



State Fauna Series, 18

Fauna of Uttarakhand

(Part-1) Vertebrates



ZOOLOGICAL SURVEY OF INDIA

State Fauna Series, 18

FAUNA OF UTTARAKHAND
(PART-1)
Vertebrates

Edited by
The Director
Zoological Survey of India, M-Block, New Alipore, Kolkata 700 053



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FAUNA OF UTTARAKHAND VERTEBRATES

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AN OVERVIEW

P.C. TAK, J.P. SATI AND P.T. BHUTIA

Zoological Survey of India, Northern Regional Center,

P.O. IPE, Dehra Dun 248 195 (Uttarakhand)

INTRODUCTION

Uttarakhand (in Hindi : Uttara = North and Khand = Section or Segment) is a state located in northern part of India. Recently, it was carved out of Himalayan and adjoining districts of Uttar Pradesh on 9th November 2000 as 27th state of the Republic of India under the name Uttaranchal. In January 2007, the name of the state was officially changed from Uttaranchal to Uttarakhand. The state shares an international boundary with China in the north and with Nepal in the east, and the state boundary with Himachal Pradesh in the west and Uttar Pradesh in the south. Biogeographically, it is situated in the Himalayan biogeographic province.

The state is often called as “the Land of the Gods” or “the abode of Gods” (in Hindi: *Dev Bhoomi*) because of the presence of a multitude of Hindu pilgrimages. The most important ones being Badrinath (Dedicated to the Lord Vishnu) and Kedarnath (dedicated to the Lord Shiva). These together with Gangotri and Yamunotri, which are the sources of the rivers Ganges and Yamuna and falling in the upper reaches of the state, form one of the most spiritually auspicious pilgrimage circuits of Hinduism. This pilgrimage circuit is popularly called “*Chota Char Dham*” (A smaller circuit of the four Hindu pilgrimages). For more than a thousand years, pilgrims have been visiting the region in the hopes of salvation and purification from sin. Hemkund has special significance to Sikhs, and is also nested in the Uttarakhand Himalayas.

Rishikesh near Haridwar (in Hindi : *Hari* = God and *Dwar* = Gate i.e. “Gate way to the God”) is known as the prominent yoga centre of India. The ‘Kumbha Mela’, in which millions of pilgrims take

part from all parts of the India, is hosted every twelve years at Haridwar. In addition, there are a number of temples and shrines, many dedicated to local deities or manifestations of the Lord Shiva and the goddess Durga.

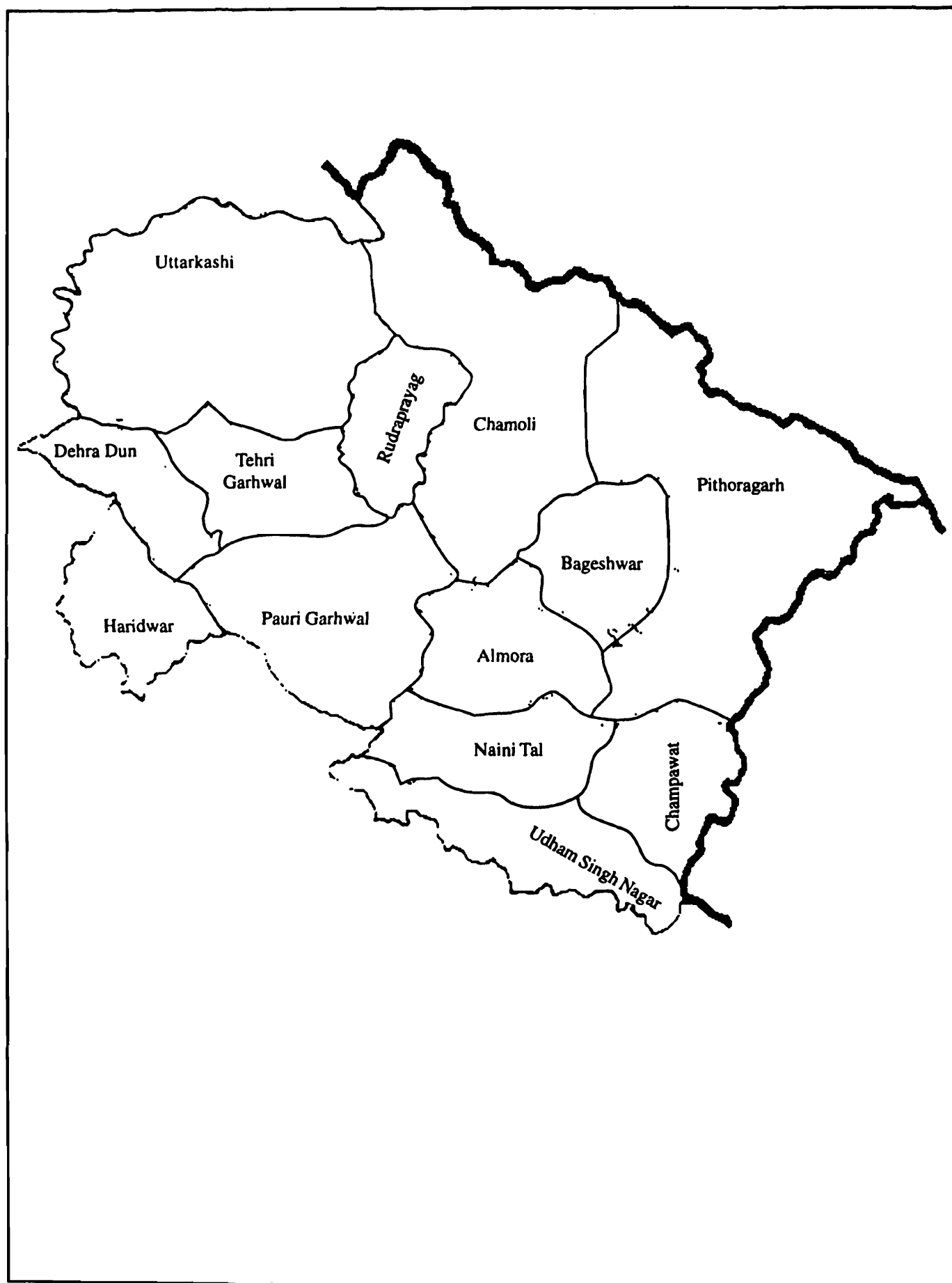
The state is also well-known for its many snow clad peaks, glaciers, and rivers. Its southern slopes are steeper and well wooded; while their northern counter parts are largely devoid of vegetation, except grass (a general characteristic of the Northern Hemisphere).

Geographically, the state is situated between latitudes 28°43'-31°28' N and longitudes 77°34'-81°03' E. The state has an area of 53,566 km², of which 93% is mountainous (Annon., 2005) (Map- 1).

GEOLOGY

The state of Uttarakhand geologically represents a complete slice of the cross-section of the Himalaya ranging from the plains to the Trans-Himalayan watershed. The narrow sub-Himalayan zone of low forest-covered hills and shallow valleys (*duns*) displaying freshwater deposits of upper tertiary age, aggregating 17,000 feet (c. 5,200 m) in thickness, and composed in ascending order of lower Shiwalik (Nahan sandstones, with subordinate shales), followed by middle Shiwalik (of soft sand-rock) and upper Shiwalik. This zone is largely consisted of the younger rock-stages and only the narrower parts of the Nahans alone. The great main boundary reversed fault (coinciding probably with the limit of deposition of these rocks) separates them sharply from the succeeding Lower Himalaya and is marked by a general rise in the Hills and cessation of the sub-Himalayan forests.

The outer Himalayan zone and central axis include enormous tracts of high-land country and



Map-1. Showing all the 13 districts of the state surveyed faunistically from 2002 to 2006

snowy peaks composed (in their southern half) of slates and massive limestone, sometimes succeeded by bands of mesozoic limestone- tal beds- and nummulitic shales, and (in their more northern half of schistose slates, quartz-schists and basic lava flows. The schistose slates pass into mica schists with isolated patches of gneissose granite, or massive bands as along the central axis. To the north of the central axis, the Trans-Himalayan watershed, in the neighbourhood of the Niti Pass, introduces an entirely new and vast sequence of marine strata from silurian to cretaceous, including a fine development of trias (Walton 1989, first published in 1910).

PHYSIOGRAPHY

The state has been divided into five geographical regions on the basis of its physiography and evolutionary history, as these geographical regions are distinguishable from each other.

1. The Trans Himalaya or the Semiarid Zone

This zone is situated in the North and North-east of the greater Himalaya and extends up to Indo-china border towards the North and constitutes the most northerly region of Uttarakhand. The elevation ranges between 4500-5700 m, though there are some isolated and higher ridges exceed the height of 6000 m in North and North-west. This is relatively the dry region dominated by glaciers. Towards the north, there are some well known mountain passes such as: Mana (5608 m); Niti (5300 m); Balchadhura (5353 m); Lipu Lekh (5121 m); Lampya Dhura (5533 m), used to provide the trade routes between India and Tibet (China). The important rivers of this zone are Bhagirathi, Alaknanda, Dhaulī or Gori and Kuthiyangti.

2. The Greater Himalaya or Himadri

This zone lies south of the above mentioned Trans-Himalayan zone and is characterized by many high peaks with their elevation ranging between 6000-7800 m. Some of these better known peaks are Bandarpunch (6320 m), Kedarnath (6968 m), Nilkanth (7273 m), Kamet (7756 m), Nanda Devi (7817 m), Trishul (7120 m), Nandakot (6861 m). This zone not only serves as

the reserve of snow and glaciers but also happens to be the source of origin of some of the major rivers of north India.

3. The Lesser Himalaya

This zone lies south of the Greater Himalaya (Himadri) and north of the Shiwaliks. It extends between the elevations of 800 m (along low river valleys) to over 3000 m (along the highest mountain ridges) lying close to the Greater Himalayan zone. Topographically, this zone is comprised of a series of ridges with river valleys in between and the hills. Several South flowing rivers, viz., Yamuna, Bhagirathi, Alaknanda, Pindar, Ramganga, Koshi and Kali emanating from the snow bound higher reaches constitute the main topographical feature of this zone. Another characteristic feature of this zone, in contrast to the Greater Himalaya, is the conspicuous absence of the fossiliferous sediments (the presence of which is the characteristic of the Greater Himalaya). Further, the character of rocks of this zone reveals closer affinity to the pre palaeozoic and early palaeozoic strata.

4. Shiwalik ranges

These ranges generally form more or less a continuous and outermost belt of Himalaya in Uttarakhand and are aligned in roughly NW-SE direction, except the westernmost part where these have been deflected southwards and enclose a valley called "*Dun*". The average elevation is 1000 m and seldom rises over 1200 m. These ranges are thickly forested with sporadic pockets of agriculture. In the South, the Shiwaliks are flanked by foothills and Terai areas. The foothills comprise of a series of parallel ridges with steep scarp facing South and gentler dip slopes towards the northern side.

5. The foothills

This zone comprises a characteristic post tertiary depositional phenomenon and is the creation of the streams flowing along the south face due to a sudden drop in the gradient and a consequent deposition of coarse material at immediate foothills creating the "Bhabar" (porous substratum, waterless zone). The material carried a little farther and deposited in the belt called Terai

with abundance of surface water. Duns are tectonic valleys occurring at three places in the foothill zone. The width of the foothills in general decreases from east to west.

(a) *Bhabar and the Duns Valleys* : Geologically Bhabar is of recent origin and largely composed of the adjoining Shiwalik ranges by the swift South flowing streams. The region has a porous substratum and suffers from a superficial absence of water. The drainage of the region assumes alarming proportions during the rains carrying a vast amount of water with huge debris loads, in the form of detritus, large and small boulders, uprooted trees and scrubs, creating hazardous conditions for life and activity in the region. The south-westwards part of the Shiwaliks encloses a "Dun Valley" which is one of the largest structural valleys developed along the foothills of Himalaya.

(b) *Terai and plains* : This zone has a super abundance of water. Due to widespread drainage control and other land reclamation schemes, the one time swampy Terai has turned into a zone of fertile agriculture.

MAJOR GLACIERS

It is important to note that the glacial ice form the largest source of fresh water on Earth. A glacier is a large and slow moving mass of ice which is formed due the compacting of the layers of snow and their movement is directed by gravity and high pressure.

Glaciers of Uttarakhand constitute its one of the most important topographical features. Locally the glaciers are often called as '*Bamak*'. The glaciers of Uttarakhand are the source of the most important river systems of India such as the Ganga and Yamuna river systems. The river Ganga has its origin in the melt waters of Gangotri glacier, while the river Yamuna originates from the Yamunotri glacier. The other well-known and most popular glaciers of Uttarakhand state are Bunderpunch glacier and Dokhriani glacier in district Uttarkashi; Khatling (Tehri); Satopanth, Chaukhamba, Kamet, Doonagiri, north & south Rishi glaciers, Trisul glacier, etc. in district Chamoli; Sunderdhunga, Kafni & Pidari (Bageshwar); Milam and Ralam (Pithoragarh).

MAJOR RIVER SYSTEMS

The state of Uttarakhand has an extensive system of snow-fed, perennial and seasonal rivers. Some of these are voluminous and fed by the glacial zone of the Himalaya, while the others carry only small amount of water because they originate from the forested zones of the lesser Himalaya. There are other still smaller and seasonal rivers with smaller courses and originate from the Shiwalik ranges. The followings are some of the major rivers of the state :

1. Yamuna and its tributaries

The river Yamuna is one of the largest Himalayan Rivers with Sauri Gad and Hanumanganga as its head waters. Yamuna emanates from the glacier lying below the Bunderpunch peak, traverse for *ca* 136 km in district Uttarkashi and enters the plains at place called Dhalipur. The principal tributaries of this river are Tons, Aglar, Asan, Kamda, Khudna, Hata, Jamdar and Pabar Nadia.

2. Ganga and its tributaries

Bhagirathi and Alaknanda are the two main head waters of the Ganga river system with the largest number of tributaries meeting the main river within the state. This system drains the main central parts of Uttarakhand falling within the large portions of the districts of Uttarkashi, Chamoli, Tehri, Rudraprayag and Pauri.

The Bhagirathi originates from Gangotri Glacier and is fed by a number of streams in the Trans-Himalayan zone and Bhilangana, which is a major tributary of Bhagirathi, rises near Khatling glacier and fed by Dharamganga and Balganga.

The Alaknanda arises from Satopanth glacier near Badrinath and fed by a large number of tributaries. Among the important ones are: Dhauliganga which joins Alaknanda at Vishnuprayag; Nandakini at Nandprayag; Pindar at Karnprayag; Mandakini at Rudraprayag; and the Bhagirathi joins Alaknanda at Devprayag to form the main river Ganga. The river Alakananda traverse for *ca* 195 km before it is joined by Bhagirathi at Devprayag and the Ganga flows for a course of *ca* 66 km from Devprayag to Haridwar where it enters the plains.

3. Ramganga and its tributaries

The river Ramganga arises from the southern slopes of the Dudhatoli ranges in Chamoli district. The main tributary of Ramganga is the river Kosi which originates in the lesser Himalaya. This system drains the South-central and South-western parts of the Kumaon region. On way, these are fed by a number of Gads (streams), including the Sona Nadi. The river Ramganga enters the plains at Kalagarh and meets Ganga outside Uttarakhand.

4. Kali and its tributaries

The river Kali is the principal river of this system which emanates from the Lipu Lekh Pass in the extreme North-east of Uttarakhand and forms the eastern boundary of Uttarakhand with Nepal. It is the largest river of Uttarakhand with a course of 252 km from its source to Tanakpur where it leaves the mountains. The rivers Dhauliganga and Gauriganga form head waters of the river Kali and join it at Tavaghat and Jaulgibi respectively.

CLIMATE

Due to its great physical diversity; varying altitudes (ranging from plains to over 7500 m); undulating hilly terrain of steep slopes, deep gorges, various river valleys dissecting land scape; the varying combination of different temperature, rainfall and humidity; and the monsoonal rhythm, the state of Uttarakhand has exceedingly diversified climate. In addition, the other factors such as precipitation, alignment of ranges and

local conditions also play a significant role in determining the broad climate types in Uttarakhand. However, the year may accordingly be divided into following four main seasons :

1. Winter (November to March)
2. Summer (April to June)
3. Rainy (July to August) and
4. The post monsoon season (September to October).

The annual rainfall of the state ranges from 720 to 2700 mm with an average annual rainfall of 1,550 mm and the temperature varies from sub-zero in higher ranges to 43° C in the plain area of the places, namely, Haridwar and Roorkee.

FOREST COVER

The recorded forest area of the State is 34,662 km², which constitutes 64.79% of its geographic area. By legal status, Reserved Forest constitutes, 71.08%, Protected Forests 28.51% and un-classed Forests 0.41% of the total forest area. Forests are largely distributed throughout the State with conifers and sal being the major forest formations. The forest cover of the State, based on satellite data of October-December 2004, is 24,442 km², which is 45.70% of the geographic area. Very dense forest is 4,002 km², moderately dense forest, 14,396 km², and open forest, 6,044 km² (Table-1) (Map-2).

The district wise details of very dense forest, moderately dense forest, open forest and scrub, along with the changes compared to 2003 assessment, have been provided in Table 2.

Table-1 : Forest cover (area in km²)

Types of forest cover	2005 Assessment (Data of Oct.-Dec.2004)				
	VDF	MDF	OF	Scrub	NF
Very Dense Forest	4,002	0	0	0	0
Moderately Dense Forest	0	14,396	0	0	13
Open Forest	0	0	6,041	0	8
Scrub	0	0	0	320	0
Non-forest	0	0	3	0	28,700
Total	4,002	14,396	6,044	320	28,721

[Source : Annon., 2005]

Table 2 : District-wise forest cover of Uttarakhand (area in km²)

District	Geographic area	2005 Assessment				Percent of G.A.	Scrub
		Very dense forest	Mod. Dense forest	Open forest	Total		
1. Almora	3,139	168	969	440	1,577	50.24	10
2. Bageshwar	2,246	159	875	346	1,380	61.44	4
3. Chamoli	8,030	406	1,558	734	2,698	33.60	7
4. Champawat	1,766	327	605	230	1,162	65.80	9
5. Dehradun	3,088	487	664	442	1,593	51.59	27
6. Pauri Garhwal	5,329	450	2,065	756	3,271	61.38	64
7. Haridwar	2,360	29	327	274	630	26.69	0
8. Nanital	4,251	548	1,936	604	3,088	72.64	17
9. Pithoragarh	7,090	470	1,229	378	2,077	29.29	69
10. Rudrapur	1,984	179	605	336	1,120	56.45	5
11. Tehri Garhwal	3,642	227	1,255	656	2,138	58.70	85
12. Udham Singh Nagar	2,542	144	246	174	564	22.19	0
13. Uttarkashi	8,016	408	2,062	674	3,144	39.22	23
Total	53,483	4,002	14,442	6,044	24,442	45.70	320

[Source : Annon., 2005]

PROTECTED AREAS

The state has a strong network of Protected Areas (PAs) : One World Heritage Site- Nanda Devi; One Biosphere Reserve- Nanda Devi; One Tiger Reserve- Corbett Tiger Reserve (CTR); Six National Parks (Corbett, Rajaji, Nanda Devi, Valley of Flower, Gangotri, & Govind); Six Wildlife Sanctuaries (Kedarnath, Govind, Sonanadi, Binsar, Askot and Benog); and Two Conserve Reserves (Asan reservoir & its environs and Jhilmil Jhil) to protect its biodiversity in general and wildlife in particular (Table-3).

The six National Parks and an equal number of Wildlife Sanctuaries covering an area of 0.71 million ha, which constitutes 13.35% of its geographic area.

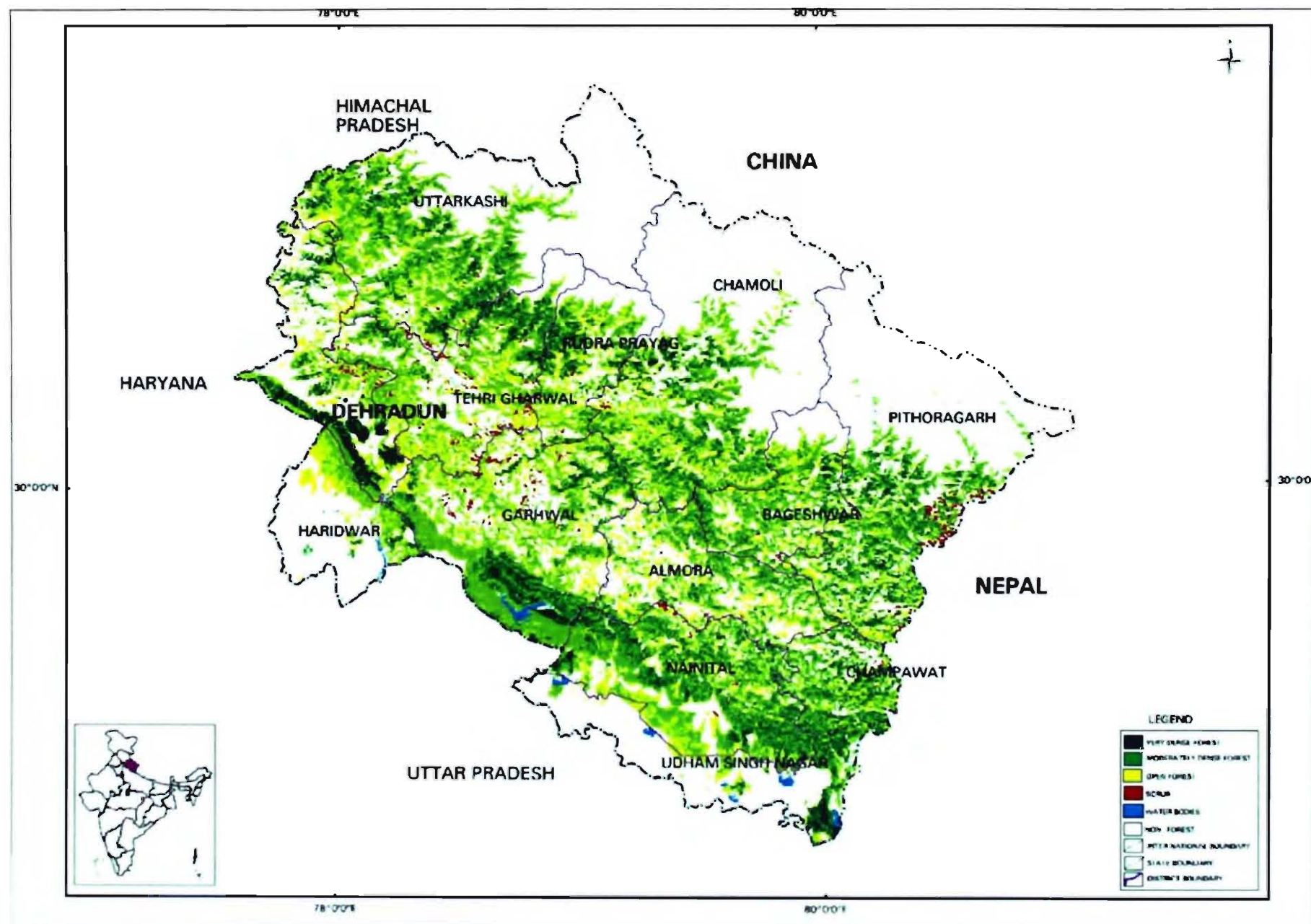
VEGETATION

Uttarakhand has ca 4700 species under 1503 genera and 213 families accounting roughly for 27% of total Indian angiospermic flowering plants (Uniyal *et al.* 2007). The wide range of physiography and phytoclimatic conditions of the state supports the luxuriant vegetation. Based

largely on the altitude, rainfall, humidity and species composition, the vegetation of the state can broadly be divided into the following five categories.

1. Subtropical forests (250-1000 m)

The subtropical forest is comprised of mixed broad leaved forests, deciduous forests and low altitude mountain forests. The dominant tree species of this zone are *Acacia catechu*, *Bauhinia variegata*, *Bombax ceiba*, *Dalbergia sissoo*, *Butea monosperma*, *Terminalia bellirica*, *Shorea robusta*, *Ficus spp.* etc. The deciduous species are characteristic of the foothill zone of Bhabar and Dun Valley areas. The other tree common species are *Terminalia tomentosa*, *Haldina cordifolia*, and *Syzygium cumini*. The principal species occurring in this zone is *Shorea robusta* constituting about 60-90% in Sal forests. The major shrubs includes *Justicia adhatoda*, *Murraya koenigii*, *Ziziphus mauritiana*, *Euphorbia royleana*, *Clerodendrum cordatum*, *Glycosmis pentaphylla*, etc. The important and commonly occurring grasses of this zone are *Heteropogon contortus*, *Apluda mutica*, *Saccharum narenga*, *Vetiveria zizanioides*, etc.



Map 2. Forest cover map of Uttarakhand.

[Source: Forest Survey of India, Dehra Dun]

Table-3. Depicting the Protected Areas network in Uttarakhand state

	Name	Status	Year of Establish-ment	Area (km ²)	District(s)	Contact Address(es)
1.	Corbett	National Park & Tiger Reserve	1936	520.82	Pauri & Nainital	Field Director, Corbett NP, Ramnagar, Nainital Tel. 05947-251549; 251376
2.	Rajaji	National Park	1983	820.42	Dehradun, Haridwar & Pauri	Director, Rajaji NP, J5/1, Ansari Marg, Dehradun Tel. 0135- 2621669
3.	Nanda Devi	National Park, Biosphere Reserve & World Heritage Site	1982	5860.69	Chamoli, Bageshwar & Pithoragarh	Director, Nanda Devi NP, Joshimath, Dist. Chamoli Tel. 01389- 222179
4.	Valley of Flower	National Park	1982	87.5	Chamoli	<i>Vide</i> Sl. No. 3
5.	Gangotri	National Park	1989	2390	Uttarkashi	Divisional Forest Officer, Uttarkashi Tel. 01374- 222444
6.	Govind	National Park	1990	472.08	Uttarkashi	1. Wildlife Warden, Govind NP, Purola, Uttarkashi & 2. <i>Vide</i> Sl. No. 2
7.	Kedarnath	Wildlife Sanctuary	1972	975.24	Rudraprayag	Divisional Forest Officer, Kedarnath Wildlife Division, Gopeshwar (Chamoli) Tel. 01372-252149
8.	Govind	Wildlife Sanctuary	1955	486	Uttarkashi	<i>vide</i> : Sl. No. 6
9.	Sonanadi	Wildlife Sanctuary	1987	301	Pauri	1. DFO, Kalagarh Tiger Reserve Div., Lansdown Tel.01386-262235 & 2. <i>Vide</i> Sl. No. 1
10.	Binsar	Wildlife Sanctuary	1988	45.59	Almora	1. Wildlife Warden, Binsar WLS, Almora & 2. <i>Vide</i> Sl. No. 1
11.	Askot	Wildlife Sanctuary	1986	600	Pithoragarh	DFO, Pithoragarh Forest Division, Pithoragarh Tel. 05962-225234
12.	Benog	Mountain Quail Wildlife Sanctuary	1993	11	Dehradun	Director, Rajaji NP, J5/1, Ansari Marg, Dehradun Tel. 0135- 2621669

[Source : Mohan and Sinha 2003]

2. Temperate forests (1000-2000 m)

This forest zone is consisted of warm temperate forest, temperate coniferous forest and cold temperate broad leaved forest. The common tree species of this zone are *Shorea robusta*, *Pinus roxburghii*, *Quercus leucotrichophora*, and *Rhododendron arboretum*. At lower altitudes of this zone, the *Pinus roxburghii* may be intermixed with *Shorea robusta* but at its upper limit, *Quercus leucotrichophora* and *Rhododendron arboreum* also appear. The commonly occurring shrubs of this zone being: *Indigofera*, *Flemingia*, *Rubus*, *Viburnum*, *Glochidion*, *Muraya*, etc. and the common grasses being: *Arundinella*, *Heteropogon*, *Eulalia*, *Themeda*, etc.

3. Subalpine forests (2000-3500 m)

The moist deciduous forest and the High altitude coniferous forest together form this forest zone. The commonly occurring tree species of this forest type are *Quercus dilatata*, *Q. semecarpifolia*, *Cedrus deodara*, *Pinus wallichiana*, *Picea smithiana*, *Abies spectrabilis*, *A. pindrow*, *Rhododendron lapidotum*, etc. The upper limits of this zone represent the highest forest consisting of *Abies* and *Betula* species, below which *Rhododendron* species occur. The shrubs consist of *Coriaria epalensis*, *Indigofera heterantha*, *Viburnum cotinifolium*, *Strobilanthes*, *Smilax*, *Berberis*, *Ribes*, *Rosa*, *Cotoneaster* and *Salix* species. The ground cover vegetation of this zone is composed of *Anemone*, *Aconitum*, *Polygonum*, *Inpatiens*, *Delphinium*, *Geranium*, *Potentilla*, *Primula*, *Valeriana*, *Erodium*, *Morina*, etc.

4. Alpine vegetation (3500-4000 m)

The vegetation of this elevation is characterized by dwarfed trees, bushes, pasture lands, grasses and other herbaceous flowering plants. This zone remains under snow cover for six months during winter. The major portion of this zone is covered by high altitude pastures locally called "buggyals". The dwarf plants are represented by *Rhododendron anthopogon*, *R. lepidotum*, *Gaultheria trichophylla*, *Juniperus* and *Salix* species. The herbaceous plants such as: *Caltha palustris*, *Clematis orientalis*, *Dactylis glomerata*, *Juncus bracteratus*, *Morina longifolia*, and species of *Coryalis*, *Anaphalis*,

Allium, *Aster*, *Geranium*, *Poa*, *Aconitum*, *Astaraglus*, *Cares*, *Saussurea*, *Primula*, *Saxifraga*, *Potentilla*, *Polygonum*, *Taraxacum*, *Sedum*, etc are found in this zone.

5. Trans-Himalayan vegetation

The valleys namely Nelang of Uttarkashi, Mana and Niti of Chamoli district represent this zone in territories of Uttarakhand. The characteristic natural vegetation occurring here comprises typical cold desert elements. Some of the most commonly found species are : *Nepeta floccose*, *Physochlaina praealta*, *Cicer microphyllum*, *Sassurea gnaphlodes*, *Arenaria broyphylla*, *Primula minutissima*, *Saxifraga imbricate*, *Potentilla fruticosa* etc. Species of *Ranunculus*, *Hippuris*, *Limosella*, *Ceratophyllum*, *Triglochin*, *Pedicularis*, etc. represent the aquatic and marshy vegetation.

FAUNAL STUDIES

The factors like rainfall, climate, temperature, etc. influence the floristic element of the Himalaya and as a consequence the faunistic element. Mani (1974), while discussing biogeography of Himalaya, has demonstrated the presence of distinct geographical distribution pattern in the fauna of Himalaya. He has mentioned that the fauna of Western Himalaya is composed partly of Oriental fauna, which has spread westwards from Eastern Himalaya, largely of Palaearctic forms and to some extent Mediterranean and Ethiopian elements. Ecologically, the state of Uttarakhand presents a unique ecosystem in the Indian sub-continent. These hills, because of their varied physiographic and climatic conditions, possess a very rich diversity of flora & fauna.

Though during the last two centuries or so, the faunal elements of Garhwal and Kumaon regions have been observed and reported by a number of Naturalists and Zoologists of our country and from abroad, enriching our knowledge about the faunal composition of these regions to a considerable extent resulting in to a large number of research papers published in various national and international periodicals. The details of which have dealt in the respective chapters on various animals groups incorporated in this document. In addition, the Zoological Survey of India has published

various faunal documents covering different protected areas of Uttarakhand, viz., Fauna of Rajaji National Park dealing with 475 species (1995); Fauna of Nanda Devi Biosphere Reserve 427 species (1997); Fauna of Asan Wetland 238 species (2003); Some Selected Fauna of Gobind Pashu Vihar 257 species (2004); and Fauna of Corbett Tiger Reserve 1013 species (2008). Another important document on the Fauna of Western Himalaya (U.P.) covering major portion of today's Uttarakhand state inventorying 2248 species was published by the survey in 1995.

After creation of Uttarakhand as an independent state in 2000, the Zoological Survey

of India, under its mandate of the Fauna of State Series, decided to bring out a revised and consolidated inventory of the Fauna of Uttarakhand. For this, systematic faunistic surveys in all the 13 districts of the state were carried out from 2002 to 2006 (Map-1). In all, 10 extensive surveys and a number of intensive surveys were conducted and 256 localities were explored faunistically. However, the present document is based on a total of 358 localities which includes 266 localities surveyed prior to the year 2002. This is inclusive of the 54 common localities which were repeated during the present surveys and have been marked with an asterisk (*) in the Table-4.

Table-4. Showing district wise list of the localities surveyed.

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
1	Almora	1	*Almora	1	Almora
2		2	Binsar WS	2	Bageshwar
3		3	Bhatrojanja	3	Bansali
4		4	Chanthanya	4	Bajnath
5		5	Chaukutia	5	Barachhina
6		6	Gagas	6	Chunauda
7		7	Kaparkhan	7	Chaubatia
8		8	*Kosi	8	Chitai
9		9	Kwarab	9	Dwara Hat
10		10	Mansi	10	Devasthal
11		11	Panduwakhal	11	Dhakuri
12		12	*Ranikhet	12	Deoli
13		13	*Somesh war	13	Ghat
14		14	Soni	14	Garur
15				15	Hawalbagh
16				16	Jogeshwar
17				17	Jatoli
18				18	Kausani
19				19	Kathpuria
20				20	Kosi
21				21	Kahimnd
22				22	Kapkote
23				23	Katarmal
24				24	Kalika
25				25	Kaparkhan
26				26	Khali
27				27	Laxmeneshwar

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
28				28	Loharkhet
29				29	Maliada
30				30	Nandkeshwar
31				31	Pitasali
32				32	Pindari
33				33	Phhalchina
34				34	Ranikhet
35				35	Someshwar
36				36	Garampani
37				37	Phurkia
38	Bageshwar	15	*Bageshwar		Nil (as an independent district)
39		16	*Bairnath		
40		17	Bhariri		
41		18	Dungri Gauri		
42		19	Jakheri		
43		20	Kameri Devi		
44		21	Kanda		
45		22	*Kapkot		
46		23	*Kausani		
47		24	Wajula		
48	Chamoli	25	Bishnu Paryag	38	Augustmuni
49		26	*Chopta	39	Auli
50		27	*Gwaldam	40	Ansuiya Devi
51		28	*Joshimath	41	Badrinath
52		29	Mandli	42	Bhimtoli
53		30	*Nand Prayag	43	Birhai
54		31	*Naranyan Baggar	44	Betta
55		32	Pipal Koti	45	Chopta
56				46	Devaldahr
57				47	Dugalbata
58				48	Gopeshwar
59				49	Gwaldam
60				50	Gobindghar
61				51	Ghagara
62				52	Gaurikund
63				53	Guptakashi
64				54	Hanuman Chatti
65				55	Hemkund
66				56	Helong

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
67				57	Joshimath
68				58	Karan Prayag
69				59	Kalimath
70				60	Kund
71				61	Koteswar
72				62	Lata
73				63	Mandal
74				64	Mana
75				65	Malari
76				66	Nand Prayag
77				67	Nanda Devi B.R.
78				68	Narayan Nagar
79				69	Naranyan Baggar
80				70	Okhimath
81				71	Pandukeshwar
82				72	Phata
83				73	Soneprayag
84				74	Sitapur
85				75	Sargarh
86				76	Soneprayag
87				77	Surathota
88				78	Tapovan
89				79	Triyugi Narain
90	Champawat	33	Barakot		Nil (as an independent district)
91		34	Bharoah Ghati		
92		35	*Chalthi		
93		36	*Champawat		
94		37	Chiddergad		
95		38	Girkahadi Nala		
96		39	Punegiri		
97		40	Tanakpur		
98	Dehra Dun	41	Addupura vill.	80	Asarori Forest
99		42	Amlawa river	81	Barkot
100		43	Asan barrage	82	Veerbhadra
101		44	Badowala	83	Badripur
102		45	Banjarewala	84	Bibiwala
103		46	Barutiwala	85	Clementown
104		47	Bataghat	86	Chandrabani
105		48	Bhatodi vill.	87	Chakrata

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
106		49	Bhatta Vill.	88	Dhalipur
107		50	Bhurae Sah	89	Dhakrani
108		51	Bossan Vill.	90	Deoban
109		52	Buras Khanda	91	Doiwala
110		53	*Chakrata	92	Dakpathar
111		54	Chandrawati vill.	93	Doonga
112		55	Chattar Sheela	94	Golatappar
113		56	Chhibro	95	Herbertpur
114		57	Darrari vill.	96	Haripur
115		58	Debrda Tonpur	97	Rishikesh
116		59	Deoband	98	Harrawala
117		60	*Dhakrani	99	Jharipani
118		61	*Dhanolti	100	Jhajra
119		62	Dhar	101	Jassowala
120		63	*Doiwala	102	Jaspur
121		64	Dubda Nala	103	Jantanwala
122		65	Dubra Vill.	104	Kothalgaon
123		66	Dudharu vill.	105	Karuapani
124		67	Dunga Vill.	106	Kalsi
125		68	Gwasa	107	Kulhal
126		69	*Haripur	108	Kuanwala
127		70	Hathyari	109	Lachiwala
128		71	*Herbertpur	110	Lakwar
129		72	Jagatpur	111	Langha
130		73	*Jaspur	112	Motichur
131		74	Jharipani	113	Maldevta
132		75	Jokhula vill.	114	Mussoorie
133		76	Juddo vill.	115	Malsi
134		77	*Kaddukhal	116	Majra
135		78	Kadwa Pani	117	Mianwala
136		79	*Kalsi	118	Mansondonwala
137		80	Kandoli vill.	119	Madhuwala
138		81	Katta Pathar	120	Phandowala
139		82	Keshewala	121	Pashulok
140		83	Korva	122	Raiwala
141		84	Koti Vill.	123	Ranipokhri
142		85	Kottha Vill.	124	Raipur
143		86	*Kulhal	125	Rajpur
144		87	Kuni Chaur	126	Rober's Cave

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
145		88	Kunja Grant	127	Satyanarain
146		89	Kusumpani	128	Sahastradhara
147		90	Lakhwad	129	Sahiya
148		91	*Langha	130	Sahaspur
149		92	Lavarka Vill.	131	Sabhawala
150		93	*Maldevta	132	Timli
151		94	Muni-ki-Raeti	133	Tuni
152		95	Naharwala	134	Tunwala
153		96	Naharwala	135	Thano
154		97	Naro khala	136	Vikasnagar
155		98	Nepali farm		
156		99	PPCL Plant		
157		100	Purkal Vill.		
158		101	Ranipokhri		
159		102	*Rishikesh		
160		103	Robbers Cave		
161		104	Rudrupur Ond		
162		105	*Sabhawala		
163		106	*Sahaspur		
164		107	*Sahastradhara		
165		108	*Sahiya		
166		109	Sardarkhala		
167		110	Shyam pur		
168		111	*Sitapur		
169		112	Siya Vill.		
170		113	Suakholi		
171		114	Teen pani		
172		115	*Thano vill.		
173		116	*Timli forest		
174		117	Viyas Nahar		
175		118	Yamuna Pul		
176	Haridwar	119	Bharamपुर		Nil (as an independent district)
177		120	Bhatodi vill.		
178		121	Bhimgoda		
179		122	Bhogpur		
180		123	Chilla		
181		124	Dholkhand		
182		125	Doodhari Temple		
183		126	Haridwar		

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
184		127	Jawalapur		
185		128	Jhilmil		
186		129	Neel Kant		
187		130	Ranipur		
188		131	Rehmalpur Bedda		
189		132	Roorkee		
190		133	Saung River		
191	Nainital	134	Aam Pokhara	137	Amangarh
192		135	Dhanmari	138	Amdanda
193		136	Dhara Caur	139	Bhowali
194		137	Dhela	140	Bhimtal
195		138	Dhumanda	141	Bastia
196		139	Dulwa Sot	142	Chorgaliya
197		140	Gairel	143	Dhangari
198		141	Gargia Sot	144	Dhela
199		142	Jarat ka nala	145	Gairal
200		143	Jarija	146	Jeolikote
201		144	Jhirna	147	Jamnagwar
202		145	Khabrar	148	Kathgodam
203		146	Kothreo	149	Nainital
204		147	LalKaun	150	Naukuchea Tal
205		148	Malani Sot	151	Ramgarh
206		149	Mohan	152	Ranibagh
207		150	Mukteshwar	153	Roopnagar
208		151	Nakka Tal	154	Sat Tal
209		152	Nauchikiya Tal	155	Sitabani
210		153	Ram ganga		
211		154	*Ramgarh		
212		155	*Ranibagh		
213		156	Sanguri		
214		157	*Sat Tal		
215		158	Sultan		
216	Pauri	159	Akhtasot	156	Boxar
217		160	*Amdanda	157	Chamdhar
218		161	Amgari	158	Dogadda
219		162	Banghat	159	Dhikala
220		163	Bijrani	160	Dhaulighat
221		164	Bilkhat	161	Fatehpur
222		165	Chilla	162	Goolarjhala

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
223		166	Dhangarhi	163	Gulabrai
224		167	*Dhikala	164	Gumkhal
225		168	Govind Chatti	165	Jhirna
226		169	Gwani Gad	166	Jawlpadevi
227		170	Jahrikhal	167	Khinanauli
228		171	Jwaplapa	168	Kaunda
229		172	Khandak	169	Kalagarh
230		173	Khankra	170	Lansdown
231		174	Khirsu	171	Malang
232		175	Kinnanoli	172	Naogakhal
233		176	Kuni Chaur	173	Pauri
234		177	Lal Dhang	174	Paterpani
235		178	Machlad Nadi	175	Pokhro
236		179	Madhu ganga	176	Rudraprayag
237		180	Nakole	177	Rathuadhab
238		181	Nimboo-boaji	178	Satpuli
239		182	*Pashulok	179	Srinagar
240		183	*Paterpani	180	Sarapduli
241		184	Patisen	181	Sneh
242		185	Pavo		
243		186	Pendul vill.		
244		187	Pin gad		
245		188	Pokhra Gad		
246		189	Ram ganga		
247		190	Rampur		
248		191	*Sarpduli		
249		192	*Satpuli		
250		193	*Srinagar		
251		194	Thandi sarak CTR		
252		195	Viyas Ghat		
253	Pithoragarh	196	*Askot	182	Askot
254		197	*Berinag	183	Bastia
255		198	Chandag	184	Berinag
256		199	Chorpatta	185	Bhelgad
257		200	Dwaligard	186	Bujeti
258		201	Garjia	187	Balu Kote
259		202	Gunna farm	188	Bhum
260		203	Jarja Gad	189	Champawat
261		204	Jhulaghat	190	Chalthi

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
262		205	Kille Vill.	191	Chandak
263		206	*Lohaghat	192	Dharchula
264		207	Melagad	193	Didihat
265		208	Munsari	194	Gaurighat
266		209	Pithoragarh	195	Jauljibi
267		210	Ranganga	196	Jhulaght
268		211	Sela Pani	197	Jharigad
269		212	Swatigad	198	Kalapanigad
270		213	Tal- Widihol	199	Lohaghat
271				200	Munsiari
272				201	Mayabati
273				202	Nachani
274				203	Nonpokhri
275				204	Raigarh
276				205	Seeteshwar
277				206	Sukhidhang
278				207	Sandev
279				208	Thal
280				209	Tawaghat
281				210	Thuligad
282				211	Pungiri
283				212	Suwalek
284				213	Banlek
285	Rudraprayag	214	Duggal Bitta		Nil (as an independent district)
286		215	Gandhari Vill.		
287		216	*Gaurikund		
288		217	*Guptkashi		
289		218	Mandakini River		
290		219	Shiv Prayag		
291		220	Tilwada		
292		221	Ukimath		
293	Tehri	222	Bros Khanda	214	Bhotapur
294		223	Dun Paryag	215	Chamba
295		224	Gaja	216	Deoprayag
296		225	*Kirti Nagar	217	Dubata
297		226	*Kanatal	218	Dhanolti
298		227	Kodia	219	Gaddugad
299		228	Kotaridhar	220	Ghansali
300		229	*Nagni Vill.	221	Jakhand

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
301		230	Pali vill.	222	Jalangi
302		231	Plas Jardar	223	Kanhra
303		232	Ranichori	224	Kaddukhal
304				225	Kanatal
305				226	Kirtinagar
306				227	Kemptyfall
307				228	Kitkileshwar
308				229	Majra
309				230	Narendra Nagar
310				231	Narkota
311				232	Panthgaon
312				233	Rampur
313				234	Ranichauri
314				235	Srimlashu
315				236	Surkanda Devi
316				237	Uppu
317	Udham Singh Nagar	233	Bijpur		Nil (as an independent district)
318		234	Bukra dam		
319		235	Dabka River		
320		236	Dinesh Pur		
321		237	Haripur dam		
322		238	Kashipur		
323		239	Khanara River		
324		240	Lalpuri		
325		241	Pantnagar		
326		242	Paratapur		
327		243	Sarda Branch Nahar		
328		244	Surai		
329		245	U.S.Nagar		
330	Uttarkashi	246	Bitiyara	238	Barkot
331		247	Dhanotri	239	Bhatwari
332		248	Dharansu	240	Barethikhal
333		249	Dhariottri	241	Bhairoghati
334		250	Dwari Khal	242	Dharasu
335		251	*Harsil	243	Gawand
336		252	Kot bongla	244	Gangani
337		253	Mahidanda	245	Gangotri
338		254	Nachiket tal	246	Harsil
339		255	Sandgan	247	Joshiard

Total localities	Districts	Sl. No.	2002-2006	Sl. No.	Prior to 2002
340		256	Silkyara	248	Jalen
341				249	Jamunotri
342				250	Jharmola
343				251	Jhala
344				252	Kharadi
345				253	Kutnur
346				254	Kuwa
347				255	Miteli
348				256	Malgad Parola
349				257	Mandri
350				258	Nakuri
351				259	Nagni
352				260	Naogaon
353				261	Raturishera
354				262	Rajgarhi
355				263	Shimla Mahidanda
356				264	Sukhi
357				265	Sayanchatti
358				266	Purola

* = Localities repeated during the present surveys

FAUNAL DIVERSITY

These above mentioned field surveys resulted in to updated information of the 3748 species belonging to 1848 genera and 427 families of the both vertebrate as well as invertebrate animal

diversity (Plates). Of these, 451 species and subspecies have been reported for the first time thus constituting the new records for Uttarakhand and 22 species for India. In all 35 species are endemic to the state while one is endemic to India (Table-5).

Table-5. Faunal diversity of Uttarakhand

S. No.	Group	Uttarakhand		First/ New record		Endemic	
		Genera	Species	Uttarakhand	India	Uttarakhand	India
	Vertebrata						
1.	Mammalia	62	93				
2.	Aves	311	743				
3.	Reptilia	48	72				
4.	Amphibia	11	20				
5.	Pisces	67	132			11	

Sl. No.	Group	Uttarakhand		First/ New record		Endemic	
		Genera	Species	Uttarakhand	India	Uttarakhand	India
	Invertebrata						
1.	Apterygota : Collembola	16	31				
2.	Apterygota : Thysanura	4	4				
	Pterygota						
3.	Odonata : Zygoptera	41	47	1		2	
4.	Odonata : Anisoptera	40	75	4			
5.	Orthoptera : Acridoidea	48	64				
6.	Isoptera	19	47				
7.	Hemiptera : Water bugs	26	45				
8.	Hemiptera : Aphididae	90	163	4			
9.	Hemiptera : Cicadelloidea	28	43	16			
10.	Hemiptera : Cicadoidea	17	31	6			
11.	Hemiptera : Fulgoroidea	18	18	5			
12.	Hemiptera : Reduviidae	23	31	27			
13.	Hemiptera : Lygaeidae	14	20	9			
14.	Hemiptera : Pentatomoidea	33	40	35			
15.	Hemiptera : Pyrrhocoridae	10	17	16			
16.	Coleoptera : Gyrinidae & Dytiscidae	18	40	15	1		
17.	Coleoptera : Coccinellidae	23	39	2 (1 sp. nov.)	2		
18.	Coleoptera : Histeridae	9	12	12			
19.	Coleoptera : Scarabaeidae	16	44	6			
20.	Coleoptera : Hydrophiloidea	19	52	19			
21.	Coleoptera : Staphylinoidea	23	110	16	3		
22.	Diptera	133	363				
23.	Diptera : Asilidae	14	28	2		11	6
24.	Diptera : Bombyliidae	11	26	2			
25.	Diptera : Calliphoridae	7	11	3			
26.	Diptera : Sarcophagidae	10	22			3	
27.	Diptera : Syrphidae	35	52	13			
28.	Diptera : Tachinidae	19	19	5		2	3
29.	Diptera : Tephritidae	16	20			6	1
30.	Lepidoptera : Pieridae & Arctiidae	38	89				
31.	Lepidoptera : Lycaenidae, Libytheidae & Acraeidae	34	55	1	1		
32.	Lepidoptera : Sphingidae	29	41	9			
33.	Lepidoptera : Satyridae	12	37				

Sl. No.	Group	Uttarakhand		First/ New record		Endemic	
		Genera	Species	Uttarakhand	India	Uttarakhand	India
34.	Lepidoptera : Papilionidae, Nymphalidae (Danaiidae), Lasiocampidae & Lymantridae	19	46	14	1		
35.	Lepidoptera : Hesperidae, Riodinidae & Nymphalidae	98	171				
36.	Hymenoptera : Chalcidoidea : Chalcididae	10	22				
37.	Hymenoptera : Aculeata : Sphecidae	10	45	3			
1.	Protozoa : Coccidia	3	35	12			
2.	Trematoda	39	48				
3.	Cestoda	25	36				
4.	Nematoda	93	196	17	2		
5.	Annelida : Wetlands	3	9				
6.	Annelida : Freshwater	9	9				
7.	Earthworms	20	45				
8.	Leeches	8	10	5			
9.	Crustacea	5	17				
10.	Chilopoda	7	32	6 (2 spp. nov.)			
11.	Araneae (Spiders)	49	127	109			
12.	Acari : Ixodidae (Ixodis Ticks)	8	47				
13.	Acari : Oribatei (Oribatid Mites)	50	57	57	12		
	Total	1848	3748	451	22	35	10

A. Vertebrate diversity : The vertebrate diversity, embracing mammals, birds, reptiles, amphibians and pisces of Uttarakhand, together constitutes 28.2% of its total known faunal diversity (1060 out of 3748 species).

Mammals : The mammalian diversity of Uttarakhand is represented a total of 93 species under 62 genera, 26 families and nine orders and represents c. 23% of the Indian mammalian diversity (397 species). This includes two critically endangered (CR) species, viz., Peter's Tube-nosed Bat (*Murina grisea*) and Pygmy Hog (*Sus*

salvanus); three endangered (EN) : Tiger (*Panthera tigris*), Snow Leopard (*Uncia uncia*) and Indian Elephant (*Elephas maximus*); five vulnerable (VU) Fishing Cat (*Prionailurus viverrinus*), Sloth Bear (*Melursus ursinus*), Swamp Deer (*Cervus duvaucelii*), Himalayan Tahr (*Hemitragus jemlahicus*), Serow (*Naemorhedus sumatraensis*) and one near threatened (NT) Common Otter (*Lutra lutra*).

The order carnivora in India is represented by 7 families, 26 genera and 55 species; of this Uttarakhand has a share of nearly 23 species

under 17 genera. The family Felidae is represented by 15 species, of which Uttarakhand has six species thus constituting 40 % of the total Indian species. The larger cats such as the tiger and panther (*Panthera pardus*) are found at the lower elevations and foot hills and are common in Corbett Tiger Reserve, Rajaji National Park and Sonanadi WLS. Stray cases in other parts of the state are also not uncommon. However, the *terai* and *bhabhar* areas of the state support substantial tiger and panther populations. The Snow Leopard is a high-altitude predator, has a wide distribution across the Himalayas and into the Trans-Himalaya, and occurs in low densities. While the smaller cats such as the Jungle Cat (*Felis chaus*) is commonly distributed throughout in its habitat; the Leopard Cat (*Prionailurus bengalensis*) is less common; and the Fishing Cat is comparatively rare and occur in marshy areas.

Family Canidae represented by 5 species and 3 genera in India, while the state of Uttarakhand accounts for only 4 species thus representation is 80% in the state. The Indian wolf is represented by *Canis lupus*, the common jackal *Canis aureus*, Indian fox *Vulpus bengalensis* and the red fox by *Vulpus vulpus* and are basically scavengers and found in scrub jungles of the state. Family ursidae is represented by two species: Sloth Bear and Asiatic Black Bear (*Ursus thibetanus*). Order wise number of Families, Genera and Species of the mammalian fauna of Uttarakhand are tabulated below (Table-6).

Aves (Birds) : The avian (bird) diversity of Uttarakhand is represented a total of 743 species

belong to 311 genera, 75 families and 18 orders. This constitutes about 60% of the known Indian bird diversity (1232 species). Of these 1232 bird species known from the India, 512 have been reported from the state of Jammu & Kashmir, 580 from Himachal Pradesh, 671 from Uttaranchal, 494 from Punjab, 522 from Haryana, 750 from Assam and so on ([www@envisbhn.org](http://www.envisbhn.org)). This indicates the fact that the state of Uttarakhand supports the second highest number of bird species after Assam (750).

The family-wise analysis indicates that family Muscicapidae, the most crowded and the most diverse family of the passerine birds, dominates the scene with 185 species (Turdinae 59, Timaliinae 37, Sylviinae 61, Muscicapinae 21, Rhipidurinae 3, Monarchinae & Panurinae 2 each), followed by Anatidae (30), Fringillidae (29), Scolopacidae & Picidae (23 each), Phasianidae (22), Columbidae (19), Cuculidae & Tytonidae (18 each), Ardeidae & Motacillidae (15 each), and so on. Of the 75 families reported from Uttarakhand, 17 families are represented by a single species.

It is interesting to note that the three genera, viz., *Ophrysia*, *Catreus*, and *Callacanthia*, which are Palaearctic in origin and endemic to India, are found in Uttarakhand. In addition, the following six species, viz., Wood Snipe (*Capella* or *Gallinago nemoricola*), Himalayan Pied Woodpecker (*Dendrocopos himalayensis*), Black-headed Jay (*Garrulus lanceolatus*), Smoky Warbler (*Phylloscopus fuligiventer*), Pied Thrush (*Zoothera wardii*), Spot-winged Crested Tit (*Parus melanolophus*) though endemic to

Table-6. Showing number of Order, Families, Genera and Species of mammals in Uttarakhand

Sl. No.	Order	Families	Genera	Species
1	Insectivora	2	3	4
2	Chiroptera	5	14	28
3	Primates	1	2	2
4	Carnivora	7	17	23
5	Proboscoidea	1	1	1
6	Artiodactyla	4	9	13
7	Pholidota	1	1	1
8	Rodentia	3	13	19
9	Lagomorpha	2	2	2
Total		26	62	93

Palearctic, also extend in temperate areas of Uttarakhand.

The analysis of various categories and subcategories of residential status of these 743 species revealed that the avian scene of the state is dominated by the residents species with its subcategories (411 species), followed by the winter migrants (118), summer visitors (72), vagrants (20), and passage migrants (08), while the residential status of remaining 114 species is not known.

Out of the 743 species, 43 are listed under threatened category. Of these 43 threatened species, 25 are Globally Threatened (GT) (Critical-CR: 08; Endangered- EN: 03; and Vulnerable- VU: 14) and 18 are Near Threatened (NT) (BirdLife Int. 2007) (for details *vide* chapter on Aves).

The species recorded once or twice from one place or locality has been considered as significant record for the state. A total of 68 such records are worth mentioning here. Of which the maximum of 46 such record are from Corbett Tiger Reserve; followed by 11 from Dehra Dun; 04 from Rajaji National Park; 03 from Nanda Devi area in Chamoli; 02 from Almora; and 01 each from Naini Tal and Rudrapur.

Reptiles : Reptilian diversity of Uttarakhand is represented by 72 species under 48 genera, 14 families and three orders which constitutes c.15% of the Indian reptilian faunal diversity (460). One species, viz., *Python mruus bivittatus* has recently been reported from the state by Nawab & Srivastawa (2008), while another species, viz., *Pangshura tentoria circumdata* is reported herewith for the first time from the state. Order wise number of Families, Genera and Species of the reptilian fauna of Uttarakhand are tabulated below (Table-7). Of these 72, eight species have been listed under different threat categories by the IUCN (2009): Two species, namely, Long snouted crocodile (*Gavialis gangeticus*) & Bengal roof turtle (*Kachuga kachuga*) are Critically endangered; one species- Narrow headed soft shell turtle (*Chitra indica*) is Endangered; while five species, viz., Broad snouted crocodile (*Crocodylus palustris*), Crowned river turtle (*Hardella thurjii*), Black spotted pond turtle (*Geochlemys hamiltoni*), Three keeled land tortoise (*Melanochelys tricarinata*) and Ganges soft shelled turtle (*Aspideratus gangeticus*) are Vulnerable.

Table-7. Showing number of Order, Families, Genera and Species of reptilian fauna in Uttarakhand

Sl.No.	Order	Families	Genera	Species
I	Crocodylia (2 species)			
		Gavialidae	1	1
		Crocodylidae	1	1
II	Chelonia (11 species)			
		Betaguridae	5	8
		Trionychidae	3	3
III	Squamata (59 species)			
		Gekkonidae	2	5
		Agamidae	3	4
		Scincidae	4	5
		Lacertidae	1	1
		Varanidae	1	2
		Typhlopidae	2	3
		Boidae	2	3
		Colubridae	15	24
		Elapidae	4	7
		Viperidae	4	4
	(72 species)	Total	48	72

Amphibia : The amphibian diversity of the state is depicted by 20 species under nine genera, five families and one order and shares c. 8% of the

Indian amphibian diversity (240) at species level. Family wise number of Species and Genera of the amphibian fauna of Uttarakhand are tabulated below (Table-8).

Table-8. Showing number anuran Families, Genera and Species of reptilian fauna in Uttarakhand

Sl. No.	Families	Genera	Species
1	Bufonidae	2	3
2	Dicroglossidae	5	10
3	Microhylidae	2	2
4	Rznidae	1	4
5	Rhacophoridae	1	1
	Total	11	20

Pisces : The Indian fish diversity is represented by 2546 species of which the state of Uttarakhand shares a total of 132 species of fish belonging to 67 genera, 27 families and 8 orders. Of these 132, 10 species (7.5%) are endangered, while 10 species (7.5%) are exotic, and 11 species (8.3%) are endemic to the state. On the bases of fish catch the dominant species in upper region (hill area) are *Schizothorax* spp. (which forms appox. 60% of fish catch) and in plain dominant species are *Barilius* spp. (which forms 40% of fish catch) *etc.*

B. Invertebrate diversity : The invertebrate diversity of Uttarakhand presented here belongs to 19 major groups covering from Protozoa through Trematoda (flat worms), Cestoda (tape worms), Nematoda (round worms), Annelida (earthworms & leeches), Crustacea (prawns), Chilopoda (centipedes), Aranae (spiders), Acari (ticks), to Insecta, which together form c. 71 % of the total faunal diversity of the state (2688 species out of 3748). Further, the major portion (75%) of the known invertebrate diversity (2020 out of 2688 invertebrate species) is constituted by insect life of the state. The insect diversity of the state dealt herewith belongs to only a few orders such as: Collembola (spring tails), Thysanura (silver fishes), Odonata (dragon & damsel flies), Orthoptera (grasshoppers, etc), Isoptera (termites), Hemiptera (bugs, including water bugs, aphids, etc.), Coleoptera (a variety of beetles), Diptera (flies), Lepidoptera (butterflies and moths), Hymenoptera (bees, wasps, ants, etc) (Table-5).

Insects : The state of Uttarakhand being an eastern part of the western Himalayas with a variety of forests (ranging from shiwaliks & foothill with *bhabhar*, *terai*, and *duns*, to the alpine forests and pastures through the sub-tropical, temperate, sub-alpine forests) harbours a tremendous diversity of insects. In fact, the present account of insects from the state deals only with ten out of more than 30 known insect orders and that too is far from complete, but when all these insect orders are fully explored, the insect diversity of the state in particular and of the country in general is likely to be much beyond the present day estimate. However, a brief analysis of the insect orders/ families studied is given below.

Collembola : The collembola of Uttarakhand constitute c. 14% of the Indian collembola diversity (210 species) and are represented by 31 species belonging 16 genera and three families. **Tysanura**: The state shares about 13% of the Indian thysanura (31 species) by four species under four genera and two families. **Odonata**: are represented by 122 species under 81 genera and 14 families in Uttarakhand which is nearly 24 % of the Indian odonata diversity (499 species). This includes five species reported for the first time from the state while two species are endemic to Uttarakhand. **Orthoptera** (Acridoidea): A total of 64 species and subspecies belonging to 48 genera and two families are recorded from the state. **Isoptera**: are represented by 47 species under 19

genera and six families which constitutes c. 18 % of the total isopteran species known from India. *Hemiptera* : The present document deals with only a few families such as: aphididae, cicadelloidea, cicadoidea, fulgoridea, reduviidae, lygaeidae, pentatomoidea, and pyrrhocoridae including water bugs. The collective hemipteran diversity of these families in Uttarakhand is represented by 408 species, 259 genera and 47 families. This includes 118 species which are recorded for the time from the state. *Coleoptera*: Five families, viz., gyrinidae, dytistidae, coccinellidae, histeridae, scarabaeidae, and two super families, viz., hydrophiloidea and staphylinoidea of this insect order are dealt herewith. A total of 297 species and 108 genera belonging to these families have been reported from Uttarakhand which includes new records for 70 species from the state and six new records from India. One new species, *Henosepilachna chamolika* sp. nov. belonging to coccinellidae family has been described for the first time, hence new to the science. Also the coleopteran genus *Egius* Mulsant has been recorded for the first time from India as well as the state. *Diptera* : Dipteran includes 6255 species under 87 families from India and is the largest group of insects next to coleopteran. The dipteran diversity of seven families: asilidae, bombyliidae, calliphoridae, sarcophagidae, syrphidae, tachinidae and tephritidae have been documented. This includes 25 species which are reported for the first time from the state, while nine species are endemic to Uttarakhand and one to India. *Lepidoptera* : The lepidoptera of the state is represented by 439 species under 230 genera belonging to the 13 families (pieridae, arctiidae, lycaenidae, libytheidae, acraeidae, sphingidae, satyridae, papilionidae, nymphalidae, lasiocampidae, lymantridae, hesperiidae, and riodinidae). This includes 24 new records from Uttarakhand and two from India. *Hymenoptera* : Major concentration of hymenopterous species is in the hilly and densely forested areas of the country and it is estimated

that nearly 80-85% of the species remain to be explored from these areas (Ramakrishna and Alfred 2006). The present document reports only 67 species under 20 genera and two families, including three new records for the state. However, the known hymenoteran diversity the state is 503 species recorded earlier (in *Fauna of western Himalaya* 1995).

Protozoa : The protozoan fauna of Uttarakhand is represented by 35 species belonging to three genera and one family, of which 12 species are new records for the state. *Trematoda* and *Cestoda* : of the state are represented by 48 species under 39 genera and 21 families; and 36 species under 25 genera and 11 families respectively. *Nematoda* : The nematode fauna of Uttarakhand is documented by 196 species under 93 genera and 37 families of which 17 species are reported for the first time from the state and two from India. *Annelida* : of the state documented herewith includes the freshwater earthworms as well as the leeches which are represented by 73 species belonging to 40 genera and 16 families of which five species are recorded for the first time. *Crustacea* : are represented by 17 species under five genera and three families while the *Chilopoda* of Uttarakhand is documented by 32 species under seven genera and two families. *Aranae* : of the state belong to 127 species under 49 genera and 17 families of which 109 are new records for the Uttarakhand state. *Acari* : is represented by Ixodidae ticks and Oribatei mites which are documented by 47 species, eight genera, one family and 57 species, 50 genera and 33 families respectively. All the 57 species of Oribatid mites are new records for Uttarakhand and 12 for India.

In addition to the above mentioned faunal diversity of 3748 species from Uttarakhand, information on some other animal groups/ families has also been published earlier, which has been summarised below in Table-9.

Table-9. Showing the animal groups of Uttarakhand published earlier

Animal group	Number of species
MOLLUSCA	56
ARACHNIDA (SCORPIONS)	17
INSECTA	
Plecoptera	20
Dermaptera	43
Trichoptera	59
Neuroptera	4
Hymenoptera	
Tiphidae	18
Scoliidae	20
Eumenidae	15
Vespidae	24
Pompilidae	5
Scelionidae	5
Platygastridae	6
Daipriidae	1
Proctotrupidae	1
Ceraphronidae	1
Ichneumonidae	303
Total	598

Source : 1. Fauna of Western Himalaya (U.P.) 1995. 2. Fauna of Nanda Devi Biosphere Reserve 1997.

The Himalayas have a relatively recent origin and therefore has low endemism, especially among the better known higher taxonomic groups. Uttarakhand being largely a hilly state, the occurrence of the viable populations of many a threatened animal species (10 threatened mammalian species, 43 species of threatened birds, and eight species of threatened reptiles and 10 species of threatened fishes) are of global significance. The state of Uttarakhand supports 3748 species belonging to 55 different animal groups. This includes 451 species and subspecies reported for the first time from Uttarakhand and 22 species from India. However, there are 35 animal species which are endemic to the state

(brown only from Uttarakhand) while ten are endemic to India. One new species, *Henosepilachna chamolika* sp. nov. of coccinellid (Coleoptera) and two new subspecies (viz., *Otostigmus politus quadrispinosus* and *Rhysida longipes punctate*) of Scolopendrid centipedes have been described as new to the science.

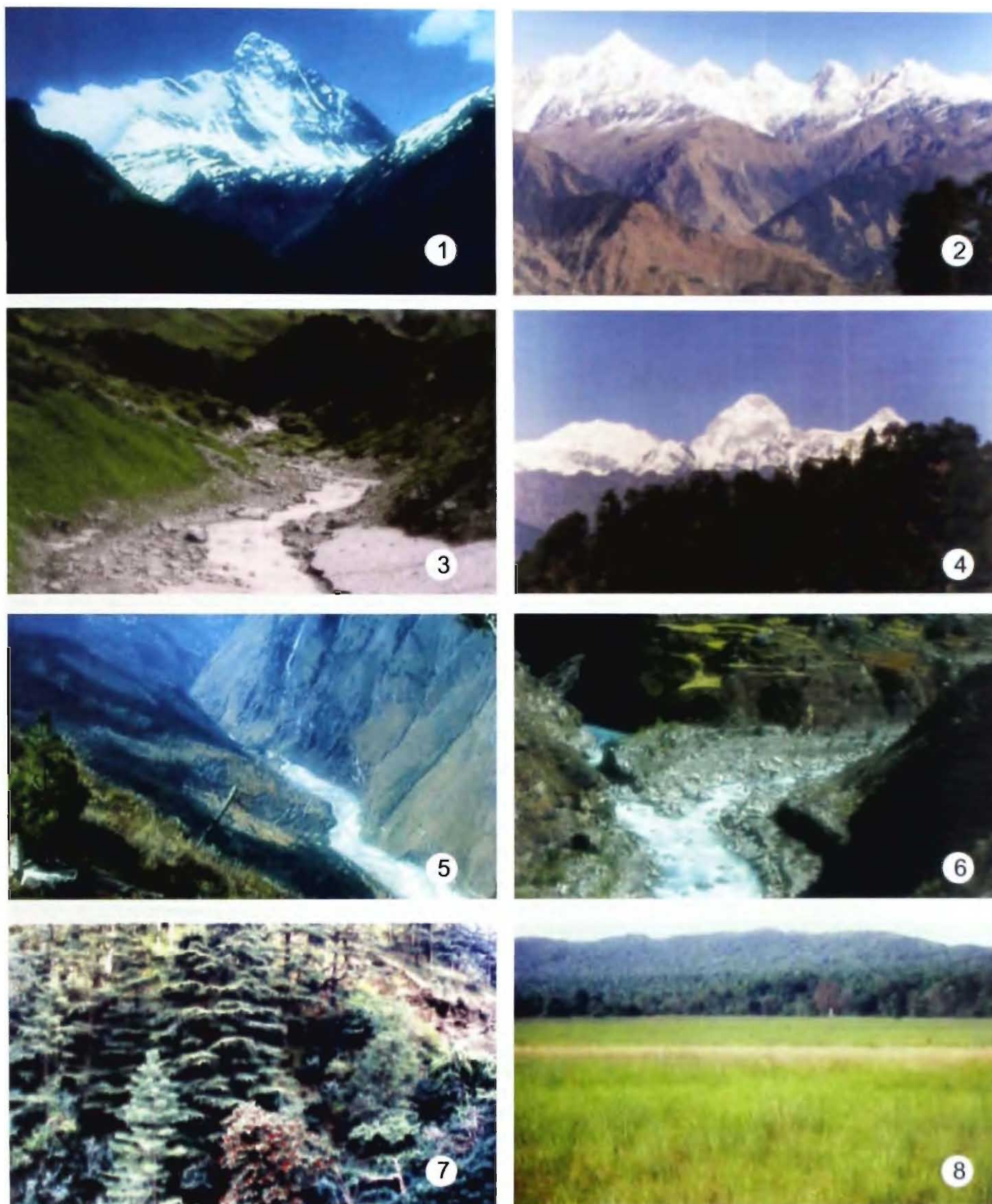
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PLATE-I (HABITATS)



1. Nanda Devi-the highest mountain peak (7817 m) in Uttarakhand, 2. A Typical view of alpine habitat between the tree line and the snow clad Himalayas, 3. A view of alpine meadows with melting snow in district Pithoragarh, 4. A view of the mount Kailash with pine forest in the fore ground in district Bageshwar, 5. A view of the river Dhaul below Lata village as seen from Belta Kharak in district Chamoli, 6. A confluence of the rivers Dhaul Ganga and Rishi Ganga below village Rem in district Chamoli, 7. A typical view of conifer forest dominated by Deodar, 8. A view of Savannah grassland with Sal forest in the back ground at Dhikala, Corbett Tiger Reserve

PLATE-II (MAMMALS)



1. Tiger (*Panthera tigris*), 2. Indian Elephant (*Elephas maximus*), 3. A Blue Bull (*Boselephas tragocamelus*), 4. A female Spotted Deer with fawn (*Axis axis*), 5. A male Rhesus Macaque (*Macaca mulatta*), 6. Northern Palm Squirrel (*Funambulus pennanti*), 7. Indian Flying Fox (*Pteropus giganteus*)

PLATE-III (BIRDS)



1. Northern Pintail (*Anas acuta*), 2. Common Teal (*Anas crecca*), 3. Mallard (*Anas platyrhynchos*), 4. Tufted Pochard (*Aythya fuligula*), 5. Pheasant-tailed Jacana (*Hydrophasianus chirurgus*), 6. White-breasted Waterhen (*Amaurornis phoenicurus*), 7. Black-winged Stilt (*Himantopus himantopus*), 8. Blue-Rock-Thrush (*Monticola solitarius*)

PLATE-IV (BIRDS)



1. Little Cormorant (*Phalacrocorax niger*), 2. Cattle Egret (*Bubulcus ibis*),
3. White-breasted Kingfisher (*Halcyon smyrnensis*), 4. White-capped Redstart (*Chaimarrornis leucocephalus*),
5. Eurasian Collared-Dove (*Streptopelia decaocto*), 6. Rose-ringed Parakeet (*Psittacula krameri*),
7. Common Crested Lark (*Galerida cristata*), 8. Common Hoopoe (*Upupa epops*)

PLATE-V (BIRDS)



1. Bank Myna (*Acridotheres ginginianus*), 2. Rufous-backed Shrike (*Lanius schach*), 3. House Crow (*Corvus splendens*), 4. Citrine Wagtail (*Motacilla citreola*), 5. Grey Wagtail (*Motacilla cinerea*), 6. White Wagtail (*Motacilla alba*), 7. Large Pied Wagtail (*Motacilla maderaspatensis*)

PLATE-VI (REPTILES)



1. Indian garden lizard (*Calotes versicolor*), 2. North Indian roofed turtle (*Pangshura tectum*), 3. Indian rock lizard (*Laudakia tuberculata* Hardwicke), 4. Indian snail eating turtle, (*Melanochelys trijuga*) (Blyth), 5. Brahminy worm snake, (*Ramphotyphlops braminus*), 6. Indian Flap shell turtle, (*Lissemys punctata*)

PLATE-VII (Amphibia)



1



2



3



4



5



6

Fig. 1. *Hoplobatrachus tigerinus* (Daudin), Indian Bull frog collected from Haridwar and around; **Fig. 2.** *Hoplobatrachus tigerinus* (Daudin), with vocal cord in male; **Fig. 3.** *Duttaphrynus melanostictus* (Schneider), Common Indian Toad collected from district Tehri and Dehradun; **Fig. 4.** *Hoplobatrachus tigerinus* (Daudin); **Fig. 5.** *Euphlyctis cyanophlyctis* Schneider, Skittering frog, common at many localities; **Fig. 6.** *Euphlyctis cyanophlyctis* Schneider Skittering frog with characteristics black spots at ventral side. The small frog is with characteristic indication of infection of parasite (dark lines on ventral surface)

PLATE-VIII (Amphibian Trematodes)



MAMMALIA

J. P. SATI and P.C. TAK

Zoological Survey of India, Northern Regional Centre, Dehra Dun 248 195

E-Mail : jpsatizsi@yahoo.co.in; pctakzsi@gmail.com

INTRODUCTION

The class Mammalia finds the highest place in the animal taxonomic group as well as in the animal kingdom. The individuals of class mammalia are commonly known as mammals and they are the most fascinating of all the fauna known. India, in its 10 biogeographical zones and 26 biotic provinces, harbours more than 10% (401 out of 4629) of the world's living mammalian species (Alfred *et al.* 2006a). The base-line information of Indian mammals is available in various indispensable books by Jerdon (1867), Blanford (1888-91), Pocock (1939, 1941), Ellerman (1961), Ellerman and Morrison-Scott (1951), Prater (1971), Saharia (1982), Alfred *et al.* (2002, 2006a & b), Menon (2003) and Ramakrishna and Alfred (2007).

Uttarakhand, which falls mostly under Himalayan biogeographic zone and west Himalayan province of India, is a home for nearly 23% (93 species) of the Indian mammals (present communication). Mammals of Uttarakhand occur in variety of habitats, ranging from Snow clad Mountains, through Alpine & Sub alpine meadows, Sub-tropical & Tropical forests, Shiwaliks to the Grass lands of the plains (small portion). The forest cover is about 45.74% of State's geographic area of 53,483 km² (Annon. 2005). The major portion (>90%) is mountainous while the remainder is plains. The state has a strong network of one World Heritage Site- Nanda Devi; One Biosphere Reserve- Nanda Devi; One Tiger Reserve- Corbett Tiger Reserve (CTR); Six National Parks (Corbett, Rajaji, Nanda Devi, Valley of Flower, Gangotri, and Govind); Six Wildlife Sanctuaries (Kedarnath, Govind, Sonanadi, Binsar, Askot and

Benog); and Two Conserve Reserves (Asan and Jhilmil Jhil) to protect its biodiversity in general and wildlife in particular.

However, the information on the Mammals of Uttarakhand in particular is very scanty and scattered in Working Plans of the State Forest Department; Brochures & Booklets; Expedition reports, Scientific tour reports and EIA (Environmental Impact Assessment) study reports; Books by the various Governmental and Non-Governmental Organisations on areas of conservation significance, like Conservation Reserves, Sanctuaries, National Parks, Biosphere Reserves, Heritage Sites, etc., and in the various day-to-day news papers and magazines.

Most of the work on mammalian fauna of Uttarakhand is either species specific or ecosystem (area) specific. The species specific work has been carried out on Spotted-Deer (Chital or Cheetal) by De and Spillelt (1966) and Tak & Lamba (1984); on Bharal (Blue Sheep) and Red/Brown Bear by Dang (1968); on Hog-Deer by Tak & Lamba (1981); on Musk-Deer by Green (1980 & 1985), Green and Singh (1981), Sathyakumar (1990); and on Snow Leopard by Fox *et al.* (1986). The area or ecosystem specific information on mammals of Dehra Dun has been provided by Osmaston and Sale (1989- originally Osmaston 1935); Nanda Devi area by Dang (1964), Lavkumar (1978), Tak & Lamba (1985), Lamba (1987), Sathyakumar (1993 & 2003), and Tak (1997); Govind Pashu Vihar by Sati (2004) and Sati & Sinha (2004), Corbett Reserve by Lamba (1977, undated), Khati (2004), Sati & Tak (2008); Rajaji National Park by Sinha (1995a); western Himalaya by Sinha (1995b); Uttarakhand

by Sati (2002); Asan Wetland, now Conservation Reserve by Sati & Sinha (2003); and Johar valley by Sati & Tak (2005).

Besides, a checklist provided by Sinha (1995b) and a general account by Sati (2002), there is no ready reference dealing with the systematic account pertaining to the mammals of Uttarakhand. Therefore, it was thought worthwhile to undertake the task of preparation of Systematic Account of mammals of Uttarakhand under the State Fauna Series of the Zoological Survey of India.

For this, as many as eight Extensive Faunistic Surveys (of 10-days each), 30 Intensive Faunistic Surveys (of one-day each) were undertaken during the years 2000-2006. The observations made by the authors over the period of time prior to this project have also been utilized. In addition, the published literature coupled with the local enquires made during the surveys from the local people possessing the knowledge of the natural history was also made. This all has resulted in to a total of 93 species of mammals from 13 districts of the state of Uttarakhand.

These 93 species belong to 62 genera, 26 families, and nine orders. The present systematic account incorporates the scientific and common names; first reference; type locality; distribution; diagnostics and status of each species.

The nomenclature and classification of these 93 species is after Wilson and Reeder (1993) and Alfred *et al.* (2002), while the diagnostic characters at orders, families, genera, and even species levels (in some cases) are based on the two indispensable volumes by Walker (1968). The first reference, type locality and distribution etc. are after Jerdon (1867), Walker (1968), Pocock (1939 & 1941), Ellerman (1961), Wilson and Reeder (1993) and Alfred *et al.* (2002 & 2006a).

The conservation status is after the IUCN (International Union for Conservation of Nature and Natural Resources) (2007), CAMP (Conservation Assessment and Management Plan) Workshop Report, 1998, Indian Wildlife (Protection) Act, 1972 [IW(P)A], and Validation of Threatened Mammals of India by Alfred *et al.* (2006b).

SYSTEMATIC ACCOUNT

Class MAMMALIA

Order INSECTIVORA

The insect-eating mammals are known as Insectivores. These are usually small, have long narrow snouts, and five-clawed digits on each limb. The body covering is usually short and with close-set of fur, a kind of hair, or sometimes spines. The ears are small; eyes are minute, and sometimes have no external opening. The teeth are primitive in structure, the common dental formula is $i\ 3/3, c\ 1/1, pm\ 4/4, m\ 3\ or\ 4/3\ or\ 4\ x\ 2 = 44$. They are terrestrial, fossorial or semi-aquatic in habit. Under this order, so far nine families are known from the world, four from India and two from Uttarakhand.

Family ERINACEIDAE

In the world, this family consists of seven genera and 15 species; in India, one genus and three species; and in Uttarakhand, one genus and one species. Head and body length varies from 105 to 445 mm, and the tail length from 10 to 325 mm the snout is elongated and blunt, eyes and ears are well developed. The tail is hairy. They have five digits on each foot except some forms. The dental formula is: $i\ 2\ or\ 3/3, c\ 1/1, pm\ 3\ or\ 4/2\ to\ 4, m\ 3/3, x\ 2 = 36\ to\ 44$. They take shelter in and under logs, under roots of trees and bush piles, in termite mounds and in burrows.

Genus *Hemiechinus* Fitzinger, 1866

In India the genus is represented by three species and in Uttarakhand by a single species. The head and body length ranges from 150 to 270 mm and the tail from 10 to 50 mm. The spines are generally banded with dark brown and white and the under parts are generally whitish.

1. *Hemiechinus collaris* (Gray)

Indian Long-eared Hedgehog

1830. *Erinaceus collaris* Gray, In Hardwicke, *Illust. Indian Zool.*, 1, pl. 8.

Type locality : Doab, between Ganga and Jamuna rivers, India.

Diagnostics : The spines are dark brown to blackish with whitish band. The lower part is

generally whitish. The ears are longer than other hedgehogs. The foot is having five digits. Lives in burrows under small bushes and the burrows are with single opening. It becomes active at dusk and feed variety of items including small vertebrates and insects.

Distribution : India : Uttarakhand (Dehra Dun, Haridwar, Tehri and Udham Singh Nagar (U. S. Nagar); North Western India.

Elsewhere : Afghanistan and Pakistan.

Status : IWPA : Schedule V, CAMP : LRlc (Nationally and Globally).

Family SORICIDAE

The family consists of 20 genera, about 200 species from the world; eight genera, 23 species from India; and two genera and three species from Uttarakhand. They are commonly known as shrews and are having smallest mammals of the world. The members of this family are small, short-legged, mouse-like animals, with long pointed noses. The head and body length ranges from 35 to 180 mm and the tail from 9 to 120 mm. Their body weight varies from 2 to 35 grams in adults, but usually from 3 to 18 grams. The fur is short, dense and usually with brown or grey shade. The eyes are small sometimes hidden in the fur. The pinna of the ear is present. They are mainly terrestrial, some are aquatic and some live in burrows.

Genus *Suncus* Ehrenberg, 1832

This genus is known by five species in India and two species in Uttarakhand. The head and body length ranges from 35 to 48 mm and the tail approximately from 25 to 30 mm. The fur is soft, short, dense, velvety and usually with brown to grey in shades.

1. *Suncus etruscus* (Savi) Pygmy White-toothed Shrew

1822. *Sorex etruscus* Savi, *Nuovo Giorn. de Letterati, Pisa*, 1 : 60.

Type locality : Pisa, Italy.

Diagnostics : The fur is soft, short, dense, velvety and usually with brown to grey in shades.

Distribution : India : Throughout, including Uttarakhand.

Elsewhere : South Europe, North Africa, Arabian peninsula, Asia Minor, Iraq, Turkestan, Afghanistan, Pakistan, Nepal, Bhutan, Myanmar, Thailand, China, Guinea, Nigeria and Ethiopia.

Status : CAMP : LRlc (Nationally and Globally).

2. *Suncus murinus* (Linnaeus) House Shrew

1766. *Sorex murinus* Linnaeus, *Syst. Nat.*, 12th. ed., 1 : 74.

Type locality : Java, Indonesia.

Diagnostics : The fur is soft, short, dense, velvety and usually with brown to grey in shades. It is nocturnal in habit sleeps by day in nest in burrows. It damages stored goods, noisy in habits and odor is offensive.

Distribution : India : Throughout the country, including Uttarakhand.

Elsewhere : Afghanistan, Pakistan, Nepal, Bhutan, Myanmar, Thailand, China, Japan, Sri Lanka, continental and peninsular Indo-Malayan region.

Status : CAMP : LRlc (Nationally); DD (Globally).

Genus *Soriculus* Blyth, 854

This genus is represented by six species in world, four in India and one in Uttarakhand. The teeth have reddish pigmentation, for which they are popularly known as the Red-toothed Shrews. The head and body length ranges from 47 to 94 mm, and the tail from 34 to 105 mm. The body colour is grey, greyish brown and dark brown.

1. *Soriculus nigrescens* Gray Himalayan Shrew

1842. *Corsira nigrescens* Gray, *Ann. Mag. nat. Hist.*, (Ser. I), 10 : 261.

Type locality : Darjeeling, West Bengal, India.

Diagnostics : The head and body length is more than 70 mm. It is stocky with enlarged fore-claws and a short tail which is usually less than 70% of the length of head and body. It is burrowing in habit but most active on ground.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri,

Pithoragarh, Rudraprayag, Tehri and Uttarakashi), Darjeeling (West Bengal), North Eastern States and Sikkim.

Elsewhere: Bhutan, China, Myanmar and Nepal.

Status : CAMP : VU (Nationally); DD (Globally).

Order CHIROPTERA

Chiropterans are the only mammals, which have wings and are capable to take true flight. They inhabit most of the temperate and tropical regions of both hemispheres, but are absent from certain remote, oceanic islands. They are not found in the colder parts of either hemisphere beyond the limit of tree-growth. The order Chiroptera is divided into two sub-orders: Megachiroptera, having a single family and Microchiroptera, have the remaining 16 families. At present the order has 17 families in the world, seven in India and five in Uttarakhand.

Family PTEROPODIDAE

Under this family 39 genera, and approximately 130 species are known from tropical and subtropical region of the Old World, east to Australia, Samoa, and the Caroline Islands; eight genera and 12 species from India, and four genera and four species from Uttarakhand. The head and body length varies from 50 to 400 mm; tail is short, rudimentary or absent; weight varies from 15 to 900 grams for the largest fruit-eaters; dental formula varies from : i 2/2, c 1/1, pm 3/3, m 2/3 x 2 = 34. The members of this family are active in the evening and at night, but they have been observed flying in the daytime also.

Genus *Cynopterus* Cuvier, 1824

The genus is represented by two species in India and by a single species in Uttarakhand. Head and body length varies from 95-127 mm; forearm from 55-92 mm; wingspread from 305-457 mm and weight from 50-100 grams.

1. *Cynopterus sphinx* (Vahl) Short-nosed Fruit Bat

1797. *Vespertilio sphinx* Vahl, *Skr. Nat. Selsk. Copenhagen*, 4(1) : 123.

Type locality : Travancore, (=Thiruvananthapuram), Kerala, India.

Diagnostics : The fur of the body is dense and olive-brown in colour. Nostrils are prominent and tubular, and the upper lip is divided by a deep vertical groove. They carry off the fruits from the fruiting tree and eat elsewhere and disseminate the seeds through its droppings.

Distribution : India : Throughout, including Uttarakhand.

Elsewhere : Bangladesh, Bhutan, China, Sri Lanka, Myanmar, Indonesia, Malaysia, Pakistan, Thailand and Vietnam.

Status : CAMP : LRlc (Nationally); DD (Globally).

Genus *Pteropus* Erxleben, 1777

Genus *Pteropus* is represented by four species in India and by a single species in Uttarakhand. The head and body length is about 406 mm, forearm is from 85-228 mm, wingspread is from 610 mm - 1.7 metres, and the weight up to 900 grams. In the daytime, usually they hang in trees and about dusk, they fly to fruiting trees to feed. They are strong fliers.

1. *Pteropus giganteus* (Brunnich) Indian Flying Fox

1782. *Vespertilio gigantea* Brunnich, *Dyrenis Historie*, 1 : 45.

Type locality : West Bengal, India.

Diagnostics : It is generally large in size. The body coat colour is greyish brown or black. The area between the shoulders is often yellow or greyish yellow.

Distribution : India : Uttarakhand (throughout), Peninsular India, Rajasthan, Gujarat, Punjab, Sikkim, Bhutan, Duars, Assam, Manipur, and Andaman Islands.

Elsewhere : Maldives Islands, Sri Lanka, Pakistan, Myanmar, China and Nepal.

Status : CAMP : LRlc; CITES : Appendix II.

Genus *Sphaerias* Millar, 1906

This genus is known by a single species. The length of the head and body is about 64 mm, forearm is about 50 mm, external tail is lacking.

1. *Sphaerias blanfordi* (Thomas)
Blanford's Fruit Bat

1891. *Cynopterus blanfordi* Thomas, *Ann. Muss. Civ. Stor. Nat. Genova, Ser.*, 2 10 : 884, 921-922.

Type locality : Karin Hills, Myanmar.

Diagnostics : The length of the head and body is about 64 mm, forearm is about 50 mm, external tail is lacking, and this genus is known by the single species. The body coat colour is dull greyish brown above and paler beneath.

Distribution : India : Uttarakhand (Champawat, Naini Tal, Pauri, Pithoragarh and U. S. Nagar), North and Northeastern Regions.

Elsewhere : Bhutan, Tibet, Myanmar, North Thailand and Southwest China.

Status : IW(P)A : Schedule V; CAMP : DD (Nationally and Globally).

Family RHINOPOMATIDAE

This family is known by a single genus. The length of head and body ranges from 60-80 mm, tail about 60 mm, forearm from 55-70 mm. The teeth are normal insectivorous type, the dental formula is: $i \ 1/2, c \ 1/1, pm \ 1/2, m \ 3/3 \times 2 = 28$.

Genus *Rhinopoma* Geoffrey, 1818

The genus is represented by two species in India and by one in Uttarakhand. Head and body length ranges from 60 to 80 mm, tail about 60 mm, forearm from 55 to 70 mm. The teeth are normal insectivorous type, the dental formula is : $i \ 1/2, c \ 1/1, pm \ 1/2, m \ 3/3 \times 2 = 28$. The fur is soft with greyish brown or dark brown above and usually paler below.

1. *Rhinopoma hardwickei* Gray
Lesser Mouse-tailed Bat

1831. *Rhinopoma hardwickei* Gray, *Zool. Misc.*, 1 : 37.

Type locality : India.

Diagnostics : The body fur is soft, but absent on the face, rump, and posterior portion of the abdomen. The body colour is greyish brown or dark brown above and usually paler below. Tail membrane is short and narrow.

Distribution : India : Uttarakhand (Champawat, Dehra Dun, Haridwar, Naini Tal,

Pauri, Tehri and U. S. Nagar) Andhra Pradesh, Assam, Bihar, Delhi, Gujarat, Jammu and Kashmir, Karnataka, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere : Afghanistan, Myanmar, Nigeria, Kenya, Pakistan, Thailand and Yemen.

Status : CAMP : LRnt (Nationally); DD (Globally).

Family MEGADERMATIDAE

The family megadermatidae is represented by three genera in the world and by one in India. The distribution is restricted to central Africa, southern Asia, Malayan region up to Philippine Islands and Australia. They are known for their large and united, ears, divided tragus, and long, erect nose leaf. The genera differ from each other in size and in dental and skull features.

Genus *Megaderma* Geoffrey, 1810

The genus is represented by two species in India and by one in Uttarakhand. In *Megaderma*, the head and body length ranges from 65-85 mm, forearm from 50-70 mm, the upper incisors are lacking and the upper canines project noticeably forward. The dental formula is $i \ 0/2, c \ 1/1, pm \ 1/2, m \ 3/3 \times 2 = 28$. They generally roost in caves, rock crevices, buildings and hollow trees.

1. *Megaderma lyra* E. Geoffroy
Indian False Vampire

1810. *Megaderma lyra* E. Geoffroy, *Ann. Mus. Hist. nat. Paris.*, 15 : 190.

Type locality : Madras (= Chennai), Tamil Nadu, India.

Diagnostics : The body is large and greyish brown above and whitish grey below. The ears are united. The tragus is divided and the leaf nose is long and erect. It feeds on insects, spiders and small vertebrates. Their food is blood and flesh, as they first consume blood and then eat flesh.

Distribution : India : Throughout the main land from Jammu and Kashmir in the north through Uttarakhand to Kanya Kumari in the south, and from Gujarat in the west to Arunachal Pradesh and Nagaland in the Northeast.

Elsewhere : Afghanistan, Bangladesh, Bhutan, Duars China, Myanmar, Malaysia, Nepal, Pakistan, Sri Lanka, Thailand and Vietnam.

Status : CAMP : LRlc (Nationally); DD (Globally).

Family RHINOLOPHIDAE

This family consists of, three genera from India, and two genera from Uttarakhand. Small to rather large-sized bats with complicated nose-leaf, large ears, small eyes and tail entirely enclosed in inter-femoral membrane (except *Coelops*). The nose-leaf consists of three main portions, such as the rounded anterior portion, called horseshoe, the central portion and the posterior vertical portion.

Genus *Rhinolophus* Lacepede, 1799

The genus *Rhinolophus* is represented by 14 species from India, eight species from Uttarakhand. The length of head and body is from 35-110 mm, the tail is 24-43 mm and the forearm is 30-75 mm. The body weight ranges from 4-28 grams. There is a great variation in colour from reddish brown to deep black above and paler below.

1. *Rhinolophus affinis* Horsfield Intermediate Horseshoe Bat

1823. *Rhinolophus affinis* Horsfield, *Zool. Res. Java.*, (6) Figs. a, b.

Type locality : Java, Indonesia.

Diagnostics : The body colour varies from buff- brown to orange; females are darker than male. The head and body length ranges from 35.60 – 60.80 mm and forearm 30-55 mm.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, Pithoragarh, Rudraprayag, Tehri and Uttarakashi), Northwestern region, Darjeeling (West Bengal), and south Andaman Islands.

Elsewhere : Bangladesh, Bhutan, China, Indo-China, Indonesia, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Sunda and adjacent islands.

Status : CAMP : LRnt (Nationally); DD (Globally).

2. *Rhinolophus ferrumequinum* (Schreber) Greater Horseshoe Bat

1774. *Vespertilio ferrumequinum* Schreber, *Saugethiere*, 1 : 174, pl. 62.

Type locality : France.

Diagnostics : The head and body length ranges from 56 to 80 mm and forearm from 54 to 62 mm. The hairs are long, soft and dense. Upper parts of the body are uniform light greyish or drab brown, and under parts are lighter buffy brown.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, and Pithoragarh), Kashmir, and Sikkim.

Elsewhere : England, France, Spain, Portugal, Italy, Switzerland, Holland, Germany, Hungary, Greece, Corsica and Sardinia.

Status : IUCN : LR/nt; CAMP : VU (Nationally); DD (Globally).

3. *Rhinolophus lepidus* Blyth Blyth's Horseshoe Bat

1844. *Rhinolophus lepidus* Blyth, *J. Asia. Soc. Bengal*, 13 : 486.

Type locality : Calcutta (= Kolkata), West Bengal, India.

Diagnostics : The head and body length ranges from 35 to 54 mm and forearm from 37 to 41 mm. Upper parts of the body are grey brown, and under parts are slightly paler.

Distribution : India : Uttarakhand (Dehra Dun and Haridwar), Gangetic Plains, Madhya Pradesh and West Bengal.

Elsewhere : Afghanistan, Myanmar, Thailand, China, Malaysia and Sumatra.

Status : CAMP : LRnt (Nationally); DD (Globally).

4. *Rhinolophus luctus* Temminck Woolly Horseshoe Bat

1835. *Rhinolophus luctus* Temminck, *Monogr. Mamm.*, 2 : 24, pl. 30.

Type locality : Java, Indonesia.

Diagnostics : The length of head and body ranges from 85 to 90 mm and forearm from 70

to 80 mm. The fur are long, dark, and of woolly texture, usually black with paler tips.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, and Pithoragarh), Sikkim, Peninsular India and Tamil Nadu.

Elsewhere : Myanmar, Nepal, Sri Lanka, Southern China, Taiwan, Vietnam, Laos, Thailand, Malaysia and Indonesia.

Status : Not known.

5. *Rhinolophus macrotis* Blyth Large-eared Horseshoe Bat

1844. *Rhinolophus macrotis* Blyth, *J. Asiat. Soc. Bengal.*, 13 : 485.

Type locality : Nepal.

Diagnostics : The head and body length ranges from 39 to 48 mm and forearm from 39 to 46 mm. The fur is soft with woolly texture, usually buffy brown above, paler below.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri and Pithoragarh) and all other northern states.

Elsewhere : Nepal, Indo-China, China, Vietnam, Malaysia, Philippines and Indonesia.

Status : Not known.

6. *Rhinolophus pearsonii* Horsfield Pearson's Horseshoe Bat

1851. *Rhinolophus pearsonii* Horsfield, *Cat. Mamm. Mus. E. India* Co. 33.

Type locality : Darjeeling, West Bengal, India.

Diagnostics : The head and body length ranges from 51 to 64 mm and forearm from 50 to 54 mm. The fur is soft, long with a woolly texture, chestnut brown in colour.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri and Pithoragarh), Assam and Darjeeling.

Elsewhere : Myanmar, China to Vietnam, Thailand and western Malaysia.

Status : CAMP : LRnt (Nationally); DD (Globally).

7. *Rhinolophus rouxii* Temminck Peninsular Horseshoe Bat

1835. *Rhinolophus rouxii* Temminck, *Monogr. Mamm.*, 2 : 306.

Type locality : Pondicherry, and Calcutta (= Kolkata), West Bengal, India.

Diagnostics : The head and body length ranges from 42 to 66 mm and forearm from 45 to 52 mm. The fur are soft and silky and colour ranges from orange to russet brown, buffy brown and grey.

Distribution : India : Almost throughout except Rajasthan and Gujarat.

Elsewhere : China, Myanmar, Nepal, Sri Lanka and Vietnam.

Status : CAMP : LRnt (Nationally); DD (Globally).

8. *Rhinolophus subbadius* Blyth Nepal Horseshoe Bat

1844. *Rhinolophus subbadius* Blyth, *J. Asiat. Soc. Bengal.*, 13 : 486.

Type locality : Nepal.

Diagnostics : The head and body length is from 35 to 37 mm and forearm from 33 to 35 mm. The fur is soft, cinnamon brown above, light paler below.

Distribution : India : Uttarakhand (throughout), Assam and Garo Hills (Meghalaya).

Elsewhere : Nepal, Myanmar, Vietnam and Indo-China.

Status : CAMP : CR (Nationally); DD (Globally).

Genus *Hipposideros* Gray, 1831

The genus *Hipposideros* is represented by 13 species from India and two species from Uttarakhand. The length of head and body is about 35-110 mm, tail is 18-60 mm and the forearm is about 33-105 mm. The colour of upper parts varies from reddish to brown and the under parts are paler.

1. *Hipposideros armiger* (Hodgson)
Himalayan Leaf-nosed Bat

1835. *Rhinolophus armiger* Hodgson, *J. Asiat. Soc. Bengal.*,
4 : 699.

Type locality : Nepal.

Diagnostics : The ears are large, broad and acutely pointed. The nose-leaf with four supplementary leaflets and the upper edge of posterior nose-leaf is flattened. The frontal sac is prominent in males smaller in females.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, Pithoragarh, Rudraprayag, and Tehri).

Elsewhere : Nepal, Myanmar, Southern China, Vietnam, Laos, Thailand, Malaysia, Taiwan, Formosa, Indo-China.

Status : CAMP : LRnt (Nationally); DD (Globally).

2. *Hipposideros cineraceus* Blyth
Least Leaf-nosed Bat

1853. *Hipposideros cineraceus* Blyth, *J. Asiat. Soc. Bengal.*,
22 : 410.

Type locality : Near Pind Dadan Khan, Salt Range, Punjab, Pakistan).

Diagnostics : The head and body length is from 33 to 42 mm and forearm from 33 to 36 mm. The fur varies dull brown to orange above, uniformly paler or whitish below.

Distribution : India : Uttarakhand (Dehra Dun), Himachal Pradesh (Simla).

Elsewhere : Pakistan, Myanmar, Indonesia, Indo-China, Malaysia, Archipelago, Borneo, Anamba Islands and Philippines.

Status : CAMP : DD (Nationally and Globally).

Family VESPERTILIONIDAE

This family has 38 genera in the world, 17 in India and seven in Uttarakhand. The length of head and body is from about 32-105 mm, the tail is 25-75 mm and the forearm is 22-75 mm. The body weight is ranged from 4-50 grams. The body colour varies from blackish, grey, brown, red, and orange to yellow. The dental formula of this family varies: $i \ 1/2$, $c \ 1/1$, $pm \ 1/2$, $m \ 3/3 \times 2$

$= 28$ to $i \ 2/3$, $c \ 1/1$, $pm \ 3/3$, $m \ 3/3 \times 2 = 38$. The bats of this family have tragus but no nose-leaf, the tail is approximately as long as the forearm and is enclosed in the interfemoral membrane upto the tip or penultimate joint.

Genus *Myotis* Kaup, 1829

In India, it is represented by 12 species and in Uttarakhand by two species. The bats of this genus are the most widely distributed group of bat. The length of head and body is about 35-80 mm, the tail is 40-60 mm and the forearm is 29-68 mm. The body weight ranges from 5-45 grams. The upper parts are brown and under parts are paler. The diet consists of insects.

1. *Myotis formosus* (Hodgson)
Hodgson's Bat

1835. *Vespertilio formosus* Hodgson, *J. Asiat. Soc. Bengal.*,
4 : 700.

Type locality : Nepal.

Diagnostics : It is known for its orange colouration. The tragus in *formosus* is erect and tapering. They are seen hanging in trees, bushes and tall jungle grasses.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, and Pithoragarh), Punjab, Sikkim, West Bengal and Assam.

Elsewhere : Afghanistan, China, Taiwan, Korea, Japan, Philippines, Indonesia and Formosa.

Status : CAMP : LRnt (Nationally); DD (Globally).

2. *Myotis siligorensis* (Horsfield)
Himalayan Whiskered Bat

1855. *Vespertilio siligorensis* Horsfield, *Ann. Mag. nat. Hist.*,
16(2) : 102.

Type locality : Siliguri in West Bengal, India.

Diagnostics : This is also known as the Himalayan Whiskered Bat and the Terai Bat. Fur is dark brown above and lighter below. Upper lip has fringe of fine hairs. The length of forearm is about 30 to 31 mm.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, and Pithoragarh) and Sikkim in West Bengal.

Elsewhere : Southern China, Nepal, Indo-China, Vietnam, Malaysia and Indonesia.

Status : CAMP : DD (Nationally and Globally).

Genus *Nyctalus* Bowdich, 1825

The genus *Nyctalus* is represented by three species in India and two species in Uttarakhand. The length of head and body is about 50-100 mm, tail is 35-65 mm and the forearm is about 40-70 mm. The colour of upper parts varies from golden brown or yellow brown to dark brown and the under parts are pale brown.

1. *Nyctalus leisleri* (Kuhl) Leisler's Bat

1817. *Vespertilio leisleri* Kuhl, *Die Deutschen Fledermaus Hanau.* : 14, 46.

Type locality : Hanau, Hessen, Germany.

Diagnostics : In *leisleri* the body coat is golden brown or yellow brown to dark brown above and the under parts are pale brown. It is known to be migratory to Australia. The head and body length ranges from 62 to 72 mm, and the forearm 42 to 45 mm.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, and Pithoragarh), Punjab and Tamil Nadu.

Elsewhere : England, Holland, Ireland, France, Switzerland, Germany, Spain, Poland, Romania, Russia, Morocco, Afghanistan and Northwest Africa.

Status : CAMP : DD (Nationally and Globally).

2. *Nyctalus montanus* (Barrett-Hamilton) Hamilton' Bat

1906. *Pterygistes montanus* Barrett-Hamilton, *Ann. Mag. nat. Hist.*, 17(7) : 99.

Type locality : Mussoorie, Garhwal, Uttarakhand, India.

Diagnostics : The head and body length is about 70 mm, and the forearm 42 to 43 mm. The fur is soft and uniform brown above and lighter below.

Distribution : India : Uttarakhand (Chamoli, Dehra Dun, Pauri, Rudraprayag, Tehri and Uttarakashi).

Elsewhere : Afghanistan, Pakistan and Nepal.

Status : CAMP : DD (Nationally and Globally).

Genus *Pipistrellus* Kaup, 1829

This genus is represented by about 40 species from world, 14 species from India and three from Uttarakhand. They are found throughout the North America, Africa, Madagascar, Europe, Asia, Australia, Indonesia, and some smaller adjoining islands and the Philippines. The length of head and body is about 35-103 mm, tail is 25-60 mm and the forearm is about 27-72 mm. The *Pipistrellus* are usually dark brown or blackish but some are grey, chocolate brown, reddish brown, or pale brown.

1. *Pipistrellus babu* Thomas Pipistrelle Bat

1915. *Pipistrellus babu* Thomas, *J. Bombay. nat. Hist. Soc.*, 24 : 30.

Type locality : Murree (2438 m.), Rawalpindi, Pakistan.

Diagnostics : The length of forearm is about 34 mm on average. Body colour is sepia brown to olive brown above and slightly paler below.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, Pithoragarh and Uttarakashi), Himachal Pradesh, Sikkim, Assam and Madhya Pradesh.

Elsewhere : Afghanistan, Pakistan, Nepal, Bhutan, Myanmar and Southwestern China.

Status : CAMP : Not Evaluated (NE).

2. *Pipistrellus dormeri* (Dobson) Dormer' Bat

1875. *Scotozous dormeri* Dobson, *Proc. Zool. Soc. London* : 373.

Type locality : Bellary Hills, Karnataka, India.

Diagnostics : Head and body length varies from 39 to 55 mm and forearm from 32 to 36 mm. Fur are grey brown on ventral side, ears and naked areas of face are pale-brown.

Distribution : India : From Jammu and Kashmir in north including Uttarakhand to Karnataka in south and Punjab in west to West Bengal to Nagaland in Northeast.

Elsewhere : Sri Lanka and Indonesia.

Status : CAMP : LRnt (Nationally); DD (Globally).

3. *Pipistrellus mimus* Wroughton Indian Pygmy Pipistrelle

1899. *Pipistrellus mimus* Wroughton, *J. Bombay. nat. Hist. Soc.*, 12 : 722.

Type locality : Mheskatri, Dangs, Surat district, Gujarat, India.

Diagnostics : Small pipistrelle with short and dense fur, upper part dark brown and ventral part lighter, face, ears and wing-membranes are almost black, ears small and scarcely triangular, tragus short and curved forward.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, and Pithoragarh), Peninsula, Gujarat, Punjab, Sikkim and Assam.

Elsewhere : Sri Lanka, Bhutan, Myanmar and Indo-China.

Status : Not known.

Genus *Plecotus* Geoffroy, 1818

The genus is represented by five species from the world, two from India and one from Uttarakhand. The species of *Plecotus* are found in the temperate regions of Eurasia and North Africa. The length of head and body is about 45-70 mm, tail is 35-55 mm and the forearm is about 35-52 mm. The upper parts are brown, under parts are paler and the ears and the membranes are brownish.

1. *Plecotus auritus* (Linnaeus) Brown Long-eared Bat

1758. *Vespertilio auritus* Linnaeus, *Syst. Nat. 10th ed.*, 1 : 38.

Type locality : Sweden.

Diagnostics : The small size bat is brownish on dorsal side and paler on ventral side. It is usually found in buildings and trees in the summer and in caves in the winter.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri and Pithoragarh), Leh, Ladakh, Kashmir and Punjab.

Elsewhere : Britain, Ireland, France, Spain, Italy, Switzerland, Sweden, Norway, Denmark and Holland, Germany, Yugoslavia, Czechoslovakia, Finland, Poland, Caucasus, Siberia, Russia, N China, Japan, Pakistan, Nepal, Mongolia, Palestine, Egypt, Sudan, Algeria and Austria.

Status : CAMP : DD (Nationally and Globally).

Genus *Scotophilus* Leach, 1821

This genus is represented by ten species from world, two from India and Uttarakhand each. The length of head and body is about 60-95 mm, tail is 40-65 mm and the forearm is about 43-75 mm. The upper parts are generally yellowish brown, under parts are buffy yellow or white but vary from species to species.

1. *Scotophilus heathi* (Horsfield) Greater Yellow Bat

1831. *Nycticejus heathi* Horsfield, *Proc. Zool. Soc. London* : 113.

Type locality : Chennai, India.

Diagnostics : The ears are small with rounded tips, tragus semi lunar, posterior border concave, tail tip free, fur short, dense, and sleek, dorsal part olive-brown, and ventral part lemon yellow or orange-yellow.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, Pithoragarh and U.S. Nagar), Rajasthan, Gujarat, Maharashtra, Peninsula, Madhya Pradesh, Pondicherry, Kashmir and Bengal.

Elsewhere : Afghanistan, Sri Lanka, Yunnan, South East China, Hainan, Myanmar, Bhutan, Duras, Pakistan, Indo-China, Thailand and Sulawesi.

Status : CAMP : LRlc (Nationally); DD (Globally).

2. *Scotophilus kuhlii* Leach Lesser Yellow House Bat

1821. *Scotophilus kuhlii* Leach, *Trans. Linn. Soc. London*, 13 : 71.

Type locality : India.

Diagnostics : The average head and body length is 60 to 78 mm, and the forearm 44 to 56

mm. Fur is chestnut above and paler below without yellow tinge like *heathi*.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, and Pithoragarh), Kashmir, Gujarat, Madhya Pradesh, Peninsula, Bengal and Sikkim.

Elsewhere : Sri Lanka, Pakistan, Bhutan, Yunan, Yugoslavia, Taiwan, Malaysia, Philippines, Indonesia and Myanmar.

Status : CAMP : LRlc (Nationally); DD (Globally).

Genus *Murina* Gray, 1842

The genus has ten species in the world, six in India and two in Uttarakhand. The length of head and body is about 33-60 mm, tail is 30-42 mm and the forearm is about 28-45 mm. The upper parts are generally golden yellow and under parts are brownish or greyish. The fur is usually thick and woolly. The nostrils are located at the ends of the tubes. They seem to be low-flying bats.

1. *Murina grisea* Peters Peter's Tube-nosed Bat

1872. *Murina grisea* Peters, *Monatsb. K. Preuss. Akad. Wiss. Berlin* : 257.

Type locality : Jeripanee, Mussoorie, Dehra Dun, Uttarakhand, India.

Distribution : India : Uttarakhand (Dehra Dun and Tehri) and North Western Himalaya.

Diagnostics : The length of forearm is about 32 mm. Hairs are dark-brown with yellowish brown tips above and ashy grey below. The species is endemic to India.

Status : IUCN : CR; CAMP : VU.

2. *Murina huttoni* (Peters) Hutton's Tube-nosed Bat

1872. *Harpyiocephalus huttoni* Peters, *Monatsb. K. Preuss. Akad. Wiss. Berlin* : 257.

Type locality : Dehra Dun, Garhwal, Uttarakhand, India.

Distribution : India : Uttarakhand (throughout), Kashmir, Darjeeling and Sikkim.

Elsewhere : Tibet, Indo-China, China, Myanmar to Vietnam, Thailand and Malaysia.

Diagnostics : The average head and body length is 48 mm, and the forearm 32 to 35 mm. Hairs are brown above and pale with darker roots below.

Status : IUCN : LRnt; CAMP : DD (Nationally and Globally).

Genus *Miniopterus* Bonaparte, 1875

The genus has ten species in the world, three in India and one in Uttarakhand. The length of head and body is about 40-63 mm, tail is 40-47 mm and the forearm is about 37-55 mm. The colouration of fur varies from reddish, reddish brownish, dark brown, greyish brown to greyish. The second bone of the longest finger is about three times as long as the first bone of this finger. The tail is completely enclosed within the interfemoral membrane. They generally roost in caves.

1. *Miniopterus schreibersi* (Kuhl) Schreiber's Bat

1817. *Vespertilio schreibersi* Kuhl, *Die Deutschen Fledermause, Hanau*, : 14.

Type locality : Kolumbacs cave near Coronini, Banat, Rumania.

Diagnostics : The length of head and body is about 47-65 mm, and the forearm is about 44-49 mm. The colouration of fur varies from russet brown to blackish brown above and paler with greyer tinge below. Limbs are long with enlarged third digit, ears small, rounded and not projected above head.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, Pithoragarh and Uttarakashi), Peninsula and Western Ghats.

Elsewhere : Spain, France, Switzerland, Italy, Germany, Hungary, Poland, Sardinia, Bulgaria, Greece, Caucasus, Russia, Turkistan, Persia, Palestine, Japan, Formosa, China, Indo-China, Sri Lanka, Nepal, Myanmar, Indonesia, Philippines, New guinea, Australia and Algeria.

Status : IUCN : LRnt; CAMP : LRlc (Nationally), DD (Globally).

Order PRIMATES

The order Primates has 11 families from the world, three from India and one from Uttarakhand. Primates in the wild are found mainly in the warmer regions of Asia, Africa and Americas. The most important characteristics of the primates are the great development of the cerebral hemispheres of the brain. The pelage in primates varies in texture from velvety soft to harsh and coarse. The first digits of the hind feet and the thumbs are opposable. Most primates have five digits in each limb. In India, Primates include Lorises, Monkeys, Langurs, and Gibbons but in Uttarakhand only Monkeys and Langurs are found.

Family CERCOPITHECIDAE

Under this family 16 genera are known from the world, five from India and two from Uttarakhand. They have a head and body length of 325 to 1,100 mm and the tail length from 20 to 1,030 mm. The pelage varies from short to long, and cap or crests on the head and manes are present. The forelimbs are generally shorter than the hind limbs. The hands and feet are adapted for grasping and have five digits. The dental formula is : $i \ 2/2, c \ 1/1, pm \ 2/2, m \ 3/3 \times 2 = 32$.

Genus *Macaca* Lacepede, 1799

There are about 12 species known from the world, seven from India and one from Uttarakhand. The length of head and body is about 382 to 764 mm; tail is absent or few mm up to about 610 mm. The large males weight up to about 13 kg. The colouration is usually yellowish brown above and lighter below, but some forms are olive and others almost black. Some species have a cap of hairs on the head. Some species have a ruff of long hairs and some long whiskers.

1. *Macaca mulatta* (Zimmermann) Rhesus Macaque

1780. *Cercopithecus mulatta* Zimmermann, *Geogr. Gesch. Mensch. Vierf. Thiere*, 2 : 195.

Type locality : Nepal and U.P. Terai, India.

Diagnostics : The length of head and body is about 450 to 600 mm; tail is short. The adult males weight up to about 12 kg. The colouration is usually yellowish brown above and lighter below,

loin and rump has orange furs which makes it distinctive from other Indian macaques. Tail pattern varies in male and females.

Distribution : India : North and east above Tapti and Godavari rivers.

Elsewhere : Afghanistan, Nepal, Bhutan, Myanmar, Indo-China, Tibet, China, Thailand, Hong Kong, and Mongolia.

Status : IUCN : LR/nt; IW(P)A : Schedule II; CAMP : LRlc (Nationally), DD (Globally); CITES : Appendix II.

Genus *Semnopithecus* Desmarest, 1822

Under this genus about 14 species are known from the world and one species from India. The length of head and body is about 432 to 788 mm; tail is 533 mm to about 1,066 mm. The weight is usually 7 to 18 kg. Langurs are usually uniformly coloured, the upper parts are generally brownish, greyish, or blackish, and the under parts are paler. They have slender bodies, long tail, and long, slender hands. The thumb is small, but the other fingers are well developed and strong.

1. *Semnopithecus entellus* (Dufresne) Hanuman Langur

1797. *Simia entellus* Dufresne, *Bull. Sci. Soc. Philon. Paris*. 7(1) : 49.

Type locality : Bengal, India.

Diagnostics : The length of head and body is about 600 to 700 mm; tail is 550 mm to about 650 mm. The weight of adult male is up to 17 kg. Langurs are usually uniformly coloured, the upper parts are generally greyish, or blackish, and the under parts are lighter. Colour and size varies place to place. They have slender bodies, long tails, and long, slender hands.

Distribution : India : Practically throughout India in suitable localities.

Elsewhere : Pakistan, Sri Lanka, Nepal and Tibet.

Status : IUCN : LR/nt; IW(P)A : Schedule II; CAMP : LRlc (Nationally), DD (Globally); CITES : Appendix I.

Order CARNIVORA

This order is represented by seven families throughout the world, and all these are also occurring in India, including Uttarakhand. The Carnivores are worldwide in distribution except Antarctic and some oceanic islands. In India, the smallest living carnivore is the Weasel of family Mustelidae, which has a head and body length of 135 to 185 mm, and the length of tail is 30 to 40 mm and the largest member is the Tiger of family Felidae.

Family CANIDAE

This family is represented by 14 genera in the world, three in India and two in Uttarakhand. Members of this family have flexible muscular, deep-chested bodies, with long, slender limbs and bushy tails. The muzzle is long, slender, and ears are large and erect. The feet are perfectly digitigrades with blunt, nearly straight and non-retractile claws. The length of head and body is about 340 to 1,375 mm; the length of tail is 110 to 540 mm. The body weight of adult canids weighs from 1 to 75 kg. In general the members of this family are hunters.

Genus *Canis* Linnaeus, 1758

The genus is known by two species in India. The length of head and body is about 560 to 1,375 mm; the length of tail is 230 to 560 mm. The body weight of adult animal weighs from 7 to 79 kg. The body colours varies from pale dirty yellow mixed with red and black to grey, sprinkled with black and under parts are yellowish white and black in some.

1. *Canis aureus* Linnaeus
Asiatic Jackal

1758. *Canis aureus* Linnaeus, *Syst. Nat.* 10th. ed., 1 : 40.

Type locality : "Oriente", restricted by Thomas (1911) to "Benna Mountains, Laristan, S. Persia" (Iran).

Diagnostics : The length of head and body is 600 to 750 mm; the tail is 230 to 355 mm. the body weight of an adult weighs from 7 to 11 kg. The body colour is pale dirty yellow mixed with red and black, and reddish-brown tail with black tip.

Distribution : India : Almost throughout the country.

Elsewhere : North and east Africa, Senegal, Nigeria, Tanzania, south-west Asia, south-east Europe, Transcaucasia, central Asia, Iran, Afghanistan south Asia to Thailand and Sri Lanka.

Status : IW(P)A : Schedule II, Part II; CAMP : LRlc (Nationally), CITES : Appendix III.

2. *Canis lupus* Linnaeus
Wolf

1758. *Canis lupus* Linnaeus, *Syst. Nat.*, 10th. ed., 1 : 39.

Type locality : "Europe sylvis, etjam frigidioribus", restricted by Thomas (1911) to Sweden.

Diagnostics : The head and body length is 900 to 1,050 mm, body colour varies from sandy fawn, grey to mottled black, therefore known as grey or timber wolf. Skull is large, jaws are powerful, brows are arched and elevated forehead makes it different from other species.

Distribution : India : Northwestern region including Uttarakhand and West Bengal.

Elsewhere : Throughout the northern hemisphere, North America south to 20° N in Oaxaca (Mexico), Europe, Asia, including the Arabian Peninsula and Japan excluding Indo-China.

Status : IW(P)A : Schedule I, Part I; CAMP : LRnt (Nationally), DD (Globally); CITES : Appendix I.

Genus *Vulpes* Brisson, 1762

This genus is represented by four species in India and two in Uttarakhand. The length of head and body is about 455 to 865 mm; the length of tail is 305 to 555 mm. The body weight of adult animal weighs up to 8 kg. The body colours varies from pale yellowish red to deep reddish above and white to ashy under parts. They have large and pointed ears, sharp and elongated muzzle, round and bushy tail.

1. *Vulpes bengalensis* (Shaw)
Indian Fox

1800. *Canis bengalensis* Shaw, *Gen. Zool. Syst. Nat. Hist.*, 1(2), *Mammalia* : 330.

Type locality : Bengal, India.

Diagnostics : The length of head and body is 450 to 600 mm. An adult animal weighs up to 8 kg. The grey upper parts, paler under parts and black tail tip makes it distinct from other Indian foxes.

Distribution : India : Throughout.

Elsewhere : Nepal and Pakistan.

Status : IW(P)A : Schedule II, Part II; CAMP : LRnt (Nationally), DD (Globally) CITES : Appendix III.

2. *Vulpes vulpes* (Linnaeus) Red Fox

1758. *Canis vulpes* Linnaeus, *Syst. Nat.*, 10th. ed., 1 : 40.

Type locality : Europe, Asia, Africa, Antrafodiens, "restricted by Thomas (1911) to Uppsala, Sweden.

Diagnostics : The length of head and body is 600 to 700 mm. The adult animal weighs up to 9 kg. The reddish upper parts, except black ears, paler under parts and white tail tip makes it distinct from other foxes.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, and Pithoragarh, Rudraprayag and Uttarakashi), Rajasthan, Gujarat, Punjab, Kashmir, Himachal Pradesh, Sikkim and Uttar Pradesh.

Elsewhere : Throughout Palaearctic region, Europe, continental Asia, Indo-China, Japan, Palaearctic Africa, North America and Australia.

Status : IW(P)A : Schedule II, Part II; CAMP : LRnt (Nationally), DD (Globally) CITES : Appendix III.

Family HYAENIDAE

This family is known by single genera. The members of this family have a large head and forequarters. The forequarters are strong while the hindquarters are weak. The forelimbs are powerful and longer than hind limbs. The length of head and body is about 550 mm to approximately 1,600 mm; the length of tail is 200 to 320 mm. The body weight of adult animal weighs about 27 to 80 kg. They have blackish transverse stripes on dirty grey coat.

Genus *Hyaena* Brunnich, 1771

Only two species of hyena are known from the world, out of which one species occurs in India. The length of head and body is about 910 to 1200 mm; the length of tail is about 310 mm. The body weight of adult animal weighs about 27 to 54 kg. The hair of these animals is rather coarse. The coat colour varies from greyish to light yellow-brown.

1. *Hyaena hyaena* (Linnaeus) Striped Hyena

1758. *Canis hyaena* Linnaeus, *Syst. Nat.* 10th. ed., 2 : 40.

Type locality : India, restricted by Thomas (1911: 134) to Benna Mountains, Laristan, Persia.

Diagnostics : Head and body length is about 910 to 1200 mm and tail is about 310 mm. The weight of an adult is about 27 to 54 kg. The body colour is dirty grey to cream buff with blackish transverse stripes on body and limbs. Head is broad, jaws are heavy, forequarters strong, hindquarters weak and sloping backward, neck and back has heavy crest of long hairs, tail is bushy and powerful jaws.

Distribution : India : Throughout including Uttarakhand except high hills.

Elsewhere : Iran, Iraq, Israel, Afghanistan, Algeria, Egypt, Ethiopia, Kenya, Libya, Mali, Morocco, Nigeria, Pakistan, Nepal, Saudi Arabia, Somali, South Africa, Tanzania and Sudan.

Status : IUCN : LR/nt; IW(P)A : Schedule III; CAMP : LRnt (Nationally), DD (Globally).

Family FELIDAE

This family is represented by 11 genera in India and four in Uttarakhand. The members of this family have slight, muscular, compact and deep-chested bodies, with shortened and rounded head. The eye pupils contract vertically and the ears range from rounded to pointed. The whiskers are well developed. The length of head and body is about 0.5 to 3.75 metres; the length of tail is 10 to 114 cm. The body weight of adult felids weighs from 2.5 to 275 kg. The body colour varies from grey to reddish and yellowish brown, generally with stripes, spots, or rosettes.

Genus *Felis* Linnaeus, 1758

This genus is represented by two species in India and one in Uttarakhand. This genus has medium to large carnivores. The body colours ranges from brown, grey to black. Most of the species have stripes, spots, or mottled patterns of dark brown or black on a grey or brown ground colour, however, some lack markings. They walk on their toes instead of their soles. The tail is usually long, the feet are large, the fore feet have five digits and the hind feet have four, the claws are sharp, recurved and retractile, the eyes are large, the ears are well developed and the coat is tawny, spotted or striped.

1. *Felis chaus* Schreber
Jungle Cat

1777. *Felis chaus* Schreber, *Die Säugethiere*, 2(13) : pl. 1101B (1777); text, 3(24) : 414 (1777).

Type locality : Terek river, North of Caucasus, Dugestan, C.I.S. Country.

Diagnostics : A medium sized cat is about 600 mm in body length. The legs are long and tail is short. Body colour varies from yellowish grey to tawny rufous on dorsal side and paler on ventral side. The limbs have black and yellowish grey transverse bars, tail is black at tip.

Distribution : India : Uttarakhand (throughout), south of Krishna river in south India, Gujarat, Jammu and Kashmir, Madhya Pradesh, Rajasthan, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Afghanistan, Algeria, Benin, China, Egypt, Iran, Iraq, Israel, Kenya, Malawi, Morocco, Mozambique, Myanmar, Nepal, Pakistan, Sri Lanka, Syria, Thailand, Vietnam, Yemen, Zambia and Zimbabwe.

Status : IW(P)A : Schedule II, Part II; CAMP : LRnt (Nationally), DD (Globally) CITES : Appendix II.

Genus *Prionailurus* Severtzov, 1858

This genus is represented by three species in India and two in Uttarakhand. The individuals of this genus have tawny, brown, grey and black body colour. Black spots are bold without forming rosettes on the flanks. Each species has different colour pattern. They walk on their toes instead of

their soles, the tail is usually long, the feet are large, the claws are sharp, recurved, and retractile, and the ears are well developed. These animals are generally nocturnal.

1. *Prionailurus bengalensis* (Kerr)
Leopard Cat

1792. *Felis bengalensis* Kerr, In *Linnaeus, Anim. kingdom*, 1 : 151.

Type locality : Bengal, India.

Diagnostics : It looks like a miniature leopard but the bold spots without rosettes on flanks. The body length is about 600 mm, about the size of a domestic cat, longer limbs, tail about the half of the length of head and body, and ringed at the tip. Body colour is yellowish above and whitish below ornamented with black and rusty spots.

Distribution : India : Uttarakhand (throughout), Northwestern, Central and Northeastern states.

Elsewhere : Afghanistan, Bangladesh, Myanmar, Cambodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Nepal, Pakistan, Philippines, Taiwan, Thailand and Vietnam.

Status : IW(P)A : Schedule I, Part I; CAMP : LRnt (Nationally), DD (Globally); CITES : Appendix I.

2. *Prionailurus viverrinus* (Bennett)
Fishing Cat

1833. *Felis viverrinus* Bennett. *Proc. Zool. Soc. London* : 68.

Type locality : Continent of India, restricted by Ellerman and Morrison-Scott (1951) to Malabar Coast, India.

Diagnostics : The stout build medium sized cat has about 700 to 800 mm body length, tawny grey to brownish mouse grey body colour, blackish elongated spots on body, arranged in longitudinal rows, 6 to 8 black lines running from forehead to neck and a pair of cheek strikes. The general body coat is harsh.

Distribution : India : Uttarakhand (Chamoli, Bageshwar, Champawat and Pithoragarh), Western Ghats and Malabar Coast.

Elsewhere : Pakistan, Sri Lanka, Nepal, Bangladesh, Myanmar, China, Indonesia, Malaysia, Taiwan, Thailand and Vietnam.

Status : IUCN : VU; IW(P)A : Schedule I, Part I; CAMP : VU (Nationally), DD (Globally).

Genus *Panthera* Oken, 1816

This genus is represented by three species in India and two in Uttarakhand. The animals of this genus are called the big cats. The length of head and body is 91.4 cm to 2.8 metres; the length of tail is 70 cm to 91.4 cm. The body weight of adult animal weighs about 91 to 272 kg. The body colour is cinnamon-buff to tawny yellow, with a rosette to the striped pattern.

1. *Panthera pardus* (Linnaeus)
Leopard; Panther

1758. *Felis pardus* Linnaeus, *Syst. Nat. 10th. ed.*, 1 : 41.

Type locality : India, Thomas (1911 : 135) fixed as Egypt.

Diagnostics : The length of head and body is 91.4 cm to 1.5 metres; the length of tail is about 91.4 cm. The body weight of adult animal weighs about 91 kg. The body colour is cinnamon-buff with a black rosette pattern distributed all over the sides of body and tail except the ringed tail tip, solid black spots (not rosettes) on head, down the middle of the back, limbs and belly.

Distribution : India : Throughout including Uttarakhand in suitable habitats.

Elsewhere : Afghanistan, Pakistan, China, Myanmar, Sri Lanka, Algeria, Angola, Arabia, Botswana, Cameroon, Central African, Republic, Chad, China, Congo, Egypt, Ethiopia, Gabon, Guinea, Indonesia, Iran, Iraq, Kenya, Korea, Liberia, Laos, Malaysia, Malawi, Nepal, Mauritania, Morocco, Mozambique, Namibia, Thailand, Vietnam, Zaire, Niger, Zambia, Nigeria, Senegal, Tanzania, Sierra Leone, Tunisia, Somalia, Turkey, South Africa, Uganda and Zimbabwe.

Status : IW(P)A : Schedule I, Part I; CAMP : VU (Nationally), DD (Globally); CITES : Appendix I.

2. *Panthera tigris* (Linnaeus)
Tiger

1758. *Felis tigris* Linnaeus, *Syst. Nat. 10th. ed.*, 1 : 41.

Type locality : Asia, Thomas (1911 : 135) fixed as Bengal, India.

Diagnostics : The length of head and body is 1.8 to 2.8 metres; the length of tail is 91.4 cm. The body weight of adult animal weighs from 227 to 272 kg. The body colour is rich reddish yellow to orange marked with black stripes, black ringed tail, outer side of the ears black, with white spots.

Distribution : India : Uttarakhand (Dehra Dun, Haridwar, Naini Tal and Pauri) and throughout in suitable habitat in rest of the states, except desert region.

Elsewhere : Bangladesh, China, Bhutan, Indonesia, Korea, Laos, Malaysia, Myanmar, Nepal, Thailand and Vietnam.

Status : IUCN : EN; IW(P)A : Schedule I, Part I; CAMP : EN (Nationally), DD (Globally); CITESb : Appendix I.

Genus *Uncia* Gray, 1837

This genus is known by a single species and the individuals of this genus inhabit in the highlands. The length of head and body is 1.2 to 1.5 metres; the length of tail is about three-fourths of the head and body length. The body weight of adult animal weighs about 23 to 41 kg. The animals of this genus are beautiful with thick and long hair and dense, woolly under fur. The fur coat is whitish or greyish above and whitish below. The dark and indistinct rosettes or rings are present on the upper parts.

1. *Uncia uncia* (Schreber)
Snow Leopard

1775. *Felis uncia* Schreber, *Die Säugethiere*, 2(14) : pl. 100 (1775); text, 3(22) : 386-7 (1777).

Type locality : Kopet-Dagh Mountains, adjacent to Iran.

Diagnostics : The length of head and body including tail is 170 to 200 cm, the adult weighs from 23 to 41 kg, head squarish with high forehead, chin vertical, muzzle short, fur coat whitish or greyish above and whitish below, dark and indistinct rosettes or rings on upper parts, solid spots on head, nape and lower parts of limbs.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Pithoragarh, Rudrapur and Uttarakashi), Jammu & Kashmir, Himachal Pradesh, Sikkim and Arunachal Pradesh.

Elsewhere : Afghanistan, Pakistan, China, Mongolia, Nepal, China and Bhutan.

Status : IUCN : EN; IW(P)A : Schedule I, Part I; CAMP : EN (Nationally), DD (Globally); CITES : Appendix I.

Family HERPESTIDAE

The herpestids are long-bodied and short limbed carnivores having a sharp snout and a trailing bushy tail. The ears are small almost semicircular which never projects over head or nape. The claws are long and modified for digging. The length of head and body is 170 to 975 mm; the length of tail is 120 to 900 mm. The body weight of adult animal weighs about 0.5 to 13 kg. The body coat in herpestids is uniform and varies from tawny yellowish-grey to reddish-brown.

Genus *Herpestes* Illiger, 1811

Seven species of mongoose occur in India, and two have been reported from Uttarakhand. The length of head and body is from 230 to 640 mm; the length of tail is 230 to 510 mm. The body weight of adult animal weighs from 0.5 to 3.2 kg. The body coat in mongoose is uniform and varies from greenish grey, yellowish brown or greyish brown to reddish-brown. Small scent glands are situated near the anus. They occupy a wide variety of habitat.

1. *Herpestes javanicus* (E. Geoffroy Saint-Hillaire)

Small Indian Mongoose

1818. *Ichneumon javanicus* E. Geoffroy Saint-Hillaire, *Descrip. de L' Egypte*, 2 : 138.

Type locality : Java, Indonesia.

Diagnostics : The head and body length is from 350 to 500 mm; the tail length is 230 to 380 mm. The body weight of adult animal weighs about 1.5 kg. The body coat is soft, silky, and dark brown speckled with golden tinge.

Distribution : Throughout.

Elsewhere : Afghanistan, Pakistan, Nepal, Bhutan, China, Myanmar, Indonesia, Bangladesh, Cambodia, Malaysia, Thailand, Vietnam, Introduced to Cuba, Dominican Republic, Fiji Islands, Hawaiian Islands, Jamaica, Japan, Puerto Rico, Surinam and West Indies.

Status : IW(P)A : Schedule IV; CAMP : LRlc (Nationally), DD (Globally).

2. *Herpestes smithi* Gray Ruddy mongoose

1837. *Herpestes smithi* Gray, *Mag. Nat. Hist. (Charlesworth's)*, 1 : 578.

Type locality : Not given. Thomas (1923) suggested that it was from the "Bombay Region" but this was questioned by Pocock (1937).

Diagnostics : The species *smithi* is similar to *javanicus* in length and body colour, except reddish-brown tinge on head, neck and shoulders, black on tail tip.

Distribution : India : Throughout.

Elsewhere : Sri Lanka.

Status : IW(P)A : Schedule IV, Part I; CAMP : LRlc (Nationally), DD (Globally); CITES : Appendix III.

Family MUSTELIDAE

Under this family 25 genera are known to occur in the world, eight in India and four in Uttarakhand. The body is cylindrical, limbs are short and the anal sac is enlarged. They are considerably diverse in morphological and adaptive features. Some of them are aquatic and semi-aquatic while others are terrestrial and partly arboreal. The length of head and body is from 135 mm to 1.5 metres; the length of tail is about 30 to 40 mm in case of the smallest individuals. The body weight of adult sea otter male weighs about 36 kg and the female about 27 kg.

Genus *Amblonyx* Rafinesque, 1832

In India, this genus is represented by single species. The body coat colour is usually dark brown; only occasionally have the grey or ashy tint. Under parts are usually paler brown, and throat may be greyish or whitish. The length of head and body is about 610 mm; the length of tail is about 305 mm in case of the smallest individuals. The body weight of adult animal weighs from 2.7 to 5.4 kg.

1. *Amblonyx cinereus* (Illiger) Small-clawed Otter

1815. *Lutra cinerea* Illiger, *Abh. Phys. Klasse K. Preuss. Akad. Wiss. Berlin, 1804-1811* : 99 (1915).

Type locality : Batavia, Jakarta, Java, Indonesia.

Diagnostics : Head and body length 450 to 550 mm, tail about 300 mm; dark brown above, paler below; claws rudimentary, smaller than common otter in size.

Distribution : India : Throughout including Uttarakhand, except southern States.

Elsewhere : Bangladesh, Myanmar, China, Taiwan, Indo-China, Indonesia and Philippines.

Status : IW(P)A : Schedule II; CAMP : NE (Nationally), DD (Globally).

Genus *Lutra* Brunnich, 1771

This genus is represented by single species in India. They are found in all types of inland waterways, as well as estuarine and marine bay. The length of head and body is 550 to 800 mm; the length of tail is 300 to 500 mm. The body weight of adult animal ranges from 4.5 to 14 kg. The upper parts are brownish and the under parts are paler, the lower jaw and throat may be whitish. The fur is short and dense. The head is flattened and rounded. The trunk is cylindrical and the tail is thick at base, muscular, flexible and tapering. The toes are webbed.

1. *Lutra lutra* (Linnaeus) Common Otter

1758. *Mustela lutra* Linnaeus, *Syst. Nat. 10th. ed.*, 1 : 45.

Type locality : Uppsala, Sweden.

Diagnostics : Head and body length is 600 to 800 mm, tail is 300 to 500 mm, weight 6 to 9 kg, upper parts brownish with grizzled fur, under parts paler, lower jaw and throat whitish, fur short and dense, muzzle terminate above nose.

Distribution : India : Throughout in suitable habitat.

Elsewhere : Widely distributed in the Palearctic region and in the Malayan region as far as Java (Indonesia). British Island, Ireland, France, Holland, Belgium, Spain, Italy, Switzerland, Norway, Sweden, Denmark, Germany, Bohemia, Hungary, Rumania, Poland, C.I.S. China, Tibet, Japan, Formosa, Sri Lanka, Nepal, Myanmar, Asia Minor, Persia, Palestine, Morocco, Algeria, Scandinavia and Algeria.

Status : IUCN : NT; IW(P)A : Schedule I; CAMP : NE (Nationally), DD (Globally); CITES : Appendix I.

Genus *Martes* Pinel, 1792

This genus is represented by eight species in the world, three in India and two in Uttarakhand. The length of head and body in martens is about 340 to 610 mm; the length of tail is about 150 to 300 mm. The body weight ranges from 680 grams to 2 kg. The body coat is golden brown to blackish, usually darker on the feet and the tip of the tail. Chest and throat is orange, yellow or whitish.

1. *Martes flavigula* (Boddaert) Yellow-throated Martin

1785. *Mustela flavigula* Boddaert, *Elench. Anim.*, 1 : 88.

Type locality : Nepal.

Diagnostics : Head and body length is 450 to 650 mm, tail is 150 to 220 mm, and weight ranges from 690 grams to 1.5 kg. Upper parts blackish variegated with deep brown and yellow. Throat yellow, becomes prominent with dark bands down the nape, as the name indicates.

Distribution : India : From Kashmir through Uttarakhand to northeast India along the foothills of Himalaya.

Elsewhere : Russia, Korea, China, Pakistan, Southeast Asian countries, Taiwan and Indonesia.

Status : IW(P)A : Schedule II, Part II; CAMP : LRlc (Nationally), DD (Globally); CITES : Appendix III.

2. *Martes foina* (Erxleben) Beach Marten

1777. *Mustela foina* Erxleben, *Syst. Regni Anim.*, 1 : 458.

Type locality : Germany.

Diagnostics : The length of head and body is from 250 to 450 mm, the tail is 125 to 225 mm, and weight ranges from 680 grams to 1.5 kg. It has slender body, moderately long limbs, slaty-brown upper parts and white to pale yellow throat.

Distribution : India : Uttarakhand (almost throughout), Kashmir, Himachal Pradesh and Sikkim.

Elsewhere : Europe-Spain, Italy, Bosnia, France, Belgium, Holland, Germany, Denmark, Switzerland, Islands of Corfu, Crete, Rhodes; Poland, Altai mountains, Asia Minor, Persia, Afghanistan, Syria, Palestine, Pakistan, China, Manchuria, Mongolia and Tibet.

Status : IW(P)A : Schedule II, Part II; CAMP : DD (Nationally), DD (Globally); CITES : Appendix III.

Genus *Mustela* Linnaeus, 1758

This genus is represented by 15 species in the world, five from India and one from Uttarakhand. The members of this genus are usually lithe and slender and have long body and short legs. The length of head and body is from 125 to 250 mm; the length of tail 25 to 150 mm. The body weight ranges from 42 to 280 grams. In summer weasels are generally brown above and whitish or yellowish below.

1. *Mustela sibirica* Pallas Siberian Weasel

1773. *Mustela sibirica* Pallas, *Reise. Prov. Russ. Reichs.*, 2 : 701.

Type locality : Varposten Tigerazkoi, near Usstkomengorsk, W. Altai, based on Pallas (1773 : 570).

Diagnostics : Head and body length is about 250 to 300 mm, tail is about 150 mm. Whole body colour is bright red to dark chocolate except paler face, chin throat and chest.

Distribution : India : Himalayas from Kashmir to northeastern states through Uttarakhand.

Elsewhere : Ural Mountains, Siberia, Pakistan, Japan Myanmar, Thailand, Taiwan, China and Korea.

Status : IW(P)A : Schedule II, Part II; CAMP : LRnt (Nationally), DD (Globally); CITES : Appendix III.

Family URSIDAE

This family is represented by seven genera in the world, four from India and two from Uttarakhand. Members of this family have large and heavy body built; big head; short and powerful limbs; short tail; small eyes and ears. The ears

are rounded and erect. They have hairy soles. Bears have a plantigrade walk; all the limbs have five digits; the claws are powerful and recurved, used for tearing and digging. The length of head and body is about one to three meters; the length of tail is from 70 to 125 mm. The body weight ranges from 27 to 250 kg (Alaskan bears are weight up to 780 kg).

Genus *Melursus* Meyer, 1793

This genus is represented by a single species. The length of head and body is from 1.4 to 1.8 metres; the length of tail is about 100 to 125 mm. The body weight ranges from 54 to 136 kg. The shaggy black hairs are longest between the shoulders. The overall black colour is mixed with brown and grey. The chest mark, typically V or Y shaped varies from white or yellow to chestnut-brown.

1. *Melursus ursinus* (Shaw) Sloth Bear

1791. *Bradypus ursinus* Shaw, *Nat. Misc.*, 2 (unpaged), pl. 58.

Type locality : Patna, north of the Ganges, Bengal (=Bihar), India.

Diagnostics : The diagnostic characters of this species are as similar as the characters of genus *Melursus*.

Distribution : India : Throughout in suitable localities including Uttarakhand.

Elsewhere : Sri Lanka.

Status : IUCN : VU; IW(P)A : Schedule I, Part I; CAMP : VU (Nationally), DD (Globally); CITES : Appendix I.

Genus *Ursus* Linnaeus, 1758

In India, this genus is represented by two species and in Uttarakhand by one. The members of this genus are usually dark brown, but there are variations ranging from cream colour to almost black. The *Ursus* is about two meters in length. The body weight ranges from 150 to 250 kg and shoulder height is up to 1.5 metres.

1. *Ursus thibetanus* G. (Baron) Cuvier Asiatic Black Bear

1823. *Ursus thibetanus* G. (Baron) Cuvier, *Rech. Oss. Foss., Nouv. ed.*, 4 : 325.

Type locality : Sylhet, Bangladesh (= Sylhet, Assam, India).

Diagnostics : Head and body length is about 140 to 170 cm and shoulder height is up to 1.5 metres. Body is glossy black with white, yellow or buff V-shaped chest hairs, smoother and shorter than Sloth Bear.

Distribution : India : Uttarakhand (almost throughout except Haridwar and U. S. Nagar), Jammu & Kashmir, Himachal Pradesh and Darjeeling in West Bengal.

Elsewhere : Siberia in Russia, Japan, Manchuria, Formosa, China, Siam, Myanmar, Afghanistan, Indo-China, Korea, Laos, Pakistan, Nepal, Taiwan, Thailand and Vietnam.

Status : CAMP : LRlc (Nationally), DD (Globally); CITES : Appendix I.

Family VIVERRIDAE

This family is represented by 37 genera in the world, seven from India and three from Uttarakhand. They are the small and medium sized carnivores of the world. The length of head and body is from 170 to 975 mm; the length of tail is about 120 to 900 mm. The body weight ranges from 0.5 to 13 kg. Viverrids have a variety of striped, spotted, and uniform colour patterns and the tail is banded or ringed in a number of genera. The body is long, legs are short and the tail is long and bushy.

Genus *Paguma* Gray, 1831

In India, this genus is represented by one species. The length of head and body is about 508 to 762 mm; the length of tail is about 508 to 636 mm. The body weight ranges from 3.5 to 5 kg. In the facial region there is a mask consists a median white strip from the top of the head to the nose. There is a white mark below each eye and a white mark above each eye, extending to the base of the ear and below. The general colour is grey tinged with buff, orange, or yellowish red. There are no spots or stripes on the body and tail.

1. *Paguma larvata* (Hamilton-Smith) Masked Palm Civet

1827. *Gulo larvatus* Hamilton-Smith, In Griffith et al. *Anim. Kingdom*, 2 : 281.

Type locality : Unknown, Temminck (1841) fixed as Nepal. Gray (1864) has reassigned the name to two specimens from Canton, China.

Diagnostics : Body coat grey to tawny; under parts white; white band on forehead, nose and beneath ears; a blotch below eyes; absence of spots or strips on body and presence of white whiskers distinguishes it from other Indian civets.

Distribution : India : Uttarakhand (almost throughout), Andaman Islands, Kashmir and Northeastern Himalayas.

Elsewhere : Pakistan, Nepal, Tibet, China, Formosa, Myanmar, Cambodia, Indonesia, Japan, Laos, Malaysia, Singapore, Taiwan, Thailand, Vietnam.

Status : IW(P)A : Schedule II, Part II; CAMP : LRlc (Nationally), DD (Globally); CITES : Appendix III.

Genus *Paradoxurus* Cuvier, 1821

This genus is represented by three species in the world, two from India and one from Uttarakhand. The length of head and body is about 432 to 710 mm; the length of tail is about 406 to 660 mm. The body weight ranges from 1.5 to 4.5 kg. The body colour is greyish to brownish but is often almost masked by the black tips of the guard hairs. There is a definite pattern of dorsal stripes and lateral spots. The hairs on the neck are backwardly directed.

1. *Paradoxurus hermaphroditus* (Pallas) Common Palm Civet

1777. *Viverra hermaphroditus* Pallas, In Schreber, *Die Säugethiere*, 3(25) : 426.

Type locality : Uncertain.

Distribution : India : Northern and eastern states including Uttarakhand.

Elsewhere : China, Myanmar, Sri Lanka, Bhutan, Nepal, Cambodia, Indonesia, Japan, Laos, Malaysia, new Guinea, Philippines, Singapore, Thailand and Vietnam.

Diagnostics : Head and body length 450 to 600 mm, tail almost same or slightly longer than head and body length, black or blackish brown above, whitish, buff or rich yellow below, hairs

long and coarse and backwardly directed and white patch below eyes.

Status : IW(P)A : Schedule II, Part II; CAMP : LRlc (Nationally), DD (Globally).

Genus *Viverricula* Hodgson, 1838

This genus is represented by a single species. The length of head and body is about 450 to 630 mm; the length of tail is from 300 to 340 mm. The body weight ranges from 2 to 4 kg. The fur is harsh, rather coarse, and loose. The body colour is buffy, brownish, or greyish. Feet are black. Small spots are present on the fore-quarters, and larger spots, tending to run into longitudinal lines are present on the flanks. There are six to eight stripes on the back and the tail has six to nine rings of black and white hairs.

1. *Viverricula indica* (Desmarest)
Small Indian Civet

1804. *Viverra indica* Desmarest, *Tabl. Meth. Hist. Nat., In Nauv. Dict. Hist. Nat.*, 24 : 9, 17.

Type locality : India.

Diagnostics : Are same as of genus, since it is known by a single species.

Distribution : India : Throughout in suitable habitat.

Elsewhere : China, Formosa, Sri Lanka, Bhutan, Myanmar, Malaysia, Indonesia, Pakistan, Mongolia, Bhutan, Bangladesh, Cambodia, Hong Kong, Laos, Taiwan, Thailand and Vietnam.

Status : IW(P)A : Schedule II, Part II; CAMP : LRnt (Nationally), DD (Globally); CITES : Appendix III.

Order PROBOSCIDEA
Family ELEPHANTIDAE

This order used to have six families, out of which five are extinct and presently only one family is existing in the world. The most distinguishing character of the proboscians is the elongated, flexible and muscular trunk or proboscis. The trunk is a great elongation of nose, the nostrils being located at the tip. The body is massive, tail is of moderate length, head is huge and ears are large. Their maximum height is nearly 4 metres and the weight varies from 5,000 to 7,000 kg.

The limbs are long, massive and columnar. The feet are short and broad and columnar in shape. The Asiatic elephant has four hooves (occasionally five) on the hind foot and five on the fore foot, and the African elephant has three on the hind foot and five on the fore foot. The hairs are sparse on the thick skin. The female has two nipples just behind the front legs. The dental formula is: i 1/0, c 0/0, pm 3/3, m 3/3 = 26. The single upper incisor grows into a large tusk in male which is usually absent in Asiatic female elephants.

Genus *Elephas* Linnaeus, 1758

This genus is represented by a single species. The length of head and body is about 5.5 to 6.4 metres; the length of tail is about 1.2 to 1.5 metres. The body weight is about 5,000 kg. The height of the shoulder is 2.5 to 3 metres. The hair cover is scanty; hairs are long, stiff and bristly. The colour of the skin is dark grey to brown. The members of the genus *Elephas* inhabit in variety of terrain, from thick jungle area to open grassy plains.

1. *Elephas maximus* Linnaeus
Indian Elephant

1758. *Elephas maximus* Linnaeus, *Syst. Nat.*, 10th. ed., 1 : 33.

Type locality : Sri Lanka.

Diagnostics : Are same as of genus, since it is represented by a single species.

Distribution : India : Uttarakhand (Dehra Dun, Haridwar, Naini Tal and Pauri) and in the forested areas between Ganges and Krishna, Western Ghats, Kerala, Karnataka, North-eastern States and Bihar.

Elsewhere : Sri Lanka, Myanmar, Bangladesh, China, Cambodia, Indonesia, Laos, Malaysia, Thailand and Vietnam.

Status : IUCN : EN; IW(P)A : Schedule I, Part I; CAMP : VU (Nationally), DD (Globally); CITES : Appendix I.

Order ARTIODACTYLA

The order is represented by nine families in the world, five in India and four in Uttarakhand. This order has many graceful as well as ungainly

creatures, and some of man's most useful animals. They are even-toed hoofed mammals, the third and fourth toes of each of their foot are large and equal in size, accompanied by diminishing size of the second and fourth toes while the first toe may be rudimentary or absent. The hoof which encases the toes of each foot appears to be single and cleft into two. Artiodactyls range in size from a Mouse Deer (460 to 560 mm head and body length) to a Giraffe (3.5 metres in shoulder height).

Family SUIDAE

This family is represented by five genera in the world, and one in India. Suids are medium-sized mammals with long pointed heads, short necks, and barrel-like, stocky bodies. The snout is truncated terminally, with a disk-like cartilage in the tip. The nostrils are terminal, the eyes are small and the ears are fairly long.

Genus *Sus* Linnaeus, 1758

This genus is represented by five species in the world, and two in India. The shoulder height varies from 28 cm to 1.0 metres. The head and body length in the larger species is as much as 1.8 metres and the tail length is about 0.3 metres. The weight is about 35 to 200 kg. The body colour varies from dark grey to black or brown.

1. *Sus salvanius* (Hodgson) Pygmy Hog

1847. *Sus salvanius* Hodgson, *J. Asiat. Soc. Bengal*, 16 : 423.

Type locality : Sikkim Terai, India.

Diagnostics : The head and body length is about 650 mm, tail is about 30 mm, and shoulder height is about 280 mm. This smallest pig is brown to blackish brown in colour, scanty and small hairs on body, but hinder portion of neck and middle of the back are longer without forming crest, ears small and naked.

Distribution : India : Uttarakhand (in foothills), foothills and terai of Northern India and Sikkim terai.

Elsewhere : Southern Nepal and Bhutan.

Status : IUCN : CR; IW(P)A : Schedule I, Part I; CAMP : CR (Nationally), DD (Globally); CITES : Appendix I.

2. *Sus scrofa* Linnaeus Wild Boar

1758. *Sus scrofa* Linnaeus, *Syst. Nat.* 10th. ed., 1 : 49.

Type locality : Germany.

Diagnostics : The head and body length is 1.8 metres; tail about 30 cm and height at shoulder 90 cm. Body coat is sparse, colour usually black mixed with grey, brown and white hairs and mane is black.

Distribution : India : Throughout including Uttarakhand.

Elsewhere : Europe, Southern Russia and China to middle east, Sri Lanka, Indonesia, Norway, Sweden, South Africa, Lesser Sunda Islands, Australia, U.S.A., West Indies, Central and south America, numerous oceanic islands : Mauritius, Hawaiian, Galapagos and Fiji Islands, Moluca Islands, New Guinea and Solomon Islands.

Status : IW(P)A : Schedule III; CAMP : LRlc (Nationally), DD (Globally).

Family MOSCHIDAE

This family is represented by one genus only. The moschids are distinguished by small head, pointed face, large ears and small tail. The antlers and facial glands are absent. The male possesses a pair of curved tusks (canine teeth) and a musk gland beneath the skin of abdomen near the naval.

Genus *Moschus* Linnaeus, 1758

This genus is represented by two species in the world and in India, and one in Uttarakhand. The head and body length is about one metre, the tail length is 38 to 51 mm, the shoulder height is 510 to 610 mm, the rump is about 50 mm higher, and the body weight of an adult is approximately 9 to 11 kg. The body is covered with long, thick, bristly hairs which are usually white at the base. The hairs are pithy and protect the animal from the severe weather conditions at high elevations. The body colour is rich dark brown, mottled and speckled with light grey above and paler below.

1. *Moschus chrysogaster* Hodgson Forest Musk Deer

1839. *Moschus chrysogaster* Hodgson, *J. Asiat. Soc. Bengal*, 8 : 203.

Type locality : Nepal, probably Tibetan Plateau.

Diagnostics : Most of the diagnostic characters are same as of the genus. The head and body length is 80 to 100 cm, tail is 3.8 to 5.00 cm, height at shoulder is 50 to 70 cm, and body weight is 10 to 11 kg. There is a variation in body colour through the Himalayan region.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Naini Tal, Pauri, and Pithoragarh), Kashmir, Sikkim, and Northeast Himalayas.

Elsewhere : Himalayas of North Afghanistan, North Pakistan, Nepal and central Tibet to central China.

Status : IUCN : LR/nt; IW(P)A : Schedule I Part I; CAMP : CR (Nationally), DD (Globally); CITES Appendix I.

Family CERVIDAE

This family is represented by 16 genera in the world and three from India and Uttarakhand too. The slim, long-legged Artiodactyls are characterized by the presence of antlers. Antlers are borne only in males, except in caribous and reindeer, in which both the sexes have antlers. Antlers are the appendages of the skull, composed of a solid bony core. The soft and tender antlers covered with thin skin, which bears short and fine hairs, appears like velvet. The velvety hairs dries when blood circulation reduces gradually at the time of maturity, and the antlers are shed off, annually between January and April, following the mating season. The female deer are slightly smaller and more delicately built than the males. The length of head and body is 0.75 to 2.9 metres, the tail is short, and adult deer weigh from 9 to 800 kg. In general the colouration is brownish.

Genus *Axis* H. Smith, 1827

The genus is represented by four species from the world and two from India and Uttarakhand as well. The length of head and body is 1.0 to 1.75 metres, the tail is 128 to 380 mm, shoulder height is 0.6 to 1 metre and adult deer weigh from 27 to 45 kg. In general the colouration is brownish which varies season to season.

1. *Axis axis* (Erxleben) Spotted Deer; Chital

1777. *Cervus axis* Erxleben, *Syst. Regn. Anim.*, 1 : 312.

Type locality : Bank of Ganges, Bihar, India.

Diagnostics : The length of head and body is about 1.75 metres, tail 380 mm, shoulder height is 90 cm and adult deer weigh up to 45 kg. The body has profuse white spots on its bright rufous fawn coat, in older males the ground coat is dark brownish. The antlers have three tines, the long brow tine projects nearly at right angle to the beam and two branch tines at the top.

Distribution : India : Uttarakhand (Champawat, Dehra Dun, Haridwar, Naini Tal, Pauri, and U. S. Nagar), Andaman Islands, Peninsula, and Bengal.

Elsewhere : Sri Lanka and Nepal.

Status : IW(P)A : Schedule IV; CAMP : LRlc (Nationally), DD (Globally).

2. *Axis porcinus* (Zimmermann) Hog Deer; Para

1780. *Cervus porcinus* Zimmermann, *Geogr. Gesch. Mensch. Vierf. Thiere*, 2 : 131.

Type locality : Bengal, India.

Diagnostics : The length of head and body is about 100 cm, tail 128 mm, height at shoulder 60-70 cm and weigh up to 27 kg. The body is squat pig-like, brown to dark brown in colour with yellowish to reddish tinge and paler under parts, foretine longer, and hindtine shorter. It runs keeping the head down like pig.

Distribution : India : Uttarakhand (Dehra Dun, Haridwar, Naini Tal, Pauri, and U. S. Nagar) and Punjab to Assam.

Elsewhere : Pakistan, Nepal, Myanmar, Indo-China, Siam and Sri Lanka.

Status : IW(P)A : Schedule III; CAMP : LRnt (Nationally), DD (Globally).

Genus *Cervus* Linnaeus, 1758

About 15 species are known from the world, four from India and two from Uttarakhand. The length of head and body is about 1.65 to 2.5 metres, the tail is about 120 to 150 mm, shoulder

height is 1.2 to 1.5 metre and adult deer weigh from 100 to 250 kg. The general body colour is reddish, brown with light under parts.

1. *Cervus duvaucelii* (Cuvier)
Swamp Deer

1823. *Cervus duvaucelii* G. Cuvier, *Rech. Oss. Foss. Nouv. ed.*, 4 : 505.

Type locality : Northern India.

Diagnostics : The head and body length is about 180 cm, height at shoulder 105 to 140 cm, tail 20 to 33 cm, and antler along with curve 75 cm. the body weight ranges from 180 to 200 kg. The male has much branched antlers and long narrow muzzle. The brow tine is nearly at right angle to the beam. The beam remains unbranched for more than its length and then divides and subdivides into 10 to 14 tines. The coat is fine and wooly, and the colour varies from brown to yellowish brown in winter and chestnut in summer.

Distribution : India : Uttarakhand (Haridwar, Naini Tal and Pauri), North of Ganges to Assam and south of Ganges principally in Madhya Pradesh.

Elsewhere : Nepal.

Status : IUCN : VU; IW(P)A : Schedule I Part I; CAMP : EN (Nationally), DD (Globally); CITES Appendix I.

2. *Cervus unicolor* Kerr
Sambar

1792. *Cervus unicolor* Kerr, In *Linnaeus, Anim. Kingdom*, p. 300.

Type locality : Sri Lanka.

Diagnostics : Head and body length is about 2.5 metres, tail about 45 to 50 mm, shoulder height 1.5 metre and weigh up to 250 kg. The dorsal side is brown with yellowish or greyish tinge, under side is paler, mane in male around neck and throat, elegant, rugged and stout antlers, brow tine forms acute angle with the beam which divides into two equal tines.

Distribution : India : Throughout, except high mountains and deserts.

Elsewhere : Sri Lanka, Southern China, Taiwan, peninsular Malaysia, Sumatra and Borneo.

Status : IW(P)A : Schedule III; CAMP : LRlc (Nationally), DD (Globally).

Genus *Muntiacus* Rafinesque, 1815

The animals of this genus are rather small, slender, with head and body is about 800 to 1000 mm, the tail is from 110 to 185 mm, shoulder height is 450 to 580 mm and adult deer weigh from 14 to 18 kg. The body is covered with short and soft hairs. The general body colour is deep brown to yellowish or greyish with white whitish markings and light under parts.

1. *Muntiacus muntjak* (Zimmermann)
Barking Deer

1780. *Cervus muntjak* Zimmermann, *Geog. Gesch. Mensch. Vierf. Thiere.*, 2 : 131.

Type locality : Java, Indonesia.

Diagnostics : The identifying characters are same as of genus. Antlers are small, unbranched, tine short and brown; antlers are set on bony hair-covered pedicel running down each side of the face as bony ridges and so called the Rib-faced Deer too.

Distribution : India : Uttarakhand (through out), Bengal, Maharashtra, Deccan plateau, Karnataka, Malabar Coast and Northern peninsula.

Elsewhere : Sri Lanka, Pakistan, Nepal, Bhutan, Bangladesh, Southern China, Indo-China, Peninsular Malaysia, Sumatra, Borneo, Java, Bali and Indonesia.

Status : IW(P)A : Schedule III; CAMP : LRlc (Nationally), DD (Globally).

Family BOVIDAE

This family is represented by 49 genera in the world, 14 in India and four in Uttarakhand, In the Old world they occur in variety and number of forms. Most bovid inhabit in grasslands, scrubby country, or desert, but some forms live in forests, swamps, or in the arctic tundra. Goats and sheep generally occur in rocky, mountainous area. The body form differs widely; it is graceful in most antelopes, slight in goats, and stout in oxen and sheep. Horns occur in both the sexes in most of the genera and vary in shape and size. The horns are composed of a bony core and a hard sheath of horny material.

Genus *Boselaphus* Blainville, 1816

The genus is represented by single species. The head and body length is 2 to 2.1 metres, the tail length is 456 to 535 mm the shoulder height is 1.2 to 1.5 metres and the body weight is about 200 kg. In both the sexes the neck has a mane. In bulls the tuft of hair is present on the throat. The hair on the body is short and wiry. The male is iron grey, the under parts of tail, inside of ears, rings on fetlocks are white. Head and limbs are tawny. The females are more lightly coloured. The fore legs are somewhat longer than the hind ones. Short horns are found only in males.

1. *Boselaphus tragocamelus* (Pallas)
Blue Bull; Nilgai

1766. *Antilope tragocamelus* Pallas, *Misc. Zool.*, p. 5.

Type locality : Plains of Peninsular India.

Diagnostics : The diagnostic characters of the Blue Bull, Nilgai are similar as given for the genus *Boselaphus*.

Distribution : India : Uttarakhand (Champawat, Dehra Dun, Haridwar, Naini Tal, Pauri, and U. S. Nagar) and foothills of Himalayas in the north to Karnataka in the south, through Punjab, Haryana, Uttar Pradesh, Bihar, Madhya Pradesh, Gujarat and Maharashtra.

Elsewhere : Bangladesh, Pakistan and Nepal.

Status : IW(P)A : Schedule III; CAMP : LRlc (Nationally), DD (Globally).

Genus *Hemitragus* Hodgson, 1841

The genus comprises three species in the world, two in India and one in Uttarakhand. The head and body length is about 1.1 metres, the tail length is about 90 mm the shoulder height is 610 to 1060 mm and the body weight is about 100 kg. The body covering and colouration varies within the species. They are similar to that of true goats.

1. *Hemitragus jemlahicus* (Smith)
Himalayan Tahr

1826. *Capra jemlahicus* H. Smith. In Griffith *et al.* [1827] *Animal kingdom*, 4, Pl. opp. p. 308.

Type locality : Jemla Hills, Nepal.

Diagnostics : The head and body length is 90 to 100 cm, height at shoulder 91 to 105 cm, tail 17 cm, and horn along with curve 30 to 45 cm.

The body weight is 90 kg (approx). The heavy bodied and well built tahr has long robust limbs, narrow erect ears, curved horns and strong body odour. Hairs on face and head are short where as long and coarse on rest of the body. The coat in general is deep reddish brown with a dark mid dorsal streak. The horns are short and curved backwards.

Distribution : India : Himalayas from Kashmir through northern India including Uttarakhand, to Sikkim.

Elsewhere : Nepal and Southern Tibet.

Status : IUCN : VU; IW(P)A : Schedule I, Part I; CAMP : LRnt (Nationally), DD (Globally).

Genus *Naemorhedus* H. Smith, 1827

The genus is known by two species throughout in the world. The head and body length is 0.9 to 1.3 metres, the tail length is about 76 to 203 mm the shoulder height is 584 to 711 mm and the body weight ranges from 22 to 32 kg. The body is covered by a short woolly undercoat, which is protected by long, coarse guard hairs, the body covering looks shaggy, the male has a short semi-erect mane.

1. *Naemorhedus goral* (Hardwicke)
Goral

1825. *Antilope goral* Hardwicke, *Trans. Linn. Soc. London.*, 14 : 518.

Type locality : Nepal Himalayas.

Diagnostics : The head and body length is 100 to 105 cm, height at shoulder 65 to 71 cm, and horns 12 to 15 cm. Body weight ranges from 25 to 35 kg. Horns are small and marked with rings, thicker at the base in the males. Body colour varies from yellowish grey to rufous brown mixed with black, white patches on the upper lip, chin, throat and the cheeks. In winters the hairs are rough and long and in summer short and smooth.

Distribution : India : Uttarakhand (almost throughout), Himachal Pradesh, Kashmir, Assam and Sikkim.

Elsewhere : Siberia, Manchuria, Korea China, Tibet, Myanmar, Nepal, Bhutan and Pakistan.

Status : IUCN : LR/nt; CITES : Appendix I.

2. *Naemorhedus sumatraensis* (Bechstein) Serow

1799. *Antelope sumatraensis* Bechstein, In *Pennant, Allgemeine, Ueber Vierfuss. Thiere*, 1 : 98.

Type locality : Sumatra, Indonesia.

Diagnostics : The head and body length is 140 to 150 cm, height at shoulder 85 to 110 cm, and horns 15 to 25 cm. Body weight is more than 90 kg. The serow has large head and ears, thick neck, short limbs, naked rhinarium and straight face profile. Horns are black, conical and wrinkled (three-fourth of their length from the base). Preorbital gland is large with deep cavity. The colour ranges from black or blackish grey to red on dorsal side, dirty grey ventral side, flanks and lower thighs are rusty red. Muzzle, throat and chest are white.

Distribution : India : Uttarakhand (Almora, Bageshwar, Chamoli, Champawat, Naini Tal, Pauri, Pithoragarh Rudraprayag, Tehri and Uttarakashi), Kashmir, Himachal Pradesh, Sikkim, and West Bengal.

Elsewhere : Nepal, China, Myanmar, Indo-China, Siam, Malay Peninsula, Sumatra and Thailand.

Status : IUCN : VU; IW(P)A : Schedule I Part I; CAMP : VU (Nationally), DD (Globally); CITES Appendix I.

Genus *Pseudois* Hodgson, 1846

This genus is represented by single species throughout. They prefer habitat between 3,600 to 5,000 metres in elevation. The head and body length is 1.3 to 1.4 metres, the tail length is about 130 to 200 mm the shoulder height is 700 to 890 mm and the body weight ranges from 55 to 73 kg. The body colour is brownish grey with a tinge of slaty blue, under parts and inside legs are white.

1. *Pseudois nayaur* (Hodgson) Bharal Blue Sheep

1833. *Ovis nayaur* Hodgson, *Asiat. Res.*, 18(2) : 135.

Type locality : Tibetan Frontier, Nepal.

Diagnostics : Are as similar as the genus mentioned above.

Distribution : India : Uttarakhand (Bageshwar, Chamoli, Pithoragarh, Rudraprayag, and Uttarakashi), Himachal Pradesh, Jammu and Kashmir and Sikkim.

Elsewhere : northern Pakistan, Tibet (China), Mongolia, Nepal and Pamir range in Tadzhikistan.

Status : IW(P)A : Schedule I Part I; CAMP : LRlc (Nationally), DD (Globally).

Order PHOLIDOTA

Family MANIDAE

Genus *Manis* Linnaeus, 1758

This order has single family, Manidae and is represented by single genus, *Manis*. The name Pholidota means the scaled animals. They have elongated and tapering body, covered above with overlapping scales. Scales are absent on the snout, chin, sides of the face, throat, belly and inner surface of the limbs. Scales grow from the thick skin. The head is small and pointed; eyes are protected by heavy and thick eyelids. In adult the tongue can be extended about 25 cm and the average thickness is approximately 5 mm. The hind legs are longer and stouter than the fore legs. All the limbs have five-clawed digits. The males are larger than the females. The head and body length is 300 to 880 mm, the tail is 350 to 880 mm, and the adult weigh from 4.5 to 27.18 kg. Scales are dark brown, dark olive-brown, pale olive, yellow-brown or yellowish. Three to four hairs are present at the base of each scale.

1. *Manis crassicaudata* Cray Indian Pangolin

1827. *Manis crassicaudata* Gray, In *Griffith et al., Anim. Kingdom*, 5 : 282.

Type locality : India.

Diagnostics : The head and body length is 60 to 75 cm and tail 38 to 45 cm. Rest of the diagnostic characters are similar as of the characters of genus.

Distribution : India : Uttarakhand (Champawat, Dehra Dun, Haridwar, Pauri, Naini Tal and U. S. Nagar), Peninsula, Tamil Nadu, Karnataka, Gujarat, Uttar Pradesh, Orissa and West Bengal.

Elsewhere : Sri Lanka, Pakistan and China.

Status : IUCN : LR/nt; IW(P)A : Schedule I Part I; CAMP : LRnt (Nationally), DD (Globally); CITES Appendix II.

Order RODENTIA

The order Rodentia has 35 families known from the world, four from India and three from Uttarakhand. The distribution of this order is world-wide. They inhabit in varied and extensive habitat, that they occupy a large portion of the world's land areas. Some rodents are specialized for an underground life, many are terrestrial and others are arboreal. They have four incisors, two above and two below. Canines and anterior premolars are absent. There is a gap between incisors and cheek teeth. In general they have 22 numbers of teeth. The incisor teeth of rodents grow throughout the life. The outer surface of the tooth is harder than the inner surface, this helps in cutting the hard materials. There is no nerve in the tooth, except at the growing base. The grinding or cheek teeth consist mostly of dentine-enamel forms the outer layer and the loops or folds in the body of the teeth. Rodents often grind their incisor teeth together, to keep them in proper condition.

Family SCIURIDAE

Family sciuridae is known by 50 genera in the world, 12 in India and two in Uttarakhand. They vary in size from the topical pygmy squirrels which weigh less than 10 grams to the marmots which can weigh as much as 2.5 kg, and *Ratufa* is the largest arboreal form. Squirrels and their relatives have small upper premolar which is shed in some forms about the time of maturity. The dental formula is: i 1/1, c 0/0, pm 1-2/1, m 3/3 x 2 = 20 or 22. The molariform teeth are rooted, usually low-crowned, and cuspidate. The upper molariform teeth in sciurids usually have four transverse ridges, each with slight or permanent cusp on the outer border; the lower molariform tooth generally has a basin-like depression surrounded by cusps. The skull is well-developed, eyes are larger, legs are longer than the arms, the foot has five toes, the tail varies from short to long and is well-haired, and often bushy with long hairs.

Genus *Funambulus* Lesson, 1835

The genus *funambulus* is known by five species in India and one in Uttarakhand. The head and body length is from 115 to 178 mm, the length of the tail is also almost same. The fur is soft and fairly dense. Body colouration ranges from light greyish brown to almost black. They have pale and brown strips on the back.

1. *Funambulus pennantii* Wroughton Northern Palm Squirrel

1905. *Funambulus pennantii* Wroughton, *J. Bombay Nat. Hist. Soc.*, 16 : 411.

Type locality : Mandvi Taluka, Surat District, Gujarat, India.

Diagnostics : Head and body length 112 to 150 mm and tail 140 to 150 mm. Five pale stripes on the greyish brown or olive brown back, running parallel from head to tail, absence of mid-dorsal line on the tail are the diagnostics.

Distribution : India : Uttarakhand (Champawat, Dehra Dun, Haridwar, Pauri, Naini Tal, and U. S. Nagar), Punjab, Rajasthan, Palanpur, Dharwar, Cutch, Kathiawar (Gujarat), Madhya Pradesh and Maharashtra.

Elsewhere : Afghanistan, Iran, Nepal and Pakistan.

Status : IW(P)A : Schedule IV; CAMP : LRlc (Nationally), DD (Globally).

Genus *Petaurista* Link, 1795

Nearly five species are known under this genus from the world, four from India and one from Uttarakhand. The length of the head and body is 305 to 585 mm, the length of the tail is 356 to 635 mm and the weight of adult is 1,138 to 1,362 grams. The body colour ranges from yellowish grey, bright brown, chestnut to black above and yellowish, buffy, brownish to white below. The soft fur is fairly long on the back.

1. *Petaurista petaurista* (Pallas) Giant Flying Squirrel

1766. *Sciurus petaurista* Pallas, *Misc. Zool.*, p 54.

Type locality : Preanger, Regencies, western Java, Indonesia.

Diagnostics : The length of the head and body is 320 to 470 mm and the length of the tail is 360 to 490 mm. The body colour is chestnut above and orange-buffy below. The soft fur is fairly long on the back. The upper incisors are orange reddish in colour. Hind foot has naked sole.

Distribution : India : Uttarakhand (Almora, Champawat, Bageshwar, Chamoli, Dehra Dun, Haridwar, Naini Tal, Pauri, Pithoragarh, Rudrapur, U. S. Nagar and Uttarakashi), Nagaland, Assam, Punjab, Kashmir, Peninsular India, Himachal Pradesh, Mishmi Hills (Assam), Tamil Nadu, Bihar and Maharashtra.

Elsewhere : Afghanistan, China, Indo-China, Indonesia, Malaysia, Myanmar and Thailand.

Status : Not known.

Family MURIDAE

This family is known by 100 genera in the world, 30 in India and 10 in Uttarakhand. The members of the family muridae are most abundant in the tropics and subtropics in practically all habitats. The total length, head, body and tail ranged from 111 to 800 mm, and the weight from five to 1,500 grams. The tail is naked to furry. The soles of the feet are naked. The dental formula varies from $i\ 1/1, c\ 0/0, pm\ 0/0, m\ 1/1 \times 2 = 8$ to $i\ 1/1, c\ 0/0, pm\ 0/0, m\ 3/3 \times 2 = 16$. The molars are rooted or rootless and are laminate or cuspidate. They shelter in tunnels under suitable objects, in logs, crevices, buildings, in a nest above the ground.

Genus *Alticola* Blanford, 1881

Genus *Alticola* is represented by six species in India and two in Uttarakhand. The head and body length is about 80 to 140 mm and the tail is less than half the length of the head and body (15 to 40 mm). The body colour is usually grey or brown; the grey is mixed with ash, silver, buff, or yellow above and white or buffy white under parts. The feet are generally white or greyish white.

1. *Alticola roylei* (Gray) Royle's Mountain Vole

1842. *Arvicola roylei* Gray, *Ann. Mag. Nat. Hist.*, 10(1) : 265.

Type locality : Kumaon Himalayas, Uttar Pradesh (= Uttarakhand), India.

Diagnostics : Head and body length 97 to 113 mm and tail 32 to 39 mm, the upper parts of the body are dark brown and under parts greyish usually with rusty tinge, tail bi-coloured dark above, paler below and greyish hind foot.

Distribution : India : Uttarakhand (Almora, Champawat, Bageshwar, Chamoli, Naini Tal, Pauri, Pithoragarh, and U. S. Nagar), Kashmir, (Ladakh) and Lahul (Himachal Pradesh).

Elsewhere : Not known.

Status : IUCN : LR/nt; CAMP : DD (Nationally and Globally).

2. *Alticola stracheyi* (Thomas) Kashmir Vole

1880. *Arvicola stracheyi* Thomas, *Ann. Mag. Nat. Hist.* 6(5) : 332.

Type locality : Ladakh, (Kashmir), India.

Diagnostics : The head and body length is 88 to 120 mm and tail 18 to 30 mm. The upper parts are pale yellowish brown lined with long blackish hairs and under parts are whitish.

Distribution : India : Himalayas from Kashmir to Sikkim including Uttarakhand.

Elsewhere : Nepal and Tibet (China).

Status : Not known.

Genus *Tatera* Lataste, 1882

This genus has 10 species in the world and one species in India. The head and body length is about 90 to 190 mm and the tail is 120 to 245 mm. The body colour is usually sandy grey or pale buffy grey to dark buffy, blackish cinnamon, sandy brown or dark grey, under parts are white or whitish.

1. *Tatera indica* (Hardwicke) Indian Gerbil

1807. *Dipus indicus* Hardwicke, *Trans. Linn. Soc. London*, 8 : 279.

Type locality : Between Varanasi and Haridwar, Uttar Pradesh (= and Uttarakhand), India.

Diagnostics : The head and body length is 15-17 mm. The body colour ranges from reddish brown to fawn or greyish fawn. A light brown colour band runs along each side of the tail. The tail is clothed with hair and ends in a tassel. Hind feet are long and longer than any other rat.

Distribution : India : Uttarakhand (Almora, Champawat, Bageshwar, Dehra Dun, Naini Tal, Pauri, Pithoragarh and U. S. Nagar), Haryana, Punjab, Peninsular region, Gujarat, Cutch, Bihar, Madhya Pradesh, Maharashtra, Karnataka, Tamil Nadu and Uttar Pradesh.

Elsewhere : Iran, Iraq, Nepal, Pakistan, Saudi Arabia, Sri Lanka and Syria,

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

Genus *Apodemus* Kaup, 1829

The genus *Apodemus* is known by seven species in the world, three in India and two in Uttarakhand. The head and body length is about 60 to 125 mm and the tail is 70 to 125 mm. The tail may be shorter or longer than the head and body. Adults are usually 15 to 25 gram in weight. The fur is generally soft, tail is moderately haired. The body is greyish buff, greyish brown, brown mixed with yellow or red, light brown above and white or greyish, often suffused with yellow below. The hands and feet are usually white. They can be distinguished by their skull and teeth. Females have six or eight mammae.

1. *Apodemus rusiges* Miller Miller's Mouse

1913. *Apodemus rusiges* Miller, *Proc. Biol. Soc. Washington*, 26 : 81.

Type locality : Central Kashmir, India.

Diagnostics : Length of head and body is 83 to 107 mm and tail 90 to 120 mm. Upper parts of body are yellowish to dark brown, under parts greyish white below in colour. Fur soft and there is no clear mid-dorsal line. Teats are three pairs

Distribution : India : Uttarakhand (Almora, Champawat, Bageshwar, Naini Tal, Pauri, Pithoragarh, and U. S. Nagar), Kashmir and Himachal Pradesh.

Status : Not known but Endemic to India.

2. *Apodemus wardi* (Wroughton) Field Mouse

1908. *Micromys sylvaticus wardi* Wroughton, *J. Bombay Nat. Hist. Soc.*, 18 : 282.

Type locality : Saspul, Ladak, Jammu and Kashmir, India.

Diagnostics : The length of head and body ranges from 92 to 111 mm and tail 91 to 124 mm. The body colours are as similar as *A. rusiges*, except larger body size.

Distribution : India : Uttarakhand (Almora, Champawat, Bageshwar, Naini Tal, Pauri, Pithoragarh, and U. S. Nagar), Himachal Pradesh, and Kashmir.

Elsewhere : Afghanistan, Iran, Nepal and Pakistan.

Status : Not known.

Genus *Bandicota* Gray, 1873

Under this genus only two species are known from the world, and both are found in India, as well as in Uttarakhand. The length of the head and body ranges from about 160 to 360 mm and the tail from 140 to 258 mm. The body weight ranges from 685 to 1,132 grams. The texture of the pelage varies from soft, fairly dense fur to thin, coarse fur, with wide differences in the length of the guard hairs. The upper parts are light greyish to various shades of brownish or almost black, the under parts are dirty white, the tail is scantily haired. The mammae vary from 12 to 18.

1. *Bandicota bengalensis* (Gray and Hardwicke) Lesser Bandicoot Rat

1833. *Arvicola bengalensis* Gray and Hardwicke, *Illustr. Indian Zool.*, Pl. 21.

Type locality : Bengal, India.

Diagnostics : The head and body length ranges from 132 – 236 mm and tail 99 – 200 mm. The upper part of the body colour varies from greyish brown to blackish and reddish blue to dark greyish on under parts. Tail is shorter than the head and body length.

Distribution : India : Uttarakhand (throughout), Peninsula, Gujarat, Punjab, Uttar Pradesh, Kashmir, Madhya Pradesh, Assam, West Bengal, Sikkim, Bihar, Orissa, Maharashtra, Andhra Pradesh and Kerala.

Elsewhere : Indo-China, Indonesia, Myanmar, Nepal, Pakistan and Sri Lanka.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

2. *Bandicota indica* (Bechstein)

Greater Bandicoot Rat; Large Bandicoot Rat

1800. *Mus indicus* Bechstein, In *Pennant Allgemeine Ueber Vierfuss. Thiere*, 2 : 497.

Type locality : Pondicherry, India.

Diagnostics : The length of the head and body ranges from 132 to 237 mm and the tail from 99 to 200 mm. The body colour is greyish brown to blackish, with reddish tinge, above, light to dark grey below, fur short and harsh, and tail unicoloured.

Distribution : India : Uttarakhand (throughout), Peninsula, Gujarat, Rajasthan, Madhya Pradesh, Maharashtra, Tamil Nadu, Karnataka, Assam, Bihar, Orissa, North-eastern parts, and Uttar Pradesh.

Elsewhere : Sri Lanka, Nepal, Myanmar, China, Taiwan, Thailand, Laos, Vietnam, Malaysia and Indonesia.

Status : IW(P)A : Schedule V; CAMP : LRnt (Nationally), DD (Globally).

Genus *Golunda* Gray, 1873

This is known by single species. The length of the head and body is usually 110 to 150 mm and the tail is 90 to 130 mm. The tail is shorter than the head and body. The texture of the pelage varies from fairly soft, to coarse, with some spiny and long hairs. The upper parts are greyish, yellowish brown, reddish brown to dark brown, the under parts are light grey, bluish grey or whitish. Females have eight mammae. They are heavy and thickset, vole like in appearance.

1. *Golunda ellioti* Gray Indian Bush Rat

1837. *Golunda ellioti* Gray, *Mag. Nat. Hist.* [Charlesworth's] 1 : 586.

Type locality : Dharwar, Gujarat, India.

Diagnostics : The length of the head and body ranges from 102 to 170 mm and the tail from 86 to 131 mm. The body furs are thick, greyish brown to blackish above and white to bluish grey below. Tail is bicoloured, dark brown above and paler below.

Distribution : India : Uttarakhand (throughout), Gujarat, Rajasthan, Peninsula, Haryana, Punjab, Assam, Maharashtra, Karnataka, Eastern Ghats, Madhya Pradesh, Bihar and Uttar Pradesh.

Elsewhere : Bhutan, Duars, Iran, Nepal, Pakistan and Sri Lanka.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

Genus *Mus* Linnaeus, 1758

The genus *Mus* is represented by 16 species in the world, 10 in India and three in Uttarakhand. The length of head and body is usually less than 100 mm but generally ranges from 65 to 95 mm, the tail is about 60 to 105 mm and the body weight is usually 18 to 30 grams. The fur may vary from soft, harsh to spiny. The tail appears to be naked but has a covering of fine hairs. The colouration ranges from pale buff or pale grey through dull greyish browns and grey to brownish grey above and under parts and sides are lighter than above. The mammae are 10 to 12 in most of the forms. It resembles with *Rattus* in number of features.

1. *Mus booduga* (Gray) Indian Field Mouse

1837. *Leggada booduga* Gray, *Mag. Nat. Hist.* [Charlesworth's] 1 : 586.

Type locality : South Maharashtra, India.

Diagnostics : The length of head and body is usually ranges from 52 to 87 mm and the tail is about 51 to 72 mm. The body fur are soft and colour varies from light sandy, greyish, dark reddish to rust brown above and whitish below. The tail is darker above and paler below.

Distribution : India : Uttarakhand (throughout), Gujarat, Punjab, Maharashtra, Bihar, Orissa, Karnataka, Eastern Ghats, West Bengal, Jammu & Kashmir and Uttar Pradesh.

Elsewhere : Sri Lanka, Nepal and Myanmar.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

2. *Mus musculus* Linnaeus House Mouse

1758. *Mus musculus* Linnaeus, *Syst. Nat. 10th. ed.*, 1 : 62.

Type locality : Uppsala, Sweden.

Diagnostics : Head and body length ranges from 55 to 94 mm and the tail from 64 to 99 mm. Body fur are soft, sandy brown to dark brown above and white to ochraceous brown below. Tail is faintly darker above and whitish below.

Distribution : India : Practically throughout including Uttarakhand.

Elsewhere : Worldwide.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

3. *Mus platythrinx* Bennett Indian Brown Spiny Mouse

1832. *Mus platythrinx* Bennett, *Proc. Zool. Soc. London.*, : 121.

Type locality : Deccan plateau, Andhra Pradesh, India.

Diagnostics : Head and body length ranges from 77 to 123 mm and the tail from 51 to 81 mm. The fur are spiny, body dusky to dark brown above and white to greyish white below. Tail is darker above and paler below.

Distribution : India : Uttarakhand (throughout), Tamil Nadu, Madhya Pradesh, Punjab, Kerala, Gujarat, Rajasthan, Karnataka, Madhya Pradesh, Uttar Pradesh, Maharashtra, Eastern Ghats and Bihar.

Elsewhere : Pakistan and Myanmar.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally); Endemic to India.

Genus *Nesokia* Gray, 1842

This is known by single species. The length of the head and body is from 140 to 215 mm and the tail is 88 to 127 mm. The adults weigh approximately 130 to 175 grams. The texture of the pelage varies from coarse, short, harsh, and

semispinous coats to those which are long, fine, and silky. In some forms the coat is dense, and in others it is thin. The tail is naked, and the hands and feet are scantily haired. The upper parts ranges from fawn or yellowish brown to greyish brown, mixed with red in places, and the under parts are greyish to whitish.

1. *Nesokia indica* (Gray and Hardwicke) Short-tailed Bandicoot Rat

1830. *Arvivola indica* Gray and Hardwicke, *Illustr. Indian Zool.*, 1 : pl.11.

Type locality : India.

Diagnostics : The diagnostic characters are similar to generic, being the single species of the genus *Nesokia*.

Distribution : India : Uttarakhand (Champawat, Dehra Dun, Haridwar, Pauri, Naini Tal and U. S. Nagar), Delhi, Punjab, Rajasthan and Uttar Pradesh.

Elsewhere : Bangladesh, Pakistan, Afghanistan, Iran and west to Egypt.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

Genus *Niviventer* Marshall, 1976

In India, *Niviventer* is represented by six species, in Uttarakhand by two species. The length of the head and body is from 140 to 155 mm and the tail is 215 to 240 mm. They are soft, densely furred rats, richly dark coloured above and whitish or paler below.

1. *Niviventer fulvescens* (Gray) Chestnut Rat

1847. *Mus fulvescens* Gray, *Cat. Hodgson. Coll. Br. Mus.*, p 8.

Type locality : Nepal.

Diagnostics : Head and body length ranges from 112 to 164 mm and tail 137 to 223 mm. The body fur are soft and spiny, fulvous to reddish brown colour above and white below. Tail dark above and pale below, but in some cases it is unicoloured.

Distribution : India : Uttarakhand (almost throughout), Assam, Arunachal Pradesh, Himachal

Pradesh, Manipur, Meghalaya, Sikkim and Darjeeling in West Bengal.

Elsewhere : Nepal, Bangladesh, China, Laos, Thailand, Vietnam, Malaysia and Indonesia.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

2. *Niviventer niviventer* (Hodgson) Himalayan White-bellied Rat

1836. *Mus niviventer* Hodgson, *J. Asiat. Soc. Bengal*, 5 : 234.

Type locality : Kathmandu, Nepal.

Diagnostics : Length of head and body ranges from 114 to 166 mm and tail 142 to 205 mm. Body fur are spiny or soft, colour dark grey above and white below. Tail is dark above and whitish below.

Distribution : India : Uttarakhand (almost throughout), Darjeeling in West Bengal, Sikkim, Himachal Pradesh and Mishmi Hill.

Elsewhere : Pakistan, Nepal, China, Myanmar, Indo-China, Malaysia, Indonesia and Formosa.

Status : IW(P)A : Schedule V; CAMP : DD (Nationally and Globally).

Genus *Rattus* Fischer, 1803

Genus *Rattus* is a difficult genus to define. It has more named forms than any other genus of mammals (570). From India so far 11 species and from Uttarakhand one species is known. The length of the head and body is from 80 to 300 mm and the tail may be shorter or longer than head and body length. The tail is thinly haired. In some forms the pelage is soft and in others it is coarse, and in some forms enlarged and spiny. The upper parts are black, greyish, dark brown, or yellowish or reddish brown and the under parts are usually greyish or whitish. The number of mammae varies from 4, 6, 8, 10 to 12.

1. *Rattus rattus* (Linnaeus) House Rat

1758. *Mus rattus* Linnaeus, *Syst. Nat. 10th. Ed.*, 1 : 61.

Type locality : Uppsala, Uppsala Country, Sweden.

Diagnostics : Length of head and body ranges from 116 to 203 mm and the tail from 159 to 256 mm, longer than head and body length. This species varies in body colouration, indoor forms are brownish above and greyish buffy below, out doors are creamy with greyish medial streak on the back, rest characters are same in both the forms.

Distribution : India : Practically throughout the country.

Elsewhere : Introduced world wide in tropics and temperate zones.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

Genus *Vandeleuria* Gray, 1842

This genus is known by single species. The length of the head and body is from 55 to 85 mm and the tail is 90 to 130 mm. The upper parts vary from light buffy through dull brown to dark reddish brown, and the under parts are white or cream coloured. The fur is full, soft, and almost silky. The tail is fairly well haired and not tufted at the tip. Females have eight mammae.

1. *Vandeleuria oleracea* (Bennett) Palm Mouse

1832. *Mus oleracea* Bennett, *Proc. Zool. Soc. London*, : 121.

Type locality : Deccan region, Andhra Pradesh, India.

Diagnostics : The diagnostic characters are similar as the generic one being the single species.

Distribution : India : Uttarakhand (Champawat and U. S. Nagar), Peninsula, Karnataka, Gujarat, Eastern Ghats, Madhya Pradesh, Andhra Pradesh, Orissa, Maharashtra, Bihar, Sikkim and North-eastern Parts.

Elsewhere : Sri Lanka, Nepal, Myanmar, China, Indo-China, Indonesia, Thailand, Vietnam and Bhutan.

Status : IW(P)A : Schedule V; CAMP : LRlc (Nationally), DD (Globally).

Family HYSTRICIDAE

The family Hystricidae is represented by four genera in the world, two in India and one in

Uttarakhand. They are distinguished by long spines or quills which are modified stiffened, sharpened and thickened dorsal hairs. They are large and heavy-set rodents have a spiny cover on the body and tail. The length of the quills is as much as 350 mm. The head and body length is 380 to 710 mm and the adult weigh as much as 27 kg. The body colour is brownish or blackish with white bands on hairs and spines. Females have two to three pairs of mammae on the sides of the body.

Genus *Hystrix* Linnaeus, 1758

The *Hystrix* are represented by 12 species in the world, two in India and one in Uttarakhand. The head and body length is 600 to 800 mm and the adult weigh as much as 17 to 27 kg. The upper parts of the body are covered by brownish or blackish quills or spines. Females have three pairs of mammae.

1. *Hystrix indica* Kerr
Indian Crested Porcupine

1792. *Hystrix indica* Kerr, In Linnaeus, *Anim. Kingdom*, p. 213.

Type locality : India.

Diagnostics : The head and body length ranges from 600 to 900 mm and the tail small less than one-fifth of head and body length. The body build is massive, head and neck possess long and brown crest of bristles, shoulders and belly with coarse, and back covered with long quills. Quills have alternate bands of white and brown.

Distribution : India : Throughout including Uttarakhand.

Elsewhere : Israel, Nepal, Pakistan, Russian Turkistan and Sri Lanka.

Status : IW(P)A : Schedule IV; CAMP : LRlc (Nationally); DD (Globally).

Order LAGOMORPHA

The order Lagomorpha is represented by two families in the world, India and Uttarakhand. Initially, it was a sub-order of Rodentia but now is known as an order. The head and body length ranges from 125 to 750 mm. Adult weigh from 100 to 4,500 grams. The fur is long, soft, and fine in pikas and usually thick and soft in rabbits. The testes are in scrotum in front of penis as in the marsupials.

Family OCHOTONIDAE
Genus *Ochotona* Link, 1795

This family contains a single genus *Ochotona*, and under this genus 14 species (12 from Asia and two from America) are known from the world, seven from India and one from Uttarakhand. They are popularly known as the Pikas or Mouse Hares. They are somewhat like guinea pig in build, having small muzzle, small rounded head, short, broad and rounded ears, and short legs (hind legs are scarcely longer than fore legs). The tail is absent. The head and body length ranges from 125 to 300 mm. Adult weigh from 125 to 400 grams. The fur is long, soft, and fine in pikas. The general body colour is greyish brown. Females have four or six mammae. The dental formula is: $i \ 2/1, c \ 0/0, pm \ 3/2, m \ 2/3 \times 2 = 26$.

1. *Ochotona roylei* (Ogilby)
Royle's Pika

1839. *Lagomys roylei* Ogilby, *Royle's Illus. Botany Himalaya*, 2 : 69, pl.4.

Type locality : Choor Mountains, 96 km North of Saharanpur, India.

Diagnostics : Head and body length ranges from 150 to 200 mm. The fur is soft, and fine. The general body colour is reddish brown. Over the nape, a pale band is found.

Distribution : India : Uttarakhand (almost throughout in except Dehra Dun, Haridwar and U. S. Nagar), in Himalayas, Kashmir and Himachal Pradesh.

Elsewhere : Russian central Asia, Himalayan Mountains in northwest Pakistan, Tibet, China, Nepal and Myanmar.

Status : CAMP : LRnt (Nationally), DD (Globally).

Family LEPORIDAE

The family Leporidae (Hares and Rabbits) is represented by nine genera in the world, two in India and one in Uttarakhand. Females are usually larger than males. The length of the body is approximately 250 to 760 mm. The tail is short and well furred. The body weighs as much as 4,500 grams. The pelage is usually thick and soft, but coarse in some forms. The anal region is

nearly naked. The body colour varies from brown, buff, and grey, to white; in some forms seasonal colour change is seen. The dental formula is : $i \ 2/1, c \ 0/0, pm \ 3/2, m \ 3/2 \times 2 = 28$, except in *Pentalagus* the molar are $2/3$.

Genus *Lepus* Linnaeus, 1758

This genus has about 26 species in the world, four in India and one in Uttarakhand. Members of this genus range in head and body length from about 400 to 700 mm and 35 to 100 mm in tail length. The body weight is from 1,350 to 7,000 grams. They have long ears and large hind feet. The usual colour is brown or grey brown above and lighter to white below.

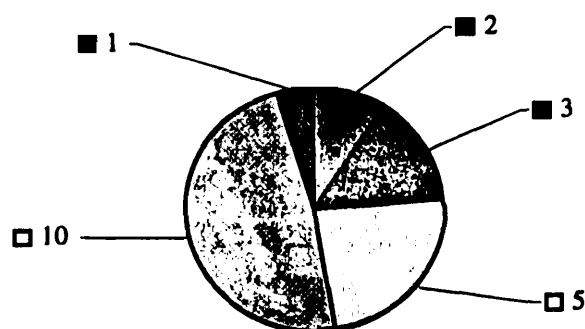
Status : CAMP : DD (Nationally and Globally).

REMARKS

While analysing the threatened status, according to IUCN (2007) criteria, for the 93 species reported from Uttarakhand, it was found that two species namely *Murina grisea* (Peter's Tube-nosed Bat) and *Sus salvanius* (Pygmy Hog) have been placed under Critical (CR) category; three species such as *Panthera tigris* (Tiger), *Uncia uncia* (Snow Leopard) and *Elephas maximus* (Indian Elephant) under Endangered (EN); five under Vulnerable (VU) category *Lutra lutra* (Common Otter) under Near Threatened (NT);

Fig. 1 Threatened Species of Mammals of Uttarakhand

(n= 21 species)



■ CR (Critical)

□ VU (Vulnerable)

■ NT (Near Threatened)

■ EN (Endangered)

□ LRnt (Lower Risk Near Threatened)

1. *Lepus nigricollis* Cuvier Black-napped Hare

1823. *Lepus nigricollis* Cuvier, *Dict. Sci. Nat.*, 26 : 307.

Type locality : Malabar, Tamil Nadu, India.

Diagnostics : Head and body length ranges from 400 to 500 mm. General body colour is brown or grey brown above and lighter to whitish below. A dark brown or black patch is present on its nape. Upper side of tail is darker or blackish.

Distribution : India : Throughout including Uttarakhand.

Elsewhere : Bangladesh, Bhutan, Indonesia, Nepal, Pakistan and Sri Lanka.

and 10 under Lower Risk near threatened (LRnt); (Fig. 1). The protection status of these 93 species as per IW(P)Act, 1972 indicates that, 16 species are listed under Schedule I, 13 Schedule II, six Schedule III, five Schedule IV and 14 under Schedule V. According to the Convention on International Trade in Endangered Species of Wild Fauna and Flora. (CITES 1973 & 1979), a total of 28 species of mammals have been placed under different Appendices as follows : 15 species have been placed under Appendices I, four species Appendices II and nine species Appendices III of CITES.

SUMMARY

Uttarakhand, which falls mostly under Himalayan biogeographic zone and west Himalayan province of India, is a home for nearly 23% (93 species) of the Indian mammals. These 93 species belong to 62 genera, 26 families, and nine orders. The present systematic account incorporates the scientific and common names; first reference; type locality; distribution; diagnostics and status of each species. Of these 93 species reported from Uttarakhand, it was found that two species have been placed under Critical (CR); three under Endangered (EN); five under Vulnerable (Vu); one under Near

Threatened (MT), and 10 under lower Risk near threatened (LRnt) categories by IUCN (2007).

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Table. Districtwise distribution of Mammals in Uttarakhand and their conservation status.

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	class Mammalia 1. Order INSECTIVORA 1. Family ERINACEIDAE																	
1.	<i>Hemiechinus collaris</i> (Gray) Indian Long-eared Hedgehog	LRlc		V						+	+					+	+	
	2. Family SORICIDAE																	
2.	<i>Suncus etruscus</i> (Savi) Pygmy White-toothed Shrew	LRlc				+	+	+	+	+	+	+	+	+	+	+	+	+
3.	<i>Suncus murinus</i> (Linnaeus) House Shrew	LRlc				+	+	+	+	+	+	+	+	+	+	+	+	+
4.	<i>Soriculus nigrescens</i> Gray Himalayan Shrew	VU				+	+	+	+			+	+	+	+	+		+
	II. Order CHIROPTERA 3. Family PTEROPODIDAE																	
5.	<i>Cynopterus sphinx</i> (Vahl) Short-nosed Fruit Bat	LRlc				+	+	+	+	+	+	+	+	+	+	+	+	+
6.	<i>Pteropus giganteus</i> (Brunnich) Indian Flying Fox	LRlc			II	+	+	+	+	+	+	+	+	+	+	+	+	+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
7.	<i>Sphaerias blanfordi</i> (Thomas) Blanford's Fruit Bat	DD		V					+			+	+	+			+	
	4. Family RHINOPOMATIDAE																	
8.	<i>Rhinopoma hardwickei</i> Gray Lesser Mouse-tailed Bat	LRnt							+	+	+	+	+			+	+	
	5. Family MEGADERMATIDAE																	
9.	<i>Megaderma lyra</i> E. Geoffroy Indian False Vampire	LRlc				+	+	+	+	+	+	+	+	+	+	+	+	+
	6. Family RHINOLOPHIDAE																	
10.	<i>Rhinolophus affinis</i> Horsfield Intermediate Horseshoe Bat	LRnt				+	+	+	+			+	+	+	+	+		+
11.	<i>Rhinolophus ferrumequinum</i> (Schreber) Greater Horseshoe Bat	VU	LR/nt			+	+	+	+			+	+	+				
12.	<i>Rhinolophus lepidus</i> Blyth Blyth's Horseshoe Bat	LRnt								+	+							
13.	<i>Rhinolophus lucus</i> Temminck Woolly Horseshoe Bat	NE				+	+	+	+			+	+	+				
14.	<i>Rhinolophus macrotis</i> Blyth	NE				+	+	+	+			+	+	+				

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Large-eared Horseshoe Bat																	
15.	<i>Rhinolophus pearsonii</i> Horsfield Pearson's Horseshoe Bat	LRnt				+	+	+	+			+	+	+				
16.	<i>Rhinolophus rouxii</i> Temminck Peninsular Horseshoe Bat	LRnt				+	+	+	+	+	+	+	+	+	+	+	+	+
17.	<i>Rhinolophus subbadius</i> Blyth Nepal Horseshoe Bat	CR				+	+	+	+	+	+	+	+	+	+	+	+	+
18.	<i>Hipposideros armiger</i> (Hodgson) Himalayan Leaf-nosed Bat	LRnt				+	+	+	+			+	+	+			+	
19.	<i>Hipposideros cineraceus</i> Blyth Least Leaf-nosed Bat	DD								+								
	7. FAMILY VESPERTILIONIDAE																	
20.	<i>Myotis formosus</i> (Hodgson) Hodgson's Bat	LRnt				+	+	+	+			+	+	+			+	
21.	<i>Myotis siligorensis</i> (Horsfield) Himalayan Whiskered Bat	DD				+	+	+	+			+	+	+	+	+		
22.	<i>Nyctalus leisleri</i> (Kuhl) Leisler's Bat	DD				+	+	+	+			+	+	+			+	
23.	<i>Nyctalus montanus</i> (Barrett-Hamilton)	DD						+		+			+		+	+		+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Hamilton' Bat																	
24.	<i>Pipistrellus babu</i> Thomas Pipistrelle Bat	NE				+	+	+	+			+	+	+	+	+		+
25.	<i>Pipistrellus dormeri</i> (dobson) Dormer' Bat	LRnt				+	+	+	+	+	+	+	+	+	+	+	+	+
26.	<i>Pipistrellus mimus</i> Wroughton Indian Pygmy Pipistrelle	NE				+	+	+	+			+	+	+			+	
27.	<i>Plecotus auritus</i> (Linnaeus) Brown Long-eared Bat	DD				+	+	+	+			+	+	+			+	
28.	<i>Scotophilus heathi</i> (Horsfield) Greater Yellow Bat	LRlc				+	+	+	+			+	+	+			+	
29.	<i>Scotophilus kuhlii</i> Leach Lesser Yellow House Bat	LRlc				+	+	+	+			+	+	+			+	
30.	<i>Murina grisea</i> Peters Peter's Tube-nosed Bat	VU	CR							+						+		
31.	<i>Murina huttoni</i> (Peters) Hutton's Tube-nosed Bat	DD	LR/nt			+	+	+	+	+		+	+	+	+	+		+
32.	<i>Miniopterus schreibersi</i> (Kuhl) Schreiber's Bat	LRlc	LR/nt			+	+	+	+			+	+	+				+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	III. Order PRIMATES 8. Family CERCOPITHECIDAE																	
33.	<i>Macaca mulatta</i> (Zimmermann) Rhesus Macaque	LRlc	LR/nt	II	II	+	+	+	+	+	+	+	+	+	+	+	+	+
34.	<i>Semnopithecus entellus</i> (Dufresne) Hanuman Langur	LRlc	LR/nt	II	I	+	+	+	+	+	+	+	+	+	+	+	+	+
	IV. Order CARNIVORA 9. Family CANIDAE																	
35.	<i>Canis aureus</i> Linnaeus Asiatic Jackal	LRlc		II	III	+	+	+	+	+	+	+	+	+	+	+	+	+
36.	<i>Canis lupus</i> Linnaeus Wolf	LRnt		I	I	+	+	+	+	+	+	+	+	+	+	+	+	+
37.	<i>Vulpes bengalensis</i> (Shaw) Indian Fox	LRnt		II	III	+	+	+	+	+	+	+	+	+	+	+	+	+
38.	<i>Vulpes vulpes</i> (Linnaeus) Red Fox	LRnt		II	III	+	+	+	+			+	+	+	+	+		+
	10. Family HYAENIDAE																	
39.	<i>Hyaena hyaena</i> (Linnaeus)	LRnt	LR/nt	III						+	+						+	

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Striped Hyaena																	
	11.Family FELIDAE																	
40.	<i>Felis chaus</i> Schreber Jungle Cat	LRnt		II	II	+	+	+	+	+	+	+	+	+	+	+	+	+
41.	<i>Prionailurus bengalensis</i> (Kerr) Leopard Cat	LRnt		I	I	+	+	+	+	+	+	+	+	+	+	+	+	+
42.	<i>Prionailurus viverrinus</i> (Bennett) Fishing Cat	VU	VU	I			+	+	+					+				
43.	<i>Panthera pardus</i> (Linnaeus) Leopard; Panther	VU		I	I	+	+	+	+	+	+	+	+	+	+	+	+	+
44.	<i>Panthera tigris</i> (Linnaeus) Tiger	EN	EN	I	I					+	+	+	+					
45.	<i>Uncia uncia</i> (Schreber) Snow Leopard	EN	EN	I	I	+	+	+				+		+	+			+
	12. FAMILY HERPESTIDAE																	
46.	<i>Herpestes javanicus</i> (E. Geoffroy Saint-Hillaire) Small Indian Mongoose	LRlc		IV		+	+	+	+	+	+	+	+	+	+	+	+	+
47.	<i>Herpestes smithi</i> Gray	LRlc		IV	III	+	+	+	+	+	+	+	+	+	+	+	+	+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Ruddy mongoose																	
	13. Family: MUSTELIDAE																	
48.	<i>Amblonyx cincreus</i> (Illiger) Small-clawed Otter	NE		II		+	+	+	+	+	+	+	+	+	+	+	+	+
49.	<i>Lutra lutra</i> (Linnaeus) Common Otter	NE	NT	I	I	+	+	+	+	+	+	+	+	+	+	+	+	+
50.	<i>Martes flavigula</i> (Boddaert) Yellow-throated Martin	LRlc		II	III	+	+	+	+	+		+	+	+	+	+		+
51.	<i>Martes foina</i> (Erxleben) Beech Marten	DD		II	III	+	+	+	+	+	+	+	+	+	+	+	+	+
52.	<i>Mustela sibirica</i> Pallas Siberian Weasel	LRnt		II	III	+	+	+	+			+	+	+	+	+		+
	14. Family URSIDAE																	
53.	<i>Melursus ursinus</i> (Shaw) Sloth Bear	VU	VU	I	I	+	+	+	+			+	+	+	+	+		+
54.	<i>Ursus thibetanus</i> G. (Baron) Cuvier Asiatic Black Bear	LRlc			I	+	+	+	+	+		+	+	+	+	+		+
	15. Family VIVERRIDAE																	

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
55.	<i>Paguma larvata</i> (Hamilton-Smith) Masked Palm Civet	LRlc		II	III	+	+	+	+	+		+	+	+	+	+	+	+
56.	<i>Paradoxurus hermaphroditus</i> (Pallas) Common Palm Civet	LRlc		II		+	+	+	+	+		+	+	+	+	+	+	+
57.	<i>Viverricula indica</i> (Desmarest) Small Indian Civet	LRnt		II	III	+	+	+	+	+		+	+	+	+	+	+	+
	V. Order PROBOSCIDEA																	
	16. Family ELEPHANTIDAE																	
58.	<i>Elephas maximus</i> Linnaeus Indian Elephant	VU	EN	I	I					+	+	+	+					
	VI. Order ARTIODACTYLA																	
	17. Family SUIDAE																	
59.	<i>Sus salvanius</i> (Hodgson) Pygmy Hog	CR	CR	I	I				+	+	+	+	+				+	
60.	<i>Sus scrofa</i> Linnaeus Wild Boar	LRlc		III		+	+	+	+	+	+	+	+	+	+	+	+	+
	18. Family MOSCHIDAE																	
61.	<i>Moschus chrysogaster</i> Hodgson	CR	LR/nt	I	I	+	+	+				+	+	+	+	+		+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Forest Musk Deer																	
	19. Family CERVIDAE																	
62.	<i>Axis axis</i> (Erxleben) Spotted Deer; Chital	LRlc		IV					+	+	+	+	+				+	
63.	<i>Axis porcinus</i> (Zimmermann) Hog Deer; Para	LRnt		III						+	+	+	+				+	
64.	<i>Cervus duvaucelii</i> (Cuvier) Swamp Deer	EN	VU	I	I						+	+	+					
65.	<i>Cervus unicolor</i> Kerr Sambar	LRlc		III		+	+	+	+	+	+	+	+	+	+	+	+	+
66.	<i>Muntiacus muntjak</i> (Zimmermann) Barking Deer	LRlc		III		+	+	+	+	+	+	+	+	+	+	+	+	+
	20. Family BOVIDAE																	
67.	<i>Boselaphus tragocamelus</i> (Pallas) Blue Bull; Nilgai	LRlc		III						+	+	+	+				+	
68.	<i>Hemitragus jemlahicus</i> (Smith) Himalayan Tahr	LRnt	VU	I		+	+	+	+			+	+	+	+	+		+
69.	<i>Naemorhedus goral</i> (Hardwicke) Goral	NE	LR/nt		I	+	+	+	+	+	+	+	+	+	+	+		+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
70.	<i>Naemorhedus sumatraensis</i> (Bechstein) Serow	VU	VU	I	I	+	+	+	+			+	+	+	+	+		+
71.	<i>Pseudois nayaur</i> (Hodgson) Bharal; Blue Sheep	LRlc		I			+	+						+	+			+
	VII. Order PHOLIDOTA 21. Family MANIDAE																	
72.	<i>Manis crassicaudata</i> Cray Indian Pangolin	LRnt	LR/nt	I	II				+	+	+	+	+				+	
	VIII. Order RODENTIA 22. Family SCIURIDAE																	
73.	<i>Funambulus pennantii</i> Wroughton Northern Palm Squirrel	LRlc		IV					+	+	+	+	+				+	
74.	<i>Petaurista petaurista</i> (Pallas) Giant Flying Squirrel	NE				+	+	+	+	+		+	+	+	+	+		+
	23. Family MURIDAE																	
75.	<i>Alticola roylei</i> (Gray) Royle's Mountain Vole	DD	LR/nt			+	+	+	+			+	+	+			+	
76.	<i>Alticola stracheyi</i> (Thomas)	NE				+	+	+				+	+	+	+	+		+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Kashmir Vole																	
77.	<i>Tatera indica</i> (Hardwicke) Indian Gerbil	LRlc		V		+	+		+	+	+	+	+	+			+	
78.	<i>Apodemus rusiges</i> Miller Miller's Mouse	NE				+	+		+			+	+	+			+	
79.	<i>Apodemus wardi</i> (Wroughton) Field Mouse	NE				+	+		+			+	+	+			+	
80.	<i>Bandicota bengalensis</i> (Gray and Hardwicke) Lesser Bandicoot Rat	LRlc		V		+	+	+	+	+	+	+	+	+	+	+		+
81.	<i>Bandicota indica</i> (Bechstein) Greater Bandicoot Rat	LRnt		V		+	+	+	+	+	+	+	+	+	+	+		+
82.	<i>Golunda ellioti</i> Gray Indian Bush Rat	LRlc		V		+	+	+	+	+	+	+	+	+	+	+		+
83.	<i>Mus booduga</i> (Gray) Indian Field Mouse	LRlc		V		+	+	+	+	+	+	+	+	+	+	+		+
84.	<i>Mus musculus</i> Linnaeus House Mouse	LRlc		V		+	+	+	+	+	+	+	+	+	+	+		+
85.	<i>Mus platythrix</i> Bennett	LRlc		V		+	+	+	+	+	+	+	+	+	+	+		+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Indian Brown Spiny Mouse																	
86.	<i>Nesokia indica</i> (Gray and Hardwicke) Short-tailed Bandicoot Rat	LRlc		V		+	+	+	+	+	+	+	+	+	+	+	+	+
87.	<i>Niviventer fulvescens</i> (Gray) Chestnut Rat	LRlc		V		+	+	+	+			+	+	+	+	+		+
88.	<i>Niviventer niviventer</i> (Hodgson) Himalayan White-bellied Rat	DD		V		+	+	+				+	+	+	+	+		+
89.	<i>Rattus rattus</i> (Linnaeus) House Rat	LRlc		V		+	+	+	+	+	+	+	+	+	+	+	+	+
90.	<i>Vandeleuria oleracea</i> (Bennett) Palm Mouse	LRlc		V			+										+	
	24. Family HYSTRICIDAE																	
91.	<i>Hystrix indica</i> Kerr Indian Crested Porcupine	LRlc		IV		+	+	+	+	+	+	+	+	+	+	+	+	+
	IX. Order LAGOMORPHA 25. Family OCHOTONIDAE																	
92.	<i>Ochotona roylei</i> (Ogilby) Royle's Pika	LRnt				+	+	+	+			+	+	+	+	+		+

Sl. No.	Scientific name	Status				Districts												
		CAMP (1998)	IUCN (2007)	IW(P)Act 1972	CITES (1973&1979)	Almora	Bageshwar	Chamoli	Champawat	Dehradun	Haridwar	Naini Tal	Pauri	Pithoragarh	Rudrapur	Tehri	U. S. Nagar	Uttarakashi
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	26. Family LEPORIDAE																	
93.	<i>Lepus nigricollis</i> Cuvier Black-napped Hare	DD				+	+	+	+	+	+	+	+	+	+	+	+	+

CAMP = Conservation Assessment and Management Plan

IUCN = International Union for Conservation of Nature and Natural Resources

IW(P)Act = Indian Wildlife (Protection) Act

CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora

CR = Critical

EN = Endangered

VU = Vulnerable

LR/nt or LRnt = Lower Risk near threatened

LRlc = Lower Risk least concern

DD = Data Deficient

NE =Not Evaluated

NT = Near Threatened

I = Schedule I of Indian Wildlife (Protection) Act

II = Schedule II of Indian Wildlife (Protection) Act

IV = Schedule IV of Indian Wildlife (Protection) Act

V = Schedule V of Indian Wildlife (Protection) Act

I =Appendice I of CITES

II = Appendice II of CITES

III = Appendice III of CITES

AVES

P. C. TAK and J. P. SATI

Zoological Survey of India, Northern Regional Centre,

P.O. IPE, Dehra Dun 248 195 (Uttarakhand) India

E-mail : pctakzsi@gmail.com; jpsatizsi@yahoo.co.in

INTRODUCTION

The wealth of data available on birds make them ideal environmental indicator across the globe because they occur almost in all types of habitats throughout, except the polar caps. The base line information on the Indian birds is available in the indispensable books by Jerdon (1862-64), Oates & Blandford (1889-98), Baker (1922-30), Ali (1949), Ali & Ripley (1968-74, 1983), Grimmett *et al.* (1998), Kazmierczak and Perlo (2000), Alfred *et al.* (2001), Grewal *et al.* (2002), Islam & Rahmani (2004), Kumar *et al.* (2005), and Rahmani & Islam (2008).

Uttarakhand, which falls mostly under Himalayan biogeographic zone and west Himalayan province of India, is a home for >55% (743 species) of the birds of Indian subcontinent (present communication). The birds of Uttarakhand occur in a variety of habitats, ranging from Snow clad Mountains, through Alpine & sub alpine meadows, Sub-tropical & Tropical forests, Shiwaliks to the Grass lands of the plains (small portion). The forest cover is about 45.74% of State's geographic area of 53,483 km² (Annon. 2005). The major portion (>90%) is mountainous while the remainder is plains. The state has a strong Protected Areas (PAs) network of: one World Heritage Site- Nanda Devi; One Biosphere Reserve- Nanda Devi; One Tiger Reserve- Corbett Tiger Reserve (CTR); Six National Parks (Corbett, Rajaji, Nanda' Devi, Valley of Flower, Gangotri, & Govind); Six Wildlife Sanctuaries (Kedarnath, Govind, Sonanadi, Binsar, Askot and Benog); and Two Conserve Reserves (Asan and Jhilmil Jheel) to protect its biodiversity in general and wildlife in particular.

The remarkable bird diversity of the hilly Uttarakhand state has attracted a large number of naturalists, bird watchers, and ornithologists. A

review of literature pertaining to avifauna of the state reveals that there are more than 300 references dealing with different aspects of the birds. However, from the bird diversity point of view, comparatively few, following important references were short listed for various districts of the state.

Osmaston (1921) was perhaps amongst the first few to provide notes on the nidification and habits of 90 bird species from the then 'British Garhwal' area of Uttarakhand. Subsequently, Briggs (1931) observed 95 bird species in the neighbourhood of Ranikhet in district Almora and Naoroji and D'Silva (1997) sighted Red Kite at Ranikhet, Almora. Recently, Mohan (2007) listed 100 bird species from the popular Pindar-Kafni Glacier Trek in Bageshwar district. There are several bird lists for the globally well-known Nanda Devi area in district Chamoli by Lavkumar 1956b (132 species), Reed 1979 (87), Tak and Kumar 1987 (77), Sankaran (1993 & 1994) 110, Tak (1997) 170, Sathyakumar (2003) 49, Singh 2005a (80); and only one bird list of 105 species from Chenab valley also in Chamoli district by Bhattacharya and Sathyakumar (2007). More than ten lists are there from various localities of the district Dehra Dun and these are by Osmaston 1935 (396 species), Wright 1957 (224), George 1957a & b, 1962a & b (216), Bhatnagar and Mishra 1971, 1972a & b (231), Singh 1991, 1999, 2000 & 2001 (520), Mohan 1993 & 1996 (266), Tak 1995 (227), Singh and Singh 1995 (94), Tak and Sati 2003, 2007 and Tak *et al.* 1998 (208). From the seven hill of district Naini Tal, Hudson 1930 provided a list of 124 species of birds, from treks around Naini Tal, Ahmed 1977 listed (14 species), and Verzec *et al.* 2005 recorded for the first time three birds (1 male, 2 females) of Mandrin Duck (*Aix galericulata*) at Sat Tal in Naini Tal. Tak 1995,

based on a three-years (1976-79) field study carried out in western half area of the Corbett Tiger Reserve falling in Pauri district, mentioned 384 species of birds from district Pauri. For district Pithoragarh, Tak and Sati 2006 made available a list of 212 bird species. The avian diversity of the district Rudraprayag has been studied by Green 1986 (146 species) and by Myers and Singh 2006 (250 species). Some information on the birds of Tehri district is also there and is by Whympers 1907 (07 species), Mathews 1918 and Searight 1926 (11 species by each), Lamprey 1954 (21), Tak 1993 unpublished report (73), and Adhikari *et al.* 2005 (67). From Govind Pashu Vihar in district Uttarkashi Tak *et al.* 2004 gave a list of 114 bird species while Singh 2005b provided 46 bird species from Harkidun trek also in Govind Pashu Vihar. The precise information on bird diversity of the remaining three districts, viz., Champawat, Haridwar and Udham Singh Nagar is still awaited.

Due to the lack of locality wise observations from Corbett Tiger Reserve and Rajaji National Park both these areas have been treated independently of the districts in the present script. Some important bird lists for the Corbett Park and Reserve area are by Lamba and Bhatnagar 1977-79 (496 species), Lamba undated (546), Khatri 2004 (512), internet list (www.campforktailcreek.com) (576), and Tak and Sati 2008 (685 species). Narang 1994 first provided a list of 168 bird species from Rajaji National Park which was followed by Pandey *et al.* 1994 (312), Daniel 1994 (11), Kumar and Bhatt 2000 (22) and Bhatt and Sharma 2000 (67 species).

In addition, there are some anecdotal articles dealing with the occasional and rare occurrence, new records, new additions, etc. of the avifauna of the state which have been published from time to time by Lavkumar (1956a), Lamba and Narang (1977), Mohan and Chellam (1991), Mohan *et al.* (1992), Naoroji (1994), Ghandi (1995), Barua (2000), Singh (2006), Vijay and Kumar (2006), and Vijay and Bhutia (2008).

Basically, this chapter is an amalgamation of the information retrieved from three main sources: i) published literature in the form of various research papers and books; ii) collection records available with the Zoological Survey of India, Dehra Dun; and iii) the field data gathered by the authors during a number of faunistic surveys of Uttarakhand, particularly from April 2002 to March 2006 (including independent faunistic surveys of the Corbett Tiger Reserve 2002-05; the Jhilmil Jheel

Conservation Reserve and Bhimgoda Barrage 2004-06).

The present chapter on Aves is divisible in to two parts : (i) Systematic List (ii) Systematic Account. The nomenclature followed is after Manakadan & Pittie (2001).

The systematic list incorporates almost all the species reported from Uttarakhand by a large number of field workers from the year 1921 to 2008. While the systematic account for each species incorporates parameters: the serial number of the species followed by the *HBI* number in parenthesis; scientific name; common name in English; first reference; collection records (wherever available); diagnostics; habitat; distribution within the state of Uttarakhand only; status; and remarks, wherever necessary. These accounts are primarily based on the information available in books by Ali & Ripley (1968-74), Grimmett *et al.* (1998), Kazmierczak and Perlo (2000), Grewal *et al.* (2002). The information on conservation status is based on the recent publications by Jhunjhunwala *et al.* (2001), Bombay Natural History Society (2002), Islam and Rahmani (2004), and IUCN (2007).

Except Tak 1995 and Mohan and Sinha 2003 (who reported 528 species and subspecies and 623 species respectively), there is no comprehensive bird checklist for the state of Uttarakhand. Therefore, it was decided to compile the above mentioned published information along with the authors' own field observations made during the course of faunistic surveys in various districts of Uttarakhand from April 2002 to March 2006 to meet up the mandate of the Zoological Survey of India under its 'Fauna of State Series'

The present chapter deals with a total 743 species of birds recorded from the state. This constitutes more than 55% of the known bird diversity of the Indian subcontinent (1342 species). These 743 species belong to 311 genera, 75 families and 18 orders (Table 1). Of the 1342 bird species known from the Indian Subcontinent, 512 have been reported from the state of Jammu & Kashmir, 580 from Himachal Pradesh, 671 from Uttaranchal, 494 from Punjab, 522 from Haryana, 750 from Assam and so on (www.envisbhnhs.org). The present data on 743 bird species along with the earlier findings indicate that the state of Uttarakhand (previously Uttaranchal) support the second highest number of bird species after Assam (750).

Table 1. Orderwise Avian Diversity of Uttarakhand

Sl. No.	Orders	Family (ies)	Family nos.	Subfamily	Genera	Species
1	PODICIPEDIFORMES	1	1		2	4
2	PELECANIFORMES	2 to 4	3		3	6
3	CICONIIFORMES	5 to 8	4		21	29
4	ANSERIFORMES	9	1		14	30
5	FALCONIFORMES	10 to 12	3		25	59
6	GALLIFORMES	13 to 14	2		17	25
7	GRUIFORMES	15 to 17	3		11	17
8	CHARADRIIFORMES	18 to 27	10		26	56
9	COLUMBIFORMES	28 to 29	2		7	20
10	PSITTACIFORMES	30	1		1	5
11	CUCULIFORMES	31	1		9	18
12	STRIGIFORMES	32 to 33	2		9	20
13	CAPRIMULGIFORMES	34	1		1	5
14	APODIFORMES	35 to 36	2		7	10
15	TROGONIFORMES	37	1		1	1
16	CORACIIFORMES	38 to 42	5		13	19
17	PCICIFORMES	43 to 45	3		11	30
18	PASSERIFORMES	46 to 75	30	9	133	389
Total : 18			75	9	311	743
* (21)		* (88)	* (11)	* (423)	* (1342)	

Note:

* Avian diversity in the Indian subcontinent is given in paranthesis (Ali and Ripley 1987)

The family-wise analysis indicates that family Muscicapidae, the most crowded and the most diverse family of the passerine birds, dominates the scene with 185 species (Turdinae 59, Timaliinae 37, Sylviinae 61, Muscicapinae 21, Rhipidurinae 3, Monarchinae & Panurinae 2 each), followed by Anatidae (30), Fringillidae (29), Scolopacidae & Picidae (23 each), Phasianidae (22), Columbidae (19), Cuculidae & Tytonidae (18 each), Ardeidae & Motacillidae (15 each), and so on (Table 2).

Table 2. Avian Diversity of Uttarakhand : An Order-wise and Family-wise Analysis

Sl. No.	Orders	No. of species	Sl.No.	Families	No. of species	No. of species
1	PODICIPEDIFORMES	4	1	Podicipedidae	4	
2	PELECANIFORMES	6	2	Pelecanidae	2	
			3	Phalacrocoracidae	3	
			4	Anhingidae	1	
3	CICONIIFORMES	29	5	Ardeidae	15	
			6	Ciconiidae	8	
			7	Threskiornithidae	4	
			8	Phoenicopteridae	2	
4	ANSERIFORMES	30	9	Anatidae	30	
5	FALCONIFORMES	59	10	Accipitridae	47	
			11	Pandionidae	1	
			12	Falconidae	11	

Sl. No.	Orders	No. of species	Sl.No.	Families	No. of species	No. of species
6	GALIFORMES	25	13	Phasianidae	22	
			14	Turnicidae	3	
7	GRUIFORMES	17	15	Gruidae	4	
			16	Rallidae	12	
			17	Otididae	1	
8	CHARADRIIFORMES	56	18	Jacaniidae	2	
			19	Rostratulidae	1	
			20	Haematopodidae	1	
			21	Charadriidae	12	
			22	Scolopacidae	23	
			23	Recurvirostridae	3	
			24	Burhinidae	2	
			25	Glareolidae	1	
			26	Laridae	10	
			27	Rynchopidae	1	
9	COLUMBIFORMES	20	28	Pteroclididae	1	
			29	Columbidae	19	
10	PSITTACIFORMES	5	30	Psittacidae	5	
11	CUCULIFORMES	18	31	Cuculidae	18	
12	STRIGIFORMES	20	32	Tytonidae	2	
			33	Strigidae	18	
13	CAPRIMULGIFORMES	5	34	Caprimulgidae	5	
14	APODIFORMES	10	35	Apodidae	9	
			36	Hemiprocnidae	1	
15	TROGONIFORMES	1	37	Trogonidae	1	
16	CORACIIFORMES	19	38	Alcedinidae	6	
			39	Meropidae	5	
			40	Coraciidae	3	
			41	Upupidae	1	
			42	Bucerotidae	4	
17	PCICIFORMES	30	43	Capitonidae	6	
			44	Indicatoridae	1	
			45	Picidae	23	
18	PASSERIFORMES	389	46	Eurylaimidae	1	
			47	Pittidae	2	
			48	Alaudidae	10	
			49	Hirundinidae	12	
			50	Motacillidae	15	
			51	Campephagidae	12	
			52	Pycnonotidae	9	
			53	Irenidae	3	
			54	Laniidae	8	
			55	Cinclidae	2	

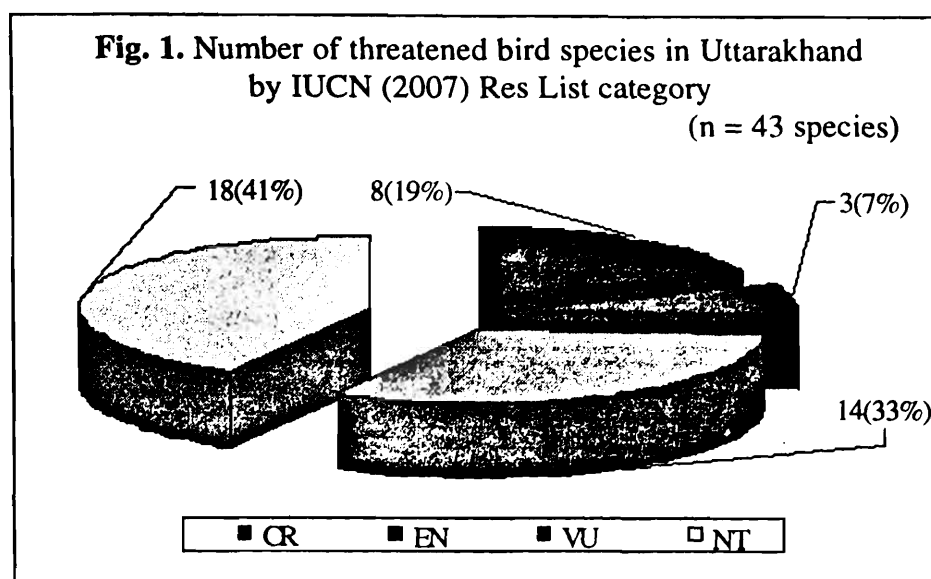
Sl. No.	Orders	No. of species	Sl.No.	Families	No. of species	No. of species
			56	Troglodytidae	1	
			57	Prunellidae	6	
			58	Muscicapidae	185	
				Turdinae		59
				Timaliinae		37
				Panurinae		2
				Sylviinae		61
				Muscicapinae		21
				Monarchinae		2
				Rhipidurinae		3
			59	Aegithalidae	2	
			60	Remizidae	1	
			61	Paridae	10	
			62	Sittidae	5	
			63	Certhiidae	3	
			64	Dicaeidae	4	
			65	Nectariniidae	6	
			66	Zosteropidae	1	
			67	Emberizinae	13	
			68	Fringillidae	29	
			69	Estrildidae	5	
			70	Ploceidae	8	
				Passerinae		4
				Ploceinae		4
			71	Sturnidae	10	
			72	Oriolidae	3	
			73	Dicruridae	8	
			74	Artamidae	1	
			75	Corvidae	14	
		743			743	

The following 43 species are listed under various Threat categories by IUCN 2007 (Table 3; Fig. 1; & Sytematic List).

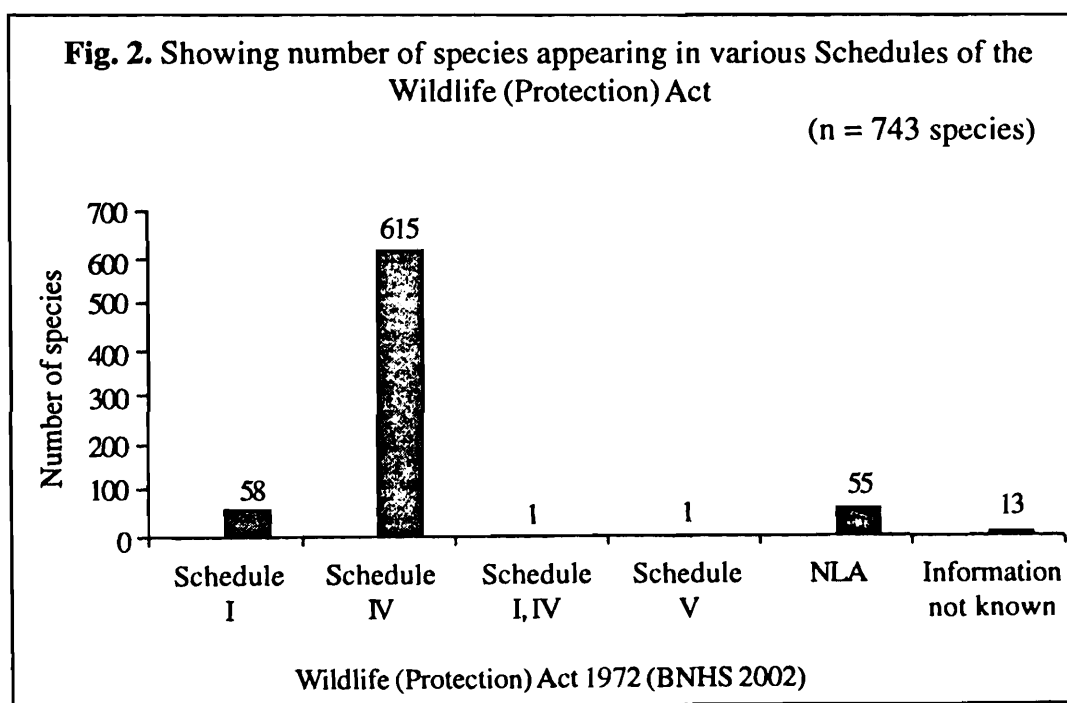
Table 3. Threat categories of 43 species of birds reported from Uttarakhand

Sl. No.	Common name	Scientific name
	Critical (CR)	
1	Indian White-backed Vulture (185)	<i>Gyps bengalensis</i> (Gmelin, 1788)
2	Long-billed Vulture (182)	<i>Gyps indicus</i> (Scopoli, 1786)
3	Slender-billed Vulture (184)	<i>Gyps tenuirostris</i> (G.R. Gray, 1844)
4	Red-headed Vulture (178)	<i>Sarcogyps calvus</i> (Scopoli, 1786)
5	Himalayan Quail (280)	<i>Ophrysia superciliosa</i> (J.E. Gray, 1846)
6	Siberian Crane (325)	<i>Grus leucogeranus</i> Pallas, 1773

Sl. No.	Common name	Scientific name
	Critical (CR)	
7	Bengal Florican (356)	<i>Houbaropsis bengalensis</i> (Gmelin, 1789)
8	Sociable Lapwing (363)	<i>Vanellus gregarius</i> (Pallas, 1771)
	Endangered (EN)	
9	Greater Adjutant-Stork (67)	<i>Leptoptilos dubius</i> (Gmelin, 1789)
10	Egyptian Vulture (186-187)	<i>Neophron percnopterus</i> (Linnaeus, 1758)
11	Spotted Greenshank (399)	<i>Tringa guttifer</i> (Nordmann, 1835)
	Vulnerable (VU)	
12	Lesser Adjutant-Stork (68)	<i>Leptoptilos javanicus</i> (Horsfield, 1821)
13	Marbled Teal (92)	<i>Marmaronetta angustirostris</i> (Ménétrières, 1832)
14	Pallas's Fish-Eagle (174)	<i>Haliaeetus leucoryphus</i> (Pallas, 1771)
15	Greater Spotted Eagle (170)	<i>Aquila clanga</i> Pallas, 1811
16	Eastern Imperial Eagle (167)	<i>Aquila heliaca</i> Savigny, 1809
17	Cheer Pheasant (307)	<i>Catreus wallichii</i> (Hardwicke, 1827)
18	Sarus Crane (323-324)	<i>Grus antigone</i> (Linnaeus, 1758)
19	Wood Snipe (405)	<i>Gallinago nemoricola</i> Hodgson, 1836
20	Indian Skimmer (484)	<i>Rynchops albicollis</i> Swainson, 1838
21	Rufous-necked Hornbill (771)	<i>Aceros nipalensis</i> (Hodgson, 1829)
22	Hodgson's Bushchat (1694)	<i>Saxicola insignis</i> Gray, 1846
23	Hodgson's Prinia (1507)	<i>Prinia cinereocapilla</i> (Moore, 1854)
24	Bristled Grass-Warbler (1547)	<i>Chaetornis striatus</i> (Jerdon, 1841)
25	Finn's Weaver (1960-1960a)	<i>Ploceus megarhynchus</i> Hume, 1869
	Near Threatened (NT)	
26	Spot-billed Pelican (21)	<i>Pelecanus philippensis</i> Gmelin, 1789
27	Darter (29)	<i>Anhinga melanogaster</i> Pennant, 1769
28	Painted Stork (60)	<i>Mycteria leucocephala</i> (Pennant, 1769)
29	Black-necked Stork (66)	<i>Ephippiorhynchus asiaticus</i> (Latham, 1790)
30	Lesser Flamingo (74)	<i>Phoenicopterus minor</i> (Geoffroy, 1798)
31	Falcated Duck (102)	<i>Anas falcata</i> Georgi, 1775
32	Ferruginous Pochard (109)	<i>Aythya nyroca</i> (Guldenstadt, 1770)
33	Lesser Grey-headed Fish-Eagle (177)	<i>Ichthyophaga humilis</i> (S. Muller & Schlegel, 1841)
34	Greater Grey-headed Fish-Eagle (175-176)	<i>Ichthyophaga ichthyaetus</i> (Horsfield, 1821)
35	Cinereous Vulture (179)	<i>Aegypius monachus</i> (Linnaeus, 1766)
36	Pallid Harrier (190)	<i>Circus macrourus</i> (S.G. Gmelin, 1770)
37	Laggar (208)	<i>Falco jugger</i> J.E. Gray, 1834
38	Black-tailed Godwit (389-390)	<i>Limosa limosa</i> (Linnaeus, 1758)
39	European Roller (754)	<i>Coracias garrulus</i> Linnaeus, 1758
40	Great Pied Hornbill (776)	<i>Buceros bicornis</i> Linnaeus, 1758
41	Yellow-rumped Honeyguide (793-795)	<i>Indicator xanthonotus</i> Blyth, 1842
42	Long-billed Bush-Warbler (1491)	<i>Bradypterus major</i> (Brooks, 1871)
43	Tytler's Leaf-Warbler (1578)	<i>Phylloscopus tytleri</i> Brooks, 1872



Of the 743 species, 58 species are listed under Schedule I of the Indian Wildlife (Protection) Act 1972 (amended up to 2003), 615 under Schedule IV, one under Schedule I and IV, and one under Schedule V, while 55 species do not appear in any of these Schedules- NLA (Not Listed in the Act) (Bombay Natural History Society 2002), whereas information on the remaining 13 species is not available (Fig. 2 & Sytematic List).



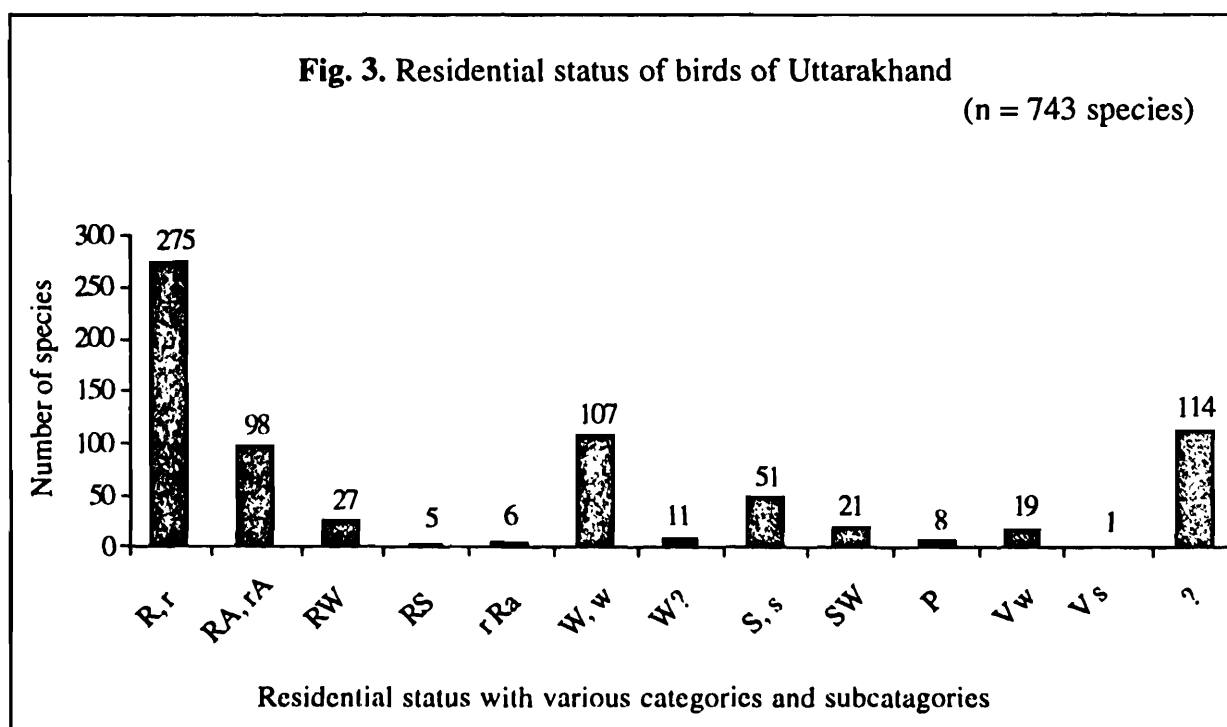
Only eight species, viz., Himalayan Quail (*Ophrysia superciliosa*), Western Tragopan (*Tragopan melanocephalus*), Cheer Pheasant (*Catreus wallichii*), Brooks's Leaf-Warbler (*Phylloscopus subviridis*), Tytler's Leaf-Warbler (*Phylloscopus tyleri*), White-throated Tit (*Aegithalos niveogularis*), Spectacled Finch (*Callacanthia burtoni*), Orange Bullfinch (*Pyrrhula aurantiaca*) are Restricted Range Species- RRS (4) and occur in endemic area number 4 i.e. Western Himalayas and one species, viz., Black-browed Leaf-Warbler (*Phylloscopus cantator*) is RRS (5) and occur in Eastern Himalayas (Jhunjhunwala *et al.* 2001) (Sytematic List).

A total of 213 species are categorized as the Biome Restricted Species (BRS). Of these, 33 species are from the Eurasian High Montane (Alpine and Tibetan)- Biome (05); 84 from the Sino-

Himalayan Temperate Forest-. Biome (07); 40 from the Sino-Himalayan Subtropical Forest- Biome (08); five from the Indo-Chinese Tropical Moist Forest- Biome (09); two from the Indian Peninsula Tropical Moist Forest- Biome (10); 42 from Indo-Malayan Tropical Dry Zone- Biome (11); six from the Indo-Gangetic Plains- Biome (12); and one from Saharo-Sindian Desert- Biome (13) (Jhunjhunwala *et al.* 2001) (Sytematic List).

The analysis of various categories and subcategories of residential status of these 743 species is summarised below (Fig. 3 & Sytematic List):

Resident (R = widespread, r = sparse local)	275
Resident with altitudinal movements (RA, rA)	98
Resident with winter influx (RW)	27
Resident with summer influx (RS)	5
Resident but rare (r Ra)	6
Summer visitor (S = Widespread, s = sparse local)	51
Summer as well as winter visitors (SW)	21
Winter visitor (W = widespread, w = sparse local)	107
Winter visitor but status not known for the state (W?)	11
Passage migrant (p = sparse local)	08
Vagrant winter visitor (V w)	19
Vagrant summer visitor (V s)	1
Status not known (?)	114
Total	743



SYSTEMATIC LIST

Sl. No.	Systematic list		IUCN 2007	BNHS 2002	Jhunjhunwala <i>et al.</i> 2001	Residential status
	Common Name	Scientific Name				
		I Order PODICIPEDIFORMES				
	Grebes	1 Family PODICIPEDIDAE				
1	* Little Grebe (5)	<i>Tachybaptus ruficollis</i> (Pallas, 1764)		IV		R
2	* Great Crested Grebe (3)	<i>Podiceps cristatus</i> (Linnaeus, 1758)		IV		w
3	Horned Grebe (N)	<i>Podiceps auritus</i> (Linnaeus, 1758)		IV		w
4	Black-necked Grebe (4)	<i>Podiceps nigricollis</i> Brehm, 1831		IV		w
		II Order PELECANIFORMES				
	Pelicans	2 Family PELECANIDAE				
5	Great White Pelican (20)	<i>Pelecanus onocrotalus</i> Linnaeus, 1758		IV		?
6	Spot-billed Pelican (21)	<i>Pelecanus philippensis</i> Gmelin, 1789	NT	IV		?
	Cormorants/Shags	3 Family PHALACROCORACIDAE				
7	* Little Cormorant (28)	<i>Phalacrocorax niger</i> (Vieillot, 1817)		IV		R
8	* Indian Shag (27)	<i>Phalacrocorax fuscicollis</i> Stephens, 1826		IV		R
9	* Great Cormorant (26)	<i>Phalacrocorax carbo</i> (Linnaeus, 1758)		IV		RW
	Darters	4 Family ANHINGIDAE				
10	Darter (29)	<i>Anhinga melanogaster</i> Pennant, 1769	NT	IV		R
		III Order CICONIIFORMES				
	Hérons, Egrets & Bitterns	5 Family ARDEIDAE				
11	* Little Egret (49)	<i>Egretta garzetta</i> (Linnaeus, 1766)		IV		R
12	Western Reef-Egret (50)	<i>Egretta gularis</i> (Bosc, 1792)		IV		?
13	* Grey Heron (35-36)	<i>Ardea cinerea</i> Linnaeus, 1758		IV		W
14	* Purple Heron (37-37a)	<i>Ardea purpurea</i> Linnaeus, 1766		IV		R
15	* Large Egret (45-46)	<i>Casmerodius albus</i> (Linnaeus, 1758)		IV		R

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	Common Name	Scientific Name				
16	* Median Egret (47, 48)	<i>Mesophoyx intermedia</i> (Wagler, 1829)		IV		R
17	* Cattle Egret (44)	<i>Bubulcus ibis</i> (Linnaeus, 1758)		IV		R
18	* Indian Pond-Heron (42-42a)	<i>Ardeola grayii</i> (Sykes, 1832)		IV		R
19	* Little Green Heron (38-41)	<i>Butorides striatus</i> (Linnaeus, 1758)		IV		R
20	Black-crowned Night-Heron (52)	<i>Nycticorax nycticorax</i> (Linnaeus, 1758)		IV		R
21	Little Bittern (55)	<i>Ixobrychus minutus</i> (Linnaeus, 1766)		IV		w
22	* Yellow Bittern (57)	<i>Ixobrychus sinensis</i> (Gmelin, 1789)		IV		?
23	* Chestnut Bittern (56)	<i>Ixobrychus cinnamomeus</i> (Gmelin, 1789)		IV		w
24	Black Bittern (58)	<i>Dupetor flavicollis</i> (Latham, 1790)		IV		w
25	Great Bittern (59)	<i>Botaurus stellaris</i> (Linnaeus, 1758)		IV		?
	Storks	6 Family CICONIIDAE				
26	* Painted Stork (60)	<i>Mycteria leucocephala</i> (Pennant, 1769)	NT	IV		s
27	Asian Openbill-Stork (61)	<i>Anastomus oscitans</i> (Boddaert, 1783)		IV		r
28	Black Stork (65)	<i>Ciconia nigra</i> (Linnaeus, 1758)		IV		w
29	* White-necked Stork (62)	<i>Ciconia episcopus</i> (Boddaert, 1783)		IV		r
30	European White Stork (63)	<i>Ciconia ciconia</i> (Linnaeus, 1758)		I, IV		?
31	* Black-necked Stork (66)	<i>Ephippiorhynchus asiaticus</i> (Latham, 1790)	NT	IV		r
32	Lesser Adjutant-Stork (68)	<i>Leptoptilos javanicus</i> (Horsfield, 1821)	VU	IV		?
33	Greater Adjutant-Stork (67)	<i>Leptoptilos dubius</i> (Gmelin, 1789)	EN	IV		?
	Ibises & Spoonbills	7 Family THRESKIORNITHIDAE				
34	Glossy Ibis (71)	<i>Plegadis falcinellus</i> (Linnaeus, 1766)		IV		?
35	* Oriental White Ibis (69)	<i>Threskiornis melanocephalus</i> (Latham, 1790)		IV		?
36	* Black Ibis (70)	<i>Pseudibis papillosa</i> (Temminck, 1824)		IV	BRS (11)	r
37	Eurasian Spoonbill (72)	<i>Platalea leucorodia</i> Linnaeus, 1758		I		?

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	Common Name	Scientific Name				
	Flamingos	8 Family PHOENICOPTERIDAE				
38	Greater Flamingo (73)	<i>Phoenicopterus ruber</i> Linnaeus, 1758	NT	IV		?
39	Lesser Flamingo (74)	<i>Phoenicopterus minor</i> (Geoffroy, 1798)		IV		?
		IV Order ANSERIFORMES				
	Swans, Geese & Ducks	9 Family ANATIDAE				
40	Large Whistling-Duck (89)	<i>Dendrocygna bicolor</i> (Vieillot, 1816)		I		?
41	Lesser Whistling-Duck (88)	<i>Dendrocygna javanica</i> (Horsfield, 1821)		IV		rs
42	Greater White-fronted Goose (79)	<i>Anser albifrons</i> (Scopoli, 1769)		IV		V w
43	Lesser White-fronted Goose (80)	<i>Anser erythropus</i> (Linnaeus, 1758)		IV		V w
44	* Greylag Goose (81)	<i>Anser anser</i> (Linnaeus, 1758)		IV		W
45	* Bar-headed Goose (82)	<i>Anser indicus</i> (Latham, 1790)		IV		w
46	* Brahminy Shelduck (90)	<i>Tadorna ferruginea</i> (Pallas, 1764)		IV		W
47	Common Shelduck (91)	<i>Tadorna tadorna</i> (Linnaeus, 1758)		IV		V w
48	Comb Duck (115)	<i>Sarkidiornis melanotos</i> (Pennant, 1769)		IV		r
49	Cotton Teal (114)	<i>Nettapus coromandelianus</i> (Gmelin, 1789)		IV		r
50	Mandarin Duck (113)	<i>Aix galericulata</i> (Linnaeus, 1758)		IV		V w
51	* Gadwall (101)	<i>Anas strepera</i> Linnaeus, 1758		IV		W
52	Falcated Duck (102)	<i>Anas falcata</i> Georgi, 1775	NT	IV		V w
53	* Eurasian Wigeon (103)	<i>Anas penelope</i> Linnaeus, 1758		IV		W
54	* Mallard (100)	<i>Anas platyrhynchos</i> Linnaeus, 1758		IV		W
55	* Spot-billed Duck (97-99)	<i>Anas poecilorhyncha</i> J.R. Forester, 1781		IV		R
56	* Northern Shoveller (105)	<i>Anas clypeata</i> Linnaeus, 1758		IV		W
57	* Northern Pintail (93)	<i>Anas acuta</i> Linnaeus, 1758		IV		W
58	Garganey (104)	<i>Anas querquedula</i> Linnaeus, 1758		IV		W
59	* Common Teal (94)	<i>Anas crecca</i> Linnaeus, 1758		IV		W

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	Common Name	Scientific Name				
60	Marbled Teal (92)	<i>Marmaronetta angustirostris</i> (Ménétrières, 1832)	VU	IV		V w
61	* Red-crested Pochard (107)	<i>Rhodonessa rufina</i> (Pallas, 1773)		IV		w
62	* Common Pochard (108)	<i>Aythya ferina</i> (Linnaeus, 1758)		IV		W
63	Ferruginous Pochard (109)	<i>Aythya nyroca</i> (Guldenstadt, 1770)	NT	IV		w
64	* Tufted Pochard (111)	<i>Aythya fuligula</i> (Linnaeus, 1758)		IV		W
65	Greater Scaup (112)	<i>Aythya marila</i> (Linnaeus, 1761)		IV		V w
66	Long-tailed Duck (117)	<i>Clangula hyemalis</i> (Linnaeus, 1758)		IV		V w
67	Common Goldeneye (118)	<i>Bucephala clangula</i> (Linnaeus, 1758)		IV		V w
68	Smew (119)	<i>Mergellus albellus</i> Linnaeus, 1758		IV		w?
69	* Common Merganser (120-121)	<i>Mergus merganser</i> Linnaeus, 1758		IV		W
		V Order FALCONIFORMES				
	Hawks, Eagles, Vultures, Kites, etc.	10 Family ACCIPITRIDAE				
70	Black Baza (127-128a)	<i>Aviceda leuphotes</i> (Dumont, 1820)		I		?
71	* Oriental Honey-Buzzard (129-130)	<i>Pernis ptilorhynchus</i> (Temminck, 1821)		I		R
72	* Black-shouldered Kite (124)	<i>Elanus caeruleus</i> (Desfontaines, 1789)		I		R
73	Red Kite (131)	<i>Milvus milvus</i> Linnaeus, 1758		I		V w
74	* Black Kite (132-134)	<i>Milvus migrans</i> (Boddaert, 1783)		I		R
75	* Brahminy Kite (135)	<i>Haliastur indus</i> (Boddaert, 1783)		I		r
76	* Pallas's Fish-Eagle (174)	<i>Haliaeetus leucoryphus</i> (Pallas, 1771)	VU	I		R
77	White-tailed Sea-Eagle (172a)	<i>Haliaeetus albicilla</i> Linnaeus, 1758		I		w
78	* Lesser Grey-headed Fish-Eagle (177)	<i>Ichthyophaga humilis</i> (S. Muller & Schlegel, 1841)	NT	I		rA
79	* Greater Grey-headed Fish-Eagle (175-176)	<i>Ichthyophaga ichthyaetus</i> (Horsfield, 1821)	NT	I		r
80	Bearded Vulture (188)	<i>Gypaetus barbatus</i> (Linnaeus, 1758)		I		rA
81	* Egyptian Vulture (186-187)	<i>Neophron percnopterus</i> (Linnaeus, 1758)	EN	IV		R

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	Common Name	Scientific Name				
82	* Indian White-backed Vulture (185)	<i>Gyps bengalensis</i> (Gmelin, 1788)	CR	IV	BRS (11)	r
83	* Long-billed Vulture (182)	<i>Gyps indicus</i> (Scopoli, 1786)	CR	IV	BRS (11)	r
84	Slender-billed Vulture (184)	<i>Gyps tenuirostris</i> (G.R. Gray, 1844)	CR	IV		r
85	* Himalayan Griffon (181)	<i>Gyps himalayensis</i> Hume, 1869		IV	BRS (05)	rA
86	Eurasian Griffon (180, 183)	<i>Gyps fulvus</i> (Hablizl, 1783)		IV		w
87	* Cinereous Vulture (179)	<i>Aegypius monachus</i> (Linnaeus, 1766)	NT	IV		w
88	* Red-headed Vulture (178)	<i>Sarcogyps calvus</i> (Scopoli, 1786)	CR	IV	BRS (11)	r
89	* Short-toed Snake-Eagle (195)	<i>Circaetus gallicus</i> (Gmelin, 1788)		0		r
90	* Crested Serpent-Eagle (196-200)	<i>Spilornis cheela</i> (Latham, 1790)		I		R
91	* Western Marsh-Harrier (193)	<i>Circus aeruginosus</i> (Linnaeus, 1758)		I		W
92	Eastern Marsh-Harrier (194)	<i>Circus spilonotus</i> Kaup, 1847		I		?
93	Hen Harrier (189)	<i>Circus cyaneus</i> (Linnaeus, 1766)		I		w
94	Pallid Harrier (190)	<i>Circus macrourus</i> (S.G. Gmelin, 1770)	NT	I		w
95	Pied Harrier (192)	<i>Circus melanoleucos</i> (Pennant, 1769)		I		w?
96	Montagu's Harrier (191)	<i>Circus pygargus</i> (Linnaeus, 1758)		I		w?
97	Crested Goshawk (144-146)	<i>Accipiter trivirgatus</i> (Temminck, 1824)		I		?
98	* Shikra (137-140)	<i>Accipiter badius</i> (Gmelin, 1788)		I		R
99	Besra Sparrowhawk (149-151)	<i>Accipiter virgatus</i> (Temminck, 1822)		I		rA
100	* Eurasian Sparrowhawk (147-148)	<i>Accipiter nisus</i> (Linnaeus, 1758)		I		rA
101	* Northern Goshawk (136)	<i>Accipiter gentilis</i> (Linnaeus, 1758)		I		?
102	* White-eyed Buzzard (157)	<i>Butastur teesa</i> (Franklin, 1832)		I	BRS (11)	R
103	* Common Buzzard (155-156)	<i>Buteo buteo</i> Linnaeus, 1758		I		w
104	Long-legged Buzzard (153)	<i>Buteo rufinus</i> (Cretzschmar, 1827)		I		w
105	Upland Buzzard (154)	<i>Buteo hemilasius</i> Temminck & Schlegel, 1845		I		w?
106	* Black Eagle (172)	<i>Ictinaetus malayensis</i> (Temminck, 1822)		I		r

Sl. No.	Systematic list		IUCN 2007	BNHS 2002	Jhunjhunwala et al. 2001	Residential status
	Common Name	Scientific Name				
107	Lesser Spotted Eagle (171)	<i>Aquila pomarina</i> Brehm, 1831	VU	I	BRS (11)	?
108	* Greater Spotted Eagle (170)	<i>Aquila clanga</i> Pallas, 1811		I		V W
109	* Tawny Eagle (168)	<i>Aquila rapax</i> (Temminck, 1828)		I		R
110	* Steppe Eagle (169)	<i>Aquila nipalensis</i> Hodgson, 1833	VU	I		W
111	Eastern Imperial Eagle (167)	<i>Aquila heliaca</i> Savigny, 1809		I		V w
112	Golden Eagle (166)	<i>Aquila chrysaetos</i> (Linnaeus, 1758)		I		r
113	* Bonelli's Eagle (163)	<i>Hieraaetus fasciatus</i> (Vieillot, 1822)		I		rw
114	* Booted Eagle (164)	<i>Hieraaetus pennatus</i> (Gmelin, 1788)		I		rw
115	* Rufous-bellied Eagle (165)	<i>Hieraaetus kienerii</i> (E. Geoffroy, 1835)		I		r
116	* Changeable Hawk-Eagle (160-162)	<i>Spizaetus cirrhatus</i> (Gmelin, 1788)		I		r
117	Mountain Hawk-Eagle (158-159)	<i>Spizaetus nipalensis</i> (Hodgson, 1836)		I		rA
	Osprey	11 Family PANDIONIDAE				
118	* Osprey (203)	<i>Pandion haliaetus</i> (Linnaeus, 1758)		I		W
	Falcons	12 Family FALCONIDAE				
119	Collared Falconet (204)	<i>Microhierax caerulescens</i> (Linnaeus, 1758)		IV		r
120	* Common Kestrel (222-224)	<i>Falco tinnunculus</i> Linnaeus, 1758		IV		RW
121	Red-headed Falcon (219)	<i>Falco chicquera</i> Daudin, 1800		I		r
122	Amur Falcon (220)	<i>Falco amurensis</i> Radde, 1863		IV		P
123	Sooty Falcon (216)	<i>Falco concolor</i> Temminck, 1825				?
124	Merlin (217-218)	<i>Falco columbarius</i> Linnaeus, 1758		IV		w?
125	Eurasian Hobby (212-213)	<i>Falco subbuteo</i> Linnaeus, 1758		IV		p
126	Oriental Hobby (214-215)	<i>Falco severus</i> Horsfield, 1821		IV		r
127	Laggar (208)	<i>Falco jugger</i> J.E. Gray, 1834	NT	I		?

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	Common Name	Scientific Name				
128	Peregrine Falcon (209-211)	<i>Falco peregrinus</i> Tunstall, 1771		I		rw
	Pheasants, Partridges & Quails	VI Order GALIFORMES				
		13 Family PHASIANIDAE				
129	Snow Partridge (227)	<i>Lerwa lerwa</i> (Hodgson, 1833)		IV	BRS (05)	r
130	Tibetan Snowcock (229-231)	<i>Tetraogallus tibetanus</i> Gould, 1854		I	BRS (05)	?
131	Himalayan Snowcock (232)	<i>Tetraogallus himalayensis</i> G.R. Gray, 1843		IV	BRS (05)	r
132	* Chukor (234-236)	<i>Alectoris chukar</i> (J.E. Gray, 1830)		IV		R
133	* Black Francolin (237-239)	<i>Francolinus francolinus</i> (Linnaeus, 1766)		IV		R
134	* Grey Francolin (244-246)	<i>Francolinus pondicerianus</i> (Gmelin, 1789)		IV		R
135	* Common Quail (250)	<i>Coturnix coturnix</i> (Linnaeus, 1758)		IV		rw
136	Rain Quail (252)	<i>Coturnix coromandelica</i> (Gmelin, 1789)		IV	BRS (11)	r
137	Blue-breasted Quail (253-254)	<i>Coturnix chinensis</i> (Linnaeus, 1766)		IV		r
138	* Jungle Bush-Quail (255-258)	<i>Perdicula asiatica</i> (Latham, 1790)		IV	BRS (11)	?
139	Common Hill-Partridge (266-269)	<i>Arborophila torqueola</i> (Valenciennes, 1826)		IV	BRS (07)	r
140	Rufous-throated Hill-Partridge (270-271)	<i>Arborophila rufogularis</i> (Blyth, 1849)		IV	BRS (08)	r
141	Red Spurfowl (275-277)	<i>Galloperdix spadicea</i> (Gmelin, 1789)		0		?
142	Himalayan Quail (280)	<i>Ophrysia superciliosa</i> (J.E. Gray, 1846)	CR	I	RRS (4)	?
143	Western Tragopan (285)	<i>Tragopan melanocephalus</i> (J.E. Gray, 1829)		I	RRS (4)	r Ra
144	Satyr Tragopan (286)	<i>Tragopan satyra</i> (Linnaeus, 1758)		I	BRS (07)	r
145	Koklass Pheasant (303-306)	<i>Pucrasia macrolopha</i> (Lesson, 1829)		IV	BRS (07)	rA
146	* Impeyan Monal (290)	<i>Lophophorus impejanus</i> (Latham, 1790)		I	BRS (07)	rA
147	* Red Junglefowl (299-300)	<i>Gallus gallus</i> (Linnaeus, 1758)		IV		R
148	* Kaleej Pheasant (293-298)	<i>Lophura leucomelanos</i> (Latham, 1790)		IV		RA
149	* Cheer Pheasant (307)	<i>Catreus wallichii</i> (Hardwicke, 1827)	VU	I	RRS (4)	r Ra
150	* Indian Peafowl (311)	<i>Pavo cristatus</i> Linnaeus, 1758		I	BRS (11)	R

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	Common Name	Scientific Name				
	Buttonquails/Bustardquails	14 Family TURNICIDAE				
151	Small Buttonquail (313)	<i>Turnix sylvatica</i> (Desfontaines, 1789)		IV		s
152	Yellow-legged Buttonquail (314-315)	<i>Turnix tanki</i> Blyth, 1843		IV		s
153	Common Buttonquail (316-319)	<i>Turnix suscitator</i> (Gmelin, 1789)		IV		r
		VII Order GRUIFORMES				
	Cranes	15 Family GRUIDAE				
154	Siberian Crane (325)	<i>Grus leucogeranus</i> Pallas, 1773	CR	I		w?
155	Sarus Crane (323-324)	<i>Grus antigone</i> (Linnaeus, 1758)	VU	IV		?
156	* Demoiselle Crane (326)	<i>Grus virgo</i> (Linnaeus, 1758)		IV		w?
157	* Common Crane (320)	<i>Grus grus</i> (Linnaeus, 1758)		IV		w?
	Rails, Crakes, Moorhens & Coots	16 Family RALLIDAE				
158	Slaty-legged Crake (332)	<i>Rallina eurizonoides</i> (Lafresnaye, 1845)		IV		s
159	Blue-breasted Rail (329-330)	<i>Gallirallus striatus</i> Linnaeus, 1766		IV		?
160	Water Rail (327-328)	<i>Rallus aquaticus</i> Linnaeus, 1758		IV		w
161	Brown Crake (342)	<i>Amaurornis akool</i> (Sykes, 1832)		IV		r
162	* White-breasted Waterhen (343-345)	<i>Amaurornis phoenicurus</i> (Pennant, 1769)		IV		R
163	Baillon's Crake (337)	<i>Porzana pusilla</i> (Pallas, 1776)		IV		w
164	Spotted Crake (338)	<i>Porzana porzana</i> (Linnaeus, 1766)		IV		V w
165	Ruddy-breasted Crake (339-340)	<i>Porzana fusca</i> (Linnaeus, 1766)		IV		?
166	Watercock (346)	<i>Gallicrex cinerea</i> (Gmelin, 1789)		IV		?
167	Purple Moorhen (348-349)	<i>Porphyrio porphyrio</i> (Linnaeus, 1758)		IV		r
168	* Common Moorhen (347-347a)	<i>Gallinula chloropus</i> (Linnaeus, 1758)		IV		R
169	* Common Coot (350)	<i>Fulica atra</i> Linnaeus, 1758		IV		R
	Bustards	17 Family OTIDIDAE				
170	Bengal Florican (356)	<i>Houbaropsis bengalensis</i> (Gmelin, 1789)	CR	I	BRS (12)	r

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	Common Name	Scientific Name				
		VIII Order CHARADRIIFORMES				
	Jacanas	18 Family JACANIDAE				
171	Pheasant-tailed Jacana (358)	<i>Hydrophasianus chirurgus</i> (Scopoli, 1786)		IV		s
172	Bronze-winged Jacana (359)	<i>Metopidius indicus</i> (Latham, 1790)		IV		?
	Painted-Snipes	19 Family ROSTRATULIDAE				
173	Greater Painted-Snipe (429)	<i>Rostratula benghalensis</i> (Linnaeus, 1758)		NLA		?
	Oystercatcher	20 Family HAEMATOPODIDAE				
174	Eurasian Oystercatcher (360-361)	<i>Haematopus ostralegus</i> Linnaeus, 1758		IV		?
	Plovers, Dotterels & Lapwings	21 Family CHRADRIIDAE				
175	Long-billed Ringed Plover (383)	<i>Charadrius placidus</i> J.E. Gray, 1863		IV		?
176	Little Ringed Plover (379-380)	<i>Charadrius dubius</i> Scopoli, 1786		IV		RW
177	Kentish Plover (381-382)	<i>Charadrius alexandrinus</i> Linnaeus, 1758		IV		W
178	Lesser Sand Plover (384-384a)	<i>Charadrius mongolus</i> Pallas, 1776		IV		?
179	Greater Sand Plover (374)	<i>Charadrius leschenaultii</i> Lesson, 1826		IV		?
180	Northern Lapwing (364)	<i>Vanellus vanellus</i> (Linnaeus, 1758)		IV		w
181	* Yellow-wattled Lapwing (370)	<i>Vanellus malabaricus</i> (Boddaert, 1783)		IV	BRS (11)	r
182	* River Lapwing (369)	<i>Vanellus duvaucelii</i> (Lesson, 1826)		IV		R
183	Grey-headed Lapwing (365)	<i>Vanellus cinereus</i> (Linnaeus, 1758)		IV		w
184	* Red-wattled Lapwing (366-368)	<i>Vanellus indicus</i> (Boddaert, 1783)		IV		R
185	Sociable Lapwing (363)	<i>Vanellus gregarius</i> (Pallas, 1771)	CR	IV		V w
186	White-tailed Lapwing (362)	<i>Vanellus leucurus</i> (Lichtenstein, 1823)		IV		W
	Sandpipers, Stints, Plovers, etc.	22 Family SCOLOPACIDAE				
187	Eurasian Woodcock (411)	<i>Scolopax rusticola</i> Linnaeus, 1758		IV		s
188	Solitary Snipe (404)	<i>Gallinago solitaria</i> Hodgson, 1831		IV	BRS (05)	r
189	Wood Snipe (405)	<i>Gallinago nemoricola</i> Hodgson, 1836	VU	IV	BRS (05)	V s
190	Pintail Snipe (406)	<i>Gallinago stenura</i> (Bonaparte, 1830)		IV		W

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	Common Name	Scientific Name				
191	Great Snipe (408)	<i>Gallinago media</i> (Latham, 1787)	NT	IV		V w
192	Common Snipe (409)	<i>Gallinago gallinago</i> (Linnaeus, 1758)		IV		rw
193	Jack Snipe (410)	<i>Lymnocyrtus minimus</i> (Brünnich, 1764)		IV		?
194	Black-tailed Godwit (389-390)	<i>Limosa limosa</i> (Linnaeus, 1758)		IV		W
195	Eurasian Curlew (387-388)	<i>Numenius arquata</i> (Linnaeus, 1758)		IV		?
196	Spotted Redshank (392)	<i>Tringa erythropus</i> (Pallas, 1764)		IV		W
197	Common Redshank (393, 394)	<i>Tringa totanus</i> (Linnaeus, 1758)		IV		w
198	* Marsh Sandpiper (395)	<i>Tringa stagnatilis</i> (Bechstein, 1803)		IV		W
199	Common Greenshank (396)	<i>Tringa nebularia</i> (Gunner, 1767)		IV		W
200	Spotted Greenshank (399)	<i>Tringa guttifer</i> (Nordmann, 1835)		IV		?
201	Green Sandpiper (397)	<i>Tringa ochropus</i> Linnaeus, 1758	EN	IV		W
202	Wood Sandpiper (398)	<i>Tringa glareola</i> Linnaeus, 1758		IV		W
203	* Common Sandpiper (401)	<i>Actitis hypoleucos</i> Linnaeus, 1758		IV		s
204	Little Stint (416)	<i>Calidris minuta</i> (Leisler, 1812)		IV		W
205	Temminck's Stint (417)	<i>Calidris temminckii</i> (Leisler, 1812)		IV		W
206	Long-toed Stint (418)	<i>Calidris subminuta</i> (Middendorff, 1853)		IV		?
207	Dunlin (420, 421)	<i>Calidris alpina</i> (Linnaeus, 1758)		IV		w
208	Curlew Sandpiper (422)	<i>Calidris ferruginea</i> (Pontoppidan, 1813)		IV		?
209	Ruff (426)	<i>Philomachus pugnax</i> (Linnaeus, 1758)		IV		w
	Ibisbill, Avocets & Stilts	23 Family RECURVIROSTRIDAE				
210	* Ibisbill (433)	<i>Ibidorhyncha struthersii</i> Vigors, 1832		IV	BRS (05)	rA
211	* Black-winged Stilt (430-431)	<i>Himantopus himantopus</i> (Linnaeus, 1758)		IV		R
212	Pied Avocet (432)	<i>Recurvirostra avosetta</i> Linnaeus, 1758		IV		w
	Stone-Curlew & Stone-Plovers	24 Family BURHINIDAE				
213	Stone-Curlew (435-436)	<i>Burhinus oedicephalus</i> (Linnaeus, 1758)		IV		r

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	Common Name	Scientific Name				
214	* Great Stone-Plover (437)	<i>Esacus recurvirostris</i> (Cuvier, 1829)	VU	IV	BRS (05)	r
	Coursers & Pratincoles	25 Family GLAREOLIDAE				
215	Small Pratincole (444)	<i>Glareola lactea</i> Temminck, 1820		NLA		r
	Gulls, Terns & Noddies	26 Family LARIDAE				
216	Yellow-legged Gull (451)	<i>Larus cachinnans</i> Pallas, 1811		IV		w
217	Pallas's Gull (453)	<i>Larus ichthyaetus</i> Pallas, 1773		IV		w
218	* Brown-headed Gull (454)	<i>Larus brunnicephalus</i> Jerdon, 1840		IV		w
219	* Black-headed Gull (455)	<i>Larus ridibundus</i> Linnaeus, 1766		IV		w
220	Gull-billed Tern (460-461)	<i>Gelochelidon nilotica</i> (Gmelin, 1789)		IV		w
221	* River Tern (463)	<i>Sterna aurantia</i> J.E. Gray, 1831		IV		R
222	Common Tern (464-465)	<i>Sterna hirundo</i> Linnaeus, 1758		IV		?
223	Little Tern (475-476)	<i>Sterna albifrons</i> Pallas, 1764		IV		r
224	* Black-bellied Tern (470)	<i>Sterna acuticauda</i> J.E. Gray, 1831		IV		r
225	Whiskered Tern (458)	<i>Chlidonias hybridus</i> (Pallas, 1811)		IV		W
	Skimmers	27 Family RYNCHOPIDAE				
226	Indian Skimmer (484)	<i>Rynchops albicollis</i> Swainson, 1838		NLA	BRS (05)	r Ra
	Sandgrouse	IX Order COLUMBIFORMES				
		28 Family PTEROCLIDIDAE				
227	White-bellied Sandgrouse (486)	<i>Pterocles alchata</i> (Linnaeus, 1766)		IV		?
	Pigeons & Doves	29 Family COLUMBIDAE				
228	* Blue Rock Pigeon (516-517)	<i>Columba livia</i> Gmelin, 1789		0		R
229	* Hill Pigeon (515)	<i>Columba rupestris</i> Pallas, 1811		IV		RA
230	Snow Pigeon (513-514)	<i>Columba leuconota</i> Vigors, 1831		IV		RA
231	* Common Wood-Pigeon (519)	<i>Columba palumbus</i> Linnaeus, 1758		IV	BRS (07)	w
232	Speckled Wood-Pigeon (520)	<i>Columba hodgsonii</i> Vigors, 1832		IV		r

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	Common Name	Scientific Name				
233	Ashy Wood-Pigeon (523)	<i>Columba pulchricollis</i> Blyth, 1846		IV		RA
234	European Turtle-Dove (529)	<i>Streptopelia turtur</i> (Linnaeus, 1758)		IV		V w
235	* Oriental Turtle-Dove (530-533)	<i>Streptopelia orientalis</i> (Latham, 1790)		IV		RW
236	Little Brown Dove (541)	<i>Streptopelia senegalensis</i> (Linnaeus, 1766)		IV		R
237	* Spotted Dove (537-540)	<i>Streptopelia chinensis</i> (Scopoli, 1786)		IV		RA
238	* Red Collared-Dove (535-536)	<i>Streptopelia tranquebarica</i> (Hermann, 1804)		IV		R
239	* Eurasian Collared-Dove (534)	<i>Streptopelia decaocto</i> (Frisvaldszky, 1838)		IV		R
240	Barred Cuckoo-Dove (526)	<i>Macropygia unchall</i> (Wagler, 1827)		IV		?
241	* Emerald Dove (542-544a)	<i>Chalcophaps indica</i> (Linnaeus, 1758)		IV		R
242	Orange-breasted Green-Pigeon (501-502)	<i>Treron bicincta</i> (Jerdon, 1840)		IV		r
243	* Yellow-legged Green-Pigeon (503-505)	<i>Treron phoenicoptera</i> (Latham, 1790)		IV	BRS (11)	R
244	Pin-tailed Green-Pigeon (493)	<i>Treron apicauda</i> Blyth, 1846		IV		r
245	Wedge-tailed Green-Pigeon (494)	<i>Treron sphenura</i> (Vigors, 1832)		IV		r
246	Mountain Imperial-Pigeon (510-512)	<i>Ducula badia</i> (Raffles, 1822)		IV		?
	Parakeets & Hanging-Parrots	X Order PSITTACIFORMES 30 Family PSITTACIDAE				
247	* Alexandrine Parakeet (545-548)	<i>Psittacula eupatria</i> (Linnaeus, 1766)		IV		R
248	* Rose-ringed Parakeet (549-550)	<i>Psittacula krameri</i> (Scopoli, 1769)		IV		R
249	* Slaty-headed Parakeet (562)	<i>Psittacula himalayana</i> (Lesson, 1832)		IV	BRS (08)	R
250	* Plum-headed Parakeet (557-558)	<i>Psittacula cyanocephala</i> (Linnaeus, 1766)		IV	BRS (11)	R
251	* Red-breasted Parakeet (551-552)	<i>Psittacula alexandri</i> (Linnaeus, 1758)		IV		R
	Cuckoos, Malkohas & Coucals	XI Order CUCULIFORMES 31 Family CUCULIDAE				
252	* Pied Crested Cuckoo (570-571)	<i>Clamator jacobinus</i> (Boddaert, 1783)		IV		S
253	Red-winged Crested Cuckoo (569)	<i>Clamator coromandus</i> (Linnaeus, 1766)		IV		s

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	Common Name	Scientific Name				
254	Large Hawk-Cuckoo (572)	<i>Hierococcyx sparveriioides</i> (Vigors, 1832)		IV		S
255	* Brainfever Bird (573-574)	<i>Hierococcyx varius</i> (Vahl, 1797)		IV		R
256	* Indian Cuckoo (576)	<i>Cuculus micropterus</i> Gould, 1838		IV		R
257	* Common Cuckoo (577-579)	<i>Cuculus canorus</i> Linnaeus, 1758		IV		S
258	Oriental Cuckoo (580-580a)	<i>Cuculus saturatus</i> Blyth, 1843		IV		S
259	Lesser Cuckoo (581)	<i>Cuculus poliocephalus</i> Latham, 1790		IV		s
260	Banded Bay Cuckoo (582-583)	<i>Cacomantis sonneratii</i> (Latham, 1790)		IV		r
261	Indian Plaintive Cuckoo (584)	<i>Cacomantis passerinus</i> (Vahl, 1797)		IV		r
262	Rufous-bellied Plaintive Cuckoo (585)	<i>Cacomantis merulinus</i> (Scopoli, 1786)		IV		?
263	Asian Emerald Cuckoo (586)	<i>Chrysococcyx maculatus</i> (Gmelin, 1788)		IV	BRS (08)	s
264	* Drongo Cuckoo (588-589)	<i>Surniculus lugubris</i> (Horsfield, 1821)		IV		s
265	* Asian Koel (590-592)	<i>Eudynamys scolopacea</i> (Linnaeus, 1758)		IV		R
266	Large Green-billed Malkoha (593-594)	<i>Phaenicophaeus tristis</i> (Lesson, 1830)		IV		r
267	* Sirkeer Malkoha (596-598)	<i>Phaenicophaeus leschenaultii</i> (Lesson, 1830)		IV	BRS (11)	r
268	* Greater Coucal (600-602)	<i>Centropus sinensis</i> (Stephens, 1815)		IV		R
269	Lesser Coucal (605)	<i>Centropus bengalensis</i> (Gmelin, 1788)		IV		r
XII Order STRIGIFORMES						
Barn Owls						
32 Family TYTONIDAE						
270	* Barn Owl (606-607)	<i>Tyto alba</i> (Scopoli, 1769)		IV		R
271	Grass Owl (608)	<i>Tyto capensis</i> (A. Smith 1834)		IV		R
Owls						
33 Family STRIGIDAE						
272	Spotted Scops-Owl (611-612)	<i>Otus spilocephalus</i> (Blyth, 1846)		IV		r
273	Eurasian Scops-Owl (615)	<i>Otus scops</i> (Linnaeus, 1758)		IV		?
274	Oriental Scops-Owl (616-618b)	<i>Otus sunia</i> (Hodgson, 1836)		IV		R
275	Collared Scops-Owl (619-624)	<i>Otus bakkamoena</i> Pennant, 1769		IV		R

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	Common Name	Scientific Name					
276	Eurasian Eagle-Owl (625-627)	<i>Bubo bubo</i> (Linnaeus, 1758)		IV	BRS (11)	R	
277	Forest Eagle-Owl (628-629)	<i>Bubo nipalensis</i> Hodgson, 1836		IV		r	
278	Dusky Eagle-Owl (630)	<i>Bubo coromandus</i> (Latham, 1790)		IV		R	
279	Brown Fish-Owl (631-632)	<i>Ketupa zeylonensis</i> (Gmelin, 1788)		IV		r	
280	Tawny Fish-Owl (633)	<i>Ketupa flavipes</i> (Hodgson, 1836)		IV		r	
281	Brown Wood-Owl (658-660)	<i>Strix leptogrammica</i> Temminck, 1831		IV		r	
282	Tawny Wood-Owl (661-662)	<i>Strix aluco</i> Linnaeus, 1758		IV		r	
283	Collared Owlet (635)	<i>Glaucidium brodiei</i> (Burton, 1836)		IV		r	
284	Asian Barred Owlet (639-641)	<i>Glaucidium cuculoides</i> (Vigors, 1831)		IV		r	
285	* Jungle Owlet (636-637)	<i>Glaucidium radiatum</i> (Tickell, 1833)		IV		R	
286	* Spotted Owlet (650-652)	<i>Athene brama</i> (Temminck, 1821)		IV		R	
287	Brown Hawk-Owl (642-645)	<i>Ninox scutulata</i> (Raffles, 1822)		IV		r	
288	Long-eared Owl (663)	<i>Asio otus</i> (Linnaeus, 1758)		IV		w	
289	Short-eared Owl (664)	<i>Asio flammeus</i> (Pontoppidan, 1763)		IV		w	
XIII Order CAPRIMULGIFORMES 34 Family CAPRIMULGIDAE							
290	* Indian Jungle Nightjar (670-672a)	<i>Caprimulgus indicus</i> Latham, 1790		IV		BRS (11)	R
291	European Nightjar (673)	<i>Caprimulgus europaeus</i> Linnaeus, 1758		IV	s		
292	* Large-tailed Nightjar (675, 678-679)	<i>Caprimulgus macrurus</i> Horsfield, 1821		IV	R		
293	* Common Indian Nightjar (680-681)	<i>Caprimulgus asiaticus</i> Latham, 1790		IV	R		
294	Franklin's Nightjar (682)	<i>Caprimulgus affinis</i> Horsfield, 1821		IV	R		
XIV Order APODIFORMES 35 Family APODIDAE							
Swifts							
295	* Himalayan Swiftlet (683-684)	<i>Collocalia brevirostris</i> (Horsfield, 1840)		NLA		R	
296	White-rumped Needletail-Swift (692)	<i>Zoonavena sylvatica</i> (Tickell, 1846)		NLA		r	

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297	White-throated Needletail-Swift (688)	<i>Hirundapus caudacutus</i> (Latham, 1802)		NLA		s
298	Silver-backed Needletail-Swift (689-690)	<i>Hirundapus cochinchinensis</i> (Oustalet, 1878)		NLA		?
299	* Asian Palm-Swift (707-708)	<i>Cypsiurus balasiensis</i> (J.E. Gray, 1829)		NLA		R
300	Alpine Swift (693-695)	<i>Tachymarptis melba</i> (Linnaeus, 1758)		NLA		r
301	* Common Swift (696)	<i>Apus apus</i> (Linnaeus, 1758)		NLA		w
302	* Pacific Swift (699-700)	<i>Apus pacificus</i> (Latham, 1801)		NLA		r
303	* House Swift (702-706)	<i>Apus affinis</i> (J.E. Gray, 1830)		NLA		R
	Tree-Swifts	36 Family HEMIPROCNIIDAE				
304	Crested Tree-Swift (709)	<i>Hemiprocne coronata</i> (Tickell, 1833)		NLA		R
	Trogon	XV Order TROGONIFORMES				
		37 Family TROGONIDAE				
305	Red-headed Trogon (713-715)	<i>Harpactes erythrocephalus</i> (Gould, 1834)		IV		?
	Kingfishers	XVI Order CORACIIFORMES				
		38 Family ALCEDINIDAE				
306	* Small Blue Kingfisher (722-724)	<i>Alcedo atthis</i> (Linnaeus, 1758)		IV		R
307	* Stork-billed Kingfisher (730-732)	<i>Halcyon capensis</i> (Linnaeus, 1766)		IV		R
308	* White-breasted Kingfisher (735-738)	<i>Halcyon smyrnensis</i> (Linnaeus, 1758)		IV		R
309	Black-capped Kingfisher (739)	<i>Halcyon pileata</i> (Boddaert, 1783)		IV		?
310	* Greater Pied Kingfisher (717-718)	<i>Megaceryle lugubris</i> (Temminck, 1834)		IV		R
311	* Lesser Pied Kingfisher (719-720)	<i>Ceryle rudis</i> (Linnaeus, 1758)		IV		R
	Bee-eaters	39 Family MEROPIDAE				
312	Blue-bearded Bee-eater (753)	<i>Nyctornis athertoni</i> (Jardine & Selby, 1828)		NLA		r
313	* Small Bee-eater ((749-752)	<i>Merops orientalis</i> Latham, 1801		NLA		R
314	Blue-cheeked Bee-eater (747)	<i>Merops persicus</i> Pallas, 1773		NLA		?
315	* Blue-tailed Bee-eater (748)	<i>Merops philippinus</i> Linnaeus, 1766		NLA		S

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316	* Chestnut-headed Bee-eater (744-745)	<i>Merops leschenaulti</i> Vieillot, 1817	NT	NLA		R
	Rollers	40 Family CORACIIDAE				
317	European Roller (754)	<i>Coracias garrulus</i> Linnaeus, 1758		IV		p
318	* Indian Roller (755-757)	<i>Coracias benghalensis</i> (Linnaeus, 1758)		IV		R
319	Oriental Broad-billed Roller (758-762)	<i>Eurystomus orientalis</i> (Linnaeus, 1766)	NT	IV		r
	Hoopoes	41 Family UPUPIDAE				
320	* Common Hoopoe (763-766)	<i>Upupa epops</i> Linnaeus, 1758		NLA		RS
	Hornbills	42 Family BUCEROTIDAE				
321	* Indian Grey Hornbill (767)	<i>Ocyroceros birostris</i> (Scopoli, 1786)	NT	I	BRS (11)	R
322	* Oriental Pied Hornbill (774)	<i>Anthracoceros albirostris</i> (Shaw, 1808)		I		r
323	* Great Pied Hornbill (776)	<i>Buceros bicornis</i> Linnaeus, 1758		I	BRS (08)	R
324	Rufous-necked Hornbill (771)	<i>Aceros nipalensis</i> (Hodgson, 1829)	VU	I		r Ra
		XVII Order PCICIFORMES				
	Barbets	43 Family CAPITONIDAE				
325	* Great Barbet (777-779)	<i>Megalaima virens</i> (Boddaert, 1783)		IV		R
326	* Brown-headed Barbet (780-782)	<i>Megalaima zeylanica</i> (Gmelin, 1788)		IV		R
327	* Lineated Barbet (783-784)	<i>Megalaima lineata</i> (Vieillot, 1816)		IV		R
328	White-cheeked Barbet (785)	<i>Megalaima viridis</i> (Boddaert, 1783)		IV		?
329	* Blue-throated Barbet (788)	<i>Megalaima asiatica</i> (Latham, 1790)	NT	IV	BRS (08)	R
330	* Coppersmith Barbet (792)	<i>Megalaima haemacephala</i> (P.L.S. Müller, 1776)		IV		R
	Honeyguides	44 Family INDICATORIDAE				
331	Yellow-rumped Honeyguide (793-795)	<i>Indicator xanthonotus</i> Blyth, 1842		NLA		rw
	Woodpeckers	45 Family PICIDAE				
332	Eurasian Wryneck (796)	<i>Jynx torquilla</i> Linnaeus, 1758		IV		w
333	Speckled Piculet (798-799)	<i>Picumnus innominatus</i> Burton, 1836		IV		r

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334	Rufous Piculet (800-801)	<i>Sasia ochracea</i> Hodgson, 1836		IV		?
335	* Brown-capped Pygmy Woodpecker (851-854)	<i>Dendrocopos nanus</i> (Vigors, 1832)		IV		R
336	* Grey-capped Pygmy Woodpecker (848-850)	<i>Dendrocopos canicapillus</i> (Blyth, 1845)		IV		R
337	* Brown-fronted Pied Woodpecker (842-843)	<i>Dendrocopos auriceps</i> (Vigors, 1831)		IV		R
338	* Fulvous-breasted Pied Woodpecker (845-846)	<i>Dendrocopos macei</i> (Vieillot, 1818)		IV		R
339	* Yellow-fronted Pied Woodpecker (847)	<i>Dendrocopos mahrattensis</i> (Latham, 1801)		IV	BRS (11)	R
340	* Rufous-bellied Pied Woodpecker (832-833)	<i>Dendrocopos hyperythrus</i> (Vigors, 1831)		IV		R
341	* Himalayan Pied Woodpecker (836-837)	<i>Dendrocopos himalayensis</i> (Jardine & Selby, 1831)		IV	BRS (07)	R
342	* Rufous Woodpecker (802-804)	<i>Celeus brachyurus</i> (Vieillot, 1818)		IV		r
343	* Small Yellow-naped Woodpecker (814-817)	<i>Picus chlorolophus</i> Vieillot, 1818		IV		R
344	* Large Yellow-naped Woodpecker (812-813)	<i>Picus flavinucha</i> Gould, 1834		IV		R
345	Laced Woodpecker (N)	<i>Picus vittatus</i> Vieillot, 1818		I		?
346	Little Scaly-bellied Green Woodpecker (808)	<i>Picus xanthopygaeus</i> (J.E. Gray & GR. Gray, 1846)		IV		R
347	* Large Scaly-bellied Green Woodpecker (806-807)	<i>Picus squamatus</i> Vigors, 1831		IV		R
348	* Black-naped Green Woodpecker (809-811)	<i>Picus canus</i> Gmelin, 1788		IV		R
349	* Himalayan Golden-backed Woodpecker (824)	<i>Dinopium shorii</i> (Vigors, 1832)		IV	BRS (09)	R
350	Common Golden-backed Woodpecker (825-826)	<i>Dinopium javanense</i> (Ljungh, 1797)		IV		?
351	* Lesser Golden-backed Woodpecker (818-823)	<i>Dinopium benghalense</i> (Linnaeus, 1758)		IV	BRS (11)	R
352	Greater Golden-backed Woodpecker (860-863)	<i>Chrysocolaptes lucidus</i> (Scopoli, 1786)		IV		r
353	Black-shouldered Woodpecker (858-859)	<i>Chrysocolaptes festivus</i> (Boddaert, 1783)		IV	BRS (11)	r
354	* Great Slaty Woodpecker (828-829)	<i>Mulleripicus pulverulentus</i> (Temminck, 1826)		IV		r
XVIII Order PASSERIFORMES						
46 Family EURYLAIMIDAE						
355	Broadbills Long-tailed Broadbill (865)	<i>Psarisomus dalhousiae</i> (Jameson, 1835)		NLA		r

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	Common Name	Scientific Name				
	Pittas	47 Family PITTIDAE				
356	Hooded Pitta (869-870)	<i>Pitta sordida</i> (P.L.S. Muller, 1776)		IV		s
357	* Indian Pitta (867)	<i>Pitta brachyura</i> (Linnaeus, 1766)		IV		s
	Larks	48 Family ALAUDIDAE				
358	* Singing Bush-Lark (872)	<i>Mirafra cantillans</i> Blyth, 1845		IV		?
359	Red-winged Bush-Lark (875-877)	<i>Mirafra erythroptera</i> Blyth, 1845		IV	BRS (11)	R
360	* Bengal Bush-Lark (873)	<i>Mirafra assamica</i> Horsfield, 1840		IV	BRS (11)	R
361	Ashy-crowned Sparrow-Lark (878)	<i>Eremopterix grisea</i> (Scopoli, 1786)		IV	BRS (11)	R
362	Greater Short-toed Lark (885-886)	<i>Calandrella brachydactyla</i> (Leisler, 1814)		IV		?
363	Hume's Short-toed Lark (887-888)	<i>Calandrella acutirostris</i> Hume, 1872		IV	BRS (05)	?
364	Indian Short-toed Lark (889-891)	<i>Calandrella raytal</i> (Blyth, 1845)		IV	BRS (11)	R
365	* Common Crested Lark (898-900)	<i>Galerida cristata</i> (Linnaeus, 1758)		IV		R
366	Eurasian Skylark (903-903a)	<i>Alauda arvensis</i> Linnaeus, 1758		IV		w
367	* Eastern Skylark (904-909)	<i>Alauda gulgula</i> Franklin, 1831		IV		s
	Swallows & Martins	49 Family HIRUNDINIDAE				
368	Sand Martin (911)	<i>Riparia riparia</i> (Linnaeus, 1758)		NLA		?
369	Pale Martin (910)	<i>Riparia diluta</i> (Sharpe & Wyatt, 1893)		NLA		?
370	* Plain Martin (912)	<i>Riparia paludicola</i> (Vieillot, 1817)		NLA		R
371	Eurasian Crag-Martin (913)	<i>Hirundo rupestris</i> Scopoli, 1769		NLA		S
372	Dusky Crag-Martin (914)	<i>Hirundo concolor</i> Sykes, 1833		NLA		R
373	* Common Swallow (916-918)	<i>Hirundo rustica</i> Linnaeus, 1758		NLA		RW
374	* Wire-tailed Swallow (921)	<i>Hirundo smithii</i> Leach, 1818		NLA		S
375	* Red-rumped Swallow (923-928)	<i>Hirundo daurica</i> Linnaeus, 1771		NLA		RW
376	Streak-throated Swallow (922)	<i>Hirundo fluviicola</i> Blyth, 1855		NLA		R
377	* Northern House-Martin (930)	<i>Delichon urbica</i> (Linnaeus, 1758)		NLA		?
378	* Asian House-Martin (931)	<i>Delichon dasypus</i> (Bonaparte, 1850)		NLA		?

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379	* Nepal House-Martin (932)	<i>Delichon nipalensis</i> Horsfield & Moore, 1854		NLA	BRS (07)	r
	Wagtails & Pipits	50 Family MOTACILLIDAE				
380	Forest Wagtail (1874)	<i>Dendronanthus indicus</i> (Gmelin, 1789)		IV		?
381	* White Wagtail (1885-1890)	<i>Motacilla alba</i> Linnaeus, 1758		IV		W
382	* Large Pied Wagtail (1891)	<i>Motacilla maderaspatensis</i> Gmelin, 1789		IV		R
383	* Citrine Wagtail (1881-1883)	<i>Motacilla citreola</i> Pallas, 1776		IV		W
384	* Yellow Wagtail (1875-1880)	<i>Motacilla flava</i> Linnaeus, 1758		IV		W
385	* Grey Wagtail (1884)	<i>Motacilla cinerea</i> Tunstall, 1771		IV		rW
386	* Paddyfield Pipit (1858-1860)	<i>Anthus rufulus</i> Vieillot, 1818		IV		R
387	* Tawny Pipit (1861-1862)	<i>Anthus campestris</i> (Linnaeus, 1758)		IV		W
388	Blyth's Pipit (1863)	<i>Anthus godlewskii</i> (Taczanowski, 1876)		IV		?
389	Brown Rock Pipit (1866-1869)	<i>Anthus similis</i> Jerdon, 1840		IV		S
390	Eurasian Tree Pipit (1854-1855)	<i>Anthus trivialis</i> (Linnaeus, 1758)		IV		W
391	* Oriental Tree Pipit (1852-1853)	<i>Anthus hodgsoni</i> Richmond, 1907		IV		RW
392	Rosy Pipit (1865)	<i>Anthus roseatus</i> Blyth, 1847		IV	BRS (05)	RW
393	* Water Pipit (1871)	<i>Anthus spinoletta</i> (Linnaeus, 1758)		IV	BRS (05)	w
394	* Upland Pipit (1873)	<i>Anthus sylvanus</i> (Blyth, 1845)		IV		R
	Cuckoo/ Flycatcher-Shrikes, Minivets, etc.	51 Family CAMPEPHAGIDAE				
395	* Large Cuckoo-Shrike (1072-1075)	<i>Coracina macei</i> (Lesson, 1830)		IV		r
396	Black-winged Cuckoo-Shrike (1077)	<i>Coracina melaschistos</i> (Hodgson, 1836)		IV	BRS (08)	r
397	Black-headed Cuckoo-Shrike (1078-1079)	<i>Coracina melanoptera</i> (Rüppell, 1839)		IV	BRS (11)	s
398	Rosy Minivet (1089)	<i>Pericrocotus roseus</i> (Vieillot, 1818)		IV	BRS (08)	r
399	* Small Minivet (1090-1095)	<i>Pericrocotus cinnamomeus</i> (Linnaeus, 1766)		IV	BRS (11)	R
400	Grey-chinned Minivet (1088)	<i>Pericrocotus solaris</i> Blyth, 1846		IV		?

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401	* Long-tailed Minivet (1085-1087)	<i>Pericrocotus ethologus</i> Bangs & Phillips, 1914		IV		RW
402	Short-billed Minivet (1084)	<i>Pericrocotus brevirostris</i> (Vigors, 1831)		IV	BRS (08)	?
403	* Scarlet Minivet (1080-1083)	<i>Pericrocotus flammeus</i> (Forster, 1781)		IV		R
404	Pied Flycatcher-Shrike (1064-1066)	<i>Hemipus picatus</i> (Sykes, 1832)		IV		RA
405	Large Woodshrike (1067-1068)	<i>Tephrodornis gularis</i> (Raffles, 1822)		IV		r
406	Common Woodshrike (1069-1071)	<i>Tephrodornis pondicerianus</i> (Gmelin, 1789)		IV	BRS (11)	R
	Bulbuls & Finchbills	52 Family PYCNONOTIDAE				
407	Striated Bulbul (1133-1134)	<i>Pycnonotus striatus</i> (Blyth, 1842)		IV	BRS (08)	r
408	Black-crested Bulbul (1115-1117)	<i>Pycnonotus melanicterus</i> (Gmelin, 1789)		IV		R
409	* Red-whiskered Bulbul (1118-1122)	<i>Pycnonotus jocosus</i> (Linnaeus, 1758)		IV		R
410	* White-eared Bulbul (1123-1124)	<i>Pycnonotus leucotis</i> (Gould, 1836)		IV	BRS (13)	?
411	* Himalayan Bulbul (1125)	<i>Pycnonotus leucogenys</i> (Gray, 1835)		IV	BRS (08)	R
412	* Red-vented Bulbul (1126-1132)	<i>Pycnonotus cafer</i> (Linnaeus, 1766)		IV		R
413	* Brown-eared Bulbul (1147)	<i>Hemixos flava</i> Blyth, 1845		IV		rA
414	Rufous-bellied Bulbul (1146)	<i>Hypsipetes maclellandii</i> Horsfield, 1840		IV	BRS (08)	rA
415	* Black Bulbul (1148-1151)	<i>Hypsipetes leucocephalus</i> (P.L.S. Muller, 1776)		IV	BRS (08)	rA
	Ioras, Chloropsis/Leafbird, etc.	53 Family IRENIDAE				
416	* Common Iora (1097-1101)	<i>Aegithina tiphia</i> (Linnaeus, 1758)		IV		R
417	* Gold-fronted Chloropsis (1103-1105)	<i>Chloropsis aurifrons</i> (Temminck, 1829)		IV		R
418	* Orange-bellied Chloropsis (1106)	<i>Chloropsis hardwickii</i> Jardine & Selby, 1830		IV	BRS (08)	r
	Shrikes	54 Family LANIIDAE				
419	Red-backed Shrike (941)	<i>Lanius collurio</i> Linnaeus, 1758		NLA		?
420	Rufous-tailed Shrike (942-943)	<i>Lanius isabellinus</i> Hemprich & Ehrenberg, 1833		NLA		?
421	* Brown Shrike (949-950a)	<i>Lanius cristatus</i> Linnaeus, 1758		NLA		w
422	* Bay-backed Shrike (939-940)	<i>Lanius vittatus</i> Valenciennes, 1826		NLA		R

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423	* Rufous-backed Shrike (946-948)	<i>Lanius schach</i> Linnaeus, 1758		NLA		RA
424	* Grey-backed Shrike (944-945)	<i>Lanius tephronotus</i> (Vigors, 1831)		NLA	BRS (05)	rW
425	* Great Grey Shrike (936)	<i>Lanius excubitor</i> Linnaeus, 1758		NLA		?
426	* Southern Grey Shrike (933-935)	<i>Lanius meridionalis</i> Temminck, 1820		NLA		R
	Dippers	55 Family CINCLIDAE				
427	White-throated Dipper (1772-1774)	<i>Cinclus cinclus</i> (Linnaeus, 1758)		NLA		RA
428	* Brown Dipper (1775-1776)	<i>Cinclus pallasii</i> Temminck, 1820		NLA		RA
	Wrens	56 Family TROGLODYTIDAE				
429	Winter Wren (1769-1771)	<i>Troglodytes troglodytes</i> (Linnaeus, 1758)		IV		rA
	Accentors	57 Family PRUNELLIDAE				
430	Alpine Accentor (1777-1779)	<i>Prunella collaris</i> (Scopoli, 1769)		NLA	BRS (05)	rA
431	Altai Accentor (1780)	<i>Prunella himalayana</i> (Blyth, 1842)		NLA	BRS (05)	w
432	Robin Accentor (1781)	<i>Prunella rubeculoides</i> (Moore, 1854)		NLA	BRS (05)	s
433	Rufous-breasted Accentor (1782-1783)	<i>Prunella strophciata</i> (Blyth, 1843)		NLA	BRS (07)	rA
434	Black-throated Accentor (1786-1787)	<i>Prunella atrogularis</i> (Brandt, 1844)		NLA	BRS (07)	w
435	Maroon-backed Accentor (1788)	<i>Prunella immaculata</i> (Hodgson, 1845)		NLA	BRS (07)	s
	Thrushes, Babblers, Warblers, etc.	58 Family MUSCICAPIDAE				
	Thrushes, Shortwings, Robins, etc.	58a Subfamily TURDINAE				
436	* Blue-headed Rock-Thrush (1723)	<i>Monticola cinclorhynchus</i> (Vigors, 1832)		IV	BRS (08)	S
437	Chestnut-bellied Rock-Thrush (1724)	<i>Monticola rufiventris</i> (Jardine & Selby, 1833)		IV		RA
438	Blue Rock-Thrush (1725-1726)	<i>Monticola solitarius</i> (Linnaeus, 1758)		IV		S
439	* Blue Whistling-Thrush (1729-1730)	<i>Myiophonus caeruleus</i> (Scopoli, 1786)		IV		R
440	Pied Thrush (1731)	<i>Zoothera wardii</i> (Blyth, 1842)		IV	BRS (08)	p
441	Orange-headed Thrush (1733-1736)	<i>Zoothera citrina</i> (Latham, 1790)		IV		S
442	Plain-backed Thrush (1738-1739)	<i>Zoothera mollissima</i> (Blyth, 1842)		IV	BRS (05)	r

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443	Long-tailed Thrush (1740)	<i>Zoothera dixonii</i> (Seebohm, 1881)		IV	BRS (07)	r
444	Scaly Thrush (1741-1744)	<i>Zoothera dauma</i> (Latham, 1790)		IV		rW
445	Greater Long-billed Thrush (1745)	<i>Zoothera monticola</i> Vigors, 1832		IV	BRS (07)	Sw
446	Lesser Long-billed Thrush (1746)	<i>Zoothera marginata</i> Blyth, 1847		IV	BRS (08)	w
447	Tickell's Thrush (1748)	<i>Turdus unicolor</i> Tickell, 1833		IV	BRS (08)	Sw
448	White-collared Blackbird (1749)	<i>Turdus albocinctus</i> Royle, 1840		IV	BRS (07)	R
449	* Grey-winged Blackbird (1750)	<i>Turdus boulboul</i> (Latham, 1790)		IV	BRS (08)	R
450	* Eurasian Blackbird (1751-1757)	<i>Turdus merula</i> Linnaeus, 1758		IV		rw
451	Chestnut Thrush (1758-1759)	<i>Turdus rubrocanus</i> Hodgson, 1846		IV	BRS (07)	R
452	Dark-throated Thrush (1763-1764)	<i>Turdus ruficollis</i> Pallas, 1776		IV		W
453	Mistle Thrush (1768)	<i>Turdus viscivorus</i> Linnaeus, 1758		IV		R
454	Gould's Shortwing (1635)	<i>Brachypteryx stellata</i> Gould, 1868		IV	BRS (07)	rs
455	White-browed Shortwing (1640)	<i>Brachypteryx montana</i> Horsfield, 1821		IV		w
456	Siberian Rubythroat (1643)	<i>Luscinia calliope</i> (Pallas, 1776)		IV		w
457	Himalayan Rubythroat (1647-1649)	<i>Luscinia pectoralis</i> (Gould, 1837)		IV	BRS (07)	s
458	Bluethroat (1644-1646a)	<i>Luscinia svecica</i> (Linnaeus, 1758)		IV		w
459	Indian Blue Robin (1650, 1651)	<i>Luscinia brunnea</i> (Hodgson, 1837)		IV	BRS (07)	s
460	Orange-flanked Bush-Robin (1654-1656)	<i>Tarsiger cyanurus</i> (Pallas, 1773)		IV		RA
461	Golden Bush-Robin (1657-1658)	<i>Tarsiger chrysaeus</i> (Hodgson, 1845)		IV	BRS (07)	RA
462	White-browed Bush-Robin (1659)	<i>Tarsiger indicus</i> (Vieillot, 1817)		IV	BRS (07)	RA
463	* Oriental Magpie-Robin (1661-1664)	<i>Copsychus saularis</i> (Linnaeus, 1758)		IV		R
464	White-rumped Shama (1665-1668)	<i>Copsychus malabaricus</i> (Scopoli, 1786)		IV		R
465	* Indian Robin (1717-1721)	<i>Saxicoloides fulicata</i> (Linnaeus, 1776)		IV	BRS (11)	R
466	Eversmann's Redstart (1669)	<i>Phoenicurus erythronotus</i> (Eversmann, 1841)		IV	BRS (07)	?
467	Blue-capped Redstart (1670)	<i>Phoenicurus caeruleocephalus</i> (Vigors, 1831)		IV	BRS (07)	R

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468	* Black Redstart (1671-1672)	<i>Phoenicurus ochruros</i> (Gmelin, 1774)	VU	IV		rW
469	Hodgson's Redstart (1674)	<i>Phoenicurus hodgsoni</i> (Moore, 1854)		IV	BRS (05)	w
470	White-throated Redstart (1676)	<i>Phoenicurus schisticeps</i> (Gray, 1846)		IV	BRS (07)	?
471	Guldenstadt's Redstart (1678)	<i>Phoenicurus erythrogaster</i> (Guldenstadt, 1775)		IV	BRS (05)	rA
472	Blue-fronted Redstart (1675)	<i>Phoenicurus frontalis</i> (Vigors, 1832)		IV		rA
473	* White-capped Redstart (1716)	<i>Chaimarrornis leucocephalus</i> (Vigors, 1831)		IV		RA
474	* Plumbeous Redstart (1679)	<i>Rhyacornis fuliginosus</i> (Vigors, 1831)		IV		RA
475	White-bellied Redstart (1680)	<i>Hodgsonius phaenicuroides</i> (Gray, 1846)		IV	BRS (07)	s
476	White-tailed Robin (1681)	<i>Myiomela leucura</i> (Hodgson, 1845)		IV	BRS (08)	w
477	Grandala (1683)	<i>Grandala coelicolor</i> Hodgson, 1843		IV	BRS (05)	rA
478	* Little Forktail (1684)	<i>Enicurus scouleri</i> Vigors, 1832		IV		RA
479	Black-backed Forktail (1685)	<i>Enicurus immaculatus</i> (Hodgson, 1836)		IV	BRS (09)	RA
480	* Slaty-backed Forktail (1686)	<i>Enicurus schistaceus</i> (Hodgson, 1836)		IV	BRS (08)	rA
481	* Spotted Forktail (1688-1689)	<i>Enicurus maculatus</i> Vigors, 1831		IV		RA
482	Purple Cochoa (1690)	<i>Cochoa purpurea</i> Hodgson, 1836		IV	BRS (08)	r
483	Green Cochoa (1691)	<i>Cochoa viridis</i> Hodgson, 1836		IV	BRS (08)	r
484	Hodgson's Bushchat (1694)	<i>Saxicola insignis</i> Gray, 1846		IV	BRS (05)	V w
485	* Common Stonechat (1695-1698)	<i>Saxicola torquata</i> (Linnaeus, 1766)		IV		R
486	White-tailed Stonechat (1699)	<i>Saxicola leucura</i> (Blyth, 1847)		IV	BRS (12)	r
487	* Pied Bushchat (1700-1703)	<i>Saxicola caprata</i> (Linnaeus, 1766)		IV		Rs
488	* Grey Bushchat (1705)	<i>Saxicola ferrea</i> Gray, 1846		IV		RA
489	Variable Wheatear (1712)	<i>Oenanthe picata</i> (Blyth, 1847)		IV		w
490	Pied Wheatear (1715)	<i>Oenanthe pleschanka</i> (Lepechin, 1770)		0		?
491	Rufous-tailed Wheatear (1707)	<i>Oenanthe xanthopyrna</i> (Hemprich & Ehrenberg, 1833)		IV		?
492	Desert Wheatear (1709-1710)	<i>Oenanthe deserti</i> (Temminck, 1825)		IV		w

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493	Isabelline Wheatear (1706)	<i>Oenanthe isabellina</i> (Temminck, 1829)		IV		w
494	* Indian Chat (1692)	<i>Cercomela fusca</i> (Blyth, 1851)		IV	BRS (11)	R
	Babblers, Laughingthrushes, Yuhinas, etc.	58b Subfamily TIMALIINAE				
495	* White-throated Laughingthrush (1273-1274)	<i>Garrulax albogularis</i> (Gould, 1836)		IV	BRS (07)	RA
496	* White-crested Laughingthrush (1283-1284)	<i>Garrulax leucolophus</i> (Hardwicke, 1815)		IV		RA
497	* Striated Laughingthrush (1279-1282)	<i>Garrulax striatus</i> (Vigors, 1831)		IV	BRS (07)	RA
498	Rufous-chinned Laughingthrush (1292-1296)	<i>Garrulax rufogularis</i> (Gould, 1835)		IV	BRS (08)	rA
499	Spotted Laughingthrush (1298-1299)	<i>Garrulax ocellatus</i> (Vigors, 1831)		IV	BRS (07)	RA
500	Streaked Laughingthrush (1312-1316)	<i>Garrulax lineatus</i> (Vigors, 1831)		IV	BRS (07)	RA
501	Variegated Laughingthrush (1289-1290)	<i>Garrulax variegatus</i> (Vigors, 1831)		IV	BRS (07)	RA
502	Black-faced Laughingthrush (1322-1323)	<i>Garrulax affinis</i> Blyth, 1843		IV	BRS (07)	?
503	Red-headed Laughingthrush (1324-1330)	<i>Garrulax erythrocephalus</i> (Vigors, 1832)		IV		RA
504	Spotted Babbler (1152-1159)	<i>Pellorneum ruficeps</i> Swainson, 1832		IV		R
505	Rusty-cheeked Scimitar-Babbler (1181-1183)	<i>Pomatorhinus erythrogenys</i> Vigors, 1832		IV	BRS (08)	RA
506	Indian Scimitar-Babbler (1172-1177)	<i>Pomatorhinus horsfieldii</i> Sykes, 1832		IV	BRS (10)	?
507	Hodgson's Scimitar-Babbler (1168-1171)	<i>Pomatorhinus schisticeps</i> Hodgson, 1836		0		RA
508	Rufous-necked Scimitar-Babbler (1178-1180)	<i>Pomatorhinus ruficollis</i> Hodgson, 1836		IV		RA
509	Greater Scaly-breasted Wren-Babbler (1197-1198)	<i>Pnoepyga albiventer</i> (Hodgson, 1837)		IV	BRS (07)	rA
510	Nepal Wren-Babbler (N)	<i>Pnoepyga immaculata</i> Martens & Eck, 1991		1		w?
511	Black-chinned Babbler (1211)	<i>Stachyris pyrrhops</i> Blyth, 1844		IV	BRS (08)	RA
512	Gold-headed Babbler (1212-1213)	<i>Stachyris chrysaea</i> Blyth, 1844		IV		?
513	Rufous-bellied Babbler (1219-1223)	<i>Dumetia hyperythra</i> (Franklin, 1831)		IV	BRS (11)	R
514	Red-capped Babbler (1229)	<i>Timalia pileata</i> Horsfield, 1821		IV		r
515	Yellow-eyed Babbler (1230-1232)	<i>Chrysomma sinense</i> (Gmelin, 1789)		IV		R

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	Common Name	Scientific Name				
516	* Common Babbler (1253-1254)	<i>Turdoides caudatus</i> (Dumont, 1823)		IV		R
517	* Striated Babbler (1255-1256)	<i>Turdoides earlei</i> (Blyth, 1844)		IV	BRS (12)	R
518	* Large Grey Babbler (1258)	<i>Turdoides malcolmi</i> (Sykes, 1832)		IV	BRS (11)	R
519	* Jungle Babbler (1261-1265)	<i>Turdoides striatus</i> (Dumont, 1823)		IV	BRS (11)	R
520	Silver-eared Leiothrix (1333-1334)	<i>Leiothrix argentauris</i> (Hodgson, 1838)		IV		rA
521	Red-billed Leiothrix (1335-1337)	<i>Leiothrix lutea</i> (Scopoli, 1786)		IV	BRS (08)	rA
522	Red-winged Shrike Babbler (1341)	<i>Pteruthius flaviscapis</i> (Temminck, 1836)		IV		?
523	Green Shrike-Babbler (1342-1344)	<i>Pteruthius xanthochlorus</i> Gray, 1846		IV	BRS (07)	rA
524	Blue-winged Minla (1362)	<i>Minla cyanouroptera</i> (Hodgson, 1838)		IV	BRS (08)	rA
525	Bar-throated Minla (1358-1361)	<i>Minla strigula</i> (Hodgson, 1838)		IV	BRS (07)	rA
526	White-browed Tit-Babbler (1380-1383)	<i>Alcippe vinipectus</i> (Hodgson, 1837)		IV	BRS (07)	rA
527	* Rufous Sibia (1396-1398)	<i>Heterophasia capistrata</i> (Vigors, 1831)		IV	BRS (07)	RA
528	Yellow-naped Yuhina (1367-1370)	<i>Yuhina flavicollis</i> Hodgson, 1836		IV		RA
529	Stripe-throated Yuhina (1371-1372)	<i>Yuhina gularis</i> Hodgson, 1836		IV	BRS (07)	RA
530	Black-chinned Yuhina (1374)	<i>Yuhina nigrimenta</i> Hodgson, 1845		IV	BRS (08)	RA
531	White-bellied Yuhina (1375)	<i>Yuhina zantholeuca</i> (Hodgson, 1844)		IV		RA
	Parrotbills	58c Subfamily PANURINAE				
532	Great Parrotbill (1236)	<i>Conostoma oemodium</i> Hodgson, 1841		IV	BRS (07)	w
533	Black-throated Parrotbill (1239a-1244)	<i>Paradoxornis nipalensis</i> (Hodgson, 1837)		IV		r
	Goldcrest, Prinias, Tesias & Warblers	58d Subfamily SYLVIINAE				
534	Goldcrest (1628-1631)	<i>Regulus regulus</i> (Linnaeus, 1758)		IV		rA
535	Streaked Fantail-Warbler (1498-1500a)	<i>Cisticola juncidis</i> (Rafinesque, 1810)		IV		R
536	Golden-headed Fantail-Warbler (1496-1497)	<i>Cisticola exilis</i> (Vigors & Horsfield, 1827)		IV		r
537	* Brown Prinia (1526-1528)	<i>Prinia criniger</i> Hodgson, 1836		IV	BRS (08)	RA
538	Hodgson's Prinia (1507)	<i>Prinia cinereocapilla</i> (Moore, 1854)	VU	IV	BRS (09)	r Ra

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	Common Name	Scientific Name				
539	Rufous-fronted Prinia (1506)	<i>Prinia buchanani</i> Blyth, 1844	NT	IV	BRS (11)	?
540	Franklin's Prinia (1502-1505)	<i>Prinia hodgsonii</i> Blyth, 1844		IV		R
541	Graceful Prinia (1508-1509)	<i>Prinia gracilis</i> (Lichtenstein, 1823)		IV		R
542	* Jungle Prinia (1519-1523)	<i>Prinia sylvatica</i> Jerdon, 1840		IV	BRS (11)	R
543	Yellow-bellied Prinia (1524-1525)	<i>Prinia flaviventris</i> (Delessert, 1840)		IV		R
544	* Ashy Prinia (1515-1518)	<i>Prinia socialis</i> Sykes, 1832		IV	BRS (11)	R
545	* Plain Prinia (1510-1514)	<i>Prinia inornata</i> Sykes, 1832		IV		R
546	Chestnut-headed Tesia (1473)	<i>Tesia castaneocoronata</i> (Burton, 1836)		IV	BRS (07)	rA
547	Grey-bellied Tesia (1471)	<i>Tesia cyaniventer</i> Hodgson, 1837		IV	BRS (07)	?
548	Blanford's Bush-Warbler (1474-1475)	<i>Cettia pallidipes</i> (Blanford, 1872)		IV	BRS (08)	rA
549	Brown-flanked Bush-Warbler (1477-1478)	<i>Cettia fortipes</i> (Horsfield, 1845)		IV		sw
550	Chestnut-crowned Bush-Warbler (1479-1480)	<i>Cettia major</i> (Moore, 1854)		IV	BRS (07)	rA
551	Aberrant Bush-Warbler (1481-1483)	<i>Cettia flavolivacea</i> (Blyth, 1845)		IV	BRS (07)	rA
552	Yellow-bellied Bush-Warbler (1484)	<i>Cettia acanthizoides</i> (Verreaux, 1871)		IV	BRS (07)	rA
553	* Grey-sided Bush-Warbler (1485-1487)	<i>Cettia brunnifrons</i> (Hodgson, 1845)		IV	BRS (07)	sw
554	Spotted Bush-Warbler (1489-1490)	<i>Bradypterus thoracicus</i> (Blyth, 1845)		IV		rA
555	Long-billed Bush-Warbler (1491)	<i>Bradypterus major</i> (Brooks, 1871)		IV	BRS (07)	?
556	Brown Bush-Warbler (1493)	<i>Bradypterus luteoventris</i> (Hodgson, 1845)		IV		?
557	Pale Grasshopper-Warbler (1545)	<i>Locustella naevia</i> (Boddaert, 1783)		IV		?
558	Moustached Warbler (1495)	<i>Acrocephalus melanopogon</i> (Temminck, 1823)		IV		?
559	Paddyfield Warbler (1557-1558)	<i>Acrocephalus agricola</i> (Jerdon, 1845)		IV		w
560	Blyth's Reed-Warbler (1556)	<i>Acrocephalus dumetorum</i> Blyth, 1849		IV		p
561	Indian Great Reed-Warbler (1550-1552)	<i>Acrocephalus stentoreus</i> (Hemprich & Ehrenberg, 1833)		IV		?
562	Booted Warbler (1562-1563)	<i>Hippolais caligata</i> (Lichtenstein, 1823)		IV		?
563	* Common Tailorbird (1535-1539)	<i>Orthotomus sutorius</i> (Pennant, 1769)		IV		R

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	Common Name	Scientific Name				
564	Common Chiffchaff (1574-1575)	<i>Phylloscopus collybita</i> (Vieillot, 1817)	NT	IV		w
565	* Plain Leaf-Warbler (1577)	<i>Phylloscopus neglectus</i> Hume, 1870		IV		?
566	Dusky Warbler (1584-1586)	<i>Phylloscopus fuscatus</i> (Blyth, 1842)		IV		w
567	Smoky Warbler (1582-1583)	<i>Phylloscopus fulgiventor</i> (Hodgson, 1845)		IV	BRS (05)	sw
568	* Tickell's Warbler (1579)	<i>Phylloscopus affinis</i> (Tickell, 1833)		IV	BRS (05)	sW
569	Buff-throated Warbler (1580)	<i>Phylloscopus subaffinis</i> Ogilvie-Grant, 1900		IV	BRS (07)	V w
570	Olivaceous Leaf-Warbler (1581)	<i>Phylloscopus griseolus</i> Blyth, 1847		IV	BRS (05)	w
571	Orange-barred Leaf-Warbler (1587-1589)	<i>Phylloscopus pulcher</i> Blyth, 1845		IV	BRS (07)	rA
572	* Grey-faced Leaf-Warbler (1597-1599)	<i>Phylloscopus maculipennis</i> (Blyth, 1867)		IV	BRS (07)	rA
573	* Lemon-rumped Warbler (1594-1596)	<i>Phylloscopus chloronotus</i> (GR. Gray & J.E. Gray, 1846)		IV		sw
574	Brooks's Leaf-Warbler (1593)	<i>Phylloscopus subviridis</i> (Brooks, 1872)		IV	RRS (4)	?
575	Yellow-browed Warbler (1592)	<i>Phylloscopus inornatus</i> (Blyth, 1842)		IV		w
576	Hume's Warbler (1590-1591)	<i>Phylloscopus humei</i> (Brooks, 1878)		IV		sw
577	Greenish Leaf-Warbler (1602-1605)	<i>Phylloscopus trochiloides</i> (Sundevall, 1837)		IV		sw
578	Large-billed Leaf-Warbler (1601)	<i>Phylloscopus magnirostris</i> Blyth, 1843		IV	BRS (07)	s
579	Tytler's Leaf-Warbler (1578)	<i>Phylloscopus tytleri</i> Brooks, 1872		IV	RRS (4)	p
580	Western Crowned Warbler (1606)	<i>Phylloscopus occipitalis</i> (Blyth, 1845)		IV	BRS (07)	Sw
581	Blyth's Leaf-Warbler (1608-1611)	<i>Phylloscopus reguloides</i> (Blyth, 1842)		IV		sw
582	Black-browed Leaf-Warbler (1612)	<i>Phylloscopus cantator</i> (Tickell, 1833)		IV	RRS (5)	?
583	* Gold-spectacled Flycatcher-Warbler (1615)	<i>Seicercus burkii</i> (Burton, 1836)		IV		rw
584	Whistler's Flycatcher-Warbler (1614)	<i>Seicercus whistleri</i> Ticehurst, 1925		0		s
585	* Grey-headed Flycatcher-Warbler (1616-1619)	<i>Seicercus xanthoschistos</i> (GR. Gray & J.E. Gray, 1846)		IV	BRS (08)	R
586	Grey-cheeked Flycatcher-Warbler (1620)	<i>Seicercus poliogenys</i> (Blyth, 1847)		IV	BRS (07)	w
587	Chestnut-crowned Flycatcher-Warbler (1621)	<i>Seicercus castaniceps</i> (Blyth, 1845)		IV		w
588	Black-faced Flycatcher-Warbler (1624-1625)	<i>Abroscopus schisticeps</i> (GE. Gray & J.R. Gray, 1846)		IV	BRS (08)	r

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589	Yellow-bellied Flycatcher-Warbler (1622-1623)	<i>Abroscopus superciliaris</i> (Blyth, 1859)	VU	IV	BRS (12)	?
590	Striated Marsh-Warbler (1548)	<i>Megalurus palustris</i> Horsfield, 1821		IV		R
591	Bristled Grass-Warbler (1547)	<i>Chaetornis striatus</i> (Jerdon, 1841)		IV		?
592	Greater Whitethroat (1566)	<i>Sylvia communis</i> (Latham, 1787)		IV		?
593	Common Lesser Whitethroat (1567-1568)	<i>Sylvia curruca</i> (Linnaeus, 1758)		IV		W
594	Orphean Warbler (1565)	<i>Sylvia hortensis</i> (Gmelin, 1789)		IV		w
	Flycatchers	58e Family MUSCICAPINAE				
595	Spotted Flycatcher (1403, 1404)	<i>Muscicapa striata</i> (Pallas, 1764)		IV	BRS (07)	?
596	Sooty Flycatcher (1405-1406)	<i>Muscicapa sibirica</i> Gmelin, 1789		IV		rA
597	Asian Brown Flycatcher (1407)	<i>Muscicapa dauurica</i> Pallas, 1811		IV		s
598	* Rusty-tailed Flycatcher (1409)	<i>Muscicapa ruficauda</i> Swainson, 1838		IV		s
599	Slaty-backed Flycatcher (1418)	<i>Ficedula hodgsonii</i> (Verreaux, 1871)		IV		?
600	Orange-gorgeted Flycatcher (1414)	<i>Ficedula strophiiata</i> (Hodgson, 1837)		IV		rA
601	* Red-throated Flycatcher (1411-1412)	<i>Ficedula parva</i> (Bechstein, 1792)		IV		W
602	Rufous-breasted Blue Flycatcher (1417)	<i>Ficedula hyperythra</i> (Blyth, 1842)		IV		sw
603	* Little Pied Flycatcher (1419-1420)	<i>Ficedula westermanni</i> (Sharpe, 1888)		IV		w
604	* Ultramarine Flycatcher (1421-1422)	<i>Ficedula superciliaris</i> (Jerdon, 1840)		IV		s
605	* Slaty-blue Flycatcher (1423-1425)	<i>Ficedula tricolor</i> (Hodgson, 1845)		IV		sw
606	* Verditer Flycatcher (1445)	<i>Eumyias thalassina</i> (Swainson, 1838)		IV	BRS (08)	s
607	Dusky-blue Flycatcher (1444)	<i>Eumyias sordida</i> (Walden, 1870)		IV		?
608	Large Niltava (1428)	<i>Niltava grandis</i> (Blyth, 1842)		IV		?
609	* Small Niltava (1429-1430)	<i>Niltava macgrigoriae</i> (Burton, 1836)		IV		rA
610	Rufous-bellied Niltava (1431-1432)	<i>Niltava sundara</i> (Hodgson, 1837)		IV		rw
611	Brooks's Flycatcher (1436-1438)	<i>Cyornis poliogenys</i> Brooks, 1879		IV	BRS (09)	w?
612	* Pale Blue-Flycatcher (1439)	<i>Cyornis unicolor</i> Blyth, 1843		IV		w?

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613	Blue-throated Flycatcher (1440)	<i>Cyornis rubeculoides</i> (Vigors, 1831)		IV		s
614	Tickell's Blue-Flycatcher (1442-1443)	<i>Cyornis tickelliae</i> Blyth, 1843		IV		R
615	* Grey-headed Flycatcher (1448-1449)	<i>Culicicapa ceylonensis</i> (Swainson, 1820)		IV		sw
	Monarch/ Paradise-Flycatchers	58f Subfamily MONARCHINAE				
616	* Asian Paradise-Flycatcher (1460-1464)	<i>Terpsiphone paradisi</i> (Linnaeus, 1758)		IV		s
617	Black-naped Monarch-Flycatcher (1465-1469)	<i>Hypothymis azurea</i> (Boddaert, 1783)		IV		r
	Fantail-Flycatchers	58g Subfamily RHIPIDURINAE				
618	* Yellow-bellied Fantail-Flycatcher (1450)	<i>Rhipidura hypoxantha</i> Blyth, 1843		IV		sw
619	* White-throated Fantail-Flycatcher (1454-1459)	<i>Rhipidura albicollis</i> (Vieillot, 1818)		IV		R
620	* White-browed Fantail-Flycatcher (1451-1453)	<i>Rhipidura aureola</i> Lesson, 1830		IV	BRS (11)	R
	Long-tailed Tits	59 Family AEGITHALIDAE				
621	* Red-headed Tit (1818-1820)	<i>Aegithalos concinnus</i> (Gould, 1855)		IV	BRS (08)	RA
622	White-throated Tit (1822)	<i>Aegithalos niveogularis</i> (Gould, 1855)		IV	RRS (4)	RA
	Penduline-Tits	60 Family REMIZIDAE				
623	Fire-capped Tit (1815-1816)	<i>Cephalopyrus flammiceps</i> (Burton, 1836)		IV	BRS (07)	s
	Tits	61 Family PARIDAE				
624	Simla Crested Tit (1804)	<i>Parus rufonuchalis</i> Blyth, 1849		IV	BRS (07)	rA
625	Rufous-bellied Crested Tit (1805-1806a)	<i>Parus rubidiventris</i> Blyth, 1847		IV	BRS (07)	rA
626	* Spot-winged Crested Tit (1802)	<i>Parus melanolophus</i> Vigors, 1831		IV	BRS (07)	rA
627	Coal Tit (1803)	<i>Parus ater</i> Linnaeus, 1758		IV		?
628	Brown Crested Tit (1807-1808)	<i>Parus dichrous</i> Blyth, 1844		IV	BRS (07)	rA
629	* Great Tit (1790-1797)	<i>Parus major</i> Linnaeus, 1758		IV		R
630	* Green-backed Tit (1799)	<i>Parus monticolus</i> Vigors, 1831		IV	BRS (07)	RA
631	* Black-lored Yellow Tit (1809-1811)	<i>Parus xanthogenys</i> Vigors, 1831		IV		r
632	Black-spotted Yellow Tit (1812-1812a)	<i>Parus spilonotus</i> Bonaparte, 1850		IV	BRS (08)	?

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633	Yellow-browed Tit (1813-1814) Nuthatches & Wallcreeper	<i>Sylviparus modestus</i> Burton, 1836 62 Family SITTIDAE		IV	BRS (07)	rA
634	* Chestnut-bellied Nuthatch (1827-1831)	<i>Sitta castanea</i> Lesson, 1830		NLA		R
635	White-tailed Nuthatch (1834-1835)	<i>Sitta himalayensis</i> Jardine & Selby, 1835		NLA	BRS (07)	rA
636	* White-cheeked Nuthatch (1832-1833)	<i>Sitta leucopsis</i> Gould, 1850		NLA	BRS (07)	rA
637	* Velvet-fronted Nuthatch (1838)	<i>Sitta frontalis</i> Swainson, 1820		NLA		R
638	* Wallcreeper (1839) Tree-Creepers, Creepers	<i>Tichodroma muraria</i> (Linnaeus, 1766) 63 Family CERTHIIDAE		NLA	BRS (05)	w
639	* Eurasian Tree-Creeper (1842-1844)	<i>Certhia familiaris</i> Linnaeus, 1758		0		RA
640	Bar-tailed Tree-Creeper (1845-1848)	<i>Certhia himalayana</i> Vigors, 1832		0	BRS (07)	RA
641	Rusty-flanked Tree-Creeper (1851) Flowerpeckers	<i>Certhia nipalensis</i> Blyth, 1845 64 Family DICAIEIDAE		0	BRS (07)	RA
642	* Thick-billed Flowerpecker (1892-1894)	<i>Dicaeum agile</i> (Tickell, 1833)		IV		RA
643	Yellow-bellied Flowerpecker (1896)	<i>Dicaeum melanoxanthum</i> (Blyth, 1843)		IV	BRS (07)	s
644	Tickell's Flowerpecker (1899-1900)	<i>Dicaeum erythrorhynchos</i> (Latham, 1790)		IV		R
645	* Fire-breasted Flowerpecker (1905) Sunbirds & Spiderhunters	<i>Dicaeum ignipectus</i> (Blyth, 1843) 65 Family NECTARINIIDAE		IV		rA
646	* Purple Sunbird (1916-1918)	<i>Nectarinia asiatica</i> (Latham, 1790)		IV		rs
647	Mrs. Gould's Sunbird (1919-1921)	<i>Aethopyga gouldiae</i> (Gould, 1831)		IV		rA
648	Green-tailed Sunbird (1922-1924)	<i>Aethopyga nipalensis</i> (Hodgson, 1836)		IV		rA
649	Black-throated Sunbird (1925-1926)	<i>Aethopyga saturata</i> (Hodgson, 1836)		IV	BRS (08)	w
650	Crimson Sunbird (1927-1929a)	<i>Aethopyga siparaja</i> (Raffles, 1822)		IV		rA
651	* Fire-tailed Sunbird (1930) White-eyes	<i>Aethopyga ignicauda</i> (Hodgson, 1836) 66 Family ZOSTEROPIDAE		IV	BRS (07)	w
652	* Oriental White-eye (1933-1936)	<i>Zosterops palpebrosus</i> (Temminck, 1824)		0		R

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	Buntings	67 Family EMBERIZIDAE				
653	Crested Bunting (2060)	<i>Melophus lathami</i> (Gray, 1831)		IV		sw
654	Pine Bunting (2042)	<i>Emberiza leucocephalus</i> Gmelin, 1771		IV		w
655	Rock Bunting (2051-2052)	<i>Emberiza cia</i> Linnaeus, 1766		IV		RA
656	White-capped Bunting (2048)	<i>Emberiza stewarti</i> (Blyth, 1854)		IV		w
657	Striolated Bunting (2057)	<i>Emberiza striolata</i> (Lichtenstein, 1823)		IV		?
658	Grey-headed Bunting (2055-2055a)	<i>Emberiza fucata</i> Pallas, 1776		IV		rw
659	Little Bunting (2056)	<i>Emberiza pusilla</i> Pallas, 1776		IV		w
660	Chestnut Bunting (2045)	<i>Emberiza rutila</i> Pallas, 1776		IV		?
661	Black-headed Bunting (2043)	<i>Emberiza melanocephala</i> Scopoli, 1769		IV		p
662	Red-headed Bunting (2044)	<i>Emberiza bruniceps</i> Brandt, 1841		IV		?
663	Black-faced Bunting (2047)	<i>Emberiza spodocephala</i> Pallas, 1776		IV		w
664	Reed Bunting (2058-2059)	<i>Emberiza schoeniclus</i> (Linnaeus, 1758)		IV		?
665	Corn Bunting (2041)	<i>Miliaria calandra</i> Linnaeus, 1758		IV		V w
	Finches	68 Family FRINGILLIDAE				
666	* Chaffinch (1979)	<i>Fringilla coelebs</i> Linnaeus, 1758		IV		w
667	Fire-fronted Serin (1998)	<i>Serinus pusillus</i> (Pallas, 1811)		IV		rw
668	Yellow-breasted Greenfinch (1990, 1992)	<i>Carduelis spinoides</i> Vigors, 1831		IV	BRS (07)	sw
669	Eurasian Goldfinch (1987-1989)	<i>Carduelis carduelis</i> (Linnaeus, 1758)		IV		rw
670	Twite (1995-1996)	<i>Carduelis flavirostris</i> (Linnaeus, 1758)		IV		?
671	* Hodgson's Mountain-Finch (1999-2000)	<i>Leucosticte nemoricola</i> (Hodgson, 1836)		IV	BRS (05)	rw
672	Black-headed Mountain-Finch (2001-2005)	<i>Leucosticte brandti</i> Bonaparte, 1850		IV	BRS (05)	?
673	Spectacled Finch (1997)	<i>Callacanthus burtoni</i> (Gould, 1838)		IV	RRS (4)	w
674	Dark-breasted Rosefinch (2014-2015)	<i>Carpodacus nipalensis</i> (Hodgson, 1836)		IV	BRS (07)	s
675	* Common Rosefinch (2010-2013)	<i>Carpodacus erythrinus</i> (Pallas, 1770)		IV		sw

Sl. No.	Systematic list		IUCN 2007	BNHS 2002	Jhunjhunwala <i>et al.</i> 2001	Residential status
	Common Name	Scientific Name				
676	Beautiful Rosefinch (2023-2024)	<i>Carpodacus pulcherrimus</i> (Moore, 1855)		IV	BRS (05)	s
677	Pink-browed Rosefinch (2017)	<i>Carpodacus rodochrous</i> (Vigors, 1831)		IV	BRS (07)	sw
678	Spot-winged Rosefinch (2019)	<i>Carpodacus rodopeplus</i> (Vigors, 1831)		IV	BRS (07)	sw
679	Red-mantled Rosefinch (2018)	<i>Carpodacus rhodochlamys</i> (Brandt, 1843)		IV	BRS (05)	r
680	White-browed Rosefinch (2020-2022)	<i>Carpodacus thura</i> Bonaparte & Schlegel, 1850		IV	BRS (07)	r
681	Streaked Great Rosefinch (2028)	<i>Carpodacus rubicilloides</i> Przevalski, 1876		IV	BRS (05)	?
682	Common Great Rosefinch (2027)	<i>Carpodacus rubicilla</i> (Guldenstadt, 1775)		IV	BRS (05)	?
683	Red-fronted Rosefinch (2029-2031)	<i>Carpodacus puniceus</i> (Blyth, 1845)		IV	BRS (05)	r
684	Crimson-browed Finch (2033)	<i>Propyrrhula subhimachala</i> (Hodgson, 1836)		IV	BRS (07)	?
685	Scarlet Finch (2034)	<i>Haematospiza sipahi</i> (Hodgson, 1836)		IV	BRS (07)	sw
686	Red Crossbill (2032)	<i>Loxia curvirostra</i> Linnaeus, 1758		IV		?
687	Brown Bullfinch (2036-2037)	<i>Pyrrhula nipalensis</i> Hodgson, 1836		IV	BRS (07)	w
688	Orange Bullfinch (2040)	<i>Pyrrhula aurantiaca</i> Gould, 1858		IV	RRS (4)	?
689	Red-headed Bullfinch (2039)	<i>Pyrrhula erythrocephala</i> Vigors, 1832		IV	BRS (07)	rw
690	Black-and-Yellow Grosbeak (1982)	<i>Mycerobas icterioides</i> (Vigors, 1831)		IV	BRS (07)	rA
691	Collared Grosbeak (1983)	<i>Mycerobas affinis</i> (Blyth, 1855)		IV	BRS (07)	w
692	Spotted-winged Grosbeak (1986)	<i>Mycerobas melanozanthos</i> Hodgson, 1836		IV	BRS (07)	s
693	White-winged Grosbeak (1984-1985)	<i>Mycerobas carnipes</i> (Hodgson, 1836)		IV	BRS (07)	rA
694	Gold-naped Black Finch (2035)	<i>Pyrrhoplectes epauletta</i> (Hodgson, 1836)		IV	BRS (07)	?
	Munias (Estrildid Finches)	69 Family ESTRILDIDAE				
695	Red Munia (1964)	<i>Amandava amandava</i> (Linnaeus, 1758)		IV		R
696	White-throated Munia (1966)	<i>Lonchura malabarica</i> (Linnaeus, 1758)		IV		R
697	White-rumped Munia (1967-1970)	<i>Lonchura striata</i> (Linnaeus, 1766)		IV		?
698	* Spotted Munia (1974-1975)	<i>Lonchura punctulata</i> (Linnaeus, 1758)		IV		R
699	Black-headed Munia (1976-1978)	<i>Lonchura malacca</i> (Linnaeus, 1766)		IV		?
	Sparrows & Weavers	70 Family PLOCEIDAE				

Sl. No.	Systematic list		IUCN 2007	BNHS 2002	Jhunjhunwala et al. 2001	Residential status
	Common Name	Scientific Name				
	Sparrows & Snowfinches	70a Subfamily PASSERINAE				
700	* House Sparrow (1938-1939a)	<i>Passer domesticus</i> (Linnaeus, 1758)		IV		R
701	* Cinnamon Tree Sparrow (1946-1947)	<i>Passer rutilans</i> Temminck, 1835		IV		RA
702	Eurasian Tree Sparrow (1941-1944)	<i>Passer montanus</i> (Linnaeus, 1758)		IV		RA
703	Yellow-throated Sparrow (1948-1949)	<i>Petronia xanthocollis</i> (Burton, 1838)		IV		R
	Weavers	70b Subfamily PLOCEINAE				
704	Black-breasted Weaver (1961)	<i>Ploceus benghalensis</i> (Linnaeus, 1758)		IV	BRS (12)	R
705	Streaked Weaver (1962-1963)	<i>Ploceus manyar</i> (Horsfield, 1821)		IV		r
706	* Baya Weaver (1957-1959)	<i>Ploceus philippinus</i> (Linnaeus, 1766)		IV		R
707	Finn's Weaver (1960-1960a)	<i>Ploceus megarhynchus</i> Hume, 1869	VU	IV	BRS (12)	r Ra
	Starlings & Mynas	71 Family STURNIDAE				
708	Spot-winged Starling (984)	<i>Saroglossa spiloptera</i> (Vigors, 1831)		IV	BRS (08)	s
709	* Grey-headed Starling (987-989)	<i>Sturnus malabaricus</i> (Gmelin, 1789)		IV	BRS (11)	s
710	* Brahminy Starling (994)	<i>Sturnus pagodarum</i> (Gmelin, 1789)		IV	BRS (11)	R
711	Rosy Starling (996)	<i>Sturnus roseus</i> (Linnaeus, 1758)		IV		p
712	Common Starling (997-1001)	<i>Sturnus vulgaris</i> Linnaeus, 1758		IV		w
713	* Asian Pied Starling (1002-1004)	<i>Sturnus contra</i> Linnaeus, 1758		IV		R
714	* Common Myna (1006-1007)	<i>Acridotheres tristis</i> (Linnaeus, 1766)		IV		R
715	* Bank Myna (1008)	<i>Acridotheres ginginianus</i> (Latham, 1790)		IV	BRS (11)	R
716	* Jungle Myna (1009-1011)	<i>Acridotheres fuscus</i> (Wagler, 1827)		IV		R
717	Common Hill-Myna (1015, 1017; 1018)	<i>Gracula religiosa</i> Linnaeus, 1758		IV		?
	Orioles	72 Family ORIOLIDAE				
718	* Eurasian Golden Oriole (952-953)	<i>Oriolus oriolus</i> (Linnaeus, 1758)		IV		s
719	* Black-headed Oriole (958-960a)	<i>Oriolus xanthornus</i> (Linnaeus, 1758)		IV		R
720	* Maroon Oriole (961)	<i>Oriolus traillii</i> (Vigors, 1832)		IV	BRS (08)	r

Sl. No.	Systematic list		IUCN 2007	BNHS 2002	Jhunjhunwala <i>et al.</i> 2001	Residential status
	Common Name	Scientific Name				
	Drongos	73 Family DICRURIDAE				
721	* Black Drongo (962-964)	<i>Dicrurus macrocercus</i> Vieillot, 1817		IV		R
722	* Ashy Drongo (965-966b)	<i>Dicrurus leucophaeus</i> Vieillot, 1817		IV		s
723	White-bellied Drongo (967-969)	<i>Dicrurus caerulescens</i> (Linnaeus, 1758)		IV	BRS (11)	r
724	* Crow-billed Drongo (970)	<i>Dicrurus annectans</i> (Hodgson, 1836)		IV	BRS (09)	s
725	Bronzed Drongo (971)	<i>Dicrurus aeneus</i> Vieillot, 1817		IV		r
726	* Lesser Racket-tailed Drongo (972)	<i>Dicrurus remifer</i> (Temminck, 1823)		IV		r
727	* Spangled Drongo (973)	<i>Dicrurus hottentottus</i> (Linnaeus, 1766)		IV		R
728	* Greater Racket-tailed Drongo (976-981)	<i>Dicrurus paradiseus</i> (Linnaeus, 1766)		IV		r
	Woodswallows/Swallow-Shrikes	74 Family ARTAMIDAE				
729	* Ashy Woodswallow (982)	<i>Artamus fuscus</i> Vieillot, 1817		NLA	BRS (11)	?
	Crows, Jays, Treepies, Magpies, etc.	75 Family CORVIDAE				
730	* Eurasian Jay (1020-1021)	<i>Garrulus glandarius</i> (Linnaeus, 1758)		IV		R
731	* Black-headed Jay (1022)	<i>Garrulus lanceolatus</i> Vigors, 1831		IV	BRS (08)	R
732	* Yellow-billed Blue Magpie (1025-1026)	<i>Urocissa flavirostris</i> (Blyth, 1846)		IV	BRS (07)	R
733	* Red-billed Blue Magpie (1027-1028)	<i>Urocissa erythrorhyncha</i> (Boddaert, 1783)		IV		R
734	* Common Green Magpie (1023)	<i>Cissa chinensis</i> (Boddaert, 1783)		IV		r
735	* Indian Treepie (1030a-1034)	<i>Dendrocitta vagabunda</i> (Latham, 1790)		IV		R
736	* Grey Treepie (1037-1039)	<i>Dendrocitta formosae</i> Swinhoe, 1863		IV	BRS (08)	R
737	Spotted Nutcracker (1042-1044)	<i>Nucifraga caryocatactes</i> (Linnaeus, 1758)		IV		r
738	* Red-billed Chough (1046-1047)	<i>Pyrrhocorax pyrrhocorax</i> (Linnaeus, 1758)		IV		R
739	* Yellow-billed Chough (1045)	<i>Pyrrhocorax graculus</i> (Linnaeus, 1766)		IV	BRS (05)	R
740	* House Crow (1048-1051)	<i>Corvus splendens</i> Vieillot, 1817		V		R
741	Carrion Crow (1058, 1058a)	<i>Corvus corone</i> Linnaeus, 1758		IV		?
742	* Jungle Crow (1054-1057)	<i>Corvus macrorhynchos</i> Wagler, 1827		IV		R
743	Common Raven (1059-1060)	<i>Corvus corax</i> Linnaeus, 1758		IV		r

SYSTEMATIC ACCOUNT

Order PODICIPEDIFORMES

PODICIPEDIDAE (Grebes)

Grebes are small to medium-sized waterbirds with fairly thin pointed bill, upright necks and a characteristic tailless shape. Plumage dense and silky; primaries 12, the first from outside rudimentary; legs placed far back, specially adapted for diving and swimming; tarsi scutellated in front, laterally compressed; front toes with broad lateral vane-like lobes; hind toe small, raised, and vertically lobed; nails broad and flattened. Sexes seasonally dimorphic; young are nidifugous (able to swim at once).

1(5) *Tachybaptus ruficollis* (Pallas, 1764)

Little Grebe

1884. *Podiceps capensis* Salvadori, *Ann. Mus. Civ. Genova* (2)I : 252 (Shoa, Africa).

1929. Baker, *FBI* No. 2292, 6 : 481.

Collection records : Uttarakhand : Dehra Dun : Chakarata road, 1 ♀, 8.iv.1963 coll. P. K. Bose; Badripur, 1 ♀, 9.ii.1977, coll. M. L. Narang.

Diagnostics : Size : Tailless Pigeon ±; c. 27 cm. Sexes alike.

Adult : A small, squat and tailless bird with short pointed bill and backwardly placed legs. It rides the water with rear end raised and dives frequently. In flight, a white wing patch of secondaries conspicuous.

Breeding (summer) : Forehead, crown and nape blackish-brown; lores, face, and chin chestnut; upper plumage lighter than the crown; flanks dusky brown and underparts silky smoky-white.

Non-breeding (winter) : Light brown with whitish chin, pale rufous neck and whitish underparts.

Juvenile : Paler, the chestnut on the sides of the head and lower neck is either absent or a trace of it, the lower plumage is white with very little brown.

Habitat : Stays in loose flocks in open waters during nonbreeding season, but singly or in pairs in vegetation during breeding season.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Asan Baraj (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Clement Town Tank (Singh 2000). Naini Tal (Hudson 1930), (Tak 1995). Pauri (Tak 1995). Rudraprayag : Deohra Tal (Lavkumar 1956b). Corbett Tiger Reserve or CTR (spread over in districts Pauri and Naini Tal) (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). Rajaji National Park or RNP (spread over in districts Dehra Dun, Haridwar and Pauri) (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

2(3) *Podiceps cristatus* (Linnaeus, 1758)

Great Crested Grebe

1758. *Colymbus cristatus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 35 (Sweden).

1929. Baker, *FBI* No. 2290, 6 : 477.

Diagnostics : Size : Domestic duck-; c. 46-49 cm length; 59-73 cm wingspan. Sexes alike, but the diagnostics less developed in female. An excellent swimmer and diver, and pursues its fish prey underwater.

Adult : A tailless aquatic bird characterised by slender white neck and straight pointed bill; two upstanding, backwardly directed ear tufts above head and a frill of chestnut-and-black elongated feathers below the head. In winter (nonbreeding) these 'ear tufts' much reduced, and in young birds absent. However, it has the black forehead, crown and crest; a blackish line from gape to eye; white lores and sides of the head, chin and throat; dark nape and back; mottled brown and rufous flanks and white underparts.

Juvenile : Similar to nonbreeding but has brown striping on cheeks.

Habitat : Prefers open water lakes, reservoirs, jheels and saltpans.

Distribution : Uttarakhand : Dehra Dun : Yamuna at mouth of Giri (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Haridwar :

Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (internet list, Khati 2004, Lamba undated, Lamba & Bhatnagar 1977-79). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**3(N) *Podiceps auritus* (Linnaeus, 1758)
Horned Grebe**

1758. *Podiceps auritus* (Linnaeus), *Syst. Nat.* ed. 10 : 135.

Not given in Baker, *FBI*.

Diagnostics : Size : Dabchick +; c. 31-38 cm length; 46-55 cm wingspan. Sexes alike. Like Black-necked Grebe, but with white tipped straight bill and a pale stripe from base of bill to eyes.

Adult breeding (summer) : Head black with yellow ear tufts sweeping back from eyes, neck and flanks rufous.

Non-breeding (winter) : Black cap extends down up to eyes, foreneck white, and hind neck dark.

Juvenile : Similar to nonbreeding birds but with faint dark stripes on cheeks.

Habitat : Prefers shallow lakes and jheels with emergent vegetation, also coastal waters.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : It was recorded as a new species for India by Drijvers, R. 1995 (*Forktail*, 10 : 175-176).

**4(4) *Podiceps nigricollis* Brehm, 1831
Black-necked Grebe**

1831. *Podiceps nigricollis* Brehm, *Handb. Naturg. Vog. Deutschl.* : 963 (E. Germany).

1929. Baker, *FBI* No. 2291, 6 : 480.

Diagnostics : Size : Dabchick +; c. 28-34 cm length. Sexes alike. A small dark brown grebe with a slender pointed and slightly uptilted bill, white underparts and silvery white flanks.

Non-breeding : In winter, distinguishable from very similar Little Grebe by blackish cap to below the eyes, mixed black and white chin and throat, and dark brown foreneck.

Breeding (summer) : Black head and neck, and a golden tuft, of feathers behind the eyes are the diagnostics.

Habitat : Prefers shallow lakes or reservoirs with patches of emergent vegetation.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage (Gandhi & Singh 1995, Singh 2000, Tak & Sati 2003). CTR (internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**Order PELECANIFORMES
PELECANIDAE (Pelicans)**

Pelicans are gregarious; fish eating, large birds with broad and powerful wings. Bill enormous; upper mandible terminates in a strongly hooked nail; the lower consists of two flexible rami supporting a large gular pouch. Retracted neck bends back in a flat S. Legs short and strong with large webbed feet. Sexes alike. Young nidicolous (remaining long in the nest) because naked on hatching, becoming downy later. Flight either characteristic V-shaped or long straggly ribbons with a wide front.

**5(20) *Pelecanus onocrotalus* Linnaeus, 1758
Great White Pelican**

1758. *Pelecanus onocrotalus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 132 (Africa, Asia).

1929. Baker, *FBI* No. 2176, 6 : 270.

Diagnostics : Size : Vulture ±; c. 140-183 cm length; c. 280 cm wingspan. Sexes alike, female smaller.

Adult : Large white bird with yellowish pouch attached to the lower mandible. Bill lead-blue, mottled with white along the centre and with the nail and edges of both mandibles red; lower mandible is blue on the basal, yellow on the terminal half; forehead feathers terminate in a point over the bill; slight crest on the back of the head. Plumage mostly white tinged with rose; yellowish breast feathers, black primaries and underside of secondaries; feet fleshy-pink, with yellow webs.

Juvenile : Largely white, head and neck overspread with dull iron-rust; remaining plumage dull pale brown; ashy tinged webs.

Habitat : Found in congregations in large jheels, heronries, lagoons, salt pans and tidal creeks.

Distribution : Uttarakhand : Dehra Dun : Ganges near Raiwala (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residentail status not known. Schedule IV (BNHS 2002).

Remarks : Like Dalmatian Pelican, this species has also declined greatly through habitat loss as well as persecution. Like most Pelicans, this species also catch fish in their huge bill pouches while swimming at the surface.

**6(21) *Pelecanus philippensis* Gmelin, 1789
Spot-billed Pelican**

1789. *Pelecanus philippensis* Gmelin, *Syst. Nat.* 1(2) : 571 (Philippines = Manila, vide Stresemann 1952, *Ibis* 94 : 514).

1789. *Pelecanus roseus* Gmelin, *Syst. Nat.* 1(2) : 570. (Manila, P.I.).

1929. Baker, *FBI* No. 2179, 6 : 274.

Diagnostics : Size : Vulture +; c. 140-152 cm length. Sexes alike.

Adult : Head, neck and upperparts grey; underparts greyishwhite, under tail-coverts mottled with brown; bill and gular pouch flesh-coloured, blue spots on upper mandible and blackish marking on pouch; nuchal crest brown, composed of white-tipped elongated feathers; legs and feet dark brown. In summer, under wing-coverts and under tail-coverts slightly wine-coloured; in winter lower back, rump and flanks tinged with vinaceous.

Juvenile : Pale brown above and white below.

Habitat : Frequents a variety of wetlands may it be deep or shallow, natural or man-made, freshwater or saline; including marshes, lakes, rivers, etc.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residentail status not known. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

Remarks : Due to ongoing habitat loss and human disturbances, this species was evaluated as Vulnerable, but in the year 2007 it has been down listed to Near Threatened.

PHALACROCORACIDAE (Cormorants/Shags)

Cormorants are gregarious, fish eating and colonial nesting birds; plumage black in all Indian species; body long and spindle-shape; bill serrated, laterally compressed and hooked at tip in cormorants; tail long and stiff; legs short, feet large, peleaniform with all four toes united in a web for swimming. Flight either V-shaped or in wavy diagonal lines. Sexes alike; young ones are nidicolous.

**7(28) *Phalacrocorax niger* (Vieillot, 1817)
Little Cormorant**

1817. *Hydrocorax niger* Vieillot, *Nouv. Dict. Hist. Nat.* 8 : 88 (East Indies = Bengal).

1929. Baker, *FBI* No. 2182, 6 : 280.

Diagnostics : Size : Jungle Crow +; c. 51 cm. Sexes alike.

Adult : Has small and black body with stout and hooked bill, blackish at tip and bluish purple at base; domed forehead; stiff tail; and without yellow gular skin.

Breeding : Black with glistering blue-green; upper back and wing-coverts dark silvery grey; short occipital crest, a few white silky feathers on forecrown, sides of head and neck.

Non-breeding : Crest and white feathers disappear, and feathers at base of lower bill appear white, sometimes extending to throat.

Juvenile: Brown above and paler below with white throat and central abdomen.

Habitat : Found in lakes, rivers, irrigation reservoirs, canals, prefers village tanks, estuaries, etc.

Distribution : Uttarakhand : Dehra Dun : rivers Yamuna and Ganges (Osmaston 1935), New Forest (George 1957), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Clement Town Tank (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-

06). Pauri (Tak 1995). Pithoragarh : Dhauli river basin 2004 (Tak & Sati 2006). Udhamsingh Nagar : Nanak Matta (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

8(27) *Phalacrocorax fuscicollis* Stephens, 1826
Indian Shag

1826. *Phalacrocorax fuscicollis* Stephens, in Shaw's *Gen. Zool.* 13(1) : 91 (Bengal).

1929. Baker, *FBI* No. 2182, 6 : 280.

Diagnostics : Size : Duck +; c. 63 cm. Sexes alike.

Adult : Chiefly a black waterbird with blue-green eyes; dark brown bill; yellow gular skin; white speckled throat; black legs and feet; scaly effect on back and wings visible on a closer look.

Breeding (July-February) : Upper plumage iridescent bronze-black; under plumage glossy black; a white tuft of feathers on each side of the neck behind eyes, a few specks on head; face black-purplish.

Non-breeding : Plumage without gloss.

Juvenile : Scaly bronze-brown above with black primaries and tail; white below; flanks mottled with brown and white.

Habitat : Freshwater wetlands such as: lakes, jheels, reservoirs, rivers; also estuaries, and mangroves.

Distribution : Uttarakhand: Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

9(26) *Phalacrocorax carbo* (Linnaeus, 1758)
Great Cormorant

1801. *Pelecanus sinensis* Shaw, *Nat. Misc.* 13 : pl. 529, text (China) [*Phalacrocorax* Brisson, 1760. *Orn.* 1 : 60. Type tautonymy, *Phalacrocorax* Brisson = *Pelecanus carbo* Linnaeus].

1929. Baker, *FBI* No. 2180, 6 : 277.

Diagnostics : Size : Large duck; c. 80-100 cm length; 121-149 cm wingspan. Sexes alike.

Adult : Black waterbird with a slender bill, hooked at tip and stiff longish tail.

Breeding : Glossy black plumage with metallic blue-green sheen; throat and front half of face white; gular pouch bright yellow; silky white plumage on head and neck; a broad white patch on posterior flanks.

Non-breeding (winter) : Yellow gular pouch less bright; silky white of head and neck and the white patch on posterior flanks disappear.

Juvenile : Brown above and white below.

Habitat : Reservoirs, lakes (high altitude lakes in Himalaya up to 3500 m) and large rivers : coastal wetlands.

Distribution : Uttarakhand : Chamoli : Pindar (Osmaston 1921). Dehra Dun : Yamuna and Ganges (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Clement Town Tank (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Gori river basin- 2004 (Tak & Sati 2006). Rudrapur : Mandagini (Osmaston 1921), Augstyamuni (ZSI Survey 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident, with widespread winter influx. Schedule IV (BNHS 2002).

ANHINGIDAE (Darters)

Darters are like cormorants but with a long thin pointed (stiletto-like) bill; longer, slimmer, snake-like neck, hence, the alternative of Snakebird, especially when the bird swims with body submerged; long wings and very long tail.

10(29) *Anhinga melanogaster* Pennant, 1769
Darter

1769. *Anhinga melanogaster* Pennant, *Indian Zool.* : 13, p. 12 (Ceylon and Java).

1929. Baker, *FBI* No. 2183, 6 : 282.

Diagnostics : Size : Duck +; c. 85-97 cm. Sometimes also called as the 'Oriental Darter' or 'Indian Darter' or 'Snakebird' Sexes alike. Often swims with only the neck above water, thus appearing like a snake and hence the name 'Snakebird'

Adult : Like cormorant but with long slender snake-like neck; narrow head; pointed and small dagger shaped bill and fan-shaped stiff tail. A white streak from eye to sides of the neck; white chin and throat, remaining head and neck velvety chocolate-brown; black above; back and wings longitudinally streaked and speckled with silver-grey; entirely black below, including legs.

Juvenile : Head and neck pale brown; lower back to upper tailcoverts dark brown; mantle narrowly streaked rufous and silver-grey; brown below; pale tail-tip.

Habitat : Lakes, jheels, reservoirs, rivers, ponds, marshes and mangroves, also coastal waters.

Distribution : Uttarakhand : Dehra Dun : Yamuna barrage and Ganges (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

Order CICONIIFORMES

ARDEIDAE (Egrets, Herons & Bitterns)

Egrets and herons are usually gregarious; waders with long legs, neck and bill; legs projecting well beyond short tails during flight. Necks retracted into S-curve enable these birds to extend the neck with speed and great force to catch or pierce the prey; bill straight, sharp-pointed and dagger-like; nostrils oval, close to the base. Most species have specialised feathers, i.e. powdery down, on each side of breast and rump; these are never shed, but continue to grow from the base and give off a powder for preening feathers. Many species acquire filamentous ornamental plumes ('aigrettes') during the

breeding season. Middle and outer toes united by a small web at their base; middle toe pectinate or comb-like; sexes alike or nearly so; breeding colonial; young nidicolous.

11(49) *Egretta garzetta* (Linnaeus, 1766) Little Egret

1766. *Ardea Garzetta* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 237 ('Oriente' = northeast Italy).

1929. Baker, *FBI* No. 2225, 6 : 348.

Collection record : Uttarakhand : Dehra Dun : Prem Nagar, 1 ♀, 27.xi.1963, coll. P.K. Bose.

Diagnostics : Size : Village hen ±; c. 55-63 cm. Sexes alike.

Adult : A pure white bird like the other egrets, but smaller with black bill and legs; and yellow feet.

Breeding (July-September) : A drooping nuchal crest of two long narrow plumes; filamentous ornamental feathers on breast and scapulars; a thick bunch of decomposed dorsal plumes extends beyond the tail.

Non-breeding : The ornamental plumes are dropped though occasionally some of the scapular plumes are retained.

Habitat : Marshes, jheels, lakes, rivers, paddy fields, mudflats, etc.

Distribution : Uttarakhand : Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), New Forest (Mohan 1993, 1996), Asan Baraj (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Khaddar (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh: Dhauli river basin- 2002 (Tak & Sati 2006). Udham Singh Nagar : Aam Pokhara-Kashipur, near Panthnagar, near Pratapur, Haripur Dam site & Dineshpur (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

12(50) *Egretta gularis* (Bosc, 1792)
Western Reef-Egret

1832. *Ardea* (*Leptorodas*) *schistacea* Hemprich & Ehrenberg,
Symb. Phys. Aves, (p. 12), pl. 6 (Red Sea).

1832. *Ardea* *Asha* Sykes, *Proc. Zool. Soc. London* : 157
(Dukhun).

1929. Baker, *FBI* No. 2228, 6 : 353.

Diagnostics : Size : Village hen $\pm$; c. 55-65 cm.
A dimorphic egret.

Adult : Like Little Egret, but has two colour phases, viz., pure white and slaty-grey. The latter may vary up to slaty-blue-black. Throat and upper foreneck glistening white in slaty-grey phase; sexes alike in both colour phases. *Breeding* birds develop two elongated narrow plumes on hind crest (nuchal crest), and same sort of plumes on back and breast.

Juvenile : Pale ashy-grey above and white below except grey upper foreneck.

Habitat : Generally found at sandy and rocky seashores, estuaries, mangroves and lagoons, rarely affects fresh waters.

Distribution : Uttarakhand : CTR (internet list).
RNP : Ganga valley (Kumar & Bhatt 2000).

Status : Resident status not known. Schedule IV (BNHS 2002).

13(35-36) *Ardea cinerea* Linnaeus, 1758
Grey Heron

1758. *Ardea cinerea* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 143
(Europe, restricted to Sweden).

1929. Baker, *FBI* No. 2217, 6 : 339.

Diagnostics : c. 90-98 cm length including neck and legs; 175-195 cm wingspan. Sexes alike, but female smaller with less developed occipital crest and pectoral plumes. A long-legged, longnecked, and largely a ashy-grey bird long black occipital crest.

Adult : Has white head with a broad black supercilium; yellow bill; white neck with black dotted line down middle of foreneck; elongated black-streaked white feathers on breast. Plumage ashy-grey above; darker central feathers with black tips; primaries, outer secondaries, primary coverts and bastard wing almost black; greyish-white below. Tail grey.

Juvenile : Browner and darker grey with foreneck more conspicuously black-streaked and without lengthened scapulars and breast plumes.

Habitat : Affect jheels, marshes, rivers, lakes, estuaries, mangroves, coral reefs and offshore islands.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Haridwar: Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

14(37-37a) *Ardea purpurea* Linnaeus, 1766
Purple Heron

1834. *Ardea purpurea* var. *manilensis* Meyen, *Nova Acta Acad. Caes. Leop. Carol.* 16, suppl. : 102-103
(Philippines).

1929. Baker, *FBI* No. 2216, 6 : 337.

Diagnostics : Size : Grey Heron -; c. 78-90 cm length; 120-150 wingspan. Sexes alike, female with less developed crest and pectoral plumes. A lanky dark greyish marsh bird with long slender snake-like neck.

Adult : Plumage slaty-purple above; chestnut and black below. Bill dark yellow; drooping crest black; crown, crest and a line down hind neck black; a second up-running black line from gape to crest; a third black line down whole length of side of neck; rest of head and neck rufous with another black streak down fore-neck. Chin and throat white; long drooping plumes on upper breast buff white with black and chestnut streaks; rest of upperparts slaty black and rich chestnut; underparts chiefly chestnut and black; legs reddish-brown.

Juvenile : Cinnamon-brown.

Habitat : Marshes with elephant grass, lakes, jheels, rivers and paddy fields.

Distribution : Uttarakhand : Dehra Dun : Eastern Dun (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

15(45-46) *Casmerodius albus* (Linnaeus, 1758)
Large Egret

1758. *Ardea alba* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 144 (in *Europa*, = Sweden).

1929. Baker, *FBI* No. 2222, 6 : 345.

Diagnostics : Size : Grey Heron $\pm$; c. 91-96 cm. Sexes alike.

Adult : A snowwhite bird with yellow beak and black legs. **Breeding** birds with black beak; edge of gape, naked lores and orbital skin behind eyes bright green; three sets of long, transparent, white plumes growing from scapulars extending beyond tail.

Juvenile : Pure white.

Habitat : Jheels, marshes, rivers, lakes, estuaries, mangroves and coral reefs.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

16(47, 48) *Mesophoyx intermedia* (Wagler, 1829)
Median Egret

1829. *Ardea intermedia* Wagler, *Isis von Oken*, col. 659 (Java).

1929. Baker, *FBI* No. 2224, 6 : 347.

Diagnostics : c. 65-72 cm. Sexes alike. The species, as its scientific name implies, is intermediate in size between the 'Large Egret'

(which has a noticeable kink near the middle of its neck) and smaller white egrets such as: the 'Little Egret' and 'Cattle Egret' Hence, also known as the 'Intermediate Egret'

Adult : A comparatively medium-sized snow-white egret with generally dark legs and a thickish yellow bill. Its neck length is a little less than its body length.

Non-breeding : Often indistinguishable.

Breeding : Develops filamentous plumes on breast as well as back, and the yellow bill (non-breeding) turns black.

Habitat : Lakes, reservoirs, marshes, pools with vegetation, jheels, inundations, estuaries, mangroves and tidal creeks.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Asan Baraj (Gandhi & Singh 1995, Tak & Sati 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : The Intermediate Egret tends to stalk upright with neck extended forward, while the Great Egret is more patient, often adopting a sideways-leaning 'one-eyed' stance.

17(44) *Bubulcus ibis* (Linnaeus, 1758)
Cattle Egret

1783. *Cancroma coromanda* Boddaert, *Table Pl. enlum.* : 54 (Coromandel).

1929. Baker, *FBI* No. 2226, 6 : 349.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1ex., 15.xi.1967, coll. P.K. Bose; Herbatpur, 1ex., 27.vii.1968, coll. P.K. Bose.

Diagnostics : Size : Village hen; c. 48-53 cm length. Sexes alike.

Adult : A lanky snowwhite bird.

Non-breeding : Like Little Egret, but always identified by yellow bill *contra* black.

Breeding : Goldenbuff plumes on head, neck and back.

Habitat : Damp grassland, fallow, paddy fields, and periphery of canals, lakes, and reservoirs.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (Mohan 1993, 1996), Asan Baraj (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur, Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

**18 (42-42a) *Ardeola grayii* (Sykes, 1832)
Indian Pond-Heron**

1832. *Ardeola Grayii* Sykes, *Proc. Zool. Soc. London* : 158 (Dukhun).

1929. Baker, *FBI No.* 2229, 6 : 354.

Collection records : Uttarakhand: Dehra Dun: Badripur, 1?, 2.iii.1976, coll. M.L. Narang; 1?, 24.i.1977, coll. Ram Das.

Diagnostics : Size : Country hen +; c. 42-45 cm. Sexes alike.

Adult : A thickset, earthy-brown at rest and largely snow-white in flight waterbird has yellow bill, which is black at tip and bluish at base; white chin, throat and foreneck; horny-green legs.

Breeding : Long recumbent white or buff occipital crest of lanceolate plumes; ashybrown upper breast; deep maroon and long decomposed feathers on back; white underparts.

Non-breeding : Dark brown head and neck with buff streaks of sides of neck prominent; brown mantle; white streaks on scapulars; white underparts.

Habitat : Streams, jheels, marshes, ponds, rice fields, village tanks, ditches, wells and mudflats.

Distribution : Uttarakhand : Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935,

Bhatnagar & Misra 1971, 1972a, Tak 1995), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur, Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Udham Singh Nagar : Dabka river, near Panthnagar, Haripur Dam site & Dineshpur, Nanak Matta (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

**19(38-41) *Butorides striatus* (Linnaeus, 1758)
Little Green Heron**

1857. *Ardea chloriceps* 'Hodgs.' = Bonaparte, *Consp. Gen. Av.*, 2 : 129 Nepal. (Restricted to Hitaura, Chisapani Garhi dist. By Biswas, 1959, *Curr. Sci.*, 28 : 288).

1929. Baker, *FBI No.* 2231, 6 : 357.

Diagnostics : Size : Pond Heron; c. 46 cm. Sexes alike.

Adult : Chiefly a black, grey and dark metallic green heron with black bill; glossy greenish-black forehead, crown and longish occipital crest; white chin, cheeks and central throat; grey head and neck. Upperparts slaty-grey glossed with bronze-green; lower parts ashy-grey and under tail-coverts white with blackish edges; legs dull green or plumbeous green.

Juvenile : Brownish above, white below; dark streaks at sides; wings with white spots.

Habitat : Rivers, lakes, marshes with dense vegetation on the banks, also backwaters, mangroves and tidal creeks.

Distribution : Uttarakhand : Dehra Dun : Lachchiwala and Kansrao (Osmaston 1935, Bhatnagar & Misra 1971, 1972a), (Wright 1957, Tak 1995, Singh 2000). CTR (Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

**20(52) *Nycticorax nycticorax* (Linnaeus, 1758)
Black-crowned Night-Heron**

1758. *Ardea Nycticorax* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 142 (Southern Europe).

1929. Baker, *FBI* No. 2233, 6 : 359.

Diagnostics : Size : Pond Heron; c. 58-65 cm. Sexes alike. The genus *Nycticorax* derives from the Greek for 'night raven' and refers to the nocturnal feeding habits of this group of birds.

Adult : Strongly built grey, white and black heron with stout black bill. Crown, nape and occipital crest black with two or three very long, narrow white plumes; forehead and a streak over eye white; sides of neck, wings, rump and tail greyish; eyes blood-red; underparts white; legs and feet pale-green, in breeding season turn pinkish and bill blacker.

Juvenile : Pale-smoky brown with bright yellow eyes and resembles adult Indian Pond-Heron except for white wings.

Habitat : Reservoirs, jheels, tanks, streams, ponds, rivers, mangroves, estuaries, creeks and lagoons.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), Tons Valley (Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Asan reservoir (Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Khaddar, New Forest (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

**21(55) *Ixobrychus minutus* (Linnaeus, 1766)
Little Bittern**

1766. *Ardea minuta* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 240 (Switzerland).

1929. Baker, *FBI* No. 2236, 6 : 364.

Diagnostics : Size : Pond Heron -; c. 33-36 cm length; 40-58 cm wingspan. Sexually dimorphic.

Adult male : A 'hunchbacked' and buff bird with purplishyellow bill and greenish-horny legs.

Crown to tail black, buff wing patch visible in flight only; sides of head and neck greyish-pink or vinous; throat and neck whitish; upper breast and flanks ochre; lower breast blackish-maroon; central abdomen, vent and under tail-coverts almost white.

Adult female : Chestnut-brown above, including shoulder patch; chestnut-rufous below and rufous streaked.

Juvenile : Heavily streaked above and below

Habitat : Jheels, marshes, lakes and stream with tall reeds at edges.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tal 1995, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list)

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**22(57) *Ixobrychus sinensis* (Gmelin, 1789)
Yellow Bittern**

1789. *Ardea Sinensis* Gmelin, *Syst. Nat.* 1(2) : 642 (China).

1929. Baker, *FBI* No. 2237, 6 : 365.

Diagnostics : Size : Pond Heron -; c. 37-38cm. Sexually dimorphic.

Adult male : Crown and crest black with dark flight feathers; remaining back chiefly yellowishbrown; rump dark ashy; tail slaty-black; bill yellowish-horny; chin, throat and foreneck pale yellowish; sides of upper breast with buff streaks; rest of underparts buff; legs and feet yellow.

Adult female : Almost similar except for a buff mesial linedown the throat.

Juvenile : More rufous-brown above with broad buff fringes on all feathers; streaked below; the mesial line more pronounced.

Habitat : Scrubby swamps with reeds, inundated paddy fields in company with Chestnut Bittern.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Resident status not known. Schedule IV (BNHS 2002).

**23(56) *Ixobrychus cinnamomeus* (Gmelin, 1789)
Chestnut Bittern**

1789. *Ardea cinnamomea* Gmelin, *Syst. Nat.* 1(2) : 643 (China).

1929. Baker, *FBI* No. 2238, 6 : 367.

Diagnostics : Size : Pond Heron -; c. 38-40 cm. Sexually dimorphic.

Adult male : Upper plumage chestnut-cinnamon, wing-coverts paler; chin, throat and upper foreneck white with a dark median stripe down the foreneck; a patch of black, buffedged feathers on each side of upper breast largely concealed by elongated breast feathers; remaining under plumage and wings pale chestnut; bill yellow; legs and feet yellowishgreen.

Adult female : Darker; chestnut-brown above with blackish crown; wings mottled buff and brown; buff-rufous below with dark brown striation from chin to vent and a streak down middle of foreneck and breast.

Juvenile : Like female, but mottled above and heavily streaked below.

Habitat : Reedy beds of jheels and marshes, paddy fields, mangroves etc.

Distribution : Uttarakhand : Dehra Dun : Asan wetland (Tak & Sati 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Tehri (Tak 1995). RNP (Narang 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**24(58) *Dupetor flavicollis* (Latham, 1790)
Black Bittern**

1790. *Ardea flavicollis* Latham, *Index Orn.*, 2 : 701 (India).

1929. Baker, *FBI* No. 2239, 6 : 368.

Diagnostics : Size : Pond Heron +; c. 58 cm. Sexually dimorphic.

Adult male : Upper plumage slaty-grey to black with bluish sheen. Bill reddish-horny with yellowish tip and terminal half of lower mandible; chin and throat white with rufous dotted line down the middle; yellowish patch on either side of neck; upper breast dark slate with buff-white margins on feathers; breast, abdomen and remaining under plumage slaty-grey to brownish-black; legs and feet dark brown.

Adult female : Brown above and paler below with streaks on breast.

Juvenile : Crown blackish; upperparts dark brown with rufous scalloping; underparts mottled chestnut and buff.

Habitat : Occur in reedy swamps and ditches in forest with overgrown seepage and submerged bushes.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**25(59) *Botaurus stellaris* (Linnaeus, 1758)
Great Bittern**

1758. *Ardea stellaris* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 144 (Europe, restricted to Sweden).

1929. Baker, *FBI* No. 2240, 6 : 370.

Diagnostics : Size : Pond Heron +; c. 69-81 cm length; 100-130 cm wingspan.

Adult : Large size together with the dark brown motling, streaking and cross-barring on golden-buff plumage make this a distinctive bird. In flight note the dark barring on flight feathers.

Immature : Is much smaller, lacks vermiculations on wings and sides of neck, and the dark brown flight feathers contrast with pale wing-coverts.

Habitat : Dense reedbeds.

Distribution : Uttarakhand : Dehra Dun : Asan wetland (Tak & Sati 2003), Dehra Dun Valley (Singh 2006a).

Status : Resident status not known. Schedule IV (BNHS 2002).

CICONIIDAE (Storks)

Storks are long-legged, diurnal waders; chiefly terrestrial and marsh hunting large bird with long, massive, pointed, straight or nearly so, ungrooved bill; wings long and broad; tail rather short; legs very long, the tibia partly naked. The three anterior toes united by webs at their base. Due to absence of tracheobronchial muscles in the larynx, adults lacking voice. In most species the noise produced is either by hissing or by snapping of mandibles. In characteristic flight, neck and legs fully

outstretched, except in Adjutants. Sexes similar, except Black-necked Storks, where females have yellow iris and males have a dark iris; but males usually larger; young nidicolous.

**26(60) *Mycteria leucocephala* (Pennant, 1769)
Painted Stork**

1769. *Tantalus leucocephalus* Pennant, *Indian Zool.* : 11, pl. 10 (Ceylon).

1929. Baker, *FBI* No. 2214, 6 : 331.

Diagnostics : Size : Vulture $\pm$; c. 93-100 cm. Sexes alike. A broad winged soaring bird with longlegs, long-neck and black and white plumage. Like all storks, it flies with its neck outstretched.

Adult : Bird with orange-yellow bill and face; plumage white; wings blackish-green and white, breast band and tail-quills black; wing-coverts with rich rosy-pink wash; legs and feet fleshy brown.

Habitat : Inland lakes, reservoirs, marshes, inundated fields and riverbanks.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage (Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse summer visitor. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

**27(61) *Anastomus oscitans* (Boddaert, 1783)
Asian Openbill-Stork**

1783. *Ardes oscitans* Boddaert, *Table Pl. enlum.* : 55 (Pondicherry).

1929. Baker, *FBI* No. 2215, 6 : 333.

Diagnostics : Size : Large duck; c. 68-81 cm. Sexes alike.

Adult : A comparatively small stork with white plumage; greenish-black scapulars, wings and tail; dull greenish-horny bill with arching mandibles, showing a gap in-between at close range. The mandibles do not meet except at the tip, and this gives rise to the species' name. In non-breeding season the white plumage of the upperparts is replaced with pale smoky-grey.

Juvenile : Smoky brown-grey with blackish-brown mantle; gap in bill develops slowly.

Habitat : Jheels, marshes, shallow wetlands, such as lakes and reservoirs, paddy fields, riverbeds, etc.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage (Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**28(65) *Ciconia nigra* (Linnaeus, 1758)
Black Stork**

1758. *Ardea nigra* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 142 (Sweden).

1929. Baker, *FBI* No. 2209, 6 : 323.

Diagnostics : Size : White Stork $\pm$; c. 90-100 cm length; c. 1.8 m wingspan. Sexes alike. A large wading bird.

Adult : Has black upperparts with contrasting white underparts; scarlet bill and legs; plumage black with varying sheen; purple, green and bronze on upperparts; brilliant green on neck; mixed green and purple on breast except underparts.

Juvenile : Head, neck and upper breast with paletipped dark brown feathers; mantle brownishblack; underparts white.

Habitat : Marshes, riverbanks, freshwater lakes, etc.

Distribution : Uttarakhand : Dehra Dun : Tons valley, FRI campus and Clement Town (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Haridwar: Four individuals were sighted near a water body in Mandal block of Chilla range in Rajaji National Park on 18th January 1995 (Gandhi 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**29(62) *Ciconia episcopus* (Boddaert, 1783)
White-necked Stork**

1783. *Ardea episcopus* Boddaert, *Table Pl. enlum.* : 54 (Coromandel Coast).

1929. Baker, *FBI* No. 2210, 6 : 324.

Diagnostics : Size : Goose $\pm$; c. 75-92 cm. Sexes alike.

Adult : A large black and white stork with conspicuous white neck, black cap and red legs. Bill black, tinged crimson-red at tip and gape; crown black with green sheen; rest of plumage black, glossed purple or greenish-blue, except lower abdomen, under tail-coverts and tail which are white.

Juvenile : Has neck feathers longer and stuffer; glossy black replaced by dark brown.

Habitat : Flooded grasslands, fallow, irrigated ploughed fields, rain-filled ponds, marshes, marshy stream, rivers, etc. near open forests or groves.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957), Asan Barrage (Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Schedule IV (BNHS 2002).

30(63) *Ciconia ciconia* (Linnaeus, 1758)
European White Stork

1758. *Ardea Ciconia* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 142 (Sweden).

1929. Baker, *FBI* No. 2207, 6 : 321.

Diagnostics : Size : Goose $\pm$; c. 100-125 cm length; c. 180 cm wingspan. Sexes alike.

Adult : Chiefly a white storks with black primaries; red bill and legs; long and lanceolate feathers on head, neck and breast.

Juvenile : Like adult, but black parts replaced by brown.

Habitat : Dry and wet grassland, damp ploughed or fallow fields.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Schedule I & IV (BNHS 2002).

31(66) *Ephippiorhynchus asiaticus* (Latham, 1790)
Black-necked Stork

1790. *Mycteria asiatica* Latham, *Index Orn.*, 2 : 670 (India).

1929. Baker, *FBI* No. 2211, 6 : 326.

Diagnostics : Size : Painted Stork +; c. 129-150 cm length; c. 230 cm wingspan.

Adult : Sexes alike except for colour of iris, brown in male and yellow in female. A black and white stork with black neck and bill and coral red legs; black head and neck with varying sheen; copper-bronze on occiput and nape, and purple-green-blue on rest; back, scapulars, innermost secondaries and median wing-coverts black with green sheen; remaining plumage white.

Juvenile : A dull replica of adult.

Habitat : Lowland freshwater marshes, jheels, large rivers, occasionally mangrove swamps and coastal mudflats, and flooded crop fields.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), Asan Barrage (Singh 2000). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

Remarks : The Black-necked Storks are extremely sensitive to environmental changes like water pollution, habitat destruction and human disruption around breeding sites.

32(68) *Leptoptilos javanicus* (Horsfield, 1821)
Lesser Adjutant-Stork

1821. *Ciconia Javanica* Horsfield, *Trans. Linn. Soc. London*, 13(1) : 188 (Java).

1929. Baker, *FBI* No. 2213, 6 : 329.

Diagnostics : Size : Vulture +; c. 110-120 cm length; c. 210 cm wingspan. Sexes alike. The smallest member of the *Leptoptilos* genus. It has a pale long and thick bill. The head and neck are bare like those of a vulture.

Adult : Head and neck reddish-yellow, nearly naked, with sparse hair-like feathers; gular pouch

absent; upper plumage, including wings and tail, black with green sheen, closely barred and with a copper spot on the larger secondary coverts near their tip; under-plumage white. In nonbreeding plumage, the copper spots absent.

Juvenile : Head and neck better feathered; upper plumage less glossy.

Habitat : Jheels, marshes, forest pools, flooded fields, mangroves and out skirts of habitations.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residentail status known. Vulnerable (IUCN 2007). Schedule IV (BNHS 2002).

Remarks : Most storks fly with neck outstretched, but the three *Leptotilos* species retract their neck in flight like a heron. It also eats carrion, for which its bare head and neck is an adaptation.

33(67) *Leptotilos dubius* (Gmelin, 1789) Greater Adjutant-Stork

1789. *Ardea dubia* Gmelin, *Syst. Nat.*, 1(2) : 624 (India).

1929. Baker, *FBI* No. 2212, 6 : 327.

Diagnostics : Size : Vulture +; c. 120-150 cm length; c. 250 cm wingspan. Sexes alike.

Adult : The largest Indian stork with a long (25-35 cm), naked pinkish gular pouch hanging from base of neck, and naked reddish and yellow head, neck and bill.

Breeding : Has a ruff of white feathers round base of neck; upper plumage, including wings and tail, blackish slaty-grey with slight green sheen; innermost secondaries and greater wing-coverts silverygrey, forming a broad wing-band; under plumage white with soft under tail-coverts.

Non-breeding : The silvery-grey wing-band absent.

Juvenile : Naked parts poorly covered with feathers; inner secondaries and coverts dark brown.

Habitat : Jheels, marshes and agricultural fields, outskirts of human habitations in NE India.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Endangered (IUCN 2007). Schedule IV (BNHS 2002).

Remarks : It also eats carrion, for which its bare head and neck is an adaptation, and feeds in human refuse dumps. The current population is estimated at less than 1,000 individual.

THRESKIORNITHIDAE (Ibises & Spoonbills)

Gregarious. A marsh birds with long bill, laterally compressed and decurved in Ibises and spatulate in Spoonbills. Nostrils placed at base of narrow groove on each side of culmen. Flight with extended neck. Sexes alike or nearly so.

34(71) *Plegadis falcinellus* (Linnaeus, 1766) Glossy Ibis

1766. *Tantalus Falcinellus* Linnaeus, *Syst. Nat.*, ed. 12 : 241 (Austria and Italy).

1929. Baker, *FBI* No. 2206, 6 : 318.

Diagnostics : Size : Domestic hen $\pm$; Black Ibis -; c. 52-65 cm length; 88-105 cm wingspan. Sexes alike. A dark Ibis with long, decurved plumbeous-brown bill, feathered head and bronze-brown feet.

Adult (breeding) : Upperparts maroon-brown with green and purple dark sheen on head, neck, chin, throat, lower back, and rump; tail black glossed with green and purple; underparts chestnut, axillaries and under tail-coverts deep purple.

Non-breeding : Head and neck brown, white-streaked; scapulars and innermost wing-coverts glossy green-blue.

Juvenile : Like adult in winter, but unglossed ashybrown above and all brown below. No white streaks on neck.

Habitat : Large lakes, marshes, flooded grasslands and paddy fields.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

35(69) *Threskiornis melanocephalus* (Latham, 1790)

Oriental White Ibis

1790. *Tantalus melanocephalus* Latham, *Index Orn.*, 2 : 709 (India).

1929. Baker, *FBI* No. 2203, 6 : 314.

Diagnostics : Size : Large domestic hen $\pm$; c. 75 cm. Sexes alike.

Adult : An unmistakable white bird with long decurved black bill, naked bluish-black head and neck, and glossy black legs and feet. In flight, blood red patches of bare skin on flanks and underwing conspicuous.

Breeding : Long ornamental plumes round base of neck; elongated disintegrated inner secondaries; some slaty-grey in wings.

Non-breeding : Neck-plumes elongated inner secondaries and ordinary feathers replace slaty-grey ones in wings.

Juvenile : Head and neck feathered except face and patch around eye; patch of bare skin under wing black, not blood-red as in adult.

Habitat : Rivers, jheels, freshwater marshes, reservoirs, tanks, paddy fields, occasionally tidal mudflats and lagoons, etc.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Residential status not known. Schedule IV (BNHS 2002).

36(70) *Pseudibis papillosa* (Temminck, 1824)
Black Ibis

1824. *Ibis papillosa* Temminck, *Pl. Col., livr.* 51, pl. 304 (India).

1929. Baker, *FBI* No. 2204, 6 : 316.

Diagnostics : Size : Domestic hen $\pm$; c. 68 cm. Sexes alike. Also known as Red-naped Ibis.

Adult : A blackish-brown bird with long decurved dull green bill, a small white shoulder patch and brick-red legs. Head black, with a triangular patch of brilliant red warts; upper plumage brown with bronze-green sheen on scapulars and back; remaining plumage black with purple-blue sheen; tail black, glossed with blue-green.

Juvenile : Dull brown.

Habitat : Dry grasslands, cultivated agricultural fields, lakes, marshes and riverbeds, sometimes around rubbish dumps.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage (Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (11) (Jhunjhunwala *et al.* 2001).

37(72) *Platalea leucorodia* Linnaeus, 1758
Eurasian Spoonbill

1849. *Platalea major* Temminck & Schlegel, in Siebold, *Fauna Jap., Aves* : 119, pl. 73 (Japan).

1929. Baker, *FBI* No. 2202, 6 : 311.

Diagnostics : Size : Domestic duck +; c. 60 cm. Sexes alike, female slightly smaller.

Adult : A snow-white bird with characteristic long, flat, spatula-shaped black bill, the terminal half of the spoon yellow; tawny patch on lower foreneck; black legs and feet.

Breeding : A pure white nuchal crest of pointed plumes.

Non-breeding : The crest has moulted.

Juvenile : Primaries black-tipped and black-shafted, the first three largely mottled with black.

Habitat : Large lakes, marshy jheels, reservoirs, rivers, swamps, lagoons and creeks.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Residential status not known. Schedule I (BNHS 2002).

PHOENICOPTERIDAE (Flamingos)

Gregarious; elegant marsh birds with excessively long legs, long sinuous necks and unique thick lamellate bills sharply decurved or 'broken' in middle; plumage largely pinkishwhite and crimson, with black wing-quills; tibiae bare; toes short and webbed; Sexes alike, but female smaller and paler. Flights: diagonal wavy ribbons, single file or in V formation with long neck and legs extended. Young are nidifugous (leaving nest soon after hatching).

38(73) *Phoenicopterus ruber* Linnaeus, 1758
Greater Flamingo

1811. *Phoenicopterus roseus* Pallas, *Zoogr. Russo-Asiat.*, 2 : 207 (Mouth of Volga river, south Russia).

1929. Baker, *FBI* No. 2241, 6 : 373.

Diagnostics : Size : Vulture +; c. 125-145 cm. Sexes alike.

Adult : Female smaller and generally with less pronounced rose colour; tall, white, stilt-legged and longnecked bird with a large sharply decurved massive pink bill, edge of upper mandible and terminal third black; legs and feet pinkish-red. Plumage rose and white, wings black and scarlet. In flight, the long neck and legs stretched to full length with contrasting black and scarlet underwing.

Juvenile : Greyishbrown with brownish bill and dark plumbeous legs.

Habitat : Large shallow brackish water lakes, saltpans, estuaries, lagoons and also freshwater jheels.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

39(74) *Phoenicopterus minor* (Geoffroy, 1798)
Lesser Flamingo

1798. *Phoenicopterus minor* Geoffroy, *Bull. Soc. Phil. Paris*, 1 : 98 (East Africa).

1929. Baker, *FBI* No. 2242, 6 : 375.

Diagnostics : Size : Large duck; c. 90-105 cm. Sexes more or less alike.

Adult : Female smaller and paler, without crimson on scapulars, back or breast; comparatively smaller flamingos with much deeper rose-pink plumage, dark bill with crimson-red centre and crimson feathers around base, and red legs and feet. In flight, the contrasting crimson and black underwing is prominent.

Juvenile : Greyish-brown with darker bill.

Habitat : Prefers more saline waters than Greater Flamingo; brackish water lakes and lagoons, saltpans.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

Remarks : This species feeds primarily on *Spirulina* a cyanobacteria which grows in very alkaline lakes. Although blue-green in colour, the bacteria contains the photosynthetic pigments that gives the birds their pink colour. Their deep bill is specialized for filtering tiny food items.

Order ANSERIFORMES
ANATIDAE (Geese & Ducks)

Plump waterbirds with considerable diversity in size and colouration; swans are generally larger and heavier than geese, while geese are larger and heavier than ducks. Bill typically broad, flat, rounded at tip, and with a comblike fringe or lamellae; wings mostly narrow and pointed; tail and legs short; feet webbed; young nidifugous. Most of the species are migratory.

40(89) *Dendrocygna bicolor* (Vieillot, 1816)
Large Whistling-Duck

1816. *Anas bicolor* Vieillot, *Nouv. Dict. Nat. Hist.*, 5 : 136 (Paraguay).

1929. Baker, *FBI* No. 2261, 6 : 413.

Diagnostics : Size : Domestic duck -; c. 48-53 cm. Sexes alike.

Adult : Similar to the Lesser Whistling Teal, but larger with creamy white upper tail-coverts; blackish-brown stripe on nape; pale rufescent-white centre of neck with black streaks; dusky-black bill; dusky plumbeous to bluish-slate legs.

Juvenile : Duller; the chestnut portions more brown.

Habitat : Reedy and vegetation covered jheels with partly submerged trees, flooded paddy fields, ponds and shallow lakes in plains.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Residential status not known. Schedule I (BNHS 2002).

41(88) *Dendrocygna javanica* (Horsfield, 1821)
Lesser Whistling-Duck

1821. *Anas javanica* Horsfield, *Trans. Linn. Soc. London*, 13 : 199 pl. 1 (Java).

1929. Baker, *FBI* No. 2260, 6 : 411.

Diagnostics : Size : Domestic duck -; c. 40-45 cm. Also known as 'Indian Whistling Duck' or 'Whistling Teal' (based on an older classification), or the 'Tree Duck' Sexes alike.

Adult : Small brown and chestnut ducks with slaty-grey bill and plumbeous-blue legs. Forehead and crown brown; remaining head and neck fulvousgrey; hind neck reddish-brown changing into brown on the scapulars and back; flanks chestnut; rump black, upper tail-coverts uniformly chestnut; tail brown; underparts chestnut.

Juvenile : Duller in colour.

Habitat : Generally found in reedy freshwater marshes, shallow pools, lakes with emergent vegetation and submerged trees in plains.

Distribution : Uttarakhand : Dehra Dun : Eastern Dun (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Asan wetland (Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident as well as summer visitor. Schedule IV (BNHS 2002).

42(79) *Anser albifrons* (Scopoli, 1769)
Greater White-fronted Goose

1789. *Branta albifrons* Scopoli, *Annus. I, Hist. Nat.* : 69 (North Italy).

1929. Baker, *FBI* No. 2253, 6 : 399.

Diagnostics : Size : Greylag Goose -; c. 66-86 cm length; 130-165 cm wingspan. Sexes alike.

Adult : A brown goose with a characteristic white patch on forehead, from gape to gape, sometimes extending to chin also; white-tipped pinkish bill; heavy black blotches on breast and abdomen; white vent and under tail-coverts; orange-yellow legs and feet.

Habitat : Large lakes and rivers.

Distribution : Uttarakhand : Dehra Dun : Asan Conservation Reserve (Vijay and Bhutia 2008). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

43(80) *Anser erythropus* (Linnaeus, 1758)
Lesser White-fronted Goose

1758. *Anas erythropus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 123 (North Sweden).

1929. Baker, *FBI* No. 2254, 6 : 401.

Diagnostics : Size : Duck $\pm$; c. 53-66 cm length; 120-135 cm wingspan. Sexes alike.

Adult : Comparatively a smaller (53 cm) and dark brown goose with a diagnostic more extensive white patch on forehead, reaching to top of head between eyes; pinkish bill; blotchy black bars on lower breast and belly; orange-yellow legs.

Habitat : Found in marshes, grasslands and lakes.

Distribution : Uttarakhand : Dehra Dun : Asan Conservation Reserve (Vijay and Bhutia 2008). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

44(81) *Anser anser* (Linnaeus, 1758)
Greylag Goose

1758. *Anser cineris* var. *rubrirostris* Swinhoe, *P. Z. S.* : 416, ex Gray, 1846, *Cat. Bds. Nepal*, 144, *nom. nud.*, ex Hodgson, 1844, *Zool. Misc.* : 86, *nom. nud.* (Shanghai).

1929. Baker, *FBI* No. 2252, 6 : 398.

Diagnostics : Size : Domestic Goose $\pm$; c. 75-90 cm length; 149-168 cm wingspan. It is the type species of the genus *Anser*. Sexes alike.

Adult : A large, greybrown goose with pink bill (almost triangular) and legs; a very narrow white rim of feathers at base of bill; and rump; white upper tail-coverts and vent.

Races : The western European nominate subspecies, *A. a. anser*, has an orange-pink bill and is slightly smaller and darker than the pink-billed Asian race, *A. a. rubrirostris*.

Habitat : Lakes, reservoirs, large rivers, tanks, grasslands and arable crops in neighbourhood of wetlands.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935), (George 1957, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), Asan reservoir (Tak *et al.* 1998, Tak & Sati 2003, Tak *et al.* 2003), New Forest (Singh 1999, Singh 2000). Haridwar : Bhimgoda (ZSI Surveys 2004-06). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**45(82) *Anser indicus* (Latham, 1790)
Bar-headed Goose**

1790. *Anas indicus* Latham, *Index Orn.*, 2 : 839 (Taimyr = India vide Ticehurst 1930, *JBNHS* 34 : 489).

1929. Baker, *FBI* No. 2258, 6 : 405.

Diagnostics : Size : Greylag Goose -; c. 71-76 cm. Sexes alike. It is easily distinguished from any of the other grey geese of the genus *Anser* by the character implied by its English name.

Adult : An ashy-grey, white and brown goose; head white with two black bars, one across the snicuput from eye to eye and the other shorter below on nape; neck brown with a white stripe on each side; face, throat, chin, vent and under tail-coverts white; breast ashy; bill yellow with black tip; upper plumage pale ashy, each feather with whitish edge; scapulars darker; flanks brown; lower back, primaries and rump grey; tail grey with white tip; legs yellow.

Juvenile : Like adult but paler and without black bars on head and white stripes on neck.

Habitat : Generally occurs on large jheels and rivers, breeds in swampy high-altitude lakes in Ladakh, winters on rivers, reservoirs and jheels in plains, also coastal islands.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : The Bar-headed Goose migrates over the Himalayas to spend the winter in the

wetlands of India, Northern Myanmar and Pakistan. The winter habitat of the Bar-headed Goose is on cultivation, and the bird feeds on barley, rice and wheat, and may damage crops. It is believed to be the highest flying bird having been seen at up to 10,175 m (33,382 feet). It has slightly larger wing area for its weight than other geese. It is believed this helps this goose to fly so high.

**46(90) *Tadorna ferruginea* (Pallas, 1764)
Brahminy Shelduck**

1764. *Anas (ferruginea)* Pallas, in *Voreg, Cat. d'Ois., Adumbr.* : 5 (Tartary).

1929. Baker, *FBI* No. 2263, 6 : 416.

Diagnostics : Size : Large domestic duck; c. 61-67 cm length; 110-135 cm wingspan. A large bright orangebrown duck with pale buff head and neck; black beak, feet and tail; white wing-coverts and a prominent metallic green speculum.

Adult : Male : In breeding season develops a narrow black collar on lower neck.

Female : Whiter head and without black collar.

Juvenile : Like female but duller with a grey wash on scapulars and tertiaries.

Habitat : Breeds around high altitude brackish water lakes in Ladakh, Sikkim and Nepal; common winter migrant to large open lakes and rivers with extensive shingle banks and mudflats across the country.

Distribution : Uttarakhand : Champawat (ZSI Survey 2005). Dehra Dun : Yamuna and Ganges (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**47(91) *Tadorna tadorna* (Linnaeus, 1758)
Common Shelduck**

1758. *Anas Tadorna* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 122 (Sweden).

1929. Baker, *FBI* No. 2262, 6 : 414.

Diagnostics : Size : Domestic duck $\pm$; c. 58-67 cm.

Adult : A distinctive white and black duck with a broad chestnut breast-band, glistening greenish-black head and neck, glossy green speculum bordered above with chestnut, black tail-tip, bright red bill and pink legs.

Male : Has a conspicuous red knob above base of bill and a broad black band from breast to vent.

Female : Is considerably smaller, dull coloured and without red knob.

Male (in eclipse) : Head dull blackish with little sheen; feathers of lower black band with white tips.

Juvenile : Chestnut breast-band absent, sometimes sides slightly suffused with chestnut.

Habitat : Open lakes, large rivers, mudflats and coastal waters.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage (Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

48(115) *Sarkidiornis melanotos* (Pennant, 1769)
Comb Duck

1769. *Anser melanotos* Pennant, *Ind. Zool.* : 12, pl. 11 (Ceylon).

1929. Baker, *FBI* No. 2247, 6 : 385.

Diagnostics : Size : Domestic duck +; c. 56-76 cm. Large glossy blue-black and white duck.

Male : Head and neck white, speckled with black, coalescing on crown, nape and hind neck; bill and comb (swollen fleshy knob) black; a black demicollar on each side of upper breast; another broad black band in front of under tail-coverts; remaining underparts white; upper back black glossed with green and blue, except scapulars, which are glossed with purple; speculum bronze; lower back grey; tail dark brown; legs and feet plumbeous. Eclipse plumage absent.

Female : Smaller, duller and without comb on bill, demicollar on upper breast and black band near tail.

Juvenile : Black upperparts less glossy than in female; lower back and rump dull greyishwhite; upper tail-coverts and tail dull brown.

Habitat : Reedy tanks, jheels, irrigation tanks with plenty of aquatic vegetation, lowland pools in wooded areas.

Distribution : Uttarakhand : Dehra Dun (Singh 2000), Asan wetland (Tak *et al.* 2003). CTR (Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

49(114) *Nettapus coromandelianus* (Gmelin, 1789)
Cotton Teal

1789. *Anas coromandelianus* Gmelin, *Syst. Nat.*, 1(2) : 522 (Coromandel, India).

1929. Baker, *FBI* No. 2250, 6 : 392.

Diagnostics : Size : Partridge; c. 30-37 cm. Dimorphic. A small perching duck and is the smallest the Indian wild duck.

Male : Chiefly black and white with a prominent black collar round the lower neck. Head and neck white with blackish, green-glossed crown; bill black; iris crimson-red; back blackish-brown, completely overlaid with dark green gloss slightly mixed with purple, distinct green wings with a white wing-bar prominent in flight; underparts white; tail brown; legs black.

Female : Dull brown, a dark line through eyes, indistinct white wing-bar.

Male (in eclipse) : Like female but darker above, distinct white wing-bar.

Habitat : Village tanks, ponds, vegetation covered pools and channels.

Distribution : Uttarakhand: Dehra Dun: Eastern Dun (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Asan reservoir (Tak *et al.* 1998, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**50(113) *Aix galericulata* (Linnaeus, 1758)
Mandarin Duck**

1758. *Anas galericulata* Linnaeus, *Syst. Nat.*, 10, 1 : 128 (China).

1929. Baker, *FBI* No. 2251, 6 : 394.

Diagnostics : Size : Domestic duck -; c. 41-49 cm length; 65-75 cm wingspan. Sexually dimorphic.

Adult (breeding) : A distinctive little duck with a unique combination of feather structure and colour - white tipped red bill; white band sweeping back behind the eye; long and metallic purple nuchal crest; orange 'Mane' (elongated cheek and neck feathers); brilliant purple copper lower neck and sides of breast; broken pectoral band of 3 black and 2 white stripes; white tipped orange 'Sails' (enormously broadened fanshaped tertiary feathers); and orange legs and feet.

Male (eclipse) : Like female, but more glossy with reddish bill and yellow legs.

Female : With white tipped grey bill; white ring round the eye continued as a streak behind it; white chin, throat and upper neck; olive brown lower neck, breast, sides of flanks, broadly mottled paler; olive-brown upperparts; deep blue speculum with black and white margins; white remaining underparts.

Juvenile : Like female but with browner head, less distinct facial pattern and more diffusely spotted breast and flanks.

Habitat : Rivers. Also lakes at Naini Tal.

Distribution : Uttarakhand : Naini Tal : Three birds (1 male, 2 females) were recorded at Sat Tal on 13th February, 1999 (Vrezec *et al.* 2005). Earlier, the species was recorded twice from the northeast and both the records are more than 50 years old (one bird from Asam 1902 and one from Manipur 1934). Thus, there are only three records of this species from India. In fact, it is an East Asian species whose native breeding range is restricted to the eastern part Russia, northern China and Japan. Its main wintering areas are in the lowlands of eastern China and southern Japan. The observation from the Sat Tal lakes is the westernmost record for this species from its native Asiatic population (Vrezec *et al.* 2005).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

**51(101) *Anas strepera* Linnaeus, 1758
Gadwall**

1758. *Anas strepera* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 125(Sweden).

1929. Baker, *FBI* No. 2269, 6 : 426.

Diagnostics : Size : Domestic duck -; c. 45-51 cm length; 78-90 cm wingspan. Sexually dimorphic.

Male : Body generally dark brown and grey; belly whitish; tail velvetyblack; breast with crescent markings; chestnut patch with the black-and-white speculum etc. are diagnostics.

Female : Like female Mallard, but duller and smaller with white inner secondaries, chestnut on wing and orange-yellow legs.

Male (in eclipse) : Like female, but greyer and less heavily marked above.

Habitat : Freshwater reedy marshes and jheels with extensive aquatic and emergent vegetation, open water spread of dams and reservoirs.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**52(102) *Anas falcata* Georgi, 1775
Falcated Duck**

1775. *Anas falcata* Georgi, *Bemerk. Reise Russ. Reich*, 1 : 167 (Asiatic Russia).

1929. Baker, *FBI* No. 2268, 6 : 424.

Diagnostics : Size : Domestic duck -; c. 48-54 cm. A dabbling duck. Sexually dimorphic.

Male : Head bronze-green with chestnut crown, lores and cheeks; throat white contrasting with finely pencilled body; bill black; inner secondaries very long and falcated (sickle-shaped); stern buff-edged black; upper tail-coverts black, overtopping tail; legs grey.

Female : Resembles female Gadwall; however, mottled dark and light brown with white-edged greenish-black speculum; 14 rectrices instead of 16 (cf. female Gadwall); grey (not orange-yellow) legs.

Male (in eclipse) : Like female but less coarsely mottled, has some green gloss on head and darker cheeks.

Habitat : Lakes, marshes and rivers.

Distribution : Uttarakhand : Dehra Dun : Asan reservoir (Tak *et al.* 1998, Tak & Sati 2003, Tak *et al.* 2003), (Singh 2000). CTR (internet list). RNP (Pandey *et al.* 1994).

Status : Vagrant. Sparse winter visitor. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

**53(103) *Anas penelope* Linnaeus, 1758
Eurasian Wigeon**

1758. *Anas penelope* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Sweden).

1929. Baker, *FBI* No. 2270, 6 : 429.

Diagnostics : Size : Domestic duck -; c. 45-51 cm length; 71-80 cm wingspan. A dabbling duck. Sexually dimorphic.

Male : Distinctive creamy patch on forehead contrasting with rusty-red head and neck; finely pencilled grey body; bluegrey bill with black tip; vinous-red breast; metallic green speculum bordered with black; white under plumage; black tail-coverts.

Female : Mottled brown; similar to male in eclipse but much duller, less reddish-brown, the dark vermiculation less coarse, the lesser wing-coverts grey. The more rufous plumage and metallic green speculum differentiate it from rather similar female Gadwall (speculum- contrasting white and black).

Male (in eclipse) : Reddish-brown with black vermiculation above and chiefly white below.

Habitat : Freshwater shallow reedy jheels, marshes, open lakes, reservoirs, rivers and also pools, avoid deep waters overgrown with vegetation.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935),

(Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak 1995). Pithoragarh: Gori river basin 2002 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**54(100) *Anas platyrhynchos* Linnaeus, 1758
Mallard**

1758. *Anas platyrhynchos* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 125(Sweden).

1929. Baker, *FBI* No. 2264, 6 : 419.

Diagnostics : Size : Domestic duck; c. 50-65 cm length; 81-98 cm wingspan. A dabbling duck. Sexually dimorphic.

Male : Head and upper neck glistening metallic dark green separated from chestnut breast by narrow white collar; bill dull olive-yellow; above and below largely grey; rump, tail-coverts and two up curled central tail-feathers black; speculum glossy bluish-purple.

Female : Brown and buff, streaked and spotted with black; chin, throat and foreneck plain buff; irregular dark line through eye; orange legs; distinguished from the very similar female Shoveller by bill shape and purple-blue speculum (vs. green).

Male (in eclipse) : Like female; however, head darker; upper plumage back to tail much like the breeding plumage; moulted curly tail feathers.

Habitat : Occurs in shallow freshwater jheels, marshes, reservoirs, lakes, rarely rivers and ponds.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

Remarks : The Mallard is a rare example of both 'Allen's Rule' and 'Bergmann's Rule' in birds. Bergmann's Rule, which states that polar forms tend to be larger than related ones from warmer climates, has numerous examples in birds. Allen's Rule says that appendages like ears tend to be smaller in polar forms to minimize heat loss, and larger in tropical and desert equivalents to facilitate heat diffusion, and that the polar taxa are stockier overall. Examples of this rule in birds are rare, as they lack external ears. However, the bill of ducks is very well supplied with blood vessels and is vulnerable to cold. The size of the Mallard varies clinally, and birds from Greenland, although larger than birds further south, have smaller bills and are stockier. It is sometimes separated as subspecies 'Greenland Mallard' (*A. p. conboschas*).

**55 (97-99) *Anas poecilorhyncha* J.R. Forster, 1781
Spot-billed Duck**

1781. *Anas poecilorhyncha* J. R. Forster, *Indian Zool.* : 23, pl. 13, f. 1 (Ceylon).

1929. Baker, *FBI* No. 2265, 6 : 421.

Diagnostics : Size : Domestic duck; c. 58-63 cm. A dabbling duck.

Male : A large, blackish-brown duck with scaly-patterned plumage; bill black and yellow (terminal third or less), tip black; two swollen orange-red spots at the base of bill on either side of forehead; crown from forehead to nape dark brown; remaining head and neck buff-white; eye-stripe dark and broad; pale edged feathers; speculum glossy green with narrow black-and-white margins; tail darker; legs and feet coral-red.

Female : Has less conspicuous loreal spots, slightly smaller and duller than male.

Juvenile : Like adult but paler, without red spots at base of bill and less spotted below.

Habitat : Freshwater vegetation covered jheels, lakes, reservoirs, marshes and tanks with extensive emergent vegetation, rarely on rivers.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak

1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

**56(105) *Anas clypeata* Linnaeus, 1758
Northern Shoveller**

1758. *Anas clypeata* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 124 (Sweden).

1929. Baker, *FBI* No. 2276, 6 : 442.

Diagnostics : Size : Domestic duck -; c. 44-52 cm. An unmistakable bird due to its large spatulate bill. Sexually dimorphic.

Male : Head and neck glossy green; bill large, flat, greyish-black; eyes yellow; breast white; abdomen and flanks chestnut with white-edged black stern; speculum metallic green.

Female : Mottled dark brown and buff, with greyish-blue shoulder patch; faint green speculum bordered above and below with white; bill broad, flat, greenish-brown tinged with orange.

Male (in eclipse) : Like female but largely with adult male wing coloration.

Habitat : Occurs in almost all types of shallow freshwater like jheels, lakes, rivers, reservoirs, irrigation and village tanks.

Distribution : Uttarakhand : Dehra Dun : Eastern Dun (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003); Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**57(93) *Anas acuta* Linnaeus, 1758
Northern Pintail**

1758. *Anas acuta* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Sweden).

1929. Baker, *FBI* No. 2274, 6 : 437.

Diagnostics : Size : Domestic duck -; c. Male 56-75 cm and female 50-55 cm. Sexually dimorphic. A dabbling duck. The breeding male is unmistakable with chocolate head, pale grey body, contrasting white breast, and long pointed tail that gives the species its English and scientific names.

Male : Head, face and neck chocolate-brown; nape black; bill plumbeous; either side of neck with white-stripe joining down to white neck and breast; neck finely pencilled silvergrey; speculum metallic bronzegreen; upper tailcoverts grey edged with black; undertail-coverts black with broad buff patch in front. Tail long, pointed pin-like.

Female : Mottled brown and buff with pointed but pinless tail and without prominent speculum.

Male (in eclipse) : Resembles female, but lacks distinctive pale edges to feathers on its back; dark ashy-grey or greyish-white coarsely vermiculated mantle.

Habitat : Lakes, marshes, reedy and vegetation-covered jheels, wet paddy fields, and rivers.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

58(104) *Anas querquedula* Linnaeus, 1758 Garganey

1758. *Anas querquedula* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Sweden).

1929. Baker, *FBI* No. 2275, 6 : 439.

Diagnostics : Size : Domestic duck -; c. 37-41 cm.

Male : A small brown teal with conspicuous white eyebrows; bluish-grey forewings, prominent in flight; head and neck pinky-brown; bill brownish-black with black nail; upper plumage

blackish-brown with pale edges; scapulars long, drooping and glossy black with white median ribs; speculum green between two white bands; breast light brown, speckled black, underparts white, finely waved on sides and black spotted near vent.

Female : Mottled brown above and white below with whitish eyebrows.

Male (in eclipse) : Like female, but with adult male wing coloration.

Habitat : Frequents almost all types of wetlands including jheels, marshes, lakes, reservoirs, rivers and village ponds with plenty of vegetation.

Distribution : Uttarakhand : Dehra Dun : Yamuna river (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

59(94) *Anas crecca* Linnaeus, 1758 Common Teal

1758. *Anas crecca* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Sweden).

1929. Baker, *FBI* No. 2271, 6 : 431.

Diagnostics : Size : Half-grown domestic duck ±; c. 34-38 cm length; 53-59 cm wingspan. A dabbling duck. Sexually dimorphic.

Adult : A small duck with a distinctive tricoloured (black, metallic green, and buff) speculum - particularly conspicuous in flight; black bill; olive-grey to deep slatyblue legs.

Male : Pencilled greyish; head dark chestnut with a broad metallic green band surrounding the eye and running back to the nape; a narrow whitish line from the bill running back towards the eye and then dividing to surround the green band; breast and flanks vermiculated dark brown and white; abdomen white or pale buff; tail brown; feathers pale edged; undertail-coverts buff laterally, black in centre.

Female : Has mottled brown and buff plumage with pale belly; black and green speculum.

Male (in eclipse) : Crown and nape blackish-brown.

Juvenile: Belly spotted; secondaries shorter.

Habitat : Freshwater shallow inland wetlands like tanks, jheels, marshes, pools, reservoirs and rivers.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

60(92) *Marmaronetta angustirostris*
(Ménétrières, 1832)
Marbled Teal

1862. *Anas angustirostris* Menetries, *Cat. Rais, Obj. Zool. Caucase* : 58 (Lenkoran, Transcaspia).

1929. Baker, *FBI* No. 2277, 6 : 445.

Diagnostics : Size : Domestic duck -; c. 39-48 cm. Sexes alike, female slightly smaller. A pale sandy-brown duck diffusely blotched with off-white. Earlier, it was included among the dabbling ducks, but is now classed as a diving duck.

Adult : With a distinct dark brown patch from eye to nape; a slight nuchal crest; bluish-grey bill, and horny-brown legs. Above, spotted or marbled with pale greyish buff and blackish; below, more or less transversely barred brown-barred.

Habitat : Occurs in shallow freshwater lakes, matted jheels, favouring shallow brackish waters rich in emergent and submerge vegetation with extensive emergent vegetation, avoid open waters.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Vagrant. Sparse winter visitor. Vulnerable (IUCN 2007). Schedule IV (BNHS 2002).

61(107) *Rhodonessa rufina* (Pallas, 1773)
Red-crested Pochard

1773. *Anas rufina* Pallas, *Reise Russ. Reichs*, 2 : 713 (Caspian Sea).

1929. Baker, *FBI* No. 2278, 6 : 448.

Diagnostics : Size : Domestic duck -; c. 53-57 cm. A large diving duck, forms large flocks in winter and often mixed with other diving ducks. Sexually dimorphic.

Male : Head golden-orange with silky chestnut crest; bill bright crimson; neck, rump and upper tail-coverts blackish-brown; wing bases next to scapulars with white band; tail silvery-grey-brown; legs and feet dull fleshy-red.

Female : Above pale greyishbrown; crown dark; bill dusky black with red tip, wings like male but paler and duller, white replaced by grey.

Male (in eclipse) : Like female but browner on underparts; crest bushy; the brightness of eyes, bill and feet retained.

Habitat : Inhabits large jheels, reservoirs, marshes and wetlands with plenty of submerged and fringe vegetation, occasionally on rivers.

Distribution : Uttarakhand : Dehra Dun : Yamuna (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994), Ganga valley (Kumar & Bhatt 2000).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

62(108) *Aythya ferina* (Linnaeus, 1758)
Common Pochard

1758. *Anas ferina* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Sweden).

1929. Baker, *FBI* No. 2279, 6 : 450.

Diagnostics : Size : Domestic duck -; c. 42-49 cm. A medium-sized diving duck. Sexually dimorphic.

Male : Head and neck deep chestnut; bill black with pale grey band near tip; upper back grey; breast black; remaining underparts light grey; sides largely greyishwhite; rump, upper and under tail-coverts dull black; legs slaty-blue.

Female : Has rufous brown head, neck, upper back and breast; and dark grey-brown rump, upper and under tailcoverts.

Male (in eclipse) : Dull and more brownish than non-breeding plumage.

Habitat : Frequents open parts of jheels, lakes and irrigation reservoirs with deep waters and submersed aquatic vegetation.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganga (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**63(109) *Aythya nyroca* (Guldenstadt, 1770)
Ferruginous Pochard**

1770. *Anas nyroca* Guldenstadt, *Novi Comm. Sci. Petropol.*, 14 : 403 ('...regionibus Tanaicensibus inter gradum 54°-55° ...' = S. Russia).

1929. Baker, *FBI* No. 2280, 6 : 453.

Diagnostics : Size : Domestic duck -; c. 38-42 cm. A medium-sized diving duck. Sexually dimorphic.

Male : Head, neck and breast deep chestnut; nape darker; bill bluish-black; iris white; upper plumage blackish-brown; speculum white; belly with a large white oval patch; under tail-coverts white; legs dark slaty.

Female : Duller with brownish iris and less contrasting off-white belly.

Male (in eclipse) : With brown mantle and dull reddish head, neck and breast. The deep chestnut colour, white oval belly-patch, white under tail-coverts and broad white crescent band on flight feathers are diagnostics of both sexes in flight.

Habitat : Occurs in weedy and vegetation covered jheels, open irrigation tanks, reservoirs with thick marginal vegetation, coastal backwaters and lagoons.

Distribution : Uttarakhand : Dehra Dun : Yamuna (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak 1995).

CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

**64(111) *Aythya fuligula* (Linnaeus, 1758)
Tufted Pochard**

1758. *Anas fuligula* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 128 (Sweden).

1929. Baker, *FBI* No. 2283, 6 : 458.

Diagnostics : Size : Domestic duck -; c. 40-47 cm. It has an obvious head tuft that gives the species its name. Sexually dimorphic.

Male : The only Pochard with a long occipital crest; and boldly contrasting black and white plumage. Head, neck, breast, back, tail and vent jet-black; sides of body and flanks pure white; belly greyish; iris goldenyellow; bill, legs and feet greyish-blue.

Female : Dark brown with rudimentary occipital crest; belly white; often a white ring of feathers at base of bill.

Male (in eclipse) : Darker than female; flanks with white moulting; underparts uniformly brown; touch of white at base of bill.

Habitat : Prefers open and deep tanks, irrigation reservoirs, lakes and marshes.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003, Tak *et al.* 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**65(112) *Aythya marila* (Linnaeus, 1761)
Greater Scaup**

1761. *Anas Marila* Linnaeus, *Fn. svec.*, ed. 2 : 39 (Lapland).

1929. Baker, *FBI* No. 2282, 6 : 456.

Diagnostics : Size : Domestic duck -; c. 40-51 cm length; 71-80 cm wingspan.

Male : Head, neck, breast, upper back, rump and upper tail-coverts black, the first two with

green sheen. Back pale grey, tail blackish-brown; flanks and abdomen white, posterior abdomen mixed with brown, vent and under tail-coverts dark brown or black; iris golden-yellow; greyish-blue bill with black tip; legs and feet greyish-blue.

Female : Resembles the female Tufted Pochard, dark brown with a broad white ring around base of bill, and speculum white.

Male (in eclipse) : Like adult female, but with no white band round bill; upperparts more vermiculated with white and white speculum more pronounced than in female.

Habitat : Occurs in coastal areas, and also large freshwater lakes and rivers.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba undated).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

**66 (117) *Clangula hyemalis* (Linnaeus, 1758)
Long-tailed Duck**

1758. *Anas hyemalis* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Northern Sweden).

1935. Baker, *JBNHS* 37 : 549.

Diagnostics : Size : Domestic duck -; c. 36-47 cm. A medium-sized sea duck, and is the only living member of the its genus *Clangula*. Sexually dimorphic.

Male : Chiefly a dark chocolatebrown and white duck with small head, short bill, and long pointed tail. Head, neck, upper breast, scapulars, flanks, and vent pure white; a patch on either side of neck behind earcoverts, a broad band along spine on back, pointed central tail, and a collar descending from upper back widening below in to a broad pectoral band covering upper abdomen dark brown. In summer, head, neck and upper breast blackish-brown and back scalloped chestnut-buff.

Female : In winter, dark brown entirely on back, scalloped fulvous; white head with dusky crown, and dusky patches on either side of upper neck; brownish lower foreneck and upper breast, forming a diffuse pectoral band; remaining underparts white; in summer, upperparts duller than in winter, the scalloping less conspicuous.

Habitat : Chiefly maritime, a very rare winter straggler on freshwater lakes, jheels and large rivers.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage- a single bird was recorded at Asan reservoir in western part of Dehra Dun on 19th January, 1991 (Singh 1991, 2000; Mohan *et al.* 1992). Based on this, later, it was also included by (Tak *et al.* 1998, Tak & Sati 2003, Tak *et al.* 2003). Earlier, this species has been recorded five times from the Indian subcontinent: thrice from Pakistan (Baluchistan 1933, 1938; Sind 1936) and twice from the India (Kashmir- Hokarsar 1939; and north-east Assam- Sadiya Frontier tract, 1935) (Mohan *et al.* 1992).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

**67.(118) *Bucephala clangula* (Linnaeus, 1758)
Common Goldeneye**

1758. *Anas Clangula* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 125 (Sweden).

1929. Baker, *FBI* No. 2284, 6 : 460 (= *Claucionetta c. clangula*).

Diagnostics : Size : Domestic duck -; c. 46 cm.

Male : Breeding bird with a distinctive oval white cheek-patch at base of upper mandible. Head, nape, chin and throat black with metallic green gloss on the first two; upperparts black with elongated white markings on scapulars; neck and underparts white, except grey vent and thighs spotted with white; iris golden yellow; bill black; legs and feet yellow with black webs.

Female : Head chocolate; neck with white collar round the base; back and tail grey.

Male (in eclipse) : Like female, but larger and brighter.

Habitat : Freshwater lakes, open reaches of swift-flowing rivers, creeks, lagoons,

Distribution : Uttarakhand : Dehra Dun : Asan Conservation Reserve (Vijay and Bhutia 2008).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

**68(119) *Mergellus albellus* Linnaeus, 1758
Smew**

1758. *Mergus Albellus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 129 (Mediterranean Sea near Smyrna).

1929. Baker, *FBI* No. 2286, 6 : 466.

Diagnostics : Size : Domestic duck -; c. 38-44 cm. It is the only member of the genus *Mergellus*. The drake Smew, with its 'cracked ice' appearance, is unmistakable.

Male : Predominantly a white duck with black eye-patch having green reflections; a broad black band from behind eye to nape; short 'rooping nuchal crest; black back with two black streaks diverging from its anterior end down each side of white breast. Grey body sides and tail; white flanks, finely barred with black; pale grey on underside of tail; dark slaty bill; slaty-black legs, feet and webs. The bill has a hooked tip and serrated edges, which help it catch fish.

Female : Forehead, crown, nape and short nuchal crest chestnutred. Throat and sides of head white; back greyish-brown; breast and flanks grey, remaining underparts white.

Male (in eclipse) : Differs from female in larger white wing-bar; darker lesser wingcoverts; and two black crescent bands on sides of breast.

Habitat : Open jheels, freshwater lakes, and streams as they descend from hills to plains.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse winter visitor (status uncertain). Schedule IV (BNHS 2002).

Remarks : From India reported by Crosby (1995) (*Oriental Bird Club Bull.*, 21 : 70).

69(120-121) *Mergus merganser* Linnaeus, 1758
Common Merganser

1758. *Mergus merganser* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 129 (Sweden).

1929. Baker, *FBI* No. 2287, 6 : 469.

Diagnostics : Size : Domestic duck +; c. 58-72 cm length; 78-94 cm wingspan. Generally a black and white (male) or grey and white (female) duck, with slender neck, narrow pointed red bill and red legs. These large fish-eaters have serrated edges to their bills to help them grip their prey.

Male : Head, upper neck and long crest of narrow feathers black glossed with metallic green; upper back glossy black; lower back, rump and upper tail-coverts grey, vermiculated with white;

extreme upper back, lower neck and underparts white with pronounced salmon-pink tinge on underparts; tail silverybrown.

Female : Chin and throat white; head, crest and neck chestnut and cinnamonbrown; upperparts grey-brown, with blue blotches; speculum white; underparts white, flanks with grey stripes; legs and feet orangered.

Male (in eclipse) : Like female, but retains white wingcoverts.

Races : There are three subspecies : *M. m. merganser* (the Goosander of Europe), *M. m. orientalis* (Central Asian Common Merganser), and the *M. m. americanus* (American Common Merganser).

Habitat : Large rivers, lakes, fast-flowing hill streams as they descend from hills into plains, rarely coastal waters.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Haridwar : Bhimgoda (ZSI Surveys 2004-06). CTR (Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

Remarks : Along with the Smew and the other Mergansers, they, due to their serrated bills, are therefore often known as 'sawbills'

Order FALCONIFORMES

ACCIPITRIDAE (Hawks, Eagles, Buzzards, Old World Vultures, Kites, Harriers, etc.)

Eagles are from medium to very large birds with massive bills. In flight, the wings are characteristically long, broad and parallel-sided. The tails are decorative, rather short, rounded and wedge-shaped. Kites are small to medium-sized hawks with forked tails. The Brahminy Kite is an exception, but resembles the true kites in its scavenging habits. The adult has a most instinctive chestnut and white plumage. Harriers are slim, medium-sized raptors with relatively long slender wings and tail. Males are generally black and females rufous in plumage. Tails have bars or rings. They use flap-and-glide technique with the wings held in a characteristic V during flight. Hunt by quartering fairly near the ground to surprise their prey.

70 (127-128a) *Aviceda leuphotes* (Dumont, 1820)
Black Baza

1820. *Falco leuphotes* Dumont, *Dict. Sci. Nat.*, 16 : 217 (Pondicherry).

1822. Baker, *FBI* No. 1822, 5 : 171.

Diagnostics : Size : Pigeon $\pm$; c. 33 cm. Sexes alike. An unmistakable small sized kite; largely black with long crest (a prominent feature of the bazas); upperparts are variably marked with chestnut and white; broad white band across upper breast, grayish underside to primaries contrasting with black underwing-coverts; like others in the genus *Aviceda* they also have two tooth like indentations on the edge of the upper bill.

Habitat : <1200 m; prefers broad leaved evergreen dense forest in the vicinity of streams in the foothills; often in small groups; a maximum of 20 individuals recorded in a single gathering.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Schedule I (BNHS 2002).

Remarks : Uncommon. Resident of the Eastern Himalayas and the Western Ghats; migrates within the country. Himalayan Foothills in Uttarakhand (Gremitt *et al.* 1998, Kryz 2000).

71(129-130) *Pernis ptilorhynchus* (Temminck, 1821)
Oriental Honey-Buzzard

1830. *Pernis ruficollis* Lesson, *Traite d'Orn.*, livr. 1 : 77 ('Patire inconnue' = Bengal).

1928. Baker, *FBI* No. 1819, 5 : 167.

Diagnostics : Size : Black Kite $\pm$; c. 57-65 cm. Sexes alike. This diurnal raptor is also known as Crested Honey Buzzard. Despite its name, this species is not related to *Buteo* buzzards, and is taxonomically closer to the kites. It has a distinctive flight profile of steady wingbeats alternating with short glides, soars with wings flat. In overhead flight, most adult birds with long and broad wings and tail; a single broad dark band towards the tip and two narrower ones near the base of the tail. Plumage with extremely variable colouration ranging from dark brown through rufous to white; underparts with different degrees of barring, may be unmarked, streaked or barred; at rest a small

crest, narrow neck and small head, often a dark moustachial stripe, a gular stripe, a gorget of straking across lower throat and unfeathered tarsus are the pointers.

Male : Has grey face; greyish-brown upperparts; two black bands on tail with broad white central band; usually three black bands across primaries/ outer secondaries; and a dark brown iris.

Female : Has browner face; browner upperparts; three black bands on tail; four narrower black bands across primaries/ outer secondaries; and a yellow iris.

Juvenile : With variable colouration of upper-and-underparts, ranging from dark brown, rufous or white; less distinct banding across underside of remiges than adult and three or more black bands across tail; dark iris; cere yellow (grey on adult).

Races : (a) *ruficollis* (b) *orientalis*.

Habitat : <1800 m. Well-wooded areas forest clearing and groves of trees. Feeds on honey and larvae of wild bees and wasps, but also on insects, small mammals, lizards and birds.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935), New Forest (George 1957, Mohan 1996), Asan Barrage, Khaddar, New Forest, [Kampty Falls] Maldeota, Mohand (Singh 2000). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Udham Singh Nagar : near Panthnagar (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule I (BNHS 2002).

72(124) *Elanus caeruleus* (Desfontaines, 1789)
Black-shouldered Kite

1790. *Falco vociferous* Latham, *Index Orn.*, 1 : 46 (India = Coromandel Coast, ex Sonnerat, *apud* Hartert).

1928. Baker, *FBI* No. 1789, 5 : 125.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1 ex., 6.i.1969, coll. P. K. Bose; 2 exs., 8.viii.1969, coll. NRS/ZSI Survey Party; Sathyanarayan, 1 ex., 14.ix.1971, coll. P. K. Bose; 1 ex., 24.iii.1973, coll. Raj Tilak.

Diagnostics : Size : Pigeon +; c. 33 cm. Sexes alike. A small distinctive raptor has pointed wings; blue-grey upperparts with black shoulder; white underparts, except for black tips to its narrow falcon-like wings; short and square tail. The slow hunting flight is like a harrier, but it will hover like a kestrel. This species was formerly referred to as the Black-shouldered Kite, but this name is now only used for the Australian species, *Elanus axillaries*, which at one time (along with the American White-tailed Kite, *E. leucurus*) was treated as a subspecies of *E. caeruleus*.

Habitat : 1200(2100) m. Commonly inhabit drier open country of the lowlands.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Tak 1995) Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), Sahastradhara Hills & Khara (Bhatnagar & Misra 1971), Asan Barrage (Gandhi & Singh 1995), Khaddar, New Forest, Tea Garden (Singh 2000). Pauri (Tak 1995). Pithoragarh : Gori river basin-2002 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule I (BNHS 2002).

**73(131) *Milvus milvus* Linnaeus, 1758
Red Kite**

1758. *Falco milvus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 89) South Sweden).

Not in Baker, *FBI*.

Diagnostics : Size : Black Kite; c. 60-66 cm. Sexes alike, more or less also in size. Distinguished from the familiar Black or Pariah Kite by its overall rusty brown colouration; paler (whitish) head; dark-streaked rust-red underparts; and bright rufous deeply forked tail. In overhead aspect, the reddish general colouration, pale (whitish) head, black primaries ('splayed fingers'), a prominent pale whitish patch at the base of primaries, pale abdomen and vent, and the bright rufous deeply forked tail are the pointers.

Habitat : Within its usual range an inhabitant of open country and farmland interspersed with woodland or groves of trees (semi-desert).

Distribution : Uttarakhand : District(s) : Almora : Ranikhet : A solitary red kite *Milvus milvus* was observed on 11th June 1994 soaring at about 200 m above ground level with black kites *Milvus migrans* over Chaubattia (2000 m).

Status : Vagrant. Sparse winter visitor. Schedule I (BNHS 2002).

Remarks : There are six published sight records of the red kite in India : Two from Gujarat, Little Rann of Kutch (Ali 1954) and Jasdan (Shivraj Kumar 1964); two from Orissa- Chilka Lake and environs of Puri (Jayakar and Spurway 1965); one each from Rajasthan- Keoladeo National Park, Bharatpur (Prakash 1988); and Kashmir- Ladakh (Fily and Perennou 1990) (Naoroji & D'Silva 1998).

**74(132-134) *Milvus migrans* (Boddaert, 1783)
Black Kite**

1783. *Falco migrans* Boddaert, *Table Pl. enlum.* : 28 (restricted type locality France, *apud* Hartert, *ex* Daubenton, pl. 472).

1928. Baker, *FBI* No. 1786, 5 : 121.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1ex., 6.i.1969, coll. P.K. Bose.

Diagnostics : Size : Kite; c. 55-68.5 cm. Sexes alike. The only common, large and dark-brown raptor with shallow fork to tail, though it may appear slightly rounded when spread during moulting. The flight is agile and floating (buoyant), with much independent maneuvering of wings and twisting of tail. When soaring and gliding, wings are usually slightly arched, with carpal joint held forward.

Adult : Dark rufous-brown, with variable whitish crescent at primary bases on underwing and pale band across median coverts on upperwing.

Juvenile : With broad whitish or buffish streaking on head and underparts.

Races : *M. m. lineatus*, which breeds in NW and NE subcontinent and winters to the south, is larger and broader-winged than *M. m. govinda*, and generally shows more prominent whitish patch at base of underside of primaries.

Habitat : 2200 m (*lineatus* up to 4500 m, exceptionally 5300 m). Common scavenger around many human settlements and surrounding areas.

Distribution : Uttarakhand : Almora (Tak 1995), Binsar WLS, Someshwar (ZSI Survey 2004). Bageshwar : Bharari, Baijnath, Garur (ZSI Survey 2004). Chamoli : Joshimath and Amrit Ganga (Lavkumar 1956b), Joshimath (Reed 1979), (Tak 1995), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, 1972a, Tak 1995), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007); Haridwar : Ranipur, Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Dhaul river basin- 2004, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Gandhari, Tilwara, Augstiyamuni (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : The proposed Tehri Dam site (Tak unpublished), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule I (BNHS 2002).

**75(135) *Haliastur indus* (Boddaert, 1783)
Brahminy Kite**

1783. *Falco Indus* Boddaert, Table Pl. enlum.: 25 (Pondicherry ex Daubenton, pl.416 and Buffon 1 : 490).

1928. Baker, *FBI* No. 1784, 5 : 118.

Diagnostics : Size : Black Kite -; c. 48cm. Sexes alike. It has a typical kite flight, with wings angled at carpals, but its tail is rounded unlike the *Milvus* species, Black Kite and Red Kite, which have forked tails. The flight is active and buoyant, slow and flapping, occasionally swooping down to pick up a food item.

Adult : Unique bright chestnut with white head, neck and breast.

Juvenile : Difficult to separate from other large raptors; largely brown, with pale bars on head, mantle and breast; note the unbarred tail; large pale patch on the primaries.

Habitat : Low country (1800 m). More common round the sea-coasts but also frequents large inland waterbodies.

Distribution : Uttarakhand : Dehra Dun : Ganges (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), Sahastradhara hills (Bhatnagar & Misra 1971), (Tak 1995), Asan Barrage (Singh 2000, Tak & Sati 2003). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Schedule I (BNHS 2002).

**76(174) *Haliaeetus leucoryphus* (Pallas, 1771)
Pallas's Fish-Eagle**

1771. *Aquila leucorypha* Pallas, *Reise Versch. Prov. Russ. Reichs*, 1 : 454 (Lower Ural river).

1928. Baker, *FBI* No. 1779, 5 : 112.

Diagnostics : Size : Kite +; c. 76-84 cm length; wingspan up to 205 cm. Sexes alike; female slightly larger. In flight, soars and glides with wings flat; has long, comparatively narrow wings, fairly long tail, and noticeably protruding head and neck.

Adult : Instantly recognizable with pale head and neck, dark brown upperwing and underwing, and largely white tail with broad black terminal band.

Juvenile : With dark mask, large pale patch on inner primaries, all dark tail, and pale crescent on uppertail-coverts.

Habitat : 1800 m. Vicinity of larger inland rivers, lakes, jheels, marshes and tidal creeks.

Distribution : Uttarakhand : Dehra Dun : Yamuna, Ganges, Kansrao, Tiuni (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage, [Dholkhand] (Singh 2000), Asan wetland (Tak & Sati 2003), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Rudraprayag : Augstiyamuni (ZSI Survey 2004). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Vulnerable (IUCN 2007). Schedule I (BNHS 2002).

77(172a) *Haliaeetus albicilla* Linnaeus, 1758
White-tailed Sea-Eagle

1758. *Falco albicilla* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 89 (Sweden).

1928. Baker, *FBI* No. 1777, 5 : 110.

Diagnostics : Size : Kite +; c. 70-90 cm length; 200-250 cm wingspan; 3.5-7.5 kg weight. Sexes alike; female larger. An enormous eagle with broad parallel-eged wings, short wedge-shaped tail, protruding head and neck. The flight has shallow steady wingbeats interspersed sporadically with short glides; soars with wings held perpendicular to body and level or held very slightly raised; when gliding, holds wings horizontal or with hand slightly depressed. Perches upright.

Adult : Simply recognized by wholly white tail contrasting with brown wings and body, and huge yellow bill.

Juvenile : With whitish centres to tail feathers, pale patch on axillaries, and variable pale band across underwing-coverts. Bill becomes yellow with age.

Habitat : Normally a coastal species on its breeding grounds but in the subcontinent generally occurs in the vicinity of larger inland lakes and rivers.

Distribution : Uttarakhand : CTR (Khatri 2004, internet list).

Status : Sparse winter visitor. Schedule I (BNHS 2002).

78(177) *Ichthyophaga humilis* (S. Muller & Schlegel, 1841)

Lesser Grey-headed Fish-Eagle

1871. *Polioaetus plumbeus* 'Hodgson' = Jerdon, *Ibis*: 336 (north-western Himalayas).

1928. Baker, *FBI* No. 1783, 5 : 117.

Diagnostics : Size : Kite ±; c. 64 cm. Sexes alike. Mainly grey fish eagle, with white belly, thighs and undertail-coverts clearly demarcated from breast.

Adult : Similar to Greater Grey-headed Fish-Eagle, but distinguished by its smaller size; less brown on head; paler grey upperparts; greyer underparts; greyish tail with, basal two-third

mottled brown and white looking greyish instead of pure white, and terminal third blackish; white patch at the base of outer primaries on underwing.

Juvenile : Browner than adult.

Habitat : Foothills and adjoining plains-1500 m (4250 m). Himalayan forest rivers and streams; occasionally jheels, tanks and more open rivers.

Distribution : Uttarakhand : Almora : Gages (ZSI Survey 2004). Dehra Dun : Yamuna, Tons and their tributaries (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995). Rudrapur : Tilwara, Augstiyamuni (ZSI Survey 2004). Uttarkashi : Tons river (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident with altitudinal movements. Near Threatened (IUCN 2007). Schedule I (BNHS 2002).

79(175-176) *Ichthyophaga ichthyaetus* (Horsfield, 1821)

Greater Grey-headed Fish-Eagle

1821. *Falco Ichthyaetus* Horsfield, *Trans. Linn. Soc. London*, 13(1) : 136 (Java).

1928. Baker, *FBI* No. 1780, 5 : 114.

Diagnostics : Size : Kite +; c. 74cm. Sexes alike. Its English and Scientific names suggest, is a specialist fish eater which hunts over lakes, large rivers, etc.

Adult : Distinguished from Lesser Grey-headed Fish Eagle by white tail with broad black subterminal band; darker and browner upperparts and rufous-brown breast.

Juvenile : With pale supercilium, boldly streaked head and underparts, and diffuse brown tail barring.

Habitat : Plains level. Vicinity of large lakes and slow rivers in open wooded country.

Distribution : Uttarakhand : CTR (Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Near Threatened (IUCN 2007). Schedule I (BNHS 2002).

80(188) *Gypaetus barbatus* (Linnaeus, 1758)
Bearded Vulture

1783. *Vultur aureus* Hablizl, 1783, *Neue Nord. Beytr.*, 4 : 64 (Province of Gilan, northern Persia).

1838. *Gypaetus hemachalanus* Hutton, *Jour. As. Soc. Bengal*, 7 : 22 (Himalayas).

1874. *Gypaetus altalicus* Sharpe, *Cat. Bds. Brit. Mus.*, 1 : 299 *ex* Gebler, 1840, *Bull. Soc. Acad. St. Petersb.*, 6 : 292 (Altai).

1928. Baker, *FBI* No. 1716, 5 : 26.

Diagnostics : Size : Himalayan Griffon +; c. 100-115 cm length; 235-280 cm wingspan; 5-7 kg weight. Sexes alike. This is the only member of the genus *Gypaetus*. Unlike most vultures Lammergeiers or the Bearded Vulture does not have a bald head.

Adult : At a closer distance and unmistakable bird with yellowish or white head with black mask and 'beard', blackish upperparts, wings and tail; cream or rufous-orange underparts contrasting with black underwing-coverts.

Juvenile : Has blackish head and neck, blackish-brown upperparts and grey-brown underparts. In flight, a huge bird with narrow pointed wings and large wedge-shaped tail. The wings are held flat when soaring, and slightly bowed at carpal joints when gliding.

Habitat : (300 m) 1200-4100 m (7500 m). Himalayas. It breeds on crags in high mountains in southern Europe, Africa, India, and Tibet, laying one or two eggs in mid-winter which hatch at the beginning of spring.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Nanda Devi and the Rishiganga basin (Dang, Hari 1963), Nanda Devi Base Camp (Reed 1979), NDNP (Tak & Kumar 1987), Dibrugheta to Sarsonpatal (Sankaran 1993, 1994), (Tak 1995), throughout NDBR (Tak 1997), Sarsopatal, Devstan bc, Pataalkhan, Bhojgara, Ramni, Deodi, Dibrugheta, Dharansi, Latakharak, Latakharak (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, Tak 1995), Chakrata, Mussoorie, New Forest, [Kampti Falls] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley-

1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Tungnath Mountain (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), Lamprey (1954). Uttarkashi (Tak 1995), Govind NP: Taluka, Osla (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident with altitudinal movements. Schedule I (BNHS 2002).

Remarks : It takes about five years to reach full maturity and can live up to 40 years in captivity. Like other vultures this old world vulture is also a scavenger feeding mostly from carcasses of dead animals. It usually disdains the rotting meat, however, and lives on a diet that 90% bone marrow. It will drop large bones from a height to crack them to get smaller pices. Its old name of Ossifrage (or Bone Crusher) relates to this habit.

81(186-187) *Neophron percnopterus* (Linnaeus, 1758)

Egyptian Vulture

1790. *Vultur ginginianus* Latham, *Index Orn.*, 1 : 7 (Gingec, Coromandel, *ex* Sonncart).

1928. Baker, *FBI* No. 1715, 5 : 23.

Diagnostics : Size : Black Kite ±; c. 60-70 cm length; 1.7 m wingspan; 2.1 kg weight. Sexes alike. It is the only member of the genus *Neophron*. A small vulture with black and white plumage; long pointed wings; wedge-shaped tail; and buoyant flight, wings are held flat when soaring and slightly bowed when gliding.

Adult : Unmistakable; with naked yellow head, face and foreneck; dirty white body, wing-coverts and tail; and black flight feathers with whitish outer webs to secondaries noticeable on upperwings.

Juvenile : Chiefly blackish or chocolate-brown mottled with white on back, breast, and greater wing-coverts.

Habitat : More common in the plains and foothills, though some breed in the mountains (up to 3800 m). Generally scavenges on carrion and refuse in the vicinity of human habitation. Will drive off House Crows but gives way to most other vultures.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Bampa

(Lavkumar 1956b), Joshimath valley (Reed 1979), (Tak 1995), Lata, Joshimath (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh: Dhaul river basin- 2004, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri: Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP: Naitwar, Himri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Endangered (IUCN 2007). Schedule IV (BNHS 2002).

**82(185) *Gyps bengalensis* (Gmelin, 1788)
Indian White-backed Vulture**

1788. *Vultur bengalensis* Gmelin, *Syst. Nat.*, 1(1) : 245 (Bengal).

1928. Baker, *FBI* No. 1713, 5 : 19.

Diagnostics : Size : Peacock minus train $\pm$; c. 75-85cm. Sexes alike. It is the smallest and the most easily identifiable of the *Gyps*.

Adult : Has blackish upper plumage with grayish-black secondaries; contrasting fluffy white ruff; bald head; and the clearly white back and rump, which are visible only when the wings are spread. In flight, the white underwing-coverts contrasting with black flight feathers and body are diagnostic.

Juvenile : Dark brown with pale streaking on upperwing-coverts and underparts; whitish head and neck, and all-dark bill, but lacks the white back and rump of adult. In flight, confusingly similar to several other immature *Gyps* but note the dark brown tail and flight feathers are not much darker than the body and wing-coverts.

Habitat : 1000 m (3100 m). All habitats. Normally nests in trees.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : above Joshimath (Reed 1979, Tak 1997), (Tak 1995), Belta (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Tons Valley and New Forest area (Bhatnagar & Misra 1971, 1972a), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Tehri : The proposed Tehri Dam site (Tak unpublished). Uttarkashi : Govind NP: Naitwar, Himri (Tak *et al.* 2004), Harsil (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Critically Endangered (IUCN 2007). Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : Critically Endangered. This species, as well as the Indian and Slender-billed Vultures have suffered a 99% population decrease in India due to poisoning by diclofenac, the veterinary drug non-steroidal anti-inflammatory drug (NSAID), that causes kidney failure in birds eating the carcasses of treated cattle. Meloxicam (another NSAID) has been found to be harmless to vultures and should prove to be an acceptable substitute. To maintain a stock of the vultures- which have already disappeared from most areas- for reintroduction, a captive breeding program was initiated. Two chicks, which were apparently the first captive-bred Indian White-rumped Vultures ever, hatched in January, 2007, at a facility at Pinjore. However, they died after a few weeks, apparently due to the fact that their parents were an inexperienced couple breeding for the first time in their lives- a fairly common occurrence in birds of prey.

**83(182) *Gyps indicus* (Scopoli, 1786)
Long-billed Vulture**

1786. *Vultur indicus* Scopoli, *Del. Faun. Et Flor. Insubr.*, 2 : 85 (India, *ex* Sonnerat).

1928. Baker, *FBI* No. 1710, 5 : 16.

Diagnostics : Size : White-backed Vulture +; c. 80-95 cm. Sexes alike. A typical vulture with a bald blackish head; some white down, mainly on nape; very broad wings and short tail.

Adult : Distinguished by the pale sandy-brown body and upperwing-coverts; dark brown remiges; blackish head and neck; white downy ruff; pale horny-yellow or greenish-yellow bill and with greenish leaded cere; and almost unstreaked underparts. Normally nests in colonies on cliffs.

Habitat : Plains (up to 1530 m). All habitats. Normally nests in trees.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun: New Forest (Mohan 1993, 1996), Khaddar, Tea Garden (Singh 2000). Rudraprayag: Augstyamuni (ZSI Survey 2004). CTR (Lamba & Bhatnagar 1977-79, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Critical (IUCN 2007). Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : Critically Endangered. This and the Indian White-backed Vulture, *G. bengalensis*, have suffered a 99% - 97% population decrease in Pakistan and India the cause of this has been identified as poisoning caused by veterinary drug diclofenac. Diclofenac is a non-steroidal anti-inflammatory drug (NSAID) and it is given to working animals to reduce joint pain and so keep them working for longer. The drug is believed to be swallowed by vultures with the flesh of dead cattle which have been given diclofenac in the last days of life. Diclofenac causes kidney failure in several species of Vultures. In March 2005 the Indian Government announced its support for a ban on the veterinary use of diclofenac. Another NSAID, meloxicam, has been found to be harmless to vultures and should prove to be an acceptable substitute to diclofenac. Till March 2006 diclofenac was still being used for animals throughout India and the changes in Indian legislation are awaited. When meloxicam production is increased it is hoped that it will be as cheap as diclofenac.

84 (184) *Gyps tenuirostris* (G.R. Gray, 1844) Slender-billed Vulture

1844. *Gyps tenuirostris* 'Hodgson' = G. R. Gray, Genera of Birds, 1 : 6, pl. 3 (Nepal).

1927. *Gyps nudiceps* Baker, *Bull. Brit. Orn. CL.*, 47 : 151 (New name for *Gyps tenuirostris* Hume, Khatmandoo, Nepal).

1928. Baker, *FBI* No. 1711, 5 : 17.

Diagnostics : Size : White-backed Vulture +; c. 80-95 cm. Sexes alike. A recently recognized species of Old World vulture. For some time, it was lumped together with its relative the Indian Vulture under the name of 'Long-billed Vulture' However these two species have parapatric or allopatric ranges and can be immediately told apart by trained observers, even at considerable distances.

Adult : Darker and has blackish bill and cere with a pale culmen.

Juvenile : In flight from below by pale brown body and wing-coverts contrasting with dark flight feathers, rectrices, head and neck; an intermediate dark with pale fringes runs through the greater coverts.

Habitat : All habitats, north of the Gangetic Plain up to 1530 m along the lower Himalays.

Distribution : Uttarakhand : Pauri (Tak 1995). Pithoragarh (Tak 1995). CTR (Lamba undated, Khati 2004).

Status : Sparse local resident. Critical (IUCN 2007). Schedule IV (BNHS 2002).

85(181) *Gyps himalayensis* Hume, 1869 Himalayan Griffon

1869. *Gyps Himalayensis* Hume, *Rough Notes*, 12, 15 (Himalayas from Kabul to Bhutan).

1928. Baker, *FBI* No. 1709, 5 : 13.

Diagnostics : Size : White-backed Vulture +; c. 115-125 cm length; c. 272 cm wingspan; c. 9.7 kg weight. Sexes alike. The largest and the palest *Gyps*, and practically the largest bird in the Himalayas.

Adult : Similar to Eurasian Griffon (*G. fulvus*), but is larger and has broader body and slightly longer tail. Has pale buffish-white body, contrasting

strongly with dark flight feathers and tail; yellow bill and cere; and pinkish legs and feet with dark claws. In flight, wings are held flatter, with markedly upturned fingers when soaring, and underwing-coverts are almost entirely whitish with narrow dark leading edge to wing (resulting in quite different underwing pattern from that of adult Eurasian).

Juvenile : Very dark brown overall with a whitish feathered head and neck; pale streaks obvious on upperwing-coverts and underbody; and without any contrast between the flight feathers and underwing-coverts.

Habitat : (plains) 900-4000 m (6100 m). Mountains of the Himalaya, sometime straying to the adjacent plains. Pairs or small groups nest on cliffs. It grunts and hisses at roosts or when feeding on carrion.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Baijnath, Kanda, Jakheri, Wajula, Garur, Rauteli-khet (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : Chor Hoti Pass (Lavkumar 1956b), Joshimath and above base camp (Reed 1979), Reni/ Lata to Sarsonpatal (Sankaran 1993, 1994), (Tak 1995), throughout Nanda Devi Biosphere Reserve (NDBR) (Tak 1997), Sarsopatal, Devstan base camp, Patakhana, Bhojgara, Deodi, Dibrugheta, Dharansi, Latakharak, Beltakharak (Sathyakumar 2003), Tunganath peak (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata hills (Osmaston 1935), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, 1972a, Tak 1995), Mussoorie, [Kampti Falls, Maldeota] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri : Bheling valley (Searight 1926), Lamprey (1954), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Jakhol, Saruka Tal, Himri, Dhaura, Duni, Satta (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident of the Himalayas with altitudinal movements. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

86(180, 183) *Gyps fulvus* (Hablizl, 1783) **Eurasian Griffon**

1869. *Gyps fulvescens* Hume, *Rough Notes*, I : 15, 19 (Punjab) Rajasthan.

1927. *Gyps indicus jonesi* Whistler, *Bull. Brit. Orn. Cl.* 47 : 74 (Margala Range, Rawal Pindi district).

1928. Baker, *FBI* No. 707, 5 : 11.

Diagnostics : Size : White-backed Vulture +; c. 90-105 cm length; 230-265 cm wingspan; 6-13 kg weight. Sexes alike. It is smaller than the Himalayan Griffon but larger than the Long-billed Vulture.

Adult : Distinguished from the former by rufescent-buff upperparts; more rufous-brown underparts with pronounced white streaking; black cere; and dark grey legs and feet. Distinguished from the latter by whiter head and neck; blackish cere; rufescent-buff upperparts; and more rufous-brown underparts with pronounced white streaking.

Habitat : 3050 m. Barren mountains, open savanna, semi-desert. Nests singly or in small groups on cliffs.

Distribution : Uttarakhand : Chamoli : Beltakharak (Sathyakumar 2003). Dehra Dun : Shiwaliks (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, Tak 1995), [Dholkhand] (Singh 2000). Pauri (Tak 1995). Pithoragarh (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

87(179) *Aegypius monachus* (Linnaeus, 1766) **Cinereous Vulture**

1766. *Vultur Monachus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 122 (Arabia, *ex* Edwards, pl. 290).

1928. Baker, *FBI* No. 1705, 5 : 7.

Collection records : Uttarakhand : Dehra Dun : Sahashpur, 1 ♀, 18.vii.1963, coll. R. K. Bhatnagar.

Diagnostics : Size : Vulture +; c. 100-110 cm length; 25-300 cm wingspan; c. 14 kg. Sexes alike.

Adult : A large, uniformly black or blackish brown vulture with paler brown ruff; partially naked head conspicuously broader than in other vultures; crown, occiput, lores and cheeks covered with black fur-like feathers and down. In flight, dark plumage above and below, absence of white thigh-patches, broader wings without whitish stripe, and slightly wedge-shaped (v. rounded) tail differentiates it from King or Red-headed Vulture. Soars with wings held flat (not shallow V or with tips upturned).

Juvenile : Blacker and more uniform than adult.

Habitat : Open savanna, semi-desert and cultivation. Top of the vulture pecking order. Usually seen singly though may occur in groups of up to 20 locally in parts of Pakistan.

Distribution : Uttarakhand : Chamoli (Tak 1995), Ramani, Bhujgara (Tak 1997). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), [Dholkhand] (Singh 2000). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba undated, Khati 2004, internet list; ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

Remarks : It is the best equipped to tear open tough carcass shims, ably using its powerful bill. It dominates all other vultures at carcasses.

88(178) *Sarcogyps calvus* (Scopoli, 1786) Red-headed Vulture

1786. *Vultur clavus* Scopoli, *Del. Faun. et Flor. Insubr.*, 2 : 85 (Pondicherry, *ex* Sonnerat).

1928. Baker, *FBI* No. 1706, 5 : 9.

Diagnostics : Size : White-backed Vulture $\pm$; c. 85 cm. Sexes alike. Also known as Asian King Vulture, Indian Black Vulture, or the Pondicherry Vulture.

Adult : Unmistakable; chiefly black with reddish head and neck, thighs and legs; the white patches at the base of neck and upper thighs are additional pointers. In flight, the red head, white breast and thigh-patches, and a thin whitish band along underside of the outstretched wings conspicuous.

Juvenile : Browner with head covered in white down, white patch on thighs, and whitish undertail-coverts.

Habitat : 2000 m (3050 m). Open country, deciduous woodland, and semi-desert; often near human.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Bakarigad (Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957, Tak 1995), New Forest (George 1957, Mohan 1996), New Forest and Tons Valley (Bhatnagar & Misra 1971, 1972a), Asan Barage (Gandhi & Singh 1995), Khaddar, [Dholkhand, Kampti Falls] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag: Kedarnath Sanctuary (Green 1986, Myers & Singh 2006); Tehri: Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Critical (IUCN 2007). Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjunwala *et al.* 2001).

Remarks : Usually seen singly or in pairs, often outnumbered by other vulture species at a carcass, though up to 20 birds have been observed together. It is relatively timid and not very high in the pecking order. More solitary than most other vultures.

89(195) *Circaetus gallicus* (Gmelin, 1788) Short-toed Snake-Eagle

1771. *Accipiter ferox* S. G. Gmelin, *Novi. Comm. Acad. Petrop.*, 15 : 422, pl. 10 (Astrakan, S. Russia).

(Unidentifiable *vide* Mayr. E., 1944, *Emu*, 43 : 303).

1788. *Falco gallicus* Gmelin, *Syst. Nat.*, 1(1) : 259 (France).

1928. Baker, *FBI* No. 1764, 5 : 93.

Diagnostics : Size : Kite +; c. 63-68 cm length; 185-195 cm wingspan; 1.7-1.9 kg weight. Sexes

alike; female larger. A medium-sized diurnal raptor; an accomplished flyer; spends more time on the wing than do most members of its genus; hovers frequently; and soars with wings held forward and flat or slightly raised.

Adult : Has predominantly white underside with broken and uneven pale brown barring, contrasting with the dark head and upperbreast and greyish brown upperparts; 3 or 4 dark bands on tail, the terminal one broadest; brightly yellow eyes and grayish cere on an owl-like head; the wing tips reaching the tip of the tail; unfeathered tarsi with varying colour from grayish-brown to yellowish-white. In flight, distinctive silvery white body and underwing contrasting with darker head and throat, blackish primaries; fine banding and barring on the underwing; and dark crossbands in tail are the clues.

Juvenile : Confusingly variable, hence not distinguishable in field.

Habitat : 1000 m (2300 m). Semi-desert, open dry stony scrub and cultivation; nests in trees.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, 1972a, Tak 1995), [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident.

90(196-200) *Spilornis cheela* (Latham, 1790
Crested Serpent-Eagle

1790. *Falco Cheela* Latham, *Index Orn.*, 1 : 14 (India = Lucknow).

1928. Baker, *FBI* No. 1765, 5 : 96.

Collection records : Uttarakhand : Uttarkashi : 1 ♀, 17.vi.1969, coll. P. K. Bose.

Diagnostics : Size : Kite +; c. 56-74 c. Sexes alike. As its name suggest, this medium large-sized raptor is specialist reptile eater which hunts over woodland for snakes and lizards. When soaring the broad wings are held in a shallow V.

Adult : Has dark brown upperparts; rufous-brown underparts spotted with silvery-grey; round

black-and-white nuchal crest (prominent when erected); yellow cere, lores and unfeathered legs. In flight, the distinctive underwing pattern depicts a narrow black border with a broad white band behind it running across the primaries and along the entire trailing edge, with narrower concentric parallel black-and-white bands before it. A broad whitish band across dark tail and another ill-defined one near its base are the pointers.

Juvenile : With whitish head, underparts and underwings, the latter showing darker barring; tail multi-banded dark and whitish brown.

Distribution : Uttarakhand : Almora (Tak 1995). Chamoli (Tak 1995), Mandal (Singh 2005a). Dehra Dun: foothills (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, 1972a, Tak 1995), Khaddar, New Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal (Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995). District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, (Tak & Sati 2006); Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : (Tak 1995). Uttarkashi (Tak 1995), Govind NP : Dhaulta (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Habitat : 2000 m (3350 m). Forest, woodland, mangroves.

Status : Widespread resident. Schedule I (BNHS 2002).

91(193) *Circus aeruginosus* (Linnaeus, 1758)
Western Marsh-Harrier

1758. *Falco aeruginosus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 91 (Europe, restricted type locality, Sweden).

1928. Baker, *FBI* No. 1794, 5 : 134.

Diagnostics : Size : Kite -; c. 48-58 cm length; 115-140 cm wingspan. Also called Eurasian Marsh Harrier or simply Marsh Harrier. As the name suggests it is a predominantly marsh-frequenting harrier, with broader and less pointed wings. Glides and soars with wings held in noticeable V, which helps to separate it from Booted Eagle and Black Kite.

Adult male : Dark brown with pale rufous head, neck and breast; dark rufous underparts; silvery grey tail and black-tipped silvery grey wings.

Adult female : Distinguishably dark chocolate with contrasting creamy, or whitish, crown and throat; buff leading edge to wing at shoulder; and a round (not forked) tail.

Juvenile : Similar to female, but head and wing-coverts may be entirely dark.

Habitat : Mainly lowlands <920 m (3050 m). Marshes, jheels, wet paddy fields, grassland.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI 2002-04). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule I (BNHS 2002).

**92(194) *Circus spilonotus* Kaup, 1847
Eastern Marsh-Harrier**

1847. *Circus spilonotus* Kaup, *Isis von Oken*, col. 953 (Asia).

1928. Baker, *FBI* No. 1795, 5 : 135.

Diagnostics : Size : Kite -; c. 48-58 cm length; 113-137 cm wingspan. Female usually larger than male. Glides and soars with wings held in noticeable V.

Adult male : Has whitish head and breast with black streaking; white nape and throat streaked heavily with black; black mantle and median coverts with feathers boldly edged with white; white abdomen; white rump with light black barring; light grey wings and tail.

Adult female : Dark brown with buffy white on head, throat, and nape, streaked with dark brown on nape and lower throat; and dark underwings.

Juvenile : Dark brown with buff on the head and a pale patch on the underwing.

Habitat : Affects marshland.

Distribution : Uttarakhand : CTR (Naoroji 1994).

Status : Residential not known. Schedule I (BNHS 2002).

Remarks : The occurrence of this species in Corbett National Park was reported as 'extension of its range' by Naoroji (1994).

**93(189) *Circus cyaneus* (Linnaeus, 1766)
Hen Harrier**

1766. *Falco cyaneus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 126 (Europe, Africa = vicinity of London, England, ex Edwards, pl. 225).

1928. Baker, *FBI* No. 1792, 5 : 131.

Diagnostics : Size : Kite -; c. 44-52 cm. A medium-sized typical harrier, with long wings held in a shallow V in its low flight. Like Pallid or Pale Harrier but darker; wings blunter, rounder black-tipped v. more pointed in Pallid.

Adult male : Grey above and white below, with black wingtips.

Adult female : Brown above with white upper tail-coverts; underparts buff streaked with brown; patch on ear-coverts not contrastingly darker than brown on rest of head; white supercilium joins or almost joins with white below eye; distinct whitish collar behind ear-coverts; and on underwing the dark secondary bars continue as distinct lines on the primaries; wing lining unbarred.

Juvenile : Similar to female, hence both often called "ringtails"

Habitat : 3000 m (much higher on passage). Open country. The commonest harrier elevations. moor

Status : Sparse winter visitor. Schedule I (BNHS 2002).

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), New Forest (Singh 1999), Khaddar, New Forest (Singh 2000). Pauri (Tak 1995). Rudraprayag: Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Remarks : The Harrier's flight follows the contours of the land below it. The nest of this species is on the ground. Four to six eggs are laid.

**94(190) *Circus macrourus* (S.G. Gmelin, 1770)
Pallid Harrier**

1770. *Falco macrourus* S. G. Gmelin, *Reise d. Russl.*, th. 1 : 48 (Voronezh, southern Russia).

1928. Baker, *FBI* No. 1790, 5 : 129.

Diagnostics : Size : Kite -; c. 40-48 cm. Perched bird distinguished from Montagu's Harrier by the wing-tip falling well of the tail tip; longer legs; more erect stance.

Adult male : Pale ashy grey above, pure white below, with black tips to the long narrow pointed wings. Tail relatively long, white cross-barred with grey.

Adult female : Dark line through eye separates white supercilium from white patch below eye; fairly distinct white line around dark ear-coverts. In field, inseparable from Montagu's, females of both these species only doubtfully distinguishable from female Hen Harrier by smaller, less prominent white rump patch.

Juvenile : Above brown like female but feathers margined with pale rufous; below rufous-buff with faint darker rufous shafts on breast and flanks.

Habitat : 3000 m (3350 m). Open country.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Tons Valley (Wright 1957). Pauri (Tak 1995). Pithoragarh: Dhauli river basin- 2004, Kali river basin-1989 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse winter visitor. Near Threatened (IUCN 2007). Schedule I (BNHS 2002).

95(192) *Circus melanoleucos* (Pennant, 1769)
Pied Harrier

1769. *Falco melanoleucos* Pennant, *Ind. Zool.* : 12, pl. 2 (Ceylon).

1928. Baker, *FBI* No. 1793, 5 : 131.

Diagnostics : Size : Kite -; c. 41-46.5 cm.

Adult male : A distinctive black-and-white hawk with black head, mantle, throat, breast, and median-covert bar; white rump and the remaining underparts; silvery grey wings broadly tipped with black; and grey tail. Yellow cere and iris are especially striking against black of head.

Adult female : Dark brown above and pale fulvous-rufous below, with whitish rump and some

white on nape. Doubtfully distinguishable in the field from females of Pallid or Pale and Montagu's Harriers except with much practice, by its blunter, less pointed wings (as in Hen Harrier), and some what heavier flight when flapping.

Juvenile : Darker than female with rufous edges to head and neck feathers; and whitish nuchal patch and ruff prominent.

Habitat : Mainly lowlands (3810 m). Grasslands, marshes and cultivation.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse winter visitor (status uncertain). Schedule I (BNHS 2002).

Remarks : Breeds in Assam; winter visitor mainly to NE. Naoroji (2006 : 339) mentions the repeated occurrences in Corbett Tiger Reserve by Robson 2002a and Manoj Sharma (*pers. comm.*).

96(191) *Circus pygargus* (Linnaeus, 1758)
Montagu's Harrier

1766. *Falco Pygargus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 89.

1928. Baker, *FBI* No. 1791, 5 : 130.

Diagnostics : Size : Kite -; c. 43-46 cm length; 97-115 cm wingspan; male 2.65 kg, female 3.45 kg weight. Sexually dimorphic, female is larger than male. A migratory bird of prey, its name commemorates the British naturalist Gorge Montagu.

Adult male : Like the Pallid and Hen Harrier, but has darker ashy grey upperparts contrasting with black wingtips; distinguished by its characteristic black bands along the secondaries, if visible at rest, both above and below the wing in flight; and rusty streaks on belly and flanks.

Adult female : Indistinguishable in field from the female of Pallid and Hen Harrier except slightly narrower white rump-patch.

Juvenile : Darker and richer than the juvenile of Pallid; but in field not sparable from it with certainty.

Habitat : Mainly lowlands (2650 m on passage). Open country.

Status : Sparse winter visitor (status uncertain). Schedule I (BNHS 2002).

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004).

Remarks : A 'melanistic' form occurs regularly in this species. In this form the male is much darker than usual, with black head, brownish black above and grey underparts. The melanistic female is entirely chocolate brown except for grey flight feathers. Partially melanistic morphs can also be found.

97 (144-146) *Accipiter trivirgatus*
(Temminck, 1824)
Crested Goshawk

1840. *Spizaetus rufitinctus* McClelland, *Proc. Zool. Soc.* London, pt. 7 : 153 (Banks of the Brahmaputra, Assam).

1836. *Astur indicus* Hodgson, *Bengal Sporting Mag.*, 8 : 177 (Nepal).

1928. Baker, *FBI* No. 1810, 5 : 155.

Diagnostics : Size : House Crow +; c. 30-46 cm. Sexes more or less alike; female larger. A medium-sized hawk. At perch, with short nuchal crest (not always visible); short and broad-wings, pinched in at base, and barely extend beyond base of the tail; and 4 narrow dark bars of even width on the upper tail. Both (short wings and long tail) adaptations to manoeuvring through trees. Has a characteristic flight with "slow flap, slow flap, and straight glide" similar to other *Accipiter*.

Adult male : Has dark grey crown and crest, paler grey ear-coverts; prominent black submoustachial and gular stripes; and rufous-brown streaking on breast and barring on belly and flanks.

Adult female : With browner crown and ear-coverts and browner streaking and barring on underparts.

Juvenile : Has rufous or buffish fringes to crown, crest and nape feathers, streaked ear-coverts, and buff/ rufous wash to streaked underparts (barring restricted to lower flanks and thighs).

Habitat : 2100 m. Most types of forest, preferring broadleaved in foothills and broken country.

Distribution : Uttarakhand : Dehra Dun : Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag: Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Schedule I (BNHS 2002).

Remarks : Resident mainly in Himalayas, NE and SW India. A forest bird; builds a stick nest in a tree; lays two or three eggs. Secretive, hunts birds, rely mammals and reptiles in woodland, relying on surprise as it flies from a perch to catch its prey unaware.

98(137-140) *Accipiter badius* (Gmelin, 1788)
Shikra

1788. *Falco badius* Gmelin, *Syst. Nat.*, 1(1) : 280 (Ceylon).

1928. Baker, *FBI* No. 1802, 5 : 147.

Collection records : Uttarakhand : Dehra Dun : East Hope Town Tea State, 1 ♀, 22.ix.1973, coll. J. C. Tripathi. Naini Tal : Ramnagar, Bhawaniganj, 1 ♀, 26.xii.1968, 1 ex., 13.x.1969, coll. P. K. Bose. Uttarkashi: Barkot, 1 ♀, 27.vi.1973, coll. Raj Tilak.

Diagnostics : Size : House Crow -; c. 30-36 cm. Sexes more or less alike; female larger. The commonest accipiter of the area, hence worth familiarizing to use it as a scale for comparison with the other *Accipiters*. A small, short and rounded-winged hawk with a longish multi-banded (4 or 5) tail. Active flight is typical of the genus: swift and direct, with fast wingbeats followed by a glide i.e. "flap – flap – glide"

Adult male : Has the palest (bluish) upperparts of all the accipiters; dark grey primaries; white chin and throat with indistinct grey gular stripe; pale and fine brownish-orange barring on underparts; unbarred thighs, and unbarred or only lightly barred central tail feathers.

Adult female : Similar, but with pale brownish-grey upperparts.

Juvenile : With pale brown upperparts, more prominent gular stripe, streaked underparts, and 5-7 dark bars on the tail. Distinguished from juvenile Besra by paler upperparts and narrower tail barring, and from juvenile Eurasian by streaked (v. barred) underparts.

Races : The nominate race from Sri Lanka and *A. b. poliopsis* of the NE subcontinent are smaller and darker grey above than other races in the region, and have underparts more closely barred with darker rufous.

Habitat : 1800 m (2250 m). Mainly plains and lower hills. Open wooded and arable country, vicinity of villages.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Mansi (ZSI Survey 2004). Dehra Dun (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, 1972a, Tak 1995), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind National Park or Govind NP: Sankri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule I (BNHS 2002).

Remarks : It nests in trees, builds a new nest each year, lays 3-7 eggs.

99(149-151) *Accipiter virgatus* (Temminck, 1822)
Besra Sparrowhawk

1936. *Accipiter virgatus kashmiriensis* Whistler & Kinnear, *Jour. Bom. nat. Hist. Soc.*, 38 : 435 (Murree).

Not in Baker, *FBI*.

Diagnostics : Size : House Crow -; c. 29-36 cm. Sexes more or less alike; female larger and browner than the male. A darker version of the widespread Shikra, but with the darkest upperparts of all the accipiters; a bold black mesial stripe on throat (*contra* narrow and grey in Shikra; absent in Sparrow-Hawk); and orange-streaked breast distinguishes it from Eurasian Sparrowhawk, while the strongly barred underwing compared with Shikra.

Adult male : With dark slate-grey upperparts, broad blackish gular stripe, and bold rufous streaking on breast and barring on belly.

Adult female : With browner upperparts, blackish crown and nape.

Juvenile : The darker, richer brown upperparts, broader gular stripe, and 3-4 dark tail-bars separate it from juvenile Shikra.

Habitat : 2800 m (3450 m). Dense hill forest, but in winter emerge in to more open woodland when Himalayan birds may descend to the adjoining plains.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996). Pauri (Tak 1995). Tehri: Bhillung valley (Matthews 1918). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident with altitudinal movement. Schedule I (BNHS 2002).

Remarks : Resident. Himalayas, NE and SW India.

100 (147-148) *Accipiter nisus* (Linnaeus, 1758)
Eurasian Sparrowhawk

1833. *Accipiter Nisosimilis* Tickell, *Jour. Asiat. Soc. Bengal*, 2 : 571 (Marcha, Borabhum, India).

1928. Baker, *FBI* No. 1811, 5 : 156.

Collection records : Uttarakhand : Uttarkashi : Rana, 1 ♂, 6.vi.1973, coll. Raj Tilak.

Diagnostics : Size : House Crow -; c. Male 29-34 cm long, 59-64 cm wingspan; female 35-41 cm length, 67-80 wingspan. A small raptor with short broad wings and a long tail, both adaptations to manoeuvring through trees. Absence of mesial streak separates this from Shikra and Besra.

Adult male : Similar to Shikra but has slate-grey upperparts (almost blackish on head), barred reddish underparts, more barred (4 or 5 blackish bands) in tail, and a white supercilium. In flight, separated from Shikra by distinctly barred underwing and tail.

Adult female : Much larger (35-41 cm), barred grey below can be confused with the similarly sized male Goshawk, but lacks the largeness of that species.

Juvenile : With dark brown upperparts and barred underparts.

Races : Male of the resident Himalayan race, *A. n. melaschistos*, has darker grey upperparts, with almost black crown and mantle, and stronger rufous barring to underparts, compared with wintering race *A. n. nisosimilis*.

Habitat : S 1400-3500 m (5200 m). W 2400 m. Well-wooded country, open forest, groves and orchards.

Distribution : Uttarakhand : Chamoli : Dibrugheta (Tak 1997, Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Shiwaliks (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995); New Forest (Singh 1999, Singh 2000). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh: Burfu (Tak 1997), Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag: Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Sparse local resident with altitudinal movement. Schedule I (BNHS 2002).

Remarks : The male was formerly called musket, and the called musket was named after the bird. Builds nests in trees, building a new nest each year; hunts birds in woodland or cultivated fields, relying on surprise as it flies from a perch or hedge-hops to catch its prey unaware.

101(136) *Accipiter gentilis* (Linnaeus, 1758) Northern Goshawk

1882. *Astur palumbarius schvedowi* Menzbier, *Orn. Georgr. Eur. Russl.* : 439 (Transbaikalia).

1928. Baker, *FBI* No. 1801, 5 : 146.

Diagnostics : Size : Black Kite $\pm$; c. Sexes alike; female larger (61 cm) than male 50 cm (female of larger races : 58-64 cm length, 108-127 cm wingspan, 2 kg weight; male of smaller races : 49-57 cm length, 93-105 cm wingspan, 630 gm weight). A medium-sized 'goose-hawk', inhabits the temperate parts of the northern hemisphere. The flight is characteristic "slow flap- sow flap-straight glide"

Adult : Has a general profile of a huge Shikra; rounded wings and longish tail; dark grey

upperparts with darker on crown, nape, sides of head and neck, white edge of forehead and supercilium; and white underparts with black cross-barring. In overhead soaring flight, heavy deep chested appearance, wings with bulging secondaries, the close-barred body, broad rounded wings, longish fanned tail with 3 or 4 black bands (subterminal broadest) are the pinpointers.

Juvenile : Brown above and buff below with blackish heavy streaking.

Habitat : (150 m) 2400-4900 m. Himalayan forest, preferring oak; occasionally above tree line.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Jardar (ZSI Survey 2005). Uttarkashi : Govind NP : Himri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Schedule I (BNHS 2002).

Remarks : Mainly resident. Birds from colder regions of north Europe and Asia migrate south for the winter, as far as North Africa and India. Like most raptors, it is also opportunistic predator but the most important prey species are less agile ground squirrels, galliformes, piciforms, and passerines, will also kill much larger animals up to the size of hares and marmots.

102(157) *Butastur teesa* (Franklin, 1832) White-eyed Buzzard

1832 (1831). *Circus Tessa* Franklin, *Proc. zool. Soc. Lond.*, pt. 1 : 115 (Farther India = Ganges Nerbudda, *apud* Baker).

1928. Baker, *FBI* No. 1774, 5 : 104.

Diagnostics : Size : Jungle Crow $\pm$; c. 43 cm. Sexes alike. A small greyish brown hawk with buffish wing shoulders; longish and rather slim wings almost reaching tail-tip, at rest; yellow iris; and long unfeathered tarsus. Flight is direct *Accipiter*-like, often flies close to ground, with few fast wingbeats interspersed with short glides.

Adult : Only adult has distinctive white eyes. The combination of two dark cheek-stripes and a third central stripe running down from chin on white throat; a small whitish patch on nape; and buffish

wing shoulders separates it from other buzzards. It has rufous rump (upper tail-coverts) and tail; whitish underparts barred with brown. In flight, silvery grey-brown undersides of broad, blunt wings, contrasting with darker body is the pointer.

Juvenile : Has brown iris; buffish head and breast streaked with dark brown; cheek-stripes and central stripe indistinct or absent; buff markings on coverts; and rufous uppertail with stronger dark band.

Habitat : <1200 m. Open country (including cultivation) with scattered bushes and trees, open broadleaved forest, forest edge.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a & b, Tak 1995, Singh 2000), New Forest (George 1957, Mohan 1996), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Bhimtal (ZSI Survey 2005). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule I (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

103(155-156) *Buteo buteo* Linnaeus, 1758 Common Buzzard

1844. *Falco buteo japonicus* Temminck & Schlegelm in Siehold's *Fauna Jap., Aves*, p. 16 (Japan).

1875. *Buteo burmanicus* Hume, *Stray Feathers*, 3 : 30, in text (Thayetmyo, Upper Pegu).

1928. Baker, *FBI* No. 1799, 5 : 143.

Diagnostics : Size : Black Kite -; c. 51-57 cm length; 110-130 cm wingspan. Sexes alike. The smallest and most compact of the *Buteo* species. This broad-winged raptor has a wide variety of plumage resulting in to a confusion with Long-legged and Upland Buzzards. Like other buzzards has dark and light plumage phases. In one of these, with creamy brown head patchy underwing, confusingly like immature Brahminy Kite (*Haliastur indus*).

Adult : With a broad dark trailing edge to under wing, and tail has well-defined dark subterminal band. A pale 'V' on the breast when present is indicative.

Juvenile : Has narrower, paler and more diffuse trailing edge to wing, and evenly barred tail (lacking broad subterminal band).

Races : *B. b. japonicus*, a winter visitor to the Himalayas, with pale head and underparts; variable dark streaking on breast and brown patch on belly or thighs; dark barring on grey-brown tail. *B. b. refectus*, a resident in the Himalayas, is dark brown to rufous-brown, with variable amounts of white on underparts; tail is dull brown with some dark barring. *B. b. vulpinus*, has occurred as a winter visitor, is extremely variable in plumage, although usually shows rufous coloration to tail.

Habitat : <4000 m. Open country with scattered perches, forest edge, and open forest. Despite its name this species is not particularly common in the subcontinent.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). Naini Tal : Bhimtal (ZSI Survey 2005). Tehri : Jardar (ZSI Survey 2005). CTR (Khati 2004, internet list).

Status : Sparse winter visitor. Schedule I (BNHS 2002).

104(153) *Buteo rufinus* (Cretzschmar, 1827) Long-legged Buzzard

1826. *Falco rufinus* Cretzschmar, in Ruppell's *Atlans Vog.* 40, pl. 27 (Upper Nubia, Schendi and Sennar, and Ethiopia).

1928. Baker, *FBI* No. 1796, 5 : 137.

Diagnostics : Size : Black Kite; c. 61 cm. Like an immature Brahminy Kite (*Haliastur Indus*) in general aspect and proportions. But in variable colouration, ranging from pale sandy to dark brown through fulvous and brown, with brown or almost white head, neck, and breast.

Adult : Identified by their pale cinnamon-coloured tail; but not to be confused with Common and Upland Buzzards which have pale rufous tail. The light phase has a pale creamy unstreaked head and breast (paler than the other *Buteo* species) contrasting with chestnut as belly. The dark phase and immature birds may show heavy dark barring on the tail. In overhead aspect the short neck; expanded, rounded, and transversely barred tail; pale to bright rufous-brown- and whitish or dark brown halfmoon-shaped patches on the chestnut-

tinged underside of the broad 'splayed finger' wings are fairly diagnostic of a buzzard. However, differentiation as to species with certainty not possible in field.

Juvenile : Has ashy brown tail with numerous dark transverse bars.

Habitat : S 1500-3700 m. Hill forest with clearing. W Down to the plains where it generally prefers open semi-desert and cultivation, but may also frequent deciduous forest.

Distribution : Uttarakhand : Chamoli : Maltoni pass, Malla Dibruggheta (Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), Khaddar, New Forest (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse winter visitor. Schedule I (BNHS 2002).

105(154) *Buteo hemilasius* Temminck & Schlegel, 1845
Upland Buzzard

1845 (1844). *Buteo hemilasius* Temminck & Schlegel, in Siebold, *Fauna Jap., Aves* : 18, pl. 7 (Japan).

1928. Baker, *FBI* No. 1797, 5 : 140.

Diagnostics : Size : Black Kite +; c. 71 cm. Similar to Longlegged Buzzard, slightly larger and always has tarsus at least three-quarters feathered (often entirely feathered). Dimorphic, the pale morph is variable especially in patterning of underparts. In flight, the dark trailing edge to underwing contrasting with otherwise whitish remiges.

Adult : A usual phase is pale greyish brown, with bold dark brown streaking on whitish head and streaked moustachial stripe; whitish underparts with dark brown streaking on breast; brown thighs which form dark U when seen from below; and brown tail with a subterminal and seven other bars. Pale morph is probably not separable by plumage from *japonicus* race of Common and some juvenile Long-legged. Not safely separable from 'blackish morphs' of Common and Long-legged Buzzards.

Juvenile : Has narrower and more diffuse trailing edge to wing, with more evenly barred secondaries, and evenly and more prominently barred tail.

Habitat : Open country in the Himalaya. Frequently hovers.

Distribution : Uttarakhand : Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). CTR (internet list).

Status : Sparse winter visitor (status uncertain). Schedule I (BNHS 2002).

106(172) *Ictinaetus malayensis* (Temminck, 1822)
Black Eagle

1836. *Aquila Pernigra* Hodgson, *Jour. Asiat. Soc. Bengal*, 5 : 227 (Nepal).

1928. Baker, *FBI* No. 1755, 5 : 83.

Diagnostics : Size : Kite +; c. 69-81 cm. Sexes alike, female larger. A striking large black eagle, with wings reaching to end of tail at rest; may be confused with melanistic form or dark morph of Changeable Hawk-Eagle. Flies with wings raised in V, upturned primaries, pronounced fingers, at the innermost primaries becoming 'pinched' near the body, and shows whitish barring on uppertail-coverts and underside of remiges. At rest, the long wings extend beyond tip of the long and square-ended tail.

Adult : Has all-black plumage, with contrasting yellow bill base (cere) and feet; and the faint greyish barring on tail, which is visible at close range.

Juvenile : Has dark-streaked buffish head, underparts, and underwing-coverts.

Habitat : <2700 m. It is a bird of mountain woodland where it hunts by cruising just above the tree-tops in its search for birds, their nestlings and eggs.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007); Chamoli (Tak 1995), Belta, Dibruggheta (Tak 1997); Dehra Dun: Mussoorie and Chakrata hills (Osmaston 1935), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, Tak 1995), Chakrata, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag: Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Govind NP: Naitwar, Himri (Tak *et al.*, 2004). CTR

(Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule I (BNHS 2002).

**107(171) *Aquila pomarina* Brehm, 1831
Lesser Spotted Eagle**

1834. *Morphnus hastatus* Lesson, in Belanger, *Vog. Ind.-Orient., Zool.* : 217 (Bengal).

1928. Baker, *FBI* No. 1751, 5 : 75.

Diagnostics : Size : Kite; c. 60-65 cm length; c. 150 cm wingspan. Formerly considered, the south Asian race *hastata* is now considered a separate species. It is a medium-sized eagle with rather short and broad wings, comparatively stocky and buzzard-like head and smallish bill, and rather short tail. Slightly less bulky than Greater Spotted Eagle. Flies and soars with wings held flat or with primaries held in a characteristic droop. When gliding and soaring, wings held flattish or very slightly raised.

Adult : Best separated in flight by the underwing-coverts being distinctly paler than the flight feathers. The upperwing-coverts are paler than the flight feathers with pale patches at the base of the inner primaries. The gape extending to rear of eye.

Juvenile : Less heavily spotted above than juvenile Greater Spotted Eagle.

Habitat : A rare bird of low country woodland and cultivation, sometimes also in similar habitat to Greater Spotted Eagle.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Schedule I (BNHS 2002).

**108(170) *Aquila clanga* Pallas, 1811
Greater Spotted Eagle**

1811. *Aquila Clanga* Pallas, *Zoogr. Rosso-Asiat.*, 1 : 351 (Russia and Siberia).

1928. Baker, *FBI* No. 1750, 5 : 74.

Diagnostics : Size : Kite +; c. 65 cm length; c. 160 cm wingspan. Sexes alike, female slightly larger. A large dark eagle, heavier than Lesser Spotted. When gliding and soaring tends to hold the wings slightly arched below the horizontal, with drooping tips.

Adult : Dark brown above with purplish wash on back; paler below. Also occurs as a pale morph, '*fulvescens*', which is rare and similar in appearance to juvenile Imperial Eagle and best told by structural differences- lack of pale wedge on inner primaries, and lack of dark streaking on underparts. From pale juvenile Steppe by lack of white band on underwing and lack of barring on underside of flight feathers. Very similar in general coloration to pale-morph Tawny Eagle but different shape and underwing pattern.

Juvenile : Has a white trailing edge to the wings and tail; white spots on the coverts and scapulars from white bars on the wing in flight.

Habitat : The vicinity of lacks, jheels, canals and marshes. A species of fairly wooded country.

Distribution : Uttarakhand : Almora : Kosi (ZSI Survey 2004). Dehra Dun: Asan Barrage (Gandhi & Singh 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Vagrant. Widespread winter visitor. Vulnerable (IUCN 2007). Schedule I (BNHS 2002).

**109 (168) *Aquila rapax* (Temminck, 1828)
Tawny Eagle**

1831. *Aquila Vindhiana* Franklin, *Proc. zool. Soc. Lond. Pt. 1* : 114 (Vindhya Hills, central India).

1928. Baker, *FBI* No. 1749, 5 : 72.

Diagnostics : Size : Black Kite +; c. 62-72 cm length; c. 165-185 cm wingspan. Sexes alike, female slightly larger. Tawny and Steppe Eagles were formerly treated as conspecific, but Tawny is now considered a separate species. A heavy and large raptor with extremely variable-colour ranging from dirty buff (almost whitish) to brownish black. Legs conspicuously covered with feathers, down to toes. Tail rounded like vulture's but relatively longer. Wings long reaching almost

to tail-tip. In flight, wings held in line with body. Easily confused with the migratory Steppe Eagle, especially when the two whistish win-bars of the latter are not conspicuous.

Adult : Dark morph similar to Steppe but with fairly uniform dark brown underparts; barring on tail flight feathers indistinct. Pale morph has rufous-buff to creamy-white body and coverts contrasting with darker flight feathers, some with a pale wedge on inner primaries.

Juvenile : Also variable, with narrow white tips to unbarred secondaries; otherwise as similar-plumaged adult.

Habitat : Semi-desert, cultivation, and other dry open habitats.

Distribution : Uttarakhand : Chamoli : Belta, Joshimath (Tak 1997). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Tons Valley (Wright 1957), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : The proposed Tehri Dam site (Tak unpublished). CTR (Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994).

Status : Widespread resident. Schedule I (BNHS 2002).

110(169) *Aquila nipalensis* Hodgson, 1833 Steppe Eagle

1833. *Aquila nipalensis* Hodgson, *Asiat. Res.*, 18(2) : 13, pl. 1 (Nepal).

1928. Baker, *FBI* No. 1748, 5 : 70.

Diagnostics : Size : Kite +; c. 60-81 cm length; c. 165-190 cm wingspan. Sexes alike. Very similar to Tawny Eagle and like it variable in colouration, but distinguished by two pale bars on upper as well as underside of wings formed by whitish tips of secondaries and coverts. At close range, the yellow gape extending to the rear edge of the eyes, as opposed to the centre of the eye in Tawny, is clearly visible.

Adult : Has dark brown upperparts, often with paler coverts; sometimes a small rusty-yellow patch on nape; small whitish patch on rump and dark terminal band on tail; dark to mid-brown underparts, with bold dark barring on the tail and

the slightly paler flight feathers along with a broad dark trailing edge to both, feature which also separate this from Greater Spotted and Lesser Spotted Eagles.

Juvenile : Distinct with broad white band through the centre of the underwing; white trailing edges wing and tail; white on lower back restricted to uppertail-coverts; white bar by tips of greater coverts.

Habitat : Open country, often near water.

Distribution : Uttarakhand : Almora : Kosi (ZSI Survey 2004). Chamoli : Joshimath (Reed 1979), Nanda Devi NP (Tak & Kumar 1987), (Tak 1995), Nandprayag (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Rudraprayag: Kedarnath Sanctuary (Green 1986). Tehri (Tak 1995). Udham Singh Nagar: near Pratapur (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread winter visitor. Schedule I (BNHS 2002).

111(167) *Aquila heliaca* Savigny, 1809 Eastern Imperial Eagle

1809. *Aquila heliaca* Savigny, *Descr. Egypte, Ois.*, 82, pl. 12 (Upper Egypt).

1928. Baker, *FBI* No. 1747, 5 : 69.

Diagnostics : Size : Vulture -; c. 72-83 cm length; c. 200 cm wingspan. Sexes alike, female larger. When soaring and gliding wings are held flat with tips of primaries slightly raised. Similar to Golden Eagle but head comparatively much paler, which together with the longer greyish tail with blackish distal third distinguishes it from the Tawny and Steppe Eagles. At rest, pale 'braces' on the shoulders are the additional diagnostics but difficult to be seen on a overhead bird.

Adult : With almost uniform upper plumage, small but usually visible white scapular patches, golden-buff crown and nape, and two-toned tail with greyish base and darker terminal band. Tail appears slightly shorter and more square-ended.

Juvenile : With pronounced curve to trailing edge of wing. Distinguished from other *Aquila* eagles by the following features : pale wedge on inner primaries; yellowish-buff body and wing-coverts contrasting with dark flight feathers and tail; distinct pale streaking on scapulars and inner coverts; uniform pale rump and back; dark streaking on head, neck and breast; and white tips to median and greater upperwing-coverts, which form white bars across wing.

Habitat : Mainly open country with small wood.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Tons Valley (Wright 1957), New Forest (Singh 1999, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Vagrant. Sparse winter visitor. Vulnerable (IUCN 2007). Schedule I (BNHS 2002).

112(166) *Aquila chrysaetos* (Linnaeus, 1758)
Golden Eagle

1888. *Aquila daphanea* Severizov, *Nouv. Mem. Soc. Imp. Nat. Moscou*, 15 (livr. 5) : 190 (Russian Turkestan, Mongolia, Himalayas, Transbaikalia and ala-shan Mountains).

1932. *Aquila chrysaetos hodgsoni* Ticehurst, *Bull. Brit. Orn. Cl.* 52 : 25 (Hazara). New name for *A. daphanea* Hodgson, 1844, in Gray's *Zool. Misc.*: 81, *nomen nudum*.

1928. Baker, *FBI* No. 1746, 5 : 68.

Diagnostics : Size : Vulture $\pm$; c. 75-88 cm length; c. 150-240 cm wingspan. Sexes alike, female larger. A large eagle with long and broad wings and long tail. In soaring overhead flight, unlike other *Aquila* species, holds its wings in a shallow 'V' above the line of back (as in King Vulture and Black Eagle).

Adult : Deep chocolate-brown (almost black) with striking golden or tawny-rufous (which give the bird its name) hindcrown, nape and hindneck. Thighs, upper and under tail-coverts, and shoulders of wings rufous-brown.

Juvenile : With white base to the tail and white patch at the base of flight feathers, extending from

the base of the primaries across the base of the inner secondaries, are the prominent and characteristics diagnostics, in flight.

Habitat : 1800 m to summer snowline in desolate rocky mountainous country with crags and precipices.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Dhakuri - Khati (Tak 1997). Chamoli : Joshimath and Badrinath (Lavkumar 1956b), Nanda Devi and the Rishiganga basin (Dang, Hari 1963), (Tak 1995), Lata, Pataalkhan, Changbang base camp, Sarsopatal bc, above the confluence of Trisul nalla & Rishiganga (Tak 1997), Dibrugheta (Sathyakumar 2003), Chopta Chatti (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). Pithoragarh: Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi : Govind NP : Naitwar, Dhaula (Tak *et al.* 2004). CTR (Khati 2004, internet list).

Status : Sparse local resident. Schedule I (BNHS 2002).

113(163) *Hieraaetus fasciatus* (Vieillot, 1822)
Bonelli's Eagle

1822. *Aquila fasciata* Vieillot, *Mem. Soc. Linn. Paris*, 2(2) : 152 (Montpellier, France).

1928. Baker, *FBI* No. 1752, 5 : 77.

Diagnostics : Size : Kite +; c. 65-72 cm length; male 458-542 cm and female 478-560 cm wingspan. Sexes alike, female larger. A comparatively slender bodied powerful, uncrested, longtailed forest eagle. Soars with wings held flat or just above the horizontal. Flight fast and graceful, with loose wingbeats interspersed with glides on flat wings.

Adult : In flight has a unique combination of white underbody (with variable black streaks on the breast), three-toned underwings and dark terminal band to the pale tail. The whitish patch on mantle (upper back) is an additional field clue. The feet and eyes are yellow.

Juvenile : With pronounced curve to trailing edge of wing; underbody and wing lining very from light buff to rufous in colour; the flight feathers and tail have indistinct fine barring; there is a large pale 'comma' patch at the base of the dark-tipped primaries.

Habitat : <2400 m. Well-wooded areas, often hilly, country with some open areas.

Distribution : Uttarakhand : Dehra Dun : Sahiya and Chakrata hills (Osmaston 1935), Tons Valley (White 1957), (Bhatnagar & Misra 1971, Tak 1995), New Forest (Singh 1999), Asan Barrage, New Forest (Singh 2000). Pauri (Tak 1995). Rudraprayag: Soak Kharak (ZSI Survey 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994).

Status : Sparse local resident with sparse winter influx. Schedule I (BNHS 2002).

Remarks : DNA research resulted in to that, this species being moved to the genus *Aquila* from *Hieraaetus*.

114(164) *Hieraaetus pennatus* (Gmelin, 1788)
Booted Eagle

1788. *Falco pennatus* Gmelin, *Syst. Nat.*, 1(1) : 272 (No type locality given).

1928. Baker, *FBI* No. 1753, 5 : 79.

Diagnostics : Size : Kite -; c. 45-53 cm length; c. 120 cm wingspan. Sexes alike, female larger. Superficially a smaller edition of Bonelli's Eagle. Our smallest eagle with comparatively long, narrow wings and long, square-ended and twists tail in kite-like fashion. Wings are held slightly forward and are flat or slightly angled down at carpal when gliding and soaring. Flight is direct with rather loose and deep wingbeats interspersed with glides. Has three distinct plumages or morphs.

Adult : In all plumages, usually has round white spot on each side of the neck at the forewing showing up as a diagnostic pair of 'spotlights', when seen from the front. In *light morph* the creamy-white head, uppertail and upperwings contrasting with blackish flight feathers form a combination not shown by any other large raptor. In *dark and rufous morph* when seen from below, the pale banded square-ended tail with

unbarred outer tail feathers and a dark wedge between the pale outer feathers, together with the broad dark band across the base of the wing-lining help in separating this species from the confusable Black and Brahminy Kites.

Juvenile : Like adult, but with broad white trailing edge to wings and tail when fresh.

Habitat : <2400 m. Well-wooded areas, cultivation, semi-desert.

Distribution : Uttarakhand : Chamoli : Rishi Ganga gorge, Bethartoli (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Guptakashi (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident with sparse winter influx. Schedule I (BNHS 2002).

115(165) *Hieraaetus kienerii* (E. Geoffroy, 1835)
Rufous-bellied Eagle

1835. *Astur Kienerii* G. S. (= E. Geoffroy), *Mag. Zool.*, cl. 2, pl. 35 (Himalayas).

1928. Baker, *FBI* No. 1754, 5 : 80.

Diagnostics : Size : Kite ±; c. 53-61 cm length; c. 105-140 cm wingspan. Sexes alike, female larger. A small, handsome and slender eagle with a distinct occipital crest as in Changeable Hawk-Eagle, but shorter. Wings held flat and pressed slightly forward when soars and glides.

Adult : Distinctive, with glossy black upperparts contrasting bright white upper breast and throat, and the rufous belly, vent and wing lining.

Juvenile : Has browner upperparts; largely white underparts and underwing coverts; dark mask with white supercilium; dark patch on sides of upper breast and flanks; undersides of flight feathers and tail are lightly barred.

Habitat : (Plains) foothills-1500 m. Humid evergreen and deciduous forest.

Distribution : Uttarakhand : CTR (Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Schedule I (BNHS 2002).

Remarks : It is a woodland associated species who builds a large stick nest in a tree and lays a single egg.

116(160-162) *Spizaetus cirrhatus* (Gmelin, 1788)
Changeable Hawk-Eagle

1788. *Falco cirrhatus* Gmelin, *Syst. Nat.*, 1(1) : 275 (Ceylon).

1928. Baker, *FBI* No. 1756, 5 : 85.

Diagnostics : Size : Kite +; c. 61-72 cm length; c. 100-160 cm wingspan. Sexes alike, female larger. A comparatively slender, crested forest eagle. It can vary considerably in appearance (hence the name). Normally brown above; white below, with black longitudinal streaks throat, and broad chocolate streaks on breast, and the prominent crest of a few long black feathers sticking out from hindcrown.

Races : The northern race (*limnaeetus*) has much reduced crest, which distinguishes it from the southern race (*cirrhatus*).

Adult : Diamorphic in northern subspecies. The commonly met melanistic (dark) phase has entirely dark chocolate-brown or almost black plumage, which is confusable with Black Eagle but when seen from below the flight feathers are much paler than wing-coverts and the tail is paler at the base becoming dark on the terminal half. While the pale morph is distinguished from Mountain by lack of prominent crest, boldly streaked underparts, lack of barring on rump, narrower tail barring and clearer white patches at base of underside of primaries.

Juvenile : With pale fringes to upperparts, pale buff underparts and underwing-coverts, and narrower and more numerous tail-bands than adult.

Habitat : Plains and foothills (1900 m). Generally prefers well-wooded areas but may sometimes be seen in more open habitats with scattered trees.

Distribution : Uttarakhand : Dehra Dun : Shiwaliks (Osmaston 1935), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, 1972a, Tak 1995), Lachchiwala, New Forest, Tons Valley Forest, Ubiquitous, Dhanaulty, Dholkhand, Kampti Falls, Maldeota, Mohand (Singh 2000),

Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Schedule I (BNHS 2002).

117(158-159) *Spizaetus nipalensis* (Hodgson, 1836)
Mountain Hawk-Eagle

1836. *Nisaetus Nipalensis* Hodgson, *Jour. Asiat. Soc. Bengal*, 5 : 229, pl. 7 (Nepal).

1928. Baker, *FBI* No. 1760, 5 : 89.

Diagnostics : Size : Kite +; c. 70-72 cm length; male 41.9-46.5 cm and female 44.5-50.8 cm wingspan. Sexes alike, female larger. Also, a comparatively slender, forest-frequenting eagle with a prominent crest of a few long black feathers (white-tipped in young birds). In flight, wings with more pronounced curve to trailing edge (and indent at base). Glides with wings held in shallow 'V' and pressed slightly forward (held flat in Changeable Hawk-Eagle).

Adult : Has a typical pattern of streaked upper breast with the remainder of the underparts barred brown, which distinguishes it from Changeable; four broad evenly spaced dark bars on the uppertail with the terminal bar only slightly broader than the others; wing-tip only extends 1/3 to 2/3 down the tail.

Juvenile : Often whiter-headed, has pale fringes to upperparts, pale buff underparts and underwing-coverts, and narrower and more numerous tail-bands than adult.

Races : The Sri Lankan and SW Indian subspecies (*S. n. kelaarti*), is smaller and has unstreaked buff underwing coverts compared with the nominate form of Himalayas and NE India.

Habitat : (150 m) 600-2400 m (3050 m) Generally at higher altitudes than Changeable but range overlaps; hill forest.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Dehra Dun : Chakrata and Mussoorie (Osmaston 1935), (Bhatnagar & Misra 1971, 1972a, Tak 1995, Singh

2000). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Sparse local resident with altitudinal movements. Schedule I (BNHS 2002).

PANDIONIDAE (Osprey)

The Osprey is smaller than other fishing eagles, and rather more dashing with fairly long angular wings and tail. It is the only representative of its genus and is found throughout most of the world.

118(203) *Pandion haliaetus* (Linnaeus, 1758) Osprey

1758. *Falco Haliaetus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 91
(Europe restricted type locality, Sweden *ex Fn. Suec.*).

1928. Baker, *FBI* No. 1704, 5 : 3.

Diagnostics : Size : Kite -; c. 55-58 cm length; male 44.8-49.5 cm and female 47.0-51.8 cm wingspan. Sexes alike, female larger. A water-frequenting and specialist fish eater hawk with long, rather thin wings and comparatively short tail, with wings typically angle at carpal joints. In direct flight, series of usually rather loose and shallow wingbeats are interspersed with long glides.

Adult : Has white head with prominent broad black stripes through eye; uniformly dark upperparts with some dark streaking on the slightly tufted head; pure white underparts with a conspicuous broad brown-streaked band ('necklace') across upper breast, females usually sporting broader and darker breast band than males, though some adults may show almost unmarked white breast; a blackish band running backwards from behind eye to hind neck; and pale barring on tail. In overhead aspect, the pure white under body and underwing-coverts, contrasting with black carpal patches and band across greater coverts; paler base to underside of primaries contrasting with black tip; and closely barred pointed wings are diagnostic.

Juvenile : Similar to adult, but has buff tips to upperparts, including coverts; rusty breast-band (prominent on adult) is poorly defined, and has black streaking on white crown.

Habitat : <900 m (3970 m). Large rivers and waterbodies, both inland and coastal.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), (Tak 1995), Asan Barrage (Singh 2000, Tak & Sati 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Rudraprayag : Tilwara (ZSI Survey 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Survey 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule I (BNHS 2002).

Remarks : Breeds in Himalayas.

FALCONIDAE (Falcons)

Small to medium-sized compact raptors with relatively long, pointed wings, hooked beak, sharp curved talons, and remarkable powers of sight and flight. They are mainly diurnal birds preying on smaller birds, mammals, reptiles and insects, which they hunt from the air. Females are larger than males.

119(204) *Microhierax caerulescens* (Linnaeus, 1758)

Collared Falconet

1758. *Falco caerulescens* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 88
(Asia = Bengal, *ex Edwards*, pl. 108).

1928. Baker, *FBI* No. 1734, 5 : 52.

Diagnostics : Size : Bulbul ±; c. 14-17 cm length; 28-34 cm wingspan. Sexes alike, female larger. A diminutive bulbul-sized black-and-white falcon with pointed wings and square-ended tail. Looks rather shrike-like when seen perched. Flight is a series of rapid flaps followed by a graceful glide.

Adult : Has glossy black upperparts; white head, with black crown and nape; broad white collar on the hindneck; a prominent broad black stripe through the eye; rufous-orange underparts, with variable amount of rufous and some white across breast. In overhead aspect, the dark barring on underside of flight feathers; white barring on underside of dark tail; and rather uniform underwing-coverts are indications.

Juvenile : Similar to adult, but shows rufous-orange on forehead; supercilium (and collar on some); and white throat.

Habitat : <920 m (2000m). Forest edge, clearings and abandoned cultivation with tall lookout trees.

Distribution : Uttarakhand : Almora (Tak 1995). Chamoli : Mandal (Singh 2005a). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : Resident in Himalayas and NE Orissa. The world's smallest carnivorous birds are the Black-thighed Falconet (*Microhierax fringillarius*) found throughout Southeast Asia and the White-fronted Falconet (*Microhierax latifrons*) on the island of Borneo.

120(222-224) ***Falco tinnunculus*** Linnaeus, 1758
Common Kestrel

1758. *Falco Tinnunculus* Linnaeus, *Syst. Nat.* ed. 10, 1 : 90 (Europe, restricted type locality, Sweden, *apud* Hartert).

1928. Baker, *FBI* No. 1740, 5 : 61.

Collection records : Uttarakhand : Dehra Dun : Mussoorie, Kemptyfall, 1 ex., 5.vi.1968, coll. P. K. Bose. Naini Tal: Haldwani, 1 ex., 4.xii.1968, coll. P. K. Bose. Uttarkashi: Rana, 1 ♂, 5.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Pigeon ±; c. 27-35 cm length; 57-79 cm wingspan. Sexually dimorphic. A small, slender falcon with pointed wings and rather rounded tail remarkable for its habit of hovering stationary in one spot for many seconds at a time ('hanging in the air'). Flight is a combination of rather fast shallow flapping, interspersed with glides and frequent hovering. In flight, wings appear longer, but when perched wing-tips fall well short of tail.

Male : Has bluish-grey head and tail; diffused dark moustachial stripe; rufous upperparts marked with black spots; and streaked and spotted underbody. The grey tail has white tip and black subterminal band.

Female : Is pale rufous above, with narrowly barred back and streaked head; pale buff below with dense streaks.

Juvenile : Similar to female.

Habitat : <3300 m (5500 m). Open grassland, cultivation and semi desert.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Badrinath trek (Lavkumar 1956b), Joshimath, Nanda Devi Base Camp (Reed 1979), NDNP (Tak & Kumar 1987), (Tak 1995), Dibrugheta to Ramani, Betartoli (Sankaran 1993, 1994), throughout NDBR, mostly in buffer zone (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun: hills in summer and open country in winter (Osmaston 1935), Sahastradhara hills (Bhatnagar & Misra 1971), (Tak 1995), New Forest (Mohan 1993, 1996, Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag: Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri: Bheling valley (Searight 1926), Lamprey (1954), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident as well as winter visitor. Schedule IV (BNHS 2002).

121(219) ***Falco chicquera*** Daudin, 1800
Red-headed Falcon

1800. *Falco chicquera* Daudin, *Traite d'Orn.*, 2 : 121 (Bengal).

1928. Baker, *FBI* No. 1730, 5 : 47.

Diagnostics : Size : Pigeon ±; c. 31-36 cm length; 55-70 cm wingspan. Sexes alike, female larger. A little, graceful and powerful grey-and-white falcon with pointed wings, longish tail and a problem-solving entire chestnut head, which separates it from all other falcons. Flight is rapid and dashing with quick wingbeats.

Adult : Has pale blue-grey upperparts with faint dark barring and streaking (the blackish primaries

contrast with rest of upper wings); chestnut crown, nape and moustachial stripe contrasting with white cheeks and throat; white underparts finely barred with black; and white tipped grey tail with broad black subterminal band. In flight, the whitish underside of primaries lightly barred and coverts lightly spotted prominent.

Juvenile : Like adult but heavily barred below and has rufous crown lightly streaked with black.

Habitat : Open lowlands with cultivation and groves of trees; thorn forest; often near human habitation.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Tak 1995, Singh 2000), Tons Valley (Wright 1957), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994).

Status : Sparse local resident. Schedule I (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

122(220) *Falco amurensis* Radde, 1863
Amur Falcon

1863. *Falco vespertinus* var. *amurensis* Radde, *Reisen sud von Ost-Sibir.*, 2 : 102, pl. 1, f. 2a, 2b (Amur).

1928. Baker, *FBI* No. 1739, 5 : 58 (= *Erythropus amurensis*).

Diagnostics : Size : Pigeon -; c. 28-31 cm length; male 21.8-23.5 cm and female 22.5-24.2 cm wingspan. Sexually diamorphic; females bulkier and heavier than males, but not significantly longer. A small, rare but widespread passage migrant.

Adult : In all plumages, has red to pale orange base of bill (cere), eye-ring (orbital skin), and legs and feet. Frequently hovers.

Male : Slaty grey above; ashy grey below; with ferruginous-red vent, thighs, and undertail-coverts. Birds in this plumage easily distinguishable, but rare in the migrating flocks. First-year male shows mixture of adult male and juvenile.

Female : Slaty grey above barred with black; whitish nuchal collar on hindneck; black cheek-stripe (moustachial stripe); pale rusty white below with longitudinal black spots on upper breast, bars on lower breast and flanks; and unmarked on lower abdomen. Underwing white with black barring.

Juvenile : Like female but with rufous-buff fringes to upperparts; rufous-buff streaking on crown; and boldly streaked underparts.

Habitat : Mainly lowland and foothills forest. Often hovers. Gregarious on passage.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Khati 2004, internet list).

Status : Passage migrant. Schedule IV (BNHS 2002).

123(216) *Falco concolor* Temminck, 1825
Sooty Falcon

1825. *Falco concolor* Teminck, *Pl. Col., livr.* 56, text (but not pl. 330) (Senegal, Barbary Coast, Egypt, Arabia, Barakan Island, Gulf of Aqaba, suggested by Meinertzhagen, 1954, *Birds of Arabia* : 340).

Not in Baker, *FBI*.

Diagnostics : Size : Jungle Crow $\pm$; c. 32-37 cm length; 75-88 cm wingspan. Sexes alike, but female overall darker and larger. A slim sooty grey falcon with long wings, long tail and different shape when compared with Eurasian Hobby. Wing-tips reach tail-tip when perched. Flight, swift with deep wingbeats interspersed with gliding and soaring.

Adult : With uniformly pale slaty grey plumage; blackish flight feathers; prominent yellow cere and legs; and long wedge-shaped tail (with slightly protruding central tail feathers).

Juvenile : Has narrow buff fringes to upperparts, and yellowish-brown underparts and underwing-coverts which diffusely streaked. In overhead flight distinctive reddish-brown streaked body, underwing-coverts and pale bases to flight feathers contrasting with dark primary tips and dark trailing edge to flight feathers.

Habitat : Arid coastal habitat.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known.

Remarks : Basically a summer visitor to Makran coast, Pakistan. Included here on the basis of the internet list available for Corbett Tiger Reserve, though recent publications do not depict its distribution in the state of Uttarakhand (Grimmett *et al.* 1998, Kazmierczak 2000 and Naoroji 2006).

124(217-218) *Falco columbarius* Linnaeus, 1758
Merlin

1907. *Aesalon regulus insignis* Clark, *Proc. U. S. Nat. Mus.*, 32 : 470 (Fusan, Korea).

1928. Baker, *FBI* No. 1731, 5 : 49.

Diagnostics : Size : Dove $\pm$; c. 24-33 cm length; 53-69 cm wingspan. A small falcon with short, pointed wings and medium-length tail. Wings fall short of tail-tip when perched. It relies on speed and agility to hunt its prey, hence, its flight is swift, with rapid wingbeats interspersed with short dashing glides.

Adult : Sexually dimorphic; female larger.

Male : Has blue-grey back with a diffuse patch of rufous-orange on nape; whitish forehead, supercilium, and sides of head with black shaft streaks; weak moustachial stripe; rufous tinged white underparts boldly streaked with black; white throat; white tipped tail with a broad subterminal black band; thighs and undertail-coverts darker rufous.

Female and Juvenile : Have weak moustachial stripe; brown upperparts with variable rufous/ buff markings; whitish patch on nape; pale below boldly streaked with brown and strongly barred uppertail.

Habitat : Lowlands. Open country.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse winter visitor (status uncertain). Schedule IV (BNHS 200).

125(212-213) *Falco subbuteo* Linnaeus, 1758
Eurasian Hobby

1758. *Falco subbuteo* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 89 (Europe, restricted type locality, Sweden).

1910. *Hypotriorchis subbuteo jakutensis* Buturlin, *Nascha Okhota* : 71 (Chuckche, NE, Siberia).

1928. Baker, *FBI* No. 1724, 5 : 42.

Diagnostics : Size : Dove or Pigeon $\pm$; c. 30-36 cm length; 68-84 cm wingspan. Sexes alike, female slightly larger and browner than male. A small slim falcon with pointed wings and square tail. Wing-tips reach tail-tip when perched. Flight is swift and powerful, with stiff wingbeats interspersed with short glides. Its speed and aerobatic skills enable it to take swallows and even swifts on the wing.

Adult : Has slaty grey upperparts with blackish head, moustachial streaks contrasting with white cheeks, and blackish primaries contrasting with rest of wings; rusty white underparts longitudinally, boldly streaked with black; and rufous thighs ('trousers') and undertail-coverts.

Juveniles : Has dark brown upperparts with buffish fringes; pale buffish underparts, which are more heavily streaked longitudinally; and lacks rufous thighs and undertail-coverts.

Habitat : S 1200-4000 m. W > plains. Open woodland, forest edge, and cultivation, semi-desert.

Distribution : Uttarakhand : Dehra Dun : beyond Chakrata (Osmaston 1935, Bhatnagar & Misra 1972a), (Tak 1995, Singh 2000). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Govind NP : Sankri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Passage migrant. Schedule IV (BNHS 2002).

Remarks : Breeds in Himalayas, widespread in plains during winters.

126(214-215) *Falco severus* Horsfield, 1821
Oriental Hobby

1844. *Falco Rufipedoides* Anonymous = Hodgson, *Calc. Jour. Nat. Hist.*, 4 : 238 (Hills of India, restricted to Nepal by Baker, 1927, *Bull. Brit. Orn. Cl.*, 47 : 107).

1928. Baker, *FBI* No. 1729, 5 : 47.

Diagnostics : Size : Dove $\pm$; c. 27-30 cm length; 61-71 cm wingspan. Sexes alike, female larger. A small robust falcon with long pointed wings and shortish tail. General aspects such as structure, flight and appearance are similar to those of Eurasian Hobby, but with shorter tail.

Adult : Has bluish-black upperparts with complete black hood and chestnut underparts with paler throat.

Juvenile : Like adult, with full hood, but browner upperparts and heavily streaked rufous-buff underparts.

Habitat : Foothills-2400 m. Well-wooded foothills, forest edge, cultivation.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Dehra Dun : hills (Osmaston

1935), New Forest (George 1957), (Bhatnagar & Misra 1971, 1972a, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**127(208) *Falco jugger* J.E. Gray, 1834
Laggar**

1834. *Falco Jugger* J. E. Gray, in Hardwicke's *Ill. Ind. Zool.* 2 : pl. 26 (India).

1928. Baker, *FBI* No. 1721, 5 : 37.

Diagnostics : Size : Kite -; c. 38-46 cm length; 95-115 cm wingspan. Sexes alike, female larger. Hindi *jugger*, 'jaggar', name of (male) falcon ('laggar' being the female). A large falcon with long, pointed wings and longish tail. The direct flight has fast, powerful wingbeats interspersed with glides and swoops.

Adult : Has dark and ashy brown upperparts; rufous crown; fine but prominent moustachial stripe; white underparts streaks thickly on flanks. In flight, pale breast contrast with darker flanks and thighs.

Juvenile : Like adult, but with dark brown upperparts; duller crown and underparts heavily streaked; and greyish bare parts. It differs from juvenile Peregrine in paler crown, finer moustachial stripe, and unbarred uppertail.

Habitat : Plains. Relatively dry open region including semi-desert, cultivation and with sparse scrub. Not normally found in the high mountains of the Himalaya.

Distribution : Uttarakhand : Dehra Dun : (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, Mohan 1996, Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994).

Status : Residential status not known. Near Threatened (IUCN 2007). Schedule I (BNHS 2002).

**128(209-211) *Falco peregrinus* Tunstall, 1771
Peregrine Falcon**

1788. *Falco japonensis* Gmelin, *Syst. Nat.*, 1(1) : 257, No. 44, ex 'Japanese Hawk', Latham, *J. Gen. Syn. Bds.*, 1 : 33, No. 7b ('flew on board off Japan').

1790. *Falco calidus* Latham, *Index Orn.*, 1 : 41 (India).

1907. *Falco peregrinus ussuriensis* Bututlin, *Psov. i. Ruzjn.* Okhota, 13 : 100 (Ussuriland and Japan).

1907. *Falco peregrinus harterti* Buturlin (Lower Lena to Anadyr, common on the Kolyma) Cf. Stresemann, E., 1949, *Ibis* 87 : 253.

1928. Baker, *FBI* No. 1718, 5 : 32.

Collection records : Uttarakhand : Dehra Dun, 1 ♂, 26.iii.1973, coll. S. M. Osman.

Diagnostics : Size : Kite -; c. 40-48 cm length; 85-117 cm wingspan. Sexes alike, female larger. A powerful, broad-shouldered falcon. The English and scientific species names mean 'wandering falcon', and refer to the fact that some populations are migratory. It is most cosmopolitan of the falcons, with formidable power of flight.

Adult : Has slaty-grey upperparts; whitish cheeks; dark moustachial stripe; pinky fulvous or rufous white underparts; and fine black cross-barring down form the lower breast.

Juvenile : Has browner upperparts; heavily streaked underparts; broad moustachial stripe; and barred uppertail.

Races : *F. p. calidus*, a winter visitor throughout the subcontinent, has slate-grey upperparts, broad, clean-cut black moustachial stripe, and whitish underparts with narrow blackish barring. *F. p. peregrinator*, a resident throughout the subcontinent, has darker upperparts than *calidus*, with more extensive black hood (and less pronounced moustachial stripe), and rufous underparts, with dark barring on belly and thighs. *F. p. babylonicus* ('Barbary Falcon'), confined as breeder to N and W Pakistan and wintering west to NW India, has paler blue-grey upperparts contrasting with darker wing-tips, buffish underparts with only sparse streaking and barring, rufous on crown and nape, and a narrower dark moustachial stripe.

Habitat : Hilly country, usually in the vicinity of rocky crags where it nests and open wetland and coastal areas where they hunt the wintering waterbirds.

Distribution : Uttarakhand : Chamoli : below Lata village (Reed 1979, Tak 1997). Dehra Dun : rivers Ganges and Yamuna, Chakrata hills,

Shiwaliks (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996). Pauri (Tak 1995). Pithoragarh (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident with sparse winter influx. Schedule I (BNHS 2002).

Remarks : The Peregrine Falcon is the fastest animal on the planet in its hunting dive, 'the stoop', in which it soars to a great height, then dives steeply at speeds of over 200 mph (322 km/h) into either wing of its prey, so as not to harm itself on impact. The fledglings practice the roll and the pumping of the wings before they master the actual stoop. It should be noted, however, that in level flight the fastest-flying bird is the White-throated Needletail and either animal is often quoted as being the fastest on earth.

Order GALLIFORMES

PHASIANIDAE (Pheasants, Partridges, Quails, etc.)

The so-called galliformes (or gamebirds) are generally plump with rounded wings, relatively small head, short thick bill and strong unfeathered legs. They are adapted to a lifestyle of scratching around on the ground for food- seeds, fruit, berries, shoots, leaves, tubers etc. as well as worms, snails and insects. Many roost in trees at night. Most nest on the ground. Generally rather shy and difficult to observe, when disturbed they may freeze or fly a short distance, sometimes up into a tree, but most prefer to run. Many are globally threatened because of habitat destruction and hunting for food and feathers.

Scrubfowl or Megapodes are characterized by exceptionally strong legs and feet and unusual nesting habits. They bury their eggs in a large mound of sand and vegetation near sea shore, the temperature produced by the decaying vegetation being sufficient to incubate the eggs. The young hatch fully fledged and immediately begin fending for themselves.

Partridges and francolins are medium-sized with shorter tails. Quails are similar in build and

habits but smaller. Some are migratory unlike most galliformes. Most Pheasants and Tragopans are strongly sexually dimorphic. The colourful males usually have a very striking courtship display. Peafowl are large colourful birds with iridescent plumage, long crest and distinctive ocelli ('eyes') adorning the cock's long tail of feathers. Peacock pheasants are similar in having ocelli, but the plumage overall is grey-brown; ocelli are also found on the upperparts, and the crest is short and brushy. Junglefowl will be recognizably familiar to almost everyone due to their resemblance to farm-yard cocks and hens. Usually shy, they often come out onto paths and clearings in the early morning and towards dusk, frequently in small groups of a cock and 3-5 hens.

129(227) *Lerwa lerwa* (Hodgson, 1833) Snow Partridge

1833. *Perdix lerwa* Hodgson, *Proc. Zool. Soc. London*, pt. 1 : 107 (Northern region of Nepal).

1928. Baker, *FBI* No. 1993, 5 : 433.

Diagnostics : Size : Partridge +; c. 38-40 cm length; male 550-700 g and female 450-580 g weight. Sexes alike. A gregarious, small sized, large spurred, and close-barred high-altitude partridge. Shows a narrow white trailing edge to the wings in flight.

Adult : Has uniformly and closely barred black and white upperparts; chestnut underparts with broad white streaking on abdomen and flanks; chestnut undertail, streaked black and tipped white; and bright red legs and bill.

Juvenile : Has mottled dull brown and buffy upperparts and pale brown and buffy white underparts with white streaks on breast and flanks.

Habitat : (2500 m) 3000-5000 m. Open hillside covered with grass, lichen, and shrubs or other low vegetation.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli : Nanda Devi and the Rishiganga basin (Dang, Hari 1963), Nanda Devi Base Camp (Reed 1979), NDNP (Tak & Kumar 1987), above Dbrugheta, 'Sath kula' (Sankaran 1993, 1994), (Tak 1995), Satkula, Dharansi, Dibrugheta (Tak 1997), Dibrugheta, Jhandidhar, Satkula (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun

: (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995), Govind NP : Harkidun, Jaura Tal (Tak *et al.* 2004).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

**130(229-231) *Tetraogallus tibetanus* Gould, 1854
Tibetan Snowcock**

1854 (1853). *Tetraogallus Tibetanus* Gould, *Proc. Zool. Soc.* London, pt. 21 : 47 (Tibet, type from Ladakh).

1928. Baker, *FBI* No. 1990, 5 : 429.

Diagnostics : Size : Large domestic hen +; c. 51 cm. Sexes alike. A fleshy short and fat high-altitude game bird and an indicative of a large overgrown Grey Partridge.

Adult : Distinguished from Himalayan Snowcock by prominent white patch on ear-coverts counter-balancing against grey head and neck; grey double banding across breast; white underparts with broad black flank stripes; and white striping on coverts and scapulars. In flight, shows only a small amount of white in primaries but extensive white in secondaries.

Juvenile : Much smaller and without black flank stripes.

Races : The nominate race of Western Himalayas is much paler with sandy upperparts than *T. t. aquilonifer* of Central and Eastern Himalayas.

Habitat : 4500-5800 m in summer and < c. 3000 m in winter in rocky slopes and alpine meadows.

Distribution : Uttarakhand : Chamoli : at 5030 m in Nanda Devi (Reed 1979), Sarsopatal, Devstan, Patalkhan (Sathyakumar 2003).

Status : Residential status not known. Schedule I (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

**131(232) *Tetraogallus himalayensis* G.R. Gray, 1843
Himalayan Snowcock**

1843 (1842). *Tetraogallus Himalayensis* G.R. Gray, *Proc. Zool. Soc.* London : 105 (Himalayas). New name for the bird figured in Jardine & Selby, *Ill. Orn.*, 141 as *Lophophorus nigelli* not *L. nigelli* id., op. cit., pl. 76.

1928. Baker, *FBI* No. 1989, 5 : 426.

Diagnostics : Size : Large domestic hen +; c. 54-72 cm. Sexes alike. A reminiscent of an overgrown Grey Partridge and endemic to the Himalayas. Its plumage is patterned with grey, brown, white and black, but it looks grey from distance. Flies downslope in the morning and feed as they walk uphill as the day wears on.

Adult : Differentiated from Tibetan Snowcock by a broad dark chestnut marking on head and bordering throat down sides of neck which join to form band across upper breast; grey lower breast and belly; flanks narrowly streaked with black and chestnut. In flight, shows a white patch on primaries.

Juvenile : With less defined patterning, but dark neck stripes join across nape.

Habitat : S 4000-5500 m. W > c. 2400 m steep arid hillsides, alpine meadows, rocky above the tree-line. Gregarious when not breeding.

Distribution : Uttarakhand : Chamoli : Malari, Niti and Kheta in Pindar valley (Osmaston 1921), above Badrinath, higher slopes of Dhaul valley including Parchola (Lavkumar 1956b), Nanda Devi and the Rishiganga basin (Dang, Hari 1963), NDNP (Tak & Kumar 1987), Patalkhan, N. Sanctuary, base camp upto 'camp II' (Sankaran 1993, 1994), (Tak 1995), Bhujgara-Patalkhan, Sarsopatal, N. Sanctuary (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun: (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Lamprey (1954). Uttarkashi (Tak 1995), Govind NP : Harkidun (Tak *et al.* 2004).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

132(234-236) *Alectoris chukar* (J.E. Gray, 1830)
Chukor

1830. *Perdix Chukar* J. E. Gray, in Hardwicke's *Ill. Ind. Zool.* 1(2) : 54 (India, No exact locality given but Srinagar in Dehra Dun district, U.P. (not Kashmir) accepted as the type locality by Hellmayr,

1929, *Field Mus. Nat. Hist. publ., Zoology Ser.*, 17 : 136).

1928. Baker, *FBI* No. 1973, 5 : 404.

Collection records : Uttarakhand : Dehra Dun : 6-Cross road, 1 ♂, 19.vii.1975, coll. V. K. Sharma; Badripur, 1 ♂, 8.iii.1976, donated by Sailendra Lamba. Rudraprayag: Agasthyamuni, 1 ♂, 30.vi.1969, coll. P. K. Bose. Tehri, 1 ♀, 22.vi.1969, 1 ex., 15.x.1969, coll. P. K. Bose.

Diagnostics : Size : Grey Partridge +; c. 38 cm. Sexes alike. A medium-sized silky, fleshy and pinkish grey-brown upland gamebird.

Adult : Has a black stripe through eye extending down, encircling creamy-white throat, meeting on upper breast to form a 'necklace' or 'gorget'; bright red bill and legs; conspicuous rib-like bars on flanks in buff and black; and rufous tail.

Juvenile : Lacks black gorget and barring on flanks. In flight, rufous corners to tail are prominent.

Habitat : (1200 m) 2000-4000 m (5000 m). Hillsides with sparse scrub and adjacent cultivation.

Distribution : Uttarakhand : Bageshwar : Khati, Lilam (Tak 1997). Chamoli : above Badrinath (Lavkumar 1956b), NDNP (Tak & Kumar 1987), (Tak 1995), Surathota (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a, Tak 1995, Singh 2000). Naini Tal : Ramgarh-Mukteshwar (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh : Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Tehri : Lamprey (1954), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Jakhol (Tak *et al.* 2004), Sankri (Singh 2005b), Dwarikhal-Patharkhal (ZSI Survey 2005). CTR (internet list, ZSI Survey 2002-05).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : The Chukar is the National bird of Pakistan and the name is derived from *Chakhoor* in Urdu. When disturbed, it prefers to run rather than fly, but if necessary it flies a short distance on rounded wings.

133(237-239) *Francolinus francolinus*
(Linnaeus, 1766)
Black Francolin

1856. *Francolinus asiae* Bonaparte, *Compt. Rend. Acad. Sci.* Paris 42 : 882 (Asia, Restricted to Gurgaon by Baker, 1922, *Jour. Bom. nat. Hist. Soc.* 28 : 202).

1936. *Francolinus francolinus parkerae* Van Tyne & Koelz, *Occas. Pap. Mus. Zool. Univ. Mitch.*, no. 334 : 1 (Arsu, Kulu, Punjab).

1928. Baker, *FBI* No. 1976, 5 : 408.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♂, 20.viii.1963, coll. R. K. Bhatnagar; Sathyanarain, 1 ♂, 24.iii.1973, 1 ♂, 18.iv.1973, coll. Raj Tilak. Tehri, 2 ♂, 23.vi.1969, coll. P. K. Bose. Uttarkashi: Gangani, 1 ♂, 28.v.1973, coll. Raj Tilak; Damta, 1 ♂, 5.vii.1973, coll. Raj Tilak.

Diagnostics : Size : Grey Partridge ±; c. 34 cm. A plum, stub-tailed and very unobstructive gamebird.

Male : Unmistakable, chiefly black, has jet black head with glistening white ear-coverts; rufous neck band 'collar'; black mantle scalloped, spotted and barred with white and fulvous; jet black underparts spotted with white; and chestnut belly and undertail-coverts.

Female : Mainly brown; has rufous hindneck or 'nuchal patch'; pale buff to fuscous-buff supercilium; ear-coverts divided by dark eye stripe; dark mantle and back edged with buff streaks, small area of upper mantle spotted; and heavily barred underparts with scalloped black and white.

Habitat : <1200 m (2500 m). Chiefly tall grassland near rivers; and cultivation, scrubby habitat with plenty of low cover.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995), Binsar WLS (ZSI Survey

2004). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Wan (Osmaston 1921), (Lavkumar 1956b), Joshimath (Sankaran 1993, 1994), Gwaldam (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), (Bhatnagar & Misra 1971, Tak 1995), Asarori, Kalsi, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995), Pithoragarh (Tak 1995), Dhaul river basin- 2004, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Naitwar, Sankri, Sunkhundi (Tak *et al.* 2004), Sankri (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Survey 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

134(244-246) *Francolinus pondicerianus*
(Gmelin, 1789)
Grey Francolin

1789. *Tetrao pondicerianus* Gmelin, *Syst. Nat.* 1(2) : 760
(Pondicherry, India).

1941. *Francolinus pondicerianus ceylonensis* Whistler, *Ibis*
: 319 (Illuppakkadavai, northern Ceylon).

1928. Baker, *FBI* No. 1983, 5 : 419.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♀, 2.vii.1964, 1 ♂, 16.vii.1964 and 30.vii.1964, coll. R. K. Bhatnagar, 1 ex., 18.xi.1965 and 18.i.1968, coll. P. K. Bose, 1 ♀, 9.viii.1972' coll. D. N. Basu; Doonga, 1 ex., 8.viii.1968, coll. P. K. Bose; Mussoorie, 1 ex., 26.vii.1969, coll. NRS/ZSI Survey Party. Pauri: Srinagar, Kanda, 1 ♀, 8.x.1969, coll. P. K. Bose; Rishikesh, Pashulok, 2 exs., 8.viii.1969, coll. NRS/ZSI Survey Party; Kalsi, 1 ♂, 24.vii.1972, coll. P. K. Bose.

Diagnostics : Size : Half-grown village hen ±; c. 33 cm. Sexes alike, but males have up to two tarsal spurs which are absent in the female. A

squat, stub-tailed gamebird largely grey-brown and rufous-chestnut.

Adult : Differs from the female Black Francolin by a prominent yellowish throat surrounded by necklace of black spotting or 'gular loop' Upperparts rufous and chestnut barred and blotched with buff and black, with distinct shaft streaking on covers, scapulars and tertials. Underparts buffy-rufous with narrow cross-bars on throat and upper breast; fine black markings on abdomen and flanks. Tail largely chestnut, conspicuous with black primaries when the bird is flying away from the observer.

Juvenile : Similar, but lacks the gular loop.

Races : Three races occur in the subcontinent. The nominate race *F. p. pondicerianus* of S peninsular India and Sri Lanka is darker with ochraceous centre of throat. While *F. p. interpositus* is paler with creamy-white throat; and *F. p. mecranensis* is the palest with more grey and less chestnut plumage.

Habitat : Plains dry, fairly open, scrubby areas and adjacent cultivation.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a & b, Tak 1995), New Forest (George 1957, Mohan 1996), Khaddar, New Forest, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, ZSI Survey 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

135(250) *Coturnix coturnix* (Linnaeus, 1758)
Common Quail

1758. *Tetrao Coturnix* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 161
(Europe, Asia, Africa. Restricted type locality, Sweden, *ex Fn. Svec.*).

1928. Baker, *FBI* No. 1950, 5 : 372.

Diagnostics : Size : Partridge -; c. 20 cm. It is a strongly migratory bird, unlike most of the gamebirds. Usually seen only if flushed.

Adult : A small and thickset pale brown partridge-like bird with a pattern of stripes on head formed by distinct buff crown-stripe and supercilium; and prominent lanceolate buff streaks on mantle and scapulars, in both sexes.

Male : Very variable; typically has a central black line on throat; two dark bands (sometimes indistinct) curving up from base of throat to ear-coverts; rufous-buff with glistening pale buff shaft-streaks; brown flanks longitudinally streaked with black; and creamy white remaining underparts.

Female : Lacks throat markings and has blackish spotting on buff breast.

Juvenile : Like female, but duller.

Habitat : <2500 m. Grass, crops, stubble.

Distribution : Uttarakhand : Chamoli : Narainbagh (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995, Singh 2000). Pauri (Tak 1995). Uttarkashi: Dwarikhal-Patharkhal (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Survey 2002-05).

Status : Sparse local resident with sparse winter influx. Schedule IV (BNHS 2002).

Remarks : As befits its migratory nature, it has long wings, unlike most typically short-winged gamebirds. It is notoriously difficult to see, keeping hidden in crops, and reluctant to fly, preferring to creep away instead. Even when flushed, it keeps low and soon drops back into cover.

136(252) *Coturnix coromandelica* (Gmelin, 1789) Rain Quail

1789. *Tetrao coromandelicus* Gmelin, *Syst. Nat.* 1(2) : 764 (Coromandel Coast).

1928. Baker, *FBI* No. 1952, 5 : 375.

Diagnostics : Size : Grey Quail -; c. 18 cm. Very similar to Common Quail, but smaller, with prominent crown-stripe and supercilium and buff streaking on mantle.

Male : Has strongly patterned head and neck, with dark marks on face and throat more jet-black contrasting strongly with white cheek; upper breast black (sometimes also centre of abdomen); flanks boldly streaked with black.

Female : Can not be differentiated from female Common Quail in field except on smaller size. For identification in the hand, outer webs of primaries unbarred, while in *C. coturnix*, the outer webs are barred with buff.

Habitat : Mainly plains (up to 2000 m). Grass scrub, stubble.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a & b, Tak 1995, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (11) i.e. Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

137(253-254) *Coturnix chinensis* (Linnaeus, 1766) Blue-breasted Quail

1766. *Tetrao chinensis* Linnaeus, *Syst. Nat.*, ed. 12, a : 277 (China and the Philippines = Nanking, China, ex Edwards).

1928. Baker, *FBI* No. 1948, 5 : 369.

Diagnostics : Size : Grey Quail -; c. 14 cm. A little dark quail with bright yellow legs. Sexes very differently coloured.

Male : Distinctive, with slaty-blue forehead, supercilium, sides of neck, breast and flanks; black-and-white pattering on head and foreneck; and reddish-chestnut belly and undertail-coverts.

Female : Distinguished from female Common and Rain Quails by smaller size, rufous-buff forehead and broad supercilium, barred breast and flanks, and unbarred flight feathers.

Juvenile : Duller, male with no blue along forehead; duller slaty blue upperparts barred with black on sides of head and neck; chestnut on abdomen restricted to centre, or wanting.

Habitat : Mainly plains (up to 2000 m). West grassland, secondary scrub, road margins, marshes, paddyfield edges, tea gardens.

Distribution : Uttarakhand : Dehra Dun : (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000).

Status : Sparse local resident. Schedule IV (BNHS 2002).

138(255-258) *Perdix asiatica* (Latham, 1790) Jungle Bush-Quail

1790. *Perdix asiatica* Latham, *Index Orn.* 2 : 649 (Mahratta region, India).

1928. Baker, *FBI* No. 1953 5 : 377.

Collection records : Uttarakhand : Pauri : Srinagar, Kameda, 1 ♀, 25.vi.1969, coll. P. K. Bose.

Diagnostics : Size : Grey Quail -; c. 17 cm. A little thick and plump partridge-like bird. Found in small coveys and are often detected only when burst out in to flight from under vegetation.

Male : Has fulvous-brown upperparts, streaked and mottled with black and buff; prominent chestnut eye-stripe edged with buff supercilium (above and below); white underparts closely barred with black; and bright chestnut chin and throat.

Female : Has vinaceous-buff underparts; bright chestnut throat patch.

Juvenile : Like female, but paler, less rufous more brown overall and finely streaked with creamy white above and below.

Races : Four subspecies are recognized, with slight variation in colouration of upperparts of both sexes and underparts of females.

Habitat : <1500 m. Dry grass and scrub, grassy open forest, edges of fields.

Distribution : Uttarakhand : Dehra Dun : (Osmaston 1935, Bhatnagar & Misra 1971, 1972a & b, Tak 1995), Tons Valley (Wright 1957), New Forest (Singh 1999), Khaddar, New Forest, [Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Survey 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

139(266-269) *Arborophila torqueola*
(Valenciennes, 1826)
Common Hill-Partridge

1826. *Perdix torqueola* Valenciennes, *Dic. Sci. Nat.*, ed. Levrault, 38 : 435 (Bengal).

1928. Baker, *FBI* No. 1959 (part), 5 : 383.

Diagnostics : Size : Grey Partridge -; c. 28 cm. A short and fat, and short-tailed olive-brown partridge.

Male : Has bright chestnut crown and nape; rufous-orange ear-coverts; black eye-patch and eye-stripe; a ring of bare crimson skin round eye; white half-collar separating throat from breast; olive-brown upperparts, streaked and mottled with black and chestnut; and black throat and neck streaked white.

Female : Like male, but without white half-collar of male and without black border between rufous foreneck and greyish breast.

Juvenile : Lacks whitish supercilium and half-collar, and also chestnut on flanks, of adult male, and has white spotting on breast.

Habitat : (550 m) 1500-4000 m. Hillsides and ravines in broadleaved evergreen forest.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli: Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun: Chakrata and Mussoorie hills (Osmaston 1935), (Bhatnagar & Misra 1972a, Tak 1995, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Osmaston 1921, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Istragad (Tak *et al.* 2004). Protected Area(s) : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

140(270-271) *Arborophila rufogularis* (Blyth, 1849)
Rufous-throated Hill-Partridge

1849 (1850). *Arboricola rufogularis* Blyth, *Jour. Asiat. Soc. Bengal*, 18 : 819 (Darjeeling).

1928. Baker, *FBI* No. 1962, 5 : 390.

Diagnostics : Size : Grey Partridge -; c. 27 cm. A short, fat and short-tailed olive-brown partridge.

Male : Easily distinguished from Common Hill-Partridge by grey forehead, rufous-orange foreneck spotted with black separating foreneck from slaty grey breast, and the lack of white half-

collar. Has greyish-white supercilium; golden olive-brown upperparts spotted with black on rump and uppertail-coverts; chestnut scapulars and wing-coverts with large grey and black drops; rufous chin, throat, and sides of neck spotted with black; slaty grey anterior flanks broadly streaked with deep chestnut and white drops; brown posterior flanks with black crescentic spots.

Female : Has less black spots on chin and throat, and more white drops on breast and abdomen.

Juvenile : Much paler with unspotted throat, smoky slate underparts with numerous white spots scattered all over.

Races : *A. r. intermedia* of hills east and south of the Brahmaputra River differs from the nominate race, described above, by almost black throat, brighter orange foreneck, and the absence of the black line separating the rufous-orange of foreneck from the slate-grey breast.

Habitat : 600-2400 m. Evergreen hill forest undergrowth and secondary scrub.

Distribution : Uttarakhand : Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba undated).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

141(275-277) *Galloperdix spadicea* (Gmelin, 1789)
Red Spurfowl

1789. *Tetrao spadiceus* Gmelin, *Syst. Nat.* 1(2) : 759 (Madagascar, *ex* Sonnerat, error = India).

1928. Baker, *FBI* No. 1940, 5 : 358.

Diagnostics : Size : Grey Partridge +; c. 36 cm. An endemic to India. A plump reddish brown long-tailed game bird. Both sexes have a red facial skin patch and legs and feet. The reddish legs with two to four sharp spurs in male and one or two spurs in female.

Male : Has brownish-grey head and neck, and rufous body, brick-red naked patch around eye, reddish brown plumage, and underparts scalloped with grey-brown.

Female : Has sandy-rufous upperparts finely barred with black, brick-red naked patch around eye, and barred underparts.

Juvenile : Like adult female, but more richly and deeply coloured and more heavily marked with black.

Races : *G. s. stewarti* of Kerala differs from the nominate race, described above, in being deeper chestnut-red plumage without obvious scaling and *G. s. caurina* of Rajasthan and parts of Gujarat is paler than the nominate race.

Habitat : <1250 m. Scrub and bamboo jungle, forest edge, coffee, lantana.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004). RNP (Pandey *et al.* 1994).

Status : Residential status not known.

142(280) *Ophrysia superciliosa* (J.E. Gray, 1846)
Himalayan Quail

1846. *Rollulus superciliosus* J. E. Gray, *Knowlesley Menagerie*, I : 8, pl. 16 (India = Mussoorie).

1928. Baker, *FBI* No. 1939, 5 : 356.

Diagnostics : Size : Grey Partridge -; c. 25 cm. A comparatively small and relatively long-tailed slaty brown partridge with conspicuous red bill, legs and feet.

Male : Has a complex black-and-white head pattern with white forehead and prominent broad white supercilium, black face with a white patch in front of eye and another behind, and greyish crown streaked with black; dark slaty brown upperparts streaked with black and lighter and browner wings; black chin and throat bordered by a white looping band from cheek; black undertail-coverts barred with white; remaining underparts similar to back.

Female : Largely cinnamon-brown broadly streaked with black on nape and neck, and with triangular black spots on back and the rest; less striking head pattern; pale vinaceous-brown underparts streaked with chestnut and black; and vermiculated with brown and black on flanks and vent.

Habitat : 1500-4000 m. Long grass and brush on steep slopes, hillsides and ravines.

Distribution : Uttarakhand : Dehra Dun : This is an exceedingly rare bird, so far only obtained near Mussoorie, three specimens, in 1865, 1867

and 1868 (Osmaston 1935), last recorded from Mussoorie in 1865, 67, and 68 (Bhatnagar & Misra 1971, 1972b), between c 1650 m Jharipani, 2100 m Banog, Badhraj behind Mussoorie (Ali & Ripley 1969), (Singh 2000). Naini Tal : One specimen of this exceedingly rare bird obtained near Naini Tal in 1876 (Osmaston 1935), last specimen procured from Sher-ka-danda near Naini Tal in 1876 (Ali & Ripley 1969).

Status : Residential status not known at present. Though, it was, originally, a resident species of western Himalayas. Critical (IUCN 2007). Schedule I (BNHS (2002). RRS (4) *i.e.* The species occurs in Endemic area number 4, which means Western Himalayas (Jhunjhunwala *et al.* 2001).

Remarks : Not recorded since 1876. It was extremely rare and is feared extinct. This species is known with certainty only from two locations in the western Himalayas in Uttarakhand. The last verifiable record was in 1876, despite a number of searches, but its continued survival cannot be ruled out as it may be difficult to detect.

143(285) *Tragopan melanocephalus* (J.E. Gray, 1829)
Western Tragopan

1829. *Phasianus Melanocephalus* J.E. Gray, in Griffith, *Anim. Kingd.*, 8 (Aves, 3) : 29.

1928. Baker, *FBI* No. 1932, 5 : 345.

Diagnostics : Size : Large village hen; Male c. 68-73 cm, 1800-220 g weight; female c. 60 cm, 1300-1400 g weight. A large village hen-sized brightly plumaged and brilliantly coloured partridge.

Male : Noticeably differs from male Satyr (below), by its bright orange foreneck and upperbreast, white spotted black underparts (with red bases of feathers visible through on breast), and deep scarlet hindneck contrasting with intricately patterned black and grey-brown upperparts (which as on Satyr, are spotted with white). The red facial skin, bluish throat, and bluish lappets and horns which are erected in display are the additional clues.

Female : Greyish overall, upperparts irregularly streaked and spotted with black and white; underparts vermiculated grey and dark brown, spotted with fulvous on throat, and boldly streaked and spotted with white on paler and greyer abdomen and flanks.

Juvenile : Young males resemble females, but are larger in size with longer legs and variable amount of black on head and red on neck.

Habitat : S 2400-3600 m. W >1350 m. Thick undergrowth in mixed coniferous forest and alpine shrubbery on steep slopes.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972b, Tak 1995, Singh 2000). Tehri: dense fir forests in Tons Valley (Osmaston 1935). Uttarkashi (Prasad 1993), Govind NP: Pustara peak area above Giyan gad, Obera gad-Manjeevan peak area in Supin valley (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79).

Status : Sparse local resident. Rare. Schedule I (BNHS 2002). RRS (4) *i.e.* Western Himalayas (Jhunjhunwala *et al.* 2001).

144(286) *Tragopan satyra* (Linnaeus, 1758)
Satyr Tragopan

1758. *Meleagris Satyra* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 157 (Bengal, *ex* Edwards, pl. 116, error = Nepal).

1928. Baker, *FBI* No. 1931, 5 : 343.

Diagnostics : Size : Village hen; Male c. 67-72 cm; female c. 59 cm.

Male : Distinctive with red neck, mantle and underparts; the underparts spotted with black bordered white spots; upperparts intricately patterned with olive-brown back, rump, upertail-coverts and wing-coverts, spotted with white and mottled with red. The blue facial skin and throat, and bluish lappets and horns (erected in display) are the additional clues.

Female : Variously coloured from rufous-brown to ochraceous-brown, and is vermiculated, mottled and spotted with black and buff; underparts are generally brighter and more rufescent than on other female Tragopans. However, not safely separable from other female Tragopans in the field, but crimson tinge to shoulder, when evident, differentiate it from female Blyth's and Temminck's Tragopan; very similar to female Western Tragopan, but range may be an indication.

Juvenile : Male like female, but with black on head, and red on neck, upper mantle and breast; brownish-grey plumage.

Habitat : (1800 m) 2400-4250 m. Dense undergrowth and ringal bamboo in evergreen forest, often in ravines and on steep slopes.

Distribution : Uttarakhand : Chamoli : village Wan and the Nawali reserve (Osmaston 1921). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Uttarkashi : Govind NP : Prasad (1993) reported its sympatry with *melanocephalus* (Tak *et al.* 2004).

Status : Sparse local resident. Schedule I (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

145(303-306) *Pucrasia macrolopha* (Lesson, 1829)
Koklass Pheasant

1829. *Satyra macrolopha* Lesson, *Dict. Sci. Nat.*, ed. Levrault, 59 : 196 (Bengal, error = Almora Hills, Kumaon).

1928. Baker, *FBI* No. 1911, 5 : 310.

Diagnostics : Size : Domestic fowl; Male c. 58-64 cm in length, 1135-1415 g weight; female c. 53 cm 1025-1135 g weight. Sexually dimorphic. It is the only member in monotypic genus *Pucrasia*. It is a medium-sized elusive bird confined to high altitude forests of the Himalayas.

Male : Has metallic green head and ear-tufts (horns) of plumes projecting behind on either side of brown occipital crest; a prominent white patch on either side of upper neck; silver-grey upperparts streaked with velvety black down to the centre of each feather; and chestnut breast.

Female : With white throat; black and brown plumage, mottle and streaked; buff-chestnut crown, with short crest. Both sexes, however, have distinct elongated tails tipped with apical feathers.

Juvenile : Resembles adult female in plumage pattern.

Habitat : S c. 2000-4000 m. W 1000-2300 m. Conifer, oak and rhododendron forest, preferring steep slopes and ravines with good undergrowth and grassy clearings.

Distribution : Uttarakhand : Almora (Tak 1995). Bageshwar : Lohajung (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNP (Tak & Kumar 1987), Dibrugheta (Sankaran 1993, 1994), (Tak 1995), Belta, Dibrugheta and Tolma (Tak 1997), Dibrugheta (Sathyakumar 2003),

Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata hills (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Chakrata, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). Uttarkashi (Tak 1995), Govind NP: Osla, Sirga, Saruka Tal (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79).

Status : Sparse local resident. Undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

146(290) *Lophophorus impejanus* (Latham, 1790)
Impeyan Monal

1790. *Phasianus impejanus* Latham, *Index Orn.* 2 : 632 (India = Sikkim, type locality fixed by Meinertzhagen, 1952. *Bull. Brit. Orn. Cl.* 72 : 85).

1884. *Lophophorus chambanus* Marshall, *Ibis* : 421, pl. 10 (Chamba).

1928. Baker, *FBI* No. 1928, 5 : 335.

Diagnostics : Size : Large domestic hen +; c. 72 cm in length, male 1980-2380 g weight, and female 1800-2150 g weight. Sexually dimorphic. Also known as the Himalayan Monal or Impeyan Pheasant. It is a stout and relatively large-sized Himalayan Pheasant.

Male : Unmistakable with brightly multicoloured plumage, has metallic green crest (of backwardly directed wire-like spatula-tipped feathers) and head; metallic green and bronze hindneck and mantle; iridescent blue and purple and green wings and uppertail-coverts; cinnamon-brown tail; a large white rump-patch; and velvety jet black underparts. When flushed, the wild ringing cry, the chestnut wings and the prominent white rump-patch are clues.

Female : Dull, has a short tuft on head, bright blue orbital skin, white throat, white crescent (horseshoe) on uppertail-coverts, dark brown upperparts with streaked appearance, and browner underparts with variable broad pale streaking. When flushed, the whitish horseshoe on uppertail-coverts, and broad rounded tail with rufous barring and narrow white tip are diagnostics.

Juvenile : Like female and less distinctly marked.

Habitat : 2500-5000 m. Steep grassy slopes; oak, deoder and rhododendron forest; cultivation.

Distribution : Uttarakhand : Almora (Tak 1995). Bageshwar : Phurkia on Pindari-Trek (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Dudatoli forest, Dhanpur ridge, up to Malari in Dhaul valley (Osmaston 1921), Badrinath and Dunagiri village (Lavkumar 1956b), Nanda Devi and the Rishiganga basin (Dang, Hari 1963), Lata Kharak (Reed 1979), NDNP (Tak & Kumar 1987), Belta Kharak to Ramani (Sankaran 1993, 1994), (Tak 1995), Belta-Ramani, Tolma, Malari, Gairola Patali, Bhagwabasa on Roopkund-Trek (Tak 1997), Ramni, Bhetartoli, Deodi, Dibrugheta, Latakharak, Beltakharak (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Naini Tal (Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudrapur : Tungnath Mountain (Lavkumar 1956b), Dugalbitta, Chopta, Soak Kharak (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), Lamprey (1954). Uttarkashi (Tak 1995), Govind NP: Saruka Tal (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b).

Status : Sparse local resident. Undertakes altitudinal movements. Schedule I (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : It is the State bird of Uttarakhand, and is also the National Bird of Nepal, where it is known as the Danfe. Recently, surveys carried out in Arunachal Pradesh discovered a new type of *Lophophorus* species and its identity, though believed to be a subspecies of Sclater's Monal or a potential new species, is yet to be confirmed. There is, so far, no confirmed record of subspecies in the Himalayan Monal. However, recent studies have shown that the male Himalayan Monals of northwestern India lack the white rump that many Himalayan Monals have, and have more green on the breast, indicating the possibility of a second subspecies.

The population of this species in most of its range threatened due to various anthropogenic factors. The male monal has been under heavy hunting pressure for its crest feather, which was used for ornament hats of Himachal men, until 1982 when legal hunting was banned in the state.

The scientific name commemorates Lady Mary Impey, the wife of British chief justice of Bengal, Sir Elijah Impey.

147(299-300) *Gallus gallus* (Linnaeus, 1758) **Red Junglefowl**

1920. *Gallus ferrugineus murghi* Robinson & Kloss, *Rec. Ind. Mus.* 19 : 14, 15 (Chirala, Gaya District, Bihar).

1954. *Gallus gallus gallina* Kloss, *Contrib. Inst. Regional Exploration*, No. 1 : 29 (Kotla, Kangra).

1928. Baker, *FBI* No. 1903, 5 : 295.

Collection records : Uttarakhand : Dehra Dun: Sahastradhara, 1 ♂, 23.ii.1963, coll. R. K. Bhatnagar; 1 ♀, 23.x.1964, coll. T. D. Soota; 1 ex., 4.xii.1965, coll. P. K. Bose; Hathibarkala, 1 ♂, 10.v.1976, donated by Sailendra Lamba. Naini Tal : Ramnagar, Chorpani, 1 ♀, 28.xii.1968, 1 ex., 11.x.1969, coll. P. K. Bose.

Diagnostics : Size : Domestic village fowl; Male c. 65-75 cm, female c. 42-45 cm. Both sexes closely resemble the Game Bantham domestic breed.

Male : Distinctive, has red comb and wattle; long orange and golden-yellow hackles (feathers) on neck and mantle; laterally compressed metallic black tail with long arching sickle-shaped central feathers; and blackish brown underparts. In eclipse plumage, after the summer moult, the hackles are replaced by short, dark brown feathers, the central tail feathers are lacking, and the comb is duller and smaller, head and neck are dark brown, crimson band across back apparent, and tail is much shorter.

Female : Has dull rufous crown, bright chestnut supercilia, reddish-brown upperparts finely vermiculated with black and buff, and rufous-brown underparts streaked with buff.

Juvenile : Much duller with less developed neck and tail feathers.

Habitat : Mainly foothills and plains (up to 2000 m). Moist deciduous forest, often on the edge in secondary growth.

Distribution : Uttarakhand : Almora (Tak 1995), Chanthariya (ZSI Survey 2004). Chamoli (Tak 1995). Champawat (ZSI Survey 2005). Dehra Dun : Kalsi (Osmaston 1935), Shiwaliks (Wright 1957), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, 1972a, Tak 1995), Ubiquitous (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995), Bhawali, Ramgarh-Mukteshwar (ZSI Survey 2005). Pauri : Nayar valley (Osmaston 1921), (Tak 1995), Pithoragarh (Tak 1995), Dhauli river basin- 2004 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995), Udham Singh Nagar : Fatehpur, Surai (ZSI Survey 2005). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Survey 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It is likely the ancestor of domestic varieties. There are probably few, if any pure wild strains remaining because of hybridization with domestic birds.

148(293-298) *Lophura leucomelanos* (Latham, 1790)

Kaleej Pheasant

1790. *Phasianus leucomelanos* Latham, *Index Orn.* 2 : 633 (India, restricted type locality Nepal, *apud* Baker, 1928, op. cit. : 322).

1827. *Phasianus Nepalensis* Hodgson, *Quart. Ornitol. Mag. Rev. and Regist.* 8, (Sci.) : 44 (Nepal).

1913. *Gennaues fockelmanni* Ghigi, *Riv. Ital. Ornitol.* 2 : 192 (no locality).

1952. Cf. Rand, A. L. & Flemming, R. L. *Fieldiana, Zool.*, 41 : 62.

1928. Baker, *FBI* No. 1919, 5 : 322.

Collection records : Uttarakhand : Champawat : Bonlekh, 1 ♂, 7.xi.1976, coll. Asket Singh.

Diagnostics : Size : Domestic fowl; Male c. 65-73 cm, female c. 50-60 cm. An obvious first cousin of domestic and jungle fowl.

Male : Has long hairy white crest; red facial skin and wattle; black upperparts with steel-blue sheen and whitish edge to rump feathers; brownish-grey underparts; and long and broad, down-curved, laterally compressed, glossy black and brown tail.

Female : Chiefly reddish-brown with pale scalloping (scaly markings) with brown drooping crest; red patch around eye; black tail, not arching or pointed, central feathers rufous-brown with pale vermiculations.

Juvenile : Like female, but with blackish-brown and buff barring on upperparts.

Habitat : Commoner at lower altitudes but recorded up to 3700 m. forest undergrowth, forest edge, cultivation, often in the vicinity of streams.

Status : Widespread resident. Undertakes altitudinal movements. Schedule IV (BNHS 2002).

Distribution : Uttarakhand : Almora : Ranikhet (Eaggs 1931), (Tak 1995). Chamoli : Vishnu Ganga, Dhauli valley (Osmaston 1921), Belta Kharak (Reed 1979), (Tak 1995), Belta, Wan (Tak 1997), Mandal, Pipalkoti, Joshimath (ZSI Survey 2004), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun : Shiwaliks (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Chakrata, Mussoorie, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997), Ramgarh-Mukteshwar (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Mandakini valley, Tungnath Mountain (Lavkumar 1956b), Gauri Kund (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Ranichauri (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Taluka, Himri, Dhaula, Istragad (Tak *et al.* 2004), Sankri – Naitwar (Singh 2005b), Mahidanda, Dwarikhal-Patharkhal (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Survey 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Remarks : *The commonest and the most widespread Himalayan pheasant.

149 (307) *Catreus wallichii* (Hardwicke, 1827)
Cheer Pheasant

1827. *Lophophorus (Phasianus) Wallichii* Hardwicke, *Trans. Linn. Soc. London* 15 : 166 (Almorah Hills).

1928. Baker, *FBI* No. 1910, 5 : 307.

Diagnostics : Size : Large domestic fowl; Male c. 90-118 cm, female c. 61-76 cm. It is the only member in monotypic genus *Catreus*. A long-tailed West Himalayan pheasant. Both sexes have long narrow backwardly projecting brown crest, red orbital patch and long pointed tail.

Male : Distinctive with bright crimson orbital patch; unmarked greyish throat and neck; buffy white and pale rusty upperparts, closely barred with black; rufous rump barred with black; and buffy white underparts conspicuously barred on lower breast and flanks. Long and pointed tail buffy grey and chestnut, strongly barred with black-edged chestnut bands across outer feathers, and black-mottled grey-brown bands across central feathers.

Female : With comparatively shorter crest; brick-red rather than bright crimson orbital patch; pronounced barring on mantle; unmarked neck; heavily barred on rufous-brown breast; belly scaled with buff.

Juvenile : Like female, but without crest and less heavily marked.

Habitat : 1400-3500 m (4545 m). Prefers steep, rugged, south-facing grassy hillsides, but occurs in scrub with scattered trees, wooded ravines and early second growth in cleared forest.

Distribution : Uttarakhand : Chamoli : Dhauri valley up to its junction with Rishi Ganga, Vishnu Ganga (Osmaston 1921), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : beyond Chakrata (Osmaston 1935), (Bhatnagar & Misra 1971, 1972b, Tak 1995, Singh 2000). Naini Tal (Hudson 1930, Tak 1995), Ramgarh-Mukteshwar (ZSI Survey 2005). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Tehri : Bheling valley (Searight 1926). Uttarkashi : Govind NP : taken from working plan (1965-75) by Pandey (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b).

Status : Sparse local resident. Rare. Vulnerable (IUCN 2007). Schedule I (BNHS 2002). RRS (4) = The species occurs in Endemic area number 4 i.e. Western Himalayas (Jhunjhunwala *et al.* 2001).

150(311) *Pavo cristatus* Linnaeus, 1758
Indian Peafowl

1758. *Pavo cristatus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 156 ('India orientali, Zeylona' = India).

1928. Baker, *FBI* No. 1897, 5 : 282.

Diagnostics : Size : Domestic turkey -; Male c. 92-122 cm without train (c. 2-2.5 m in full plumage), female c. 90-100 cm. The male is called peacock, the female a peahen. A familiar bird of India. The peacock is designated as the national bird of India.

Male : Distinctive, with fan-shaped crest of spatula-tipped wire-like feathers on head; brilliantly glistening blue neck and breast; and sweeping metallic bronze-green train (long uppertail-coverts); light bronze-green lower back, narrowly scalloped with black; bluish-green and black scapulars and outer surface of wings, closely barred with black and buff.

Female : Similarly crested but without the sweeping train, metallic green upper breast, and mantle. Has whitish face and throat; rufous-brown head and nape; brown upperparts faintly and finely mottled paler; white belly; and brown back, rump and tail.

Juvenile : Male like adult female but chestnut on primaries.

Habitat : <1800 m (2000 m). In the wild state usually in deciduous forest, often near water; commonly semi-feral in the vicinity of villages and cultivation. Usually in small groups of a male and 3-5 hens in the breeding season; otherwise often in separate group of male-male or female-female and immatures. Forages on the ground. Roosts in tall trees.

Distribution : Uttarakhand : Almora (Tak 1995). Champawat (ZSI Survey 2005). Dehra Dun : (Osmaston 1935, Wright 1957, Tak 1995), Shiwaliks from Mohand to Rani Pokhari in SE and to Timli in SW (Bhatnagar & Misra 1971, 1972a & b), Karva Pani, Kansrao, Timli, [Dholkhand,

Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal (Tak 1995), Garjia Temple, Mohaan (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Survey 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule I (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : The so-called 'tail' of the peacock, is also termed the 'train', is not the tail quill feathers but highly elongated uppertail-coverts. The train feathers have a series of eyes that are best seen when the tail is fanned. The eyes or 'ocelli' are purplish black-centred coppery discs, make the cock unmistakable.

TURNICIDAE (Buttonquails/Bustardquails)

The unrelated buttonquails are similar in appearance to the true quails but lack a hind toe. In flight they can be distinguished from true quails by the contrast between the pale upperwing-coverts and darker flight feathers. They are unusual in that the females are larger and brighter than the males and, being polyandrous, they leave the raising of the young entirely to the males.

151(313) *Turnix sylvatica* (Desfontaines, 1789) Small Buttonquail

1828. *Hemipodius Dussumier* Temminck, *Pl. col., livr.* 76, pl. 454, f. 2 (Bengale).

1928. Baker, *FBI* No. 2003, 5 : 450.

Diagnostics : Size : Bush Quail -; Male c. 13 cm, female slightly larger. Sexes almost similar. One of our tiniest quail. Prefers running, avoids flying. In flight, a whitish wingbar contrasts with the grey wings.

Adult : Distinguished from the two other three-toed species (Yellow-legged and Barred Buttonquail) by its smaller size; distinctly pointed, comparatively long tail, and dark rump (a pointer in flight); and chest spots bordered with black on sides of neck and breast; and from the Yellow-legged by pale fleshy of blue-grey legs and grey

bill. Has a blackish crown with a whitish median line or 'centre parting'; ferruginous hindneck scalloped with buff; streaked sandy brown upperparts with intricate pattern (irregular barring); brownish buff breast (spotted on sides); and white or whitish remaining underparts.

Juvenile : Has blue-grey bill, pale pink legs and feet and more spots on underparts.

Habitat : < 2400 m. Grassland, grassy scrub and crops.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), Khaddar (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

152(314-315) *Turnix tanki* Blyth, 1843 Yellow-legged Buttonquail

1843. *Turnix tanki* Blyth, *Jour. Asiat. Soc. Bengal* 12 : 180. No locality = Bengal, based on drawing by Buchanan Hamilton [Not *Turnix maculatus* Vieillot = synonym of *Turnix maculosa* (Temminck)].

1928. Baker, *FBI* No. 2005, 5 : 454.

Diagnostics : Size : Bush Quail ±; Male c. 15 cm, female slightly larger. Distinguished from Small Buttonquails by larger size, rounded tail (lacks the pin-tail of Small), and from Small and Barred Buttonquail by bright yellow bill, legs and feet (trailing in flight), and black spotting on buffy wings.

Male : Has blackish crown with a paler median line (centre parting), buff supercilia and sides of head; greyish brown upperparts, irregularly vermiculated with black (obsolete in old birds); buff wing-coverts spotted with black; whitish chin and throat; remaining underparts pale buff with dark rusty-brown middle-breast and conspicuously black-spotted on sides of breast.

Female : With a broad orange-rufous half-collar on back and sides of neck.

Juvenile : Mottled red and densely spotted.

Habitat : <1200 m (2000 m). Grassland mixed with scrub; standing crops.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

153(316-319) *Turnix suscitator* (Gmelin, 1789)
Common Buttonquail

1832. *Hemipodius Taigoor* Sykes, *Proc. Zool. Soc. London* : 155 (Dukhun).

1928. Baker, *FBI* No. 1898, 5 : 447.

Diagnostics : Size : Bush Quail $\pm$; Male c. 15 cm, female slightly larger. Distinguished from other buttonquails by bold black barring on buffish sides of neck, breast and wing-coverts; orange-rufous to orange-buff flanks and belly which are clearly demarcated from breast; and blunt tail. From Yellow-legged Buttonquail differs by prominent buff straking to mantle, scapulars and back; bold black and rufous cross-barring; bluish-grey legs, and grey bill; and buff-crown stripe.

Male : Has greyish or buffish-white throat, bold black and buff barring on neck sides and breast.

Female : More richly coloured, has black throat and centre of breast, with black and buff barring on breast.

Habitat : < 2500 m. Grass, crops, stubble.

Status : Sparse local resident. Schedule IV (BNHS 2002).

Distribution : Uttarakhand : Dehra Dun (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Remarks : Unlike other buttonquails, are not as difficult to see, since it tends to cross, or run along, savannah tracks, and is readily viewed from a vehicle.

Order GRUIFORMES GRUIDAE (Cranes)

Cranes are large elegant birds with long neck and long legs superficially resembling storks but with bill either equal or little longer than head. Nostril covered by a membrane on the posterior side and placed above halfway of the mandible. Wings broad, with eleven primaries; inner secondaries much lengthened, drooping over tail;

tail short with twelve feathers. Tibiae partly bare; toes short, strong and unwebbed; hind toe raised (*contra* Storks). Flight is powerful, in V-formation or in line with outstretched head, neck and legs; calls powerful, trumpet-like; young nidifugous.

154(325) *Grus leucogeranus* Pallas, 1773
Siberian Crane

1773. *Grus Leucogeranus* Pallas, *Reise Russ. Reichs* 2 : 714
(Swamps bordering the Ischim, Irtych, and Ob rivers).

1929. Baker, *FBI* No. 2037, 6 : 53.

Diagnostics : Size : Common Crane $\pm$; c. 156 cm. Also known as Siberian White Crane or the Snow Crane.

Adult : Sexes alike, female slightly smaller. The largest Indian Crane with naked red head and upper neck, grey plumage, greenish-horny bill, and red legs.

Juvenile : Brownish-grey with rusty-brown on head and neck.

Habitat : The species frequents a variety of wetland habitats, cultivation and meadows. Due to the shrinkage of natural wetlands, the species has been forced into man-made wetlands. It is more able to utilise dry habitats than many other crane species.

Distribution : Uttarakhand : Dehra Dun : New Forest, identity doubtful (George 1957), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000).

Status : Sparse winter visitor (status uncertain). Critical (IUCN 2007). Schedule I (BNHS 2002).

Remarks : The Siberian Crane has three separate populations, all of them nest in arctic Russia in Yakutia and western Siberia. The relatively large eastern ('Yakutia/ China') population breeds in Yakutia and winters in eastern China; the tiny central ('Ob/ India') population breeds in the Ob valley in Western Siberia and winters in North-west India (Keoladeo National Park); and the tiny western ('Tyumen/ Iran') population also breeds in Western Siberia but winters in Iran (UNEP/ CMS 1999).

It breeds in winters in wetlands, where it feeds on the shoots, roots and tubers of aquatic plants. On wintering grounds in India the species feeds mainly on vegetable matter such as the tubers of

Scirpus tuberosus, *S. littoralis*, *Cyperus rotundus*, *Eleocharis dulcis*, *Hydrilla verticillaria* and *Nymphaea*, and the basal parts of the leaves of *Lymnophyton* and the tips of the culms of *Eleocharis dulcis*; they also eat some animal matter, including aquatic insects (water bugs, beetles), molluscs, worms and probably fish. (Kumar *et al.* 2005).

Historic records from India suggest that a number of them wintered here in the past. This number has steadily declined and the birds are no longer visit the area.

**155(323-324) *Grus antigone* (Linnaeus, 1758)
Sarus Crane**

1758. *Ardea Antigone* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 142
(Asia = Farther Indai, as restricted by Hartert, 1921).

1929. Baker, *FBI* No. 2038, 6 : 55.

Diagnostics : Size : Vulture +; c. 156 cm.

Adult : Sexes alike, female slightly smaller. The largest Indian Crane with naked red head and upper neck, grey crown, grey plumage, greenish-horny bill, and red legs. In flight, the long neck is kept straight, unlike herons; and the black wing tips, long red or pink legs trailing behind are the prominent identification.

Juvenile : Brownish-grey with rusty-brown on head and neck.

Habitat : The species frequents a variety of wetland habitats, cultivation and meadows. Due to the shrinkage of natural wetlands, the species has been forced into man-made wetlands. It is more able to utilise dry habitats than many other crane species.

Distribution : Uttarakhand : Dehra Dun : (Narang 1994), Asan wetlad (Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Vulnerable (IUCN 2007). Schedule IV (BNHS 2002).

**156(326) *Grus virgo* (Linnaeus, 1758)
Demoiselle Crane**

1758. *Ardea virgo* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 141 ('In Oriente' = India).

1929. Baker, *FBI* No. 2040, 6 : 57.

Diagnostics : Size : Sarus -; c. 90-100 cm length; 155-180 cm wingspan.

Adult : Sexes alike. A delicate grey crane of medium size with black head and neck, except for grey forecrown and nape; prominent white ear-tufts behind eyes; black feathers of lower neck long, pointed and falling over breast; brownish-grey sickle-shaped secondaries drooping over tail; redtipped greenish bill; black legs and feet.

Juvenile : Like adult, but with grey head and much shorter drooping secondaries.

Habitat : Large rivers with sandy beds, reservoirs, winter crop fields, flat open margins of jheels and tanks.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Survey 2002-05). RNP (Narang 1994).

Status : Sparse winter visitor (status uncertain). Schedule IV (BNHS 2002).

Remarks : They undertake one of the toughest migrations in the world. During their arduous journey they have to cross the Himalayan mountains to get to their over wintering grounds in India, many die from fatigue, hunger and predation from birds such as eagles. At their wintering grounds, Demoiselles have been observed flocking with Common Cranes. Demoiselles maintain separate social groups within the larger flock. In Khichan (Rajasthan) in India, villagers feed the Cranes on their migration and these large congregations have become an annual spectacle.

**157(320) *Grus grus* (Linnaeus, 1758)
Common Crane**

1894. *Grus lilfordi* Sharpe, *Cat. Bds. Brit. Mus.* 23 : 250
(type locality fixed by Whistler & Kinneir, 1936, *Jour. Bom. nat. Soc.* 38 : 695, Jhelum River near Jelapur, Punjab).

1929. Baker, *FBI* No. 2034, 6 : 50.

Diagnostics : Size : Goose ±; c. 110-120 cm length; 180-240 cm wingspan; and 4.5-6 kg weight. Migrating flocks fly in V formation. Sexes alike.

Adult : A tall grey bird with black flight feathers, long neck, dull green bill, and black legs.

Head and upper neck blackish with dull red naked patch across nape; a prominent broad white band runs from behind eye down on sides of upper neck; tail darker grey, concealed by a mass of long grey drooping tertiaries.

Juvenile : Grey with buffed feathers, crown and neck covered by rusty feathers, tertiaries shorter.

Habitat : Winter field crops, sandy riverbeds, marshes, reservoirs and jheels.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Survey 2002-05).

Status : Sparse winter visitor (status uncertain). Schedule IV (BNHS 2002).

RALLIDAE (Rails, Crakes, Moorhens, Coots, etc.)

Small to medium-size crepuscular or diurnal birds, with plump, laterally compressed body; short rounded wings; and short pointed tails. Plumage black or in soft shades of grey, brown, blue or green; bill long and curved in Rails, short and stout in Moorhens and Coot; tibiae partly bare. Legs long, toes very long in Rails and lobed in Coot. Walk, run and swim well but fly very poorly with legs dangling, although some species are long-distance migrants. Sexes similar in most species; young nidifugous.

158(332) *Rallina eurizonoides* (Lafresnaye, 1845) Slaty-legged Crake

1844. *Z. (apornia)* Hodgson, in Gray, G. R., *Zool. Misc.* : 86 (Nepal). *Nomen nudum*.

1845. *Rallus sperciliaris* Eyton, *Ann. And Mag. Nat. Hist.* 16 : 230 (Malacca). *Nec. Rallus spuerciliaris*

1819. Vieillot, *Nouv. Dict. Hist. Nat.* 28 : 565.

1846. *Zaponia nigrolineata* 'Hodgs.' = G. R. Gray, *Cat. Bds. Nepal* : 143 (Nepal) In synonymy of *Rallus superciliaris* Eyton, *nomen nudum*.

1864. *Porzana amauroptera* 'Blyth' = Jerdon, *Bds. Indiai* 3 : 725 (Northern India).

1929. Baker, *FBI No.* 2014, 6 : 16.

Diagnostics : Size : Between Quail and Partridge; c. 25 cm. Laterally flattened body with long toes and a short tail allow easier passage through the undergrowth. Sexes alike.

Adult : Head, neck and breast chestnut; remaining upper parts rufous brown; bill green, terminal half of upper mandible and tip of lower dark brown; chin and throat white; underparts with striking black and white bands; legs slaty.

Juvenile : Uniformly olive-brown above; more ashybrown on sides of head and neck; a few white and black bars on scapulars and wingcoverts.

Habitat : Occurs in a variety of forest habitats from plains up to 1600 m, marshes.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated). RNP (Narang 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

159(329-330) *Gallirallus striatus* Linnaeus, 1766 Blue-breasted Rail

1838. *Rallus albiventer* Swainson, *Animals in Menageries* : 337 (India).

1929. Baker, *FBI No.* 2008, 6 : 7.

Diagnostics : Size : Grey Partridge -; c. 27 cm.

Male : Crown to hind neck chestnut; upper parts dark brown with narrow white bars broken into spots on lower back and primaries; chin and throat white; sides of head, foreneck and breast ashy-blue; abdomen, flanks and under tail-coverts dark brown with conspicuous white bars; bill and eyes red; legs olive-grey.

Female : Duller above and whitish on belly.

Juvenile : Crown and neck rufous-brown streaked with dark brown; feathers of back streaked with dark brown, the white bars and spots absent.

Habitat : Reedy swamps and mangroves, margins of village tanks, inundated paddy fields.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002).

160(327-328) *Rallus aquaticus* Linnaeus, 1758 Water Rail

1849. *Rallus indicus* Blyth, *Jour. Asiat. Soc. Bengal* 18(2) : 820 (Lower Bengal and India generally).

1929. Baker, *FBI* No. 2006, 6 : 4.

Diagnostics : Size : Grey Partridge -; c. 23-28 cm.

Adult : Sexes alike, medium-sized bird with slender body; comparatively longer, fleshy-brown legs and long orange-red bill. Above, greyish olive-brown streaked with black. Below, chin and throat white; sides of head, neck and breast pale slaty-grey; flanks with black and white bars.

Juvenile : Has distinct white bars on wing-coverts, reddish edged feathers below.

Habitat : Occurs in reedy marshes, jheels, inundated sugar and paddy fields, and mangroves.

Distribution : Uttarakhand : Dehra Dun : Kansrao and Karwapani swamps (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). CTR (internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

161(342) *Amaurornis akool* (Sykes, 1832)
Brown Crake

1832. *Amaurornis akool* Sykes, *Proc. Zool. Soc. London* : 164 (Dukhun).

1929. Baker, *FBI* No. 2024, 6 : 25.

Diagnostics : Size : Grey Partridge -; c. 28 cm. Sexes alike.

Adult : Female slightly smaller; upperparts dark olive-brown; indistinct supercilia; sides of head and neck ashy-grey; chin and throat white; breast and upper abdomen ashy-grey; remaining underparts and flanks brown; legs and feet fleshy brown.

Habitat : Prefers swampy reedy beds, water bodies with emergent vegetation, irrigation channels.

Distribution : Uttarakhand : Dehra Dun : Kansrao and Lachchiwala (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). CTR (Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

162(343-345) *Amaurornis phoenicurus*
(Pennant, 1769)
White-breasted Waterhen

1769. *Gallinula phoenicurus* Pennant, *Indian Zool.* : 10, pl. 9 (Ceylon).

1958. *Amaurornis phoenicurus maldicus* Philips & Sims, *Bul. Brit. Orn. Cl.* 78 : 53 (Hulule Island, North Male Atoll, Maldivian Archipelago).

1929. Baker, *FBI* No. 2021, 6 : 23.

Diagnostics : Size : Grey Partridge $\pm$; c. 32 cm. Sexes alike.

Adult : A familiar dark slaty-grey and silky-white rail with greenish yellow bill, base of upper mandible red; forehead, supercilia and sides of head pure white; upperparts dark slaty-grey; under parts silky-white, except rufous vent and under tailcoverts; side of breast and flanks slaty-grey; legs and feet yellowish-green.

Juvenile : More olive-brown above with white facial mask obscured by slaty-tipped feathers.

Habitat : Occurs in reedy marshes, edges of submersed fields, monsoon ponds, roadside ditches, village tanks, and reservoirs.

Distribution : Uttarakhand : Almora : Mansi (ZSI Survey 2004). Dehra Dun : New Forest (Mohan 1993, 1996), Asan Barage (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Karva Pani, New Forest (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Survey 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

163(337) *Porzana pusilla* (Pallas, 1776)
Baillon's Crake

1776. *Rallus pusillus* Pallas, *Reise Russ. Reich* 3 : 700 (Dauria).

1929. Baker, *FBI* No. 2013, 6 : 14.

Diagnostics : Size : Grey Quail $\pm$; c. 17-19 cm. Sexes alike.

Adult : The smallest Indian Rail. Bill horny-green; a brownish streak through eye over ear-coverts to sides of neck; supercilium, sides of head and neck, breast and anterior abdomen grey; remaining upper plumage rufous-brown broadly streaked dark brown; scapulars, back, rump and upper tail-coverts with narrow white paint-like

smears; posterior abdomen vent and under tail-coverts barred brown and white; legs and feet yellowishgreen.

Juvenile : Like adult but paler above; brown eyestreak broader; almost white below, sides of neck, breast and flanks suffused with ruddy brown.

Habitat : Affects reedy marshes, jheels, edges of lakes, pools with emergent vegetation, irrigated crops, and paddy fields.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : This bird is named after French naturalist Louis Antoine Francois Baillon. The names of Marsh Crake and Tiny Crake have previously been used to refer to this species.

164(338) *Porzana porzana* (Linnaeus, 1766)
Spotted Crake

1766. *Rallus Porzana* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 262
(Europe = France, ex Brissonian reference).

1929. Baker, *FBI* No. 2011, 6 : 11.

Diagnostics : Size : Grey Quail +; c. 22-24 cm. Sexes alike.

Adult : Bill yellow with orange base, dark green tip and culmen; supercilium, sides of head and neck grey, spotted white; remaining upper parts rufous olive-brown broadly black streaked; black hind neck and upper back white-spotted; scapulars, lower back, rump, upper tail-coverts and inner secondaries narrowly whitestreaked. Chin and throat white; breast grey, whitespeckled; vent and under tailcoverts buff; flanks grey-brown with white bars; legs and feet bright olivegreen.

Juvenile : More brown below and with more extensive white on chin and throat.

Habitat : Occurs in reedy jheels, marshes around reservoirs and canals, swamps.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : Its breeding habitat is marshes and sedge beds across temperate Europe into western Asia and it winters in Africa and India.

165(339-340) *Porzana fusca* (Linnaeus, 1766)
Ruddy-breasted Crake

1917. *Porzana fusca bakeri* Hartert, *Nov. Zool.* 24 : 272
(Bhim Tal, Kumaon).

1929. Baker, *FBI* No. 2017-2019, 6 : 20-21.

Diagnostics : Size : Grey Quail +; c. 22 cm. Sexes alike.

Adult : Upperparts dark olive-brown; chin and throat white; forehead, crown, sides of face, neck and breast chestnut; under tail-coverts blackish with white fringes; legs and feet brick red.

Juvenile : Darker above; sides of head, neck and lower plumage barred brown and white.

Habitat : Occurs in swamps, edges of flooded fields, reedy canal banks, and marshes.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Status not known. Schedule IV (BNHS 2002).

166(346) *Gallicrex cinerea* (Gmelin, 1789)
Watercock

1789. *Fulica cinerea* Gmelin, *Syst. Nat.* 1(2) : 702 (China, ex Latham).

1929. Baker, *FBI* No. 2027, 6 : 29.

Diagnostics : Size : Grey Partridge +; c. Male c. 43 cm and female c. 36 cm. Sexes alike.

Adult : In nonbreeding plumage, female considerably smaller. Dark brown above and pale buff with fine wavy darker bars below; bill horny-yellow; legs and feet dull greenish-brown. The breeding male black with grey scaly markings above; red fleshy frontal shield projecting above crown; bright red eyes and legs; buffwhite under tail-coverts.

Juvenile : Like female but less barred below.

Habitat : Affects reedy swamps, low-lying waterlogged paddy and other fields, ditches, ponds, canals and channels with emergent vegetation.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Status not known. Schedule IV (BNHS 2002).

167(348-349) *Porphyrio porphyrio* (Linnaeus, 1758)

Purple Moorhen

1801. *Gallinula poliocephala* Latham, *Index Orn.*, Suppl. : 68 (India).

1929. Baker, *FBI* No. 2028, 6 : 32.

Diagnostics : Size : Village hen $\pm$; c. 45-50 cm. Sexes alike.

Adult : The bald red forehead (Basque) smaller in female; purplish-blue rail with red bill, frontal shield and legs. Upperparts generally purple-blue; tail black with green iridescence; scapulars and wings greenishblue; chin, throat and foreneck cobalt blue; breast greenish-blue; abdomen and flanks purple; vent blackish-brown; under tail-coverts white.

Juvenile : Paler, with black bill and casque; orange-brown legs and feet.

Habitat : Occurs in large marshes and reed beds around jheels, rivers and swamps.

Distribution : Uttarakhand : Dehra Dun (Tak 1995, Singh 2000), Asan wetland (Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

168(347-347a) *Gallinula chloropus* (Linnaeus, 1758)

Common Moorhen

1842. *Gallinula chloropus?* var. *indicus* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 887 (Calcutta).

1929. Baker, *FBI* No. 2028, 6 : 32.

Collection records : Uttarakhand : Dehra Dun : Prem Nagar, 1♂, 22.xi.1963, coll. P. K. Bose; Herbatpur, 1♀, 11.viii.1966, coll. P. K. Bose.

Diagnostics : Size : Grey Partridge $\pm$; c. 32-35 cm. Sexes alike.

Adult : Head and neck dark grey; remaining upperparts dark brown, closed wings with white

edges; underparts slaty-grey; under tail-coverts conspicuously white with a black central patch; iris, frontal shield and base of bill red; terminal third of bill greenish-yellow; legs and feet green with an orange ring around base of tibia.

Juvenile : More brown, less grey above; much mixed with white below; bill and frontal shield greenish-brown.

Habitat : Occurs in jheels and swamps, marshes, lakes, ponds, village tanks and ditches with emergent vegetation; shifts locally with water conditions.

Distribution : Uttarakhand : Dehra Dun : Eastern Dun : Lachiwala and Kansrao (Osmaston 1935), (Tak 1995), Asan reservoir (Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Clement Town Tank (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : Despite loss of habitat in parts of its range, as a species the Common Moorhen remains plentiful and widespread.

169(350) *Fulica atra* Linnaeus, 1758
Common Coot

1758. *Fulica atra* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 152 (Europe, restricted type locality Sweden, *ex ref. to Fn. Svec.*).

1929. Baker, *FBI* No. 2029, 6 : 34.

Diagnostics : Size : Three-quarter grown duck $\pm$; c. 36-38 cm. Sexes alike.

Adult : A slaty-black waterbird with stout pointed ivory-white bill, white frontal shield and green legs; head, neck and throat black; upper plumage slaty-black with steel-blue sheen; under plumage slatygrey with dark vent and under tail-coverts.

Juvenile : Greenish-brown above and mottled white underneath.

Habitat : Large jheels, lakes, reservoirs and irrigation tanks with deep water and marginal emergent vegetation.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Asan Barage (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Clement Town Tank (Singh 2000). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). (Pandey *et al.* 1994), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It breeds across much of the Old World on freshwater lakes and ponds. It is resident in the milder parts of its range, but migrates further south and west from much of Asia in winter as the waters freeze. It is reluctant to fly and when taking off runs across the water surface with much splashing. They do the same, but without actually flying, when travelling a short distance at speed in territorial disputes.

OTIDIDAE (Bustards and Floricans)

Bustards and Floricans are tall, long-necked terrestrial birds with long, powerful legs, muscular bodies and short straight bill. Male bustards are larger than females, the reverse is the case with the floricans. They are inhabitants of open plains, grasslands and standing crops but omnivorous in their feeding habits. Most are polygamous and by nature gregarious in the non-breeding season, although the severe declines in their populations due to loss of habitat and persecution means that they are now rarely seen in any great numbers.

170(356) *Houbaropsis bengalensis* (Gmelin, 1789) Bengal Florican

1789. *Otis bengalensis* Gmelin, *Syst. Nat.* 1(2) : 724 (Bengal).

1929. Baker, *FBI* No. 2046, 6 : 71.

Diagnostics : Size : Domestic hen +; c. 55 cm. A peahen-sized bird with long, bare legs. The sexes differ in size and colour.

Male : Has velvety black head, neck and underparts; black moppy crest on the head and a bunch of plume-like feathers overhanging the breast; buff upperparts with fine black vermiculations and black arrowhead markings; and conspicuous white patch on wing-coverts.

Female : Slightly larger than male, with buff-brown general colouration, mottled and vermiculated with buff; dark brown crown and narrow dark streak down the sides of neck.

Juvenile : Full adult male plumage acquired by second summer.

Habitat : Open tall grassland with scattered bushes.

Distribution : Uttarakhand : CTR (Lamba and Bhatnagar (1977-79).

Status : Sparse local resident. Critical (IUCN 2007). Schedule I (BNHS 2002). BRS (12) *i.e.* Indo-Gangetic Plains (Jhunjhunwala *et al.* 2001).

Remarks : Gremitt *et al.* (1998) and Krys (2000) have also depicted its occurrence, as former distribution, in maps. In 2007 it has been uplisted to Critically Endangered by BirdLife International, due to having a very small, rapidly declining population. It is the only member of the genus *Houbaropsis*. It has two disjunct populations, one in the Indian subcontinent, another in SE Asia. The former occurs from Uttar Pradesh, India, through the terai of Nepal to Assam and Arunachal Pradesh, India, and historically to Bangladesh. It has declined dramatically and survives in small and highly fragmented populations (220-280 birds in India and up to 100 in Nepal). The SE Asian population occurs in Cambodia and adjacent southern Vietnam.

Order CHARADRIIFORMES JACANIDAE (Jacanas)

The term wader is used to describe a large, somewhat heterogeneous group of species that are united by certain anatomical characters. They are long-legged birds frequenting shallow wetlands and their margins, with some having evolved to occupy drier habitats. Most feed terrestrially, subsisting largely on animal matter such as worms, molluscs, insects and crustaceans. A large portion of the species only comes to the subcontinent in winter when their rather drab grey and brown non-breeding plumage makes identification difficult.

Jacanas are distinguished by their enormously elongated toes and claws which enable them to walk on floating vegetation earning them the alternative name of lily-trotter; short wing spur and

rounded wings; and short tail, except in *Hydrophasianus*. The sex roles are reversed, the female being polyandrous and the male looking after the eggs and young. Flight is feeble and short, with large feet dangling behind; sexes alike; but female larger and polyandrous; young nidifugous and downy.

171(358) *Hydrophasianus chirurgus* (Scopoli, 1786)
Pheasant-tailed Jacana

1786. *Tringa Chirurgus* Scopoli, *Del. Flor. et Faun. Insubr.*, fasc. 2 : 92 ('In nova Guiana' = Luzon ex Sonnerat).

1929. Baker, *FBI* No. 2045, 6 : 69.

Diagnostics : Size : Grey Partridge; c. 39-58 cm. It is the only member of the genus *Hydrophasianus*. Sexes alike.

Adult : Female slightly larger and more colourful than the males and are 'polyandrous'

Breeding : Head, face, throat and foreneck white; hind neck pale silky golden yellow, edged with black line; upper and lower plumage chocolate-brown; rump, upper tail-coverts and tail black; wing-coverts white; tail long, pointed and sickle-shaped (Pheasant-like); legs and feet pale bluish with long spidery toes.

Non-breeding : Chiefly dull brown and white with a black 'necklace' on upper breast, and without the long tail.

Juvenile : Yellow on neck absent; black necklace broken up with white; and crown dull rufous-brown.

Habitat : Occurs in lotus and water hyacinth covered jheels, reservoirs, lakes, pools and village tanks.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Tak 1995), Sahaspur, Chakrata Road (Bhatnagar & Misra 1971), Asan reservoir (Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, New Forest (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

Remarks : The only jacana to have a separate breeding plumage, when it is a conspicuous and unmistakable bird. They are 31 cm long, but the

females are larger than the males. In breeding season, the long tail adds another 8 cm. The outermost primaries have a spatulate extension of 2 cm and the seventh primary has broad protrusion.

172(359) *Metopidius indicus* (Latham, 1790)
Bronze-winged Jacana

1790. *Parva indica* Latham, *Index Orn.* 2 : 765 (India).

1928. Baker, *FBI* No. 2031, 6 : 40.

Diagnostics : Size : Grey Partridge $\pm$; c. 28-31 cm. Sexes alike.

Adult : Female slightly larger. Bill greenish-yellow, tinged with red at base; frontal shield bluish-red; a broad superciliary streak from eye to nape of pure white; rest of head, neck and lower parts black with deep green sheen; back and wings metallic greenish-bronze; tail and under tailcoverts chestnut; vent and thighcoverts dull brownish-black; legs and feet dull green.

Juvenile : With short dull white supercilium, rufous-brown crown, terminal black band on rufous tail, and whitish underbody.

Habitat : Occurs in vegetation covered jheels, lakes, reservoirs, pools and village tanks.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : When forced they sometimes choose to hide by submerging themselves. The male may carry chicks between the wings and body.

ROSTRATULIDAE (Painted-Snipes)

Sexually dimorphic; polyandrous; and the males attend to nest and rear young.

173(429) *Rostratula benghalensis* (Linnaeus, 1758)
Greater Painted-Snipe

1758. *Rallus benghalensis* Linnaeus, *Syst. Nat.* ed. 10, 1 : 153 (Asia).

1929. Baker, *FBI* No. 2033, 6 : 45.

Diagnostics : Size : Grey Quail $+$; c. 25 cm. Polyandrous.

Adult : Female brighter and larger than male; sexes more or less alike and difficult to distinguish

in non-breeding season; a colourfully mottled snipe with long, flesh-pink bill, slightly downcurved at tip.

Breeding (female) : Head and neck chestnut with a broad, median and buff stripe on head down to bill; a pure white circle around and a short band behind the eye; remaining upperparts metallic bronze-green spotted and streaked with black and buff; broad white bands over shoulder to sides of breast; chin, throat and breast chestnut; lower breast blackish. Remaining underparts white.

Breeding (male) : Duller and lacking the chestnut and black on neck and breast.

Juvenile : Similar to adult male but with white throat; lower throat and foreneck washed with brown, with some dusky streaks.

Habitat : Found in freshwater marshes with deep pools, ditches with thick vegetation and mud patches, also in mangroves.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004).

Status : Residential status not known. Not Listed in the Act (BNHS 2002).

HAEMATOPODIDAE (Oystercatcher)

Oystercatchers are pied waders generally frequenting seashores where they use their long, strong orange-red bills to open the shell of their molluscs (chiefly bivalve) prey. Their sexes are alike, but female with longer and thinner bill. The bill is compressed and slightly truncated at tip; wings long and pointed, first primary longest; tarsus short, stout and reticulated throughout; hind toe absent; anterior toes short, stout and edged laterally with a narrow membrane and slightly webbed, especially between 3rd and 4th toes.

174(360-361) *Haematopus ostralegus* Linnaeus, 1758

Eurasian Oystercatcher

1758. *Haematopus Ostralegus* Linnaeus, *Syst. Nat.* ed. 10, 1 : 152 (Europe and America = Oland).

1929. Baker, *FBI* No. 2210, 6 : 165.

Diagnostics : Size : Grey Partridge +; c. 42-36 cm. Sexes alike; a striking black and white bird with stout red legs; long straight orange-red snipe-like bill, blunt at tip.

Non-breeding (first winter) : White-collar present on foreneck; can be distinguished in flight by broad white band across the black wings.

Habitat : Chiefly a coastal bird, prefers sandy and rocky seashores, rare inland on shingle beds of large rivers.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : Gremmett *et al.* (1998) and Krys (2000) have not depicted its occurrence in maps.

CHARADRIIDAE (Plovers, Dotterels & Lapwings)

Small to medium-size waders; bill short, pigeon-like to long, slender and straight or downcurved; wings long and pointed; legs short to long, with tibiae partly bare in many species. Flight strong, swift and well sustained. Sexes may be nearly alike, or female may be much smaller and/or duller.

Lapwings are medium-sized waders with long legs, fairly large head, short straight bill and rounded wings. Posture is fairly upright with birds usually running or walking a few steps before stopping to pick a prey from the ground and then changing direction. Dotterels and Plovers are of similar built but smaller with shorter neck, relatively shorter pointed wings and less upright stance.

175(383) *Charadrius placidus* J.E. Gray, 1863 Long-billed Ringed Plover

1863. *Charadrius placidus* J. E. Gray, *Cat. etc. Mamm. Bds. Nepal and Tibe. Brit. Mus.*, ed. 2 : 70. (Nepal).

1929. Baker, *FBI* No. 2116, 6 : 172.

Diagnostics : Size : Grey Quail +; c. 19-21 cm. A long and slim-bodied plover with long bill, small head, yellowish legs, and rather jerky flight.

Adult : Similar to Large Ringed and Little Ringed Plovers except with nearly black frontal bar and comparatively thin black breast-band. In flight, white wing-bar inconspicuous. **Non-breeding** birds and **juveniles** are duller overall.

Habitat : Occasionally on coarse sandy bank of large rivers.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Residential status not known. Schedule IV (BNHS 2002).

**176(379-380) *Charadrius dubius* Scopoli, 1786
Little Ringed Plover**

1789. *Charadrius curonicus* Gmelin, *Syst. Nat.* 1(2) : 692 (Kurland).

1880. *Aegialitis jerdoni* Legge, *Proc. Zool. Soc. London* : 39 (Ceylon and middle India). New name for *Aegialitis minuta* Jerdon, nec *Charadrius minutus* Pallas.

1929. Baker, *FBI* No. 2114, 6 : 171.

Diagnostics : Size : Lesser Sand Plover $\pm$; c. 14 -17 cm. Sexes alike.

Adult : A typical little plover with sandy brown upperparts and white forehead; black fore-crown, separated from sandy brown crown by a thin white line running back over eyes and ear-coverts; black bands on head and breast, the latter continues into a pectoral band; white neck-ring, chin, throat and underparts; yellow eye-ring and legs; a double collar on hind neck (the upper white, the lower black) separating crown from the sandy brown upperparts.

Juvenile : Brownish head and breast; whitish fringes on black pectoral band when first assumed.

Habitat : Sandy, pebbled margins of lakes, rivers, pools, mudflats, grasslands, intertidal zones, tidal creeks, etc.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995), New Forest (Mohan 1993, 1996), Assan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident with winter influx. Schedule IV (BNHS 2002).

**177(381-382) *Charadrius alexandrinus*
Linnaeus, 1758
Kentish Plover**

1758. *Charadrius alexandrinus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 150 (Egypt, ex Hasselquist).

1929. Baker, *FBI* No. 2106, 6 : 161.

Diagnostics : Size : Grey Quail -; c. 15 - 17 cm. Sexes alike.

Adult : Female duller; similar to immature Little Ringed Plover.

Non-breeding (winter) : Distinguished by blackish legs, white forehead continued unbroken as supercilium, sandy grey crown, narrow and brownish eye stripe, and a small dark patch on either side of breast.

Breeding (summer) : Male has black and rufous crown and black eye streak; female more or less as in non-breeding plumage.

Juvenile : Like female but with the upperparts narrowly scalloped with sandy buff.

Habitat : Mainly seashore, also riverbeds with shingle, sandy margins of lakes, ponds, and salt pans.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**178(384-384a) *Charadrius mongolus* Pallas, 1776
Lesser Sand Plover**

1829. *Charadrius atrifrons* Wagler, *Isis von Oken*, col. 650 (Bengal).

1929. Baker, *FBI* No. 2117, 6 : 174.

Diagnostics : Size : Grey Quail; c. 19 - 21 cm. Sexes alike.

Adult : A typical little plover with short pigeon-like black bill and greenish-grey legs.

Non-breeding (winter) : Distinguished from similar Kentish Plover by broad white face divided by dark brownish patch behind eyes. Upperparts sandy greyish-brown and underparts white.

Breeding (summer) : **Male** : Forehead and sides of head black; crown and hind neck rusty; remaining upperparts sandy brown; upperparts and flanks chestnut, separated from glistening white throat by a blackish half-collar; rufous-orange breast and hind neck.

Female : Similar to non-breeding adult but with pale orange breast-band.

Juvenile : Feathers of upperparts with pale fringes.

Habitat : Occurs in sandy plains in the vicinity of high altitude lakes, streams and marshes in summer; during winters on coasts, intertidal mudflats, tidal creeks, rocky and sandy shores.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

**179(374) *Charadrius leschenaultii* Lesson, 1826
Greater Sand Plover**

1826. *Charadrius Leschenaultii* Lesson, *Dict. Sci. Nat.*, ed. Levrault, 42 : 36 (Pondicherry, India).

1929. Baker, *FBI* No. 2118, 6 : 175.

Diagnostics : Size : Grey Partridge -; c. 22 – 25 cm. Sexes alike.

Non-breeding (winter) : Forehead and supercilium prominent patches on sides of breast grey-brown.

Breeding (summer) : Male has black mask with white patch on sides of forehead, rufous-orange breast-band and sides of neck; while female is similar to non-breeding adult but with an orange breast-band.

Habitat : Mainly on sandy shores, intertidal mudflats, saltpans, mangroves and rocky coasts.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

**180(364) *Vanellus vanellus* (Linnaeus, 1758)
Northern Lapwing**

1758. *Tringa Vanellus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 148 (Europe, Africa. Restricted type locality, Sweden).

1928. Baker, *FBI* No. 2121, 6 : 180.

Diagnostics : Size : Grey Partridge; c. 28–31 cm. Also known as the 'Peewit', 'Green Plover' or just 'Lapwing' Sexes alike.

Adult : Female's crest smaller.

Non-Breeding (winter) : Crown brown; face, chin, throat and foreneck white, speckled with

brown or black; scapulars, innermost secondaries and black breast-feathers fulvous scalloped; remaining underparts as in breeding bird.

Breeding (summer) : Long upstanding pointed crest, crown and chin to breast black; remaining underparts white; sides of head and neck white with black markings; back, rump, scapulars and innermost secondaries glossy bronze-green; scapulars marked with violet-purple; upper and under tail-coverts cinnamon, former with a broad black subapical band.

Juvenile : Brown above, each feather fulvous edged; back slightly glossed with purple-bronze and wings with green; under-parts like non-breeding adult.

Habitat : Prefers fallows, harvested and irrigated fields, and riverbanks with pebbles, lake margins and marshlands.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), New Forest (Mohan 1993, 1996), Asan Barrage (Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**181(370) *Vanellus malabaricus* (Boddaert, 1783)
Yellow-wattled Lapwing**

1783. *Charadrius malabaricus* Boddaert, *Table Pl. enlum.* : 53 (Malabar Coast, *ex* Daubenton, pl. 880).

1928. Baker, *FBI* No. 2128, 6 : 190.

Diagnostics : Size : Grey Partridge -; c. 26-28 cm. A medium-sized conspicuous and unmistakable plover. In flight, the upperwings have black flight feathers and brown coverts separated by a white bar while the underwings are largely white. Sexes alike.

Adult : Bill black with yellow base and gape; wattle bright yellow; crown (skull cap) silky black, surrounded by a thin white line; upperparts sandy brown. Tail white with a broad black sub-terminal band; chin and throat black; breast sandy brown; remaining underparts white separated from breast by a thin black line; primaries black; outer secondaries white with a black tip; legs and feet bright yellow.

Juvenile : Pale sandy brown above and whitish below with traces of brown on throat and upper breast.

Habitat : Fallows, dry fields, much less dependent on water, near jheels, keeps away from muddy shores.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), Tons Valley (Wright 1957), New Foest (George 1962a, Mohan 1996), (Bhatnagar & Misra 1971, 1972a & b, Tak 1995), Asan Barrage (Singh 2000, Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (11) or Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

182(369) *Vanellus duvaucelii* (Lesson, 1826)
River Lapwing

1826. *Charadrius Duvaucelii* Lesson, *Dict. Sci. Nat.*, ed. Levrault, 42 : 38 (Calcutta).

1827. *Charadrius ventralis* Wagler, *Syst. Av. no. 2* (Calcutta).

1929. Baker, *FBI* No. 2124, 6 : 184.

Diagnostics : Size : Grey Partridge; c. 29-32 cm. A rather sedentary lapwing. In flight, the black primaries, white under wings and upper wing secondaries, and brown upper wing coverts prominent. Sexes alike.

Adult : Bill, head and occipital crest (drooping over back) black; upperparts sandy grey-brown; upper tailcoverts and tail white, the latter with its terminal half black; central secondaries white; chin, cheek, throat and a patch on abdomen black bordered with white; upper breast vinous-grey; remaining underparts white; legs and feet reddish-black.

Habitat : Sandy, shingle and pebble banks and islands of rivers; jheels, tanks, reservoirs, ditches and puddles; also estuarine coasts.

Distribution : Uttarakhand : Champawat (ZSI Survey 2005). Dehra Dun : Ganges and Yamuna and also larger tributaries (Osmaston 1935), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995), New Forest (Mohan 1993, 1996), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998,

Singh 2000, Tak & Sati 2003). Haridwar: Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

183(365) *Vanellus cinereus* (Linnaeus, 1758)
Grey-headed Lapwing

1842. *Pluvianus cinereus* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 587 (Calcutta).

1929. Baker, *FBI* No. 2129, 6 : 191.

Diagnostics : Size : Grey Partridge +; c. 34-37 cm.

Adult : A thickset, yellow-legged lapwing.

Breeding : Has a grey head and neck; black-tipped yellow bill; darker grey breast band; white belly; and brown upperparts. In flight, the black primaries, brown upperwing-coverts, white upperwing secondaries, under wings, and tail with broad black terminal band prominent.

Non-breeding : Browner head and neck and less prominent breast band are the clues.

Juvenile : With brownish head, but lacks breast-band and has prominent buff fringes to feathers of upperparts.

Habitat : River banks, marshes and wet fields.

Distribution : Uttarakhand : Dehra Dun : In winter, earliest seen on December 21st and latest on January 19th (Wright 1957). Also mentioned by Bhatnagar & Misra 1971, Tak 1995, and Singh 2000.

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

184(366-368) *Vanellus indicus* (Boddaert, 1783)
Red-wattled Lapwing

1783. *Tringa Indica* Boddaert, *Table Pl. enlum.* : 150 (Goa, ex Daubenton, pl. 807).

1913. *Sarcogrammus indicus aigneri* Laubmann, *Falco* 9 : 30 (Sonmiani, Makran).

1929. Baker, *FBI* No. 2125, 2136 6 : 187, 189.

Collection records : Uttarakhand : Dehra Dun : Prem Nagar, 1 ♂, 27.xi.1963, coll. P. K. Bose; Rajpur, 1 ex., 7.iii.1968, coll. R. K. Bhatnagar; Chanderbani, 1 ex., 17.x.1968, coll. P. K. Bose; Badripur, 1 ♀, 17.x.1977, coll. M. L. Narang.

Diagnostics : Size : Grey Partridge +; c. 32-35 cm. Its striking appearance is supplemented by its noisy nature, with a loud and scolding *did-he-do-it* call, often uttered at night. In flight, white V-shaped wing bar prominent. Sexes alike.

Adult : A familiar plover with black tipped red bill, crimson-red wattle and eyelids, and bright yellow legs. Head, neck and breast jet-black; upperparts bronze-brown; underparts white continuing to broad bands up the neck-sides towards eyes; rump, upper tail-coverts and tail white, the last with a broad sub-terminal black band; primaries and outer secondaries black, the latter with broad white bases.

Juvenile : Black feathers of head broadly fringed with brown; chin, throat and foreneck white; sides of neck sullied white.

Habitat : Found at jheels, tanks, ditches, puddles, open cultivation, countryside and open grounds near water.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli (Osmaston 1935). Dehra Dun : (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), Tons Valley (Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, New Forest, [Dholkhand, Kampty Falls, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur, Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh (Tak 1995). Tehri : Bheling valley (Searight 1926), (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

185(363) *Vanellus gregarius* (Pallas, 1771)
Sociable Lapwing

1771. *Charadrius gregarius* Pallas, *Reise Russ. Reichs* 1 : 456 (Volga, Jaiku, and Samara).

1928. Baker, *FBI* No. 2122, 6 : 182.

Diagnostics : Size : Grey Partridge ±; c. 27-30 cm. Also known as 'Sociable Plover' Sexes alike.

Non-Breeding (winter) : Crown and eye-stripe brown, forehead buff-white, supercilia white; remaining upperparts ashy-grey; wings black with large white patch (secondaries); lower back white; tail white with a black subterminal band. Chin and throat white; breast mottled brown and grey; remaining underparts smoky-white; Bill, legs and feet black.

Breeding (summer) : Crown and eye-stripe black; forehead and supercilia pure white; throat and upper breast ashy-grey; lower breast black and chestnut; abdomen and vent white. The black subterminal tail band and large white patch in black flight feathers are diagnostic clues in flight.

Juvenile : With scaly back, and only vestiges of the head pattern.

Habitat : Occurs in fallow, wastelands, stubble, occasionally grassy margins of lakes and rivers.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Vagrant. Sparse winter visitor. Critical (IUCN 2007). Schedule IV (BNHS 2002).

186(362) *Vanellus leucurus* (Lichtenstein, 1823)
White-tailed Lapwing

1823. *Charadrius leucurus* Lichtenstein, in Evermann's *Reise von Orenburg nach Buchara* : 137 (Between the Kuwan and Jan Daria, Turkestan).

1929. Baker, *FBI* No. 2033, 6 : 45.

Diagnostics : Size : Grey Partridge ±; c. 26-29 cm. Also known as 'White-tailed Plover' Sexes alike.

Adult : A light brown and white Plover with black bill and long prominent yellow legs; forehead and indistinct supercilia greyish-white; upper plumage light brown, except white rump and tail; chin, throat and foreneck ashy-grey; breast dark grey; abdomen and under tailcoverts rosy-white. The white rump and tail, and contrasting black primaries and white patch on secondaries are diagnostics in flight.

Juvenile : Darker above and sullied white below.

Habitat : Freshwater marshes and marshy grassy edges of lakes and jheels.

Distribution : Uttarakhand : CTR (internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

Remarks : Winters in N India south to N Maharashtra and C Orissa (Grimmett *et al.* 1998); locally fairly common winter visitor to the north and northwest (Grimmett *et al.* 1998, Krys 2000).

SCOLOPACIDAE (Shanks, Sandpipers, Stints, Snipes, Godwits & Curlews)

Sandpipers and Stints are small to medium-sized waders with fairly long legs and longish bill used to probe in the mud for invertebrate prey on mudflats and at the margins of waterbodies. Snipes are medium-sized, stout-bodied waders with very long, fairly straight bill and highly cryptic plumage. Generally found in grassy marshland and soft margins of vegetated waterbodies probing vertically in the mud for prey. Godwits and Curlews are large, relatively tall, long-legged waders with long slender bills used to feed by probing in the mud for small invertebrates. The bills of godwits are slightly upcurved; those of curlews downcurved. Woodcocks though similar in appearance to snipe are distinguished by the cross-barring on the head and their woodland habitat. Usually crepuscular and nocturnal, they are difficult to see unless flushed.

187(411) *Scolopax rusticola* Linnaeus, 1758 Eurasian Woodcock

1758. *Scolopax rusticola* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 146 (Europe, restricted type locality, Sweden).

1837. *Scolopax indicus* Hodgson, *Jour. Asiat. Soc. Bengal* 6 : 490 (Nepal).

1954. *Scolopax rusticola ultimus* Koelz, *Contrib. Inst. Regional Exploration* No. 1 : 31 (Sangu, Lushai Hills)
Cf. Hartert, E., 1921, *Vog. pal. Fauna* 2 : 1651-4.

1929. Baker, *FBI* No. 2167, 6 : 252.

Diagnostics : Size : Partridge -; c. 33-35 cm length; 55-65 cm wingspan. Its body is patterned cinnamon on top and grey underneath with its large eyes located high in the head. Sexes alike. An

outsized snipe with cryptic colours of brown, black and white; bill long, dusky with swollen tip; head and nape with three broad transverse bands of velvet-black, divided by yellowish lines; a blackish line running from base of bill to eye; another similar line below eye and posterior ear-coverts; remaining face grey with brown spots. Hind crown, nape and rump crossbarred black and rufous; remaining upperparts brownish-grey blotched and barred with black, rufous and buff. Chin white; remaining underparts dull greyish-white, cross-barred throughout with dark brown, more numerous on upper breast; legs short, green-grey.

Habitat : Occurs at swampy glades in fir and rhododendron forests of Himalaya.

Distribution : Uttarakhand : Chamoli : Kulara in Painkhanda Malla (Osmaston 1921), NDNP (Tak & Kumar 1987), (Tak 1995), Belta, Lata Kharak (Tak 1997). Dehra Dun: beyond Chakrata, Kalsi, Karwapani and Lachchiwala (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bhilung valley (now Bhilangna) (Matthews 1917, Searight 1926). Uttarkashi : Govind NP : taken from working plan (1965-75) by Pandey (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

188(404) *Gallinago solitaria* Hodgson, 1831 Solitary Snipe

1831. *Gallinago solitaria* Hodgson, *Gleanings in Science* 3 : 238 (Nepal).

1929. Baker, *FBI* No. 2169, 6 : 257.

Diagnostics : Size : Grey Quail +; c. 29-31 cm. Sexes alike. A cryptic coloured marsh bird with plump body and long, greenish-plumbeous bill; plumage variegated brown, black, rufous, fulvous and white. Crown black with a narrow white median band; supercilium broken, indistinctly mixed with white and brown, and narrowing behind the eye; scapulars with broad white outer edges; abdomen white, faintly barred at the sides; legs and feet plumbeous and relatively short.

Habitat : Prefers large high-altitude boggy mountain streams and paddy fields bordered with stubble.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Dehra Dun : beyond Chakrata and upper slopes of Deoban (Osmaston 1935), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). Tehri: Bheling valley (Searight 1926).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

189(405) *Gallinago nemoricola* Hodgson, 1836
Wood Snipe

1836. *Gallinago nemoricola* 'Ej.' = Hodgson, *Proc. Zool. Soc. London* : 8 : (Nepal).

1929. Baker, *FBI* No. 2168, 6 : 255.

Diagnostics : Size : Grey Quail +; c. 28-32 cm. Sexes alike. Bill horny brown, pointing downwards; upperparts dark brown, variegated with black, rufous and buff streaks; breast fulvous barred with brown; remaining underparts white closely barred with brown; legs dark plumbeous-green. Usually distinguished from Eastern Solitary, Pintail and Fantail Snipes by larger size; much darker colouration, comparatively slow flight with downward pointing bill.

Habitat : Breeds in alpine meadows with streams, prefers swamps, pools and puddles. In winter, occurs in swampy areas at the edge of the forest.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000). CTR (Khati 2004, internet list).

Status : Vagrant. Sparse summer visitor. Vulnerable (IUCN 2007). Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

190(406) *Gallinago stenura* (Bonaparte, 1830)
Pintail Snipe

1830. *Scolopax stenura* 'Khul' = Bonnaparte, *Ann. Stor. Nat. Bologna* 4 : 335 (Sunda Islands).

1929. Baker, *FBI* No. 2173, 6 : 263.

Diagnostics : Size : Grey Quail +; c. 25-27 cm. Sexes alike, female slightly larger. Dark brown above heavily streaked with buff, rufous and black; dull white below. Bill long, with terminal third or half blackish-brown and basal half dull olive-green. Tail normally with 26 or 28 feathers, outer 8 or 9 on each side being stiff and narrow (pin-like, hence the name). Legs and feet plumbeous-green. In flight, the less pointed wings than Common Snipe, and lack of the white trailing edge of that species, are the clues.

Habitat : Occurs at edges of marshy jheels, paddy stubble, and seepage from reservoirs in foothills, occasionally on dry ground.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

191(408) *Gallinago media* (Latham, 1787)
Great Snipe

1787. *Scolopax media* Latham, *Gen. Syn. Suppl.* : 292 (England; based on *Gen. Syn.* 3(1) : 133, no. 4).

1929. Baker, *FBI* No. 2172, 6 : 261.

Diagnostics : Size : Fantail Snipe +; c. 27-29 cm length; 42-50 cm wingspan. Sexes alike.

Adult : Slightly larger and stouter than Common Snipe from which it differs by the larger amount of white in the tail (outside feathers). From Wood Snipe it differs with 2-3 white wing-bars (formed by tips to coverts) and bold barring on breast and flanks to vent, except central belly.

Juvenile : Like adult but with narrow white tips to greater and median-coverts.

Habitat : Marshy areas, also on drier grounds.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

192(409) *Gallinago gallinago* (Linnaeus, 1758)
Common Snipe

1758. *Scolopax Gallinago* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 147 (in Europa = Sweden).

1912. *Scolopax (Gallinago) gallinago raddei* Buturlin, *Psovaia I Ruzheinaia* Okhota, author's reprints, p. 54 (East Siberia).

1929. Baker, *FBI* No. 2170, 6 : 259.

Diagnostics : Size : Grey Quail +; c. 25-27 cm length; 39-45 cm wingspan. Sexes alike.

Adult : Dark brown above, heavily streaked with black, rufous and buff; whitish below; head with a buff median stripe and supercilium; bill olive-yellow on basal half and dark horny-brown to blackish on terminal half; tail-feathers 14 or 16; legs and feet dull olive-green. In flight, the long straight bill held downwards; distinguished from Pintail Snipe only when the bird is in hand.

Juvenile : Like adults, but with whitish fringes on mantle feathers and wing-coverts.

Habitat : Occurs at swampy edges of jheels, marshes around reservoirs, paddy stubble, muddy edges of rivers and pools.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident as well as sparse winter visitor. Schedule IV (2002).

193(410) *Lymnocyptes minimus* (Brünnich, 1764)
Jack Snipe

1764. *Scolopax Minima* Brunnich, *Orn. Boreal.* : 49 (e. Christianso, Denmark).

1929. Baker, *FBI* No. 2175, 6 : 265.

Diagnostics : Size : Fantail Snipe -; c. 17-19 cm. The only one in the genus *Lymnocyptes*. Sexes alike. The smallest snipe with relatively shorter and stouter bill, shining metallic green and purple back boldly streaked with buff, wedge-shaped tail, and pale olivegreen legs and feet. Its head pattern differs from Common Snipe and other species in the genus *Gallinago*, in that there is no central crown-stripe; instead, there are two pale lateral crown-stripes, which are separated from the supercilium by an area of dark plumage.

Habitat : Found in swamps, around jheels, marshes, waterlogged paddy fields.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak

1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

194(389-390) *Limosa limosa* (Linnaeus, 1758)
Black-tailed Godwit

1758. *Scolopax Limosa* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 147 (in Europa = Sweden).

1929. Baker, *FBI* No. 2137, 6 : 205.

Diagnostics : Size : Country hen; c. 36-44 cm. A large shorebird with relatively long-legs. Sexes alike.

Adult : Female slightly larger; bill long, slender and straight with red base and dusky tip; upperparts greybrown, with white upper tail-coverts; underparts white; legs and feet greyish-green. In summer, assumes chestnut head and breast, bars on flanks; white chin, throat, abdomen and lower back. In flight, broad white wing-bars, white rump and black tail-tip distinctive.

Habitat : A predominant freshwater species, found at inland jheels, shallows and mud banks of rivers, lakes and reservoirs, sometimes also in brackish lagoons, tidal waters and coastal salt pans.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread winter visitor. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

Remarks : In 2006 Bird Life International classified this species as Near Threatened due to a decline in numbers of around 25% in the previous 15 years.

195(387-388) *Numenius arquata* (Linnaeus, 1758)
Eurasian Curlew

1758. *Scolopax Arquata* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 145 (in Europa = Sweden).

1929. Baker, *FBI* No. 2133, 6 : 200.

Diagnostics : Size : Large country hen; c. 50-60 cm length; 100 cm wingspan. Mainly a greyish brown curlew. Sexes alike.

Adult : An unmistakable wader with long, slender and strongly downcurved dark brown bill; bluishgrey legs and feet; plumage, streaked buff and brown, abdomen whitish streaked with black; white lower back and rump conspicuous in flight.

Juvenile : With more pronounced buff streaks on upperparts; white back; buff tinge on rump; narrow black streaks on breast and abdomen.

Habitat : Occasionally on large lakes, mudflats, commonly around tidal estuaries and creeks.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

196(392) *Tringa erythropus* (Pallas, 1764)
Spotted Redshank

1764. *Scolopax erythropus* Pallas, in Voreg's *Cat., Adumbr.* : 6 (Holland).

1929. Baker, *FBI* No. 2149, 6 : 223.

Diagnostics : Size : Grey Partridge $\pm$; c. 29-32 cm. Sexes alike.

Non-breeding (winter) : Brownish-grey with faint white spots; red and black bill and red legs; head, hind neck and back ashy-brown; supercilia white; upper back with tiny white fringes on each feather; scapulars and inner secondaries notched with black and white; wing-coverts with broad white fringes; lower back, rump and tail-coverts white, the last barred with black; tail ashy-brown, barred with white on edges; underparts white with brown on neck and upper breast; dusky tinge on flanks.

Breeding (summer) : Overall sooty; black spotted; scalloped with white.

Juvenile : With brown upperparts and uniformly barred underparts.

Habitat : Occurs at inland jheels and tanks, muddy banks and shallow waters of lakes and rivers, also in tidal eustuaries and creeks.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage (Singh 2000, Tak & Sati 2003). CTR (Khati 2004).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

197(393, 394) *Tringa totanus* (Linnaeus, 1758)
Common Redshank

1758. *Scolopax Totanus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 145 (in Europa = Sweden).

1929. Baker, *FBI* No. 2147, 6 : 221.

Diagnostics : Size : Grey Partridge $\pm$; c. 27-29 cm. Sexes alike.

Non-breeding (winter) : Mottled grey-brown above and white below with orange-red legs and basal third of bill; lower back, rump and tail white, the last barred with brown; breast finely streaked with brown.

Breeding (summer) : Upperparts streaked and spotted with black and fulvous; upper breast heavily streaked with brown; lower breast with dark crescent spots. The white edges to the dark greyish wings and the white lower back and rump are diagnostic in flight.

Juvenile : More rufous above; scapulars with fulvous spots; flanks with more black bands.

Habitat : Found at marshes, muddy edges of rivers, lakes, muddy pools, mudbanks of mangroves, salt pans, tidal creeks and estuaries.

Distribution : Uttarakhand : Dehra Dun : Ganges, Yamuna, Song and Asan Rivers (Osmaston 1935), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). Pithoragarh : Goriganga valley-1994 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

198(395) *Tringa stagnatilis* (Bechstein, 1803)
Marsh Sandpiper

1803. *Totanus stagnatilis* Bechstein, *Orn. Taschenb. Deutschl.* 2 : 292, pl. 29 (Germany).

1929. Baker, *FBI* No. 2144, 6 : 216.

Diagnostics : Size : Grey Partridge -; c. 22-25 cm. Sexes alike.

Non-breeding (winter) : Greyish-brown above and white below with white forehead, supercilium sides of head, lower back and rump; black bill greenish legs.

Breeding (summer) : Sandy grey above and white below with dark angular spots on back; brown spots on foreneck and upper breast; irregular bars on flanks; narrow bars on tail.

Habitat : Occurs at swampy edges of freshwater ponds and jheels, paddy fields and marshes, also intertidal mudflats, brackish lagoons and saltpans.

Distribution : Uttarakhand : Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). CTR (Khati 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

199(396) *Tringa nebularia* (Gunner, 1767)
Common Greenshank

1767. *Scolopax nebularia* Gunnerus, in Leem, *Beskr. Finm. Lapper* : 251 (District of Trondhjem, Norway).

1928. Baker, *FBI* No. 2150, 6 : 225.

Collection records : Uttarakhand : Dehra Dun : Dakpathar, 1 ♀, 4.ix.1973, coll. Raj Tilak.

Diagnostics : Size : Grey Partridge +; c. 30-34 cm. Sexes alike.

Non-breeding (winter) : Dark greyish-brown above and white below. White forehead; lower back, rump and tail, the last with faint, almost invisible barring; greyish on foreneck and sides of head; bill greenish-brown, blacker at tip and slightly upcurved; legs and feet olive-green.

Breeding (summer) : Darker above, with broad black centres on back and scapulars. In flight distinguished from Marsh Sandpiper by larger size, and from Redshank by absence of white wing-bar. Olive-green legs and slightly upcurved bill.

Habitat : Found at riverbanks, marshes, puddles, paddy fields, tanks, jheels and brackish pools, coastal lagoons, tidal creeks and saltpans.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971), New Forest (Singh 1999), Asan Barrage, Khaddar, Mathurawala Swamp (Singh 2000), Asan wetland (Tak & Sati 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

200(399) *Tringa guttifer* (Nordmann, 1835)
Spotted Greenshank

1835. *Totanus guttifer* Nordmann, in Erman's Reise, Naturh. Atlas: 17 (Okhotsk).

1928. Baker, *FBI* No. 2151, 6 : 226.

Diagnostics : Size : Grey Partridge ±; c. 29-32 cm. Also known as Nordmann's Greenshank, is a medium-sized snadpiper with slightly upturned, bicoloured bill and shortish yellow legs. Sexes alike.

Non-breeding (winter) : Head and neck ashy brown; remaining upperparts dark brown with green bronze sheen; tail white with faint blackish terminal bars; underparts white with fine brown streaks on throat, breast and flanks.

Breeding (summer) : Darker, spotted lightly with white.

Juvenile : With bronze narrow scalloping on upperparts and narrow bars with a broad terminal band on tail. Distinguished from similar Wood Sandpiper by more white on rump and tail, and darker surface of upper and underwings.

Habitat : Freshwater and coastal wetlands; generally favours small wetlands like village tanks, puddles, streams, marshes and paddy fields, though affect lakes.

Distribution : Rajaji National Park or RNP (spread over in districts Dehra Dun, Haridwar and Pauri) (Pandey *et al.* 1994).

Status : Residential status not known. Endangered (IUCN 2007). Schedule IV (BNHS 2002).

201(397) *Tringa ochropus* Linnaeus, 1758
Green Sandpiper

1758. *Tringa Ochropus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 149 (in Europa = Sweden) [name emended to *ochropus*].

1929. Baker, *FBI* No. 2143, 6 : 215.

Diagnostics : Size : Grey Quail +; c. 21-24 cm. Sexes alike.

Non-breeding (winter) : Head and neck ashy brown; remaining upperparts dark brown with green bronze sheen; tail white with faint blackish terminal bars; underparts white with fine brown streaks on throat, breast and flanks.

Breeding (summer) : Darker, spotted lightly with white.

Juvenile : With bronze narrow scalloping on upperparts and narrow bars with a broad terminal band on tail. It is distinguished from similar Wood Sandpiper by more white on rump and tail, and darker surface of upper and underwings.

Habitat : Generally favours small wetlands like village tanks, puddles, streams, marshes and paddy fields, though affect lakes.

Distribution : Uttarakhand : Bageshwar : Dhakrui (Tak 1997). Dehra Dun : Ganges and Yamuna (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995), Asan Barrage, Khaddar, Mathurawala Swamp (Singh 2000), Asan wetland (Tak & Sati 2003). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Milam (Tak 1997). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

202(398) *Tringa glareola* Linnaeus, 1758 Wood Sandpiper

1758. *Tringa Glareola* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 149 (in Europa = Sweden).

1929. Baker, *FBI* No. 2146, 6 : 219.

Diagnostics : Size : Grey Quail $\pm$; c. 18-21 cm. Sexes alike.

Non-breeding (winter) : Grey brown above spotted white; white below with dusky breast; bill blackish; supercilium whitish; lower back, rump and tail white, the last blackish barred; legs and feet olive-green.

Breeding (summer) : Darker with conspicuous white spots. In flight, grey-brown upperparts, white rump, barred brown-and-white tail, and absence of wing-bar is diagnostic.

Habitat : Prefers jheels with emergent vegetation, marshes, village tanks, paddy fields, irrigation tanks in lowlands, and tidal creeks, occasionally up to 2000 m.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), Tons

Valley (Wright 1957), Tons Valley (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

203(401) *Actitis hypoleucos* Linnaeus, 1758 Common Sandpiper

1758. *Tringa hypoleucos* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 149 (in Europa = Sweden).

1929. Baker, *FBI* No. 2145, 6 : 217.

Diagnostics : Size : Grey Quail; c. 19-21 cm length; 32-35 cm wingspan. Sexes alike.

Non-breeding (winter) : Olive-brown above and white below with more ash-brown on head and sides of neck; supercilia pale and indistinct; rump and tail brown with only the outer tail-feathers white; breast lightly brown-streaked; a prominent small white patch - dividing band of wing from side of breast.

Breeding (summer) : Darker above and speckled; foreneck and breast boldly brown-streaked. In flight distinguished by white wing-bar and brown rump.

Juvenile : Barred above with buff edges to the wing feathers.

Habitat : Hill streams and rivers during breeding season; in winter prefers freshwater bodies, village tanks, stream banks, ditches, rivers, canals, lakes; tidal creeks, rocky seashores, harbours and docks.

Distribution : Uttarakhand : Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Tons Valley (Wright 1957), New Forest (George 1957, Singh 1999), Asan Barage (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Khaddar, Mathurawala Swamp (Singh 2000). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

204(416) *Calidris minuta* (Leisler, 1812)
Little Stint

1812. *Tringa minuta* Leisler, *Nachtrage zu Bechstein's Naturg. Deutschl.* : 74 (Hanau am Main, Germany).

1929. Baker, *FBI* No. 2155, 6 : 234.

Diagnostics : Size : Grey Quail -; c. 13-15 cm. Sexes alike.

Non-breeding (winter) : Bill black; forehead and supercilia white; upperparts 'scaly' grey-brown with smoky-brown outer tail feathers; underparts white with faint streaks on breast; legs and feet blackish.

Breeding (summer) : Has forehead and supercilia often obsolete pale fawn; feathers on back black with broad rufous edges; foreneck and upper breast indistinctly spotted dark brown.

Juvenile : Like adult in summer, but hind neck greyer and mantle less rufous, white below.

Habitat : Found at tidal creeks, mudflats, coastal lagoons, marshes, jheels, lakes and paddy fields in winters.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

205(417) *Calidris temminckii* (Leisler, 1812)
Temminck's Stint

1812. *Tringa Temminckii* Leisler, *Nachtrage zu Bechstein's Naturg. Deutschl.* : 64 (Hanau am Main, Germany).

1929. Baker, *FBI* No. 2158, 6 : 237.

Diagnostics : Size : House Sparrow +; c. 13-15 cm. Sexes alike; very similar to little Stint but distinguished by more uniform greybrown upperparts; brownish fore head; white outer tail-feathers and greenish legs.

Non-breeding (winter) : Brown-ash-grey upperparts, breast-band and less distinct supercilium; underparts white.

Breeding (summer) : Similar to non-breeding but has browner head, breast and upperparts.

Habitat : Prefers fresh water habitats with vegetation, riverbanks, pools, lakes, brackish marshes, mudflats and tidal lagoons.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Tons Valley (Wright 1957), New Forest (Singh 1999), Asan Barrage, Khaddar (Singh 2000), Asan wetland (Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

206(418) *Calidris subminuta* (Middendorff, 1853)
Long-toed Stint

1853. *Tringa subminuta* Middendorff, *Reise. Nord. Und Ost. Siberien* 2, Th. 2 : 222, pl. 19, f. 6 (Western slopes of the Stanovoi Mountains and mouth of the Uda).

1929. Baker, *FBI* No. 2157, 6 : 236.

Diagnostics : Size : House Sparrow +; c. 13-15 cm. Sexes alike; similar to Little Stint but with comparatively longer, yellowish legs; upright and longish neck; slightly down curved bill and greyish-brown outer tailfeather.

Non-breeding (winter) : Upperparts with prominent dark centres in feathers and prominent supercilium.

Breeding (summer) : Has crown rufous, supercilium white and foreneck and breast streaked with brown.

Juvenile : With white V on back formed due to white edging to mantle.

Habitat : Marshes, lakes, riverbanks and intertidal mudflats, prefers vegetation.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : Winter visitor. Mainly E subcontinent; widespread and uncommon (Grimmett *et al.* 1998).

207(420, 421) *Calidris alpina* (Linnaeus, 1758)
Dunlin

1758. *Tringa alpina* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 149 (Lapland).

1929. Baker, *FBI* No. 2161, 6 : 241.

Diagnostics : Size : Grey Quail -; c. 16-22 cm length; 32-36 cm wingspan. Sexes alike.

Non-breeding (winter) : Upperparts grey-brown; throat, belly and under tail-coverts white; breast streaked grey; bill black, long and slightly downcurved near tip.

Breeding (summer) : Has head and upperparts chestnut boldly mottled with black; underparts white, except centre of breast and abdomen black. In flight, the white wing-bar, as in Curlew Sandpiper, conspicuous, but differs from it by black upper tail-coverts instead of white.

Juvenile : Has brown upperparts with two whitish 'V' shapes; and black marks on the flanks or belly.

Habitat : Seashore, intertidal mudflats, creeks, riverbeds, flooded fields and sandbars.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

208(422) *Calidris ferruginea* (Pontoppidan, 1813)
Curlew Sandpiper

1764. *Scolopax testacea* Pallas, in Vroeg's *Cat. Adumbr.* : 5 (Holland).

1929. Baker, *FBI* No. 2160, 6 : 240.

Diagnostics : Size : Dunlin $\pm$; c. 18-23 cm. Sexes alike. Often confused with Dunlin but differs by its slightly larger size, longer legs and similarly downcurved but more slender bill. In flight, it is distinguished by its white tail-coverts.

Non-breeding (winter) : Upperparts mottled grey-brown. Underparts white, with brownish wash and streaks on breast.

Breeding (summer) : Upper and underparts mainly chestnut and rich rufous, crown and mantle grey-brown, fairly distinct supercilium from the forehead to nape.

Juvenile : Has strong supercilium, buff wash to breast, and buff fringes to upperparts.

Habitat : Chiefly coasts, seashore, mudflats and salt pans, rarely on inland lakes and rivers.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002).

209(426) *Philomachus pugnax* (Linnaeus, 1758)
Ruff

1758. *Tringa Pugnax* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 148 (in Europa minus boreali = Southern Sweden).

1929. Baker, *FBI* No. 2152, 6 : 228.

Diagnostics : Size : Male (Ruff) c. Grey Partridge; Female (Reeve) Grey Quail +; c. 26-32 cm.

Non-breeding (winter) : A greyish-brown wader with bold scalypatterned upperparts; relatively short, dark brown bill with yellowish base; varying orange-yellow legs.

Breeding (summer) : Upperparts of both sexes blackish, feathers edged with buff or rufous; breast flanks etc. suffused with brown.

Male (Ruff) : Face covered with yellow caruncles and grows an enormous ruff, extending from nape to cover the entire breast. The ruff may be of any colour - chestnut, buff, white, black or grey.

Female (Reeve) : Upperparts blackish, sometimes with black linear spots or broken bars on pale fulvous breast.

Habitat : Prefers flooded paddy fields, freshwater lakes, pools, marshes, grassland, intertidal mudflats and estuaries.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

RECURVIROSTRIDAE (Ibisbill, Avocets & Stilts)

White, black or brownish-grey waders. Bill straight in Stilts; upcurved in Avocets; downcurved in Ibisbill. Wings long and pointed. Tail short and square; legs extremely long; feet webbed; hallux or hind-toe vestigial or absent; sexes alike; young nidifugous and downy.

210(433) *Ibidorhyncha struthersii* Vigors, 1832
Ibisbill

1832(1830-31). *Ibidorhyncha Struthersii* Vigors, *Proc. Zool. Soc. London* : 174 (Himalayas).

1929. Baker, *FBI* No. 2132, 6 : 196.

Diagnostics : Size : Grey Partridge +; c. 38-41 cm. Sexes alike.

Adult : An ashy greybrown bird with black facial mask and broad breast-band long downcurved crimson-red bill. Bluish-grey neck, sides of head and upper breast; white border along facial mask; a narrow white band separating the broad breast-band from upper breast; ashy grey tail with narrow wavy blackish cross-bars; white lower plumage; pinkish-grey (non-breeding and young) to blood-red (breeding) legs and feet.

Juvenile : Without black and white on head and black breast-band.

Habitat : Torrential hill streams and rivers with pebbly bed or shingle riverbanks and islands.

Distribution : Uttarakhand : Chamoli : Amrit Ganga (Lavkumar 1956b). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Survey 2002-05).

Status : Sparse local resident, undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (05) i.e. Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

211(430-431) *Himantopus himantopus*
(Linnaeus, 1758)

Black-winged Stilt

1758. *Charadrius Himantopus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 151 (Southern Europe).

1929. Baker, *FBI* No. 2130, 6 : 193.

Diagnostics : Size : Grey Partridge ±; c. 35-40 cm.

Adult : A lanky black and white wader with painted wings, black bill and crimson-red legs.

Male : Head white with a few black spots; wings glossy black above and black below; tail pale grey-brown; remaining body glossy white.

Female : Head and hind neck off-white with brownish grey, wings brown above and black below. Duller in winter.

Juvenile : Young males with black anterior crown, upper ear-coverts and a line down the back of the neck.

Habitat : Prefers freshwater and brackish water marshes, pools, village tanks, reservoirs, and shallow margins of lakes, jheels, lagoons and salt pans.

Distribution : Uttarakhand : Dehra Dun : New Forest (Singh 1999), Asan reservoir (Tak *et al.* 1998, Tak & Sati 2003), Asan Barrage, Khaddar (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Survey 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 20002).

212(432) *Recurvirostra avosetta* Linnaeus, 1758
Pied Avocet

1758. *Recurvirostra Avosetta* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 151 (in Europe australiore = Italy).

1929. Baker, *FBI* No. 2131, 6 : 195.

Diagnostics : Size : Grey Partridge +; c. 42-45 cm. Sexes alike.

Adult : An unmistakable marsh bird with conspicuously upcurved long black bill; dark red iris; glistening white body, black head, hind neck and two wing-bands, and bluish-grey legs. In winter, the tail is greyish, the long secondaries more grey and less black.

Juvenile : Brown where the adult is black, and its white plumage is often blotched with greyer patches.

Habitat : Generally found at shallow brackish pools, jheels, swamps, mudflats, also tidal creeks, salt pans and estuaries.

Distribution : Uttarakhand : Dehra Dun : Asan Barage (Gandhi & Singh 1995, Tak *et al.* 1998, Tak & Sati 2003), (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : This species gets its English and scientific names from its black cap, as once worn by European advocates or lawyer. The species became extinct in Great Britain in mid-19th century. Its successful recolonisation in the 1940s led to its adoption as the logo of the Royal Society for the Protection of Birds.

BURHINIDAE (Stone-Curlew & Stone-Plovers /Thick-knees)

Plover-like bird with large yellow eyes, stout heavy bill; large broad head; long pointed wings; long legs, thickened tibiotarsal joint (knee), partly webbed feet with three toes. Sexes similar. Largely crepuscular and nocturnal.

213(435-436) *Burhinus oediconemus* (Linnaeus, 1758) Stone-Curlew

1894. *Oediconemus oediconemus saharae* Reichenow, *Jour. f. Orn.* 42 : 102 (Tunis).

1916. *Burhinus oediconemus astutus* Hartert, *Nov. Zool.* 23 : 93 (Fao, Persian Gulf) Cf. Whistler, H., 1938, *JBNHS* 40 : 231.

1929. Baker, *FBI* No. 2048, 6 : 79.

Diagnostics : Size : Grey Partridge +; c. 40-44 cm. Also known as Eurasian Thick-knee. The scientific name refers to the prominent joints in the long yellow or greenish legs. Unmistakable; has sandy-brown upperparts, strongly streaked with dark brown; very large striking yellow eyes; short black-and-yellow bill; white supercilium and cheek-stripe; dark submoustachial stripe; black and white bands across wing-coverts; and long stout yellowish legs. In flight, white patches on primaries prominent.

Habitat : Desert, stony hills, open dry forest and fields.

Distribution : Uttarakhand : Chamoli : Mandal chatti (Lavkumar 1956b). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), Khaddar (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : Despite being classed as a wader, this species has a preference for dry open habitats with some bare ground. In Egypt, the melodic song of the Stone Curlew is heard at night, and the bird is almost never seen. Its song is featured in poetry, songs, and movies such as 'Song of the Stone Curlew'

214(437) *Esacus recurvirostris* (Cuvier, 1829) Great Stone-Plover

1829. *Oediconemus recurvirostris* Cuvier, *Regne Anim.*, ed. 2, 1 : 500, note 2 (No locality = Nepal, *vide* Baker).

1929. Baker, *FBI* No. 2049, 6 : 80.

Diagnostics : Size : Domestic hen; c. 49-54 cm. Sexes alike.

Adult : A massive billed sandy brown plover, with greenish yellow legs. Bill stout and black with yellow base, distinctly upturned; lores, feathers round the eye and supercilium white; eyes large and yellow with two blackish bands resembling 'goggles'; primaries, innermost secondaries and scapulars black; tail ashybrown with pale tip and two irregular dark bars; a short grey-brown moustache-like streak, remaining lower plumage white.

Juvenile : Paler.

Habitat : Generally in deciduous habitats such as stony beds of large rivers and lakes with pebbled shores, salt marshes, estuaries and saltpans.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), Clement Town and FRI area (Wright 1957), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Asan wetland (Tak & Sati 2003). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

GLAREOLIDAE (Pratincoles)

Plover-like birds with strong flight. Pratincole : Wings long, narrow and pointed; bill and legs short; tail forked; hind-toe (hallux) present; middle toe elongated with pectinate claw; sexes alike, or nearly so.

215(444) *Glareola lactea* Temminck, 1820 Small Pratincole

1820. *Glareola lactea* Temminck, *Man d'Orn.*, ed. 2, 2 : 503 (Bengal).

1929. Baker, *FBI* No. 2056, 6 : 92.

Diagnostics : Size : Sparrow +; c. 16-19 cm. Sexes alike.

Adult : Forehead brown; remaining upperparts pale sandy grey; black band from eye to beak; wings long, narrow and pointed; tail white with a broad sub-terminal black band; underparts smoky brown tinged with rufous, except whitish lower breast and abdomen; legs and feet short and dark brown.

Juvenile : Upper plumage scaly; throat and foreneck spotted with black.

Habitat : Occurs around large rivers with shingle or sand banks, placid streams and lakes in Himalaya up to 1800 m, also coastal swamps.

Distribution : Uttarakhand : Dehra Dun : Ganges (Osmaston 1935), (Bhatnagar & Misra 1971, 1972a, Tak 1995), Asan Barrage (Singh 2000, Tak & Sati 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Not Listed in the Act (BNHS 2002).

LARIDAE (Gulls & Terns)

Gulls : Heavy-bodied gregarious birds with grey, white and black plumage; long pointed wings; sharply pointed or blunt and slightly hooked bill; square or forked tail; legs short; feet webbed; hind-toe small or vestigial; roost and nest in colonies; sexes alike. **Terns** : Generally smaller and slimmer than gulls with soft grey plumage, except the Skimmer which has black and long pointed wings; finer bill; shorter legs, webbed feet. Sexes similar. Like gulls, colonial breeders. In winter, generally the head of white-headed species of Gulls streaked darker, while that of black-headed changes into white, sometimes mottled with grey. On the other hand, the black caps of Terns become white or streaked.

216(451) *Larus cachinnans* Pallas, 1811 Yellow-legged Gull

1925. *Larus argentatus mongolicus* Sushkin, *Bds. Russian Altai etc.* : 63 (Lake Uriugnoor [= Ureg Nor], NW Mongolia).

1929. Baker, *FBI* No. 2066, 6 : 109.

Diagnostics : Size : Domestic duck $\pm$; c. 55-65 cm. Sexes alike; a large gull with long, dull yellow legs; yellow bill with red spot on lower mandible.

Adult : Similar to Heuglin's Gull in size and structure, but larger than Mew Gull and nearer to Pallas's Gull.

Non-Breeding (winter) : With fine streaks on head, may form faint mask around eyes that is usually retained longer on hind neck (prominent in early winter). Bill and legs duller or pinkish, former often with blackish sub-terminal band.

Breeding (summer) : Upperparts grey, slightly paler than Pallas's; outer 6-8 primaries black with white tips, the black decreases inwards giving a 'shutter' effect; outer primary with single large white 'mirror'; head, underparts and tail white; bill yellow with red gonys spot; legs usually yellow, occasionally pink.

Habitat : Coasts, harbours, offshore waters also in passage in inland lakes, marshes and rivers.

Distribution : Uttarakhand : CTR (internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

217(453) *Larus ichthyaetus* Pallas, 1773 Pallas's Gull

1773. *Larus Ichthyaetus* Pallas, *Reise Russ. Reich* 2 : 713 (Caspian Sea).

1929. Baker, *FBI* No. 2060, 6 : 101.

Diagnostics : Size : Domestic duck +; c. 66-72 cm length; 140-160 cm wingspan. Sexes alike; largest gull in India, with robust bill; eyes dark; solitary.

Non-breeding (winter) : Head white with brown and black streaks across hind crown; whitetipped primaries sub-terminally black. Bill stout, yellow with an orange tip banded with black.

Breeding (summer) : Head and upper neck black with two crescent white patches (one above and one below eye); bill stout, yellow with an orange tip, banded with black; mantle pearl-grey with slaty tinge, remaining plumage pure white; primaries mainly white, the outer ones with sub-terminal black bands and white tips; legs and feet yellowish-green.

Habitat : Generally at coasts, and at sea around fishing boats, occasionally on large inland lakes, large rivers, and river barrages as winter or passage migrant.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Bhatnagar & Misra 1971), (Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba undated, Khati 2004, internet list). RNP : Ganga valley (Kumar & Bhatt 2000).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**218(454) *Larus brunnicephalus* Jerdon, 1840
Brown-headed Gull**

1840. *Larus brunnicephalus* Jerdon, *Madras Jour. Lit. & Sci.* **12** : 225 (West coast of Indian peninsula).

1929. Baker, *FBI* No. 2062, **6** : 103.

Diagnostics : Size : Jungle Crow $\pm$; c. 42-46 cm. It is slightly larger than Black-headed Gull. Sexes alike. Medium-sized gull with a white patch (mirror) near the tips of black primaries; deep red bill, legs and feet.

Non-breeding (winter) : Head white with a vertical black crescent mark on ear-coverts.

Breeding (summer) : Head dark brown, but lighter than that of Black-headed; remaining upperparts grey except white tail; underparts white.

Habitat : Found inland at most large rivers and lakes as passage migrant during winters.

Distribution : Uttarakhand : Dehra Dun : (Tak 1995), Asan Barrage (Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Haridwar : Bhimgoda, (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

**219(455) *Larus ridibundus* Linnaeus, 1766
Black-headed Gull**

1766. *Larus ridibundus* Linnaeus, *Syst. Nat.*, ed. 12, **1** : 225 (European seas = England).

1929. Baker, *FBI* No. 2061, **6** : 102.

Collection records: Uttarakhand: Dehra Dun: Sathyanarain, 1 σ , 24.iii.1973, coll. Raj Tilak.

Diagnostics : Size : House Crow $\pm$; c. 38-43 cm length; 94-105 cm wingspan. Sexes alike. This

species is very similar to Brown-headed Gull, but is slightly smaller and distinguishable in all seasons by white leading edges to wings instead of white 'mirror'. The summer adult has a chocolate-brown head (not black, despite the name), pale grey body, black tips to the primary wing feathers, and red bill and legs. The hood is lost in winter, leaving just dark vertical streaks. The species takes two years to reach maturity. First year birds have a black terminal tail band, more dark areas in wings, and, in summer, a less fully developed dark hood.

Habitat : Seacoasts, harbours, estuaries, large rivers and inland jheels and lakes during winter.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935), Asan Barrage (Singh 2000, Tak & Sati 2003). Haridwar : Bhimgoda (ZSI Surveys 2004-06). CTR (Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : The Black-headed Gull is a bold and opportunist feeder and scavenges in towns or take invertebrates in ploughed field with equal relish.

**220(460-461) *Gelochelidon nilotica* (Gmelin, 1789)
Gull-billed Tern**

1789. *Sterna nilotica* Gmelin, *Syst. Nat.* **1**(2) : 606 (Egypt).

1929. Baker, *FBI* No. 2072, **6** : 117.

Diagnostics : Size : House Crow -; c. 35-38 cm. Sexes alike.

Adult : Pale grey and white tern, with stout black 'gull-like' bill, slightly forked white tail and black legs.

Non-breeding (winter) : Head white, streaked with black in front and behind the eyes. Distinguished from Whiskered Tern by larger size, stouter bill and slower wing beats.

Breeding (summer) : Head turns jet-black covering forehead, crown down to eyes and nape.

Juvenile : Crown grey or greyish-white; upperparts pale brown with buff edges and grey-brown primaries.

Habitat : Coastal mudflats, salt pans, tidal creeks, brackish lakes, large inland rivers, jheels, marshes and cultivations.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : The Gull-billed Tern does not normally plunge-dive for fish like the other white terns, but feeds on insects taken in flight, and also often hunts over wet fields, to take frogs and small mammals (mice, voles, etc.).

**221(463) *Sterna aurantia* J.E. Gray, 1831
River Tern**

1831. *Sterna aurantia* J. E. Gray, in Hardwicke's *Ill. Ind. Zool.* 1(5) : pl. 69, f. 2 (India).

1929. Baker, *FBI* No. 2080, 6 : 125.

Diagnostics : Size : House Crow $\pm$; c. 38-46 cm. Sexes alike.

Adult : A fluviatile pale grey and white bird with pointed bright yellow bill; deeply forked 'swallow' tail; and short red legs.

Non-breeding (winter) : Head dull grey with streaks; bill duller with black tip.

Breeding (summer) : Forehead, crown and nape down to below eyes glossy jet-black; a horizontal crescent white patch below eyes; upperparts blue-grey; underparts white.

Juvenile : With white forehead and broad supercilium; buffy white edged and blackish sub edged upperparts.

Habitat : Prefers large rivers, lakes, canals and tanks.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), Asan Barrage (Gandhi & Singh 1995, Tak *et al.* 1998, Singh 2000, Tak & Sati 2003). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

**222(464-465) *Sterna hirundo* Linnaeus, 1758
Common Tern**

1758. *Sterna Hirundo* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 137 (in Europa = Sweden).

1929. Baker, *FBI* No. 2083, 6 : 129.

Diagnostics : Size : House Crow -; c. 31-36 cm length; 70-80 cm wingspan. Sometimes, it is known as sea swallow. At rest, its long tail extends only up to the wingtips. Sexes alike.

Adult : A pale grey bird with black-tipped reddish bill; forked tail; red legs.

Non-breeding (winter) : Forehead white, head streaked, and nape dark.

Breeding (summer) : Forehead, crown below to eyes and nape black.

Juvenile : Forehead buff, head streaked black, nape black; upperparts buff barred dark brown; underparts white.

Habitat : Prefers large rivers, jheels and lakes.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : Like other *Sterna* terns, the Common Tern also feeds by plunge-diving for fish. It usually dives directly, and not from the "stepped-hover" favoured by Arctic Tern. The offering of fish by the male to the female is a part of the courtship display. Common Terns are known to reach an age of 23 years or more on occasion.

**223(475-476) *Sterna albifrons* Pallas, 1764
Little Tern**

1764. *Sterna albifrons* Pallas, in Vroeg's *Cat. Adumbr.* : 6 (Holland).

1902. *Sterna minuta innominata* Zarudny & Loudon, *Orn. Monatsb.* 10 : 150 (Bampur and Esposafar, Persian Baluchistan).

Sterna albifrons praetermissa Baker, *Bull. Brit. Orn. Cl.* 49 : 39 (Buna Island, Persian Gulf).

1929. Baker, *FBI* No. 2087, 2090, 6 : 135, 138.

Diagnostics : Size : Myna $\pm$; c. 22-24 cm; 41-47 cm wingspan. Sexes alike.

Adult : A small grey and white tern.

Non-breeding (winter) : Forehead, crown and nape black mixed with white; bill blackish; legs and feet dusky red.

Breeding (summer) : Forehead white, crown and nape velvety black; bill and legs orange yellow.

Juvenile : Dark wavy bars on upperparts; white forehead and crown speckled brownish-black; blackish nape finely dotted with white.

Habitat : Generally on inland rivers, jheels, lakes and reservoirs.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935), Asan reservoir (Tak *et al.* 1998, Tak & Sati 2003), (Singh 2000). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**224(470) *Sterna acuticauda* J.E. Gray, 1831
Black-bellied Tern**

1831? (1830-1832). *Sterna acuticauda* J. E. Gray, in Hardwicke's *Ill. Ind. Zool.* 1(6) : pl. 70, f. (Cawnpore, India).

1827. *Sterna melanogaster* Temminck, *Pl. col., livr.* 72 : pl. 434 (Islands of Ceylon and Java (error) and the coasts of India) Cf. Deignan, H. G. 1945, *Bull. U.S. Nat. Mus.* No. 186 : 133-4 (use of name).

1929. Baker, *FBI* No. 2081, 6 : 127.

Diagnostics : Size : House Crow -; c. 33 cm. Sexes alike.

Non-breeding (winter) : Head white streaked with black; a black patch behind eye; bill dull yellow with dusky tip; upper plumage greyish; under plumage white with grey tinge on foreneck and breast; tail deeply forked; legs orange red.

Breeding (summer) : Forehead, crown down below to eyes and nape glossy black; lores, cheeks, chin and throat pure white; upper plumage ashy-grey; remaining under plumage black.

Juvenile : Upperparts buff-grey, feathers with pale buff-white edges and blackish subedges.

Habitat : Predominantly inland freshwater tern, found on large rivers, jheels and lakes, etc. in winter.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935), Asan Barrage (Gandhi & Singh 1995, Singh 2000, Tak & Sati 2003). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**225(458) *Chlidonias hybridus* (Pallas, 1811)
Whiskered Tern**

1826. *Viralva Indica* Stephens, in Shaw's *Gen. Zool.* 13(1) : 169 (Cawnpore, India).

1912. *Hydrochelidon leucopareia leggei* Mathews, *Bds. Austr.* 2 : 320 (Ceylon).

1929. Baker, *FBI* No. 2067, 6 : 111.

Diagnostics : Size : Pigeon -; c. 23-25 cm. Flight is less direct than that of *Sterna* tern, but slower and less erratic, with deeper wingbeats, than flight of other marsh terns. Sexes alike.

Adult : A silvery-grey and white bird with long narrow pointed wings (tips projecting beyond tail) and short red legs.

Non-breeding (winter) : Forehead white with black streaks; head and nape black; plumage pale ashy; bill and legs blackish.

Breeding (summer) : Crown down to eyes and nape black with contrasting snow-white cheeks ('whiskers'); belly black; bill and legs dark red.

Juvenile : Streaked brown and white.

Habitat : Prefers inland jheels, lakes, reservoirs, marshes, rivers and flooded paddy fields.

Distribution : Uttarakhand : Dehra Dun (Wright 1957, Bhatnagar & Misra 1971, Tak 1995), Asan Barrage (Singh 2000, Tak & Sati 2003). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

RYNCHOPIDAE (Skimmers)

Related to Terns but distinguished by the long, strong, scissor-like bill with elongated lower mandible. Feed on water surface with bill open and lower mandible partly immersed to grasp encountered fish quarry.

**226(484) *Rynchops albigollis* Swainson, 1838
Indian Skimmer**

1837 (1838). *Rynchops albigollis* Swainson, *Anim. In Menag.* : 360 (India)

1929. Baker, *FBI* No. 2100, 6 : 150.

Diagnostics : Size : House Crow $\pm$; c. 40 cm. Sexes alike.

Adult : Female slightly smaller. A large tern-like bird with contrasting pied plumage. Bill orange-red, yellow at tip and orange at base, with much longer lower mandible; forehead, neck-collar and wing-bar white; upperparts blackishbrown; underparts glistening white; legs and feet red. At rest, wings project far beyond the slightly forked tail.

Juvenile : Forehead streaked with brown; upperparts lighter brown, scalloped with fulvous white; tail feather brown-tipped.

Habitat : Occurs in undisturbed reaches of large rivers with sandbanks, reservoirs, and lakes; occasionally coastal waters.

Distribution : Uttarakhand : Dehra Dun : Ganges and Yamuna (Osmaston 1935, Bhatnagar & Misra 1971), (Tak 1995, Singh 2000). CTR (internet list).

Status : Sparse local resident. Rare. Vulnerable (IUCN 2007). Not Listed in the Act (BNHS 2002).

Order COLUMBIFORMES PTEROCLIDIDAE (Sandgrouse)

Sandgrouse are medium-sized terrestrial birds, similar in same respect to pigeons with short neck, small head, long pointed wings, longish wedge-shaped tail, short legs with feathered tarsi and toes. Plumage blends in well with their desert and semi-desert biotopes. An interesting adaptation is the ability of the males to carry water soaked into the belly feathers over long distances back to the nest. Flight is fast and direct, often in sizeable flocks. Gait is mincing and pigeon-like. All species are granivorous and ground nesters.

227(486) *Pterocles alchata* (Linnaeus, 1766) White-bellied Sandgrouse

1774. *Tetrao caudatus* S. G. Gmelin, *Reise Russl.* 3 : 93, pl. 18 (Northern Persia).

1928. Baker, *FBI* No. 1892, 5 : 268.

Diagnostics : Size : Pigeon +; c. 38 cm length, including tail c. 10-18 cm. It is a largely sandy coloured terrestrial pigeon-like bird with a pin-

pointed tail. Sexes similar, but the female is shorter tailed than the male and has three instead of two (in male) narrow black bands across neck and breast. Head and upperparts are yellowish-green. The underparts are white with a chestnut breast band separating the belly from the green neck. Male in flight: with white belly, orange breast edged black, white underwing with dark primaries.

Habitat : Stony semi-desert, fallow land.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : Winter visitor to NW India (Punjab, Haryana, Delhi, Rajasthan and Gujarat (Grimmett 1998).

COLUMBIDAE (Pigeons & Doves)

Pigeons and Doves are plum medium-sized birds with small head, short bill and legs, broad longish tail. Largely granivorous and frugivorous, some are almost exclusively arboreal while others feed mainly on the ground. Flight is fast and direct. Most are quite gregarious. They nest in trees or on ledges of cliffs and buildings. Some species are quite nomadic outside the breeding season, following the availability of seasonal fruit and grain. The terms pigeon and dove are often interchangeable, though they are generally used to refer to the larger and smaller species respectively.

Some 300 species of Pigeons and Doves are of near passerine birds. In general parlance (phrasing) the terms 'dove' and 'pigeon' are used somewhat interchangeably. In ornithological practice, there is a tendency for 'dove' to be used for smaller species and 'pigeon' for larger ones, but this is in no way consistently applied, and historically the common names for these birds involve a great deal of variation between the term 'dove' and 'pigeon'. The species commonly referred to just as the 'pigeon' is the feral (untamed or natural) Rock Pigeon, common in many cities. Unlike most of other birds (but see flamingo), the doves and pigeons produce "crop milk" (also known as "Pigeon's Milk"), which is secreted by a sloughing of fluid-filled cells from the lining of the crop. Both sexes produce this highly nutritious substance (rich in both carbohydrates as well as proteins) to feed to the young. The young doves and pigeons are called "squabs"

**228(516-517) *Columba livia* Gmelin, 1789
Blue Rock Pigeon**

1873. *Columba neglecta* Hume, in Henderson & Hume's
Lahore to Yarkland : 272 (Ladak).

1928. Baker, *FBI* No. 1855, 5 : 220.

Collection records : Uttarakhand : Dehra Dun : Herbatpur, 2 exs., 27.vii.1968, coll. P. K. Bose; Kalsi, 2♂, 24.vii.1972, coll. P. K. Bose. Naini Tal : Haldwani, 1 ex., 4.xii.1968, coll. P. K. Bose; Ramnagar : Chilka, 1♀, 25.xii.1968, coll. P. K. Bose. Uttarkashi : Gangani, 2♂ and 1♀, 31.v.1973, coll. Raj Tilak; Janki Chatti, 1♀, 9.vi.1973, coll. Raj Tilak; Naw Gaon, 1♀, 13.vi.1973, coll. Raj Tilak.

Diagnostics : Size : c. 32-37 cm length; 64-72 cm wingspan. It is also known by the names 'pigeon', or 'domestic pigeon', or 'rock pigeon' etc. Sexes alike. It is a well-known bluish grey pigeon with metallic green, purple, and magenta sheen on upper breast and around the neck, and two dark bars on the wings. The white lower back of the pure Rock Pigeon is its best identification. The tail is margined with white. It is strong and quick on the wing, dashing out of the resting place. The head and neck of the mature bird are darker blue-grey than the back and wings. Eye colour generally orange. The legs and feet red to pink.

Habitat : <3300 m. Rocky country.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Petshal, Kosi, Ranikhet, Gagas, Chanthariya, Mansi (ZSI Survey 2004). Bageshwar: Lillam, Bugdiyar (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Ganges and Dhauli valleys up to Niti village (Osmaston 1921), lower Rishi Gorge up to Deodi (Reed 1979), Joshimath (Sankaran 1993, 1994), Surathota, Reni-Deodi (Tak 1997), Latakharak, Beltakharak (Sathyakumar 2003), Joshimath, Vishnuprayag, Nandprayag (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Asan Barrage, New Forest, [Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal : Ramnagar, Garjia Temple, Lalkuaon (ZSI Survey 2005). Pauri (Tak 1995).

Pithoragarh (Tak 1995), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Augstiyamuni (ZSI Survey 2004). Tehri (Tak 1995), Ranichauri (ZSI Survey 2005). Udham Singh Nagar : Aam Pokhara-Kashipur, near Pratapur, Haripur Dam site & Dineshpur (ZSI Survey 2005). Uttarkashi : Govind NP : Naitwar, Jakhol, Himri, Dhaula, Istragad (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Information is not available in BNHS 2002.

Remarks : Rock pigeons have been domesticated for several thousand years, giving rise to the domestic pigeon (*Columa livia domestica*). Trained domestic pigeons are able to return to the home lost if released at a location that they have never visited before and that may be up to 1000 km away. A special breed, called homing pigeons has been developed through selective breeding to carry messages and members of this variety of pigeon are still being used in pigeon racing.

**229(515) *Columba rupestris* Pallas, 1811
Hill Pigeon**

1908. *Columba rupestris turkestanica* Buturlin, *Orn. Monatsb.* 16 : 45 (Altai). New name for *Columba rupestris pallida* Rothschild & Hartert, preoccupied.

1928. Baker, *FBI* No. 1857, 5 : 222.

Diagnostics : Size : Blue Rock Pigeon; c. 33 cm length. Sexes alike. It is a pale grey pigeon of the high-altitude of Himalays with prominent white band across dark tail, which separates it from the Rock and the Snow Pigeons.

Adult : Similar to Rock Pigeon, but has contrasting white band across middle of blackish tail; more extensive and more clearly defined white patch on back; metallic green-and-purple sheen on neck and breast; paler grey plumage; and blackish bars across inner wing.

Juvenile : Browner than adult; lacks iridescence; neck and breast feathers fringed with buff; and coverts fringed with creamy-buff.

Habitat : S 3000-5500 m, W >1500 m. Mountain cliffs, gorges, cultivation, mainly northern slopes of Himalayas.

Distribution : Uttarakhand : Chamoli : Niti to Chot Hoti Pass (Osmaston 1921), at 5180m in Nanda Devi (Reed 1979), near Bethartoli (Sankaran 1993, 1994), Girthi valley (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Deoban (Singh 2000). Pithoragarh : District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Tehri : Ranichauri (ZSI Survey 2005). CTR (Khatri 2004, internet list).

Status : Widespread resident, undertakes altitudinal movements. Schedule IV (BNHS 2002).

230(513-514) *Columba leuconota* Vigors, 1831
Snow Pigeon

1831. *Columba leuconota* Vigors, *Proc. Zool. Soc. London*, pt. 1 : 23 (Himalayas, type probably from Nepal).

1928. Baker, *FBI* No. 1858, 5 : 224.

Diagnostics : Size : Pigeon; c. 34 cm length. It is a unique pigeon of the high Himalayas. Sexes alike. In overhead aspect, the white body and blackish head are the clues, when flying below the observer's level the blackish head, brown back, white rump patch, grey wings with 3 dark bars, and blackish tail with a narrow white subterminal band of an inverted V-shape are the diagnostics.

Adult : Has slate-grey head, creamy-white collar and underparts, fawn-brown mantle contrasting with pale grey wing-coverts, white back contrasting with blackish rump and uppertail-coverts, and white band across blackish tail (similar to Hill Pigeon at rest).

Juvenile : Like adult, but with greyish-buff wash to neck, breast and rest of underparts, and fine whitish fringes to coverts and scapulars.

Habitat : S 3000-5000 m, W > 1500 m (750 m). Alpine cliffs, gorges, slopes.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Pindar valley (Osmaston 1921), Mana and Dunagiri (Lavkumar 1956b), Nanda Devi Base Camp (Reed 1979), NDNP (Tak & Kumar 1987), Doodganga & above (Sankaran 1993, 1994), (Tak 1995), Lata

Kharak, Satkula, Dharansi, above Dibrugheta, Bhujgara, Patalkhan, Sarsopatal, Gufa camp, Tala camp, Bhagwabasa (Tak 1997), Dibrugheta, Dharansi (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a. Tak 1995, Singh 2000). Pauri (Tak 1995). Pithoragarh: Burfu, Milam (Tak 1997), Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), Lamprey (1954). Uttarkashi (Tak 1995), Govind NP : Taluka, Osla, Harkidun, Saruka Tal (Tak *et al.* 2004).

Status : Widespread resident, undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

231(519) *Columba palumbus* Linnaeus, 1758
Common Wood-Pigeon

1854. *Polumbus casiotis* Bonaparte, *Compt. Rend. Acad. Sci. Paris* 39 : 1103 (Chinese Tartary).

1928. Baker, *FBI* No. 1861, 5 : 227.

Diagnostics : Size : Pigeon +; c. 43 cm length. A large, stout grey and brown pigeon with broken buff collar at sides of the hindneck. In flight, from above: a broad whitish band across wing, and dark tail-band very prominent.

Adult : Has buff neck patch; pale grey-brown mantle; white patch visible at bend of wing at rest; dark grey back and rump; and deep vinaceous underparts.

Juvenile : Duller and browner, with greyer beak; and lacks green gloss and buff neck patch.

Habitat : S 1500 -3000 m, W lower. Slopes and valleys with scrub forest.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Dehra Dun : Chakrata hills (Osmaston 1935), (Bhatnagar & Misra 1971), New Forest (Mohan 1993, 1996), (Singh 2000). Naini Tal : Garjia Temple (ZSI Survey 2005).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

232(520) *Columba hodgsonii* Vigors, 1832
Speckled Wood-Pigeon

1832. *Columba hodgsonii* Vigors, *Proc. Zool. Soc. London*, pt. 2 : 16 (Nepal).

1928. Baker, *FBI* No. 1867, 5 : 234.

Diagnostics : Size : Pigeon +; c. 38 cm length. It is a dark arboreal Himalyan pigeon with 'speckled' underparts, which give it its name.

Male : Has grey head and neck, the latter speckled with blackish behind; maroon mantle and wing-coverts; white spotting on wing-coverts; and maroon streaking on breast, which is more solid on belly and flanks.

Female : Has grey mantle and underparts, and the red of back and breast duller and browner.

Juvenile : Like female, but with less distinct neck pattern.

Habitat : 1800-4000 m. Hill forest: mainly oak-rhododendron. Chiefly arboreal.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli : NDNP (Tak & Kumar 1987), Reni, Kalikona, Belta Kharak (Sankaran 1993, 1994), Dharansi, Dibrugheta (Tak 1997), Dibrugheta, Latakharak, Beltakharak (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : forests beyond Chakrata (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Tons Valley Forest (Singh 2000). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

**233(523) *Columba pulchricollis* Blyth, 1846
Ashy Wood-Pigeon**

1846 (1845). *Columbia pulchricollis* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 14(2) : 866 (Wooded region of eastern Himalaya, *i.e.* Nepal).

1928. Baker, *FBI* No. 1864, 5 : 230.

Diagnostics : Size : Pigeon +; c. 36 cm. It is a pigeon of broadleaved forest of Himalayas with a diagnostic buff collar.

Adult : Distinguished from Speckled Wood Pigeon by dark slate-grey upperparts (not maroon), unspotted wing-coverts; creamy-buff underparts (unspeckled), and the buff-collar. At closer look, rufous-buff tips to neck feathers contrast with dark

bases (forming checkerboard pattern), and metallic green-and-purple gloss to lower neck and back clear.

Juvenile : With browner upperparts, less distinct patterning on neck, and rufous fringes to feathers of breast and belly.

Habitat : (100 m) 1200-3200 m. Dense forest.

Distribution : Uttarakhand : Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006).

Status : Widespread resident, undertakes altitudinal movements. Schedule IV (BNHS 2002).

**234(529) *Streptopelia turtur* (Linnaeus, 1758)
European Turtle-Dove**

1894. *Turtur turtur arenicola* Hartert, *Nov. Zool.* 1 : 42 (Fauna on the Persian Gulf).

1928. Baker, *FBI* No. 1869, 5 : 237.

Diagnostics : Size : Pigeon -; c. 33 cm. Sexes alike. A small rather slender Turtle Dove may be recognized by its browner colour and 3-4 black bars on white neck-patch. In flight, the wedge shaped tail, with dark centre and white borders and tips is the clue.

Adult : Has blue-grey head, neck, flanks, and rump; cinnamon wings, mottled with black; vinaceous breast; white abdomen and under tail-coverts; black bill; and red eye-rims and legs.

Juvenile : Duller and browner with brown ledges, but lacks the neck-patch.

Habitat : Mainly dry open scrub.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). CTR (Khati 2004).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

**235(530-533) *Streptopelia orientalis* (Latham, 1790)
Oriental Turtle-Dove**

1790. *Columba orientalis* Latham, *Index Orn.* 2 : 606 (China, *ex* Sonnerat).

1934. *Streptopelia orientalis baicalensis* Buturlin, *Polnyi opredelitel ptitsy S.S.S.R.* 1 : 224, New name for *S. o. orientalis* (Pallas) Cf. Whistler, H., and Kinnear, N. B., 1936, *JBNHS* 38 : 677-9.

1928. Baker, *FBI* No. 1870, 5 : 238.

Collection records : Uttarakhand : Uttarkashi : Rana, 1 ♀, 5.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Pigeon; c. 33 cm. Sexes alike. A large reddish brown dove with scaly-patterned upperparts. Three races are recognized, viz., *S. o. meena* (of W Himalaya) is very similar to European Turtle-Dove, but has 5-6 black bars (instead of 3-4) on blue-grey neck-patch; vinaceous-brown nape contrasts with grey crown; bluish-grey rump; upperparts scaly due to narrow buff-orange fringes to feathers; vinous-brown breast; white tip to wedge shaped tail. *S. o. agricola* (of E Himalayas and NE India) is darker, with vinous-brown extending across belly. *S. o. erythrocephala* (of peninsular India) has reddish-brown head, neck and mantle.

Habitat : <4000 m. Open forest.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Loharkhet, Dhakuri, Khati, Dwali, Pindari zero point (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNF (Tak & Kumar 1987), Belta Kharak, Auli around Joshimath (Sankaran 1993, 1994), (Tak 1995), Lata, Belta, Wan (Tak 1997), Beltakharak (Sathyakumar 2003), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie and Chakrata hills (Osmaston 1935), Tons Valley (Wright 1957), New Forest (George 1957, Mohan 1996), (Bhatnagar & Misra 1971, 1972a, Tak 1995), Mussoorie, New Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Rilkote, Burfu (Tak 1997), Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag: Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), Ranichauri, near Kanatal (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Seema, Naitwar, Talul.a, Sunkhundi, Jakhol, Sirga (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident as well as widespread winter visitor. Schedule IV (BNHS 2002).

236(541) *Streptopelia senegalensis*
(Linnaeus, 1766)
Little Brown Dove

1789. *Columba cambayensis* Gmelin, *Syst. Nat.* 1(2) : 779
(‘Cambaya’, i.e. Gulf of Cambay, NW. India).

1928. Baker, *FBI* No. 1877, 5 : 246.

Diagnostics : Size : Myna +; c. 27 cm. Sexes alike. A small slim pinkish brown-and-grey dove with fairly long tail.

Adult : Has lilac-pink head and neck, with miniature ‘chessboard’ in black and rufous on either side of foreneck; earthy brown back, with prominent grey patches on wing-shoulders; pinkish brown throat and breast; white belly and vent; and graduated tail with white tips to outer tail-feathers.

Juvenile : Has duller pinkish-brown head, neck and breast and whitish fringes to fawn-brown scapulars and grey coverts.

Habitat : <1500 m. Semi-desert; scrub and cultivation with scattered trees.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), New Forest, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

237(537-540) *Streptopelia chinensis* (Scopoli, 1786)
Spotted Dove

1789. *Columba suratensis* Gmelin, *Syst. Nat.* 1(2) : 778
(Surat, Gulf of Cambay, India).

1928. Baker, *FBI* No. 1873, 5 : 242.

Collection records : Uttarakhand : Dehra Dun : Chanderbani, 1 ex., 17.x.1968, coll. P. K. Bose; 37-Chakrata road, 1 ♂, 10.viii.1973, coll. Nathu Singh. Pauri : Kotdwar, 1 ♀, 6.vi.1972, coll. D. N.

Basu. Uttarkashi : Gangani, 1 ♂, 31.v.1973, coll. Raj Tilak; Kuwa, 1 ♂, 2.vii.1973, coll. Raj Tilak.

Diagnostics : Size : Pigeon -; c. 30 cm. It is a long-tailed, slim pigeon; also known as Spotted Turtle Dove. Sexes alike.

Adult : Has pink-brown and grey upperparts, heavily spotted with white; black hindneck collar, spotted with white (chessboard); vinous-grey breast; white belly, vent and undertail-coverts; and blackish-brown tail with broad white terminal border, which flashes prominently when spread out.

Juvenile : Duller than adult, lacks chequered hindneck patch, and has faintly barred mantle and scapulars.

Habitat : < 2400 m (4900 m). Parks, gardens, farmland, scrub, wooded areas. Usually in moister, less open biotope.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Binsar WLS (ZSI Survey 2004). Bageshwar : Loharkhet (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Lohajung, Wan (Tak 1997). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), Masandhanwala (Wright 1957), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007); Haridwar : Ranipur, Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995), Ramnagar, Garjia Temple (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), Lilam, Bugdiyar (Tak 1997), District survey- 2005, Dhaul river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : lower Mandakini (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Sankri, Taluka, Dhaul, Duni, Satta (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident, depicts altitudinal movements. Schedule IV (BNHS 2002).

238(535-536) *Streptopelia tranquebarica* (Hermann, 1804)

Red Collared-Dove

1804. *Columba tranquebarica* Hermann, *Obs. Zool.* : 200 (Tranquebarica, India).

1928. Baker, *FBI* No. 1881, 5 : 250.

Diagnostics : Size : Myna ±; c. 23cm. It is a small and attractive dove with black half-collar and dark grey tail.

Male : Like Eurasian Collared-Dove; but distinguished by blue-grey head, vinous-red mantle and wing-coverts and deep pink underparts; and has brownish and grey tail with conspicuously white outer feathers and a broad terminal band.

Female : With darker fawn-brown upperparts and darker buffish-grey underparts.

Juvenile : Like female, but lacks neck-collar and has buffish fringe to the feathers of upperparts and breast; rufous tips to primary coverts.

Habitat : <1300 m. Mainly lowland open scrub and cultivation with scattered trees.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957), New Forest, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

239(534) *Streptopelia decaocto* (Frisvaldszky, 1838) Eurasian Collared-Dove

1758. *Columba risoria* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 65 (India). [Based on a pale domesticated bird.]

1838 (1834-36). *Columba risoria* L. var. *decaocto* Frivaldszky, K. Magyar Tudos Tarssag Evkonyvi, 3 : 183, pl. 8 (Turkey).

1928. Baker, *FBI* No. 1879, 5 : 248.

Diagnostics : Size : Pigeon -; c. 32 cm. Sexes alike.

Adult : A sandy-brown dove with narrow black half-collar on hindneck (from which it gets its name); paler upperparts with a blue-grey wing patch; lilac breast; ashy-grey abdomen; dark grey vent and undertail-coverts; blackish tail with broad white terminal edge conspicuous in flight, especially when spread; and black bill and short and red legs. From distance, the eyes appear to be black, as the pupil is relatively large and only a narrow rim of reddish-brown eye colour can be seen around the black pupil.

Juvenile : Lacks neck-collar, and upperparts with buff fringed feathers.

Habitat : <2400 m (3000 m). Gardens; scrub and cultivation with scattered trees.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Lohajung on Roopkund Trek (Tak 1997), Narainbagh (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Khaddar, New Forest, [Dholkhand (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal : Ramnagar, Garjia Temple (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), Dhauli river basin- 2004, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudrapur : Mandakini Valley (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri : Bheling valley (Searight 1926), (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Naitwar (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It is one of the great colonizers of the Avian World. Its original range was warmer temperate regions from southeastern Europe to Japan. However, in the 20th century it expanded across the rest of Europe, reaching as far west as Great Britain by 1953, and Ireland soon after.

Now, also breeds north of the Arctic Circle in Scandinavia; was introduced into the Bahamas in the 1970s and spread to Florida by 1982; in North America, the stronghold is still the Gulf Coast, but now found as far south as Veracruz, as far west as California, and as far north as British Columbia and the Great Lakes. Its impact on native species is yet unknown; it appears to occupy an ecological niche between that of Mourning Dove and Rock Pigeon; some have suggested that its spread represents exploitation of a niche made available by the extinction of the Passenger Pigeon.

240(526) *Macropygia unchall* (Wagler, 1827)
Barred Cuckoo-Dove

1843. *Columba tusalia* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 12(2) : 936 (Darjeeling).

1928. Baker, *FBI* No. 1884, 5 : 253.

Diagnostics : Size : Pigeon $\pm$; c. 41cm (with longer, pointed tail).

Adult : A distinctive, slender, forest-dwelling dove with long graduated tail. Its upright stance coupled with the long tail gives it a cuckoo-like appearance, at first. Rufous upperparts and tail of both the sexes are profusely barred with dark brown.

Male : Has buffish head and underparts, metallic purple-and-green sheen to crown, nape, and upper breast; limited dark brown barring on neck sides and upper breast.

Female and juvenile : With yellowish-brown head, neck and breast; heavily barred underparts; and green-and-purple sheen restricted to nape and neck sides.

Habitat : 450-2700 m. Dense evergreen forest and secondary growth.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002).

241(542-544a) *Chalcophaps indica* (Linnaeus, 1758)
Emerald Dove

1758. *Columba indica* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 164 (orientali = Amboina *vide* Stresemann, 1952, *Ibis* 94 : 511).

1960. *Chalcophaps indica salimalii* Mukherjee, *Bull. Brit. Orn. Cl.* **80** (1) : 6 (Jenmalai (*sic*) = Tenmalai, entral Travancore, Kerala).

1928. Baker, *FBI* No. 1852, **5** : 215.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ex., 8.iv.1965, coll. R. K. Bhatnagar; Hathibarkala, 1 ♂, 23.iii.1976, 1 ♀, 24.iii.1976, donated by Sailendra Lamba.. Pithoragarh, 1 ex., date ?, coll. P. K. Bose.

Diagnostics : Size : Myna +; c. 27cm. It is also known as 'Green Dove' and 'Green-winged Pigeon' Sexes alike. It is a stout, broad-winged and short tailed dove with bright bronze green upperparts (hence the name Emerald), bright red bill and rufous legs and feet. The flight is fast and direct, with regular beats and occasional sharp flick of the wings, in which the prominently contrasting black and green wings and black-and-white banding on rump are the clues.

Male : With grey crown, white forehead and supercilium; vinaceous-pink head sides and underparts; and prominent white shoulder-patch.

Female : with brown crown, neck and underparts; and brown shoulder-patch.

Juvenile : Like female, but duller with brown scallops on body and wing plumage.

Habitat : < 1800+. Forest—mainly evergreen and moist deciduous. Usually on the ground and in low mid—storey

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Tak 1995), New Forest (George 1957, Mohan 1996), Kuwanwala (Bhatnagar & Misra 1971, 1972a), New Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007); Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : Emerald Dove is the state bird of the Tamil Nadu, India. Males perform a bobbing (move up and down) dance during courtship.

242(501-502) *Treron bicincta* (Jerdon, 1840) Orange-breasted Green-Pigeon

1840. *Vinago bicincta* Jerdon, *Madras Jour. Lit. Sci.* **12** : 13 (Sea coast south of Tellicherry).

1921. *Treron bisincta* [*sic*] *praetermissa* Robinson & Kloss, *Jour. Fed. Malay States Mus.* **10** : 203 (Koh Lak, southwestern Siam).

1928. Baker, *FBI* No. 1834, **5** : 191.

Diagnostics : Size : Pigeon ±; c. 29 cm. It is the smallest green pigeon with blackish flight feathers and grey central tail feathers.

Male : Has orange breast, bordered above with lilac band; yellowish-green forehead, blue-grey hindcrown and nape; and uniform green mantle.

Female : Without orange and lilac on breast, but has strong yellow cast to breast and belly, and grey hindcrown and nape.

Juvenile : Like female but duller and darker.

Habitat : < 1500 m. Forest, well-wooded areas.

Distribution : Uttarakhand : Pauri (Tak 1995). Rudraprayag : Mandakini Valley (Lavkumar 1956b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

243(503-505) *Treron phoenicoptera* (Latham, 1790) Yellow-legged Green-Pigeon

1790. *Columba phoenicoptera* Latham, *Index Orn.*, **2** : 597 (India).

1928. Baker, *FBI* No. 1826, **5** : 181.

Collection records : Uttarakhand : Tehri : Devprayag, Mulya, 1 ♀, 11.vii.1969, 1 ♂ and 1 ♀ 13.vii.1969, 1 ♂, 30.x.1969, 1 ♂, 8.xi.1969, coll. P. K. Bose.

Diagnostics : Size : Pigeon; c. 33 cm. It is also known as Yellow-footed Green Pigeon; a stout green pigeon with light purple shoulder-patch (reduced in female) and yellow legs and feet.

Adult : Has grey head contrasting with orange yellow-green collar; narrow grey band across upper mantle; pale greyish-green upperparts; grey belly and flanks; and olive-yellow band across base of grey tail.

Juvenile : Similar to adult but without the shoulder-patch.

Races : The peninsular (*T. p. chlorigaster*) and the Sri Lankan (*T. p. phillipsi*) populations have greenish-yellow belly and flanks, which are greyish in the northern (*T. p. phoenicoptera*).

Habitat : <1500 m. Forest, groves, parks and gardens.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, Mohan 1996), New Forest, Tons Valley Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Tehri : Bheling valley (Searight 1926), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Naitwar (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

**244(493) *Treron apicauda* Blyth, 1846
Pin-tailed Green-Pigeon**

1846 (1845). *Treron apicauda* 'Hodgson' = Blyth, after May, *Jour. Asiat. Soc. Bengal* 14(2) : 854. (South-eastern Himalayas and hill ranges of Assam – common at Darjeeling).

1928. Baker, *FBI* No. 1840, 5 : 199.

Diagnostics : Size : Pigeon ±; male c. 42 cm including tail of c. 21 cm; female c. 39 cm (with shorter tail).

It is a large yellowish-green pigeon with long pointed central tail feathers; two conspicuous yellow bars in the black wings; broad greyish collar on hindneck; lime-green rump; greenish yellow underparts; and grey tail (with greenish tip to long central feathers).

Male : With pale orange wash to breast and longer central tail feathers.

Female : Duller; lack orange wash to breast and with shorter central tail feathers.

Habitat : <1800 m. Mature forest.

Distribution : Uttarakhand : Dehra Dun : Chakrata and Mussoorie hills (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**245(494) *Treron sphenura* (Vigors, 1832)
Wedge-tailed Green-Pigeon**

1832 (1831). *Vinago sphenura* Vigors, *Proc. Zool. Soc. London* : 173 (Himalayas).

1928. Baker, *FBI* No. 1841, 5 : 200.

Collection records : Uttarakhand : Uttarkashi : Pali Nala, 1 ♀, 29.v.1973, coll. Raj Tilak; Sayana Chatti, 1 ♂, 5.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Pigeon; c. 33 cm.

Adult : An overall yellowish green pigeon but with a broad, wedge-shaped and all-green tail, which is unique among *Treron*.

Male : Has rufous-orange on crown; variable amount of deep maroon on back and scapulars; and pale orange breast.

Female : Lacks rufous-orange on crown and breast, and maroon on back and scapulars.

Juvenile : Like female, but duller and darker.

Habitat : <2500 m (2800 m). Forest – mainly broadleaved.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Mandal (Singh 2005a). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), New Forest (George 1957, Mohan 1996), Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998, (Tak & Sati 2006). Rudrapur : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**246(510-512) *Ducula badia* (Raffles, 1822)
Mountain Imperial-Pigeon**

1836. *Ducula Insignis* Hodgson, *Asiat. Res.* 19(1) : 162, pl. 9 (Nepal).

1953. *Ducula badia carolinae* Ripley, *Postilla, Yale Peabody Mus.* No. 17 : 1-2 (Phek, eastern Naga Hills).

1928. Baker, *FBI* No. 1843, 5 : 203.

Diagnostics : Size : Jungle Crow +; c. 51cm. Sexes alike.

Adult : A very large greyish brown forest pigeon with brownish grey upperparts; lilac crown and hindneck; ashy-grey uppertail-coverts; two-tonned black and brownish tail (not with uniform pattern); white chin and throat; vinous-grey underparts; and buff undertail-coverts.

Juvenile : Duller than adult; upperparts without the copper-purple tint and upperwing-coverts edged with chestnut.

Habitat : <2300 m. Mature evergreen forest.

Distribution : Uttarakhand : Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006).

Status : Residential status not known. Schedule IV (BNHS 2002).

**Order PSITTACIFORMES
PSITTACIDAE (Parakeets & Hanging-Parrots)**

Parakeets are medium-sized birds with largely green plumage, large head, short neck, strong, rounded hooked bill and long tail with elongated central tail feathers. Gregarious and chiefly arboreal, they feed mainly on fruit and grain, will often gather in huge flocks where food is abundant. They often use their bills to give extra perch when climbing about in trees. Flight is swift and direct, and the fight call is more-or-less a harsh scream, which can with practice be used for identifying the species. The related hanging parrots are much smaller with short tail lacking streamers. They habitually sleep upside-down, whence the name.

**247(545-548) *Psittacula eupatria* (Linnaeus, 1766)
Alexandrine Parakeet**

1836. *Palaeornis Nipalensis* Hodgson, *Asiat. Res.*, 19(1) : 177 (Nepal).

1878. *P. (alaeornis) indoburmnicus* Hume, *Stray Feathers* 7 : 459 (No locality; restricted to Sikkim by Kloss).

1927. Baker, *FBI* No. 1497, 1498, 4 : 199, 200.

Diagnostics : Size : Pigeon ±; 53-62 cm with tail up to 35 cm in length; female smaller. Sexually dimorphic.

Adult : A large bird with rich grass-green plumage; a conspicuous deep red (maroon) patch on wing-shoulder (secondary wing-coverts); short, massive and deeply hooked red bill; and yellow-tipped bluish-green tail. The flight is swift and direct.

Male : With a rose-pink collar on hindneck and sides of neck; a black chin stripe from lower mandible to the rose collar; and green head with grey-blue cheeks and nape.

Female and Juvenile : Are duller and without rose-pink collar and black mandibular stripe.

Races : There are five sub-species, differing in mostly minor plumage details and size : *P. e. eupatria* (nominate Alexandrine Parakeet), *P. e. avensis* (Burmese Alexandrine Parakeet), *P. e. magnirostris* (Andaman Islands Alexandrine Parakeet), *P. e. nipalensis* (Nepalese Parakeet) and *P. e. siamensis* (Laos or Siamese Alexandrine Parakeet), Nigell J. Collar suspects that these sub-species may not represent true sub-species but clinal variation. This is particularly so for the *P. e. nipalensis*.

Habitat : <1600 m. Deciduous forest, woodland, plantations, cultivation, mangroves.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), Tons river-side (Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Karva Pani, New Forest, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Uttarkashi : Dwarikhal-Patharkhal (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

**248(549-550) *Psittacula krameri* (Scopoli, 1769)
Rose-ringed Parakeet**

1915. *Palaeornis krameri borealis* Neumann, *Orn. Monatsb.*, 23 : 178 (Assam).

1954. *Psittacula krameri fragosa* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 25 (Anadra, Sirahi, Rajasthan).

1927. Baker, *FBI* No. 1501, 4 : 204.

Collection records : Uttarakhand : Dehra Dun : Rajpur, 1 ex., 7.iii.1968, coll. R. K. Bhatnagar; Sathyanarayan, 1 ex., 28.ii.1969, coll. P. K. Bose; 1 ♀, 29.xii.1972, coll. D. N. Basu; 37-Chakrata road, 1 ex., 20.iii.1975, coll. P. K. Bose. Naini Tal: Haldwani, 1 ♂, 8.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Myna +, with tail; c. 42 cm. Sexually dimorphic. It is also known as the Ring-necked Parakeet. A slim, rich grass-green parakeet with short, hooked, red beak and dark blue-green tail (dorsal aspect).

Male : With black chin stripe joining pink collar on hind-neck (obtained only during third year).

Female : Lacks the black-and-pink collar, but has a pale emerald-green around neck.

Habitat : Mainly lowlands variety of (mainly broadleaved) wooded habitats including vicinity of man; cultivation.

Distribution : Uttarakhand : Almora : Soni, Chanthariya, Mansi (ZSI Survey 2004). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), Tons river-side (Wright 1957), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995), Pithoragarh (Tak 1995), District survey- 2005 (Tak & Sati 2006). Tehri : Bheling valley (Searight 1926), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It is the most common and widespread parakeets throughout the region; and is a gregarious tropical parakeet species that is popular as a pet. This non-migratory species is one of few parrot species that have successfully

adapted to living in 'disturbed habitats', and in that way withstood the onslaught of urbanization and deforestation. In the wild, this is a noisy species with an unmistakable squawking call.

249(562) *Psittacula himalayana* (Lesson, 1832) Slaty-headed Parakeet

1832. *Psittacus (Conurus) Himalayanus* Lesson, in Belanger's *Voy. Ind. Orient, Zool.*, : 239 (Valleys of the Himalayas).

1836. *Palaeornis schisticeps* Hodgson, *Asiat. Res.*, 19 : 178 (Nepal).

1927. Baker, *FBI* No. 1504, 4 : 206.

Collection records : Uttarakhand : Tehri : Kempty, 1 ♀, 11.vii.1973, coll. Raj Tilak.

Diagnostics : Size : Myna, with tail; c. 41 cm. Sexually dimorphic.

Adult : Has entirely dark grey head; red-and-yellow bill; a narrow black ring encircling neck (from chin); grass-green plumage; and steeply graduated yellow tipped bluish-green tail. It can be confused with female Plum-headed Parakeet, but easily distinguished by its entirely dark grey head, a narrow black ring encircling neck, and the red-and-yellow bill (with red upper mandible).

Male : With maroon shoulder-patch (secondary coverts).

Female : Lacks the maroon shoulder patch.

Juvenile : Overall green, but acquires the dark head after first winter.

Habitat : (250 m) 600-2500 m (3260 m). Forest, orchards, cultivation.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931, ZSI Survey 2004), (Tak 1995). Bageshwar : Dwali - Phurkia (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Malari (Lavkumar 1956b), Tolma (Tak 1997), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata and Mussoorie (Osmaston 1935), Tons river (Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Rajpur and Sahastradhara hills (Bhatnagar & Misra 1971, 1972a & b), (Tak 1995), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997). Pauri (Tak 1995).

Pithoragarh (Tak 1995), Rargari on Milam Trek (Tak 1997), Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Mandakini (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Naitwar (Tak *et al.* 2004), Dwarikhal-Patharkhal (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident, depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

Remarks : The Slaty-headed Parakeet is the only psittacid species to exhibit altitudinal migration, descend to the valley in winter, usually by October-end. It is a Himalayan species occurring from the foothills of Western Himalayas to Arunachal Pradesh.

250(557-558) *Psittacula cyanocephala*
(Linnaeus, 1766)

Plum-headed Parakeet

1781. *Psittacus bengalensis* Forster, in Pennant's *Indian Zool.*, : 40 (Bengal; restricted to Calcutta by Whistler & Kinnear).

1927. Baker, *FBI* No. 1503, 4 : 206.

Collection records : Uttarakhand : Bageshwar, 1 ♀, 30.vi.1972, coll. D. N. Basu. Parui : Srinagar, 1 ♂, 3.x.1975, coll. J. C. Tripathi.

Diagnostics : Size : Myna -, with tail; c. 36 cm. Sexually dimorphic. A small and an elegant parakeet with yellowish-green plumage and long blue-green tail. The flight is swift and arrow-like and the call is distinctive high-pitched.

Male : Has plum-red head becoming purplish-blue on the back of the crown; yellow upper mandible; black neck collar and chin stripe; maroon-red wing shoulder-patch; and white-tipped blue-green tail.

Female : Is diagnosed by yellow upper mandible and the dark lower mandible, greenish-yellow collar, lilac head, and whitish tail-tip.

Juvenile : With green head and yellowish mandibles; dark head is acquired after the first winter.

Habitat : <600 m (1500 m). Open broadleaved forest, orchards, forest edge adjoining cultivation.

Distribution : Uttarakhand : Almora (Tak 1995), Kaparkhan, Binsar WLS (ZSI Survey 2004). Chamoli: Nandprayag (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), along Tons river (Wright 1957), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Tak 1995). Pauri (Tak 1995), Pithoragarh (Tak 1995), Dhauri river basin- 2004 Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Gandhari (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Sankri, Taluka, Himri, Dhaura, Duni, Istragad (Tak *et al.* 2004), Dwarikhal-Patharkhal (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

251(551-552) *Psittacula alexandri* (Linnaeus, 1758)
Red-breasted Parakeet

1776. *Psittacus fasciatus* P.L.S. Muller, *Natursyst.*, Suppl. : 74 (Pondicherry, *errore*, restricted to Arakan by Ticehurst, 1993, *Jour. Bom. nat. Hist. Soc.*, 36 : 934).

1927. Baker, *FBI* No. 1508, 4 : 210.

Diagnostics : Size : Pigeon -, with tail; c. 38 cm.

Adult : A distinctive parakeet with rosy breast, lilac-grey head, a narrow black forehead running back to eyes, a broad black stripe from lower mandible to sides of head, a large yellow shoulder-patch (median and greater coverts), bluish-green belly, yellowish green vent and undertail-coverts, and yellowish-tipped blue-green tail.

Male : Disguished from *female* by a largely red bill and the prominent rosy (pinkish violet) breast.

Juvenile : Duller than adult, with green underparts and orange bill, becoming blackish later.

Habitat : <1500 m. Open deciduous forest, orchards and cultivation.

Distribution : Uttarakhand : Dehra Dun : First reported from Doon School ground on 14th November 1955 (Lavkumar 1956ba), (Bhatnagar & Misra 1971, Tak 1995), New Forest (Mohan 1993, 1996, Singh 2000), Forests around Asan (Singh 2001). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread resident. Schedule IV (BNHS 2002).

Order CUCULIFORMES CUCULIDAE (Cuckoos, Malkohas & Coucals)

Cuckoos are medium-sized zygodactylous birds with long graduated tails and characteristic, slightly decurved bills. They are brood-parasitic, laying their eggs in the nests of other birds, which then raise as their own. In most species sexes are alike, although some females also have a hepatic (rufous-brown) morph. Some cuckoos are very similar in plumage and are best distinguished by their distinctive loud call which is monotonously repeated in the breeding season, often from an exposed perch; they are inconspicuous at other times of the year. They are largely solitary, but may descend to the ground to feed. Malkohas are related to cuckoos but are larger, plumper-bodied with a stouter bill and very long graduated tail; they raise their own young and are usually found singly or in pairs frequenting the mid-story. Coucals are related to cuckoos and malkohas but are much larger with stout bodies and broad tails. They frequent bushes, scrub and grassland as well as low to mid-story forest. Like Malkohas they are also not brood-parasitic. Omnivorous.

252(570-571) *Clamator jacobinus* (Boddaert, 1783) Pied Crested Cuckoo

1783. *Cuculus Jacobinus* Boddaert, *Table Pl. enlum.*, : 53 (Coromandel Coast, ex Daubenton, *Pl. enlum.*, pl. 872).

1915. *Clamator jacobinus taprobanus* Hartert, *Nov. Zool.*, 22 : 254 (Northwestern Ceylon)

1927. Baker, *FBI* No. 1472, 1473, 4 : 167, 169.

Collection records : Uttarakhand : Dehra Dun : NRS compound, 1 ex., 13.vi.1963, coll. R. K. Bhatnagar.

Diagnostics : Size : Myna $\pm$ with a much longer tail; c. 33 cm. Sexes alike. A black-and-white medium-sized and slender bodied distinctive bird with a prominent crest and long graduated tail.

Adult : Has black upperparts (including prominent backwardly directed crest and tail) with a white patch at the base of primaries and prominent white tips to tail feathers; and all-white underparts with a soft buffish wash.

Juvenile : Like adult but with smaller crest, brownish upperparts (with a smaller white wing-patch) and buffish wash to white underparts.

Habitat : <2600 m. Light woodland, scrub, gardens etc.

Distribution : Uttarakhand : Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Reni (Tak 1997); Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread summer visitor. Schedule IV (BNHS 2002).

Remarks : Chiefly SW monsoon breeding visitor; a brood parasite, lays its single egg mostly in the nests of *Turdoides* Babblers; a noisy species, with persistent and loud *piew piew piew* call.

253(569) *Clamator coromandus* (Linnaeus, 1766) Red-winged Crested Cuckoo

1766. *Cuculus coromandus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 171 (Coromandel = Pondicherry).

1927. Baker, *FBI* No. 1474, 4 : 170.

Diagnostics : Size : House Crow +; c. 47 cm. Sexes alike, but female with white iris.

Adult : A larger crested cuckoo with chestnut wings, metallic glossy black back, whitish collar; rusty chin, throat and upper breast, white or whitish remaining underparts; and very long black tail with narrow greyish-white feather tips.

Juvenile : Has shorter crest with rufous fringes to crown, buff collar, whitish chin and throat, and buff tips to rectrices.

Habitat : <550 m (1700 m). Evergreen forest.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Dehra Dun : lower Himalayan valleys, both east and west of Mussoorie (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

**254(572) *Hierococcyx sparverioides* (Vigors, 1832)
Large Hawk-Cuckoo**

1832 (1831). *Cuculus sparverioides* Vigors, *Proc. Zool. Soc. London*, 1 : 173 (Himalayas).

1927. Baker, *FBI* No. 1457, 4 : 146.

Diagnostics : Size : House Crow -; c. 38 cm. Sexes alike. It is a larger cuckoo with broad, rounded wings; browner upperparts; strongly barred underparts, and tail (with broad bands).

Adult : Has slate-grey head; brownish mantle and wings; blackish chin; grey streaking on throat and breast; irregular rufous-band (streaked with grey) across upper breast; dark brown broad barring on breast, belly and flanks; and much broad and strong blackish bands on brownish tail with white tip.

Juvenile : With dark grey head, barred flanks and broad tail banding.

Habitat : S 900-3000 m. W >plains. Woodland country.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : forests beyond Chakrata (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread summer visitor. Schedule IV (BNHS 2002).

**255(573-574) *Hierococcyx varius* (Vahl, 1797)
Brainfever Bird**

1797. *Cuculus varius* Vahl, *Skriv. Naturhist.-selsk.*, Kjobenhavn 4(1) : 60 (Tranquebar).

1927. Baker, *FBI* No. 1458, 4 : 148.

Diagnostics : Size : Pigeon $\pm$, slenderer with proportionately longer tail; c. 34 cm. Sexes alike. Also known as Common Hawk-Cuckoo, it is popularly called Brainfever Bird.

Adult : Has uniformly grey upperparts; whitish throat with grey wash; rufous on underparts more extensive than on Large Hawk-Cuckoo; indistinct barring on whitish belly and flanks; and narrow banding on both surfaces of tail.

Juvenile : With spotted flanks and narrower tail banding.

Habitat : <1000 m (1200 m). Well-wooded areas, gardens etc.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Chamoli : Beltakharak (Sathyakumar 2003), Mandal (Singh 2005a). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972b, Tak 1995), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993). Tehri : Bheling valley (Searight 1926), (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : In summers, easily detected by its repeated calls: a loud, screaming *dee dee dit*, repeated with monotonous persistency 5 or 6 times, rising in crescendo and ending abruptly. This in its various interpretations provide alternative names : *brain-fever* (English) or *pee kahan* (Hindi, 'where's my love') or *chokh gelo* (Bengali, 'my eyes are gone') and *paos ala* (Marathi, 'the rains are coming'). Heard all through the day and frequently during moonlit nights.

**256(576) *Cuculus micropterus* Gould, 1838
Indian Cuckoo**

1837. *Cuculus micropterus* Gould, *Proc. Zool. Soc. London* : 137 (Himalayas).

1954. *Cuculus micropterus fatidicus* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 24 (Laikul, N. Cachar).

1927. Baker, *FBI No.* 1456, 4 : 144.

Diagnostics : Size : Pigeon $\pm$, slenderer with proportionately longer tail; c. 33 cm. Sexes alike. A grey-brown cuckoo with rounded wings and tail (barred and spotted with white) and broad black barring on underparts. Its characteristic broad dark subterminal tail-band and the distinctive 4-syllabled call differentiate it from the Eurasian, Lesser and Oriental Cuckoos.

Adult : Has dark slate-grey mantle and wing-coverts with pale brownish wash; paler grey head and breast; reddish-brown iris (yellow in Eurasian, yellow or brown in Oriental); broad widely spaced black barring on white underparts; and a broad and diffuse dark subterminal band on tail (with white barring on outer tail feathers and larger white spots on shafts of central feathers).

Juvenile : Browner with white tips to head and wing feathers.

Habitat : <2300 m (3700 m). Wooded areas.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995); Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Mandal (Singh 2005a). Dehra Dun : Mussoorie (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), New Forest, [Dhanaulty, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993), Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

**257(577-579) *Cuculus canorus* Linnaeus, 1758
Common Cuckoo**

1758. *Cuculus canorus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 110 (Europa = Sweden, *ex Fn. Suec.*).

1863. *Cuculus telephones* Heine, *Jour. f. Orn.* 11 : 352 (Japan).

1927. Baker, *FBI No.* 1451, 4 : 135.

Collection records : Uttarakhand : Dehra Dun : 13-Subhash road, 1 juvenile, 18.vii.1976, coll. B. S. Lamba.

Diagnostics : Size : Pigeon $\pm$; c. 33 cm. It is also known as Eurasian Cuckoo. Unmistakable often repeated *cuck-koo* calls. In flight, looks like a small bird of prey (raptor). It is mainly a greyish bird with slender body, long tail and strong legs.

Grey adult : With uniformly dark grey upperparts, black barring (finer and more closely spaced than Oriental) on white underparts, and yellow iris (rather than reddish-brown). The grey female often has rufous wash on breast.

Hepatic female : Females are sometimes brown (hepatic), usually with narrower black bars than rufous.

Juvenile : Variable, browner with pale nuchal patch (white patch on nape).

Habitat : <4100 m (5250 m). Open forest, clearings.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Niti and Malari villages (Osmaston 1921), NDNP (Tak & Kumar 1987), (Tak 1995), Dibrugheta to Reni (Sankaran 1993, 1994, Tak 1997), Dibrugheta, Latakhark (Sathyakumar 2003), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Mussoorie, New Forest, Timli, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri : Bheling valley (Searight 1926). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread summer visitor. Schedule IV (BNHS 2002).

**258(580-580a) *Cuculus saturatus* Blyth, 1843
Oriental Cuckoo**

1843. *Cuculus saturatus* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 12(2) : 942 (Nepal).

1845. *Cuculus optatus* Gould, *Proc. Zool. Soc. London* : 18 (Port Essington, Northern Territory).

1927. Baker, *FBI* No. 1454, 4 : 140.

Diagnostics : Size : Pigeon -; c. 31cm. Similar to Common (Eurasian) Cuckoo, but the *Grey adult* : Has broader (as compared Common/Eurasian) barring on buffish-white (*contra* white in Common) underparts, also distinguished by its 4-noted hoopoe-like call. *Hepatic female* : Slightly more heavily (broad and intense) barred than *C. canorus*.

Juvenile : Occurs in two morphs: rufous and grey; underparts warmer buff and more prominently barred and the barring is stronger on the upperparts and tail in rufous morph compared with *canorus*.

Habitat : <3000 m. Open woodland.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : inner ranges of Chakrata, Tons Valley from Datmir through Osla to Har-ki-Dun (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Widespread summer visitor. Schedule IV (BNHS 2002).

**259(581) *Cuculus poliocephalus* Latham, 1790
Lesser Cuckoo**

1790. *Cuculus poliocephalus* Latham, *Index Orn.* 1 : 214 (India).

1952. *Cuculus poliocephalus assamicus* Koelz, *Jour. Zool. Soc. India* 4 : 45 (Kohima, Naga Hills).

1927. Baker, *FBI* No. 1455, 4 : 142.

Diagnostics : Size : Myna +; c. 26 cm. Sexes more or less alike, but female has also a hepatic phase. Similar to *C. canorus*, but smaller.

Adult male : Upperparts slaty grey; underparts suffused with buff and has black-barring on white.

Hepatic female : Bright rufous with indistinct barring on crown and nape; has broad and intense barring like Oriental.

Juvenile : Dark grey-brown upperparts with variable, narrow whitish to rufous barring, and broadly barred underparts.

Habitat : < 3200 m (4000 m). Wooded country.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : beyond Chakrata (Osmaston 1935), [Dhanaulty] (Singh 2000). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Osla and Harke Dun (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

**260(582-583) *Cacomantis sonneratii* (Latham, 1790)
Banded Bay Cuckoo**

1790. *Cuculus sonneratii* Latham, *Index Orn.*, 1 : 215 (India).

1927. Baker, *FBI* No. 1464, 4 : 157.

Diagnostics : Size : Myna+; c. 24 cm. Sexes alike. It is a small, slim, and rufous-brown and white cuckoo.

Adult : Distinguished from females and immatures of other small cuckoos by broad white supercilium encircling dark brown ear-coverts (dark lores), finely barred uniformly whitish (with pale buff wash) underparts, and barred central tail feathers tipped with white and subtyped with black.

Juvenile : With buff barring on crown and nape, and the barring on underparts broader and diffused.

Habitat : <2400 m. forest, open woodland.

Distribution : Uttarakhand : Dehra Dun : forests below Mussoorie (Osmaston 1935),

(Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (Mohan 1996), New Forest, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**261(584) *Cacomantis passerinus* (Vahl, 1797)
Indian Plaintive Cuckoo**

1797. *Cuculus passerinus* Vahl, *Skriv. Naturhist.-Selsk.*, Kjobenhavn, 4(1) : 57.

1927. Baker, *FBI* No. 1462, 4 : 154.

Diagnostics : Size : Myna $\pm$; c. 23 cm. Sexes alike, but female dimorphic. Also known as Grey-bellied Cuckoo, it is a small grey cuckoo with a white shoulder-patch and broad blackish tail.

Grey adult : Is mainly grey with a white patch on under side of wings at base of primaries (conspicuous in flight), white vent and undertail-coverts, and white tipped broad blackish tail (outer rectrices obliquely barred with white).

Hepatic female (red phase) : Has bright rufous upperparts crossbarred with black on back (with sparse barring on crown and nape); unbarred tail; and white underparts finely barred with black.

Juvenile : Variable, either similar to hepatic female, or grey with pale barring on underparts, or intermediate.

Habitat : <2700 m. Lightly wooded country.

Distribution : Uttarakhand : Dehra Dun (Csmaston 1935, Wright 1957, Bhatnagar & Misra 1971), New Forest (George 1957, Mohan 1996), Tons Valley Forest (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**262(585) *Cacomantis merulinus* (Scopoli, 1786)
Rufous-bellied Plaintive Cuckoo**

1863. *Cacomantis querulous* Heine, *Jour. f. Orn.*, 11 : 352. New name for *Polyphasias tenuirostris* Jerdon, not *Cuculus tenuirostris* Gray, 1834, which = *Cacomantis passerinus* (Vahl) (Lower Bengal, Assam, Sylhet, Burma, and China).

1927. Baker, *FBI* No. 1463, 4 : 156.

Diagnostics : Size : Myna $\pm$; c. 23 cm. Sexes alike, but female dimorphic (with a hepatic phase).

Grey adult : Similar to Indian Plaintive, but has orange (rusty red) on underparts from breast down to belly and vent.

Hepatic female (red phase) : Has strongly barred upperparts and tail (*contra* unbarred tail of Indian Plaintive), finely barred chin and throat, and pale rufous base to the finely barred underparts.

Juvenile : With bold streaking on rufous-orange head and breast.

Habitat : <1200 m. Wooded country.

Distribution : Uttarakhand : Dehra Dun : New Forest (George 1962a), (Tak 1995). Pauri (Tak 1995). CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

**263(586) *Chrysococcyx maculatus* (Gmelin, 1788)
Asian Emerald Cuckoo**

1788. *Trogon maculatus* Gmelin, *Syst. Nat.*, 1(1) : 404 (Ceylon).

1927. Baker, *FBI* No. 1468, 4 : 162.

Diagnostics : Size: Sparrow +; c. 18 cm. It is an unmistakable little cuckoo with emerald-green plumage.

Adult male : Has emerald green upperparts including head, neck, breast and tail with golden bronze reflections; a white patch at the base of primaries conspicuous in flight; rectrices (tail feathers) tipped white, the outermost pair with three irregular white bars; remaining underparts white barred with bronze-green; and metallic green undertail-coverts, barred with white.

Female : Has shining emerald green with golden rufous crown and nape (suggestive of *Merops orientalis*); white underparts with rufous tinge on throat and flanks, barred with bronze-brown (with close barring on throat and broader and wider on abdomen); and barred chestnut and black tail, tipped with white.

Juvenile : Like female, but has pale chestnut wash on throat and a little more barring on mantle and scapulars.

Habitat : < 1000 m (1830 m). Evergreen forest, second growth.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

264(588-589) *Surniculus lugubris* (Horsfield, 1821)
Drongo Cuckoo

1839. *Pseudornis Dicruroides* Hodgson, *Jour. Asiat. Soc. Bengal* 8 : 136 and pl. (Mountains of Nepal).

1927. Baker, *FBI* No. 1470, 4 : 165.

Diagnostics : Size : Myna $\pm$; c. 25 cm. Sexes alike. A small, slimmer and all-dark cuckoo; deceptively like Black Drongo (*Dicrurus*), but easily distinguished by fine downcurved black bill, square-cut tail with slight indentation, clean belly and vent, and white-barred undertail-coverts.

Adult : Is overall glossy metallic black; has white barring on undertail-coverts and outermost tail-feathers near their base; white thighs; and a tiny white patch on nape, last two feathers, difficult to see in the field.

Juvenile : With unglossed plumage; spotted with white on head, back and breast; with more white on tail and undertail-coverts.

Habitat : < 2000 m. Well-wooded country.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli : Pindar valley (Osmaston 1921). Dehra Dun : Shiwaliks (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, Mohan 1996); New Forest, [Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Tehri : Nagni (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

265(590-592) *Eudynamys scolopacea*
(Linnaeus, 1758)
Asian Koel

1758. *Cuculus scolopaceus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 111 (Malabar).

1927. Baker, *FBI* No. 1475, 4 : 172.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♀, 21.ii.1963, coll. R. K. Bhatnagar; 1 ♀, 8.x.1964, coll. S. K. Mitra; 1 ♂, 12.xi.1964, coll. R. K. Bhatnagar; NRS compound, 1 ♀, 29.iv.1963 and 6.x.1964, 1 ♂, 6.x.1964, coll. P. K. Bose; Herbatpur, 1 ex., 24.ix.1971, coll. P. K. Bose; Kalsi, 1 ♂, 27.ix.1972, coll. D. N. Basu; Rishikesh, Pashulok, 1 ♂, 5.x.1972, coll. P. K. Bose.

Diagnostics : Size : House Crow $\pm$; c. 43 cm; formerly, also known as 'Common Koel'; the word 'koel' also means 'nightingale' in India because of the Indian Koel's melodious call. They are very vocal, with a number of different calls.

Male : Glossy black all over with faint green sheen; yellowish-green bill and shining red eyes.

Female : Has dark brown upperparts (with faint green sheen), spotted and barred with white and buff; white underparts strongly barred with dark brown; and shining red eyes.

Juvenile : Spotted with white and more or less like adult, sex for sex, but female darker.

Habitat : <1800 m. Woodland parks, gardens.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag: lower Mandakini (Lavkumar 1956b). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

266(593-594) *Phaenicophaeus tristis* (Lesson, 1830)
Large Green-billed Malkoha

1830. *Melias trisis* Lesson, *Traite d'Orn.*, livr. 2 : 132 (Sumatra, errore = Bengal).

1927. Baker, *FBI* No. 1479, 4 : 178.

Diagnostics : Size : Pigeon $\pm$; c. 38 cm. Sexes alike. A long-tailed cuckoo, with ashy grey

upperparts (with deep green sheen); stout lime-green bill; white-streaked supercilium; crimson orbital patch; ashy grey chin, throat and sides of head (with fine black streaks); remaining underparts uniform buffish-grey (with fine black shaft streaking); and green glossed black tail (long, broad, steeply graduated, the rectrices cross-rayed darker and broadly tipped with white).

Habitat : <700 m (1800 m). Tangled (knotted) undergrowth.

Distribution : Uttarakhand : Dehra Dun : [Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

267(596-598) *Phaenicophaeus leschenaultii*
(Lesson, 1830)
Sirkeer Malkoha

1831. *Centropus sirkee* J. E. Gray, in Hardwicke's *Ill. Ind. Zool.* 1(6) : pl. 28 (No locality = Cawnpore).

1954. *Taccocua leschenaultii vantlynei* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 24 (Sasan, Junagadh, Sajrasntra).

1927. Baker, *FBI* No. 1487, 4 : 187.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1 ♀, 6.x.1972, coll. P. K. Bose.

Diagnostics : Size : House Crow $\pm$; c. 42-44 cm including long tail. Sexes alike.

Adult : Has earthy-brown and rufous plumage, with fine shining black shaft-streaks to head and breast feathers; a stout bright cherry-red and yellow bill; and long heavy tail with broad white tips to the graduated blackish tail-feathers, conspicuous in flight.

Juvenile : Duller and barred above.

Habitat : <1000 m (2100 m). Largely terrestrial, dry woodland and open scrub and thorn jungle, and deciduous secondary jungle.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972b, Tak 1995), Khaddar, [Dholkhand]

(Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

268(600-602) *Centropus sinensis* (Stephens, 1815)
Greater Coucal

1815. *Polophilus sienesis* Stephens, in Shaw's *Gen. Zool.* 9(1) : 51 ('Said to inhabit China' = Ning Po, China, by designation of Stresemann, 1933, *Nov. Zool.* 20 : 321).

1927. Baker, *FBI* No. 1490, 4 : 189.

Collection records : Uttarakhand : Dehra Dun : Kalsi, 1 ex., 22.i.1970, coll. NRS/ZSI Survey Party. Naini Tal : Ramnagar, Chorpani, 2 ♀, 28.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Jungle Corw $\pm$; c. 48 cm. Sexes alike, female slightly larger. It is the commonest and most widespread coucal, also known as the 'Crow Pheasant'

Adult : Has glossy bluish-black plumage; uniform chestnut wings; and blackish loose-looking, long graduated tail.

Juvenile : Duller, heavily barred and black tail with narrow grey bars.

Habitat : <2200 m. Overall and tangled shrubbery in light forest, edge, gardens, cultivation, and tall grassland.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Asan Barrage, Khaddar, Tons Valley Forest, [Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal : Lalkuaon (ZSI Survey 2005). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

269(605) *Centropus bengalensis* (Gmelin, 1788)
Lesser Coucal

1788. *Cuculus bengalensis* Gmelin, *Syst. Nat.*, 1(1) : 412
 (Bengal) Cf. Whistler, H. & Kinnear, N.B. 1935,
JBNHS 37 : 528.

1927. Baker, *FBI* No. 1495, 4 : 194.

Diagnostics : Size : House Crow -; c. 33 cm.
 Sexes alike, female larger.

Adult : Similar to Greater Coucal with glistening blue-black plumage and chestnut wings, but conspicuously smaller. **Breeding adult** has chestnut (vs black) underwing-coverts. **Non-breeding adult** has streaks on head and mantle (absent in Greater).

Juvenile : Differs from the Greater by brown- and buff-barred tail (vs black with narrow grey bars).

Habitat : <1830 m. Moist tall grassland, reeds scrub.

Distribution : Uttarakhand : Dehra Dun : eastern Dun below Asarori (Osmaston 1935), (Bhatnagar & Misra 1971, 1972a, Tak 1995), [Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Order STRIGIFORMES
 TYTONIDAE (Barn Owls)

The 'Barn Owls' belong to one of the two groups of owls, the other being the 'Typical Owls' (Strigidae). They are pale, long-winged, long-legged owls, 33-39 cm in length with an 80-95 cm wingspan. They have an effortless wavering flight as they quarter pastures or similar hunting ground. These are the birds of open country such as farmland, preferentially hunting along the edges of woods. They are fairly sedentary and nocturnal or crepuscular.

No ear-tufts. Facial disc well developed and large, entirely surrounded by a ruff or stiff-feathers. Bill straight at base, compressed and comparatively weak. Nostrils oval. Legs long, the upper part of tarsus covered with feathers which

pass into bristles on lower tarsus and upper surface of toes. Middle toe scarcely longer than inner, with the claw expanded and pectinate on the inner side. Wings very long and pointed, exceeding tail length: 2nd primary (as.) longest, first subequal. Tail moderately long.

Barns Owls occur worldwide, on every continent except Antarctica. Some times they are called Monkey-Faced Owls of their appearance. They are also called Ghost Owls due to their eerie (peculiar), silent flight. Other common names are Church Owl, Golden Owl, Rat Owl, and Stone Owl. They mostly feed on rodents : rats, mice, gophers, shrews, moles, and voles. Each Barn Owl may consume between one to seven rodents per night; a nesting pair and their young ones can eat thousands of rodents per year.

270(606-607) *Tyto alba* (Scopoli, 1769)
Barn Owl

1929. *Tyto alba stertens* Hartert, *Nov. Zool.* 35 : 98 (Cachar).

1939. *Tyto alba crypta* Koelz, *Proc. Biol. Soc.* Washington 52 : 80 (Londa, Bombay Presidency).

1927. Baker, *FBI* No. 1636, 4 : 385.

Diagnostics : Size : House Crow -; c. 36 cm. Sexes alike. It is a pale owl with white monkey-like facial disc. Adult bird has unmarked white ear-shaped face with contrasting black eyes; dull golden-buff and grey upperparts, finely speckled black and white; and white to gloden-buff underparts, often with dark spots. In flight, wings and tail appear very uniform (that is without any prominent tail barring or wing patches).

Habitat : Vicinity of human habitation, open country, farmland/ cultivation, and hunting along the edges of woods.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995), New Forest (Mohan, 1993, 1996, Singh 2000). Pauri (Tak 1995). Pithoragarh : Dhauli river basin- 2004 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread resident. Schedule IV (BNHS 2002).

271(608) *Tyto capensis* (A. Smith 1834)
Grass Owl

1839. *Strix longimembris* Jerdon, *Madras Jour. Lit. Sci.* 10 : 86 (Neilgherries, India).

1927. Baker, *FBI* No. 1638, 4 : 387.

Diagnostics : Size : House Crow -; c. 36 cm. Sexes alike. Similar to Barn Owl in size and structure, but has dark brown upperparts (vs dull golden-buff) heavily blotched and minutely spotted with white, and some golden-buff on nape; facial disc white or pinkish rusty white bordered by a dark brown ruff; a prominent blackish spot in front of each eye; largely white and buff tail cross-barred with brown; and very long and feathered tarsus.

Habitat : Grassland. Avoids human habitation.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Tak 1995, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

STRIGIDAE (Owls)

Owls are birds of prey with a large rounded head, short neck, rounded wings and short tail. Most, but not all, species are partly, if not wholly, nocturnal. Adaptations to a life of hunting by night include the facial disk which helps focus sound to the asymmetrically placed ears so that bird can pinpoint the location of its prey aurally, soft plumage to enable soundless flight, and large eyes with good vision. Important features to note for identification : presence or absence of 'horns' (ear tufts); overall colouration; shape of facial disc; pattern and strength of barring and streaking on underparts; eye colour; tail barring. Note that the 'horns', which some owl species have, may be raised or lowered. They are usually fairly obvious where present. Calls are often the most useful diagnostic feature.

Contains small owls of extremely beautiful vermiculated and speckled grey, brown, and rufous plumage, with well developed aigrettes or ear-tufts ('horns'). Head proportionately large. Bill rather small; nostrils round, pierced in the anterior margin of the cere. Wing long but of variable shape. Tail moderate, rounded at the ends. Tarsus fully feathered or nearly so. Sexes alike, but juvenile plumage different from adult.

Fish-owls can be distinguished from other owls by their unfeathered tarsi, and from eagle owls additionally by the dark tail with narrow buffy bars.

272(611-612) *Otus spilocephalus* (Blyth, 1846) Spotted Scops-Owl

1846. *Ephialtes spilocephalus* Blyth, *Jour. Asiat. Soc. Bengal* 15 : 8 (Darjeeling).

1952. *Otus spilocapulus rupchandi* Koelz, *Jour. Zool. Soc. India* 4 : 45 (Kohima, Naga Hills).

1927. Baker, *FBI* No. 1672, 4 : 427.

Diagnostics : Size : Myna $\pm$; c. 19 cm. Sexes alike. It is a small montane scops owl, also known as Mountane Scops Owl. Distinguished from other similar species by its distinctive short high-pitched call- a resonant and far-carrying double whistle, *toot-too*, repeated every 5-7 seconds. Adult bird has unstreaked underparts (indistinctly spotted with buff and barred with brown); rufous upperparts mottled with buff and brown; and various pale bands on wings, but lacks prominent ear-tufts.

Races : *O. s. huttoni* of Western Himalayas is grey or fulvous-brown, while the nominate race of Eastern Himalayas is rufous.

Habitat : <600-2600 m. Dense evergreen forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie (*Type locality*- Jharipani), Chakrata (Osmaston 1935), species was first described by Hume in the year 1870 on type material collected from Jharipani, Mussoorie (Bhatnagar & Misra 1971), (Tak 1995, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

273(615) *Otus scops* (Linnaeus, 1758) Eurasian Scops-Owl

1801. *Stryx pulchella* Pallas, *Reise Russ. Reich* 1 : 456 ('*Copiosius in australioribus ad Volgam, Samaram. laicum*').

1927. Baker, *FBI* No. 1677, 4 : 433.

Diagnostics : Size : Myna -; c. 19-21 cm length; 47-54 cm wingspan. Sexes alike. Also known as European Scops Owl or just Scops Owl; occurs in two morphs 'grey' and 'brown' Adult has prominent white spots on lower scapulars (if present); pale horizontal bars underparts; and longer primary projections than Oriental Scops, best visible when it perches upright and also shows small ear-tufts. Its call is plaintive (mournful) bell-like whistle.

Habitat : 1500-3000 m. Rocky hillsides, juniper and holly-oak forest.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1962a). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b).

Status : Residential status not known. Schedule IV (BNHS 2002).

274(616-618b) *Otus sunia* (Hodgson, 1836)
Oriental Scops-Owl

1836. *Scops sunia* Hodgson, *Asiat. Res.* 19 : 175 (Nepal).

1954. *Otus sunia khasiensis* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 27 (Mawphlang, Khasi Hills).

1927. Baker, *FBI* No. 1680, 4 : 435.

Diagnostics : Size : Myna -; c. 19 cm. Sexes alike. It is similar to *O. scops* but browner; highly variable with 'dark rufous' and 'greyish phases' It has prominent ear-tufts; prominent white scapular white spots; streaked underparts; and lacks prominent nuchal collar. Rufous morph quite distinct from *O. scops*; otherwise not distinguishable on plumage, although it has shorter primary projections as compared to Eurasian.

Habitat : Mainly lower elevations (1500 m). Forest, second growth, groves, gardens.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Singh 2000), New Forest (George 1962a, Mohan 1996). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

275(619-624) *Otus bakkamoena* Pennant, 1769
Collared Scops-Owl

1769. *Otus bakkamonea* Pennant, *Ind. Zool.* : 3, pl. 3 (Ceylon).

1927. Baker, *FBI* No. 1666, 4 : 422.

Diagnostics : Size : Myna $\pm$; c. 23-25 cm. Sexes alike. An enchanting small owl (although the largest of the scops owls), with small 'horned' ('eared'). It is similar to Scops, but larger and distinguished from it by presence of a prominent buff nuchal collar (at the base of hindneck or upper back); fine darker streaks on underparts; indistinct buffish scapular spots; and dark orange or brown iris. Occurs in two morphs 'grey-brown' and 'rufous-brown', both the forms have spotted upperparts vermiculated with white; chin and throat white or buff, the latter barred with black, and with fine wavy bars of reddish brown. Its call is downcast, frog-like, interrogative *whutor whuk*, repeated at irregular intervals.

Habitat : <2200 m. Woods.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, 1996), Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

276(625-627) *Bubo bubo* (Linnaeus, 1758)
Eurasian Eagle-Owl

1831 (1830-31). *Otus Bengalensis* Franklin, *Proc. Zool. Soc.* London : 115 (The Ganges between Calcutta and Benares and in the Vindhyan Hills between the latter place and Gurra Mundela).

1927. Baker, *FBI* No. 1660, 4 : 414.

Collection records : Uttarakhand : Dehra Dun : Kaulagarh, 1 ♀, 9.vi.1976, coll. Dhan Bahadur.

Diagnostics : Size : Black Kite +; c. 56-66 cm. Sexes alike. A large brown owl with two prominent upstanding black 'horns' (ear tufts); bold dark brown streaking on breast, finer streaking and barring on belly; dark brown and tawny-buff upperparts; orange eyes; and completely feathered legs. Call is a resonant *tu-whoo*.

Habitat : <4500 m (*bengalensis* <2400 m). Bare rock areas, semi-desert, ruined forests, rocky ravines, cliffs, mature groves.

Distribution : Uttarakhand : Chamoli : Pindar valley (Osmaston 1921), NDNP (Tak & Kumar 1987), (Tak 1995), Lata, Surathota (Tak 1997). Dehra Dun : Syed Mohalla and Naya Gaon near Jhara Forest Block (Bhatnagar & Misra 1971, 1972a), New Forest (Mohan 1993, 1996), (Tak 1995), Jhara, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

**277(628-629) *Bubo nipalensis* Hodgson, 1836
Forest Eagle-Owl**

1836. *Bubo nipalensis* Hodgson, *Asiat. Res.*, **19** : 172 (Nepal).

1840. *Huhua pectoralis* Jerdon, *Madras Jour. Lit. Sci.*, **10** : 89 (Malabar).

1927. Baker, *FBI* No. 1663, **4** : 418.

Diagnostics : Size : Black Kite $\pm$; c. 63 cm. Sexes alike. A very large dark brown owl with two outwardly slant (directed) erect black-and-white 'horns' (ear tufts).

Adult : Distinguished from other 'eared owls' by blackish-brown, chevron-shaped (heart-shaped) spots on whitish underparts; mottled dark brown upperparts; all-brown eyes; and yellow bill. Call is deep hoot and a mournful scream.

Juvenile : Distinctive with white and buff plumage spotted and barred with brown.

Habitat : <1800 (2100). Thick forest.

Distribution : Uttarakhand : Pauri (Tak 1995). Pithoragarh : Dhaul river basin- 2004, Gori river basin- 2002, Goriganga valley- 1994 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**278(630) *Bubo coromandus* (Latham, 1790)
Dusky Eagle-Owl**

1790. *Strix coromanda* Latham, *Index Orn.*, **1** : 53 (Coromandel Coast).

1927. Baker, *FBI* No. 1661, **4** : 416.

Diagnostics : Size : Black Kite $\pm$; c. 58 cm. Sexes alike. A large greyish-coloured eagle-owl distinguished from other 'eared' owls by its prominent ear-tufts (which stand erect close to each other like twin spires when perched), grey or sooty-washed rather than tawny, and paler yellow eyes (*contra* deep orange-yellow); and from fish owls by feathered tarsi. It has greyish-brown upperparts, finely vermiculated with whitish, and with diffuse darker brown streaking; greyish-white underparts finely vermiculated and more strongly streaked with brown. Likely to be confused with Brown Fish-Owl, but easily differentiated by more uniform grey-brown upperparts, comparatively less streaking on mantle, and lack of any rufous tone. Call is a deep, resonant *wo, wo, wo, wo-o-o-o-o*.

Habitat : Lowland well-wooded areas near water and/or habitation.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

**279(631-632) *Ketupa zeylonensis* (Gmelin, 1788)
Brown Fish-Owl**

1820. *Strix leschenaulti* Temminck, *Pl. col., livr.* **4**, pl. 20 (Eastern provinces of India = Chandernagore).

1829. *Strix hardwickii* Griffith, *Anim. Kingd., Aves*, **1** : 77, *ex* Gray MS. (Futtegghur).

1927. Baker, *FBI* No. 1653, 1654, **4** : 408, 409.

Collection records : Uttarakhand : Dehra Dun : 1 ♂, 18.iii.1962, coll. Ram Das (R. D. Verma).

Diagnostics : Size : Black Kite $\pm$; c. 56 cm. Sexes alike. It is a large rufous-brown 'eared' owl with stubby ear-tufts; reddish brown upperparts, heavily streaked with black or dark brown; buffish underparts, with fine wavy brown cross-bars and bold streaking; bright golden eyes; and naked legs (*contra* Eagle-Owl). Calls : a soft, deep *hup-hup-hu* and a wild *hu-hu-hu-hu..hu ha*.

Juvenile : More rufescent with narrower and browner shaft-streaks.

Habitat : Plain and foothills (up to 1800 m); semi-nocturnal.

Distribution : Uttarakhand : Dehra Dun : Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

280(633) *Ketupa flavipes* (Hodgson, 1836)
Tawny Fish-Owl

1836. *Cultunguis Flavipes* Hodgson, *Jour. Asiat. Soc. Bengal* 5 : 364, pl. 26 (Nepal).

1927. Baker, *FBI* No. 1657, 4 : 411.

Diagnostics : Size : Black Kite $\pm$; c. 61 cm. Sexes alike. A very large rufous-orange (tawny) owl; has broad blackish shaft-stripes, much buff on scapulars and wing-coverts; dark brown wing- and tail-quills, with buff bars and tips; pale rufous-orange underparts with broad black streaking and without black barring; usually a throat-patch; and whitish patch on forehead. Call a deep *whoo-hoo* and a cat-like mewing.

Habitat : Banks of streams and rivers in dense broadleaved forest.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

281(658-660) *Strix leptogrammica* Temminck, 1831
Brown Wood-Owl

1836. *Ulula newarensis* Hodgson, *Asiat. Res.* 19 : 168 (Nepal).

1927. Baker, *FBI* No. 1647, 4 : 400.

Diagnostics : Size : Black Kite -; c. 45-57 cm. Sexes alike. A large dark brown owl; has uniformly chocolate-brown upperparts with fine white barring on scapulars, wings and tail-coverts; whitish facial disc framed with uniform chocolate crown, prominent white supercilium, and dark brown eye-patches; no ear-tufts; buffy underparts closely barred with dark brown; chocolate and white chin; white throat-patch; brownish breast;

and brown tail barred with fulvous and tipped with white. Call is *too-tu-whoo*.

Habitat : 750-2420 m (4000 m). Dense forest.

Distribution : Uttarakhand : Chamoli : Mandal (Singh 2005a). Dehra Dun : New Forest (George 1957), (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Govind NP : Duni (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

282(661-662) *Strix aluco* Linnaeus, 1758
Tawny Wood-Owl

1845. *Syrnium nivicolium* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 14(1) : 185 ('Himalaya', i.e. Nepal).

1954. *Strix nivicola obrieni* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 27 (Blue Mountain, Lushai Hills).

1927. Baker, *FBI* No. 1645, 4 : 398.

Collection records : Uttarakhand : Dehra Dun : DL road, 1 σ , 28.xi.1973, coll. Basant.

Diagnostics : Size : Jungle Crow $\pm$; c. 46 cm length; c. 81-96 cm wingspan. It occurs in two colour phases, rufous brown and greyish brown, with intermediate forms. A medium-sized, stocky and brown Himalayan owl; has large rounded head with dark centre to crown and pale forecrown stripes; whitish facial disc with dark brown eyes and no ear-tufts; broad rounded wings; plumage colour varying from grey to rufous-brown, with white markings on scapulars; white underparts heavily and closely barred on chin and throat, streaked and narrowly bared on remaining underparts (distinguishes it from Hume's, Mottled Wood and Brown Wood); and broad barring on wings and tail.

Races : *S. a. biddulphi* of the W Himalayas is grey-brown and white with broad streaking on upperparts, and is larger than *S. a. nivicola* of C and E Himalayas, which varies from rufous to dark brown and has barred rather than streaked upperparts. Call is a *too-tu-whoo*.

Habitat : (600)1200-4250. Temperate forest.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : The Tawny Owl has extremely capable eyes. Its retina has about 56,000 light-sensitive rods per square millimetre; enabling it to pick out prey several metres away by the light of one candle over 500 metres away. In low-level light conditions, this is about 100 times better than the eyes of humans.

**283(635) *Glaucidium brodiei* (Burton, 1836)
Collared Owllet**

1836 (1835). *Noctua Brodiei* Burton, *Proc. Zool. Soc. London* : 152 (Himalayas, restricted to Simla by Baker, 1927 *Fauna* 4 : 450).

1836. *Noctua tubiger* Hodgson, *Asiat. Res.*, 19 : 175 (Nepal).

1952. *Glaucidium brodiei garoense* Koelz, *Jour. Zool. Soc. India* 4 : 45 (Tura).

1927. Baker, *FBI* No. 1696, 4 : 450.

Collection records : Uttarakhand : Dehra Dun : Sayed Mohalla, 1 ♀, 24.i.1973, coll. Ram Das.

Diagnostics : Size : Quail ±; c. 17 cm. Sexes alike. A tiny owl with a face-like pattern on nape (created due to the hind collar and a black spot on each side of nape also known as owl-face pattern). It is an attractive and acceptable miniature of the better known Asian Barred Owllet; occurs in two morphs rufous and chestnut; has spotted crown; heavily barred with buff and grey-brown (or rufous and brown) on upperparts; similarly patterned underparts; prominent white supercilium; and white throat-patch.

Habitat : <3200 m. Subtropical and temperate forest. Quite diurnal.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995, Singh 2000), New Forest (George 1957, Mohan 1996). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Rudrapur : Kedarnath Sanctuary (Myers & Singh 2006).

CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**284(639-641) *Glaucidium cuculoides* (Vigors, 1831)
Asian Barred Owllet**

1831. *Noctua cuculoides* Vigors, *Proc. Zool. Soc. London* : 8 (Himalayas, i.e. Simla-Almora district).

1927. Baker, *FBI* No. 1689, 4 : 444.

Collection records : Uttarakhand : Almora : Kathpuria, 1 ♂, 22.xii.1968, coll. P. K. Bose. Uttarkashi: Barkot, 1 ♀, 28.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Myna ±; c. 23 cm. Sexes alike.

Adult : Has dark brown (or olive brown) heavily barred upper-and-lower parts; whitish abdomen with longitudinal dark striations; and prominent white throat-patch. Resembles Jungle Owllet (*G. radiatum*), but distinguished by its barring on upperparts more broadly spaced (i.e. dark spaces 3-4x width of pale bars), barring on belly usually more broken, turning to streaking on lower flanks. Often waves tail from side to side.

Juvenile : With buff spotting on crown, nape and mantle, and barring on breast and streaking on flanks is more diffuse.

Habitat : <2700 m. Tropical, subtropical and temperate forest.

Distribution : Uttarakhand : Dehra Dun : around Mussoorie and Chakrata hills (Osmaston 1935), New Forest (George 1962a, Mohan 1996, Singh 2000), (Bhatnagar & Misra 1971, 1972a, Tak 1995). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh: Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**285(636-637) *Glaucidium radiatum* (Tickell, 1833)
Jungle Owllet**

1833. *Strix Radiata* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 572 (Jungles of Borabhum and Dholbhum).

1927. Baker, *FBI* No. 1694, 4 : 448.

Diagnostics : Size : Myna $\pm$; c. 20 cm. Sexes alike. Smaller than the Asian Barred Owlet, with more closely barred upperparts (i.e. dark spaces $1\frac{1}{2}$ -2 x width of pale bars) and underparts; white chin, moustachial streaks, middle of breast and abdomen; bright rufous barring on wing-coverts and flight feathers; and a rufous patch on underwing conspicuous in flight.

Habitat : Mainly lower elevations (up to 2000 m). Open tropical and subtropical forest.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a & b, Tak 1995), New Forest (George 1957, Mohan 1996, Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

286(650-652) *Athene brama* (Temminck, 1821)
Spotted Owlet

1831. *Noctua Indica* Franklin, *Proc. Zool. Soc.* London : 115
(Banks of the Ganges and in the mountain chain of upper Hindoostan, i.e. Uttar Pradesh).

1927. Baker, *FBI* No. 1648, 4 : 440.

Collection records : Uttarakhand : Dehra Dun : Herbatpur, Asan River, 1 σ , 31.vii.1973, coll. D. N. Basu. Naini Tal: Ramnagar, Chilka, 1 ϕ and 1 ex., 27.xii.1968, coll. P. K. Bose; Dalanwala, 1 ϕ , 20.ix.1973, coll. A. Husain.

Diagnostics : Size : Myna $\pm$; c. 21 cm. Sexes alike. It is a familiar short owl.

Adult : Has heavy white spotting on greyish brown upperparts; the white spots on its head distinguishes it from Asian Barred, Jungle and Collared Owlets; white underparts with brown streaks; pale facial disc; pale hind collar; and yellow forwardly directed staring eyes.

Juvenile : More marked with white, spots running into definite bars, and longitudinal dark markings on underparts.

Habitat : <1530 m (2750 m). Habitation and cultivation.

Distribution : Uttarakhand : Almora : Kaparkhan, Chanthariya (ZSI Survey 2004). Chamoli : Narainbagrh (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, Mohan 1996), New Forest, [Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag : Augstyamuni (ZSI Survey 2004). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : Spotted Owlet is a common resident bird in open habitats including farmland and human habitation.

287(642-645) *Ninox scutulata* (Raffles, 1822)
Brown Hawk-Owl

1833. *Strix Luugubris* Tickell, *Jour. Asiat. Soc. Bengal*, 2 : 572 (Dampara, Dholbhum, Bengal).

1927. Baker, *FBI* No. 1698, 4 : 454.

Diagnostics : Size : Pigeon $\pm$; c. 32 cm. Sexes alike. A distinctive chocolate-brown owl with hawk-like profile (due to its long tail and lack of a distinct facial disc); has dark facial disc (without spotting or barring), white forehead and irregular white spotting on scapulars; bold reddish-brown streaking on whitish underparts; and tail barred with black and tipped white.

Habitat : Wooded areas, often near water and/or habitation.

Distribution : Uttarakhand : Chamoli (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, Mohan 1996, Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

288(663) *Asio otus* (Linnaeus, 1758)
Long-eared Owl

1758. *Strix Otus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 192 (Europa, restricted type locality = Sweden, ex *Faun. Svec.*).

1927. Baker, *FBI* No. 1642, 4 : 393.

Diagnostics : Size : Pigeon +; c. 31-37 cm length; 86-98 wingspan. Sexes alike. A medium-sized owl with long ear-tufts (typically held erect when at rest, sometimes hidden), more rounded wings and shorter tail; has mottled grey-brown upperparts; orange-brown facial disc; orange (rather than yellow) iris; buff underparts (boldly streaked and barred with black); and entirely feathered tarsus and toes. In flight, the orange-buff base to primaries, tail feathers, pronounced dark barring, etc. are the clues.

Habitat : Semi-desert with low trees, woodland, plantations, tall grass.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). CTR (Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : Owls belonging to genus *Asio* are known as the eared owls, as they have tufts of feathers resembling mammalian ears. These 'ear' tufts may or may not be visible.

289(664) *Asio flammeus* (Pontoppidan, 1763)
Short-eared Owl

1763. *Strix Flammea* Pontoppidan, *Dansk. Atlas* 1 : 617, pl. 25 (Sweden).

1927. Baker, *FBI* No. 1643, 4 : 394.

Diagnostics : Size : Pigeon +; c. 37-39 cm length; 85-103 cm wingspan; 206-475 grams weight. Sexes alike. It is a medium-sized owl with short ear-tufts (often hidden); buffish facial disc; yellow eyes (exaggerated by black rings encircling each eye, and large whitish discs of plumage surrounding the eyes like a mask); mottled tawny to brown plumage with buffish background colouration to primaries and tail; pale buff underparts longitudinally brown-streaked on upper breast, indistinct streaking on belly and flanks; broad pointed wings visible in flight; and short barred tail. It displays its 'ear-tufts' when in a defensive pose, however, its very short tufts are usually not visible.

Habitat : <1400 m (3320 m). Open country : grassland, marsh, cultivation, scrub.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Order CAPRIMULGIFORMES
CAPRIMULGIDAE (Nightjars)

Nightjars are medium-sized, cryptically mottled species with broad gapes adapted for hawking insects. Ears are large, tail is long, and wings are long and pointed. Their nocturnal habits and similar plumages make them normally very difficult to observe adequately and identify except by voice. They spend the day by roosting on the ground or perched along a horizontal branch, when they may be fairly closely approached, allowing identification by the following features : size; pattern of white in tail and wing (absent in females of most species); amount of streaking on crown; pattern of scapulars.

290(670-672a) *Caprimulgus indicus* Latham, 1790
Indian Jungle Nightjar

1790. *Caprimulgus indicus* Latham, *Index Orn.* 2 : 588 (India).

1927. Baker, *FBI* No. 1625, 4 : 366.

Diagnostics : Size : Pigeon -; c. 27-32 cm. It is a darker and greyer (grey to grey-brown) Nightjar than congeners; upperparts heavily marked with black; bold irregular markings on scapulars; white throat-band sometimes broken; female lacks male's white on wing; and breast is dark grey-brown. Song is a diagnostic loud, resonant *chuk-chuk-chuk-chuk*.

Male : With white spots on first four primaries, and white at tips of all but central tail feathers (narrow white subterminal band on outer tail of male diagnostic); both these diagnostics of the male are prominent in flight.

Female : Without white in primaries and no white in outer tail.

Habitat : <3300 m. Clearings, scrub, teak, blue pines.

Distribution : Uttarakhand : Chamoli : a few miles south of Chamoli (Osmaston 1921), Belta

Kharak (Sankaran 1993, 1994), Surraithota, Belta Kharak (Tak 1997), Mandal (Singh 2005a). Dehra Dun: beyond Chakrata (Osmaston 1935), (Singh 2000). Pauri (Tak 1995). Rudraprayag: Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Govind NP : Sirga (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

291(673) *Caprimulgus europaeus* Linnaeus, 1758
European Nightjar

1871. *Caprimulgus unwini* Hume, *Ibis* : 406 (Agrore Valley and I the neighbourhood of Abbottabad. The specimens listed as types in the former locality).

1927. Baker, *FBI* No. 1619, 4 : 359.

Diagnostics : Size : Myna +; c. 25 cm length; 55 cm wingspan. A medium-sized, lichen-grey (brownish-grey), and well-streaked Nightjar; has regular bold lanceolate streaking on crown, nape and scapulars; dark brown and buffy scapular-bands; black bill; white throat-patch indistinct but generally complete; dark barring on breast; longer wings and tail; and reddish brown legs.

Male : With characteristic white spots on first three primaries and on two pairs of outer tail feathers.

Female : Similar to male but without white on tail and the white wing-bar is replaced by buff. Song is continuous churring; soft *quoit quoit* in flight.

Habitat : 1600-2800 m. Thinly vegetated hillsides.

Distribution : Uttarakhand : Dehra Dun : Chakrata hills (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

Remarks : Its beautifully variegated plumage resembles the Wryneck, its wide gape and long wings are like a Swift, and its soft downy plumage and nocturnal habits are akin to an Owl. Its strange nocturnal note and silent ghostly flight have earned (from the superstition) the name 'Goatsucker',

based on the ancient, but mistaken, belief that European Nightjar would suck milk from goats. Infact, the Nightjar does not hunt with open mouth, as often depicted, but the huge gape opens wide for large crepuscular insects, such as 'noctuid moths' and 'door-beetles', which are shattered up with greediness. Crepuscular insects are its food.

292(675, 678-679) *Caprimulgus macrurus*
Horsfield, 1821
Large-tailed Nightjar

1833. *Caprimulgus Albonotatus* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 580 (Dampara, Dholbhum, Bengal) [Now in Chaibasa dist., Bihar].

1892. *Caprimulgus nepalensis* Harter, *Cat. Bds. Brit. Mus.* 16 : 540 (ex Hodgson MS., a *nomen nudum* cited in synonymy of *C. albonotatus* by Hodgson, 1844, in *Zool. Misc.* : 82).

1930. *Caprimulgus macrourus hodgsoni* Baker, 1930, *Fauna Brit. Ind.*, Bds., ed. 2, 7 : 372. New name for *Caprimulgus nepalensis* Hartert, not available.

1954. *Caprimulgus macrurus noctuivigilus* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 26. (Bhadwar, Kangra dist., Punjab).

1927. Baker, *FBI* No. 1623-4, 4 : 364-5.

Diagnostics : Size : Pigeon ±; c. 30 cm. A medium-sized cryptically coloured brown (resembling bark or leaves) Nightjar with remarkably camouflaging plumage; bold black-entered scapulars (with well-defined buff edges); white throat-band; indistinct or diffuse pale rufous-brown nuchal collar; white tail-corners and wing-patches; and long broad tail.

Male : With diagnostic white spots on first four primaries and extensive white tips to outer two tail feathers.

Female : With buff (rather than white) spots on primaries and outer tail feathers. Song is a series of loud repetitive and often mechanical, resonant calls : *chaunk-chaunk-chaunk*, repeated at the rate of 100 per minute.

Habitat : <1800 m (2000 m). Open forest, forestedge, clearings, secondary growth.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George

1957, Mohan 1996), Lachchiwala, New Forest, Phanduwala, Timli, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : Temperate species are strongly migratory, wintering in the tropics.

**293(680-681) *Caprimulgus asiaticus* Latham, 1790
Common Indian Nightjar**

1790. *Caprimulgus asiaticus* Latham, *Index Orn.* 2 : 588 (India = Bombay).

1939. *Caprimulgus asiaticus gurgaoni* Koelz, *Proc. Boil. Soc. Washington* 52 : 80 (Hattin, Gurgaon, Punjab [=Haryana]).

1927. Baker, *FBI* No. 1630, 4 : 372.

Diagnostics : Size : Myna $\pm$; c. 24 cm. Sexes alike. A small-sized grey (sometimes paler sandy-grey) Nightjar with relatively shorter wings and tail; boldly streaked crown; distinct rufous-buff nuchal collar; broken white throat-band; variegated buff and brown plumage; bold black centres and broad buff edges to scapulars; prominent rufous-buff spotting on wing-coverts; and relatively unmarked tail feathers. White on primaries (wings) and outer tail feathers in both sexes. Song far carrying *chuk-chuk-chuk-chuk-tukaroo*, short sharp *qwit-qwit* in flight.

Habitat : <1500 m. Thin scrub, young plantations, etc.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

**294(682) *Caprimulgus affinis* Horsfield, 1821
Franklin's Nightjar**

1831. *Caprimulgus monticolus* Franklin, *Proc. Zool. Soc. London*: 116 (Ganges between Calcutta and Benares).

1931. *Caprimulgus monticolus* Baker, *Bull. Brit. Orn. Cl.* 51 : 102 (Upper Chindwin, Burma).

1927. Baker, *FBI* No. 1629, 4 : 370.

Diagnostics : Size : Myna +; c. 25 cm. It is also known as Savanna Nightjar; a medium-sized, mottled, grey-brown Nightjar; compared with European (Eurasian) crown and mantle are finely vermiculated, and lack bold dark streaking; has white broken throat-band; rufous-buff edging on scapulars; more uniform coverts (with fine dark vermiculations and irregular rufous-buff markings).

Male : With diagnostic white spots on first four primaries, and outer tail feathers are all white except for greyish tips.

Female : With rufous-buff spots on primaries and without white in tail. Song is loud and shrill *dheet*.

Habitat : <1200 m (2400 m). Open forest, lightly wooded grassland, hillsides.

Distribution : Uttarakhand : Dehra Dun : Karwapani (Osmaston 1935, Bhatnagar & Misra 1971, 1972a), New Forest (Mohan 1993 & 1996), (Tak 1995), Khaddar, [Dholkhand (Singh 2000). Pauri : not beyond the limits of sal forest, or the Nayar valley (Osmaston 1921). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

**Order APODIFORMES
APODIDAE (Swifts)**

Swifts are superficially similar to swallows but have longer scythe-like wings and a generally stiffer flight consisting of rapid wing-beats interspersed with long glides. Overall plumage is dark brown or black, occasionally with a blue or green gloss, relieved in many species with distinctive patches of white. Their very short legs reflect the fact that they spend most of their time in the air hawking for insects and are only seen perched at roosting or nesting sites, which are

usually in caves, old building rock faces or hollow trees. They often fly very high and are frequently seen at the edge of an approaching weather front feeding on the clouds of insects which it stirs up. Swiftlets are smaller with square-ended or notched tails. They breed colonially using hardened saliva in the construction of the nests, which are highly prized by some Asiatic people for their supposed medicinal properties and for making birds' nest soup. The collection of these nests is endangering the species survival. Needletails are among the fastest flying birds in the world. They are bulkier than other swifts with broader wings and short square-ended tails tipped with needle-like projections (only visible at close range).

295(683-684) *Collocalia brevirostris* (Horsfield, 1840)

Himalayan Swiftlet

1840. *Hirundo brevirostris* Horsfield, *Proc. Zool. Soc. London* : 155 (Assam).

1927. Baker, *FBI* No. 1609, 4 : 348.

Diagnostics : Size : Sparrow -; c. 14 cm. Sexes alike. A small, slender and stocky swift with narrow but rather swallow-like wings and slightly indented (notched) tail; has dark brown upperparts with slight gloss and distinct greyish rump band; and uniformly greyish brown underparts. Distinguishable in the air from other swifts (as *Collocalia*) by the occasional interludes of seemingly laboured pipistrelle-like fluttering while in normal hawking flight.

Habitat : Foothills to 4580 m. Montane habitats, especially forested valleys. Nest combines moss and saliva.

Distribution : Uttarakhand : Almora (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : in forest above Joshimath (Reed 1979), Rishiganga gorge (Sankaran 1993, 1994), Lilam (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : New Forest (Mohan 1993, 1996), Karva Pani (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pithoragarh : Goriganga valley- 1994 (Tak & Sati 2006). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005).

Uttarkashi : Silkyara (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

296(692) *Zoonavena sylvatica* (Tickell, 1846)
White-rumped Needletail-Swift

1846. *Acanthylis sylvatica* Tickell, *Jour. Asiat. Soc. Bengal* 15 : 284 (Central India, restricted to Maunbhum by Whistler & Kinnear, 1935, *JBNHS* 38 : 33).

1927. Baker, *FBI* No. 1606, 4 : 344.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. A small, stocky Needletail with broad wings (pinched in at base and pointed at tip); blue-black upperparts with a contrasting broad white rump-band; greyish brown chin, throat and breast; and white lower abdomen, vent and undertail-coverts. In overhead aspect, gives general effect of House Swift (*Apus affinis*) but black flight feathers, white belly, white rump-patch and 'Snipes' at tip of tail (visible at close range) form diagnostics.

Habitat : <1700 m. Hawks chiefly over hill forest and clearings.

Distribution : Uttarakhand : Chamoli : NDNF (Tak & Kumar 1987), (Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Not Listed in the Act (BNHS 2002).

297(688) *Hirundapus caudacutus* (Latham, 1802)
White-throated Needletail-Swift

1837 (1836). *Cypselus (Chaetura) nudipes* Hodgson, *Jour. Asiat. Soc. Bengal* 5 : 779 (Nepal).

1927. Baker, *FBI* No. 1603, 4 : 340.

Diagnostics : Size : Bulbul ±; c. 20 cm. Sexes alike. It is also known as 'White-throated Needletail' or 'Needle-tailed Swift' or 'Spine-tailed Swift'. It is a large, blackish brown swift with long, narrow pointed bow-shaped wings; short, square-ended tail (projecting beyond white undertail-coverts, and tail 'spines' indistinct). It has very powerful and superb flight combining flapping, swooping, gliding and soaring, often at very high speed. Easily distinguished from Silver-backed and Brown-backed by its white throat and white inner tertials (may be obscured).

Adult : With glossy black upperparts, except prominent pale brown 'shaddle' on back, and white patch on tertials (prominent in flight); and well-defined white chin, throat and undertail-coverts, remaining underparts dark brown.

Juvenile : With black streaking and spotting on white of hindflanks, and black fringes to white undertail-coverts.

Habitat : 1250- 4000 m. Can be seen over most montane habitats such as ridges, cliffs, upland grassland, and river valleys.

Distribution : Uttarakhand : Dehra Dun : Chakrata (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000). Rudraprayag : Tungnath Mountain (Lavkumar 1956b). CTR (internet list).

Status : Sparse summer visitor. Not Listed in the Act (BNHS 2002).

Remarks : The *Hirundapus* needletail swifts get their name from the spiny end to the tail, which is not forked as in the *Apus* typical swift. It is the fastest flying bird in level, flapping flight, being capable of 170 km/h. The flight is impressively fast, even compared to other swifts. These birds have very short legs which they use only for clinging to vertical surfaces. They build their nests in rock crevices in cliffs or hollow trees. They never settle voluntarily on the ground and spend most of their lives in the air, living on the insects they catch in their beaks.

298(689-690) *Hirundapus cochinchinensis*
(Oustalet, 1878)

Silver-backed Needletail-Swift

1878. *Chaetura cochinchinensis* Oustalet, *Bull. Soc. Philom. Paris* (7)2 : 52 (Saigon, Cochinchina [= South Vietnam]).

1927. Baker, *FBI* No. 1604, 4 : 342.

Diagnostics : Size : Bulbul $\pm$; c. 20 cm.

Adult : Very similar to White-throated Needletail-Swift, but lacks the white on chin and throat; and its tertial spots are buffy brown (vs white).

Juvenile : With brown fringes to white undertail-coverts.

Habitat : Broadleaved forest.

Distribution : Uttarakhand : Rudraprayag : Tungnath Mountain forest (Lavkumar 1956b). CTR (internet list).

Status : Residential status not known. Not Listed in the Act (BNHS 2002).

Remarks : The resemblances between the swift and swallows are due to convergent evolution reflecting similar life style based on catching insects in flight. Like swallows and martins, the swifts of temperate regions are strongly migratory and winter in the tropics. The nest of many species is glued to a vertical surface with saliva, and the genus, *Aerodramus* use only that substance, which is the basis for bird's nest soup.

299(707-708) *Cypsiurus balasiensis* (J.E. Gray, 1829)

Asian Palm-Swift

1829. *Cyps.(selus) Balasiensis* [sic] J. E. Gray, in Griffith's *Anim. Kingdom* 7 : 60 (India, restricted to Calcutta by Baker, 1927, *Fauna* 4 : 336).

1830. *Cypselus palmarum* J. E. Gray, in Gray and Hardwicke's *Ill. Ind. Zool.* 1(2), pl. 35, figs. 1b (No locality = Cawnpore).

1927. Baker, *FBI* Nos. 1600, 1601, 4 : 336; 338.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike.

Adult : Slim, mainly pale brown with slender body; back-swept long wings; and very long tail usually held closed (deeply forked when open, needle-like when closed). The flight is slow and flicker compared with most swifts; rapid fluttering and wingbeats are interspersed with short glides.

Juvenile : With shorter tail.

Habitat : Mainly plains (up to 1000 m). Open country and cultivation with palm trees.

Distribution : Uttarakhand : Pauri (Tak 1995). Uttarkashi Dhanotri (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

300(693-695) *Tachymarptis melba* (Linnaeus, 1758)
Alpine Swift

1758. *Hirundo Melba* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 192 (Gibraltar).

1927. Baker, *FBI* No. 1589, 4 : 324.

Diagnostics : Size : Bulbul +; c. 22 cm length; c. 55 cm wingspan compared to the 42 cm of Common Swift. Sexes alike. A large sooty brown swift with very long, narrow, pointed, and swept-back wings and slightly forked tail. In overhead aspect, white throat, brown breast-band, and white patch on belly together with brown undertail-coverts and brown-and-white underside of bow-shaped wings are the diagnostics. The flight is powerful and slower with comparatively deep and slow wingbeats.

Habitat : <2200 m (3700 m). Chiefly forested hill country.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : beyond Chakrata (Osmaston 1935), New Forest (George 1957, Mohan 1996), (Wright 1957, Bhatnagar & Misra 1971, Tak 1995), Chakrata, New Forest (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition-1998, (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Not Listed in the Act (BNHS 2002).

Remarks : The Alpine Swift is similar to Barn Swallow or House Martin. It is, however, unrelated to those passerine species. The resemblances between the groups are due to convergent evolution, reflecting similar life styles. Alpine Swifts breed in mountains from southern Europe to the Himalaya. Like Common Swifts, they are strongly migratory, and winter much further south. They built their nests in a suitable cliff hole or cave; and return to the same site year after year; rebuilding the nest when necessary. These birds pair for life. Young swifts in the nest drop their body temperature and become torpid if bad weather prevents their parents from catching insects nearby. They spend most of their lives in the air, living on the insects they catch in their beaks. They drink on the wings, but roost on vertical cliffs or wall.

301(696) *Apus apus* (Linnaeus, 1758) Common Swift

1870. *Cypselus pekinensis* Swinhoe, *Proc. Zool. Soc. London* : 435 (Pekin, China).

1927. Baker, *FBI* No. 1590, 4 : 326.

Diagnostics : Size : Bulbul -; c. 17 cm length; c. 42 cm wingspan. Sexes alike.

Adult : Uniformly and entirely dark brown (sooty black), except for the white or pale grey chin (noticeable at close range); with a short forked tail and very long swept-back wings.

Juvenile : With whiter forehead, more extensive white throat, and extensive pale scaling on underparts.

Habitat : (plains) 1500-3800 m (5730 m?). Chiefly mountains.

Distribution : Uttarakhand : Dehra Dun : Asan Barage (Gandhi & Singh 1995). Rudraprayag : Tungnath Mountain (Lavkumar 1956b), Chopta and Duggalbitta (Bannerjee 1993). Udham Singh Nagar: Haripur Dam site & Dineshpur (ZSI Survey 2005). Uttarkashi : Kamad (ZSI Survey 2005). CTR (Khatri 2004, internet list).

Status : Sparse winter visitor. Not Listed in the Act (BNHS 2002).

302(699-700) *Apus pacificus* (Latham, 1801) Pacific Swift

1801. *Hirundo pacifica* Latham, *Index Orn.*, Suppl., lvii (new Holland = New South Wales *apud* Mathews); the *terra typica* has been fixed as the vicinity of Vladivostok by Domaniewski, 1933, *Acta Orn. Mus. Zool. Polonici* 1 : 80).

1927. Baker, *FBI* No. 1593, 4 : 329.

Diagnostics : Size : Bulbul -; c. 18 cm. Sexes alike. Pacific Swift is similar to Common, but distinguished by its deeply forked tail, blackish-brown upperparts with a contrasting white rump-patch; and whitish chin and throat with black-and-white scaling on underparts.

Habitat : <3700 m. Varied habitats.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Lohajang (Osmaston 1921), lower Rishiganga gorge (Tak 1997),

Dibrugheta (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Singh 2000). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998, (Tak & Sati 2006). Rudraprayag : Tungnath Mountain (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri: Bheling valley (Searight 1926), Ranichauri (ZSI Survey 2005). Uttarkashi : Govind NP : Taluka (Tak *et al.* 2004). CTR (Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Not Listed in the Act (BNHS 2002).

**303(702-706) *Apus affinis* (J. E. Gray, 1830)
House Swift**

1830. *Cypselus affinis* J.E.Gray, in Gray and Hardwicke's *Ill. Ind. Zool.* 1(2), pl. 35, f. 2 (No locality = Ganges).

1927. Baker, *FBI* No. 1596, 4 : 332.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1 ♂, 8.ix.1972, coll. D. N. Basu.

Diagnostics : Size : Sparrow; c. 15 cm length; c. 33 cm wingspan. Sexes alike. A small smoky black swift with comparatively short sickle-shaped wings; contrasting white rump and throat; and square-ended or slightly forked tail.

Habitat : <2000 m. Neighbourhood of towns, cliffs, ruins, etc. Flocks noisy in flight.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Mandal village (Singh 2005a). Dehra Dun : Dun and Mussoorie (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996, Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Dhauli river basin- 2004, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

HEMIPROCNIDAE (Tree-Swifts)

Treeswifts are unlike other swifts in being less aerial, more colourful, sporting a crest, and building their nests in the forks of branches. Since the following species is mostly seen on the wings, identification notes primarily refer to birds in flight. They are aerial near passerine birds, closely related to, but distinct from the true swifts.

**304 (709) *Hemiprocne coronata* (Tickell, 1833)
Crested Tree-Swift**

1833. *Hirundo Coronata* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 580 (Jungles of Borabhum and Dholbhum).

1950. *Hemiprocne longipennis dryas* Ripley, *Proc. Biol. Soc. Washington* 63 : 101 (Juna Rajpipla, South Gujarat).

1927. Baker, *FBI* No. 1616, 4 : 354.

Diagnostics : Size : Bulbul ±; c. 23 cm. A slender swallow-like bird with a prominent backward curving frontal crest (in conspicuous in flight, but erected when perched); and long, forked, and extremely thin tail (often held closed).

Male : With chestnut (dull orange) ear-coverts, chin, throat, and sides of face; blue-grey upperparts; paler underparts, becoming whitish on belly and vent.

Female : With dark grey ear-coverts, forming dark mask, bordered below by whitish moustachial stripe.

Juvenile : With dark grey head and wings, and much streakier plumage.

Habitat : <1280 m. Chiefly broadleaved hill forest. Relatively slow flight consists of much gliding interspersed with a few rapid wingbeats, often low above treetops.

Distribution : Uttarakhand : Dehra Dun : forest edges near water- Karwapani, Lachchiwala and Kansrao (Osmaston 1935), (Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (Mohan 1993, 1996), Karva Pani, New Forest, [Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

Order TROGONIFORMES
TROGONIDAE (Trogons)

Trogon are shy, brightly coloured, medium-sized inhabitants of broadleaved evergreen forests. Appearance is chunky with characteristic long, broad square-cut tail; short rounded wings; short, thick, broad bill; short legs; upright posture. Generally found singly or in pairs, sometimes with mixed flocks, usually frequenting the mid-storey form where they venture out forward after insects.

305(713-715) *Harpactes erythrocephalus*
(Gould, 1834)
Red-headed Trogon

1838. *Trogon (Harpactes) Hodgsonii* Gould, *Monogr. Trogonidae*, List of pl. No. 34 (Nepal). Restricted by Biswas to Hitaura, Chisapani, Garhi Province, Nepal.

1927. Baker, *FBI* No. 1586 (part), 4 : 318.

Diagnostics : Size : Myna +; c. 35 cm.

Male : Has crimson head, neck and breast; dark cinnamon remaining upperparts; black-and-grey vermiculated wing-coverts; prominent white breast-band; and pink remaining underparts.

Female : Has dark cinnamon head and breast, and brown-and-buff vermiculated wing-coverts; white breast-band and pink underparts.

Juvenile : With buffish-white (rather than pink) on lower breast, belly and flanks.

Habitat : <1830 m. Dense broadleaved evergreen forest and bamboo.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : The word 'trogon' is Greek for 'nibbling' and refers to the fact that these birds gnaw holes in trees to make their nests. Trogons are residents of tropical forests worldwide.

Order CORACIIFORMES
ALCEDINIDAE (Kingfishers)

Kingfishers are small to medium-sized birds with long strong bill; large flat head; short neck; compact body; short rounded wings; and short weak legs. Many are tied to aquatic habitats; subsisting largely on fish caught by diving from an

exposed position, but some prey on insects and small animals well away from water. Flight is direct and strong with rapid wing beats. They actively defend their territory throughout the year.

306(722-724) *Alcedo atthis* (Linnaeus, 1758)
Small Blue Kingfisher

1851. *Alcedo Pallasii* Reichenbach, *Handb. spec. Orn.* : 3, pl. cccxcii, figs. 3043-6 (Siberia).

1927. Baker, *FBI* No. 1535, 4 : 253.

Collection records : Uttarakhand : Dehra Dun : Kalsi, 1 ♂, 27.ix.1972, coll. D. N. Basu. Pauri : Srinagar, Kameda, 1 ex., 25.vi.1969, coll. P. K. Bose.

Diagnostics : Size: Sparrow +; c. 18 cm. Sexes alike. An elegant little metallic blue kingfisher with greenish-blue head, scapulars and wings; turquoise-blue back and rump (noticeable in flight); orange ear-coverts (ending in a white patch on side of neck) and underparts; white chin and throat; a broad greenish blue streak from lower mandible to side of neck; long, straight, pointed black bill (the bill of female is reddish orange at the base); and short stumpy tail.

Habitat : <1850 m (3100 m). Wide variety of waterbodies in open country.

Distribution : Uttarakhand : Almora : Gagas, Chanthariya, Someshwar (ZSI Survey 2004). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Khaddar, Karva Pani, Lachchiwala, Mathurawala Swamp, Sulphur Springs (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal (Hudson 1930). Pauri (Tak 1995). Pithoragarh : Dhauli river basin- 2004 (Tak & Sati 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995). Udham Singh Nagar : near Panthnagar, Haripur Dam site & Dineshpur (ZSI Survey 2005). Uttarkashi : Kamad (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

307(730-732) *Halcyon capensis* (Linnaeus, 1766)
Stork-billed Kingfisher

1766. *Alcedo cpaensis* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 180
(Cape of Good Hope = Chandernagor, *fide* Stresemann, 1952, *Ibis* 94 : 517-21).

1841. *Alcedo gural* Pearson, *Jour. Asiat. Soc. Bengal* 10(2) : 633 (Midnapore, Bengal, India).

1927. Baker, *FBI* No. 1548, 4 : 265.

Diagnostics : Size : Pigeon ±; c. 38 cm. Sexes alike. A large and predominantly freshwater kingfisher; has direct and laboured flight with flapping.

Adult : With enormous, coral-red, dagger-shaped bill; brownish cap; yellowish buff collar and underparts; green back, blue wings and tail; and bright red legs.

Juvenile : With dusky barring on underparts, broader breast than elsewhere.

Habitat : Lowland rivers, streams and lakes in well-wooded areas (up to 1200 m).

Distribution : Uttarakhand : Dehra Dun : Karwapani, Lachchiwala and Kansrao (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Lachchiwala (Singh 2000). Pauri (Tak 1995). Tehri : Kamad (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : Stork-billed Kingfisher is territorial and will chase away eagles and other large predators. It hunts fish, frogs, crabs, rodents and young birds. It digs its nest in a river bank, decaying tree, or a tree, termite nest.

308(735-738) *Halcyon smyrnensis* (Linnaeus, 1758)
White-breasted Kingfisher

1758. *Alcedo smyrnensis* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 116 (Africa and Asia = Smyrna, *ex* Albin).

1927. Baker, *FBI* No. 1550, 4 : 268.

Collection records : Uttarakhand : Chamoli : Nandprayag, 1 ♂, 3.7.1969, coll. P. K. Bose;

Power House, 1 ♀, 4.7.1969, coll. P. K. Bose. Dehra Dun : Jantanwala, 3 exs., 4.ii.1969, coll. P. K. Bose; Rishikesh, Pashulok, 1 ♂, 29.xii.1972, coll. D. N. Basu; Sathyanarain, 1 ♂, 3.iii.1973, coll. Raj Tilak; Herbatpur, Asan River, 1 ♀, 31.vii.1973, coll. D. N. Basu; Dakpathar, 1 ♂, 5.ix.1973, coll. Raj Tilak; 37-Chakrata road, 1 ♂, 28.xi.1974, coll. S.K. Serin; 1 ♂, 1.iii.1976, coll. Surender Singh. Uttarkashi : Nagani, 1 ♀, 20.vi.1969, coll. P. K. Bose; Gangani, 1 ♂, 2.vi.1973, coll. Raj Tilak. Pauri : Dugada, 1 ex., 26.vi.1969, coll. P. K. Bose. Tehri : Uppu, 1 ♂ and 1 ♀, 22.vi.1969, coll. P. K. Bose.

Diagnostics : Size : Myna +; c. 28 cm. Sexes alike. It is also known as White-throated Kingfisher; a brilliant turquoise-blue kingfisher; has rapid and direct flight (large white patches are visible on the blue and black wings).

Adult : Has bright blue back, wings, rump and tail; chocolate brown head, shoulders, flanks and lower belly; white throat and centre of breast; and bright red large bill and legs.

Juvenile : Duller version of adult with brown bill and dark scalloping on breast.

Habitat : <2300 m (3050 m). Wide range of open habitats; not tied to water.

Distribution : Uttarakhand : Almora : Chanthariya, Mansi (ZSI Survey 2004). Bageshwar : Bharari, Baijnath, Garur (ZSI Survey 2004). Chamoli : Nagnath and Pindar valley (Osmaston 1921); Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006); Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Haripur Dam site & Dineshpur (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys

2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It perches conspicuously on wires or other exposed perches within its territory. It is reputed to eat tired migratory passerine birds like Chiffchaffs where the opportunity arises.

309(739) *Halcyon pileata* (Boddaert, 1783)
Black-capped Kingfisher

1783. *Alcedo pileata* Boddaert, *Table Pl. enlum.* : 41 (China, ex Daubenton, Pl. enlum., no. 673).

1927. Baker, *FBI* No. 1554, 4 : 271.

Diagnostics : Size : Myna +; c. 30 cm. Sexes alike. Mainly a coastal species.

Adult : Has velvety black cap and shoulders; purple-blue back and tail (looks black until sunshine transforms it into brilliant purple-blue); black coverts contrasting with blue secondaries; slightly brighter blue rump; white breast and collar; pale orange-buff belly and flanks; and coral-red bill and legs. In flight, large white patches at the base of primaries prominent.

Juvenile : With numerous striations running from lower mandible to neck; feathers across breast edged with black.

Habitat : <1000 m. Largely coastal; occasionally inland lacks, jheels and rivers.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : Mainly Indian coasts, west to Maharashtra; locally frequent in inland (Grimmett *et al.* 1998).

310(717-718) *Megaceryle lugubris* (Temminck, 1834)
Greater Pied Kingfisher

1900. *Ceryle lugubris continentalis* Hartert, *Novit. Zool.* 7 : 534 (Skkim).

1927. Baker, *FBI* No. 1532 (part), 4 : 248.

Collection records : Uttarakhand : Dehra Dun : Dakpathar, 1 ♂, 5.ix.1973, coll. Raj Tilak. Pauri :

Dugada, 1 ♂, 26.vi.1969, coll. P. K. Bose. Uttarkashi : Gangani, 1 ♀, 27.vi.1973, coll. Raj Tilak.

Diagnostics : Size : House Crow ±; c. 41 cm. A resident of Himalayas; very large black-and-white (grey-and-white) kingfisher; has striking, shaggy black crest streaked with white.

Male : Distinguished from the similar Lesser Pied (below) by the complete white neck-collar; finely spotted breast-band (sometimes mixed with rufous); evenly barred wings and tail; dark grey back and rump finely spotted with pale grey; and lacks white supercilium.

Female and juvenile : Similar to male, but with pale rufous underwing-coverts.

Habitat : <2000 m (3000 m). Mainly found in Mountain Rivers and larger rivers in foothills. Frequently sits on boulders in the river.

Distribution : Uttarakhand : Dehra Dun : larger streams, viz., Sahastradhara, Manjhera, Raipur, Kansrao, Lachhiwala, Asan as well as Ganges and Yamuna (Dakpathar) (Osmaston 1935), (Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (Mohan 1996), Asan Barrage, Asarori, [Maldeota] (Singh 2000), Asan wetland (Tak & Sati 2003). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993), Shivpuri (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995). Uttarkashi : Govind NP : Himri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

311(719-720) *Ceryle rudis* (Linnaeus, 1758)
Lesser Pied Kingfisher

1851. *Ceryle leucomelanura* Reichenbach, *Handb. spec. Orn.* : pl., ccix b, f. 3488 (Ceylon).

1927. Baker, *FBI* No. 1531, 4 : 246.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♀, 29.x.1964, coll. T. D. Soota;

1 ♀, 18.xi.1964, coll. R. K. Bhatnagar; Herbatpur, 1 ex., 25.x.1968, coll. P. K. Bose; 1 ex., 23.xi.1968, coll. P. K. Bose; Asan River, 1 ♂, 31.vii.1973, coll. D. N. Basu; Jantanwala, 2 ♀, 4.ii.1969, coll. P. K. Bose. Pauri : Srinagar, Kameda, 1 ♂, 25.vi.1969, coll. P. K. Bose. Uttarkashi, 1 ♀, 17.vi.1969, coll. P. K. Bose.

Diagnostics : Size : Myna + c. 31 cm. A speckled and barred black-and-white kingfisher; similar to the Greater Pied Kingfisher (above), but distinguished by its smaller size; streaked black crown; white supercilium contrasting with broad black eye-stripe and finely white-streaked black ear-coverts; white underparts with solid black band(s) (not spotted band as in Greater) across breast; and white patches on wings.

Male : With a double black gorget across breast.

Female : With only a single black gorget, broken in the middle.

Habitat : <900 m (1800 m). Standing water and slow rivers in open country. Frequently hovers.

Distribution : Uttarakhand : Almora : Mansi (ZSI Survey 2004). Dehra Dun : (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Asan Barrage, Khaddar, Mathurawala Swamp (Singh 2000). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal : Garjia Temple (ZSI Survey 2005). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Nagni (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Aam Pokhara-Kashipur, Dabka river, Bakra Dam site (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000), Ganga valley (Kumar & Bhatt 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It has evolved two unique strategies, shared by no other kingfishers. The Pied Kingfisher can hunt in both salt and freshwater. It can also deal with prey without returning to a perch, and can, for example, catch a second fish,

or eat small prey in flight. These adaptations mean that this kingfisher can hunt over the sea or in estuaries that lack the perches required by other kingfishers.

MEROPIDAE (Bee-eaters)

Mostly slim and medium-sized birds have essentially green plumage with splashes of blue, yellow and chestnut; longish, slim, pointed decurved bill; long triangular wings; long tail, often with elongated central tail feathers; short weak legs. Gregarious. They hawk for insects or catch them in graceful sallies from an exposed perch, and nest in burrows. Most species are sociable.

312(753) *Nyctyornis athertoni* (Jardine & Selby, 1828)

Blue-bearded Bee-eater

1828. *Merops athertoni* Jardine & Selby, *Ill. Orn.* 2, pl. 58 and text (India = Bangalore).

1836. *Bucia nipalensis* Hodgson, *Jour. Asiat. Soc. Bengal* 5 : 361 (Nepal).

1954. *Nyctyornis athertoni* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 25 (Keitum, Lushai Hills).

1927. Baker, *FBI* No. 1529, 4 : 242.

Diagnostics : Size : Pigeon ±; c. 36 cm. Sexes alike. A comparatively larger, bulkier and longer-billed bee-eater with a broad square-ended tail.

Adult : Easily distinguished by a combination of blue forehead and 'beard' (throat and upper breast), uniform grass-green upperparts, buffy-yellow belly and flanks with broad greenish streaking, and yellowish-buff undertail-coverts and underside of tail.

Juvenile : Similar to adult with blue 'beard'

Habitat : <1980 m. Moist broadleaved forest, second growth, riverine forest, clearings less active than other bee-eaters.

Distribution : Uttarakhand : Dehra Dun : Gorkha Cantonment (Osmaston 1935), New Forest (George 1957, Mohan 1996) (Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest, Tons Valley Forest, [Maldeota] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Not Listed in the Act (BNHS 2002).

**313(749-752) *Merops orientalis* Latham, 1801
Small Bee-eater**

1801. *Merops orientalis* Latham, *Index Orn.*, Suppl. : xxxiii (India = Pondichery vide Stresemann, 1952, *Ibis* 94 : 515).

1927. Baker, *FBI* No. 1523, 4 : 234.

Collection records : Uttarakhand : Dehra Dun : Raipur, 1 ♂, 9.iv.1963, coll. P. K. Bose; Sahastradhara, 1 ♀, 6.viii.1963, R. K. Bhatnagar; 2 exs., 15.iv.1965, coll. R. K. Bhatnagar; Jantanwala, 1 ex., 25.iii.1969, coll. P. K. Bose; Sayed Mohalla, 1 ex., 23.iv.1975, coll. Satpal. Naini Tal : Ramnagar, Chilkia, 1 ♀, 25.xii.1968, 1 ♂, 29.xii.1968, P. K. Bose.

Diagnostics : Size : Sparrow ±; c. 21 cm. Sexes alike.

Adult : A small, slender grass-green bird with blue cheeks, bordered below by a black gorget; faint golden sheen on head and hindneck in NW subspecies *M. o. beludschicus* (and strong rufous cast in *ferrugeiceps* of NE subcontinent); the central pair of tail-feathers projecting as blunt pins beyond tail; and long slightly curved black bill.

Juvenile : With square-ended tail.

Habitat : <2140 m. Open country, semi desert.

Distribution : Uttarakhand : Chamoli : Alaknanda valley between Karnprayag and Nandprayag (Osmaston 1921). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur, Jhilmil Jheel CR (ZSI Surveys 2004-06); Naini Tal : Ramnagar (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

Remarks : Unlike most bee-eaters, these are often solitary nesters, making a tunnel in sandy banks. The breeding pairs are often joined by helpers. They sometimes form small colonies, or nest near other bee-eaters. These birds roost communally, lined up on a tree branch. They readily make use of fence wires and electric wires. Before eating its meal, a bee-eater removes the sting by repeatedly hitting the insect on a hard surface.

A study showed that Little Green Bee-eaters are capable of identifying with the behaviour other animals. They were able to predict whether a predator at a particular location would be capable of spotting their nest entrance and then behaved appropriately in distinguishing their location. The ability to look at a situation from another's point of view was previously believed to be possessed only by primates.

**314(747) *Merops persicus* Pallas, 1773
Blue-cheeked Bee-eater**

1773. *Merops persicus* Pallas, *Reise Russ. Reich* 2 : 708 (Shores of the Caspian Sea).

1927. Baker, *FBI* No. 1527, 4 : 239.

Diagnostics : Size : Bulbul ±; c. 31 cm. Sexes alike.

Adult : A large, bright green bird; has whitish forehead and turquoise-and-white supercilium; a broad black streak from base of bill backward through eye to ear-coverts; a conspicuous white and blue-green cheek-patch; slightly curved black bill; yellow chin; chestnut throat; bright green remaining underparts, upperparts and tail; and two elongated central tail feathers.

Juvenile : Lacks blue on supercilium and cheeks and also lack elongated central tail feathers.

Habitat : Chiefly plains. Vicinity of lacks, jheels and sandy shores.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995, Singh 2000), New forest (George 1957). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Residential status not known. Not Listed in the Act (BNHS 2002).

315(748) *Merops philippinus* Linnaeus, 1766
Blue-tailed Bee-eater

1766. *Merops philippinus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 183, errata at end of volume; name for *Merops* 5th sp. (Philippine Islands).

1821. *Merops Javanicus* Horsfield, *Trans. Linn. Soc. London* 13(1) : 171 (Java).

1927. Baker, *FBI* No. 1526, 4 : 237.

Diagnostics : Size : Bulbul $\pm$; c. 31 cm. Sexes alike.

Adult : Similar to Blue-cheeked but distinguished by its blue rump and tail; and absence of blue supercilium. From Small Bee-eater (*M. orientalis*) by larger size, blue rump and tail, green crown, yellow chin, chestnut throat, and lack of black gorget.

Juvenile : With strong blue cast to rump, uppertail-coverts and tail; and more extensive but less well-defined rufous throat.

Habitat : Chiefly lowland (up to 1530 m). Often near wooded areas.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), New Forest, Timli, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread summer visitor. Not Listed in the Act (BNHS 2002).

316(744-745) *Merops leschenaulti* Vieillot, 1817
Chestnut-headed Bee-eater

1817. *Merops Leschenaulti* Vieillot, *Nouv. Dict. D'Hist. Nat.* 14 : 17 (Java, *errore* = Ceylon).

1927. Baker, *FBI* No. 1528, 4 : 240.

Collection records : Uttarakhand : Dehra Dun : Herbatpur, 1 ex., 8.ix.1970, coll. NRS/ZSI Survey Party.

Diagnostics : Size : Bulbul $\pm$; c. 21 cm. Sexes alike. Like other bee-eaters it is also a small, slim, slender green bird.

Adult : Predominantly grass-green with rich chestnut crown and nape; yellow face and throat with a black eye-stripe; thin curved black bill; blue on the rump and lower belly; and square-ended tail (central rectrices scarcely projecting beyond tail).

Juvenile : Duller.

Habitat : <1500 m. Broadleaved forest, often near water.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972a), Asan Barrage, Timli (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Dhauri river basin- 2004 Goriganga valley- 1994 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

Remarks : A near passerine bird in the bee-eater family Meropidae. It is a resident breeder in southern Asia from India east to southeast Asia and Indonesia.

CORACIIDAE (Rollers)

Rollers are heavily-built, medium-sized birds with colourful, predominantly blue purple plumage. The head is large; bill strong and broad; neck and legs short; tail broad; wings long and broad. They hunt for a lookout perch by hawking for insects or dropping onto small animals on the ground, they usually occur singly or in loose pairs. The striking wing-pattern is shown to great advantage in their rolling acrobatic display flight.

317(754) *Coracias garrulus* Linnaeus, 1758
European Roller

1902. *Coracias garrulus semenowi* Loudon & Tschudi, *Orn. Jahrb.* 13 : 148 (Transcaspi).

1927. Baker, *FBI* No. 1516, 4 : 222.

Diagnostics : Size : Pigeon; 29-32 cm length; 52-58 cm wingspan. Sexes alike.

Adult : A brightly coloured bird, easily distinguished from Indian Roller by patterning of wings and tail; has entirely blue head, neck and underparts; rufous-cinnamon mantle and tertials; black primaries and secondaries; and a broken dark-blue terminal tail-band.

Juvenile : Much drabber with white streaking on throat.

Habitat : Breeding : 1700-2200 m (3200 m). Lightly wooded areas; cultivation.

Distribution : Uttarakhand : CTR (Baura 2000).

Status : Sparse passage migrant. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002).

Remarks : It is a passage migrant in Pakistan and NW India (Grimmett *et al.* 1998). It has a lapwing-like display, with the twists and turns that give this species its English name.

318(755-757) *Coracias benghalensis*
(Linnaeus, 1758)
Indian Roller

1758. *Corvus benghalensis* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 106 (Benghala, i.e. Madras *fide* Biswas, 1961, *Bull. zool. Nomencl.* 18 : 217-18; fixed at Tulin, Purulia district, West Bengal by Biswas's Neotype designation as per ICZN Ruling [Opinion 663]; see *Bull. zool. Nomencl.* 20 : 195-6; April 1963).

1927. Baker, *FBI* No. 1517, 4 : 224.

Collection records : Uttarakhand : Almora : Ranikhet, 2 ex., date ?, coll. P. K. Bose; Kausani, 1 ♂, 5.vii.1972, coll. D. N. Basu. Dehra Dun: Sahastradhara, 1 ♂, 14.ii.1963, coll. P. K. Bose; 1 ♀, 26.viii.1963, 1 ♀, 6.viii.1964, 1 ♂, 16.vii.1964, coll. R. K. Bhatnagar; 1 ♀, 8.ix.1964, 1 ♂, 15.ix.1964, coll. T. D. Soota; 1 ♂, 10.vi.1965, 2 exs., 28.v.1968, 1 ex., 30.viii.1968, coll. P. K. Bose; Prem Nagar, 1 ♂, 27.xi.1963, P. K. Bose; Doiwala, 1 ex., 15.xii.1967, coll. P. K. Bose; Rajpur, 1 ex., 7.ii.1968, coll. R. K. Bhatnagar; Raipur, 1 ex., 4.x.1968, coll. P. K. Bose; Rishikesh, 1 ex., 28.x.1968, coll. P. K. Bose; Rishikesh, Pashulok, 1 ex., 8.viii.1969, coll. NRS/ZSI Survey Party; 1 ♀, 6.x.1972, coll. P. K. Bose; Herbatpur, 1 ex., 23.xi.1968, coll. P. K. Bose; Sathyanarayan, 1 ex., 28.ii.1968, 1 ex., 28.ii.1969, coll. P. K. Bose; Haridwar road, 1 ex., 7.i.1970, coll. NRS/ZSI Survey Party; Hathibarkala, 1 ♂, 7.iv.1976, coll. Sailendra Lamba. Pauri: Chamdhar, 1 ♀, 27.vi.1969, coll. P. K. Bose. Tehri: Bhontpar, 1 ♀, 22.vi.1969, coll. P. K. Bose; Devprayag, Mulya, 1 ♂, 11.vii.1969, coll. P. K. Bose; Chamba, 1 ♂, 7.ii.1972, coll. P. K. Bose; Rajchali, 1 ♀, 8.ii.1972, coll. P. K. Bose.

Diagnostics : Size : Pigeon; c. 30-34 cm. Sexes alike.

Adult : Distinguished from European Roller by distinct turquoise-blue cap; rufous-brown nape; brownish olive-green mantle and tertials; lilac breast and face; white streaking on ear-coverts, throat and upper breast; blue belly and vent; turquoise band across primaries and unbroken dark blue terminal tail-band (broken in European). In flight, the alternating brilliant pale blue and dark blue bands in the wings and in tail are characteristic.

Juvenile : Duller with heavily streaked throat and breast.

Habitat : <1500 m (3700 m) open country with suitable lookout perches; light woodland.

Distribution : Uttarakhand : Chamoli : Gwaldam in Pindar valley (Osmaston 1921). Dehra Dun : throughout (Osmaston 1935), New Forest (George 1957, 1996) (Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh (Tak 1995), Dhaul river basin- 2004, Goriganga valley- 1994 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : This non-migratory (but undertakes some seasonal local movements) species has been given the status of state bird of Karnataka. They often perch prominently on trees, posts or overhead wires. They follow tractors for disturbed invertebrates, and dash into the smoke of a forest fire on a similar mission. They are fearless and will drive and roll at humans and other intruders.

319(758-762) *Eurystomus orientalis* (Linnaeus, 1766)

Oriental Broad-billed Roller

1816. *Eurystomus Vieillot*, *Analyse* : 37. Type, by monotypy, Rolle des Indes, Burron = *Coracias orientalis* Linnaeus Cf. Ripley, S.D., 1942, *Proc. Biol. Soc. Washington* 55 : 170 (Nanking, China). New name for *calonyx* Sharpe.

1927. Baker, *FBI* No. 1520 (part), 4 : 228.

Diagnostics : Size : Pigeon; c. 31cm. Sexes alike. It is also known as Dollar Roller or Dollarbird, so named because of a bluish-white oval patch on the primaries (said to resemble a silver-dollar) prominent in flight.

Adult : From distance, appears a black bird with bright red bill and legs; but at close range, greenish-brown colour mantle, wing-coverts and underparts; browner head; and red eye-ring form the additional characteristic.

Juvenile : Similar but with dull pinkish bill.

Habitat : <1000 m (2500 m). Tropical forest edge, clearing and cultivation. Frequently perches in exposed positions at the tops of trees.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972a), New Forest (Mohan 1993, 1996, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

UPUPIDAE (Hoopoes)

The following single South Asian species of hoopoe is highly distinctive fawn colour with black wings and tail barred white; long erectile crest tipped with black; long downcurved bill. Usually solitary or in small loose groups feeding on the ground. Nests in tree hollows.

320(763-766) *Upupa epops* Linnaeus, 1758 Common Hoopoe

1758. *Upupa Epops* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 117 (Europae sylvis = Sweden).

1927. Baker, *FBI* No. 1579, 4 : 308.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1 ♂, 8.ix.1972, coll. D. N. Basu; 37-Chakrata road, 1 ♂, 16.xii.1974, 1 ♀, 14.i.1975, 1 ♂, 6.vi.1975, coll. P. K. Bose, 1 ♂, 22.i.1975, 1 ♂, 20.iii.1975, 1 ♂, 21.iv.1975, 1 ex., 18.v.1976, coll. D. N. Basu; 1 ♀, 21.v.1977, coll. Ram Das. Badripur, 1 ♀, 3.iii.1976, donated by Sailendra Lamba. Uttarkashi: Purola, 1 ♀, 21.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Myna; c. 25-29 cm length; 44-48 cm wingspan. Sexes alike. Unmistakable.

Adult : A fawn coloured bird with conspicuous black-and-white zebra markings on back, wings and tail; a prominent black-tipped fan-like crest, which is full and fan-shaped when erected and falling to a point behind the head when folded; and a long, thin downcurved (decurved) bill.

Juvenile : Duller above and browner below.

Habitat : <4600 m (5000 m). Open country, light woodland, parks, and cultivation.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath (Reed 1979), NDNP (Tak & Kumar 1987), Joshimath, Auli (Sankaran 1993, 1994), (Tak 1995), throughout NDBR (Tak 1997), Beltakharak (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Augstyamuni (ZSI Survey 2004). Tehri: Lamprey (1954), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Bakra Dam site (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Jakhol (Tak *et al.* 2004), Kamad (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident as well as widespread summer visitor. Not Listed in the Act (BNHS 2002).

BUCEROTIDAE (Hornbills)

Hornbills are large birds with broad wings, long tails and very large bills. In most species the bill is surmounted by a distinctive casque which grows

in size as the bird reaches maturity over a period of several years. Most inhabits forests, through some frequent open wooded areas, including parks and garden. They subsist largely on fruit, being particularly partial to figs; their movements are thus to some extent dictated by the fruiting of trees. They will, however, also feed on small animals and birds. The flight is slow and direct; the larger birds are audible from some distance due to the loud whooshing note made by their wings. Outside the breeding season some species congregate in flocks. In flight most hornbills can be readily identified by the tail pattern. On perched birds it can be important to note the shape and pattern of the casque as well as the colouration of the bare parts. Hornbills are also unusual in that the entrance to the nesting cavity is sealed up with the female inside. She is fed by her mate through a narrow slit and does not emerge for several weeks or months until the young are partly grown or even fully fledged. Their size and habit of breeding in tree hollows mean that the hornbills' survival depends on the continued existence of large mature trees in primary forest which provide the necessary nesting sites. Progressive deforestation and hunting by man have resulted in population decrease in almost all species of hornbill.

**321(767) *Ocyrceros birostris* (Scopoli, 1786)
Indian Grey Hornbill**

1786. *Buceros birostris* Scopoli, *Del. Flor. et. Faun. Insubr., fasc. 2* : 87 (Coromandel, India).

1939. *Tokus birostris* Koelz, *Proc. Biol. Soc. Wash.* 52 : 79 (Lahore, Punjab).

1927. Baker, *FBI* No. 1575, 4 : 301.

Collection records : Uttarakhand : Dehra Dun, NRS compound, 1 ♀, 25.viii.1964, coll. S. Lal; Rishikesh, 1 ex., 28.x.1968, coll. P. K. Bose; Rishikesh, Pashulok, 2 ex., 6.i.1969, coll. P. K. Bose; Hathibarkala, 1 ex., 4.iii.1976, donated by Sailendra Lamba. Naini Tal: Haldwani, 1 ex., 5.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Kite ±; c. 61 cm. Sexes alike, but casque in female smaller. A clumsy brownish-grey bird with a heavy decurved blackish bill surmounted by a peculiar pointed protuberance or casque.

Adult : Has paler sandy brownish-brey upperparts with white tips to primaries and

secondaries; broad greyish-white supercilium with dark grey ear-coverts; both bill and casque with extensive black at base; light grey or dull white belly; and long black-and-white-tipped graduated tail, with elongated central tail feathers.

Juvenile : With almost wholly yellow bill, but lacks casque and white tips to primaries.

Habitat : <1000 m (1400 m). Well-wooded open areas, parks, gardens, groves.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a & b, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Karva Pani, New Forest, Timli, Tons Valley Forest, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal : Lalkuaon (ZSI Survey 2005). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule I (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : Indian Grey Hornbills usually form their nest in tree holes. A peculiar characteristic of this bird is that the female stays inside the nest and the male seals the nest hole leaving only a small hole for feeding the female. In this way they safeguard the eggs and hatchlings. While inside the nest, the female will pluck out all her feathers and throw them outside the nest so that it can maintain the required space along with the growing chicks. The regrowth of the feathers in the female coincides with the maturity of the chicks at which point the nest is broken open. Usually feeds on fruits including a variety of figs (*Ficus* spp.) and occasionally on small insects, lizards, small snakes etc.

**322(774) *Anthracosceros albirostris* (Shaw, 1808)
Oriental Pied Hornbill**

1788. *Buceros malabaricus* Gmelin, *Syst. Nat.*, 1(1) : 359 (India = Chandemagor, *apud* Baker).

1927. Baker, *FBI* No. 1565, 4 : 288.

Diagnostics : Size : Vulture -; c. 89 cm. Sexes alike, but female smaller with a different colour

pattern on bill and casque. A medium-sized black and white (or pied) hornbill with large and prominently patterned bill and casque and bluish gular skin. In flight, the white trailing edge to wings and white tipped outer tail feathers conspicuous.

Adult male : Has cylindrical casque with black patch at tip; heavy wax-yellow bill (contra black tipped in female); black neck; black-and-white upperparts with white tip to wings; and white underparts.

Adult female : Smaller, with less convex casque (lacking projecting tip); shows much black at tip of bill (lacking in male); and some black on posterior tip of casque.

Juvenile : With smaller bill and poorly developed casque with less black.

Habitat : < Foothills. Open broadleaved forests, forest edge, groves of mangoes and figs.

Distribution : Uttarakhand : Dehra Dun : Shiwaliks (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Kansrao (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Lalkuaon (ZSI Survey 2005). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule I (BNHS 2002).

323(776) *Buceros bicornis* Linnaeus, 1758 Great Pied Hornbill

1832. *Buceros Homrai* Hodgson, *Jour. Asiat. Soc. Bengal* 1 : 251 (Nepal).

1927. Baker, *FBI* No. 1563, 4 : 284.

Diagnostics : Size : Vulture; c. 130 cm; c. 150 cm wingspan. Sexes very similar, but female smaller and has white iris and lacks black at ends of casque. It is also known as Great Hornbill or Greater Indian Hornbill and is the largest member of the hornbill family.

Adult : A black-and-white hornbill easily distinguished by a combination of enormous horn-shaped yellow-and-white hornbill, surmounted with massive yellow casque, and white tail with a broad black subterminal band. Has black face band

and white neck, wing-bars and trailing edge to wing which are variably stained with yellow (also prominent in flight). The white parts of the plumage often become stained yellow with oil from the bird's preen gland.

Male : With red iris, black circumorbital skin, and black at both the ends of casque.

Female : Smaller, with white iris and red circumorbital skin, and lacks black at ends of casque.

Juvenile : Lacks casque.

Habitat : < 2000 m. Primary broadleaved evergreen and moist deciduous forest.

Distribution : Uttarakhand : Dehra Dun : Phanduwalla (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Near Threatened (IUCN 2002). Schedule I (BNHS 2002).

Remarks : It is the largest hornbill of the region; is long-lived with lifespan approaching 50 years in captivity. The casque is hollow and serves no known purpose ('tame' hornbills are known to enjoy having them scratched) although they are believed to be the result of sexual selection. Male hornbills have been known to indulge in areal casque butting fights. The Great Hornbills form monogamous pair bond and live out their lives in groups of 2-40 individuals.

324(771) *Aceros nipalensis* (Hodgson, 1829) Rufous-necked Hornbill

1829. *Buceros nipalensis* Hodgson, *Asiat. Res.* 18(1) : 178, 2 pls. (Nepal).

1927. Baker, *FBI* No. 1570, 4 : 294.

Diagnostics : Size : Vulture; c. 122 cm. The second-largest hornbill of the subcontinent, and is the only hornbill with white distal half to black tail.

Male : Has bright rufous head, neck and breast changing into maroon on abdomen and blackish maroon farther down; dark green sheen on black upper plumage; and; scarlet gular pouch; and blue orbital skin.

Female : Mainly black with scarlet gular pouch white terminal band to tail. In flight, both sexes show white wing-tips.

Juvenile : Like adult, sex for sex, but with much smaller bill.

Habitat : <1800 m. Primary broadleaved evergreen forest.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Rare. Sparse local resident. Vulnerable (IUCN 2007). Schedule I (BNHS 2002). BRS (08) i.e. Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

Order PICIFORMES CAPITONIDAE (Barbets)

Barbets are brightly coloured chunky birds, predominantly green with diagnostic patches of red, orange, blue, yellow and/ or brown on the head. Strong stout bill; short rounded wings; short to medium-length tail. Strictly arboreal, frequenting the canopy. Chiefly frugivorous, often attracted in large numbers to fruiting trees. They generally excavate their own nesting holes.

325(777-779) *Megalaima virens* (Boddaert, 1783) Great Barbet

1870. *Megalaima marshallorum* Swinhoe, *Ann. Mag. Nat. Hist.* 6(4) : 348 (Himalayas).

1927. Baker, *FBI* No. 1427, 4 : 106.

Collection records : Uttarakhand : Naini Tal : Haldwani, 1 ex., 4.xii.1968, coll. P. K. Bose. Uttarkashi: Sayana Chatti, 1 ♂ and 1 ♀, 5.vi.1973, coll. Raj Tilak; Rana, 1 ♂, 6.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Myna +; c. 33 cm. Sexes alike. It is an unmistakable and the largest barbet with plump body, large head, and short neck and tail. The adult has blue head, large pale yellow bill, brown back and breast, green-streaked belly, red undertail and green remaining plumage. Both adult and juvenile birds are similar.

Habitat : S 1000-3000 m. W > foothills. Moist temperate forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931, ZSI Survey 2004), (Tak 1995). Bageshwar : Kausani (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNP (Tak & Kumar 1987), Auli (Sankaran 1993, 1994), Tolma (Tak 1997), Dibrugheta, Latakharak,

Beltakharak (Sathyakumar 2003), Mandal, Gwaldam, Narainbagrh (ZSI Survey 2004), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun : around Mussoorie, beyond Chakrata (Osmaston 1935), New Forest (George 1957, Mohan 1996), (Wright 1957, Bhatnagar & Misra 1971, Tak 1995), Chakrata, Mussoorie, New Forest, Tons Valley Forest, [Dhanaulty] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Dhaul river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Mandakini (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Augstyamuni, Shivpuri, Guptakashi, Ukhimath (ZSI Survey 2004). Tehri : Bheling valley (Searight 1926). Uttarkashi (Tak 1995), Govind NP : Sankri, Taluka, Sunkhundi, Jakhol, Dhaul, Mashri, Istragad (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : The Barbets have a world-wide tropical distribution. They are resident breeder in the hills from Pakistan east to southern China and Laos. They get their name from the bristles which fringe their heavy bill.

326(780-782) *Megalaima zeylanica* (Gmelin, 1788) Brown-headed Barbet

1788. *Bucco zeylanica* Gmelin, *Syst. Nat.*, 1(1) : 408 (Ceylon).

1927. Baker, *FBI* No. 1429, 4 : 108.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1 ex., 6.i.1969, 1 ex., 6.i.1970, coll. P. K. Bose; Mussoorie : Company Garden, 1 ex., 18.ix.1979, coll. P. K. Bose, Mussoorie, 1 ex., 12.x.1970, NRS/ZSI Survey Party; Herbatpur, Asan River, 1 ♀, 31.vii.1973, coll. D. N. Basu. Naini Tal : Ramnagar, 1 ♀, 30.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Myna +; c. 27 cm. Sexes alike. A plump, green and arboreal bird with short neck, large head, short tail and stout bill.

Adult : Has brown head, neck, upper back and upper breast with fine white streaking; remaining upper plumage grass-green with white spotted wing-coverts; orange circumorbital skin (extending to base of bill) and bill; lower breast and abdomen pale green; and under surface of tail bluish.

Juvenile : Duller and much paler.

Habitat : <800 m (1500 m). Well-wooded areas, parks, gardens.

Distribution : Uttarakhand : Dehra Dun : (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972b, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Ahmed 1997). Pauri (Tak 1995). Pithoragarh (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

327(783-784) *Megalaima lineata* (Vieillot, 1816)
Lineated Barbet

1950. *Megalaima zeylanica rana* Ripley, *Proc. Biol. Soc. Washington* 63 : 101 (Bajora, Dailekh dist., west Nepal).

1927. Baker, *FBI* No. 1432 (part), 4 : 111.

Diagnostics : Size : Myna +; c. 28 cm. Sexes alike. A plump, green and arboreal bird with bold whitish streaks on brown head, neck, upper back, throat (white), and breast extending onto centre of belly; yellow (not orange) circumorbital skin (much smaller, less conspicuous and separated from bill) and bill; remaining upper plumage grass-green; underparts may appear white, streaked with brown.

Habitat : <1000 m. Moist broadleaved forest, open woodland, parks, gardens.

Distribution : Uttarakhand : Dehra Dun : New Forest (Mohan 1993, 1996, Singh 2000), Asan Barage (Gandhi & Singh 1995), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Rudraprayag : Mandakini (Lavkumar 1956b). CTR (Lamba & Bhatnagar

1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

328(785) *Megalaima viridis* (Boddaert, 1783)
White-cheeked Barbet

1783. *Bucco viridis* Boddaert, *Table Pl. enlum.* : 53 (Mahe, India *ex* Daubenton, pl. 870)

1927. Baker, *FBI* No. 1434, 4 : 113.

Diagnostics : Size : Myna ±; c. 23 cm. Sexes alike. It is also known as Small Green Barbet; comparatively a medium-sized; and mainly a brown and green barbet.

Adult : Has characteristic supercilium and broader white cheek-patch (from the lores through the ear-coverts) contrasting with brown crown and nape; a blackish band running backward from eye; whitish chin, throat and breast, the last with brown streaks; and the remaining upper and underparts green.

Juvenile : With indistinct brown streakings.

Habitat : <1800 m (2300 m). Wooded areas, parks gardens.

Distribution : Uttarakhand : Dehra Dun : Asan Barage (Gandhi & Singh 1995). CTR (Lamba & Bhatnagar 1977-79).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (10) *i.e.* Indian Peninsula Tropical Moist Forest (Jhunjhunwala *et al.* 2001).

329(788) *Megalaima asiatica* (Latham, 1790)
Blue-throated Barbet

1790. *Trogon asiaticus* Latham, *Index Orn.* 1 : 201 (India = Calcutta *fide* Baker).

1896. *Cyanops rubescens* Baker, *Novit. Zool.* 3 : 257 (Highest ranges in the east of the Cachar Hills). (Erythristic form).

1927. Baker, *FBI* No. 1436, 4 : 116.

Collection records : Uttarakhand : Pauri : Srinagar, Kameda, 1 ♀, 25.vi.1969, coll. P. K. Bose; Narkota, 1 ♂, 29.vi.1969, coll. P. K. Bose. Rudraprayag : Gholtir, 1 ♂ and 1 ♀, 1.7.1969, coll. P. K. Bose. Tehri : Simlasu, 1 ♂, 22.vi.1969, coll. P. K. Bose.

Diagnostics : Size : Myna; c. 23 cm. Sexes alike. It is mainly a grass-green medium-sized barbet with characteristic head pattern.

Adult : Characterised by a combination blue 'face', chin, throat and upper breast; crimson forehead, then yellow band, then a black band across vertex, followed by crimson hindcrown; a short blue supercilium around eye; a black streak covering base of upper mandible running on either side back to nape; a crimson speck on either side at base of lower mandible as well as at base of throat, the base of bill surrounded by a conspicuous black bristles; and remaining plumage green.

Juvenile : Duller with poorly defined colour of head pattern.

Habitat : <1500 m (2000 m). Wooded areas: open forest, groves and gardens.

Distribution : Uttarakhand : Dehra Dun : lower and outer Himalayas below Mussoorie, Rajpur, Kalsi, Thano, etc. (Osmaston 1935), (Wright 1957, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), New Forest, Timli (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Ramnagar (ZSI Survey 2005). Pauri : Nayar river (Osmaston 1921), (Tak 1995). Rudraprayag : Alakananda main valley (Osmaston 1921), Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjunwala *et al.* 2001).

330(792) *Megalaima haemacephala* (P.L.S. Müller, 1776)

Coppersmith Barbet

1788. *Bucco indicus* Latham, *Index Orn.* 1(1) : 205 (India).

1830. *Bucco luteus* Lesson, *Traite d' Orn.* 3 : 163 (Pondicherry).

1939. *Xantholaema haemacephala confusa* Koelz, *Proc. Biol. Soc. Washington* 52 : 78 (Londa, Bambay State).

1927. Baker, *FBI* Nos. 1446, 1447 4 : 127, 128.

Collection records : Uttarakhand : Dehra Dun : Pichikesh, Pashulok, 1 ♂, 29.xii.1972, coll. D. N.

Basu; New Dalanwala, 1 ♂, 7.v.1976, coll. Rajvir Singh. Naini Tal: Ramnagar, 1 ♂ and 1 ♀, 9.vi.1972, coll. D. N. Basu.

Diagnostics : Size : Sparrow +; c. 17 cm. Sexes alike. It is sometimes referred as simply Coppersmith or Coppersmith Barbet. It is a small, plump, brightly coloured green barbet with characteristic head pattern, short neck, large head and short truncated tail (distingly triangular in flight).

Adult : Has a black-bordered yellow face with black eye stripes; crimson forehead and breast; grass-green upperparts; yellowish-green underparts diffusely streaked with darker green; and stout dark bill.

Juvenile : Duller and lack crimson patches.

Habitat : <2000 m. Open woodland, parks, gardens.

Distribution : Uttarakhand : Dehra Dun : (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh (Tak 1995). Rudraprayag : Gandhari (ZSI Survey 2004). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 200).

INDICATORIDAE (Honeyguides)

Honeyguides are small, zygodactylous arboreal birds which specialize in feeding on insects, larvae and the wax from wild bees' honeycombs. They often bear a superficial resemblance to bulbuls but the sole South Asian species could also be mistaken for a finch. More or less restricted to forests in the vicinity of rock bees' nest, which are usually found hanging from steep cliffs of Himalayan river gorges. Rather solitary, birds may defend a colony of bees' nests against their own species. African species are said to lead humans to honeycombs, hence the name.

331(793-795) *Indicator xanthonotus* Blyth, 1842
Yellow-rumped Honeyguide

1870. *Indicator radcliffi* Hume, *Ibis* : 528 (Kalabagh, Hazara dist., W. Punjab).

1927. Baker, *FBI* No. 1450 (part), 4 : 131.

Diagnostics : Size : Sparrow; c. 15 cm. It is a sparrow-like olive-brown bird with a rather stout finch-like bill; golden-yellow forehead, lower back and rump; narrow olive-yellow edges to feathers of mantle and wings; streaked underparts; and square-ended tail.

Male : With broad well-defined golden-yellow malar stripes.

Female : With ill-defined malar stripes.

Habitat : 1500-3500 m. Vicinity of cliffs with honeycombs of rock bees in broadleaved and coniferous forest.

Distribution : Uttarakhand : Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Deodi (Tak 1997). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004).

Status : Sparse local resident as well as sparse local winter visitor. Near Threatened (IUCN 2007). Not Listed in the Act (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : Like other Honeyguides it leads humans and bears to bee hives. They are among a few vertebrates capable of feeding on bees-wax. They are brood parasites, laying their eggs in the nest of host species. The host species for the Yellow-rumped Honeyguides are as yet unknown and undocumented. The males are polygynous.

PICIDAE (Woodpeckers, Piculets, & Wrynecks)

Woodpeckers specialize in hunting for insects and larvae in the bark and wood of trees. To this end they have evolved a strong, conical, chisel-like bill for excavating and a very long sticky tongue for extracting their prey from deep crevices and bore-holes in the wood. The tail is specially adapted with stiff central feathers used as a support when climbing trees. Most of them are zygodactylous (with two toes pointing forward, and two backwards). They work their way up a

tree-trunk or branch in short erratic bursts, their bill-tapping often giving away their presence. Many species also feed terrestrially on ants. The flight is typically strong and undulating. Generally non-migratory. Usually solitary, in pairs or small family groups, though many regularly associate with mixed hunting parties. Most have more-or-less loud calls as territorial drumming display produced in the breeding season by a rapid hammering of their bill on a resonant piece of wood. Nesting cavities are excavated in trees and sometimes in ants' or termites' nests. Piculets are tiny, plump, short-tailed woodpeckers. Chiefly forage on ants, their pupae and eggs on small branches, twigs and bamboo in the manner of a nuthatch. They often tap loudly with their bills. Usually occur singly or in pairs but often with mixed hunting parties. They excavate nesting holes in rotten branches and bamboo. Wrynecks are cryptically coloured birds in a subfamily of the woodpeckers. When perched on a tree they may look like part of an old broken branch. They mostly forage on the ground for ants and other invertebrates.

332(796) *Jynx torquilla* Linnaeus, 1758
Eurasian Wryneck

1758. *Jynx Torquilla* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 112 (Europe = Sweden).

1927. Baker, *FBI* No. 1423, 4 : 99.

Diagnostics : Size : Bulbul -; c. 19 cm. Sexes alike. A slim, long-tailed, unusual woodpecker with grey-brown upperparts streaked, speckled and vermiculated with black and fulvous; and whitish belly and flanks with arrow-head markings producing a finely cross-barred pattern. A dark stripe through eye, 3 or 4 conspicuous dark bands on tail, and fine black barring on buff throat and breast and grey head are the characteristics. In flight, appears deceptively sparrow-like and mistakable for Great Reed Warbler on a flashing glimpse.

Habitat : S 1500-3300 m. Orchards, light mixed forest. W lower; open woodland, cultivation, semi-desert, scrub, thorn, forest.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971), New Forest (George 1957, Mohan 1996), Khaddar, [Dholkhand] (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : These birds get their English name from their ability to turn their head almost 180 degrees. When disturbed at the nest, they use this snake-like head twisting and hissing as a threat display. Their cryptic colour patterning is suggestive of nightjars and owls.

333(798-799) *Picumnus innominatus* Burton, 1836
Speckled Piculet

1836 (1835). *Picumnus innominatus* Burton, *Proc. Zool. Soc. London* (3) : 154 (Himalayas = Sikkim).

1933. *Vivia innominata simlaensis* Ticehurst, *Bull. Brit. Orn. Cl.* 54 : 20 (Murree).

1927. Baker, *FBI* No. 1416, 4 : 92.

Collection records : Uttarakhand : Dehra Dun : Hathibarkala, 1 ♂, 31.iii.1976, donated by Sailendra Lamba.

Diagnostics : Size : Sparrow -; c. 10 cm. A diminutive woodpecker with short, square-ended tail; has yellow-olive upperparts; blackish ear-covert patch and malar stripe on whitish face; yellowish-white underparts heavily spotted with black and barred on flanks; and blackish tail with white on central and outer tail feathers.

Male : With dull orange forehead and forecrown, barred with black.

Female : Lacks orange-and-black forecrown.

Habitat : 2000 m (3000 m). Bushes and bamboo in forest and secondary growth.

Distribution : Uttarakhand : Chamoli : Dunagiri Ghad (Lavkumar 1956b). Dehra Dun : New Forest (Mohan 1993, 1996), Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : Like the true woodpeckers, piculets have large heads, long tongues which they use to extract their insect prey and zygodactyls feet.

However, but they lack the stiff tail feathers that the true woodpeckers use when climbing trees, so they are more likely than their relatives to perch on a branch rather than an upright trunk.

334(800-801) *Sasia ochracea* Hodgson, 1836
Rufous Piculet

1836. *Sasia ochracea* Hodgson, *Jour. Asiat. Soc. Bengal* 5 : 778 (Nepal).

1927. Baker, *FBI* No. 1419, 4 : 95.

Diagnostics : Size : Sparrow -; c. 9-10 cm.

Adult : A tiny, short and fat bird with stub-tail; has greenish-olive upperparts with variable rufous wash; a short broad white supercilium above and behind eye; red iris and orbital skin; rufous underparts; and a very short black tail.

Male : With golden-yellow forehead.

Female : Lacks golden-yellow forehead.

Juvenile : Like respective adult, but with greyish-green wash on underparts.

Habitat : >2100 m. Forest and secondary scrub. Partial to bamboo.

Distribution : Uttarakhand : Dehra Dun : New Forest (Singh 1999), Phanduwalla, Tons Valley Forest (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002).

335(851-854) *Dendrocopos nanus* (Vigors, 1832)
Brown-capped Pygmy Woodpecker

1832 (1831-2). *Picus nanus* Vigors, *Proc. Zool. Soc. London* (1) : 172 (Himalayas).

1926. *Yungipicus hardwickii brunneiceps* Baker, *Bull. Brit. Orn. Cl.* 61 : 42 (Udaipur-Jodhpur road near Jelwara, Rajputana).

1927. Baker, *FBI* No. 1381, 4 : 53 (= *brunneiceps*).

Diagnostics : Size : Sparrow -; c. 13 cm. A little brown and white woodpecker with brown crown; brown colouration to upperparts; a conspicuous broad white stripe from above eye to down sides of neck; whitish underparts indistinctly streaked with brown; white bar-like spots on central tail feathers; pinkish-red eye-ring; and usually pale iris.

Male : Has a narrow scarlet streak on either side of occiput.

Female : Lakcs scarlet streaks on occiput.

Juvenile : Duller with orange-red on nape of male.

Habitat : <1200 m. Lowland secondary growth, open woodland, gardens, mangroves, coastal scrub.

Distribution : Uttarakhand : Almora : Chanthariya (ZSI Survey 2004). Dehra Dun : (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread resident. Schedule IV (BNHS 2002).

336(848-850) *Dendrocopos canicapillus* (Blyth, 1845)

Grey-capped Pygmy Woodpecker

1845. *Picus canicapillus* Blyth, (after 12 July), *Jour. Asiat. Soc. Bengal* 14(1) : 197 (Arrakan; type from Ramree Island).

1927. Baker, *FBI* No. 1379, 4 : 51.

Collection records : Uttarakhand : Almora : Ranikhet, 2♂ and 1♀, 17.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Sparrow -; c. 14 cm.

Adult : A little pied woodpecker; has ashy grey forehead and crown; white-barred black mantle and wings; a broad white supercilium from behind eye continued down sides of neck; whitish chin and throat with diffuse ashy malar streaks; remaining underparts fulvous streaked with black; and black uppertail-coverts and two central pairs of rectrices, lateral rectirces more or less barred with white.

Male : Has scarlet short occipital crest.

Female : Has black occipital crest.

Juvenile : Darker; blackish crown, heavy streaks below, with orange-red nape on male.

Habitat : <1700 m. Open forest, gardens, etc.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1971, Tak 1995), New Forest (Mohan 1993, 1996), New Forest, Timli, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak

& Sati 2007). Pithoragarh (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : Woodpeckers gained their English name because of the habit of some species of tapping and pecking noisily on tree trunks with their beaks. This is both a means of communication to signal possession of territory to their rivals, and a method of locating and accessing insect larvae found under the bark or in long winding tunnels in the tree.

337(842-843) *Dendrocopos auriceps* (Vigors, 1831)
Brown-fronted Pied Woodpecker

1831 [Apr. 6], (1830-31). *Picus auriceps* Vigors, *Proc. Zool. Soc. London* (1) : 44 (Simla, restricted by Baker, 1921, *JBNHS* 28 : 97).

1831. *Picus brunnifrons* Vigors in Gould, *Centrury of Birds*, Himalayan Mts, text to pl. 52 (Hilly districts of India = Simla *vide* Rand & Fleming, 1956, *tom. cit.*).

1927. Baker, *FBI* No. 1368, 4 : 39.

Collection records : Uttarakhand : Tehri : Magra, 1 ex., 9.vii.1973, coll. Raj Tilak. Uttarkashi : Barkot Nala, 1♂, 30.v.1973, coll. Raj Tilak.

Diagnostics : Size : Bulbul; c. 20 cm. A medium-sized pied woodpecker with brownish forehead and forecrown; yellowish occipital crest; conspicuous black moustachial stripe; transversely white-barred upperparts; fulvous-white underparts, longitudinally streaked with black; pinkish lower abdomen and undertail-coverts; and unbarred all-black central tail feathers.

Male : With occipital crest golden yellow in front, and crimson behind.

Female : Similar male but lack the golden and crimson on occiput.

Juvenile : Duller with more grey below.

Habitat : 1000-3100 m. Pine, oak deodar forest.

Distribution : Uttarakhand : Garhwal (Osmaston 1921, Lavkumar 1956b). Almora :

Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Lohajung – Wan (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972b, Tak 1995), New Forest (George 1957, Mohan 1996), New Forest, Sulphur Springs, [Dholkhand] (Singh 2000). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Osmaston 1921, Tak 1995). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Govind NP : Naitwar, Dhaura, Satta (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

**338(845-846) *Dendrocopos macei* (Vieillot, 1818)
Fulvous-breasted Pied Woodpecker**

1818. *Picus Macei* Vieillot, *Nouv. Dict. d'Hist. Nat.* 26 : 80 (Bengal).

1850. *Picus analis* 'Temm.' = Bonnaparte, *Consp. Av.* 1 : 137 (Java).

1870. *Picus Westermanni* Blyth, *Ibis* : 163 ('Himalay' restricted to Simla by Biswas, 1961, *JBNHS* 58 : 131).

1954. *Dendrocopos macei humei* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 22 (Mawryngkneng, Khasi Hills).

1927. Baker, *FBI* No. 1436, 4 : 116.

Diagnostics : Size : Bulbul -; c. 18-19 cm.

Adult : A medium-sized pied woodpecker with white-barred black upperparts; bright crimson crown and crest in male, black in female; fulvous sides of head and neck; conspicuous black moustachial stripe; uniform buff chin, throat and breast, with faint black streaking only on breast; pinkish undertail-coverts; and unbarred all-black central tail feathers.

Juvenile : Duller with pink vent.

Habitat : < 2000 m (2800 m). Open forest, woodland.

Distribution : Uttarakhand : Chamoli : Joshimath (Reed 1979), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : New Forest (Mohan 1993, 1996), New Forest, Timli (Singh 2000), Forests around Asan (Singh

2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

339(847) *Dendrocopos mahrattensis* (Latham, 1801)

Yellow-fronted Pied Woodpecker

1801. *Picus Mahrattensis* Latham, *Index Orn.*, Suppl., xxxi (India = Mahratta country *ex* Gen. Syn., Suppl. 2 : 142, No. 7).

1833. *Picus Aurocristatus* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 579 (Jungles of Borabhum and Dholbhum).

1951. *Dendrocopos mahrattensis pallescens* Biswas, *Amer. Mus. Novit.*, No. 1500 : 8 (Lucknow, U.P., India).

1951. *Dendrocopos mahrattensis koelzi* Biswas, *Amer. Mus. Novit.*, No. 1500 : 10 (Aripo, northwestern Ceylon).

1927. Baker, *FBI* No. 1374, 4 : 46.

Diagnostics : Size : Bulbul -; c. 17-18 cm.

Adult : A smallish pied woodpecker distinguished by a characteristic combination of yellowish forehead and forecrown; brownish-black upperparts irregularly spotted with white; bold white barring on central tail feathers; diffused moustachial stripe and a patch on sides of neck; white chin, throat and foreneck; remaining underparts fulvous with heavy brown streaking; and a prominent scarlet patch on lower belly.

Male : With scarlet hindcrown and nape (it is more extensive than on male Brown-fronted).

Female : With golden forecrown and brownish hindcrown and nape (on Brown-fronted, hindcrown and nape are yellow and distinct from browner rest of crown).

Juvenile : Like female but darker, duller and more profusely streaked below.

Habitat : <1000 m (1700 m). Mainly lowland; dry open woodland and scrub including semi-desert, parks, gardens and riverine habitats. Avoids dense forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Dehra Dun (Bhatnagar & Misra 1972a, Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Uttarkashi : Dwarikhal-Patharkhal (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

340(832-833) *Dendrocopos hyperythrus*
(Vigors, 1831)

Rufous-bellied Pied Woodpecker

1831 (1830-31). *Picus hyperythrus* Vigors, *Proc. Zool. Soc. London* (1) : 23 (Himalayas, restricted to the eastern Himalayas by Hartert, 1912).

1924. *Dryobates hyperythrus sikkimensis* Ticehurst & Whistler, *Ibis* : 473 (Sikkim).

1934. *Dryobates hyperythrus minakorum* Meise, *Abh. Ber. Mus. Dresden* 18(2) : 53 (Tatsienlu, Szechuan = Kangting, Sikang, China).

1940. *Dryobates hyperythrus heinrichi* Stresemann & Heinrich, *Mitt. Zoolog. Mus. Berlin* 24(2) : 235 (Mt Victoria, Chin Hills).

1952. *Hypopicus hyperythrus haemorrhous* Koelz, *Jour. Zool. Soc. India* 4 : 44 (Karong, Manipur).

1954. *Hypopicus hyperythrus heniticus* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 22 (Mawryngkneng, Khasi Hills).

1927. Baker, *FBI* No. 1358, 4 : 30.

Diagnostics : Size : Bulbul $\pm$; c. 20 cm.

Adult : A medium-sized black-and-white and rufous woodpecker; with whitish forecrown and face; boldly white-spotted and -barred mantle and wings; uniformly rufous underparts except greyish chin and pale crimson undertail-coverts; and indistinct or diffuse black moustachial stripe.

Male : Has crimson crown and nape upto hindneck.

Female : Has black crown and nape upto hindneck spotted with white.

Juvenile : With barred underparts and brownish-black wing.

Habitat : 800-4100 m. Pine and moist temperate forest.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Auli (Sankaran 1993, 1994), Beltakharak (Sathyakumar 2003), Chopta Chatti (Singh 2005a). Dehra Dun : hills north of Chakrata (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), Chakrata (Singh 2000). Naini Tal (Ahmed 1997). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005). Uttarkashi : Govind NP : Sankri (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006).

Status : Widespread resident. Schedule IV (BNHS 2002).

341(836-837) *Dendrocopos himalayensis*
(Jardine & Selby, 1831)

Himalayan Pied Woodpecker

1831. *Dendrocopos himalayensis* Jardine & Selby, in Jardine's *Ill. Orn.* 3, Sig. D., pl. 116 and text (Mussoorie, 6500 feet).

1927. Baker, *FBI* No. 1360, 4 : 32.

Collection records : Uttarakhand : Uttarkashi : Jarmola, 1 σ and 1 ϕ , 17.vi.1973, 1 σ , 20.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Myna $\pm$; c. 25 cm.

Adult : A medium-sized woodpecker; has whitish lores, a narrow supercilium, cheeks and ear-coverts; ear-coverts bordered with black; a black moustachial streak below extending sides of neck; black upperparts with a prominent elongated white 'shoulder-patch', and small white spots and barring on the wing-quills; pale fulvous chin and throat, darker on breast and abdomen; and crimson undertail-coverts.

Male : With crimson crown and crest.

Female : With black crown and crest instead of crimson.

Juvenile : Duller and browner with white spotting on forecrown and vent.

Habitat : 1500 m - treeline. Montane oak, rhododendron and coniferous forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Panduwakhal (ZSI Survey 2004). Bageshwar : Dhakuri (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Auli (Sankaran 1993, 1994), (Tak 1995), Tolma (Tak 1997), Chopta Chatti (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : oak and fir mixed forests of Mussoorie and Chakrata (Osmaston 1935), (Bhatnagar & Misra 1972b, Tak 1995), Chakrata (Singh 2000). Naini Tal (Hudson 1930, Ahmed 1997). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey-2005, Gori river basin- 2002, Panchchuli expedition-1998 (Tak & Sati 2006). Rudraprayag : Vanyakund (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri : Bheling valley (Searight 1926). Uttarkashi (Tak 1995), Govind NP : Naitwar, Jakhol, Sirga, Saruka Tal (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

**342(802-804) *Celeus brachyurus* (Vieillot, 1818)
Rufous Woodpecker**

1918. *Micropternus brachyurus humei* Kloss, *Ibis*: 109 (Rohilkand; restricted by Baker, 1921, *JBNHS* 28(1) : 133; corrected by Whistler & Kinnear to Kumaon bhabar, *ibid* 37 : 291).

1927. Baker, *FBI* No. 1390, 4 : 64.

Diagnostics : Size : Myna $\pm$; c. 25 cm.

Adult : A medium-sized rufous-brown woodpecker with a saggy crest; short black bill; rufous-brown plumage heavily barred with black on mantle, wings, flanks and tail; and pale edged feathers of throat turn out to a scaly or scalloped pattern.

Male : Has a characteristic red patch (ear-coverts) under eye.

Female : Has pale buff ear-coverts.

Juvenile : More heavily barred.

Habitat : <700 m (1500 m). Moist-deciduous and sal forest, scrub and secondary growth with bamboo.

Distribution : Uttarakhand : Dehra Dun : (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (Singh 1999), New Forest, Tons Valley Forest (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : The species was usually placed in the South American genus *Celeus*, but it differed from these species in many aspects. DNA sequence analyses have confirmed that the Rufous Woodpecker should be placed in the monotypic genus *Micropternus*. Its closest relatives seem to be the enigmatic woodpeckers of the genus *Meiglyptes* and possibly *Hemicircus* (Benz *et al.* 2006).

**343(814-817) *Picus chlorolophus* Vieillot, 1818
Small Yellow-naped Woodpecker**

1818. *Picus chlorolophus* Vieillot, *Nouv. Dict. d'Hist. Nat.* 26 : 78 (Bengal).

1927. Baker, *FBI* No. 1346, 4 : 17.

Collection records : Uttarakhand : Tehri : Chamba, 1 ♂, 7.ii.1972, coll. P. K. Bose.

Diagnostics : Size : Myna +; c. 27 cm. Also known as Lesser Yellow-nape or Lesser Yellow-naped Woodpecker.

Adult : A medium-sized yellowish green woodpecker with a golden yellow nuchal crest (less prominent when compared with Large Yellow-naped); has green head, neck and breast; white throat; yellowish-green upperparts except the bright yellow tufted nape; maroon edges to secondaries which form indistinct panel on wings, and white barring on primaries (folded primaries unbarred or with faint pale barring); whitish belly, finely barred with green; blackish rump and tail (unbarred).

Male : Has red forehead, supercilia (continued behind to meet at nape) and red moustachial stripes.

Female : Lacks red on forehead or malar stripe; red restricted to a short broad line from behind eye to nape.

Juvenile : Like female, but duller.

Habitat : 2100 m. Mixed deciduous, evergreen and secondary jungle; teak, bamboo, rubber and coffee plantations.

Distribution : Uttarakhand : Dehra Dun : Type locality of the species is Dehra Dun but since first description (in year 1924), it has not been observed in the area (Bhatnagar & Misra 1971), (Tak 1995), New Forest (Mohan 1993, 1996), New Forest, Timli (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag: Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : This is jungle species which nests in a tree hole, laying two to four white eggs. Like other woodpeckers, this species has a straight pointed bill, a stiff tail to provide support against tree trunks, and zygodactyls or 'yoked' feet with two toes pointing forward, and two backward. The long tongue can be darted forward to capture insects.

**344(812-813) *Picus flavinucha* Gould, 1834
Large Yellow-naped Woodpecker**

1834 (1833). *Picus flavinucha* Gould, *Proc. Zool. Soc.* London (1) : 120 (Himalayas, Darjeeling).

1952. *Picus flavinucha marianae* Biswas, *Ibis* 94 : 213 (Moutn Victoria, Chin Hills, upper Burma).

1927. Baker, *FBI* No. 1353, 4 : 23.

Diagnostics : Size : Pigeon $\pm$; c. 33 cm. Also known as Greater Yellow-naped Woodpecker; is a large woodpecker.

Adult : Has a conspicuous golden yellow nuchal crest (sometimes erected fanwise under excitement); brown crown; dark olive sides of neck; yellow-green upperparts, with broad rufous barring on primaries (folded primaries chestnut barred with black); olive-grey unbarred underparts; and unbarred stiff black tail.

Male : Has bright yellow chin and throat; rich brown foreneck streaked with white.

Female : Has rufous brown (instead of yellow) chin and throat.

Juvenile : Like adult male, has buff throat spotted with black.

Habitat : 300-1500 m (2750 m). Mixed evergreen, deciduous, pine, sal, teak and secondary forest.

Distribution : Uttarakhand : Dehra Dun : lower Himalayas as far west as Rajpur below Mussoorie (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995, Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Dhauri river basin- 2004, Goriganga valley- 1994 (Tak & Sati 2006). Uttarkashi : Govind NP : Naitwar (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006).

Status : Widespread resident. Schedule IV (BNHS 2002).

**345(N) *Picus vittatus* Vieillot, 1818
Laced Woodpecker**

1818. *Picus vittatus* Vieillot, *Nouv. Dict. Hist. Nat.* 26 p. 91.
Not in Baker, *FBI*.

Diagnostics : Size : Myna +; c. 30 cm.

Adult : A medium-sized woodpecker with a bold black moustachial stripe; diffuse white supercilium; reddish eyes; uniform grey ear-coverts; yellowish-green sides of neck, throat and upper breast; greenish upperparts; scaly underparts; and longer blackish tail.

Male : Has scarlet forehead and crown.

Female : Has black forehead and crown.

Juvenile : Like respective adult, but with less distinct scaling on belly.

Habitat : <1500 m. Evergreen and deciduous forest, mangroves, second growth, scrub and gardens.

Distribution : Uttarakhand : Almora : Occasionally seen in the Neighbourhood of Ranikhet (Briggs 1931).

Status : Residential status not known. Information with reference to the Wildlife (Protection) Act is not available in BNHS (2002).

Remarks : Grimmett *et al.* (1998) reports the species “only certain record is of one collected south of Kuhlina in the southwest in April 1958” from Bangladesh. While Kazmierczak (2000) states that the species is “vagrant” and there is “single record from Bangladesh”

346(808) *Picus xanthopygaeus* (J.E. Gray & G.R. Gray, 1846)

Little Scaly-bellied Green Woodpecker

1920. *Picus myrmecophoneus* Stresemann, *Verh. Orn. Bayern* 14 : 289 (Himalaya and Central India). New name for *Picus striolatus* Blyth, preoccupied *Brachylophus xanthopygaeus* ‘Hodgs.’ = J.E. & G.R. Gray, 1846, *Cat. Spec. Mamm. Bds. Nepal and Tibet* : 117 ex Hodgson in Gray 1944, *Zool. Misc; nomen nudum* quoted ub synonymy of *Gecinus striolatus* (Blyth), preoccupied *Picus vittatus dehrae* Baker, 1926, *Bull. Brit. Orn. Cl.* 46 : 69 (Dehra Dun) *Picus vittatus dawae* Van Tyne & Koelz, 1936, *Occ. Pappers Mus. Zool. Univ. Michigan*, No. 334 : 3 (Bhadwar, Kangra dist., Punjab, British India).

1927. Baker, *FBI* No. 1339, 4 : 10.

Diagnostics : Size : Myna +; c. 29 cm.

Adult : A medium-sized greenish woodpecker with prominent white supercilium (bordered above by a black line) and cheek-stripe; pale eyes; pale grey-brown ear-coverts; greenish upperparts with bright yellow rump; olive streaking on chin and throat and scaling on remaining underparts; and greenish brown tail with indistinct barring.

Male : Has scarlet forehead and crown.

Female : Has black forehead and crown.

Juvenile : With mottled upperparts.

Habitat : <900 m (1800 m). Secondary growth and plantations.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931). Dehra Dun : (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Tak 1995), New Forest (Mohan 1993, 1996), New Forest, [Dholkhand] (Singh 2000). Pauri (Tak 1995). Pithoragarh (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

347(806-807) *Picus squamatus* Vigors, 1831
Large Scaly-bellied Green Woodpecker

1831 (1830-31). *Picus squamatus* Vigors, *Proc. Zool. Soc. London* (1) : 8 (Himalayas, restricted to Simla-Almora dist. By Ticehurst & Whistler, 1924, *Ibis* : 471).

1927. Baker, *FBI* No. 1436, 4 : 116.

Collection records : Uttarakhand : Almora : Kathpuria, 1 ♂, 22.xii.1968, 1 ex., 7.iii.1969, coll. P. K. Bose. Chamoli : Joshimath, Auli, 1 ♀, 9.7.1969, coll. P. K. Bose.

Diagnostics : Size : Pigeon +; c. 35 cm.

Adult : A large dull green woodpecker with white supercilium bordered above and below with black; prominent dark moustachial stripe; pale bill; reddish eyes; dull grass-green upper plumage with bright yellow rump (and the only green woodpecker with barred secondaries and tertials); pale greyish throat and breast, remaining underparts greenish white with scale-like black markings; and prominent whitish barring on tail.

Male : Has scarlet forehead and crown.

Female : Has black forehead and crown streaked with grey.

Juvenile : Like female, but with breast feathers also squamated like abdomen though less boldly.

Distribution : Uttarakhand : Garhwal (Osmaston 1921, Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995), Chanthariya (ZSI Survey 2004). Bageshwar : Dhakuri – Khatri (Tak 1997). Chamoli : NDNF (Tak & Kumar 1987), (Tak 1995), Belta, Tolma (Tak 1997), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata and Mussoorie (Osmaston 1935), (Bhatnagar & Misra 1971, Tak 1995), New Forest (Singh 1999), Chakrata, New Forest, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Osmaston 1921, Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). Uttarkashi (Tak 1995), Govind NP : Duni (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005 b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Habitat : 1000-3300m moving down from the higher altitudes in winter. Open evergreen, mixed oak, poplar and pine forest, orchards.

Status : Widespread resident. Schedule IV (BNHS 2002).

348(809-811) *Picus canus* Gmelin, 1788
Black-naped Green Woodpecker

1926. *Picus canus sanguiniceps* Baker, *Bull. Brit. Orn. Cl.* 46 : 70, New name for *Picus occipitalis* Vigors, preoccupied (Himalayas, Simla-Almora dist.).

1927. Baker, *FBI* No. 1343, 4 : 13.

Collection records : Uttarakhand : Dehra Dun : Badripur, 1 ♂, 25.viii.1976, coll. M. L. Narang.

Diagnostics : Size : Pigeon ±; c. 32 cm.

Adult : A medium-sized woodpecker with plain grey face; black moustachial stripe; reddish iris; dark green upperparts, olive-yellow rump; uniform greyish-green underparts; and typical stiff blackish wedge-shaped tail.

Male : Has scarlet forehead and forecrown; and black hindcrown and nape.

Female : Has black forehead, crown and nape streaked with grey.

Juvenile : Like respective adult; but duller with greyer upperparts and barred underparts.

Habitat : <2000 m (3500 m). Moist subtropical and temperate forest; open country in the vicinity of forest.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Lohajung – Wan on Roopkund Trek (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971), New Forest (Mohan 1993, 1996), Karva Pani, New Forest, Timli (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh (Tak 1995), Gori river basin-2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005). Udham Singh Nagar : Fatehpur (ZSI Survey 2005). Uttarkashi : Govind NP : Naitwar, Dhaura (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati

2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : The Sibley-Monroe checklist has two birds called 'Grey-headed Woodpecker', *Dendropicos spodocephalus* and *Picus canus*. For the former, see African grey-headed Woodpecker. In summer, the grey-headed woodpecker eats maggots, beetle larvae and other insects. In winter it takes seeds, and can even come to garden feeding places, especially if fat is offered.

349(824) *Dinopium shorii* (Vigors, 1832)
Himalayan Golden-backed Woodpecker

1832 (1830-31). *Proc. Zool. Soc. London* (1) : 175 (Himalayas).

1927. Baker, *FBI* No. 1401, 4 : 74.

Collection records : Uttarakhand : Dehra Dun : Karbari, 1 ♂, 7.iv.1975, coll. R. K. Sahi.

Diagnostics : Size : Pigeon ±; c. 31 cm. Also known 'Himalayan Flameback' or 'Himalayan Goldenback'

Adult : A medium-sized woodpecker has golden-yellow upperparts with variable shade of orange or red; black-and-white face pattern with brownish buff chin and throat; scarlet rump; buffy white breast and underparts boldly scalloped with black; and black tail. Black on hindneck continued forward as a black stripe to behind eye; a prominent white supercilium to nape; a broad white band on either side of neck; black moustachial streaks continued as double line down centre of throat with intervening space pale brown.

Male : Has scarlet crown and occipital crest.

Female : Has black (instead of scarlet) crown and occipital crest with white streaks.

Habitat : <2100 m. Mature semi-evergreen and deciduous forest, chiefly in the lowlands and foothills.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Karva Pani (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra

Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Gori river basin- 2002 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (09) *i.e.* Indo-Chinese Tropical Moist Forest (Jhunjhunwala *et al.* 2001).

350(825-826) *Dinopium javanense* (Ljungh, 1797)
Common Golden-backed Woodpecker

1845. *Picus (Tiga) intermedius* Blyth, *Jour. Asiat. Soc. Bengal* 14(1) : 193 (Nepal, Assam, Tenasserim = Arakan, *vide* Baker, 1919. Restricted to Ramree Island by Robison & Kloss, 1923, *Jour. Nat. Hist. Soc. Siam* 5 : 187.

1934. *Dinopium Javanense malabaricum* Whistler & Kinnear, *Jour. Bombay nat. Hist. Soc.* 37 : 294 (Manantoddy, Wynaad). New name for *Picus rubropygialis* auct., not of Malherbe, 1845.

1927. Baker, *FBI* No. 1400, 4 : 73.

Diagnostics : Size : Myna +; c. 28 cm. Also known as 'Indian Golden-backed Three-toed Woodpecker' or 'Common Goldenback'

Adult : Distinguished from other flamebacks by a single, undivided black moustachial stripe; has golden-yellow upperparts shaded with orange or scarlet; black-and-white face pattern (black hindneck, irregular black line down centre of throat, a white supercilium to nape, sides of head boldly striped black and white); scarlet rump; and whitish underparts spotted with black.

Male : Has crimson crown and occipital crest.

Female : Has white spotted black (instead of crimson) crown and occipital crest.

Habitat : <2300 m. Mainly lower-altitude moist-deciduous and evergreen forest. Prefers moister habitat than Black-rumped Flameback.

Distribution : Uttarakhand : Dehra Dun : Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007).

Status : Residential status not known. Schedule IV (BNHS 2002).

351(818-823) *Dinopium benghalense*
(Linnaeus, 1758)

Lesser Golden-backed Woodpecker

1758. *Picus benghalensis* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 113 (Benghala = Chandernagor *vide* Tyne & Koelz, 1836, *Occ. Pappers Mus. Zool. Univ. Michigan*, No. 334 : 2 (Bhadwar, 2000 ft, Kangra dist. Pinjab).

1927. Baker, *FBI* No. 1394, 4 : 67.

Collection records : Uttarakhand : Dehra Dun : Rishikesh: Pashulok, 1 ♀, 6.i.1970, coll. NRS/ZSI Survey Party; Badripur, 1 ex., 23.ii.1976, coll. M. L. Narang. Naini Tal : Ramnagar, Chilkia, 1 ♀, 25.xii.1968, 1 ♀, 29.iii.1969 coll. P. K. Bose.

Diagnostics : Size : Myna +; c. 29 cm. Also known as Black-rumped Flameback.

Adult : A medium-sized woodpecker with golden-yellow upperparts, black-and-white face pattern and black streaking or scaling on underparts. Has white spotting on black throat; golden yellow back and paler wings; white spots on shoulders; white barring on folded black primaries; white underparts finely streaked with black on chin and throat, more boldly on breast; and black rump and tail. The whitish head is with black nape and throat, and a black eye stripe.

Male : Has scarlet crown and crest.

Female : Has white spotted black forehead and forecrown and scarlet hindcrown.

Juvenile : Like female, but duller.

Habitat : <1700 m. All types of woodland but avoiding denser forest.

Distribution : Uttarakhand : Dehra Dun : (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a & b, Tak 1995), New Forest (George 1957, Mohan 1996), ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

352(860-863) *Chrysocolaptes lucidus*
(Scopoli, 1786)

Greater Golden-backed Woodpecker

1837. *Picus Sultaneus* Hodgson, *Jour. Asiat. Soc. Bengal* 6 : 105 (Nepal, restricted to Simla, central

1950. Nepal, Ripley, *JBNHS* 49 : 380).

1927. Baker, *FBI* No. 1405, 4 : 80.

Diagnostics : Size : Pigeon; c. 33 cm. Also known as 'Greater Flameback' or 'Large Golden-backed Woodpecker'. A large woodpecker with golden-yellow to dark brown back and wings; has striking black-and-white face pattern; scarlet rump; white underparts with dark scaly pattern; and black uppertail-coverts and tail.

Adult : Distinguished by a combination of split moustachial stripe together with white patch on black hindneck and white spotting on upper mantle. The whitish head has black-and-white spotted hindneck, white chin and cheeks, clearly divided black moustachial stripe (two black stripes on either cheek meeting on sides of throat embracing a white oval patch and continuing), and a fifth broader black stripe down centre of chin and foreneck.

Male : Has scarlet crown and crest.

Female : Has black crown and crest spotted with white.

Juvenile : Like female but duller.

Habitat : <2100 m. Open evergreen, semi-evergreen and moist deciduous forest, secondary forest, older plantations.

Distribution : Uttarakhand : Chamoli : Belta (Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, Tak 1995), New Forest (George 1957, 1996), Jhajra, New Forest, Tons Valley Forest (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : It is found in the foothills of the Himalayas and in the forests of the Western Ghats.

353(858-859) *Chrysocolaptes festivus*
(Boddaert, 1783)

Black-shouldered Woodpecker

1783. *Picus festivus* Boddaert, *Table Pl. enlum.* : 43 (Goa ex Daubenton, pl. 696).

1927. Baker, *FBI* No. 1403, 4 : 77.

Diagnostics : Size : Pigeon -; c. 29 cm. Also known as 'White-naped', 'Black-backed' or 'Black-backed Yellow, Woodpecker.

Adult : Easily identified by the large white area on hindneck, mantle and upper back surrounded by black (forming a black V). The additional characters being black rump split moustachial stripe and four toes. The remaining upperparts and wings are golden yellow; rump and tail black; underparts white with dark chevron markings; head whitish with a dark split moustachial stripe; and eye patch black which extends down the neck sides.

Male : Has crimson crown and crest.

Female : Has yellow crown and crest (the only flameback with a yellow crown).

Juvenile : Male with buffish forehead and pinkish crest; female with yellow crest, tipped pink towards rear crown.

Habitat : <1000 m. Widespread but not common in lowland open deciduous forest as well as scrub and cultivation with scattered trees.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

354(828-829) *Mulleripicus pulverulentus*
(Temminck, 1826)

Great Slaty Woodpecker

1950. *Mulleripicus pulverulentus mohun* Ripley, *Proc. Biol. Soc. Washington* 63 : 103 (Jamu Ghat, Bheri River, western Nepal).

1927. Baker, *FBI* No. 1411 (part), 4 : 86.

Diagnostics : Size : House Crow +; c. 51 cm.

Adult : An unmistakable and a large bird with serpentine slate-grey plumage; large pale yellow bill; fine white spotting on head, neck and underparts; long neck and tail; and buffy yellow chin, throat and foreneck.

Male : Has a short broad crimson moustachial stripe.

Female : Lacks crimson moustachial stripe.

Juvenile : With brown cast to upperparts.

Habitat : <600 m (2000 m). Scarce resident of primary forest, mature sal and teak plantations in the terai and foothills of the Himalaya. Also affects more open woodland if there are sufficient tall mature trees.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Order PASSERIFORMES EURYLAIMIDAE (Broadbills)

Broadbills are brightly coloured, medium-sized birds with largish heads and broad flattened bills. Usually in family parties, often in mixed flocks, moving from tree to tree in the mid and upper storeys. They feed mainly on grasshoppers, insects, bugs and spiders and can be quite tame and approachable.

355(865) *Psarisomus dalhousiae* (Jameson, 1835) Long-tailed Broadbill

1835. *Eurylaimus Dalhousie* Jameson, *Edinburgh New Philos. Jour.* 18 : 589 (Northern India, probably near Simla).

1927. Baker, *FBI* No. 1335, 4 : 472.

Diagnostics : Size : Bulbul +; c. 27 cm. Sexes alike.

Adult : A gaudy grass-green arboreal bird; has green upper plumage with blue patch on primaries; blue-green under plumage; lime green bill; black crown with an oblong yellow spot on either side, and a bright blue patch in the centre; bright yellow chin and throat shaped up sides of neck as a collar broken behind; and a long graduated tail bright blue upperside and black underside.

Juvenile : Like adult, but the blue on head replaced by green (concolourous with mantle) and the yellow on chin and throat by greenish-yellow.

Habitat : <2000 m. Tropical and subtropical evergreen forest. Arboreal. Often in flocks, sometimes with other species in bird waves.

Distribution : Uttarakhand : Dehra Dun : lower hills near Mussoorie (Osmaston 1935), (Bhatnagar

& Misra 1971, 1972a, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Not Listed in the Act (BNHS 2002).

PITTIDAE (Pittas)

Pittas are colourful, long-legged birds the size of a thrush but plumper and shorter tailed. They generally hop around on the forest floor, over fallen logs and in dense undergrowth, usually singly or in loose pairs. They feed on insects, beetles, grubs, snails, worms etc. Very shy, and best located by characteristic whistling calls. More likely to be seen in the open just after dawn or at dusk and may take to trees to sing or roost.

356(869-870) *Pitta sordida* (P.L.S. Muller, 1776) Hooded Pitta

1843. *Pitta cucullata* Hartlaub, *Rev. Zool.* : 65 (Malacca).

1926. Baker, *FBI* No. 1325, 3 : 455.

Diagnostics : Size : Quail; c. 19 cm. Sexes alike.

Adult : A dark-hooded and multicoloured terrestrial bird; has black head with chestnut crown and nape; dark green mantle and wings; glistening blue wing-shoulder and rump, white patch on wing-coverts (prominent in flight); greenish breast and flanks; black abdomen; and scarlet belly and vent.

Juvenile : Like adult but the scarlet of belly and vent pale.

Habitat : Mainly plains and foothill (up to 2000 m). Subtropical moist forest and secondary growth.

Distribution : Uttarakhand : Dehra Dun : First sighted at New Forest Campus on 16th July 1988 (Mohan & Chellam 1991), New Forest (Mohan 1993, 1996), Tons Valley Forest (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

357(867) *Pitta brachyura* (Linnaeus, 1766) Indian Pitta

1766. *Corvus brachyurus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 158 (Moluccas = Ceylon).

1939. *Pitta brachyura pulchra* Koelz, *Proc. Biol. Soc. Washington* 52 : 77 (Bhadwar, Kangra, Punjab).

1926. Baker, *FBI* No. 1323, 3 : 453.

Collection records : Uttarakhand : Dehra Dun : Doonga forest, 1♂ and 1♀, 3.vi.1968, 1♂, 27.iii.1969, 1♀, 28.iii.1969 coll. NRS/ZSI Survey Party.

Diagnostics : Size : Quail ±; c. 19 cm. Sexes alike. In Hindi, it is known as 'Naorang' (i.e. nine-coloured).

Adult : A strikingly coloured bird; has bold black eye-stripe contrasting with white throat, supercilium and neck; buff lateral crown-stripes separated by a black central crown-stripe; green upperparts, with shining blue forewing and uppertail-coverts and a small white wing-patch (prominent in flight); buff breast and flanks; and crimson-pink lower belly and vent.

Juvenile : Duller.

Habitat : Lowland scrub and undergrowth in lightly forested areas (up to 1700 m).

Distribution : Uttarakhand : Dehra Dun : Shiwaliks (Osmaston 1935), Wright 1957, Bhatnagar & Misra 1971, 1972b), New Forest (Mohan 1993, 1996), Timli, [Mohand] (Singh 2000), Forests around Asan (Singh 2001). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

Remarks : It breeds in the Himalayas and NE India and winters in S India and Sri Lanka.

ALAUDIDAE (Larks)

Larks are generally small to medium-sized ground feeding birds of open arid regions. For the newcomer to birdwatching they can be confusingly similar to the pipits, some of which inhabit the same habitats. With practice the larks can be distinguished from the latter by shorter-tailed, dumpier appearance, heavier bills, shorter legs and habit of crouching down when approached before taking flight if the intruder comes too near. Some species are practically fine songsters often with characteristic song-flights, making up vocally for

what they lack in visual appeal. The subdued streaked brown and grey patterns blend in well with their surroundings, the underpart colouration in some species being slightly variable and tending to match the locally predominant soil colour. Specific identification can be difficult with the exception of the rather distinctive Horned Lark, Greater Hoopoe Lark and Sparrow Lark males. Sexes are similar in all but the sparrow larks. Flight is normally strong and undulating. Bushlarks can be distinguished from most other larks by the more-or-less obvious rufous wing-patch and the jerky, stiff wing-beats. The tips of their tertials reach the tips of the primaries. They usually call when flushed. Skylarks have short indistinct crests that are not obvious unless raised. Short-toed larks are all rather small with more-or-less streaked upperparts and relatively short stubby bills. Runs about feeding on bare flats in the characteristic zigzag jerky spurts of the family. Crested larks are easily identified by the long pointed crest which is usually upstanding and obvious.

358(872) *Mirafra cantillans* Blyth, 1845 Singing Bush-Lark

1844-5. *Mirafra cantillans* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 960 (Bengal).

1939. *Mirafra cantillans bangsi* Koelz, *Proc. Biol. Soc. Washington* 52 : 76 (Hospet, Madras Presidency).

1926. Baker, *FBI* No. 1229, 3 : 334.

Diagnostics : Size : Sparrow; c. 14 cm. Sexes alike. This is only bushlark with whitish outer tail feathers.

It is slimmer, long-tailed and smaller-billed than Red-winged or Indian Bushlarks. It has stout bill; small crest; rufous on wings (like other *Mirafra* larks); uniform brownish-buff ear-coverts; whitish throat; faint streaking on breast; a slight rufous-buff breast-band; and white outer tail feathers. Both the rufous on wings as well as the whitish outer tail feathers are noticeable in flight which is undulating and rather pipit like.

Habitat : <350 m. Dry plains and foothills with bushes, grassland, stubble, fallow, scrubby patches in sandy semi-desert.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list, ZSI Surveys 2002-05).

Status : Residential status not known. Schedule IV (BNHS 2002).

**359(875-877) *Mirafra erythroptera* Blyth, 1845
Red-winged Bush-Lark**

1845. *Mirafra erythroptera* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 958 (Northern portion of the peninsula of India = northern Deccan).

1926. Baker, *FBI* No. 1235, 3 : 341.

Collection records : Uttarakhand : Dehra Dun : Sahashpur, 1♂, 10.v.1963, coll. P. K. Bose; Sahastradhara, 1♂, 18.vii.1963, 1♂, 25.vii.1963, coll. R. K. Bhatnagar; Dakpathar, 1♂, 4.ix.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow; c. 14 cm. Sexes alike. It is also known as 'Red-winged' or 'Indian Bush-larks'. A stout billed, broad-winged sturdy lark with small crest. Distinguished by more extensive rufous on primaries than other bushlarks (i.e. all brown primaries coverts noticeable in flight); rufous-buff outer tail feathers (not whitish as in Singing); and hindclaw equal to hindtoe. It has prominent spotting on ear-coverts and malar region (cheek-patch) completely bounded by white supercilium and post-articular border; fulvous-brown upperparts including crown heavily streaked; whitish chin and throat; remaining underparts pale fulvous with large triangular blackish marks on breast;

Habitat : Stony scrub and fallow cultivation.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972b), New Forest (Singh 1999), Khaddar (Singh 2000). CTR (Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) i.e. Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

**360(873) *Mirafra assamica* Horsfield, 1840
Bengal Bush-Lark**

1840 (1839). *Mirafra assamica* Horsfield, *Proc. Zool. Soc. London* : 162 (Assam).

1926. Baker, *FBI* No. 1231, 3 : 336.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike. Similar to Singing and Indian Bush-Larks in general appearance, but is distinguished by its larger size; stockier build; strong and stout bill and

shorter tail; ashy-brown upperparts streaked with black; prominent chestnut wings (noticeable in flight); fulvous underparts with thick triangular spots on breast; rufous-buff outer tail feathers; and hindclaw longer than hindtoe.

Habitat : Plains; open short, often damp, grassland and cultivation.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1971, Singh 2000). CTR (Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) i.e. Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : Care must be taken to distinguish Rufous-winged Bush Lark from other very similar bush-lark species in the genus *Mirafra*.

**361(878) *Eremopterix grisea* (Scopoli, 1786)
Ashy-crowned Sparrow-Lark**

1786. *Alauda grisea* Scopoli, *Del. Flor. et Faun. Insubr.* 2 : 95 (Gingee, S. Arcot Dist., India).

1925. *Pyrhulauda grisea siccata* ticehurst, *Bull. Brit. Orn.Cl.* 45 : 87 (Desa, Rajputana [= Banaskantha, Gujarat]).

1934. *Eremopterx grisea ceylonensis* Whistler & Kinnear, *Jour. Bombay nat. Hist. Soc.* 37 : 105 (Eight miles north of Palatupana, east coast, Ceylon).

1926. Baker, *FBI* No. 1323, 3 : 453.

Diagnostics : Size : Sparrow -; c. 13 cm. Also known as Ashy-crowned Finch-lark.

Adult : Is a small thickset and crestless lark with sturdy bill.

Male : Has sandy brown upperparts; ashy crown; whitish cheeks; a black streak from chin to eye; and brownish-black underparts.

Female : Like a hen-sparrow; sandy brown.

Juvenile : Like female.

Habitat : <1000 m. Stony areas with sparse scrub, dry cultivation, sandy riverbeds, dry tidal mudflats.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a & b), New Forest (George 1957, Mohan 1996), Asan Barrage (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977 79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

362(885-886) *Calandrella brachydactyla*
(Leisler, 1814)

Greater Short-toed Lark

1832. *Alauda dukunensis* Sykes, *Proc. Zool. Soc. London* : 93 (Dukun).

1848. *Alauda longipennis* Eversmann, *Bull. Soc. Imp. Sci. Nat. Moscow* 21 : 219 (Sangara, Dzungaria).

1926. Baker, *FBI* No. 1221, 1222, 3 : 325, 326.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike. Sometimes just Short-toed Lark. A sparrow-like bird found in large flocks; has a strong pointed bill; streaked crown; prominent supercilium and eye-stripe; dark patches on each side of neck; greyish brown upperparts with heavily streaked mantle and dark centres to wing-coverts and tertials; whitish underparts, the buffy breast finely striated with brown; and blackish tail with two outer pairs of feathers largely white.

Habitat : <5000 m. Dry open country; cultivation; semi-desert.

Distribution : Uttarakhand : Chamoli : NDNF (Tak & Kumar 1987), (Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

363(887-888) *Calandrella acutirostris* Hume, 1872
Hume's Short-toed Lark

1872. *Calandrella acutirostris* Hume, Lahore to Yarkand: 265 (Balakchi, upper Karakash Valley, north of Sugher Pass, Karakoram).

1926. Baker, *FBI* No. 1223, 3 : 327.

Diagnostics : Size : Sparrow; c. 14 cm. Sexes alike. In general appearance similar to Greater Short-toed, but distinguished by unstreaked crown; less distinct supercilium and eye-stripe; longer, thinner yellow-tinged (vs pinkish) bill with darker culmen; greyer (vs tawny) and less heavily streaked upperparts; unstreaked grayish-brown (vs buffy) breast-band.

Habitat : <5000 m. Open arid tracts. Flocks in winter. Gregarious in winter.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential not known. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

Remarks : Larks are passerine birds of the predominantly Old World family Alaudidae. Only one species, the Shore Lark has spread to North America, where it is called the Horned Lark. They are small terrestrial birds with often extravagant songs and display flights. Like many ground birds, most lark species have long hind claws, which are thought to provide stability while standing.

364(889-891) *Calandrella raytal* (Blyth, 1845)
Indian Short-toed Lark

1845. *Alauda raytal* 'Buch.-Hamilton' = Blyth, *Jour. Asiat. Soc. Bengal* 13 : 962 (Lucknow).

1954. *Calandrella raytal vauriei* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 20 (Palasbari, Assam).

1926. Baker, *FBI* No. 1225, 3 : 329.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. Also known as 'Indian Sandlark'; in appearance, like Greater Short-toed; but distinguished from the other two above mentioned *Calandrella* larks by smaller size; stockier appearance; rather rounded wings with flickering flight; fine bill; fine streaking on breast; sandy-grey upperparts with streaking most prominent on crown and very short primary projection; and comparatively short and prominent blackish sides to tail contrasting with white outer tail feathers

Habitat : Lowland. Sandbanks by water, salt pans, dry fields, coastal dunes, and mudflats. Gregarious in winter.

Distribution : Uttarakhand : Dehra Dun : New Forest (Singh 1999), Khaddar (Singh 2000). CTR (Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

365(898-900) *Galerida cristata* (Linnaeus, 1758)
Common Crested Lark

1831. *Alauda Chendoola* Franklin, *Proc. Zool. Soc. London* : 119 (Between Calcutta and Benares).

1926. Baker, *FBI* No. 1237, 3 : 343.

Collection records : Uttarakhand : Dehra Dun : Badripur, 1 ♂, 10.xii.1975, coll. M. L. Narang.

Diagnostics : Size : Sparrow +; c. 18 cm. Sexes alike. Large larks with a noticeable, long, spiky and erectile crest; grey-brown upperparts streaked with blackish; whitish underparts boldly streaked with dark brown on breast; and rufous-buff outer tail feathers and underwings. In flight, reddish underwings clear. The song is melodious and varied, with mournful whistles and mimicry included.

Habitat : Mainly lowlands (up to 2400 m); desert and semi-desert, dry cultivation, and coastal mudflats. Small flocks in winter.

Distribution : Uttarakhand : Dehra Dun : western Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971), New Forest (George 1957, Mohan 1996, Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

366(903-903a) *Alauda arvensis* Linnaeus, 1758 Eurasian Skylark

1873. *Alauda Dulcivox* Books, *Stray Feathers* 1 : 484 ("Himalayas and plains of North-Western Punjab", emended to Djarkent, Russian Turkestan by Vaurie, 1951, loc. cit. : 511).

1904. *Alauda cinerascens* Ehmcke, *Jour. f. Orn.* : 313 (Barnaul, west Siberia).

1926. Baker, *FBI* No. 1211, 3 : 315.

Diagnostics : Size : Sparrow +; c. 19 cm. Sexes alike. A dark-streaked sandy brown lark; similar to Oriental Skylark, but larger with thicker bill usually horny (vs pinkish); longer tail with white outer tail feathers (vs buffish); white trailing edge to wing; and longer primary projection (c. half of visible tertials).

Habitat : Plains-1500 m (3000+ m). Grassland and cultivation. Gregarious in winter.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra

1971, Singh 2000), New Forest (George 1957). CTR (Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : Like most other larks, the Skylark is a rather dull-looking species on the ground, being mainly brown above and paler below. It has a short blunt crest on the head, which can be raised and lowered. In flight, it shows a short tail and short broad wings. The tail and the rear edge of the wings are edged with white, which are visible when the bird is flying away. The Skylark has sturdy legs and spends a much time on the ground foraging for seeds, supplemented with insects in the breeding season.

367(904-909) *Alauda gulgula* Franklin, 1831 Eastern Skylark

1831. *Alauda gulgula* Franklin, *Proc. Zool. Soc. London* : 119 (The Ganges between Calcutta and Benares).

1926. Baker, *FBI* No. 1215, 3 : 319.

Diagnostics : Size : Sparrow +; c. 16 cm. Sexes alike. Also known as the 'Oriental Skylark' or the 'Oriental Lark' or 'Small Skylark' For differences see Eurasian Skylark (above). Has an indistinct tuft on crown, noticeable when partially erected; much finer pinkish bill; streaked brown upperparts (each feather centered blackish and edged tawny); rufous tinged primaries; pale fulvous-buff underparts; darker fulvous on breast, heavy streaking on breast; and buffish outer tail feathers.

Habitat : <4300 m. Open grassland and cultivation and solitary.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a), New Forest (Mohan 1996), Khaddar (Singh 2000). Pauri (Tak 1995). Pithoragarh (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

Remarks : These skylarks frequently rocket up into the sky, fluttering and singing before descending

down to earth. Male Oriental Skylark (Eastern Skylark) may also hover in the air and sing, in order to attract a mate.

HIRUNDINIDAE (Swallows & Martins)

Swallows and martins are slender and slim bodied birds with long and pointed wings; small bill with wide gape; short and weak legs; more or less forked tail. Long-tailed species are known as *Swallows* and shorter-tailed *Martins*. They hawk day-flying insects in swift, agile, sustained flight, sometimes high in the air. Catch most of their food while flying in the open air. Perch on exposed branches and telegraph wires. Gregarious, often roost and feed communally. Nests in holes, tunnels, walls and cliffs with mud.

368(911) *Riparia riparia* (Linnaeus, 1758) Sand Martin

1908. *Clivicola riparia ijimae* Lonnberg, *Jour. Coll. Sci. Tokyo* 23(14) : 38 (Tretia Padi, Sakhalin).

1926. Baker, *FBI* No. 1147, 3 : 234.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. A small martin, has white throat and half-collar (distinguishing from Plain Martin, *R. paludicola*); smoky grey-brown upperparts, darker on wings- and tail-quills; white underparts with a well defined brown breast-band (contrasting with white throat distinguishes from other Martins); and the border between clear white throat and dark brown ear-coverts and deeper tail-fork (distinguishes from Pale Martin, *R. diluta*).

Habitat : Vicinity of rivers with sheer banks.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935), Asan Barrage (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Not Listed in the Act (BNHS 2002).

Remarks : *Riparia* martins, like other swallows, take insects in flight over water, grassland or other open country. The Sand Martin, (*Riparia riparia*) is a migratory passerine bird in the swallow family. The cosmopolitan Sand Martin is almost completely migratory, breeding across temperate Eurasia and North America and wintering in the tropics. The other species are partial migrants or resident.

369(910) *Riparia diluta* (Sharpe & Wyatt, 1893) Pale Martin

1893. *Cotile diluta* Sharpe & Wyatt, *Monogr. Hirund.* 1 : 63 (Chimkent north of Tashkent).

1859. *Cotyle subsoccata* Adams, *Proc. Zool. Soc. London* : 176, *nomen nudum*. (Quoted in synonymy of *Riparia sinensis* by Horsfield & Moore, 1854).

1916. *Riparia riaparia plumipes* Zarudny, *Mess. Orn.* : 34 (Turkestan).

1916. *Riparia riaparia indica* Ticehurst, *Ibis* : 71 (Jhelum, Punjab).

1925. *Riparia riaparia taczanowskii* Stegmann, *Compt. Rend. Acad. Sci. URSS.*, ser. A. : 39 (Sidemi, near Vladivostock).

1925. *Riparia riaparia tibetana* Stegmann, *Compt. Rend. Acad. Sci. URSS.*, ser. A : 39 (Dza Chu R., 1937. Sikang, restricted by Meise, *Jour. f. Orn.* 85 : 575).

1926. Baker, *FBI* No. 1145, 3 : 232.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. Also known as 'Collared Sand Martin'

Adult : A small martin with paler and greyer upperparts (than on Sand and Plain Martins); greyish-white throat and underparts; smoky grey sides on neck, throat and flanks; smoky grey weakly defined breast-band; and shallow tail-fork.

Juvenile : With buff fringes to upperparts.

Habitat : <4500 m. Near large streams and rivers with perpendicular banks.

Distribution : Uttarakhand : CTR (Lamba undated).

Status : Residential status not known. Not Listed in the List (BNHS 2002).

Remarks : These species are closely associated with water. They nest in tunnels usually excavated by the birds themselves in a natural sand bank on earth mound. They lay white eggs, which are incubated by both parents, in a nest of straw, grass and feathers in a chamber at the end of the burrow. Some species breed colonially.

370(912) *Riparia paludicola* (Vieillot, 1817) Plain Martin

1830. *Hirundo chinensis* J. E. Gray, *Ill. Indian Zool.* 1(2), pl. 35, fig. 3 (China).

1839. *Hirundo brevicaudata* Horsfield, *Proc. Zool. Soc.* London : 156 (Assam).

1910. *Clivicola birkewitchi* Zarudny, *Orn. Monatsb.* 18 : 147 (Termez).

1926. Baker, *FBI* No. 1148, 3 : 235.

Diagnostics : Size : Sparrow -; c. 12 cm. Sexes alike. Also known as 'Plain Sand Martin' or 'Brown-throated Sand Martin' or 'Sand Martin'; its brown back, small size and quicker, jerkier flight separate it at once from most other members of the swallow family.

Adult : Similar to Sand and Pale Martins (above), but distinguished by its pale brownish-grey throat and breast, merging into discoloured white remaining underparts; slightly darker and richer brown upperparts; and lack of the narrow brown breast-band of Sand Martin. It has black bill and brown legs.

Juvenile : With rufous fringes to upperparts and buff wash on throat and breast.

Habitat : Around rivers and lakes.

Distribution : Uttarakhand : Dehra Dun : Yamuna and Ganges (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1971, 1972a), New Forest (Mohan 1993, 1996), Khaddar (Singh 2000). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

371(913) *Hirundo rupestris* Scopoli, 1769 Eurasian Crag-Martin

1769. *Hirundo rupestris* Scopoli, *Annus 1, Hist. Nat.* : 167 (Tyrol).

1926. Baker, *FBI* No. 1149, 3 : 236.

Diagnostics : Size : Sparrow; c. 14 cm. Sexes alike. Also known as 'Crag Martin' or 'Northern Crag Martin'

Adult : Like other crag martins, is a thickset, has broad wings; white spots on tail (clear when tail is spread); similar to Dusky Crag-Martin, but slightly larger and with paler (ashy brown) upperparts; almost whitish underparts with dusky

throat, dusky brown flanks and vent; blackish undertail-coverts (clearly contrasting in overhead flight). At close range, the dark streaking on fulvous-white throat is also a distinguishing feature. The flight is strong and swift, with much gliding and stooping on insects on which it feeds while airborne.

Juvenile : With rufous margins to feathers of upperparts and dull rufous underparts.

Habitat : S 1600-5000 m. W < 2150 m. Mountain crags and cliffs old hill forts.

Distribution : Uttarakhand : Chamoli : Girthi valley in Painkhanda Malla (Osmaston 1921), Dhauli gorge above Bampa (Lavkumar 1956b). Dehra Dun: beyond Chakrata (Osmaston 1935), New Forest (Wright 1957, George 1962a), (Wright 1957, Bhatnagar & Misra 1971, Singh 2000). Pauri (Tak 1995). Uttarkashi : Govind NP : Duni (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread summer visitor. Not Listed in the Act (BNHS 2002).

Remarks : The Crag Martin builds a neat quarter-sphere nest lined with mud collected in its beak, and lays 3-5 eggs. It normally nests under cliff overhangs in its mountain homes, but will readily adapt to buildings and motorway bridges. It does not normally form large breeding colonies, but is gregarious outside the breeding season. It is a migratory species that inhabits open meadow habitat near cliffs and ravines, often near water, in mountainous areas at mid-elevation. Usually migrates in flocks. It defends a breeding site and attracts a mate by song and aerial displays.

372(914) *Hirundo concolor* Sykes, 1833 Dusky Crag-Martin

1833. *Hirundo concolor* Sykes, *Proc. Zool. Soc.* London : 83 (Dukhun).

1926. Baker, *FBI* No. 1150, 3 : 237.

Collection records : Uttarakhand : Dehra Dun : Herbatpur, 1 ex., 10.x.1968, coll. P. K. Bose.

Diagnostics : Size : Sparrow -; c. 13 cm. Similar to Eurasian Crag-Martin, but is a dark brown uniformly coloured martin with square-cut tail. Has dusky underparts (slightly paler than upperparts) which separate it from other martins,

breast and belly noticeably paler than vent; dull rufous chin, throat and foreneck finely streaked with blackish; a roundish white spot ('window') on all tail-feathers except the middle and outermost pairs (conspicuous in flight). Lacks contrast between the flight feathers and the underwing-coverts as well as between the underparts and tail feathers.

Habitat : <1800+ m. Rocky gorges and old buildings.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a), New Forest (George 1957, Mohan 1996), Asan Barrage, New Forest (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

**373(916-918) *Hirundo rustica* Linnaeus, 1758
Common Swallow**

1758. *Hirundo rustica* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 191 (Sweden).

1939. *Hirundo rustica afghanica* Koelz, *Proc. Biol. Soc. Washington* 52 : 75 (Baghlan, Afghanistan) Cf. 1927. Ticehurst, C.B., *JBNHS* 32 : 349.

1926. Baker, *FBI* No. 1152, 3 : 240.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1 ♂, 24.i.1975, coll. D. N. Basu.

Diagnostics : Size : Sparrow ±; c. 18 cm (with long forked tail). Sexes alike. Also known as 'Barn Swallow' is a small migratory passerine bird.

Adult : Its chestnut forehead, chin and throat and blue-black breast or pectoral-band separates it from other swallows. Has shiny steel-blue upperparts; white to rufous remaining underparts; curved, pointed wings; and long, deeply forked tail (outer rectrices greatly elongated and attenuated on terminal half).

Juvenile : Duller and paler with much less gloss.

Habitat : <3000 m (6400 m). Open country.

Distribution Uttarakhand : Bageshwar : Dwali – Phurkia (Tak 1997). Champawat (ZSI Survey 2005). Dehra Dun : Yamuna and Ganges,

Chakrata and Mussoorie (Osmaston 1935), (Bhatnagar & Misra 1971, 1972a), New Forest (Mohan 1993, 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Asan Barrage, Khaddar (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident as well widespread winter visitor. Not Listed in the Act (BNHS 2002).

**374(921) *Hirundo smithii* Leach, 1818
Wire-tailed Swallow**

1825. *H. (irundo) filifera* Stephens, in Shaw's *Gen. Zool.* 13 : 78 (India, ex Latham).

1930. *Hirundo smithi bobrinskoi* Stachanow, *Orn. Monatsb.* 38 : 76 (Tchubck, Bokhara).

1926. Baker, *FBI* No. 1157, 3 : 245.

Collection records : Uttarakhand : Dehra Dun : Herbatpur, 1 ex., 10.x.1968, coll. P. K. Bose; Rishikesh, Pashulok, 1 ♂, 8.ix.1972, coll. D. N. Basu; 37-Chakrata road, 1 ♀, date ?, coll. D. N. Basu.

Diagnostics : Size : Sparrow ±; c. 14 cm excluding tail-wires. Sexes similar, but the female has shorter 'wires' This species gets its name from the very long filamentous outermost tail feathers, which trail behind like two wires (visible at close range, and are frequently broken).

Adult : Distinguished from 'Common' or 'Barn' by a combination of chestnut crown; glistening white underparts, underwing-coverts (clear in flight); and the 'wires' It has bright blue upperparts, except for a chestnut crown, white spots on the tail, and blue mask through eyes.

Juveniles : With brown, back and tail.

Habitat : <1500 m (2700 m). Open country. Usually near water and human habitation.

Distribution Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a), New Forest (George 1957, 1962a,

Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Asan Barrage, New Forest (Singh 2000). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Rudraprayag : lower Mandakini (Lavkumar 1956b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread summer visitor. Not Listed in the Act (BNHS 2002).

Remarks : Wire-tailed Swallows are fast flyers and they generally feed on insect, especially flies, while airborne. They are typically seen low over water, with which they are more closely associated than most swallows. The neat half-bowl nests are lined with mud collected in the swallow's beak. They are placed on vertical surfaces near water under cliff ledges or more commonly on man-made structures such as buildings and bridges. These birds are solitary and territorial nesters, unlike many swallows, which tend to be colonial.

**375(923-928) *Hirundo daurica* Linnaeus, 1771
Red-rumped Swallow**

1771. *Hirundo daurica* Linnaeus, *Mantissa Plant.* : 528 (Siberia).

1877. *Lillia substriolata* Hume, *Stray Feathers* 5 : 268 (Cachar).

1926. Baker, *FBI* No. 1159, 3 : 248.

Collection records : Uttarakhand : Tehri : Kempti, 1 ♀, 10.vii.1973, 1 ♀, 22.viii.1975, coll. Raj Tilak. Uttarkashi : Naw Gaon, 1 ♂, 14.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow ±; c. 19 cm. Sexes alike. A deeply fork-tailed swallow with broad pointed wings.

Adult : Similar to Barn Swallow, but bulkier and distinguished by rufous-orange sides of head creating a complete collar; rufous-orange rump; a narrow supercilium; finely streaked uniformly buffish-white underparts; and black undertail-coverts. Has glistening steel blue-black back.

Races : Six races are recognised from the subcontinent, differing mainly in strength of streaking on and colouration of underparts and rump, and prominence of collar. *H. d. rufula* of

NW subcontinent is only faintly streaked on underparts, has a complete collar, and has whiter uppertail-coverts than rump.

Juvenile : Duller with shorter tail-streamers.

Habitat : <3300 m. Open country.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971), New Forest (George 1957, Mohan 1996), Asan Barrage, New Forest (Singh 2000). Pauri (Tak 1995). Rudraprayag : Mandakini (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident as well as widespread summer visitor. Not Listed in the Act (BNHS 2002).

Remarks : They normally nest under cliff overhangs in their mountain homes, but will readily adapt to buildings such as mosques and bridges.

**376(922) *Hirundo fluviicola* Blyth, 1855
Streak-throated Swallow**

1855. *Hirundo fluviicola* Blyth, *Jour. Asiat. Soc. Bengal* 24 : 270 (Bundelkhand *ex* Jerdon).

1926. Baker, *FBI* No. 1158, 3 : 246.

Diagnostics : Size : Sparrow -; c. 12 cm. Sexes alike. Also known as 'Indian Cliff Swallow' is a small, compact swallow with a very slight fork to broad tail.

Adult : Identified by the combination of chestnut forehead and crown; glossy steel-blue remaining upperparts; dirty off-white underparts with heavy blackish streaking on throat, breast, and sides of head; and narrow white streaks on mantle, and brownish rump.

Juvenile : Duller with browner crown, mantle and wings. Streaked throat differentiates it from juvenile Wire-tailed Swallow.

Habitat : Open country and cultivation near water.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra

1971, 1972a & b), New Forest (George 1957, Mohan 1996), Asan Barrage, New Forest (Singh 2000). Haridwar : Maiapur (Osmaston 1935). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

**377(930) *Delichon urbica* (Linnaeus, 1758)
Northern House-Martin**

1758. *Delichon urbica* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 192 (in Europe = Sweden).

1926. Baker, *FBI* No. 1141, 3 : 226.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike. Also known as 'Common' or 'Eurasian'; is a small black and white swallow with a longer and more deeply forked tail.

Adult : Similar to Asian House-Martin, but distinguished by a combination of larger size; entirely white underbody; longer and more deeply forked tail; and larger white rump-patch. Has glossy blue-black back with glistening white rump; and pure white below including feathered legs and feet. In flight, the diagnostics are: white rump as in House Swift; white underparts as in Wire-tailed Swallow; short slightly forked tail as in Cliff Swallow.

Juvenile : With less glossy upperparts; rather discoloured underparts and less shallow tail-fork.

Habitat : S 3000-4500 m. W > plains. Open walls, grassy slopes, and cliffs.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Lobha (Osmaston 1921), Badrinath and Amrit Ganga valley (Lavkumar 1956b), (Tak 1995), Bhujgara (Reed 1979, Tak 1997), Nandprayag (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a, Singh 2000), Asan Barage (Gandhi & Singh 1995). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Rudraprayag : Kedarnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Lamprey (1954). Uttarkashi : 'Breeds' in colonies near source of Tons river (Osmaston 1935), Govind NP: Sankri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Khatri 2004, internet list).

Status : Residential status not known. Not Listed in the Act (BNHS 2002).

Remarks : The House-Martin was originally a cliff and cave nester, and some cliff nesting colonies still exist, usually building their nests below an overhanging rock. They now largely use human structure. On houses, the nests are close under the caves so that they may be strengthened by attachment above. The nest is a cup fixed below a suitable ledge. The entrance is so small that the House Sparrow cannot take over the nest once the nest is complete. The mud, added in successive layers, is collected from ponds, streams or puddles. Both birds (sexes) work at construction.

**378(931) *Delichon dasypus* (Bonaparte, 1850)
Asian House-Martin**

1858. *Chelidon Cashmeriensis* Gould, *Proc. Zool. Soc.* London : 356 (Kashmir).

1926. Baker, *FBI* No. 1142, 3 : 228.

Diagnostics : Size : Sparrow; c. 14 cm. Sexes alike. Also known as Asian Martin; is a small black and white swallow with a shallower fork to tail.

Adult : Distinguished from Northern by dusky underparts (darkest on breast); smaller and sooty white rump-patch; shallow fork to shorter square-ended tail; darker underwing; and dusky centres to undertail-coverts. Has short legs and toes feathered with white downy.

Juvenile : With browner upperparts and stronger dusky wash to underparts.

Habitat : S 1500-5000 m. W > plains, mountain cliffs and villages slopes, along waterways, cultivation.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Lohba (Osmaston 1921). Dehra Dun (Singh 2000). CTR (Lamba undated, internet list, ZSI Surveys 2002-05).

Status : Residential status not known. Not Listed in the Act (BNHS 2002):

**379(932) *Delichon nipalensis* Horsfield & Moore, 1854
Nepal House-Martin**

1854. *Delichon nipalensis* 'Hodgson'=Moore in Horsfield & Moore, *Cat. Bds. Mus. E. I. Co.* 1 : 384 (Nepal).

1952 (Sept.). *Delichon nipalensis bartletti* Koelz, *Jour. Zool. Soc. India* 4 : 43 (Hmunttha, Lushai Hills).

1953 [Feb.], (1952). *Hirundo cuttingi ernstmayri* Wolters, *Bonner Zool. Beitr.* 3 : 280 (New name for *D. nepalensis* Moore if placed in genus *Hirundo*, preoccupied).

1926. Baker, *FBI* No. 1215, 3 : 319.

Diagnostics : Size : Sparrow $\pm$; c. 13 cm. Sexes alike. Also known as Nepal Martin; is a small black and white bird with a short square-cut tail.

Adult : Like Northern and Asian, but is smaller with black throat; black undertail-coverts; smaller white rump-patch; and square-cut tail.

Juvenile : Duller with buff underparts and less black on throat.

Habitat : S 2000-4000 m. W >350 m (160 m). Mountain cliffs, river valleys.

Distribution : Uttarakhand : Bageshwar : Bharari, Baijnath, Garur (ZSI Survey 2004). Chamoli : Pindar valley (Osmaston 1921), NDNP (Tak & Kumar 1987), (Tak 1995), Bhujgara, Belta (Tak 1997). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba undated, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Not Listed in the Act (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : It is a bird of the mountains of southern Asia, breeding between 1000 m and 4000 m, but mainly below 3000 m in river valleys and rugged wooded mountain ridges. The nominate race *D. n. nipalensis* is resident in the Himalayas from Garhwal through Nepal and east to western Myanmar.

MOTACILLIDAE (Wagtails & Pipits)

They are small and slim ground-feeding birds with slender pointed bill, pointed wings, fairly long legs, walk with deliberate gait and run rapidly, nest on the ground. Wagtails are generally unstreaked, brighter and more contrasting, wag their tails up and down, feed primarily on insects, often call in flight, usually found singly in breeding season, roost communally in non-breeding season. Pipits are dull coloured, like larks, some wag their tails up and down while walking, flight less fluttery, often give diagnostic call in flight.

380(1874) *Dendronanthus indicus* (Gmelin, 1789) Forest Wagtail

1789. *Motacilla indica* Gmelin, *Syst. Nat.* 1 : 962 (India, *ex* Sonnerat, restricted to Malabar by Ripley, 1961. Synopsis : 574).

1926. Baker, *FBI* No. 1183, 3 : 276.

Diagnostics : Size : Sparrow; c. 17 cm. Sexes alike. The Forest Wagtail differs from its *Motacilla* relatives in its strange habit of swaying its tail from side to side, not wagging it up and down like other wagtails. In addition, it has unusual plumage pattern and habitat.

Adult : Has olive upperparts with broad yellowish white median- and greater-covert wing-bars and white patch on secondaries; whitish underparts with double black breast-band (lower band broken at centre of breast); and white supercilium.

Habitat : S >1535 m. W Foothills -2200 m. Forest, plantations, clearings.

Distribution : Uttarakhand : Dehra Dun : Asan Barage (Gandhi & Singh 1995), (Singh 2000). CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : It breeds in East Asia from Siberia to north China, and is migratory, wintering in south Asia from India to Indonesia. As its English and scientific names mean, this is a forest species, a distinction from all other wagtails. It is usually found in open areas of the woodland such as clearings. It builds its cup-shaped nest in a tree and usually lays five eggs. Like other wagtails, this species is insectivorous.

381(1885-1890) *Motacilla alba* Linnaeus, 1758 White Wagtail

1832. *Motacilla Dukhunensis* Sykes, *Proc. Zool. Soc.* London : 91 (Dukhun).

1926. Baker, *FBI* No. 1166, 3 : 257.

Collection records : Uttarakhand : Dehra Dun : Herbatpur, 1 ex., 25.x.1968, coll. P. K. Bose; Rajpur : Kuthal Gaon, 1 ex., 6.xi. 1969, coll. P. K. Bose; Dakpathar, 1 σ , 4.ix.1973, coll. Raj Tilak; 37-Chakrata road, 1 σ , 17.i.1977, coll. Ram Das.

Diagnostics : Size : Bulbul; c. 18 cm. Sexes partially alike. It is a slender bird, with the characteristic long, constantly wagging tail; is extremely variable, with black-and-white head pattern, grey or black mantle, and largely white to largely black wing-coverts indicate racial indentificaiton of breeding males. There are a number of subspecies, the validity of some are questionable, while others are sometimes proposed as constituting distinct species. They differ in the colour of the wings, back, and head, or other features.

Races : The nominate subspecies *M. a. alba* is basically grey above and white below, with a white face, black cap and black throat. *M. a. dukhunensis* (a widespread winter visitor to the subcontinent) has grey mantle, white forehead and face, and black hindcrown/ nape, throat and breast; while *M. a. personata* (breeding in NW subcontinent and wintering widely across subcontinent) has grey mantle and black head and breast, with white forehead and face patch, giving rise to pale-masked appearance.

Habitat : Usually in open country. S 800-4500 m, streams and rivers. W <1800 m (5500 m on passage). Vicinity of water, damp fields, short grassland.

Distribution : Uttarakhand : Bageshwar : Loharkhet – Khati (Tak 1997). Chamoli : Daldungi in Amrit Ganga (Lavkumar 1956b), vicinity of the glacier snout (Reed 1979), (Tak 1995), Reni, Lata – Malari, glaciers aroud Sarsopatal, Bedni – Roopkund (Tak 1997), Nandprayag, Narainbagrh (ZSI Survey 2004). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Asan Barrage, Khaddar, New Forest, Sulphur Springs, Tapkeshwar, [Dholkhand, Maldeota] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995), Garjia Temple (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh : Rilkote – Milam (Tak 1997), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Lamprey (1954),

Jardar (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Bakra Dam site (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Taluka, Osla, Dhaula (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

382(1891) *Motacilla maderaspatensis* Gmelin, 1789

Large Pied Wagtail

1789. (*Motacilla*) *maderapatensis* Gmelin, *Syst. Nat.* 1 : 961 (India = Madras *vide* Whistler & Kinnear, 1933. *JBNHS* 36 : 842).

1939. *Motacilla maderaspatensis kangrae* Koelz, *Proc. Biol. Soc. Washington* 52 : 75 (Badhwar, Kangra District, Punjab).

1926. Baker, *FBI* No. 1172, 3 : 263.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♀, 18.vii.1963, coll. R. K. Bhatnagar.

Diagnostics : Size : Bulbul; c. 21 cm. Sexes alike but female sometimes duller and browner; summer and winter plumage alike. Also known as White-browed Wagtail; is a resident breeder in India; the species name is derived from the Indian city of Madras now known as Chennai. This is a slender bird, with the characteristic long, constantly wagging tail. The combination of black mantle and black head broken only by white supercilium, separates it from all races of White Wagtail.

Adult male : Has black upperparts, head and breast, with a white supercilium; large white wing-bar; and white remaining underparts.

Female : Has less glossy black colouration.

Juvenile : Brown-grey.

Habitat : <2200 m. Usually in pairs near water.

Distribution : Uttarakhand : Chamoli : Ghat (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a & b), New Forest (Mohan 1993, 1996), Asan Barage

(Gandhi & Singh 1995, Tak & Sati 2003), Asan Barrage, Khaddar, New Forest, Sulphur Springs, Tapkeshwar, [Dholkhand, Maldeota] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh : Gori river basin-2002 (Tak & Sati 2006). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

383(1881-1883) *Motacilla citreola* Pallas, 1776
Citrine Wagtail

1776. *Motacilla citreola* Pallas, *Reise. Russ. Reich* 3 : 696 (Siberia).

1926. Baker, *FBI* No. 1181 (part), 3 : 273.

Diagnostics : Size : Sparrow; c. 17 cm.

Adult male (breeding) : Easily identified by the entirely yellow head; basically grey remaining upperparts; and bright yellow underparts. In other plumages, the yellow underparts may be diluted by white, and the head is browner.

Adult female (breeding) : Separated from similarly plumaged Grey Wagtail by yellow supercilium curving round behind the ear-coverts to meet yellow throat, white vent and broad white wing-bars.

Juvenile : Has brownish crown, ear-coverts and mantle; buffish supercilium (with dark upper edge) curving round behind the ear-coverts; buffish-white underparts black spotting across breast (gorget) and lacks any yellow.

Habitat : S (1500 m) 3000-5600 m. W mainly lowlands. Marshes, wet margins of lakes and jheels, wet paddies.

Distribution : Uttarakhand : Dehra Dun (Wright 1957), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Khaddar (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

384(1875-1880) *Motacilla flava* Linnaeus, 1758
Yellow Wagtail

1832. *Budytes Beema* Sykes, *Proc. Zool. Soc. London* : 90 (Dukhun).

1926. Baker, *FBI* No. 1175, 3 : 267.

Diagnostics : Size : Sparrow; c. 17 cm. Sexes more or less alike.

Adult male (breeding) : Has olive-green upperparts and yellow underparts, with considerable variation in colouration of head depending on race.

Adult female (breeding) : Extremely variable, but in breeding plumage shows some features of breeding male. *First- winter* bird has brownish-olive upperparts, whitish underparts with variable yellowish wash, and buff or whitish median- and greater-covert wing-bars and fringes to tertials.

Juvenile : With a dark malar stripe and band across breast.

Habitat : S 3600-4500 m. W <1500 m. Damp pastures, marshy areas with short vegetation, margins of rivers, lakes and jheels.

Distribution : Uttarakhand : Bageshwar : around Bageshwar (ZSI Survey 2004). Chamoli : Vishnuprayag, Nandprayag (ZSI Survey 2004). Dehra Dun (Wright 1957), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Khaddar, New Forest, Tapkeshwar (Singh 2000); Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh (Tak 1995), Dhaul river basin- 2004, Gori river basin-2002, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Gandhari (ZSI Survey 2004); Tehri: Jardar (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

385(1884) *Motacilla cinerea* Tunstall, 1771
Grey Wagtail

1774. *Parus Caspicus* Gmelin, *Reise d. Russ.* 3, pl. 20, fig. 2 : 104 (southern shore of Caspian Sea).

1776. *Motacilla Melanope* Pallas, *Reise Russ. Reichs* 3 : 696 (Dauria, E. Siberia).

1771. *Motacilla cinerea* Tunstall, *Orn. Brit.* : 2 (England).

1926. Baker, *FBI* No. 1174, 3 : 265.

Collection records : Uttarakhand : Dehra Dun : Raipur, 1 ♀, 24.iv.1963, coll. T. D. Soota; Rovers Cave, 1 ex, 12.ix.1968, coll. P. K. Bose.

Diagnostics : Size : Sparrow, with a long tail; c. 17 cm. Sexes indistinguishable in winter. In all plumages, has white supercilium; grey upperparts; and yellow vent and undertail-coverts.

Breeding male : Has black throat, while other plumages lack the black throat, and the yellow may be diluted by white except in undertail area.

Breeding female : with a buff throat (mottled with black in summer) and paler underparts.

Habitat : S (1200 m) 1800-3900 m. Rocky Mountain streams. W <2000 m. Near water (mainly streams).

Distribution : Uttarakhand : Almora : Petshal, Soni, Gagas, Chanthariya, Mansi (ZSI Survey 2004). Bageshwar : between Khati and Dwali (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Badrinath, Mana, above Lata (Lavkumar 1956b), Rishi Ganga gorge (Sankaran 1993, 1994), Belta, lower Rishi Gorge, Wan (Tak 1997), Dibrugheta (Sarsopatal, Devstan bc, Pataalkhan, Bhojgara, Ramni, Betartoli, Deodi, Dibrugheta (Sathyakumar 2003). Dehra Dun (Osmaston 1935, Wright 1957, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Mussoorie, New Forest, Sulphur Springs, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal (Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), Lamprey (1954), Jardar (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Naitwar (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local resident as well as widespread winter visitor. Schedule IV (BNHS 2002).

386(1858-1860) *Anthus rufulus* Vieillot, 1818 Paddyfield Pipit

1818. *Anthus rufulus* Vieillot, *Nouv. Dict. d'Hist. Nat.* 26 : 494 (Bengal).

1926. Baker, *FBI* No. 1195 (part), 3 : 290.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ex., 29.iv.1965, coll. R. K. Bhatnagar.

Diagnostics : Size : Sparrow ±; c. 15 cm. Sexes alike.

Adult : Has mainly streaked grey-brown upperparts; dark lores; pale underparts, with a band of fine streaks across breast, not on flanks; long legs and tail and a long dark bill.

Races : Three races known from the subcontinent. *A. r. waitei* of the NW subcontinent is paler and more sandy-grey on the upperparts compared with the widely distributed nominate race, and is less heavily streaked above and below. *A. r. malayensis* of the S peninsula and Sri Lanka is darker and more heavily streaked than the nominate race.

Habitat : S <1800 m (3000 m). W mainly lowlands. Open short grassland, stubble, fallow and wasteland, marshy areas.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Khaddar, New Forest (Singh 2000). Pithoragarh (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

387(1861-1862) *Anthus campestris* (Linnaeus, 1758) Tawny Pipit

1758. *Alauda campestris* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 166 (Europa = Sweden).

1920. *Anthus campestris griseus* Nicoll, *Bull. Brit. Orn. Cl.* 41 : 25 (Tischan, Turkestan).

1926. Baker, *FBI* No. 1197 (part) and 1198, 3 : 292, 293.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Sexes alike.

Adult : Has faintly streaked sandy-grey upperparts, with darker streaks on crown and contrasting black-centred median coverts; distinct malar stripe; unstreaked rump; buffy-yellowish breast; white on centre of belly. *First-winter* bird similar to adult, but some retain dark-streaked juvenile feathers, especially on crown, scapulars and breast.

Juvenile : More heavily streaked with dark lores, finer bill, rather horizontal stance, and wagtail-like behaviour.

Habitat : S 2700-3700 m (4200 m). Grassy slopes with scattered tree and bushes. W <1400 m. Open habitat with grass, scrub and trees.

Distribution : Uttarakhand : CTR (Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

Remarks : In south Asia, in winter some care must be taken to distinguish this from other large pipits which winters or are resident in the area, including Richard's, Blyth's and Paddyfield Pipits.

388(1863) *Anthus godlewskii* (Taczanowski, 1876) Blyth's Pipit

1844. *C. (ichlops) thermophilus* Hodgson, in Gray, *Zool. Misc.* : 83, *nomen nudum* *Anthus striolatus* Blyth, in Gray, 1846, *Cat. Mamm. Bds. Nepal* : 77, *nomen nudum*, as a synonym of *Anthus rufescens* Temminck.

1847. *A. (nthus) striolatus* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 435 (Darjeeling) *corydalla* (A.) *thermophilus* 'Hodgson' = Jerdon, 1863, *Bds. India* 2 : 233 (name only).

1876. *Agrodroma Godlewskii* Taczanowski, *Bull. Soc. Zool. France* : 158 (Argun River, south Dauria) Cf. 1944. Kinnear, N.B., in Ludlow & Kinnear, *Ibis* 86 : 364.

1926. Baker, *FBI* No. 1194, 3 : 289.

Diagnostics : Size : Sparrow $\pm$; c. 17 cm. It is extremely similar to Paddyfield and Tawny, and hence hard to separate unless in hand.

Adult : Distinguished from Tawny by streaked upperparts and pale lores. Has heavily streaked

upperpart, with square-shaped, well-defined black centres to median-coverts contrasting with whitish fringes and tips; and more uniformly buffish underparts. Its flight is strong and direct, and it gives a characteristic 'pshee' call.

Juvenile : More heavily streaked on upperparts and breast; median coverts are finged with white.

Habitat : <750 m (up to 4250 m on passage). Dry fields, grassland, scrub, wasteland. Generally drier areas than Paddyfield Pipit & Richard's Pipit.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : This bird was named after the English zoologist Edward Blyth. It breeds in Mongolia and neighbouring areas. It is a long distance migrant moving to open lowlands in southern Asia. It is very rare vagrant to western Europe.

389(1866-1869) *Anthus similis* Jerdon, 1840 Brown Rock Pipit

1840. *Anthus similes* Jerdon, *Madras Jour. Lit. Sci.* 11 : 35 (Jalna, restricted by Whistler & Kinnear, 1934, *JBNHS* 37 : 99, *vide* Jerdon, 1847, *Ill. Ind. Orn.*, pl. 45).

1890. *Anthus cockburniae* Oates, *Fauna Brit. India, Bds.* 2 : 305 (Nilgiri hills).

1926. Baker, *FBI* No. 1190 (part), 3 : 285.

Diagnostics : Size : Bulbul; c. 20 cm. Sexes alike. Also known as Long-billed Pipit; an undistinguished looking species on ground, mainly sandy grey above and whitish or pale buff below.

Adult : Large, rather uniform, pale brown, long-tailed; pale brown above with light streaks on head and back; a distinct buff supercilium; darker wings and tail, the latter with whitish outer edge; whitish throat; pinkish buff below with faint brown streaks on breast. Flight is strong and direct, and it gives a characteristic *chupp* call, similar to Desert Lark. It is very similar to Paddyfield (*A. rufulus*) and Tawny (*A. campestris*), but considerably larger. While the *A. sylvanus* is much darker and boldly streaked above.

Races : North Indian race *A. s. jerdoni* has greyish upperparts and warm buff colour unstreaked or only lightly streaked underparts.

South Indian race *A. s. travancoriensis* is darker grey-brown above and warm rufous-buff below with heavier spotting on breast.

Juvenile : Has dark spotting on breast, and rounded dark centres to upperparts with distinct pale fringes.

Habitat : S 600-2900 m. Grassy and stony hillsides. W <3600 m. Also open scrub, fallow, grazing land; sand dunes.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread summer visitor. Schedule IV (BNHS 2002).

390(1854-1855) *Anthus trivialis* (Linnaeus, 1758)
Eurasian Tree Pipit

1758. *Alauda trivialis* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 166 (Sweden).

1926. Baker, *FBI* No. 1184, 3 : 279.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Sexes alike. A small pipit with buffish-brown to greyish ground colour upperparts, streaked darker especially on crown; distinct malar stripe; unstreaked rump; buffy-yellowish breast; white on centre of boldly streaked breast; finely streaked flanks.

Races : Two races occur in the subcontinent: *A. t. haringtoni*, which breed in NW Himalayas and winters widely across the subcontinent is generally colder and greyer than nominate. Tree Pipits more readily perch in trees. The call is strong *speck*, unlike the weak call of its relative. The song flight is unmistakable. The bird rises a short distance up from a tree, and then parachutes down on stiff wings, the song becoming more drawn out towards the end.

Habitat : S 2700-3700 m (4200 m). Grassy slopes with scattered tree and bushes. W <1400 m. Open habitat with grass, scrub and trees.

Distribution : Uttarakhand : Dehra Dun (Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, [Dholkhand (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of

SW Dehra Dun (Tak & Sati 2007). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). CTR (Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

Remarks : This species is insectivorous, like its relatives, but also feeds on seeds.

391(1852-1853) *Anthus hodgsoni* Richmond, 1907
Oriental Tree Pipit

1907. *Anthus trivialis hodgsoni* Richmond, in Blackwelder, *Res. In China*, (2) : 493, new name for *Anthus maculates* Jerdon, 1864, *Bds. India* : 3 : 873. [Type locality from 1863, *ibid.* 2 : 228 (Calcutta)], *nec Anthus maculates* Vieillot *Anthus maculatus berezowskii* Zarudny, 1909, *Orn. Monatsb.* 17 : 41 (SW. Kansu).

1926. Baker, *FBI* No. 1186 and 1187, 3 : 281, 282.

Collection records : Uttarakhand : Almora : Ranikhet, 1♂, 17.xii.1968, coll. P. K. Bose. Bageshwar, 1♂, 28.vi.1972, coll. D. N. Basu.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Sexes alike. Sometimes it is also called Indian, or Hodgson's, Tree Pipit, or Olive-backed Pipit. Similar to Tree Pipit, but has greenish-olive cast to upperparts. Striking head pattern with distinctive small black and white patches on rear of ear-coverts; and supercilium usually white behind eye, buff in front, bordered above by thin dark line. Whitish double wingbar and outer rectrices and whitish to buff below streaked with dark brown on breast and flanks.

Races : *A. h. yunnanensis*, which a widespread winter visitor to the subcontinent, is much less heavily streaked on upperparts than nominate race. Flight is jerky and undulating; song lark-like and uttered on the wing- a single *tseep* or *spek*.

Habitat : S (2450 m) 2700 m - above treeline. Open grassy areas, clearings, scrub with scattered trees. W <2800 m. Also open forest, forest edge. Commoner in hills than lowlands. When disturbed flies up into tree.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Amrit Ganga (Lavkumar 1956b), Base Camp valley (Reed 1979), (Tak 1995), Dibrugheta, Deodi

(Sankaran 1993, 1994, Tak 1997), enroute Tunganath (Singh 2005a). Dehra Dun : beyond Chakrata (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Karva Pani, New Forest (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh: Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident as well as widespread winter visitor. Schedule IV (BNHS 2002).

Remarks : Breeds in Himalayas; widespread in winter, except NW and SE subcontinent.

392(1865) *Anthus roseatus* Blyth, 1847
Rosy Pipit

1847. *Anthus roseatus* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 437 (Nepal).

1846. *Anthus pelopus* G.R. Gray, *Cat. Mamms. Bds. Nepal* : 154 (Nepal) [*nomen nudum*].

1926. Baker, *FBI* No.1200, 3 : 295.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Sexes alike.

Adult : With boldly streaked upperparts, olive cast to mantle, olive-green edges to greater coverts, secondaries and tertials.

Breeding (summer) : Has mauve-pink wash on breast and throat.

Non-breeding : Has dark upperparts; heavily streaked underparts; dark lores; pale ear-covert spot; and very long supercilium.

Habitat : S > treeline. Alpine meadows. Often near snow melt.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Dhauli valley (Osmaston 1921), Amrit Ganga (Lavkumar 1956b), near Base Camp (Reed 1979), Dibrugheta to Sarsonpatal (Sankaran 1993, 1994, Tak 1997), Sarsopatal, Devstan base camp, Pataalkhan, Bhojgara, Ramni, Betartoli, Deodi, Dibrugheta (Sathyakumar 2003), Chenab Valley

(Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957), New forest (Singh 1999, 2000). Pauri (Osmaston 1921). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Lamprey (1954). CTR (Lamba undated, Khati 2004, internet list).

Status : Widespread resident as well as widespread winter visitor. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

393(1871) *Anthus spinoletta* (Linnaeus, 1758)
Water Pipit

1828. *Anthus Coutellii* Audouin, in Savigny, *Descr. Egypte, Ois.* 23, pl. 5 : 360 (Egypte).

1863. *Anthus blakistoni* Swinhoe, *Proc. Zool. Soc. London* : 90 (Yangtze River, China).

1926. Baker, *FBI* No.1201 and 1202, 3 : 297, 298.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Sexes alike.

Adult : Has lightly streaked upperparts, lacks olive-green on wing, has dark legs and usually pale lores, and underparts less heavily marked than on Rosy Pipits.

Breeding (summer) : Has grey crown and nape, almost unstreaked pinkish underparts and dark legs.

Non-breeding : Has greyish-brown upperparts; whitish underparts; fairly conspicuous wing-bars; generally dark legs. Some show slight streaking on breast and flanks.

Habitat : Damp ground, often near water; wet crops.

Distribution : Uttarakhand : Dehra Dun (Vijay and Kumar 2006). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). CTR (Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

Remarks : It is a short-distance migrant moving to wet open lowlands such as marshes and flooded fields in winter. Some birds migrate north to Britain for winter, taking advantage of the warm oceanic climate.

394(1873) *Anthus sylvanus* (Blyth, 1845)
Upland Pipit

1845 (Aug.). *H. (eterura) sylvana* Hodgson, *Proc. Zool. Soc.*
London : 33 (central region. Nepal).

1845. *H. (eterura) sylvana* Hodgson, in Blyth, (after
August), *Jour. Asiat. Soc. Bengal* 14 : 556 (Nepal).

1954. *Oreocorys sylvanus oreinus* Koelz, *Contrib. Inst.*
Regional Exploration, No. 1 : 21 (Kotla, Kangra
District, Punjab).

1926. Baker, *FBI* No.1204, 3 : 299.

Diagnostics : Size : Bulbul -; c. 17 cm. Sexes
alike. A large, heavily streaked pipit has warm
brown upperparts, heavily streaked with dark
brown; white supercilium; fine streaking below,
broader on sides of breast; black malar; short and
heavy bill; almost conical pointed tail feathers.

Habitat : S (900 m) 1200-2400 m (3000 m). W
900-2500 m. Rocky hillsides with grass and
bushes; open pine forest.

Distribution : Uttarakhand : Garhwal hills
(Osmaston 1921). Bageshwar : Pindari zero point
(Tak 1997). Chamoli : Nanda Devi Sanctuary
(Reed 1979), Sarsopatal (Tak 1997), Chenab
Valley (Bhattacharya & Sathyakumar 2007).
Dehra Dun (Osmaston 1935, Singh 2000). Pauri
(Osmaston 1921). Pithoragarh : Rilkote (Tak 1997),
Gori river basin- 2002, Panchchuli expedition-
1998, Goriganga valley- 1994 (Tak & Sati 2006).
Rudraprayag (Osmaston 1921), Kedarnath
Sanctuary (Green 1986, Myers & Singh 2006),
Chopta and Duggalbitta (Bannerjee 1993). Tehri
(Tak 1995), Tehri Dam Submergence Zone
(Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar
1977-79, Lamba undated, internet list, ZSI Surveys
2002-05).

Status : Widespread resident. Schedule IV
(BNHS 2002).

CAMPEPHAGIDAE (Cuckoo-Shrikes,
Minivets, Flycatcher-Shrikes, Woodshrikes)

They are small to medium-sized birds of forests
and open woodland with relatively long pointed
wings and somewhat graduated tails. They
generally keep to the canopy and mid-storey,
feeding chiefly on insects and the like. Cuckoo-
Shrikes are robust, medium-sized birds with
predominantly grey plumage and strong blackish

bills. For specific identification note the shade of
grey and pattern of barring on the underparts.
Minivets are pied or brightly coloured with fairly
long tails and strong, slim black bills. Plumage is
predominantly black, red/orange, grey and white
in males, the red/orange colour largely replaced by
yellow in females. They often move around in
flocks which may consist of more than one
species of minivet; sometimes also in mixed
hunting parties. Truly red males can be identified
to species by exact pattern of red on the wings.
Females can be more confusing, it being important
to note the exact pattern of yellow on the wing,
forehead, chin and throat. Flycatcher-Shrikes are
small pied birds with arboreal flycatching habits
and an upright posture when perched. They are
related to cuckoo-shrikes and minivets rather than
flycatchers and shrikes. Woodshrikes are medium-
sized, fairly thickset, grey/ brown birds with a
strong, hook-tipped bill, rounded wings, medium-
length tail and a dark mask through the eye.
Largely insectivorous and arboreal.

395(1072-1075) *Coracina macei* (Lesson, 1830)
Large Cuckoo-Shrike

1830. *Graucalus macei* Lesson, *Traite d'Orn.* : 349
(Calcutta, Bengal).

1924. Baker, *FBI* No. 758, 2 : 343.

Diagnostics : Size : Pigeon -; c. 28 cm.

Male : Has a conspicuous dark black lores and
dark grey ear-coverts (together forming a dark
eye-band); grey upperparts; black wings and tail;
and heavy slightly hooked bill; uniformly grey throat
and breast and whitish remaining underparts.

Female : Has less conspicuous eye-band; and
greyish-white underparts with faint grey barring.

Races : *C. m. nipalensis* of the Himalayan
foothills and E subcontinent has broader whitish
fringes to greater coverts, tertials and secondaries
as compared to the nominate race of the
peninsula.

Habitat : S <2400 m. W <1500 m (2400 m).
Open wooded country, Gorges, Scrub jungle.

Distribution : Uttarakhand : Dehra Dun
(Osmaston 1935, Wright 1957), New Forest
(George 1957, Mohan 1996), New Forest, Timli
(Singh 2000), Forests around Asan (Singh 2001),

Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar (Osmaston 1935). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

396(1077) *Coracina melaschistos* (Hodgson, 1836)
Black-winged Cuckoo-Shrike

1836. *Valvocivora Melaschistos* Hodgson, *Ind. Rev.*, 1(8) : 328 (Nepal).

1924. Baker, *FBI* No. 753, 2 : 337.

Diagnostics : Size : between bulbul and myna; c. 22 cm.

Male : Has dark grey upperparts contrasting with black wings and tail; unbarred grey underparts; and bold white tips on underside of tail feathers.

Female : Paler with faint barring on underside.

Habitat : S<2000 m. W<1000 m. Open forest, groves, secondary jungle.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935), New Forest (George 1957, 1962a, Mohan 1996), New Forest, Timli, Tons Valley Forest (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

397(1078-1079) *Coracina melanoptera*
(Rüppell, 1839)
Black-headed Cuckoo-Shrike

1839. *Ceblepyris melanoptera* Ruppell, *Mus. Senckenbergianum*, 3 : 25, pl. Fig. 1 (Neu Holland, *errore*, Bhadwar, Punjab).

1936. *Lalage sykesi eximia* Van Tyne & Koelz, 1936, *Occ. Papers Mus. Zool. Univ. Michigan*, No. 334 : 4 (Bhadwar, Kangra District, Punjab, British India).

1924. Baker, *FBI* No. 756, 2 : 340.

Diagnostics : Size : Bulbul; c. 20 cm.

Male : With diagnostic slate-grey head and breast (black hood); and pale grey mantle.

Female : Has broad white supercilium (not always present); barred underparts; pale grey back and rump contrasting with blackish tail; broad wide fringes to coverts and tertials.

Habitat : <2100 m. Open forest, secondary jungle, orchards, groves, mangroves.

Distribution : Uttarakhand : Dehra Dun (Wright 1957, Bhatnagar & Misra 1972b), New Forest (Mohan 1993, 1996), Karva Pani, New Forest (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

398(1089) *Pericrocotus roseus* (Vieillot, 1818)
Rosy Minivet

1818. *Muscicapa rosea* Vieillot, *Nouv. Dict. d'Hist. Nat. nouv. ed.* 21 : 486 (Bengal).

1924. Baker, *FBI* No. 744, 2 : 328.

Diagnostics : Size : Bulbul -; c. 18 cm.

Male : Has ashy-brown to grey-brown upperparts; white throat; rosy pink rump and upper tail-coverts; and rosy pink underparts from upper breast to vent.

Female : Like male but rosy parts replaced by pale yellow; greyish forehead and white throat.

Habitat : Chiefly <1000 m. Forest, wooded compounds, mangroves.

Distribution : Uttarakhand : Chamoli : above Joshimath (Reed 1979). Dehra Dun (Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Dhauli river basin- 2004 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

399(1090-1095) *Pericrocotus cinnamomeus*
(Linnaeus, 1766)
Small Minivet

1766. *Parus peregrinus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 342
(No locality, Ambala, Punjab, fixed by Baker, 1920).

1929. *Pericrocotus cinnamomeus iredalei* Baker, *Bull. Brit. Orn. Cl.* 49 : 64 (Ambala, Punjab).

1936. *Pericrocotus peregrinus galbinus* Van Tyne & Koelz, *Occ. Papers, Mus. Zool.*, Univ. Michigan, No. 334 : 4 (Bhadwar, Kangra).

1924. Baker, *FBI* No. 745, 2 : 329.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 2 ♀, 12.vi.1963, 1 ♀, 20.viii.1975, coll. R. K. Bhatnagar; Herbatpur, coll. R. K. Bhatnagar; 1 ♂, 11.viii.1966, coll. P. K. Bose.

Diagnostics : Size : Sparrow -; c. 15 cm.

Male : Has grey crown, nape and mantle (not glossy black as in most other common minivets); a yellow-orange patch on wing; black throat and mask; orange breast and rump fading to yellow on the belly; and long tail black above and yellow-orange below.

Female : Has paler upperparts with yellow patch on wing and orange rump; underparts vary from orange-yellow to mainly white; and tail as in male.

Habitat : Mainly lowlands (up to 1650 m). Open forest, semi-desert, thorn forest, scrub, groves, gardens.

Distribution : Uttarakhand : Dehra Dun : Shiwaliks (Osmaston 1935), (Wright 1957), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : This minivet catches insects in trees by flycatching or while perched. The Small Minivet will form small flocks.

400(1088) *Pericrocotus solaris* Blyth, 1846
Grey-chinned Minivet

1846. *Pericrocotus solaris* Blyth, *Jour. Asiat. Soc. Bengal*, 15 : 310 (Darjeeling).

1924. Baker, *FBI* No. 742, 2 : 326.

Diagnostics : Size : Bulbul -; c. 17 cm.

Male : Has grey chin and ear-coverts; pale orange throat; slate-grey upperparts (not black); and orange-red underparts and rump.

Female : Has grey forehead and ear-coverts; whitish chin; and yellow remaining underparts. Differs from Short-billed and Long-tailed Minivets by greyish-white chin (very little or not yellow on forehead).

Habitat : <3000 m. Open moist hill forest.

Distribution : Uttarakhand : Chamoli : above Joshimath (Reed 1979), Lata, Deodi (Tak 1997).

Status : Residential status not known. Schedule IV (BNHS 2002).

401(1085-1087) *Pericrocotus ethologus* Bangs
& Phillips, 1914
Long-tailed Minivet

1914. *Pericrocotus brevirostris flavillaceus* [sic] Bang & Phillips, *Bull. Mus. Comp. Zool.*, Harvard Univ. 58 : 293 (Koolloo Valley, northern India).

1924. Baker, *FBI* No. 738, 2 : 323.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♂, 12.vi.1963, coll. R. K. Bhatnagar.

Diagnostics : Size : Bulbul -; c. 18 cm.

Male : Has glossy black and deep scarlet plumage with a large scarlet patch on the black wing (an inverted red 'U' on wing), black throat, and a long black-and-scarlet graduated tail.

Female : With yellow throat and all the scarlet parts of the male replaced by yellow. Distinguished from the similar female Short-billed Minivet (*P. brevirostris*) by grey ear-coverts, yellow of forehead confined to small patch just above the bill, and weak yellow (not strong yellow) underparts.

Habitat : S 1200-3400 m (3970 m). W <1000 m (2140 m). Open forest, groves, wooded compounds, forest edge.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath, Lata and Deodi (Reed 1979), NDNP (Tak & Kumar 1987), Auli (Sankaran 1993, 1994), (Tak 1995), Belta, Lohajung (Tak 1997),

Narainbagrh (ZSI Survey 2004), Mandal (Singh 2005a). Dehra Dun : New Forest (Mohan 1993, 1996), Karva Pani, Kansrao, New Forest, Tons Valley Forest, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993); Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995), Govind NP: Taluka, Sunkhudi, Jakhol, Sirga (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident as well as widespread winter visitor. Schedule IV (BNHS 2002).

402(1084) *Pericrocotus brevirostris* (Vigors, 1831)
Short-billed Minivet

1830. *Muscicapa brevirostris* Vigors, *Proc. Zool. London* : 43 (Himalayas = Sikkim foothills, *vide* Mayr, 1940).

1840 (1839). *Phaenicornis affinis* McClelland, *Proc. Zool. Soc. London* : 157 (Sadiya, Assam).

1952. *Pericrocotus brevirostris sanguineus* Koelz, *Jour. Zool. Soc. India* 4 : 42 (Shillong Peak, Khasia Hills).

1924. Baker, *FBI* No. 739, 2 : 324.

Diagnostics : Size : Bulbul -; c. 17 cm.

Male : Lacks extension of red wing patch (not extending down to tertials to form an inverted 'U' of Long-tailed Minivet).

Female : Very similar to Long-tailed Minivet but has richer yellow underparts, yellow of forehead more extensive (extending up above the eye to the middle of the crown where it weakens in to the Olive-grey of the upperparts). Whistle distinctive monotone.

Habitat : S 1800-2400 m (2750 m). W >foothills. Broadleaved open forest, forest edge, secondary growth.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931). Dehra Dun : Mussoorie (Osmaston 1935), New Forest (George 1957) (Wright 1957,

Bhatnagar & Misra 1972a, Singh 2000). Naini Tal (Tak 1995). Rudraprayag : Vanyakund on Tungnath Mountain (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006). CTR (Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

403(1080-1083) *Pericrocotus flammeus*
(Forster, 1781)
Scarlet Minivet

1781. *Muscicapa flammea* Forster, *Ind. Zool.* : 25-26, pl. 15 (No locality = Ceylon, *vide* Whistler & Kinnear, 1933, *JBNHS* 36 : 341).

1924. Baker, *FBI* No. 737, 2 : 322.

Collection records : Uttarakhand : Almora : Kathpuria, 2♂ and 1♀, 20.xii.1968, 3♂, 21.xii.1968, 1♂, 22.xii.1968, coll. P. K. Bose. Dehra Dun: 1♂, 7.ii.1977, coll. D. N. Basu; Mussoorie, 1♂, 16.iii.1962, coll. R. D. Verma; 1♂ and 1♀, 4.iii.1968, coll. P. K. Bose; Sahastradhara, 1♂ and 1♀, 20.iii.1965, coll. T. D. Soota; Haridwar road, 1♂, 7.i.1970, coll. NRS/ZSI Survey Party. Pauri : Srinagar, 1♂, 13.ii.1972, coll. P. K. Bose.

Diagnostics : Size : Bulbul +; c. 23 cm. A glossy black and deep scarlet bird.

Male : Has black upperparts including head; scarlet underparts, tail edges, rump and wing patches. The red wing-chevron with one or two additional 'drops' on the secondaries (yellow in female)

Female : Grey above, with yellow underparts (including the face), tail edges, rump and wing patches.

Habitat : <2700 m. Forest, mango groves.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a), New Forest (Mohan 1996), Karva Pani, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). CTR

(Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

404(1064-1066) *Hemipus picatus* (Sykes, 1832)
Pied Flycatcher-Shrike

1832. *Muscicapa picata* Sykes, *Proc. Zool. Soc. London* : 85 (Dukhun).

1924. Baker, *FBI* No. 724 (part), 2 : 306.

Diagnostics : Size : Sparrow; c. 14 cm. A small black-and-white flycatcher-like bird.

Male : Has glossy black upperparts and grey underparts; the glossy-black head and back contrasting with white throat; white rump; and long white-band through wing. It is confusable with Pied Triller (of Andaman and Nicobar) and Ashy Minivet (of Mangroves) but distinguished by the absence of white supercilium and forecrown.

Female : Like male but the black portions are replaced by sooty brown. Its characteristic posture on a perch is rather hunchbacked, with neck pulled in and tail depressed.

Habitat : S <2000 m. W <1500 m. Forest. Often in loose flocks and mixed hunting parties.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Karva Pani, New Forest, Tons Valley Forest, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Uttarkashi : Govind NP : Seema (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident, undertakes altitudinal movements. Schedule IV (BNHS 2002).

Remarks : A common resident breeding bird in forest and scrub in hilly country. The bird catches insects in trees by flycatching or by gleaning. It will associate with other small birds such as Babblers, Velvet-fronted Nuthatch and White-eye in feeding flocks.

405(1067-1068) *Tephrodornis gularis* (Raffles, 1822)

Large Woodshrike

1837. *Tenthaca Pelvica* Hodgson, *Ind. Rev.*, 1(10) : 447 (Nepal).

1839. *Tephrodornis sylvicola* Jerdon, *Madras Jour. Lit. Sci.*, 10 : 236 (Malabar Coast).

1924. Baker, *FBI* No. 727, 728, 2 : 309, 311.

Diagnostics : Size : Myna; c. 23 cm. Distinguished from Common Woodshrike (below) by larger size, absence of white supercilium, and uniform grey-brown tail (not dark with white sides).

Male : Has stout black bill, dark mask, grey-brown upperparts, white rump, and pale pinkish-grey underparts.

Female : Like male but has poorly defined brown mask, paler bill, and brown (rather than grey) crown and nape which concolorous with mantle.

Juvenile : With scaly appearance and buffish-white spots on crown.

Habitat : <1800 m. Broadleaved forest; well-wooded areas. In loose parties, mixed feeding flocks.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

406(1069-1071) *Tephrodornis pondicerianus* (Gmelin, 1789)

Common Woodshrike

1789. *Muscicapa pondiceriana* Gmelin, *Syst. Nat.*, 1 : 939 (Coromandel).

1833. *Lanius griseus* Tickell, *Jour. Asiat. Soc. Bengal*, 2 : 573 (Borabhum and Dholbhum).

1925. *Tephrodornis pondicerianus thai* Kloss & Chasen, *Bull. Brit. Orn. Cl.*, 46 : 48 (Ta Chang Thai, Raheng, west Siam).

1939. *Tephrodornis pondicerianus warei* Kloss & Chasen, *Proc. Biol. Soc. Washington*, 52 : 69 (Londa, Bombay Presidency).

1924. Baker, *FBI* No. 729, 2 : 312.

Diagnostics : Size : Bulbul $\pm$; c. 18 cm.

Adult : Superficially resembles Large Woodshrike (above), with dark mask, grey-brown upperparts and whitish underparts, and small white-band across rump. But distinguished by its smaller size, white supercilium above dark mask, and dark brown tail with white sides.

Juvenile : With buffish-white supercilium.

Habitat : <900 m (1400 m). Acacia and scrub jungle, open wooded, overgrown gardens.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Karva Pani, New Forest, Timli, Tons Valley Forest, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala 2001).

PYCNONOTIDAE (Bulbuls)

Bulbuls are medium-sized birds with short rounded wings, medium-long tails and short-medium bills. Several species have distinctive crests. They chiefly inhabit trees, shrubs and bushes feeding on fruit, berries and insects. Many species are rather vocal and gregarious; some are among the more familiar birds of parks and gardens. Sexes alike.

407(1133-1134) *Pycnonotus striatus* (Blyth, 1842) Striated Bulbul

1842. *Trichophorus striatus* Blyth, *Jour. Asiat. Soc. Bengal*, 11 : 184 (Darjeeling).

1922. Baker, *FBI* No. 397, 1 : 379.

Diagnostics : Size : Redvented Bulbul $\pm$; c. 23 cm. Sexes alike. A crested, greenish-yellow bulbul; has olive-green upperparts with fine white streaks; an upstanding brownish-olive crest; olive-and-brown wings and tail (tipped with pale yellow); pale yellow rim around eye; yellow lores throat and under tail-coverts; underparts dark grey to olive heavily streaked with white. In flight, the olive-green tail has pale yellow tips to outer tail feathers.

Habitat : S 1200-2400 m (3000 m). W >foothills. Moist broadleaved forest.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

Remarks : Resident, subject to altitudinal movements; Himalayas from WC Nepal east to Arunachal Pradesh, NE India (Grimmett *et al.* 1998).

408(1115-1117) *Pycnonotus melanicterus* (Gmelin, 1789)

Black-crested Bulbul

1789. *Muscicapa melanictera* Gmelin, *Syst. Nat.*, 1 : 941 (Ceylon).

1922. Baker, *FBI* No. 429, 1 : 414.

Diagnostics : Size : Redvented Bulbul $\pm$; c. 19 cm. Sexes alike. It is also known as Black-headed Yellow Bulbul or Black-capped Bulbul; has glossy black head, throat and crest; olive-yellow upperparts; dark yellow underparts; brown tail; and pale yellow eyes noticeable at closer look are the diagnostics. Distinguished from nearly similar Black-headed Bulbul by its erect pointed crest, and the absence of yellow in tail.

Races : Three races occur in the subcontinent: The widely distributed *P. m. flaviventris* has prominent black crest and throat; *P. m. gularis* of Western Ghats lacks crest and has ruby-red throat; and the nominate race of Sri Lanka lacks crest, has yellow throat concolouring with the remaining underparts, and dull red or brown iris (not pale yellow).

Habitat : <1500 m (2400 m). Thick forest with good undergrowth, secondary jungle, well-wooded country, scrub adjoining arable land, orchards. Normally singly or in pairs; sometimes in small groups.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

409(1118-1122) *Pycnonotus jocosus* (Linnaeus, 1758)
Red-whiskered Bulbul

1758. *Motacilla Emeria* Linnaeus, *Syst. Nat.*, 1 : 187 (Benghala).

1922. Baker, *FBI* No. 410 (part), 1 : 394.

Diagnostics : Size : Redvented or White-cheeked Bulbul $\pm$; c. 20 cm. Sexes alike. An unmistakable bird with glossy black crest, brown upperparts, and largely white underparts.

Adult : Differentiated from other bulbuls except Red-vented Bulbul by red vent; and from the Red-vented by the glossy black erect crest, white ear-coverts with red post-ocular 'whiskers' (reduced or absent in some birds of the extreme north-east and in immatures) bordered below by black moustachial stripe; brown upperparts; white underparts with buff flanks and a dark spur running onto the breast at shoulder level. The tail is long and brown with white terminal feather tips, but the vent area is red.

Juvenile : Lacks red 'whiskers'; lighter brown upperparts; and rufous-orange vent.

Races : Six races are known from the subcontinent. They vary in presence or absence of white tips to rectrices, in having complete or broken breast-band, and in colouration of upperparts (from grey-brown to rufous-brown). Call include a lively *pettigrew* or *kick-pettigrew*.

Habitat : <1800 m. Parks, gardens, scrub, light forest, secondary growth. In moister habitats than Red-vented Bulbul & White-eared Bulbul. Normally in pairs or small parties; occasionally in flocks.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006).

Status : Widespread resident. Schedule IV (BNHS 2002).

410(1123-1124) *Pycnonotus leucotis* (Gould, 1836)
White-eared Bulbul

1836. *Ixos leucotis* Gould, *Proc. Zool. Soc. London* : 6 (Karachi, Sind).

1922. Baker, *FBI* No. 406, 1 : 390.

Diagnostics : Size : Redvented $\pm$; c. 20 cm. Sexes alike. The species was earlier considered a conspecific of *Pycnonotus leucogenys*. It is very similar in appearance to the Himalayan (or White-cheeked) Bulbul, *P. leucogenys* but smaller and uncrested and with a larger white cheek patch. It has a pale bare eye-ring. The vent is orange yellow.

Races : *P. l. humii* of NW part of range differs from the nominate race in having a short crest.

Habitat : <1800 m. Semi-desert, scrub, gardens, cultivation, mangroves. Chiefly in pairs and small parties; sometimes in flocks.

Distribution : Uttarakhand : Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, ZSI Surveys 2002-05).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (13) *i.e.* Saharo-Sindian Desert (Jhunjhunwala 2001).

411(1125) *Pycnonotus leucogenys* (Gray, 1835)
Himalayan Bulbul

1835. *Brachypus leucogenys* Gray, in Hardwicke's *Ill. Zool.* 2, pl. 35, fig. 3 (Himalaya and Kashmir, *vide* Blyth, 1845, *Jour. Asiat. Soc. Bengal*, 14 : 567, restricted to Kashmir by Vaurie, 1958, *Amer. Mus. Novit.*, No. 1869 : 19).

1954. *Malpastes leucogenys* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 11 (Laghman, Afghanistan).

1922. Baker, *FBI* No. 405, 1 : 389.

Collection records : Uttarakhand : Dehra Dun : Raipur, 1 σ , 29.iv.1963, coll. T. D. Soota; Sahashpur, 1 ex., 10.v.1963, coll. P. K. Bose; Sahastradhara, 1 σ , 25.vii.1963, 1 σ , 4.x.1963, 1 σ , 25.vi.1964, R. K. Bhatnagar; 1 σ , 4.ii.1966, coll. P. K. Bose; 37-Chakrata road, 1 σ , 10.ii.1975, 1 σ , 28.vii.1975, coll. P. K. Bose, 1 σ , 10.ii.1975, coll. D. N. Basu. Rudraprayag : Agasthyamuni, 1 σ , 30.vi.1969, coll. P. K. Bose. Tehri : Kempti, 1 σ , 10.vii.1973, coll. Raj Tilak. Uttarkashi : Gangani, 1 σ , 2.vi.1973, coll. Raj Tilak; Kuwa, 1 σ , 3.vii.1973, coll. Raj Tilak.

Diagnostics : Size : Redvented $\pm$; c. 20 cm. Sexes alike. Easily distinguished from similar White-eared Bulbul by long forwardly curving pointed brown (vs black) crest, earth-brown (vs grey-brown) upperparts, and pure yellow (vs orangy-yellow) vent.

Habitat : 300-2400 m. Open scrub, secondary growth, hedges, cultivation. Chiefly in pairs and small parties; sometimes in flocks.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931, ZSI Survey 2004), (Tak 1995), Kaparkhan, Binsar WLS, Kwarab, Kosi, Soni, Bhatronj Khan, Gagas, Chanthariya, Panduwakhal, Mansi, Someshwar (ZSI Survey 2004). Bageshwar : Dhakuri (Tak 1997), Kausani, around Bageshwar, Bharari, Kapkot, Baijnath, Kanda, Jakheri, Wajula, Garur, Rauteli-khet (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath (Reed 1979), around Joshimath (Sankaran 1993, 1994), (Tak 1995), Wan (Tak 1997), Beltakharak (Sathyakumar 2003), Mandal, Pipalkoti, Joshimath, Nandprayag, Ghat, Gwaldam, Narainbagrh (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Augstyamuni, Shivpuri, Guptakashi, Ukhimath (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Ranichauri (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Sankri, Dhaura (Tak *et al.* 2004), Dhanotri (ZSI Survey 2005). CTR (Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

412(1126-1132) *Pycnonotus cafer* (Linnaeus, 1766) **Red-vented Bulbul**

1766. *Turdus cafer* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 295 (Cape of Good Hope = Pondichery *fide* Stresemann, 1952, *Ibis* 94 : 515, 520).

1841. *H.(aematornis) pusillus* Blyth, *Jour. Asiat. Soc. Bengal* 10 : 841 (Chingleput, Madras).

1946. *Pycnonotus cafer vicinus* Ripley, *Spolia Zeylanica* 24 : 288 (Mysore).

1922. Baker, *FBI* No. 400 (part), 1 : 385.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1 ♀, 2.ix.1972, 1 ♀, 14.i.1975, 1 ♀, 16.i.1975, 1 ♀, 17.i.1975, 1 ♂, 18.i.1975, 2 ♀, 8.vi.1976, 1 ex., 11.ii.1977, coll. D. N. Basu; 1 ♂, 8.i.1973, coll. P. K. Bose; 1 ex., 10.viii.1973, coll. Nathu Singh; 1 ex., 4.xi.1974, coll. S. K. Serin; 1 ♀, 22.iv.1975, coll. M. L. Narang; 1 ♂, 19.i.1977, coll. Ram Das. Mussoorie, 1 ♀, 12.ix.1972, coll. D. N. Basu; Bhanaiawala, 1 ♂, 30.xii.1972, coll. Raj Tilak; Sathyanarain, 1 ♂, 3.iii.1973, 1 ex., 6.viii.1975, coll. Raj Tilak; Hathibarkala, 1 ex., 2.i.1976, B. S. Lamba; 1 ex., 13.iv.1976, coll. Sailendra Lamba. Pauri : Kotdwar, 1 ♂ and 1 ♀, 6.vi.1972, coll. D. N. Basu. Naini Tal : Ramnagar, Chilkia, 1 ♂, 29.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Myna -; c. 20 cm. Sexes alike. The commonest, the most widespread, and a distinctive bulbul; has black head with slight crest, lively earthy-brown plumage, white rump and uppertail-coverts, white-tipped black tail, and red vent. In flight, white rump is a helpful clue for separating it from other bulbuls.

Races : Seven races are described from the subcontinent, varying mainly in extent to which black of head reaches onto mantle and breast and prominence of whitish fringes to feathers of mantle and breast.

Habitat : <1500 m (2140 m) Open scrub, parks, gardens, open deciduous forest, secondary jungle.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), Binsar WLS, Kwarab, Kosi, Gagas, Chanthariya, Panduwakhal, Mansi, Someshwar (ZSI Survey 2004). Bageshwar : Kausani, Bharari, Kapkot, Baijnath, Kanda, Jakheri, Wajula, Garur, Rauteli-khet (ZSI Survey 2004). Chamoli : Pipalkoti, Joshimath, Ghat, Narainbagrh (ZSI Survey 2004), Mandal village (Singh 2005a). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur, Rasiyabar, Bhimgoda, Jhilmil Jheel CR (ZSI

Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995), Pithoragarh (Tak 1995), District survey- 2005, Dhaulī river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006); Tehri : Bheling valley (Searight 1926), (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Fatehpur (ZSI Survey 2005). Uttarkashi : Govind NP (Tak *et al.* 2004), Dhanotri (ZSI Survey 2005). Protected Area(s) : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : The Red-vented Bulbul is incapable of synthesizing vitamin C. It shares this feature with a very limited number of other animals, among which are certain fruit bats and primates (including humans) as well as the guinea pig.

413(1147) *Hemixos flavala* Blyth, 1845
Brown-eared Bulbul

1845. *Hemixos flavala* Blyth, *Jour. Asiat. Soc. Bengal* 14 : 572 (sub-Himalayan Ranges).

1922. Baker, *FBI* No. 391, 1 : 374.

Diagnostics : Size : Redvented $\pm$; c. 20 cm. Sexes alike.

Adult : A distinctive dark grey bulbul with short tuft-like crest; black cheeks (mask); light brown ear-coverts with silky sheen; grey upperparts and greyish-brown tail; olive-yellow patch on wings (formed by greater coverts and broad fringes to tertials and secondaries); white throat; and pale grey breast merging into whitish belly.

Juvenile : Similar to adult, but with browner upperparts.

Habitat : S 700-1600 m. W > plains. Forest, forest edge, second growth.

Distribution : Uttarakhand : Naini Tal (Tak 1995). Tehri (Tak 1995). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba

undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002).

414(1146) *Hypsipetes maclellandii* Horsfield, 1840
Rufous-bellied Bulbul

1840 (1839). *Hypsipetes McClellandi* Horsfield, *Proc. Zool. Soc. London* : 159 (Assam).

1954. *Ixos maclellandi vargus* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 10 (Bhimpedi, Nepal).

1922. Baker, *FBI* No. 394, 1 : 377.

Diagnostics : Size : Myna $\pm$; c. 24 cm. Sexes alike. It has brown crest with white streaking; olive-green upperparts; greyish throat with bold white streaks; cinnamon-brown ear-coverts and breast, latter with fine buff streaks, paler on belly; and yellowish vent (under tail-coverts).

Habitat : S 900-2700 m. W > plains. Forest, second growth. Sometimes in bird waves.

Distribution : Uttarakhand : Dehra Dun : Sulphur Springs (Singh 2000). Naini Tal (Hudson 1930). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

415(1148-1151) *Hypsipetes leucocephalus*
(P.L.S. Muller, 1776)
Black Bulbul

1831. *Hypsipetes Psaroides* Vigors, *Proc. Zool. Soc. London* : 43 (Himalayan Mountains = Simla).

1922. Baker, *FBI* No. 386, 1 : 369.

Diagnostics : Size : Red-vented Bulbul $\pm$; c. 23 cm. Sexes alike.

Adult : Is a slate-grey to blackish (depending on the race) bulbul with black crest, slightly forked tail and bright red bill, legs and feet.

Juvenile : Lacks crest and has whitish underparts; rest grey; brown bill, legs and feet.

Races : *H. l. nigrescens* of the NE subcontinent is dull black; *H. l. psaroides* occupying the most of Himalayan range of the

species is paler slate-grey; and *H. l. ganeesa* and *H. l. humii* of the Western Ghats and Sri Lanka, respectively, are darker than *psaroides*, with less noticeable fork in tail.

Habitat : <3000 m. Mature forest plantation, gardens.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath (Reed 1979), Auli (Sankaran 1993, 1994), (Tak 1995), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Mussoorie, New Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson (1930). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Mandakini valley (Lavkumar 1956b), Chopta and Duggalbitta (Bannerjee 1993), Shivpuri, Guptakashi, Ukhimath (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Govind NP : Sankri, Taluka, Dhaula, Duni, Satta, Istragad (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

IRENIDAE (Ioras, Chloropsis/Leafbird, etc.)

Ioras are slim, sparrow-sized, greenish-yellow birds with a slender straight bill. They generally keep to the foliage of trees and bushes and feed on insects, grubs and caterpillars. Normally singly or in pairs, often in mixed flocks. Breeding male more brightly coloured than female but attains plumage in the winter months. Leafbirds/Chloropsis are medium-sized green and yellow birds with slender downcurved bills. They merge in well with their preferred habitat of dense canopy foliage. Often attracted to flowering trees, they feed on nectar and fruit as well as invertebrates.

416(1097-1101) ***Aegithina tiphia*** (Linnaeus, 1758)
Common Iora

1758. *Motacilla Tiphia* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 186
(Benghala = neighbourhood of Calcutta).

1922. Baker, *FBI* No. 362, 1 : 340.

Diagnostics : Size : Sparrow; c. 14 cm. Sexes alike.

Breeding male : Has black or greenish upperparts, and bright yellow underparts. The flight feathers are blackish with two white obvious bars across the wing.

Non-breeding : Males have uniformly greenish upperparts.

Female : Is similar to non-breeding male, but with grey-black wings.

Races : The nominate race of the Himalayas has the upperparts entirely green, while *A. t. humei* of peninsular India has a black crown with its back a mixture of black and green, and whilst *A. t. multicolor* of Sri Lanka and southern India has a black crown and back.

Habitat : <2000 m. Gardens, woodland, etc.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

417(1103-1105) ***Chloropsis aurifrons***
(Temminck, 1829)
Gold-fronted Chloropsis

1829. *Phyllornis aurifrons* Temminck, *Pl. Col. d'Ois.*, livr. 81, pl. 484, fig. 1 (Sumatra, India = Cachar).

1861. *Phyllornis hodgsoni* Gould, *Bds. Asia*, 3(13), pl. 15, text. (Northern India, Himalaya, restricted to Nepal by Deignan, 1946, Smith. Misc. Coll., 106 : 3).

1922. Baker, *FBI* No. 368, 1 : 346.

Collection records : Uttarakhand : Dehra Dun : Rly. Bridge at Rispana river, 1 ex., 15.ii.1976, coll. S. M. Osman. Naini Tal : Ramnagar, Chilkia, 1 ♂, 1 ♀ and 1 ex., 25.xii.1968, 1 ♂ and 1 ♀, 27.xii.1968, 1 ♀, 23.x.1969, 1 ♂, 28.x.1969, coll. P. K. Bose.

Diagnostics : Size : Bulbul; c. 19 cm.

Adult : Has green body with black face and throat bordered with yellow; orange forehead; and blue moustachial line. It is confusable with similar Blue-winged Leafbird, but distinguished by the presence of orange forecrown; and the absence of blue flight feathers and tail sides.

Juvenile : With plain green head.

Habitat : <1200 m (1800 m). Forest, preferring lighter growth in northern part of range.

Distribution : Uttarakhand : Chamoli : Bampa, Dhauli valley (Lavkumar 1956b). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), New Forest, Timli, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Bhimtal (ZSI Survey 2005). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

418(1106) *Chloropsis hardwickii* Jardine & Selby, 1830

Orange-bellied Chloropsis

1830. *Chloropsis hardwickii* Jardine & Selby, Ill. Orn., Add., 2 : 1 (Nepal).

1922. Baker, FBI No. 371, 1 : 349.

Diagnostics : Size : Bulbul; c. 19cm.

Male : Distinguished from other leafbirds by orange belly and vent; black throat and chest with large blue moustachial stripe; green back with blue flight feathers (shoulder patch) and sides of tail.

Female : Largely green with pale blue shoulder patch and no black on throat and breast.

Juvenile : With green head and some birds with touch of orange on belly. Song : a variety of harsh and whistling notes, and is a very good mimic of other birds.

Habitat : S 600-2600 m. W foothills (and adjoining plains in Assam). Forest and secondary growth. Usually at higher altitudes than its relatives.

Distribution : Uttarakhand : Dehra Dun : Lachiwala (Osmaston 1935), (Singh 2000). Naini Tal : Bhimtal (ZSI Survey 2005). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

LANIIDAE (Shrikes)

Shrikes are small to medium-sized passerines with strong, hook-tipped bill, largish head, short fairly thick neck, medium-length pointed wings, long, slightly graduated tail, strong legs with sharp claws and upright posture. They hunt from an exposed perch, swooping down on their insect and small animal prey, sometimes prick prey on thorns. They utter a variety of harsh and squeaky notes.

419(941) *Lanius collurio* Linnaeus, 1758 Red-backed Shrike

1758. *Lanius Collurio* Linnaeus, Syst. Nat., ed. 10, 1 : 94 (Sweden).

1952. *L.(anius) collurio pallidirois* Johansen, Jour. f. Orn. 92 : 199 (toms, West Siberia).

1924. Baker, FBI No. 717, 2 : 298.

Diagnostics : Size : Bulbul -; c. 17cm.

Male : Has reddish upperparts with longer primary projection (longer than exposed tertials); typical shrike black stripe through the eye; grey head; and underparts tinged pinked. Confusingly similar to Bay-backed (*L. vittatus*) in size and colour, but distinguished by absence of white wing-speculum and by greater amount of white in tail.

Female and Juvenile : With brown and vermiculated pattern of upperparts.

Habitat : Open scrub, margins of cultivation.

Distribution : Uttarakhand : Chamoli : Pipalkoti and Malari (Lavkumar 1956b). CTR (internet list).

Status : Residential status not known. Not Listed in the Act (BNHS 2002).

420(942-943) *Lanius isabellinus* Hemprich & Ehrenberg, 1833
Rufous-tailed Shrike

1833. *Lanius isabellinus* Hemprich & Ehrenberg, *Symb. Phys. Avium fol. e.* (Kunfuda, Arabia).

1924. Baker, *FBI* No. 721, 2 : 302.

Diagnostics : Size : Bulbul -; c. 17cm. The plumage is isabelline, the sandy colour which gives rise to its name. It is distinguished from similar looking Brown Shrike (*L. cristatus*) by rusty red rump and tail and the uniformly coloured upperparts (without the contrast between crown and back).

Male : Has small white patch at the base of primaries.

Female : With grey ear-coverts.

Habitat : Sparse dry thorn jungle, Semi-desert, tamarisks, edges of fields.

Distribution : Uttarakhand : RNP (Pandey *et al.* 1994).

Status : Residential status not known. Not Listed in the Act (BNHS 2002).

421 (949-950a) *Lanius cristatus* Linnaeus, 1758
Brown Shrike

1758. *Lanius cristatus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 93 (Benghala).

1924. Baker, *FBI* No. 719, 2 : 300.

Diagnostics : Size : Bulbul $\pm$; c. 19cm.

Adult male : Has darker rufous-brown upperparts (lacking clear contrast between crown and mantle and between mantle and tail, and without white wing-patch); white forehead and supercilium; a black line through eyes; brownish-black wings; rufous-brown tail; yellowish-buff underparts (the hues varied somewhat between the different races).

Adult female : Less contrasted with greyer crown.

Juvenile : With scalloped underparts.

Habitat : Open country, clearings etc.

Distribution : Uttarakhand : Dehra Dun : A single specimen collected from Sulphur Spring also known as Sahastradhara (Lamba & Narang 1977),

New Forest (Mohan 1993, 1996, Singh 2000). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse winter visitor. Not Listed in the Act (BNHS 2002).

422(939-940) *Lanius vittatus* Valenciennes, 1826
Bay-backed Shrike

1826. *Lanius vittatus* Valenciennes, *Dict. Sci. Nat.*, ed. Levrault 40 : 227 (Pondicherry).

1924. Baker, *FBI* No. 710, 2 : 289.

Collection records : Uttarakhand : Naini Tal : Kathgodam, 1 ex., 5.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Bulbul; c. 18cm. Sexes alike, but frontal black band narrower in females.

Adult : With a broad black band across forehead, through eyes upto the end of ear-coverts; white-and-grey head; chestnut-maroon mantle; white patch at the base of primaries; whitish rump; white throat; fulvous breast; and rusty flanks. In flight, chestnut-maroon back, white rump, contrasty black-and-white tail and roundish white 'mirror' (patch) on black wings are the diagnostics.

Juvenile : Washed-out versions of the adult-with pale greyish to buffish upperparts with prominent dark barring, dark scaling on breast and flanks and lacks white wing-patch.

Habitat : <2000 m. Dry thorn forest, open scrub, hedges, usually in drier areas than Long-tailed shrike but not as arid as Southern Grey Shrikes & Great Grey Shrikes.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971), New Forest (George 1957, Mohan 1996), New Forest, [Dholkhand] (Singh 2000). Pauri (Tak 1995). Tehri : Bheling valley (Searight 1926), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

423(946-948) *Lanius schach* Linnaeus, 1758
Rufous-backed Shrike

1831. *Collurio erythronotus* Vigors, *Proc. Zool. Soc.* London : 42 (Himalayas, restricted to Lucknow by Baker, 1924, *FBI* 2 : 295; re-restricted to Simla-Almora dist. By Ticehurst & Whistler, 1924, *Ibis* : 468-73).

1924. Baker, *FBI* No. 714, 2 : 295.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, 1 ♂ and 2 ♀, 12.viii.1970, coll. NRS/ZSI Survey Party; Doonga, 1 ♂, 17.viii.1970, coll. NRS/ZSI Survey Party; Sahastradhara, 1 ♀, 26.viii.1970, 1 ex., 24.x.1970, coll. NRS/ZSI Survey Party; Sathyanarayan, 1 ♂, 29.xii.1972, coll. D. N. Basu; 37-Chakrata road, 1 ♂, 20.ii.1973, 1 ♂, 1 ♀, 11.xii.1974, 16.xii.1974, coll. D. N. Basu; 1 ♂, 17.ii.1973, 1 ♀, 20.ii.1973, coll. Nathu Singh; 1 ♂, 25.i.1975, coll. P. K. Bose. Rajpur, Kutal Gate, 1 ♂, 18.viii.1973, coll. P. K. Bose; 13-Subhash road, 1 ♂, 18.vii.1976, coll. B. S. Lamba.

Diagnostics : Size : Bulbul +; c. 25 cm. It is also known as Long-tailed shrike; the Himalayan *L. s. tricolor* is sometimes called Black-headed Shrike (as its black head extending from the eye mask to the whole crown and nape). It is the commonest shrike throughout most of its range; and is separated from most other grey-mantled shrikes by the rufous flanks and long tail.

Adult : Has grey mantle; rufous scapulars and upper back; narrow black forehead; rufous edges to black tail; small white patch on primaries; white underparts with rufous flanks. The flight is undulating, but its dash is straight and determined.

Habitat : <3000 m. Variety of open habitats.

Distribution : Uttarakhand : Bageshwar : around Bageshwar (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : Malari, Pipalkoti (Lavkumar 1956b), Joshimath, Joshimath – Lata (Reed 1979), above Joshimath, Auli (Sankaran 1993, 1994), (Tak 1995), Lata (Tak 1997). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Bhimtal (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), Panchchuli expedition- 1998, Kali river

basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Dwarikhal-Patharkhal (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movement. Not Listed in the Act (BNHS 2002).

424(944-945) *Lanius tephronotus* (Vigors, 1831)
Grey-backed Shrike

1831. *Collurio tephronotus* Vigors, *Proc. Zool. Soc.* London : 43 (Himalayas, restricted to Gyantse, Tibet, by Baker, 1924, *FBI* 2 : 297; re-restricted to 'Foothills of the Himalayas near Darjeeling, where breeding birds of the Gyantse district may be expected to winter 'by Mayr, 1947, loc. Cit. : 127).

1837. *Lanius nipalensis* Hodgson, *Ind. Rev.* 1 : 445 (Nepal).

1924. Baker, *FBI* No. 716, 2 : 297.

Diagnostics : Size : Bulbul +; c. 25cm. It is a large, long-tailed shrike, superficially resembling Rufous-backed Shrike.

Adult : Distinguished from other 'Grey' shrikes (except Rufous-backed) by rufous flanks; and from the Rufous-backed by uniform darker grey upperparts, no white wing-patch, lacks or has very narrow black forehead band, and less graduated tail with rufous on upper tail-coverts.

Juvenile : Has brown ear-coverts; cold grey upperparts (except rufous on upper tail-coverts), with variable dark scaling on underparts by first winter; scaling on breast and flanks.

Habitat : S 2700-4500 m. W > plains. Scrub, clearings, second growth, edges of fields.

Distribution : Uttarakhand : Almora : Gagas, Mansi, Someshwar (ZSI Survey 2004). Bageshwar : Loharkhet (Tak 1997). Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995). Dehra Dun (Bhatnagar & Misra 1971, 1972a, Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Rilkote, Malari (Tak 1997), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006).

Rudraprayag : Guptakashi, Ukhimath (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). CTR (Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident as well as widespread winter visitor. Not Listed in the Act (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

425(936) *Lanius excubitor* Linnaeus, 1758

Great Grey Shrike

1873. *Lanius Homeyeri* Cabanis, *Jour. f. Orn.* 21 : 75 (Sarepta).

1875. *Lanius excubitor* var. *leucoptera* Severtzov, *Stray Feathers* 3 : 430 (Upper Naryn River, Turkestan).

1881. *Lanius Przewalskii* Bogdanov, *Wur. der Russ. Faun.* : 147 (Tashkent).

1924. Baker, *FBI* No. 709, 2 : 289.

Diagnostics : Size : Myna $\pm$; c. 25cm (including long tail). Sexes alike. It is a large silvery grey shrike, has pale grey mantle; black wings, with white scapulars and one or two white bars at the base of primaries extending onto base of inner secondaries (conspicuous in flight); heavy and hooked black bill (as in birds of prey) and lores; white underparts; and longish graduated black-and-white tail.

Habitat : <2100 m. Open semi-desert, scrub, thorn forest, field-margins; drier areas.

Distribution : Uttarakhand : Chamoli : Gwaldam, Narainbagh (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1971, 1972a). Pauri (Tak 1995). CTR (Khati 2004). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Not Listed in the Act (BNHS 2002).

426(933-935) *Lanius meridionalis* Temminck, 1820

Southern Grey Shrike

1832. *Collurio Lahtora* Sykes, *Proc. Zool. Soc.* London : 86 (Dukhun).

1924. Baker, *FBI* No. 706, 2 : 285.

Diagnostics : Size : Myna $\pm$; c. 25 cm (including long tail). Sexes alike.

Adult : Has grey mantle; white scapulars; black wings and tail with white bold markings; greyish rump; white breast and flanks; black mask extending over forehead and down sides of neck.

Juvenile : Has sandy cast to grey crown and mantle; buff tips to tertials, median and greater coverts; grey mask (not black) not extending to forehead.

Habitat : < 2100. Open semi-desert, scrub, thorn forest, field-margins; drier areas.

Distribution : Uttarakhand : Dehra Dun : [Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list, ZSI Surveys 2002-05).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

CINCLIDAE (Dippers)

Dippers are plump brown birds with short wings and tail; adapted for feeding in fast flowing mountainous rivers and streams; swim and walk under water for invertebrate prey beneath stones and boulders; flight direct and low over the water.

427(1772-1774) *Cinclus cinclus* (Linnaeus, 1758)

White-throated Dipper

1860. *Cinclus cashmeriensis* Gould, *Proc. Zool. Soc.* London : 494 (Kashmir).

1924. Baker, *FBI* No. 477 (part), 2 : 2.

Diagnostics : Size : Myna $\pm$; c. 20 cm. Sexes alike. It is, perhaps, the only aquatic passerine bird; also known as European Dipper or just Dipper.

Adult : A round, short-tailed, thrush-like warm chocolate bird; has greyish tinge to wings, rump and tail; white throat and upper breast, followed by a band of warm chestnut which merges into black on the belly and flanks; black bill and brown legs.

Juvenile : Greyish brown and without chestnut band.

Juvenile : Has grey upperparts with dark scaling and whitish underparts with grey scaling.

Habitat : S 3000-4800 m (5100 m). W > 2000 m. Mountain streams, usually at higher altitudes than Brown Dipper though ranges overlap.

Distribution : Uttarakhand : Chamoli : Nanda Devi and the Rishiganga basin (Dang, Hari 1963). Dehra Dun (Osmaston 1935). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993). Tehri : Lamprey (1954). CTR (Lamba undated).

Status : Widespread resident, undertakes altitudinal movement. Not Listed in the Act (BNHS 2002).

428(1775-1776) *Cinclus pallasii* Temminck, 1820
Brown Dipper

1850. *Cinclus tenuirostris* 'Gould' = Bonaparte, *Consp. Gen.*
Av. 1 : 252 (central Asia, restricted to the Himalayas, Simla-Almora area, by Ripley, 1961, Synopsis : 540).

1924. Baker, *FBI* No. 479, 2 : 4.

Collection records : Uttarakhand : Dehra Dun : Maldeota, 1 ex., 25.xi.1968, coll. P. K. Bose; Kalsi, 1 ex., 15.xii.1969, coll. P. K. Bose; Sahastradhara, 1 ♂, 13.xii.1976, coll. M. L. Narang. Pauri: Srinagar, Kameda, 1 ♀, 25.vi.1969, coll. P. K. Bose.

Diagnostics : Size : Myna ±; c. 22 cm. Sexes alike.

Adult : Entirely chocolate-brown; lack of white throat and breast distinguishes it from White-throated Dipper.

Juvenile : Has white or rufous-buff spotting on brown plumage (upperparts and underparts).

Habitat : S 450-4000 m (4950 m). W <2700 m (3600 m). Mountain streams and rivers.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Bageshwar : Dhakuri (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Amrit Ganga at Daldungi (Lavkumar 1956b), Trisul, North Rishi Ganga and Changabang in the Sanctuary (Reed 1979), NDNP (Tak & Kumar 1987), Kalikona to Doodganga, Dibrugheta, Patalkhan, Base Camp (Sankaran 1993, 1994), (Tak 1995), Trishul nalla, Rishi Gorge, Changabang outwash river, Tolma (Tak 1997), Ramni, Betartoli, Deodi (Sathyakumar 2003). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935), Tapkeshwar, [Maldeota, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh (Tak 1995), Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Mandakini valley, Kedarnath

(Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), Lamprey (1954), (Tak 1995). Uttarkashi (Tak 1995), Harke Dun (Osmaston 1935), Govind NP : Naitwar, Taluka, Himri, Dhaula (Tak *et al.* 2004), torrents of Supin (Singh 2005b). CTR (Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident, undertakes altitudinal movement. Not Listed in the Act (BNHS 2002).

TROGLODYTIDAE (Wrens)

The winter wren is superficially similar to the smaller wren babblers. Its stubby tail is characteristically cocked. Occurs in high altitude rocky and bushy habitat in the Hiamalaya.

429(1769-1771) *Troglodytes troglodytes*
(Linnaeus, 1758)
Winter Wren

1872. *Troglodytes neglectus* Brooks, *Jour. Asiat. Soc. Bengal* 41 : 328 (Kashmir).

1922. Baker, *FBI* No. 460, 1 : 446.

Diagnostics : Size : Sparrow -; c. 9 cm. Sexes alike. Also known as Wren or Northern Wren is a small, thick rufous-brown bird; has rounded wings, short and cocked tail, and strong legs; buffish supercilium; a pale eye-ring; brownish upperparts narrowly barred with dark brown on wings, lower back and tail; and paler underparts more closely barred.

Races : Three races are recognized from the Himalayas *T. t. magrathi* of the far NW subcontinent with greyish plumage; *T. t. neglectus* of W Himalayas has darker brown upperparts with heavy blackish barring and smoky-brown underparts; and *T. t. nipalensis* of C and E Himalayas with sooty brown plumage.

Habitat : S (2400 m) 2700-5000 m (5300 m). W 1200-3600 m (4700 m). Tangles, piles of rocks; undergrowth.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Almora (Tak 1995) Chamoli : at 4880 m in the Sanctuary (Reed 1979), NDNP (Tak & Kumar 1987), Deodi, Ramani (Sankaran 1993, 1994), (Tak 1995), Saini Kharak, Deodi, Ramani, Scree area bc (Tak 1997). Dehra Dun :

Karwapani, the Body Guards ravines, Lachiwala, and hills beyond Chakrata (Osmaston 1935), New Forest (Singh 1999, 2000). Naini Tal (Tak 1995). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Whymper 1907). Uttarkashi : Kedar Kanta (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Sparse local resident, undertakes altitudinal movements. Schedule IV (BNHS 2002).

PRUNELLIDAE (Accentors)

Accentors are compact and small sombrecoloured birds with slender and pointed bill, reflecting their diet of insects in summer, augmented with seeds and berries in winter; flight usually low over the ground; build cup-shaped nests of plant materials usually on shrubs; most species live above tree line, descent to lower altitude in winter; both sexes incubate.

430(1777-1779) *Prunella collaris* (Scopoli, 1769) Alpine Accentor

1915. *Laioscopus collaris whymperi* Baker, *Bull. Brit. Orn. Cl.* 35 : 61 (Garhwal).

1924. Baker, *FBI* No. 620 (part), 2 : 188.

Diagnostics : Size : Sparrow; c. 15.5-17 cm. Sexes alike. A Robin-sized bird; has a streaked brown back, somewhat resembling a House Sparrow, but superficially resembles Altai Accentor (below).

Adult : Has grey head, breast and centre of belly; close barring on narrow white throat patch (apparent at close range); blackish brown wing-coverts with white tips forming two wing-bars; tertials tipped with buff or whitish; dark brown tail, each rectrix with a white or buff, roundish terminal spot; rusty-streaked flanks.

Juvenile : With browner head and lacks rusty-streaking on flanks.

Habitat : S 3600-5500 m (7900 m). W1800-4800 m. Stony meadows, cliffs, moraines, scree slopes; also mountains villages in winter.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Chamoli : Dibrugheta and Base Camp in Nanda Devi Sanctuary (Reed 1979),

NDNP (Tak & Kumar 1987), Patalkhan (Sankaran 1993, 1994), (Tak 1995), Patalkhan, Sarsopatal, Rocks above Dibrugheta, Bhagwabasa (Tak 1997), Sarsopatal, Devstan bc, Patalkhan (Sathyakumar 2003). Dehra Dun (Singh 2000). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba undated, internet list).

Status : Sparse local resident undertakes altitudinal movement. Not Listed in the Act (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

Remarks : It is a bird of bare mountain areas (generally above 2000 m) with some low vegetation. The mating system is of particular interest. Home ranges are occupied by breeding groups of 3 or 4 males with 3 or 4 females. These are unrelated birds which have a socially polygandrous mating system. Males have a dominance hierarchy, with the alpha males being generally older than subordinates. Females seek matings with all the males, although the alpha male may defend her against matings from lower ranking males. In turn, males seek matings with all the females. DNA fingerprinting has been used to show that, within broods, there is often mixed paternity, although the female is always the true mother of the nestlings raised within her nest. Males will provide food to chicks at several nests within the group, depending on whether they have mated with the female or not- males only provide care when they are likely to be the true fathers of the chicks.

431(1780) *Prunella himalayana* (Blyth, 1842) Altai Accentor

1842. *Accentor Himalayanus*? Blyth, *Jour. Asiat. Soc. Bengal* 11 : 187 (Himalayan range).

1924. Baker, *FBI* No. 624, 2 : 191.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike.

Adult : Easily distinguished from other Accentors by its white throat, with a black gorget across lower throat; diffuse malar stripe of black spotting; and whitish underparts, with rufous

mottling on breast and flanks. Has greyish crown and nape with dark streaks; greyish supercilium; brownish ear-coverts; heavily streaked mantle; and whitish centre of belly. Like Alpine Accentor (above), it also has white tips to greater and primary coverts.

Juvenile : Lacks distinctive patterning on throat and underparts.

Habitat : (1000 m) 2000-4000 m. Bare rocky ground.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba undated, internet list).

Status : Sparse winter visitor. Not Listed in the Act (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

432(1781) *Prunella rubeculoides* (Moore, 1854)
Robin Accentor

1854. *Accentor rubeculoides* 'Hodgson' = Moore, *Cat. Bds. Mus. Orn.* E.I. 1 : 361 (Nepal).

1926. *Prunella rubeculoides muraria* R. & A. Meinertzhagen, *Bull. Brit. Orn. Cl.* 46 : 99 (Astor).

1924. Baker, *FBI* No. 626, 2 : 193.

Diagnostics : Size : Sparrow; c. 17 cm. Sexes alike.

Adult : Superficially resembles to Rufous-breasted Accentor, but readily differentiated by uniformly brownish grey head and throat, unstreaked rusty orange band across breast, diffusely streaked upperparts, and unstreaked white belly with some streaks on flanks.

Juvenile : Rufous-breasted but without streaks on flanks.

Habitat : S 3000-5300 m. W >2500 m (1000 m). Scrub and bushes in valley bottoms, often preferring wet areas; around upland villages in winter.

Distribution : Uttarakhand : Chamoli : Sarsonpatal (Sankaran 1993, 1994, Tak 1997). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Tehri : Lamprey (1954). CTR (Lamba undated).

Status : Sparse summer visitor. Not Listed in the Act (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

433(1782-1783) *Prunella strophliata* (Blyth, 1843)
Rufous-breasted Accentor

1843. *A. (ccentor) strophliatus* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 12 : 959 (Nepal).

1924. Baker, *FBI* No. 628, 2 : 196.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike.

Adult : Rufous band across breast; white and rufous supercilium; blackish ear-coverts and later crown-stripes; and dark streaking on sides of neck and underparts. Distinguished from Robin Accentor (*P. rubeculoides*) by streaked throat and belly, and conspicuous supercilium (whitish in front of eye and rufous behind eye); from Altai Accentor (*P. himalayana*) by rufous supercilium, streaked whitish throat, unstreaked rufous breast, and dark brown streaks on belly.

Juvenile : Like juvenile Robin Accentor, but with streaked belly.

Habitat : S 2700-5000 m. Dwarf juniper and rhododendron jungle, rocky meadows. W (600 m) 1200-3600 m. Bushes near cultivation, scrub.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Bageshwar : Pindari-Kafni Trek (Mohan 2007); Chamoli : Girthi valley (Osmaston 1921), Base Camp valley (Reed 1979), NDNP (Tak & Kumar 1987), North Sanctuary (Sankaran 1993, 1994), (Tak 1995), above Dibrugheta, Sarsopatal, Bhagwabasa (Tak 1997). Dehra Dun (Osmaston 1935, Singh 2000). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba undated, internet list).

Status : Sparse local resident undertakes altitudinal movement. Not Listed in the Act (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

434(1786-1787) *Prunella atrogularis* (Brandt, 1844)
Black-throated Accentor

1844. *Accentor atragularis* [sic] Brandt. *Bull. Phy. Acad. Imp. Sci. St. Petersb.* 2, col. 140 (Semipalatinsk).

1924. Baker, *FBI* No. 627 (part), 2 : 194.

Diagnostics : Size : Sparrow; c. 15 cm. It is the only accentor with black chin and throat.

Adult : Has black crown, face patch and throat, and orange-buff supercilium and submoustachial stripe; dark brown streaking on mantle; orange breast and flanks; and whitish belly with orange stripes.

Juvenile : Lacks black throat and less contrasted.

Habitat : <1800 m (2500 m). Scrub, orchards, bushes and semi-desert near cultivation; *sarpat* grass.

Distribution : Uttarakhand : Chamoli (Tak 1995), near Lata (Reed 1979, Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957, Singh 2000). CTR (Khati 2004, internet list).

Status : Sparse winter visitor. Not Listed in the Act (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

435(1788) *Prunella immaculata* (Hodgson, 1845)
Maroon-backed Accentor

1845. *Acc.(entor) immaculatus* Hodgson, *Proc. Zool. Soc.*
London : 34 (central and northern regions of the Hills, Nepal).

1924. Baker, *FBI* No. 625, 2 : 193.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike.

Adult : Distinctive; has grey head with white scaling on forehead and forecrown; yellow iris; maroon-brown mantle; olive-brown to maroon wings with grey panel and grey edges; grey throat to belly; olive-brown lower flanks, vent and under tail-coverts; and slaty thighs.

Juvenile : With similar wing pattern, but lack white scaling on crown.

Habitat : S 2900-4200 m. W (1500 m) 2100-3700 m. Humid fir and rhododendron forest, second growth, clearings, forest edge near fields.

Distribution : Uttarakhand : Chamoli : Joshimath (Reed 1979, Tak 1995).

Status : Sparse summer visitor. Not Listed in the Act (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

MUSCICAPIDAE

TURDINAE (Thrushes, Shortwings, Robins, Forktails, Wheaters)

Thrushes are fairly robust, medium-sized passerines with a relatively slim bill, fairly long wings and legs. Largely insectivorous, some supplement their diet with fruit. Some are chiefly arboreal while others are more terrestrial and move by hopping, rather than walking. Most thrushes found in the subcontinent are relatively solitary though some may gather in flocks, particularly in winter. Many are good songsters as judged by the human ear. Juveniles are usually spotted in contradistinction to those of warblers and babblers. Shortwings are small thrushes with short rounded wings and short square tail. Chiefly insectivorous, feeding on the ground and in moist dense undergrowth. Solitary, shy, and skulking. Members of the genus *Turdus* are typical thrushes. Robins form a large varied group comprising small to medium-sized birds with short, fairly slim bill, medium wings, and medium to longish tail. Posture is normally quite upright. Mostly shy in bushes, undergrowth and on the ground. Forktails are with long deeply forked tails and pied plumage. Mostly found long forested Himalayan mountain streams, hopping from rock to rock or walking along the banks, feeding on insects and other aquatic invertebrates. Usually fly low over the water. Shrill calls carry above the noise of the water. Wheaters are slim pied and buffy/ brown birds with distinctive tail patterns shown when the tail is spread. Largely terrestrial inhabitants of open arid regions (virtually restricted to the north-western part of the subcontinent). Usually perched on rocks, low walls and bushes watching out for insects, beetles, lizards and other small prey.

436(1723) *Monticola cinclorhynchus* (Vigors, 1832)
Blue-headed Rock-Thrush

1832. *Petrocincla cinclorhyncha* Vigors, *Proc. Zool. Soc.*
London : 172 (Himalayan Mountains = Simla).

1924. Baker, *FBI* No. 606, 2 : 171.

Diagnostics : Size : Bulbul; c. 17 cm. It is a species of thrush that breeds in the foothills of the Himalayas and winters in the hill forests of southern India (mainly Western Ghats and Assam hills).

Adult male (summer) : Blue head, nape and upper back; white rump and back forming white wing-patch (easily distinguishes it from Rufous-tailed Thrush and Chestnut-bellied Thrush); orange underparts; and blue-black tail. In the *first winter male*, feathers of upperparts are fringed with buff, those of belly with white, and easily recognized by white back.

Female : Uniform grey-brown upperparts with dark shaft-streaks; white centre of throat; remaining underparts heavily marked with brown on breast, less on belly and flanks. The white throat differentiates it from female Blue Rock-Thrush and white centre of belly and undertail-coverts from Chestnut-bellied Rock-Thrush and female Blue Rock-Thrush

Habitat : S (1000 m) 1200-2200 m (3600 m) open forest, rocky grassy. W <2600 m moist-deciduous forest, secondary growth, plantation.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Pipalkoti to Joshimath (Lavkumar 1956b), above Joshimath (Sankaran 1993, 1994), Mandal (Singh 2005a). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Tons Valley (Singh 2000). Naini Tal (Hudson 1930, Tak 1995), Bhimtal (ZSI Survey 2005). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi : Govind NP : Sankri (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread summer visitor. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest Jhunjhunwala *et al.* 2001).

437(1724) *Monticola rufiventris* (Jardine & Selby, 1833)

Chestnut-bellied Rock-Thrush

1832. *Turdus erythrogaster* Vigors, *Proc. Zool. Soc. London* : 171 (Himalayan mountains), *nec Turdus erythrogaster* Boddaert, 1783.

1833. *Petrocincla rufiventris* Jardine & Selby, *Ill. Orn.* 3, pl. 129 (restricted to Simla by Ripley, 1961, *Synopsis* : 523).

1924. Baker, *FBI* No. 605, 2 : 170.

Diagnostics : Size : Myna $\pm$; c. 24 cm.

Adult male : Chestnut-red underparts; brilliant blue upperparts without white wing-patch distinguish it from Blue-headed Rock-Thrush (above).

Female : Orange-buff patch on sides of neck; conspicuous buff eye-ring; dark barring on slaty olive-brown upperparts; and heavy scaling on underparts.

Juvenile : With bold buff spotting and brown fringes to crown and mantle.

Habitat : S (1200 m) 1800-2400 m (3500 m). W <2300 m. Open forest and scattered trees on rocky hillsides.

Distribution : Uttarakhand : Chamoli : Joshimath (Reed 1979), (Tak 1995), Mandal village (Singh 2005a). Dehra Dun : Mussoorie, Chakrata (Osmaston 1935), New Forest (George 1957, Mohan 1996), Chakrata, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Tungnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident undertakes altitudinal movement. Schedule IV (BNHS 2002).

438(1725-1726) *Monticola solitarius* (Linnaeus, 1758)

Blue Rock-Thrush

1832. *Petrocincla Pandoo* Sykes, *Proc. Zool. Soc. London* : 87 (Ghauts, Dukhun).

1843. *Peterocincla affinis* Blyth, *Jour. Asiat. Soc. Bengal* 12 : 177 (Tenasserim and Darjeeling).

1924. Baker, *FBI* No. 608 and 609, 2 : 175.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ex., 8.iv.1965, coll. R. K. Bhatnagar; Rajpur, 1 ex., 22.xi.1965, coll. P. K. Bose.

Diagnostics : Size : Bulbul +; c. 23 cm.

Male (summer) : Unmistakable, has all blue-grey plumage with darker wings.

Female : Much less striking, with dark brown upperparts, and paler brown scaly underparts.

Juvenile : Like female, but lacks any blue, and has buff spotting and brown fringes to crown and mantle, and buff fringes to wing-coverts and tertials.

Habitat : S (1200 m) 1500-4000 m (4800 m). Rocky hillsides. W<2100 m. Rocky country, ruins villages.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Dhaul valley (Lavkumar 1956b), Nanda Devi and the Rishiganga basin (Dang, Hari 1963), Joshimath and the Sanctuary (Reed 1979), (Tak 1995), Sarsopatal (Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996, Singh 2000). Pauri (Osmaston 1921, Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread summer visitor. Schedule IV (BNHS 2002).

439(1729-1730) *Myiophonus caeruleus*
(Scopoli, 1786)
Blue Whistling-Thrush

1832. *Myophonus Temminckii* Vigors, *Proc. Zool. Soc.*
London : 171 (Himalayan Mountains = Simla-Almora area).

1943. *Myophonus caeruleus euterpe* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 12 (Mawphlang, Khasi Hills).

1924. Baker, *FBI* No. 614, 2 : 180.

Collection records : Uttarakhand : Almora : Kathpuria, 1 ♂, 22.xii.1968, coll. P. K. Bose. Bageshwar, 1 ♂, 12.7.1969, coll. P. K. Bose. Chamoli : Rampur, 1 ♂, 30.vi.1969, coll. P. K. Bose. Dehra Dun : Rovers Cave, 1 ex., 14.x.1971, coll. P. K. Bose; Sahastradhara, 1 ♀, 9.viii.1972, coll. D. N. Basu; Mussoorie, 1 ♀, 12.ix.1972, coll. P. K. Bose. Naini Tal : on way to China Peak, 1 ♂, 12.xii.1968, coll. P. K. Bose. Pauri : Chamdhar, 1 ♂, 27.vi.1969, coll. P. K. Bose. Tehri : Devprayag, 1 ex., 23.vi.1969, coll. P. K. Bose. Uttarkashi : Karadi, 1 ♂, 28.v.1973, coll. Raj Tilak; Gangani, 1 ♀, 31.v.1973, coll. Raj Tilak; Kuwa, 1 ♂, 2.vii.1973, coll. Raj Tilak.

Diagnostics : Size : Pigeon: c. 33 cm. Sexes alike.

Adult : Has dark purple-blue plumage spotted with glistening silvery-blue on head and body; brighter blue forehead, shoulders, edge of wing and tail; some white spots on median wing-coverts; and yellow bill.

Juvenile : Browner and lacks spottings.

Habitat : S (1000 m) 1500-2400 m (tree-line). W Foothills-2700 m. Forest, especially near water courses.

Distribution : Uttarakhand : Almora (Tak 1995), Kaparkhan, Binsar WLS, Petshal, Kwarab, Soni, Bhatronj Khan, Ranikhet, Gagas, Chanthariya (ZSI Survey 2004). Bageshwar : Loharkhet – Pindar zero point (Tak 1997), Kausani, around Bageshwar, Baijnath, Kanda, Wajula, Garur (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : Dhaul near Joshimath (Lavkumar 1956b), from Ramani upwards in the Sanctuary (Reed 1979), NDNP (Tak & Kumar 1987), Reni to Ramani, Bethartoli (Sankaran 1993, 1994), (Tak 1995), Reni – Sarsopatal, Lata, Malari, Lohajung – Wan (Tak 1997), Ramni, Betartoli, Deodi, Dibrugetha, Latakharak, Beltakharak (Sathyakumar 2003), Mandal, Pipalkoti, Vishnuprayag, Nandprayag, Ghat, Narainbagrh (ZSI Survey 2004), enroute Tunganath (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun (Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), Chakrata, Malsi Deer Park, Mussoorie, New Forest, [Dhanaulty, Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997). Pauri (Tak 1995). Pithoragarh (Tak 1995), Lillam-Bugdiyar (Tak 1997), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, (Tak & Sati 2006). Rudraprayag : Kedarnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993), Gandhari, Tilwara, Augstyamuni, Guptakashi, Gauri Kund, Ukhimath, Dugalbitta, Chopta (ZSI Survey 2004). Tehri : Bhilung valley (Matthews 1918, Searight 1926), (Tak 1995), Tehri Dam

Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Sankri, Taluka, Himri, Dhaula, Istragad (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

**440(1731) *Zoothera wardii* (Blyth, 1842)
Pied Thrush**

1842. T. (urdus) Wardii Blyth, *Jour. Asiat. Soc. Bengal* 11 : 882 (Mysore).

1924. Baker, *FBI* No. 584, 2 : 145.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 2 ♀, 25.vii.1963, 1 ♀, 9.vii.1964, coll. R. K. Bhatnagar.

Diagnostics : Size : Myna ±; c. 22 cm. It is an unmistakable thrush with black-and-white plumage.

Adult male : Prominent white supercilium; white tips to the wing coverts (wing-bars), tertials, rump and tail; white underparts with black spots on flanks; and yellowish bill and legs.

Female : With same basic pattern, but the black is replaced by dark brown, and the white by light brown; buff supercilium and wing-bars (buff median- and greater-covert bars); olive-brown upperparts; and scaled underparts.

Juvenile : With buff streaking on mantle and breast.

Habitat : S 1200-2400 m. W > 750 m. Forest. Well-wooded ravines, streams, parks and gardens.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli (Tak 1995), NDNP (Tak & Kumar 1987), Dibrugheta (Tak 1997). Dehra Dun : New Forest (George 1962a), (Bhatnagar & Misra 1972b, Singh 2000). Pauri (Osmaston 1921). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Govind NP : Sankri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Widespread passage migrant. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest Jhunjhunwala *et al.* 2001).

**441(1733-1736) *Zoothera citrina* (Latham, 1790)
Orange-headed Thrush**

1790. *Turdus citrinus* Latham, *Index Orn.* 1 : 350 (India, Cachar).

1924. Baker, *FBI* No. 587, 2 : 148.

Diagnostics : Size : Myna -; c. 21cm.

Adult male : Orange head and underparts (breast and belly); uniform blue-grey upperparts (mantle, rump and tail) with white shoulder patch; and white vent and undertail-coverts.

Female : Like male, but with browner upperparts (strong olive-brown wash to mantle, tertials and secondaries).

Juvenile : With buffish-orange streaking on crown and mantle, orange-buff tips to wingcoverts, and diffuse brownish mottling and barring on underparts.

Races : Four races are recognized from the subcontinent: the nominate of the Himalayas and NE subcontinent (which winters in south to peninsular India and Sri Lanka has entirely orange head; the other three remaining being: *Z. c. cyanotus* of peninsula with vertical black stripes on white ear-coverts and white throat, and *Z. c. andamanensis* and *Z. c. albogularis* of the Andaman and Nicobar lacks the white shoulder patch shown by the two main land races.

Habitat : <2300 m. Well-wooded areas including groves.

Distribution : Uttarakhand : Dehra Dun (Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, Tons Valley Forest, [Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread summer visitor. Schedule IV (BNHS 2002).

442(1738-1739) *Zoothera mollissima* (Blyth, 1842)
Plain-backed Thrush

1842. *T. (urdus) mollissimus* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 188 (Darjeeling).

1924. Baker, *FBI* No. 599, 2 : 162.

Diagnostics : Size : Myna +; c. 27 cm. Sexes alike.

Adult : Olive-brown upperparts (lacks or has indistinct wing-bars); conspicuous pale eye-ring; crescent-shaped heavy black scaling on underparts; and white tips to outer rectrices.

Juvenile : With buff streaking on upperparts and diffused heavy dark brown scaling and barring on underparts.

Habitat : S 2700-4300 m. Open country above treeline. W (600 m) 1300-2400 m (3600 m). Open forest, open country with bushes near fallow land.

Distribution : Uttarakhand : Bageshwar : Malildoh (Tak 1997). Chamoli : NDNP (Tak & Kumar 1987), Dibrugheta (Sankaran 1993, 1994, Tak 1997), (Tak 1995), Wan, Bedni (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935), New Forest (Singh 1999, 2000). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bhilung valley (Matthews 1918). Uttarkashi : Govind NP : Jakhol, Saruka Tal (Tak *et al.* 2004). CTR (Lamba undated, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

443(1740) *Zoothera dixonii* (Seeborn, 1881)
Long-tailed Thrush

1881. *Geocichla dixonii* Seeborn, *Cat. Bds. British Mus.* 5 : 161 (Himalayas, spp. From Nepal and Darjeeling).

Not in Baker, *FBI*.

Diagnostics : Size : Myna +; c. 27 cm. Sexes alike.

Adult : Similar to Plain-backed (*Z. mollissima*), but distinguished by two comparatively broad and prominent median- and greater-covert wing-bars

(buff tips to median coverts form distinct spotting); more sparsely marked belly and flanks; and dark brown markings on flanks appear less crescentic in shape (more bar-like, on some almost spotted). A large buff wing-patch concealed at rest but prominent in flight.

Juvenile : With fine buff streaks and diffused dark brown scaling on upperparts.

Habitat : S 2100-4200 m. Dense birch and rhododendron forest near treeline, scrub above treeline. W (450 m) 1500-2700 m. Dense forest, open country with bushes near fallow land.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Singh 2000). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Whymper 1907). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

444(1741-1744) *Zoothera dauma* (Latham, 1790)
Scaly Thrush

1790. *Turdus Dauma* Latham, *Index Orn.* 1 : 362 (India = Kashmir).

1924. Baker, *FBI* No. 595, 2 : 158.

Diagnostics : Size : Myna +; c. 26 cm. Sexes alike. Also known as 'Golden/ Speckled Mountain Thrush' or 'White's Thrush', is the only thrush with a spotted back.

Adult : Pale face with large black eyes; differs from other *Zoothera* thrushes by bold black crescent-shaped markings on golden-olive upperparts, and golden-olive panels across wing, with dark bar at tip of primary coverts; white throat and belly with buffy breast and flanks boldly marked with dark brown crescentic spots. The most striking identification feature in flight is a large buff wing-patch on the under surface of wing prominent in flight.

Juvenile : Has upperpart more barred than scaled and breast is distinctly spotted.

Habitat : S 2100-3300 m (3600 m). W <2100 m. Forest.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Almora : Ranikhet (Briggs 1931), (Tak 1995). Dehra Dun : Deoban (Osmaston 1935), (Bhatnagar & Misra 1972a), New Forest (George 1957, 1962a, Mohan 1996), New Forest, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bhilling valley (Matthews 1918). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident as well as widespread winter visitor. Schedule IV (BNHS 2002).

Remarks : The bird was named after the English naturalist Gilbert White. The male has a song which is loud, far-carrying mechanical whistle, with 5-10 second pauses between each one second long phrase *twee...tuuu...tuuu...tuuu*.

**445(1745) *Zoothera monticola* Vigors, 1832
Greater Long-billed Thrush**

1832. *Zoothera monticola* Vigors, *Proc. Zool. Soc. London* : 172 (Himalayas = Simla-Almora area).

1954. *Zoothera monticola tenebricola* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 13 (Sangau, Lushai Hills).

1924. Baker, *FBI* No. 603, 2 : 166.

Diagnostics : Size : Myna +; c. 28 cm. Sexes alike. Also known as 'Long-billed Thrush' or 'Large Brown/ Long-billed Thrush', is a stout and short-tailed dark thrush with black bill (with curved culmen and hooked tip).

Adult : Distinguished from Lesser Long-billed (*Z. marginata*) by larger size, larger bill; dark lores; dark salty-olive upperparts; darker and more uniform sides of head (with diffuse dark moustachial stripe and narrow white throat patch); and darker and more uniform breast and flanks (both with diffuse dark spotting), and dark spotting on whitish belly. The white banding on underwing is prominent in flight.

Juvenile : With buff streaks on upperparts.

Habitat : S 2280-3850 m. W (300 m) 900-2900 m. Streams and swampy areas in forest.

Distribution : Uttarakhand : Chamoli : near Wan in Pindar valley (Osmaston 1921). Dehra Dun : Deoban (Osmaston 1935), (Singh 2000). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjunwala *et al.* 2001).

**446(1746) *Zoothera marginata* Blyth, 1847
Lesser Long-billed Thrush**

1847. *Z. (oothera) marginata* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 141 (Arracan).

1952. *Zoothera marginata tenebrosa* Koelz, *Jour. Zool. Soc. India* 4 : 41 (Nichunguard, Naga Hills).

1924. Baker, *FBI* No. 604, 2 : 168.

Diagnostics : Size : Myna +; c. 25 cm. Sexes alike. Also known as 'Dark-sided Thrush' or 'Lesser Brown/ Long-billed Thrush', is a stout short-tailed dark thrush.

Adult : Similar to Greater Long-billed, but smaller in size with smaller bill; rufescent brown upperparts; pale lores; pale and more patterned sides of head (paler ear-coverts, pale crescent behind eye followed by dark patch, and a prominent black moustachial stripe); paler underparts with dark scaling on breast and flanks.

Juvenile : With buff streaks on upperparts.

Habitat : S 750-2100+ m. Swampy areas and streams in humid forest. W <1900 m. Also dense reed-jungle along slow-moving streams in evergreen forest.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjunwala *et al.* 2001).

**447(1748) *Turdus unicolor* Tickell, 1833
Tickell's Thrush**

1833. *T. (urdus) Unicolor* T. (ickell), *Jour. Asiat. Soc. Bengal* 2 : 577 (Bansigar in Borabhum = Barahabhum, Purulia dist., W. Bengal).

1954. *Turdus unicolor subbicolor* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 12 (Mawphlang, Khasi Hills).

1924. Baker, *FBI* No. 579, 2 : 138.

Diagnostics : Size : Myna $\pm$; c. 21 cm. Also known Indian Grey Thrush, is a small Himalayan thrush with yellowish to pale brown bill, and pale legs.

Male : Uniform blue-grey upperparts; fine yellow eye-ring; paler breast, and whitish belly.

Female : With browner upperparts; plain brown face with prominent dark malar stripe; whitish throat and submoustachial stripe; olive-brown breast band and flanks; and white belly and undertail-coverts.

Juvenile : Browner upperparts with fine orange-buff shaft streaks; and heavily spotted breast and flanks.

Habitat : S 1500-1800 m (2700 m). W > plains. Groves, forest, edge, gardens.

Distribution : Uttarakhand : Chamoli : Auli (Sankaran 1993, 1994), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Bhatnagar & Misra 1972b), New Forest (George 1957, Mohan 1996, Singh 2000). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba undated, Khatri 2004, internet list).

Status : Widespread summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

Remarks : It is common in open forest in the Himalayas. Populations move further south in India in winter.

448(1749) *Turdus albocinctus* Royle, 1840
White-collared Blackbird

1835. *Turdus Albicollis* Royle, *Ill. Bot. Himalayan Mountains* 2 (1839), pl. 8, fig. 3 (Himalayas), *nec Turdus albicollis* Vieillot.

1840. *T.(urāus) albocinctus* Royle, *Ill. Bot. Himalayan Mountains* 1(1839) : lxxvii, lxxviii, applied to plate of *T. albicollis* ('Hills' = Himalayas, restricted to Dehra Dun).

1924. Baker, *FBI* No. 570, 2 : 129.

Diagnostics : Size : Myna +; c. 27cm. A large, dark long-tailed thrush with striking white neck collar; and yellow bill and legs.

Male : Entirely black to blackish brown, with white throat and broad white collar.

Female : Rufous-brown with variable pale collar.

Juvenile : Lacks collar; but with bold spotting on orange-buff upperparts.

Habitat : S 2100-4200 m. W 900-3000 m. Forests.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Bageshwar : Pindari-Kafni Trek (Mohan 2007); Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Belta Kharak (Sankaran 1993, 1994, Tak 1997), Chopta Chatti (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata, Deoban (Osmaston 1935), (Bhatnagar & Misra 1972b, Singh 2000). Naini Tal (Tak 1995, Ahmed 1997). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Vanyakund on the Tungnath mountain, Mandakini (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

449(1750) *Turdus boulboul* (Latham, 1790)
Grey-winged Blackbird

1790. *Lanius boulboul* Latham, *Index Orn.* 1 : 80 (India = Darjeeling).

1924. Baker, *FBI* No. 571, 2 : 130.

Collection records : Uttarakhand : Dehra Dun : at the confluence of Rispana river and Bindal Rao, 1♂, 27.i.1975, coll. S. M. Osman.

Diagnostics : Size : Myna +; c. 28 cm.

Male : Entirely black with contrasting grey panel on wing (formed due to grey tertials, secondaries, greater and median-coverts); orangish bill; yellowish legs. The fresh plumage has prominent whitish fringes to belly and vent.

Female : Olive-brown with pale rufous panel on wings.

Juvenile : Similar to respective sexes, but with orange-buff streaking on upperparts and variable orange-buff markings on underparts.

Habitat : S (1200 m) 1800-2700 m (3000 m). Damp dense broadleaved forest. W Lower. Forest, scrub and villages.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath (Reed 1979), Auli (Sankaran 1993, 1994), (Tak 1995), Belta, Joshimath/ Auli (Tak 1997), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie, Chakrata (Osmaston 1935), New Forest (George 1957, 1962a, Mohan 1996), Mussoorie, New Forest (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Tungnath Mountain (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

**450(1751-1757) *Turdus merula* Linnaeus, 1758
Eurasian Blackbird**

1881. *Merula maxima* Seebohm, *Cat. Bds. Brit. Mus.* 5 : 405 (Cashmere, restricted to Gulmerg).

1926. *Turdus merula buddae* R. & A. Meinertzhagen, *Bull. Brit. Orn. Cl.* 46 : 98 (Gyangtse, Southern Tibet).

1924. Baker, *FBI* No. 565, 2 : 123.

Diagnostics : Size : Myna +; c. 26 cm. Also known as 'Blackbird' or 'Common Blackbird', is a very variable (black, grey, or brownish-grey) with seven subspecies from the subcontinent. *T. m. maximus* is a Himalayan resident.

Male : Easily identified in the field by its entirely black plumage with yellow eye-ring and a yellow bill.

Female : By dark brown plumage and a brown bill, and without yellow eye-ring.

Juvenile : Slightly lighter brown than the female, and the very young with a speckled breast.

Habitat : Forest and gardens.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli : Lata (Reed 1979), Belta Kharak, Auli (Sankaran 1993, 1994), (Tak 1995), Lata, Belta (Tak 1997), Beltakharak (Sathyakumar 2003). Dehra Dun (Osmaston 1935), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bhilung valley (Matthews 1918), Ranichauri (ZSI Survey 2005). Uttarkashi : Mahidanda (ZSI Survey 2005). CTR (Lamba undated, Khati 2004).

Status : Sparse local resident as well as sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : The Blackbird is the national bird of Sweden. It has an average life expectancy of 2.4 years and the oldest recorded age is 20 years.

**451(1758-1759) *Turdus rubrocanus* Hodgson, 1846
Chestnut Thrush**

1835. *Merula castanea* Gould, *Proc. Zool. Soc. London* : 185 (Himalayas) *nec Turdus castaneus* Muller, 1776.

1844. *T. (urdus) rubrocanus* Hodgson in Gray, *Zool. Misc.* : 83 (Nepal), *nom. nud. Turdus rubrocanus* 'Hodgs.' = G. R. Gray, *Cat. Mamms. Bds. Nepal* : 81 (Nepal).

1924. Baker, *FBI* No. 572, 2 : 132.

Diagnostics : Myna +; c. 27 cm. Also known as 'Grey-headed Thrush' is a dark chestnut-and-grey thrush with distinct brown or blackish wings.

Male : Grey head; buffish-grey throat, neck and upper breast (forming a distinct collar); and remaining plumage largely chestnut with blackish wings and tail and whitish centre of belly.

Female : Similar to male, but duller with pale brownish-grey head and neck (lacks or indistinct collar); and brownish wings and tail.

Juvenile : With buff streaking on upperparts and dark spotting and barring on underparts.

Races : The nominate race of the W Himalayas is described here, while *T. r. gouldii* with darker slate-grey head and neck (male) and brownish-grey head and neck without collar (female) is a rare winter visitor to the E Himalayas and NE subcontinent.

Habitat : S (1500 m) 2100-3000 m (3200 m). Forest W (Foothills). Open country, orchards.

Distribution : Uttarakhand : Chamoli : Malla Nagpur (Osmaston 1921), NDNP (Tak & Kumar 1987), (Tak 1995), Belta (Tak 1997). Dehra Dun (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bhilung valley (Matthews 1918). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

452(1763-1764) *Turdus ruficollis* Pallas, 1776
Dark-throated Thrush

1776. *Turdus ruficollis* Pallas, *Reise Russ. Reichs* 3 : 694 (Dauria).

1924. Baker, *FBI* No. 577, 2 : 136.

Diagnostics : Size : Myna $\pm$; c. 25 cm.

Adult : Plain grey upperparts; black or red supercilium, throat, and breast; whitish underparts; and reddish underwings;

Races : Two distinct races occur: *T. r. atrogularis*, the Black-throated Thrush, and *T. r. ruficollis*, the Red-throated Thrush (sometimes considered different species). The adult male *atrogularis* has black throat, while *ruficollis* has red throat. The Red-throated always shows reddish-orange sides of tail (prominent in flight). In overhead aspect, undertail can be entirely orange. Females and young birds have black streaks on underparts.

Habitat : <4200 m. Forest edge, scrub, cultivation.

Distribution : Uttarakhand : Dehra Dun (Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

453(1768) *Turdus viscivorus* Linnaeus, 1758
Mistle Thrush

1860. *T.(urdus) Bonapartei* Cabanis, *Jour. f. Orn.* 8 : 183 (Himalayas).

1924. Baker, *FBI* No. 592, 2 : 154.

Diagnostics : Size : Myna +; c. 28 cm. Sexes alike.

Adult : Pale greyish-brown upperparts with prominent whitish-buff edges to wings; pale eye-ring; neatly round-spotted creamy-white underparts; and white tipped outer rectrices (tail feathers).

Juvenile : Like adult, but with buffish-white spotting and diffuse dark tips to feathers of upperparts; distinguished from the similarly looking Scaly Thrush by colder grey-brown upperparts and lack of golden-olive panels across wing of Scaly.

Habitat : S (1800 m) 2400-3600 m (3900 m). Coniferous forest, junipers. W >1200 m. Open forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Dibrugheta (Sankaran 1993, 1994; Tak 1997). Dehra Dun (Osmaston 1935, Singh 2000), New Forest (George 1957, Mohan 1996). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Rudraprayag : Tungnath Mountain (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). CTR (Lamba undated, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : A Mistle Thrush defends a berry-bearing tree against other thrushes in winter. The male sings its loud melodious song from a tree, rooftop or other elevated perch, often during bad weather or at night, and starting relatively early in the spring- hence the Mistle Thrush's old name of "Stormcock" The song is a harder and simpler version of the Blackbird's. The alarm call is said to sound like a football rattle (a form of musical ratchet) or machine gun.

454(1635) *Brachypteryx stellata* Gould, 1868
Gould's Shortwing

1868. *Brachypteryx* (*Drymochares*) *stellatus* Gould, *Proc. Zool. Soc. London* : 218 (Nepal = Sikkim).

1924. Baker, *FBI* No. 486, 2 : 16.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. A striking sub-tailed and long-legged robin.

Adult : Bright chestnut upperparts; black lores; narrow grey supercilium; slate grey lower rump speckled with whitish; slate-grey underparts with white star-shaped spotting on belly and flanks.

Juvenile : With rufous streaking on head, mantle and breast, and greyish-black belly and flanks with broad whitish V-shaped spots.

Habitat : S 3300-4200 m. W (540 m) 2000-3400 m. Juniper, rhododendron, dense undergrowth, rocks and boulders above treeline.

Distribution : Uttarakhand : Pauri (Osmaston 1921). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba undated).

Status : Sparse local resident as well as sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

455(1640) ***Brachypteryx montana*** Horsfield, 1821
White-browed Shortwing

1843. *Calliope? Cruralis* Blyth, *Jour. Asiat. Soc. Bengal* 12 : 929, 933 (Darjeeling).

1947. Cf. Roonwal, M.L. & Nath, B., *Rec. Indian Mus.* 45 : 321-8.

1924. Baker, *FBI* No. 488, 2 : 17.

Diagnostics : Size : Sparrow -; c. 13 cm.

Adult male : Entirely dark slaty blue with ashy belly, velvety black lores, and a fine long white-supercilium extending beyond eye.

Adult female : Dark olive-brown with rusty lores and eye-ring, brown upperparts (with rufescent wings), and brownish underparts with paler belly. **Immature male** is like female but with fine white supercilium, rufous-orange lores, and uniform brownish underparts.

Juvenile : Like female but with pale orange spotting on crown and nape, orange-buff spotting on underparts, and rufous uppertail-coverts.

Habitat : S (1500 m) 2000-3300 m. W 300-2400 m. Damp undergrowth along streams, ravines and in oak and rhododendron forest.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

456(1643) ***Luscinia calliope*** (Pallas, 1776)
Siberian Rubythroat

1776. *Motacilla Calliope* Pallas, *Reise Russ. Reichs* 3 : 697 (Yenisei).

1924. Baker, *FBI* No. 542, 2 : 91.

Diagnostics : Size : Sparrow ±; c. 15 cm. Also known 'Eurasian Rubythroat' or 'Rybythroat', is a skulking, olive-brown bird with a conspicuous white supercilium.

Adult male : With brilliant ruby-red throat and white moustachial stripe.

Adult female : Lacks the brightly coloured red throat and borders.

Juvenile : With buff tips to greater coverts and tertials.

Habitat : <1500 m. Dense bushes in woodland, gardens and scrub; long grass, cane and reeds.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

457(1647-1649) ***Luscinia pectoralis*** (Gould, 1837)
Himalayan Rubythroat

1837. *Calliope pectoralis* Gould, *Icones Avium*, pl. 4, text (Himalayas = western Himalayas *vide* Hartert, 1909, *Vog. pal. Fauna* 1 : 739).

1924. Baker, *FBI* No. 543, 2 : 92.

Diagnostics : Size : Sparrow ±; c. 15 cm. Also known as 'White-tailed Rubythroat', is a skulking bird with bold upright carriage, long tail (usually held upright), and black legs.

Adult male : Ruby-red throat; striking white supercilium contrasting with blackish ear-coverts; black breast-band (distinguishing it from Siberian Rubythroat); brownish slaty upperparts with brown wings; blackish brown tail with white base and tips (visible when spread).

Adult female : Distinguished from female Siberian by its grey upperparts (vs olive-brown in Siberian); grey breast-band (lacks in Siberian); and white tips to tail.

Juvenile : Dark brown upperparts and coverts with bold fulvous streaking; fulvous breast and flanks with black scaling.

Races : Male *L. p. teschebaiewi* [which breeds mainly in Tibet (China) and also south to eastern Ladakh, northern Bhutan and northern Arunachal Pradesh] differs from other two races occurring in the subcontinent in having a broad white moustachial stripe; female of this race shows indistinct white moustachial and dark submoustachial stripe.

Habitat : S 2700-4900 m. Mostly in shrubbery above treeline. W Foothills and adjacent plains. Marshes, dense scrub, long grass.

Distribution : Uttarakhand : Chamoli : Temmersain and Dunagiri in upper Alakananda (Lavkumar 1956b), Nanda Devi and the Rishiganga basin (Dang, Hari 1963), Base Camp valley (Reed 1979), NDNP (Tak & Kumar 1987), (Tak 1995), Bethartoli, Sarsonpatal (Sankaran 1993, 1994, Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Khaddar, Malsi Deer Park, New Forest, Tons Valley Forest, [Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh (Tak 1995). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

458(1644-1646a) *Luscinia svecica* (Linnaeus, 1758)
Bluethroat

1758. *Motacilla svecica* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 187 (Sweden).

1907. *Cyabecula svecica robusta* Buturlin, *Psov. Rush. Okh.*, No. 6 (Kolyma Delta).

1924. *Luscinia svecica weigoldi* Kleinschmidt, *Abh. Ber. Mus. Dresden* 16(2) : 43 (Bago, Northern Chihli).

1924. Baker, *FBI* No. 536 and 538, 2 : 83 and 85.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1♂, 1.i.1975, 1♂, 3.ii.1975, 1♂, 20.iii.1975, coll. P. K. Bose.

Diagnostics : Size : Sparrow ±; c. 15 cm. The adult in all plumages is a robin-like skulking, though moves boldly with usually held cocked, bird with white supercilium; plain brown upperparts; dark tail with rufous sides at base (prominent in flight).

Male (breeding) : With variable blue, black and rufous patterning to throat and breast. The non-breeding birds with whitish throat and duller breast patterning.

Female : With blackish crescent on an otherwise cream throat and breast.

Juvenile : Speckled and spotted dark brown above.

Habitat : Breeds 2600-3600 m. Down to plains in winter. Bushes, reeds and grass near water.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Karva Pani, New Forest, Tons Valley Forest (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba undated, Khati 2004, internet list). RNP (Narang 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

459(1650, 1651) *Luscinia brunnea* (Hodgson, 1837)
Indian Blue Robin

1837. *Larvivora brunnea* Hodgson, *Jour. Asiat. Soc. Bengal* 6 : 102 (Nepal).

1952. *Larvivora brunnea angamea* Koelz, *Jour. Zool. Soc. India* 4 : 41 (Tekhubama, Naga Hills).

1916. *Larvivora wickhami* Baker, *Novit. Zool.* 23 : 298 (Chin Hills).

1924. Baker, *FBI* No. 484, 2 : 14.

Diagnostics : Size : Sparrow ±; c. 15cm. In India, also known by its older name of 'Indian Blue Chat' (*Erithacus brunneus*) or 'Blue Chat', is a short-tailed bird with horizontal stance, long pale legs and large feet. It frequently bobs and fans tail.

Male : Eye-catching- slate blue above and bright orange below with white supercilium and black ear-coverts. It is distinguished from male 'White-browed Bush-Robin' by shorter and broader white supercilium (not extending beyond ear-coverts), black ear-coverts, and whitish centre to belly and vent.

Female : Olive-brown above and buffish below with white throat, belly and vent. It is distinguished from female 'White-browed Bush-Robin' by the absence of buffish-white supercilium.

Juvenile : Mainly brown, streaked with fulvous; male juvenile with blue tail.

Habitat : S 1600-3300 m. W <2100 m. Dense forest undergrowth.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Maltoni pass (Sankaran 1993, 1994, Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957, Singh 2000), New Forest (George 1957, 1962a, Mohan 1996). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Khati 2004, internet list).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : It breeds in the Himalayas in India, and in Myanmar. The Himalayan population is migratory, wintering in the Western Ghats of southwest India and in Sri Lanka. The Myanmar birds are mainly resident.

460(1654-1656) ***Tarsiger cyanurus*** (Pallas, 1773)
Orange-flanked Bush-Robin

1773. *Motacilla Cyanurus* Pallas, *Reise Russ. Reichs* 2 : 709 (Yenisei).

1924. Baker, *FBI* No. 548, 2 : 98.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Also known as 'Red-flanked Bluetail' (*Erithacus cyanurus*), has white throat, bright orange flanks, and blue uppertail-coverts. Its redstart-like stance and behaviour coupled with fine dark legs and feet distinguish it from the blue robins and rubythroats.

Male : Light blue upperparts and sides of breast; white throat, centre of breast and belly; and bright orange flanks.

Female : Olive-brown upperparts, sides of head and breast-band; a pale eye-ring; well-defined white throat-patch; and orange flanks.

Juvenile : Brownish upperparts spotted with buff; and buffish underparts scaled with brown.

Habitat : S 3700-4000 m (4400 m). W (750 m) 1200-2600 m (3800 m). Forest undergrowth.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli : Nanda Devi and the

Rishiganga basin (Dang, Hari 1963), NDNP (Tak & Kumar 1987), Maltoni to Ramani, Belta Kharak (Sankaran 1993, 1994, Tak 1997), (Tak 1995), Dibrugheta, Dharansi (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a), New Forest (George 1962a & b, Mohan 1996), Mussoorie, Sulphur Springs (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Osmaston 1921, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag (Osmaston 1921), Chopta and Duggalbitta (Bannerjee 1993), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bhilung valley (Matthews 1918). Uttarkashi : Govind NP : Seema (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002).

Remarks : It is a migratory insectivorous species breeding in mixed coniferous forest with undergrowth in north Asia to the Himalayas and western China; winters in southeast Asia. It nests near the ground, laying 3-5 eggs which are incubated by the female. The male sings its melancholy trill from treetops. Its call is typical chat "tacc" noise.

461(1657-1658) ***Tarsiger chrysaeus*** (Hodgson, 1845)
Golden Bush-Robin

1845. *Tarsiger chrysaeus* Hodgson, *Proc. Zool. Soc. London* : 28 (Nepal).

1924. Baker, *FBI* No. 546, 2 : 95.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Also known as '*Erithacus chrysaeus*', its orange to orange-buff underparts and orange sides to dark tail easily separate it from other Bush-Robins; has pale bill with contrasting black ridge to culmen; and pale legs.

Male : Orange supercilium and scapular line, rump and sides to black tail; blackish mask; olive-brown wings; and entirely orange underparts.

Female : Duller, with ill-defined supercilium.

Juvenile : Brownish with golden-buff streaks on upperparts and golden-buff spotting on underparts; and tail as in respective adult.

Habitat : S (1800 m) 3000-4200 m (4600 m). W (foothills) 1200-2000 m (3000 m). Evergreen forest undergrowth, treeline scrub.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli (Tak 1995), Dibrugheta (Reed 1979, Tak 1997), enroute Tunganath (Singh 2005a). Dehra Dun : Mussoorie (Osmaston 1935), (Bhatnagar & Misra 1972a, Singh 2000). Pauri (Osmaston 1921). Pithoragarh : Gori river basin-2002 (Tak & Sati 2006). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Kedar Kanta and Harke Dun (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

462(1659) *Tarsiger indicus* (Vieillot, 1817)
White-browed Bush-Robin

1817. *Sylvia indica* Vieillot, *Nouv. Dict. d'Hist. Nat., nouv. ed.*, 11 : 267 (India, *ex* Sonnerat = Darjeeling).

1924. Baker, *FBI* No. 551, 2 : 102.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Also known as '*Erithacus indicus*', superficially resembles Indian Blue Robin, but differs in carriage and profile, longer tail, more upright stance, rounded head, and short dark legs and feet (not long and pale).

Male : Slate-blue upperparts with white supercilium; and rufous-orange underparts. It is distinguished from male 'Indian Blue Robin' by longer and finer white supercilium (extending beyond and curving down behind ear-coverts), slate-blue (not black) ear-coverts concolouring with nape, and entirely rufous-orange belly and vent.

Female : Olive-brown upperparts; dull orange-buff underparts; and less distinct supercilium.

Juvenile : Brownish upperparts with orange-buff streaking; and orange-buff underparts boldly scaled with brown; and indistinct supercilium.

Habitat : S 3000-4200 m. Mixed forest. W (foothills) 2000-3000 m (3700 m). Undergrowth in dense forest.

Distribution : Uttarakhand : Chamoli : enroute Tunganath (Singh 2005a). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004). RNP (Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

463(1661-1664) *Copsychus saularis*
(Linnaeus, 1758)
Oriental Magpie-Robin

1758. *Gracula Saularis* Linnaeus, *Syst. Nat.* 1 : 109 (Asia = Bengal).

1924. Baker, *FBI* No. 558 (part), 2 : 113.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ex., 15.iv.1965, coll. R. K. Bhatnagar; Sathyanarain, 1 σ and 1 ϕ , 19.iv.1973, coll. Asket Singh; 37-Chakrata road, 1 σ , 17.x.1974, coll. M. L. Narang; 1 σ , 19.x.1974, coll. P. K. Bose; 1 σ , 31.vii.1975, coll. Surender Singh; 1 σ , 14.v.1976, 1 σ , 30.ix.1977, coll. D. N. Basu; 1 σ , 18.vii.1977, coll. Ram Das. Rudraprayag : Gholtir, 1 σ , 1.7.1969, coll. P. K. Bose. Tehri : Kempty, 1 σ , 13.vii.1973, coll. Raj Tilak. Uttarkashi : Purola, 1 ϕ ?, 21.vi.1973, 1 σ , 23.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Bulbul; c. 20 cm. It is also known as 'Asian Magpie Robin' or 'Indian Magpie Robin' or 'Magpie Robin' or 'Robin Dayal' is a blackish or slate-grey and white bird with a long cocked tail.

Male : Glossy blue-black upperparts, including head and breast; white remaining underparts; white on wings (shoulder- stripe) and sides of blackish tail.

Female : Bluish slate-grey with similar pattern of male.

Juvenile : With scaly brown upperparts and breast.

Habitat : <2000 m (2200 m). Parks, gardens, scrub, forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli (Tak 1995).

Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), New Forest, Timli, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Rudraprayag : lower Mandakini up to Gupta Kashi (Lavkumar 1956b), Augstyamuni (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995), Nagni (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Sankri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : Oriental Magpie Robin is a common and tame bird. It is terrestrial, hopping along the ground with cocked tail. The male sings loud melodic notes from the top of a perch during breeding season. It is called the *Dhayal* in many parts of India, was once common in the Indian songbird trade. When a specimen reached Linnaeus it was apparently labeled *Dial* and thinking this had something to do with a sun-dial, he gave it the scientific name of 'solaris' ('saularis' in error).

464(1665-1668) *Copsychus malabaricus*
(Scopoli, 1786)

White-rumped Shama

1786. *Muscicapa malabarica* Scopoli, *Del. Flor. et Faun. Insubr.* 2 : 96 (Mahe, Malabar).

1924. Baker, *FBI* No. 563 (part), 2 : 118.

Diagnostics : Size : Bulbul, with a long tail; c. 25 cm. Also known as 'White-rumped Shama Thrush' or simply 'Sharma Thrush' has white rump and uppertail-coverts; long, graduated tail with white outer rectrices; and black bill and pink feet. The tail is frequently raised.

Male : Glossy blue-black upperparts (head, breast, mantle and wings) with remaining underparts rufous-orange.

Female : Duller, brownish grey upperparts (not black as in male) and pale orange underparts, but has shorter, squatter tail with white outer rectrices (more conspicuous in flight).

Juvenile : Like adult female, but has orange-buff spotting on dark brown head and mantle; orange-buff throat and breast with fine blackish scaling.

Habitat : <900. Bamboo and tangled undergrowth is moist evergreen forest.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972a), [Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

465(1717-1721) *Saxicoloides fulicata*
(Linnaeus, 1776)

Indian Robin

1790. *Sylvia cambaiensis* Latham, *Index Orn.* 2 : 554 (Guzerat, India).

1936. *Saxicoloides fulicata munda* Van Tyne & Koelz, *Occ. Papers Mus. Zool. Univ. Michigan*, No. 334 : 5 (Bhadwar, Kangra Dist., Punjab, British India).

1939. *Saxicoloides fulicata lucknowensis* Koelz, *Proc. Biol. Soc. Washington* 52 : 66 (Lucknow, U.P.).

1924. Baker, *FBI* No. 557 (part), 2 : 111.

Collection records : Uttarakhand : Almora : Kathpuria, 2♂, 20.xii.1968, coll. P. K. Bose. Dehra Dun : Sahastradhara, 1♀, 25.vii.1963, 6.ii.1964, 6.viii.1964, and 5.xi.1964, 2♂, 6.viii.1963 and 30.vii.1964, 1♀, 13.viii.1975, coll. R. K. Bhatnagar; 2 exs., 28.v.1968, 1 ex., 24.x.1970, coll. NRS/ZSI Survey Party; Rishikesh, 1 ex., 24.viii.1968, coll. P. K. Bose; Rovers Cave, 1 ex., 14.x.1971, coll. P. K. Bose; 37-Chakrata road, 1♀, 16.ix.1972, coll. D. N. Basu; 1♀, 15.x.1974, coll. Surender Singh; 1♀, 20.xi.1974, coll. S. K. Serin. Naini Tal : Kathgodam, 1 ex., 5.xii.1968, coll. P. K. Bose. Uttarkashi : Purola, 1♀, 24.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow; c. 16 cm. Also known as 'Black Robin' or 'Indian Chat' has a

graduated black tail (often held raised) and chestnut vent and undertail-coverts (apparent in all plumages).

Male : Dark greyish brown upperparts (crown, back and wings) with a conspicuous white shoulder-patch; and glossy black underparts.

Female : Greyish-brown upperparts (lacks white shoulder-patch); purer grey underparts; and chestnut vent and undertail-coverts.

Juvenile : Darker brown; lacks the characteristic spotting and scaling of juvenile chats, but throat is lightly mottled.

Races : Five races are recognized from the subcontinent, of which the only two, viz., *S. f. cambaiensis* (pale brown with more greyish) and *S. f. erythrura* (darker brown) of N subcontinent have brown upperparts, while the remaining three have either blue-black or black.

Habitat : <1000 m (1800 m). Dry scrubby areas. Usually on the ground or low bushes.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972b), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Khaddar, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal : Lalkuaon (ZSI Survey 2005). Pauri (Tak 1995). Tehri (Tak 1995), Nagni (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : This is a common resident and tame bird in Pakistan, India and Sri Lanka. It is terrestrial, hopping along the ground with cocked tail. The male sings a few melodic notes during courtship. It nests in a hole in wall, tree-stump or bank and only the female incubates.

466(1669) *Phoenicurus erythronotus*
(Eversmann, 1841)

Eversmann's Redstart

1841. *Sylvia erythronota* Eversmann, *Add. Pallas Zoogr. Rosso-Asiat.* 2 : 11 (altai).

1924. Baker, *FBI* No. 529, 2 : 73.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Rufous-backed Redstart', *P. erythronota* is larger than other redstarts except 'White-winged'; may appear rather shrike-like with slightly raised tail (flicks as well); and with flycatcher-like hang down wings.

Male (breeding) : Grey crown and nape; black mask; rufous-orange mantle, throat, breast and flanks; and blackish scapulars, blackish wings with white patch on coverts and white primary coverts. In non-breeding and first-winter plumage the black mask and the white on wing heavily obscured by pale fringes.

Female : With double buffish wing-bar.

Habitat : <2100-2800 m. Arid country.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

467(1670) *Phoenicurus caeruleocephalus*
(Vigors, 1831)

Blue-capped Redstart

1831. *Phoenicura caeruleocephala* Vigors, *Proc. Zool. Soc. London* : 35 (Himalayas = Simla-Almora area *vide* Ticehurst & Whistler, 1924, *Ibis* : 411).

1924. Baker, *FBI* No. 553, 2 : 104.

Diagnostics : Size : Sparrow ±; c. 15 cm. Also known as 'Blue-headed Redstart', its adult male (worn) differs from other redstarts in lacking any rufous in plumage.

Adult male (breeding) : Blue-grey cap (crown and nape), remaining upperparts including tail black with a large white wing-patch; black throat and breast, remaining underparts white. *Non-breeding* (winter) and first-winter male have black colour of upperparts masked by pale brown fringes to feathers.

Female : Brown upperparts, with prominent double wing-bar, and chestnut rump.

Juvenile : With dark brown barring on upperparts and underparts; juvenile male with broad white edges to tertials.

Habitat : S (1400 m) 2700-3600 m (3900 m). W (foothills) 1200-2600 m (3500 m). Steel rocky hillsides, junipers, open pine forest, olive groves and gardens.

Distribution : Uttarakhand : Chamoli : Dunagiri Ghad (Lavkumar 1956b), NDNP (Tak & Kumar 1987), Belta Kharak (Sankaran 1993, 1994), (Tak 1995), Belta, Dibrugetha, Sarsopatal (Tak 1997). Dehra Dun: Chakrata and Kalsi (Osmaston 1935), New Forest (George 1957, Mohan 1996), New Forest, [Dhanaulty] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

468(1671-1672) *Phoenicurus ochruros*
(Gmelin, 1774)
Black Redstart

1818. *Oenanthe rufiventris* Vieillot, *Nouv. Dict. d'Hist., nouv. ed.*, 21 : 431 (S. Africa *errore* = *Gyanise*, Tibet *vide* Baker, 1921, Hand-list : 85).

1924. Baker, *FBI* No. 532, 2 : 77.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm.

Adult male (breeding) : Black or dark grey upperparts, with brown wings, and rufous rump and tail (central rectrices dark brown); black throat and breast, and remaining underparts rufous. **Non-breeding male** black parts fringed with grey.

Female : Dusky brown upperparts, with orange-buff wash to lower flanks and vent.

Juvenile : With diffuse dark scaling on upperparts and underparts, and fine buff greater-covert bar.

Races : *P. o. phoenicuroides* of W Himalayas has grey crown, nape and lower back where as these areas are much blacker in *P. o. rufiventris* of the C and E Himalayas.

Habitat : S (2100 m) 3000-4000 m (5200 m). W <1400. Stony open country, villages, opens woodland.

Distribution : Uttarakhand : Chamoli : Niti village (Osmaston 1921), Base Camp valley and

on moraine near Changbang glacier (Reed 1979), NDNP (Tak & Kumar 1987), Sarsonpatal (Sankaran 1993, 1994), (Tak 1995), Sarsopatal, Changbang glacier (Tak 1997). Dehra Dun : Chakrata (Osmaston 1935), (Wright 1957), New Forest (George 1957, Mohan 1996), Asan Barrage, Kalsi, Khaddar, Karva Pani, New Forest (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Tehri : Bheling valley (Searight 1926), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident as well as widespread winter visitor. Schedule IV (BNHS 2002).

469(1674) *Phoenicurus hodgsoni* (Moore, 1854)
Hodgson's Redstart

1854. *Ruticilla Hodgsoni* Moore, in Horsfield & Moore, *Cat. Bds. Mus. E.I. Co.* 1 : 303 (Bootan).

1924. Baker, *FBI* No. 530, 2 : 74.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm.

Male (both breeding and non-breeding) : Has grey upperparts, white wing-patch, and black throat and breast. It is distinguished from male 'Black Start' by its uniform grey upperparts (crown, nape and mantle), and white patch on wing.

Female and first-winter male : Have dusky brown upperparts and grey underparts. Both are similar to female 'Black Redstart', but have whitish area on belly. It is distinguished from female 'Blue-capped Redstart' by rufous-orange tail concolorous with rump/uppertail-coverts; and from 'Blue-fronted' by the lack of black terminal band to tail.

Habitat : Foothills-2800 m. Dry riverbeds in forest and cultivation; scrub, grassland and parkland.

Distribution : Uttarakhand : Dehra Dun : New Forest (Singh 1999), Khaddar (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

Remarks : There are two main groups : the true redstarts of the genus *Phoenicurus* and the more aberrant and not too closely related White-capped, Plumbeous, Luzon, and White-bellied Redstarts. These are insectivorous ground feeding birds, many of which have the red tail ("start" is the modern English reflex of Middle English *stert*, Old English *steort* = tail of an animal), which gives the group its name. Most northern species are strong migrants.

470(1676) *Phoenicurus schisticeps* (Gray, 1846)
White-throated Redstart

1846. *Ruticilla schisticeps* Gray, *Cat. Mamm. Bds. Nepal* : 69 153 (Nepal).

1924. Baker, *FBI* No. 527, 2 : 70.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. Both sexes are identified by white throat, white wing-patch on wing-coverts and edges to tertials, rufous rump and dark tail (with chestnut base to outer rectrices).

Male : Dull indigo blue crown, with brighter forehead; black chin, sides of head and back; and rufous scapulars, rump, breast and belly.

Female : With similar plumage pattern, but has grey-brown head and mantle; white throat; and paler grey-brown breast becoming buffish on belly.

Juvenile : With similar plumage pattern, but has profuse buff spotting and dark scaling.

Habitat : S 2700-4900 m. W 1400-4200 m. Open forest and scrub, often along streams.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : Resident, subject to some altitudinal movements, and winter visitor; mainly Himalayas from W Nepal east to Bhutan. India : locally fairly common; summers 2700-4570 m, winters 1400-4200 m (Grimmett *et al.* 1998).

471(1678) *Phoenicurus erythrogaster*
(Guldenstadt, 1775)
Guldenstadt's Redstart

1850. *Ruticilla grandis* Gould, *Proc. Zool. Soc. London* : 112 (Afghanistan and Thibet).

1854. *Ruticilla Vagorsi* Moore, in Horsfield & Moore, *Cat. Bds. Mus. E.I. Co. 1* : 304 (Bootan).

1924. Baker, *FBI* No. 533, 2 : 78.

Diagnostics : Size : Sparrow +; c. 18 cm. Also known as 'White-winged Redstart' is a large-sized, thickset, resident redstart of Himalayas.

Male : White cap (forehead, crown and nape) and large wing-patch; remaining upperparts black, except chestnut lower rump and tail; and black throat and breast, remaining underparts chestnut.

Female : Pale brown upperparts with a whitish eye-ring and chestnut lower rump and tail, but without white wing-patch; and buffish underparts.

Juvenile : Brownish with diffuse buff spotting and brown scaling on head and body; male with white wing-patch, and blacker coverts and flight feathers; and chestnut tail.

Habitat : S (3600 m) 3900-4800 m (5200 m). W (900 m) 1500-4800 m. *Hippophae* bushes, riverbeds, dry scrubby alpine habitats.

Distribution : Uttarakhand : Chamoli : below Bamlas La, Dhauri valley (Lavkumar 1956b), (Tak 1995), Changbang moraine (Tak 1997). Uttarkashi : Govind NP: Saruka Tal (Tak *et al.* 2004).

Status : Sparse local resident undertakes altitudinal movement. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

472(1675) *Phoenicurus frontalis* (Vigors, 1832)
Blue-fronted Redstart

1832. *Phoenicurus frontalis* Vigors, *Proc. Zool. Soc. London* : 172 (Himalayas = Garhwal, *vide* Baker,

1924 (April), *FBI* 2 : 69).

1954. *Phoenicurus frontalis perates* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 13 (Karong, Manipur).

1924. Baker, *FBI* No. 526, 2 : 69.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm.

Male (summer) : Bright blue forehead and supercilium; dark blue crown and back; brown wings; rufous rump; rufous tail with black central rectrices, outer edges of outer rectrices, and a broad terminal band; dark blue throat; and chestnut-orange remaining underparts. In winter, blue and orange of body duller due to extensive rufous-brown fringes and tertial edged with buff.

Female : Olive-brown upperparts darker than most redstarts and underparts, with orange wash to centre of belly and vent; pale eye-ring; and male-like tail pattern.

Juvenile : Is also dimorphic (like its respective sex); adult-like tail pattern; spotting on head and body; whitish or buffish panel on wing; and unspotted belly and vent.

Habitat : S (2000 m) 3000-4500 m (5300 m). W (1000 m) 1500-2400 m (2700 m). Alpine scrub, gardens, opens forest.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Niti village (Osmaston 1921), Alakananda and Dhauli valleys, Badrinath, Bampa (Lavkumar 1956b), near the Base Camp (Reed 1979), NDNP (Tak & Kumar 1987), (Tak 1995), Dibrugheta to Sarsonpatal (Sankaran 1993, 1994, Tak 1997), Sarsopatal, Devstan bc, Pataalkhan, Bhojgara, Ramni, Betartoli, Deodi, Dibrugheta (Sathyakumar 2003), enroute Tunganath (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a), Chakrata (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Lamprey (1954). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident undertakes altitudinal movement. Schedule IV (BNHS 2002).

473(1716) *Chaimarrornis leucocephalus*
(Vigors, 1831)

White-capped Redstart

1831. *Phoenicurus leucocephala* Vigors, *Proc. Zool. Soc.*
London : 35 (Himalaya = Simla-Almora area).

1924. Baker, *FBI* No. 534, 2 : 79.

Collection records : Uttarakhand : Almora : Ranikhet, Dhobighat, 1 ex., 16.xii.1968, coll. P. K. Bose. Dehra Dun : Rajpur : Kuthal Gaon, 1 ex., 6.xi.1969, coll. P. K. Bose; Kalsi, 1 ex., 15.xii.1969, coll. P. K. Bose; Bhanaiaiwala, 1 ex., 30.xii.1972, coll. Raj Tilak.

Diagnostics : Size : Bulbul; c. 19 cm. Also known as 'White-capped Water Redstart' or

'River Chat' or 'White-capped River Chat' or ('*Thamnolaea leucocephala*') is an striking chat with white cap contrasting with blue-black remaining head, mantle, and breast; rufous belly and rump; and rufous tail with broad black terminal band. Could be mistaken for white-winged Redstart (White-winged Redstart) but lacks white wing-patch.

Habitat : S 1800-5300 m. W Foothills-1500 m (2600 m). Usually on rocky in mountain streams and rivers.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931, ZSI Survey 2004), (Tak 1995), Kwarab, Kosi, Mansi (ZSI Survey 2004). Bageshwar : Dwali – Pindari zero point (Tak 1997), around Bageshwar, Bharari, Kapkot, Baijnath, Garur, Narainbagrh (ZSI Survey 2004). Chamoli : Badrinath and Amrit Ganga valley (Lavkumar 1956b), Nanda Devi and the Rishiganga basin (Dang, Hari 1963), on all running water in the Sanctuary (Reed 1979), NDNP (Tak & Kumar 1987), Reni to Sarsonpatal (Sankaran 1993, 1994), (Tak 1995), Reni-Sarsopatal, Surraithota, Tolma, Malari (Tak 1997), Sarsopatal, Devstan bc, Pataalkhan, Bhojgara, Ramni, Betartoli, Deodi, Dibrugheta (Sathyakumar 2003), Mandal, Ghat (ZSI Survey 2004), Tunganath peak (Singh 2005a). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Asan Barrage, Kalsi, Khaddar, New Forest, Sulphur Springs, Tapkeshwar, [Dholkhand, Maldeota] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Lilam – Milam (Tak 1997), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993), Gandhari, Shivpuri, Gauri Kund (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006); Tehri : Lamprey (1954), Nagni (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Taluka, Istragad (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident undertakes altitudinal movement. Schedule IV (BNHS 2002).

474(1679) *Rhyacornis fuliginosus* (Vigors, 1831)
Plumbeous Redstart

1831. *Phoenicurus fuliginosus* Vigors, *Proc. Zool. Soc. London* : 35 (Himalayas, restricted to Simla-Almora area by Ticehurst & Whistler, 1924, *Ibis* : 471).

1924. Baker, *FBI* No. 535, 2 : 81.

Collection records : Uttarakhand : Uttarkashi : Rana, 1 ♂, 6.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow -; c. 12 cm. Also known as 'Plumbeous Water Redstart' is a small stocky redstart which constantly flick opens its short, broad tail while moving it up and down.

Male : Almost entirely dark slaty-blue, with rufous-chestnut uppertail-coverts and tail. Males often breed in female-like plumage.

Female and first-year male : Very different, with dark grey-brown upperparts, with two rows of white spots on wings; white base of tail; partly white rectrices, tipped broadly and edged with brown; and pale grey underparts with white spotting and scaling.

Juvenile : Like female, but with buff spotting on browner upperparts, buff tips to wing-coverts, and buffish underparts with black scaling becoming whiter on lower belly.

Habitat : S (600 m) 1200-4400 m. W 1000-1800 m (2400 m). Mountain streams and rivers.

Distribution : Uttarakhand : Almora (Tak 1995), Kwarab, Gagas, Chanthariya, Mansi, Someshwar (ZSI Survey 2004). Bageshwar : Khati, Dhakuri (Tak 1997), around Bageshwar, Bharari, Baijnath, Garur (ZSI Survey 2004). Chamoli : Amrit Ganga valley (Lavkumar 1956b), Nanda Devi and the Rishiganga basin (Dang, Hari 1963), near North Rishi Glacier (Reed 1979), NDNP (Tak & Kumar 1987), Kalikona (Sankaran 1993, 1994), (Tak 1995), Reni, Lata, Belta, Dibrugeta, Deodi, Gufa camp, Tala bc, north Rishi glacier moraine, Wan (Tak 1997), Vishnuprayag, Nandprayag, Ghat (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun : Yamuna and Tons (Osmaston 1935), (Wright 1957, Tak 1995), New Forest (George 1957, 1962a,

Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Asan Barrage, Kalsi, Khaddar, New Forest, Sulphur Springs, Tapkeshwar, [Dholkhand, Maldeota] (Singh 2000); Haridwar : Bhimgoda (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Bugdiyar, Milam (Tak 1997), District survey- 2005, Dhauli river basin- 2004, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Gaurikund, Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993), Shivpuri (ZSI Survey 2004). Tehri : Lamprey (1954), Nagni, Jardar (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Sankri, Taluka, Himri, Dhaula (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b), Kamad (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident undertakes altitudinal movement. Schedule IV (BNHS 2002).

475(1680) *Hodgsonius phaenicuroides* (Gray, 1846)
White-bellied Redstart

1846. *Bradypterus phaenicuroides* [sic] Gray, *Cat. Mamms. Bds. Nepal* : 70, 153 (Nepal).

1924. Baker, *FBI* No. 491, 2 : 21.

Diagnostics : Size : Bulbul; c. 19 cm. Also known as 'Hodgson's Shortwing' is slimmer redstart with short and dropped (jump down) wings; and much longer, graduated tail which is frequently acutely raised and lightly fanned.

Male : Almost entirely slate-blue plumage with two small white spots on alula (the small 'bastard' wing on the leading edge of the wing used to control stall tendency at very low speed); white belly and vent; and rufous sides to the base of bluish-black tail.

Female : Distinguished from the similar female Blue-fronted Robin by slender bill; paler underparts; creamy white throat and centre of belly; and slightly rufous wash to uppertail.

Juvenile : Like female, but with chestnut spotting on upperparts and dark scaling on underparts.

Habitat : S 2400-4400 m. Juniper, birch and rhododendron at treeline. W <1500 m. Dense undergrowth and forest edge.

Distribution : Uttarakhand : Chamoli : Dhauli valley close to Dunagiri (Osmaston 1921), Alakananda and Dhauli valleys (Lavkumar 1956b), NDNP (Tak & Kumar 1987), (Tak 1995), Dibrugheta (Tak 1997). Dehra Dun (Osmaston 1935, Singh 2000). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

476(1681) *Myiomela leucura* (Hodgson, 1845)
White-tailed Robin

1845. *M. (uscisylvia) leucura* Hodgson, *Proc. Zool. Soc. London* : 27 (Nepal).

1952. *Notodela leucura rhipidura* Koelz, *Jour. Zool. Soc. India* : 4 : 41 (Tekhubama, Naga Hills).

1924. Baker, *FBI* No. 554, 2 : 106.

Diagnostics : Size : Bulbul -; c. 17 cm. Also known as 'White-tailed Blue Robin' ('*Cinclidium leucurum*') has long, broad tail which is frequently curved in and spread. The conspicuous white patches on tail (only visible when tail spread) of both sexes diagnostic; which often unveil bird as it perches in dense cover.

Male : Almost entirely blue-black, with glossy blue forehead, supercilium and bend of wing; white patch on each side of neck (often concealed); and two oval-shaped white patches on basal half (prominent only in flight) of the blackish tail.

Female : Olive-brown, with paler underparts; whitish lower throat; and white patches on tail, as in male.

Juvenile : With orange-buff spotting on upperparts as well as underparts, and distinctive tail pattern.

Habitat : S 1200-2700 m. W <1500 m. Undergrowth in broadleaved evergreen forest; often in gullies.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

Remarks : Altitudinal migrant; Himalayas from Uttarakhand east to Arunachal Pradesh. India: locally fairly common; breeds 1200-2700 m; winters from 1500 down to foothills and locally in adjacent plains (Grimmett *et al.* 1998).

477(1683) *Grandala coelicolor* Hodgson, 1843
Grandala

1843. *Gr.(andala) coelicolor* [sci] Hodgson, *Jour. Asiat. Soc. Bengal* 12 : 147 (Nepal).

1924. Baker, *FBI* No. 541, 2 : 89.

Diagnostics : Size : Bulbul +; c. 23 cm. Also known as 'Hodgson's Grandala' is a slim, long-winged, starling-like chat. It is a strong, streamlined flier, usually in large flocks. On the ground, it flicks open wings and tail.

Male : Entirely bright purple-blue with a silky sheen, except for lores, wings and tail which are black.

Female and immature male : Dark brown, with blue wash to rump and uppertail-coverts; white patches on wing, with white tips to tertials and coverts; and streaked head and underparts.

Juvenile : Like female, but darker brown with more bold streaking; and lack blue on rump and uppertail-coverts.

Habitat : S (3900 m) 4300-5400m. Rocky alpine meadows, scree slopes and hillsides above scrublone. W (2200 m) 3000-4300 m. Rocky hillsides and ridges.

Distribution : Uttarakhand : Chamoli : Sarsonpatal (Sankaran 1993, 1994, Tak 1997). Dehra Dun (Osmaston 1935). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Harke Dun (Osmaston 1935). CTR (Lamba undated).

Status : Sparse local resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

478(1684) *Enicurus scouleri* Vigors, 1832
Little Forktail

1832. *Enicurus Scouleri* Vigors, *Proc. Zool. Soc. London* : 174 (Himalayas = Simla).

1924. Baker, *FBI* No. 525, 2 : 65.

Diagnostics : Size : Sparrow -; c. 22 cm. Sexes alike. A small and more rounded Forktail with short tail.

Adult : White forehead; black neck and upperback; a conspicuous white 'triangular' bar across wing; white lower back and base of tail; a black band across rump; slightly forked blackish brown tail with white outer rectrices; black throat; white remaining underparts smeared with black on breast and flanks; and fleshy white legs and feet.

Juvenile : Like adult, but with brownish-black upperpart; white underparts with dark scaling on throat and breast; and lacks white forehead.

Habitat : S 450-400 m (4950 m). W <2700 m (3600 m). Mountain streams and rivers.

Distribution : Uttarakhand : Bageshwar : Dhakuri, Dwali (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : near Deodi in the Sanctuary (Reed 1979), NDNP (Tak & Kumar 1987), Dibrugheta (Sankaran 1993, 1994), (Tak 1995), Dibrugheta, Deodi (Tak 1997), Pipalkoti (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935), Tapkeshwar (Singh 2000). Pauri (Tak 1995). Pithoragarh : Bugdiyar (Tak 1997), District survey- 2005, Dhaul river basin- 2004, Gori river basin- 2002, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Mandakini (Lavkumar 1956b), Shivpuri, Gauri Kund (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Nagni (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Jakhol (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident undertakes altitudinal movement. Schedule IV (BNHS 2002).

479(1685) *Enicurus immaculatus* (Hodgson, 1836)
Black-backed Forktail

1836. *Motacilla (Enicurus) Immaculatus* Hodgson, *Asiat. Res.* 19 : 190 (Nepal).

1924. Baker, *FBI* No. 520, 2 : 61.

Diagnostics : Size : Bulbul, with a long tail; c. 25 cm. It is a bird with general effect of a pied wagtail.

Adult : Resembles with Slaty-backed, white forehead and supercilium; black rest of head and back; white rump continued as a white band across black wings; white tipped secondaries; very long, deeply forked graduated tail, with white outer rectrices, inner ones black with white tips emphasizing the graduated aspect; black throat; and white remaining underparts.

Juvenile : Like adult, but with shorter tail, lacks white forehead and supercilium, and has brownish-black upperparts and dark scaling on white breast.

Habitat : <1450 m. Hill streams through moist forest.

Distribution : Uttarakhand : Chamoli : Mandal (Singh 2005a). Dehra Dun (Tak 1995). Pithoragarh : Dhaul river basin- 2004, Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident undertakes altitudinal movement. Schedule IV (BNHS 2002). BRS (09) *i.e.* Indo-Chinese Tropical Moist Forest (Jhunjhunwala *et al.* 2001).

480(1686) *Enicurus schistaceus* (Hodgson, 1836)
Slaty-backed Forktail

1836. *Motacilla (Enicurus) schistaceus* Hodgson, *Asiat. Res.* 19 : 189 (Nepal).

1924. Baker, *FBI* No. 519, 2 : 59.

Diagnostics : Size : Bulbul, with a long tail; c. 25 cm. Sexes alike.

Adult : Resembles Black-backed, but differs by slate-grey (*vs* Black) crown and mantle, with less white on forehead and supercilium than Black-backed; black wings with a broad white band across, a smaller white patch on primaries and white tipped tertials; white rump; tail as of *immaculatus*; black chin, throat; and white remaining underparts with slaty on sides of breast.

Juvenile : With brown upperparts; dark scaling on breast; shorter tail; and lacks white forehead and supercilium.

Habitat : <1700 m. Rocky torrents and lake margins.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). Pauri (Tak 1995). Pithoragarh : Dhaul river

basin- 2004, Goriganga valley- 1994 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

481(1688-1689) *Enicurus maculatus* Vigors, 1831
Spotted Forktail

1831. *Enicurus maculatus* Vigors, *Proc. Zool. Soc. London* : 9 (Himalayas = Simla).

1924. Baker, *FBI* No. 517, 2 : 57.

Collection records : Uttarakhand : Dehra Dun : Maldeota, 1 ex., 25.xi.1968, coll. P. K. Bose; Sahastradhara, 1 ex., 13.xii.1976, coll. M. L. Narang. Pauri : Narkota, 1 ♀, 29.vi.1969, coll. P. K. Bose. Uttarkashi : Nand Gaon, 1 ♂?, 3.vi.1973, coll. Raj Tilak; Barkot, 1 ♂, 29.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Bulbul, with a long tail; c. 25 cm. Sexes alike.

Adult : Unmistakable, easily distinguished from other forktails by white spotting on black mantle (forming white collar towards nape); conspicuous white forehead; and black of throat extending to breast. Its white spotted mantle separates it from White-crowned Forktail.

Juvenile : Like adult, with brownish-black upperparts; paler brownish-black throat and breast with white streaking; and lacks white forehead.

Races : Two races are recognized: The nominate race of W and C Himalayas is larger, with more and larger white spots on mantle, and has white scaling on black breast as compared to the *E. m. guttatus* of the E Himalayas and NE India.

Habitat : S (600 m) 1200-3000 m (3600 m). Smaller forest watercourses. W 600-2300 m. Also larger rivers.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Joshimath, Belta, Deodi and Dibrugheta (Reed 1979), above Joshimath, Auli (Sankaran 1993, 1994), (Tak 1995),

Reni, Belta, Dibrugheta, Deodi (Tak 1997), Gwaldam (ZSI Survey 2004), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935), Kalsi, [Kampti Falls] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Lilam, Bugdiyar (Tak 1997), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : The proposed Tehri Dam site (Tak unpublished). Uttarkashi (Tak 1995), Govind NP : Sankri (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002).

482(1690) *Cochoa purpurea* Hodgson, 1836
Purple Cochoa

1836. *Cochoa purpurea* Hodgson, *Jour. Asiat. Soc. Bengal* 5 : 359 (Nepal).

1924. Baker, *FBI* No. 617, 2 : 184.

Diagnostics : Size : Myna +; c. 28 cm. An unobtrusive, slow-moving and stocky, arboreal thrush.

Male : Largely dull brownish-purple with lilac-blue crown; black mask; lilac paneling on wing; lilac tail with black terminal band; and uniform brownish purple underparts.

Female : Resembles male, but with rusty-brown mantle, wing-coverts and base of secondaries and tertials; brownish-orange underparts.

Juvenile : With bold orange-buff spotting and scaling, but has the general wing and tail pattern of adult.

Habitat : 1000-3000 m. Dense damp evergreen forest; dense undergrowth in ravines.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

Remarks : The cochoas are medium-sized insectivorous and molluscivorous birds in the genus *Cochoa*. They were formerly in the thrush family Turdinae, but are more often now treated as part of the Old World flycatcher family Muscicapidae.

483(1691) *Cochoa viridis* Hodgson, 1836
Green Cochoa

1836. *Co. (choa) Viridis* Hodgson, *Jour. Asiat. Soc. Bengal* 5 : 359-60 (Nepal).

1924. *Cochoa rothschildi* Baker, *Fauna Brit. India, Bds. 2* : 186 (Sikkim).

1924. Baker, *FBI* Nos. 618 and 619, 2 : 185, 186.

Diagnostics : Size : Myna +; c. 28 cm. Its habits and behaviour are like Purple Cochoa, but mainly green with bluish head and tail with black terminal band.

Male : Sky-blue crown to nape; black lores and supercilium; dark blue ear-coverts; deep green back and wings obsoletely barred with black; deep green rump and uppertail-coverts; black wings with a broad, pale blue band, black tips of coverts forming a narrow black bar across the pale blue, and small black patch; blue tail with black outer tail feathers (rectrices), terminal band and under surface; deep green underparts washed with blue on throat and belly.

Female : Like male, but greater coverts and secondaries marked with yellow brown instead of blue.

Juvenile : With bold orange-buff spotting and scaling; wings and tail like respective adult.

Habitat : (300 m) 700-1500 m (3300? m). Undergrowth in dense evergreen forest, usually on steep hillsides.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) i.e. Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

484(1694) *Saxicola insignis* Gray, 1846
Hodgson's Bushchat

1846. *Saxicola insignis* Gray, *Cat. Mamms. Bds. Nepal* : 71, 153 (Nepal).

1924. Baker, *FBI* No. 500, 2 : 33.

Diagnostics : Size : Sparrow +; c. 17 cm. Also known as 'White-throated Bushchat', is distinguished from the similarly looking 'Common Stonechat' and male 'Indian Bush Chat' by its larger size and the greater amount of white in the wing along with longer tail.

Male : Black head with narrow fulvous fringes; black lores and ear-coverts; black back with broad fulvous edges; a large white wing-patch; white uppertail-coverts; blackish tail with narrow rufous edges; white throat extending to form almost complete white collar.

Female : Brown head with a fulvous faint supercilium; two broad fulvous wing-bars; and pale rusty fulvous underparts, darker on throat and breast.

Habitat : Plains. Grassland, reeds, tamarisks, canefields.

Distribution : Uttarakhand : Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993). CTR (internet list).

Status : Vagrant. Sparse winter visitor. Vulnerable (IUCN 2007). Schedule IV (BNHS 2002). BRS (05) i.e. Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

Remarks : It is an Old World flycatcher in the genus *Saxicola*, which breeds in the alpine or subalpine meadows and scrub in the mountains of Mongolia and adjacent parts of Russia; winters in the terai areas of Nepal and northern India, in wet and dry grassland, reeds and tamarisks along riverbeds, and also in sugarcane fields. The major threat appears to be the rapid loss of grasslands in its wintering area. In winter, it occurs in the following protected areas: Kaziranga, Corbett and Manas in India, and Lumbini Crane Sanctuary, Royal Chivan National Park and Sukla Phanta Wildlife Reserve in Nepal. The current population is estimated at between 2,500 and 10,000.

485(1695-1698) *Saxicola torquata* (Linnaeus, 1766)
Common Stonechat

1773. *Muscicapa maura* Pallas, *Reise Russ. Reichs* 2 : 428, 708 (Karassun, Ishim River, W. Siberia).

1924. Baker, *FBI* No. 495 (part), 2 : 28.

Collection records : Uttarakhand : Dehra Dun : Badripur, 1 ♀, 12.i.1976, coll. M. L. Narang.

Diagnostics : Size : Sparrow -; c. 13 cm. Also known as 'Stonechat' or 'Collared Bush Chat' or 'Siberian Stonechat' or '*Saxicola maura*' (subcontinent birds sometimes treated as Asian Stonechat) is distinguished from 'White-tailed Stonechat' by blackish tail.

Male (summer) : Black crown, ear-coverts and throat contrasting with a large white patch on sides of neck and breast (the 'collar'); blackish mantle with rufous-buff edges; large white wing-patch (formed by the white inner coverts); white uppertail-coverts contrasting with dark tail. In summer, due to strongly looking pied plumage (black and white) sometimes deceptively look like Pied Bush Chat.

Female : Rufous-brown upperparts with dark brown streaks; a white wing-patch; pale rufous rump; pale fulvous underparts with rufous on breast; and blackish brown tail.

Juvenile : Brownish-black upperparts streaked and spotted with buff; and buff underparts.

Habitat : S Dry fields with bushes. W <2200 m. Scrub, grassland, cultivation, reeds.

Distribution : Uttarakhand : Almora : Mansi, Someshwar (ZSI Survey 2004). Bageshwar : around Bageshwar, Garur (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : Nanda Devi and the Rishiganga basin (Dang, Hari 1963), NDNP (Tak & Kumar 1987), around Joshimath (Sankaran 1993, 1994), (Tak 1995), Reni, Surathota (Tak 1997), Narainbagh (ZSI Survey 2004), Mandal village (Singh 2005a). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Khaddar, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930). Pauri (Tak 1995). Pithoragarh : District survey-2005, Panchchuli expedition- 1998, Kali river basin-1989 (Tak & Sati 2006). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Rudrapur : Chopta and Duggalbitta (Bannerjee 1993), Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

486(1699) *Saxicola leucura* (Blyth, 1847)
White-tailed Stonechat

1847. *Pranticola leucura* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 474 (Upper Scinde).

1924. Baker, *FBI* No. 498, 2 : 31.

Diagnostics : Size : Sparrow -; c. 13 cm. Also known as 'White-tailed Bushchat' is very similar to Common Stonechat.

Male : Distinguished from male Common Stonechat by black head and upperparts; restricted rusty-orange on breast (not extending to belly); and largely white inner webs to tail feathers (shows much white in flight). In fresh plumage the black of crown and mantle largely covered by buff fringes.

Female : Has greyer upperparts than Common, with diffuse streaking and paler grey-brown tail.

Habitat : Plains (700+ m). Tall grass, reeds and tamriska subject to seasonal flooding, usually along rivers.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (12) *i.e.* Indo-Gangetic Plains (Jhunjhunwala *et al.* 2001).

487(1700-1703) *Saxicola caprata* (Linnaeus, 1766)
Pied Bushchat

1832. *Saxicola bicolor* Sykes, *Proc. Zool. Soc. London* : 92 (Dukhun).

1939. *Saxicola caprata rupchandi* Koelz, *Proc. Biol. Soc. Washington* 52 : 65 (Londa, Bombay Presidency).

1924. Baker, *FBI* No. 494, 2 : 26.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ex., 15.iv.1965, coll. R. K. Bhatnagar; 37-Chakrata road, 1 ♂, 2.v.1975, coll. M. L. Narang; 1 ♂, 20.v.1975, coll. P. K. Bose; 1 ♂, 26.iii.1976, coll. D. N. Basu.

Diagnostics : Size : Sparrow -; c. 13 cm. Also known as 'Pied Stone-chat', though similar in shape to Common Stonechat, but is much darker.

Male : Jet black with a white wing-patch (often concealed, but conspicuous in flight, with white rump) and white uppertail-coverts; and black underparts with white belly and undertail-coverts. In winter the black feathers are fringed with brown.

Female : Dark brown upperparts and rufous-brown underparts, with pale throat, centre of belly and vent. Confusable with female White-tailed Stonechat, but is darker with rufous-orange rump and back tail.

Juvenile : Like female, but with buffish spotting on upperparts, and buffish underparts with dark scaling.

Races : The males of the race *S. c. bicolor* of N and NW subcontinent has white belly and lower breast (although extent of white is variable), which are black in the other three races of the region.

Habitat : <2500 m (in the south >900 m). Fields and grassland with scrub, tea gardens.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Joshimath (Lavkumar 1956b), (Tak 1995), Ghat, Narainbagrh (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Khaddar, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Sankri, Taluka, Saruka Tal, Dhaura, Istragad (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident as well as sparse summer visitor. Schedule IV (BNHS 2002).

488(1705) *Saxicola ferrea* Gray, 1846
Grey Bushchat

1846. *Saxicola ferrea* Gray, *Cat. Mamms. Bds. Nepal* : 71, 153 (Nepal).

1910. *Oreicola ferrea harigtoni* Harter, *Vog. pal. Fauna* 1 : 711 (Lien-kiang near Fu-tschau, China).

1924. Baker, *FBI* No. 502 and 503, 2 : 36, 38.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Dark-grey Bush Chat' is larger and longer-tailed than Common Stonechat with a general effect of pied (black and white).

Male : Broad white supercilium contrasting with black ear-coverts, almost black crown and mantle (mixed with some grey); dark ashy grey remaining upperparts with black streaks and a concealed white shoulder-patch (visible in flight); white throat, pale grey breast and flanks, and whitish belly; and black tail with whitish outer edges. In winter plumage (fresh), grey upperparts (with rufous-brown cast) with some dark streaking, and greyish breast-band.

Female : Rufous brown faintly streaked with darker brown; broad buff supercilium, contrasting with dark brown ear-coverts; rufous rump and sides to tail; whitish underparts, with brownish-buff breast and flanks.

Juvenile : Like female, but has rufous-buff spotting on upperparts, and buffish underparts with indistinct dark scaling; tail as in respective sex.

Habitat : S (1500 m) 1 800-3000 m (3350 m). Open scrubby slopes, forest edge, barberry, juniper. W <1200 m (2400 m). Cultivation, scrubby hillsides, second growth, grassland with bushes, tea gardens.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995); Bageshwar : Baijnath (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNP (Tak & Kumar 1987), around Joshimath (Sankaran 1993, 1994), (Tak 1995), Reni, Lata (Tak 1997), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), (Wright 1957), New Forest (George 1957, Mohan 1996), Chakrata, New Forest, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee

1993), Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002).

489(1712) *Oenanthe picata* (Blyth, 1847)
Variable Wheatear

1847. *Saxicola picata* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 131 (Scinde).

1849. *Saxicola opistholeuca* Strickland, in Jardine's *Contrib. Orn.* : 60 (Northern India = Punjab).

1865. *Saxicola capistrata* Gould, *Bds. Asia* 4, pl. 28 (Upper Provinces of Hindostan = Sind).

1924. Baker, *FBI* No. 506, 507 and 508, 2 : 42-4.

Diagnostics : Size : Sparrow +; c. 17 cm. Also known as 'Pied Chat' or 'Pied Wheatear', as its common English names suggest, is a black-and-white polymorphic chat; intermediates occur especially in females (cf. Paludan, 1959, pp. 205-13 in Ali and Ripley 1973, 9 : 50).

1. Black-bellied phase ('*opistholeuca*') :

Male : Entirely jet black except white undertail-coverts, base and sides of tail; central rectrices and terminal band of tail black.

Female : With black parts replaced by sooty black.

2. White-bellied phase ('*picata*') : [The most common within our limits]

Male : Similar to *opistholeuca*, but with white belly.

Female : Like male but black parts replaced by greyish brown; belly more buffish.

3. White-crowned phase ('*picata*') :

Male : Like *picata*, with white belly and black throat, but crown and nape white.

Female : Similar to male but black parts and crown earthy brown; belly more buffish.

N. B. The geographical dominance of the three types of females does not exactly correspond to the dominances of the three colour phases of the males (Paludan, p. 208 in Ali and Ripley 1973, 9 : 50).

Habitat : S (600 m) 1800-2400 m (3300 m). Barren hillsides, near villages. W Plains-1200 m (2700 m). Semi-desert, fields.

Distribution : Uttarakhand : Dehra Dun : Winter, not common, seen solitary frisking about the boulders of the dry river bed, and on a disused stone hut in the valley. Earliest seen : December 17th. Latest : February 12th (Wright 1957), New Forest (Singh 1999), Khaddar (Singh 2000, Singh 2006). CTR (internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : Its English name has nothing to do with wheat or ears, but is a bowdlerised form of white-arse, which refers to its prominent white rump. Most species are strongly sexually dimorphic; only the male has the striking plumage patterns characteristic of the genus, though the females share the black and white or red and white markings on their rumps or their long tails. Northern species are long-distant migrants, wintering in Africa/ south.

490(1715) *Oenanthe pleschanka* (Lepechin, 1770)
Pied Wheatear

1770. *Motacilla pleschanka* Lepechin, *Novi. Comm. Acad. Petrop.* 14 : 503, pl. 14, fig. 2 (Saratov, lower Volga).

1771. *Motacilla leucomela* Pallas, *Novi. Comm. Acad. Petrop.* 14 : 584, pl. 22, fig. 3 (Samara, Russia).

1924. Baker, *FBI* No. 509, 2 : 45.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Pleschanka's Pied Chat' is similar to Variable Wheatear, but slightly smaller with different and variable tail patterns. The tail and rump are white, with an inverted black 'T' (formed by the black terminal tail-band, blackish central rectrices extending about half the length of tail, and white outer rectrices).

Male (summer) : Black-and-white bird; the white crown tinged with grey and contrasting with black face and throat; black neck (all round) and wings; white rump and base of tail; black chin and throat; and white remaining underparts. In winter (non-breeding and first-winter), the black of mantle and throat is fringed with pale brown; and rufous-fawn remaining underparts.

Female (summer) : Grey-brown upperparts; greyish to black throat, some show orange-buff wash to breast; and told from female Variable by tail and less white on rump. In winter (non-breeding and first-winter), lacks black on face and throat; and separated from Variable by conspicuous fringes to body and wing feathers.

Habitat : 1500-3100 m. Barren stony slopes, wasteland.

Distribution : Uttarakhand : CTR (Khatri 2004).

Status : Residential status not known. Information not available in BNHS 2002.

491(1707) *Oenanthe xanthopyrma* (Hemprich & Ehrenberg, 1833)
Rufous-tailed Wheatear

1871. *Saxicola kingi* Hume, *Ibis* : 29 (Jodhpur).

1924. Baker, *FBI* No. 515, 2 : 53.

Diagnostics : Size : Sparrow +; c. 16 cm. Also known as 'Red-tailed Chat' or 'Red-tailed Wheatear' is the only wheatear with rufous rump and base of tail, which together with greyish underparts make it distinctive in flight.

Male : Pale grey-brown head and back, with an unclear pale supercilium, black lores, and warm brown ear-coverts; rufous-orange lower back, rump, and base of tail; rufous tail sides; black centre of tail with broad blackish brown terminal band; and whitish underparts tinged with pink.

Female : Like male, but with more sandy-brown upperparts; and lacks black lores.

Habitat : S >2100 m. Dry stony slopes especially near streams. W <3300 m. Open arid country, preferring base of rocky hillsides.

Distribution : Uttarakhand : RNP (Pandey *et al.* 1994).

Status : Residential status not known. Schedule IV (BNHS 2002).

492(1709-1710) *Oenanthe deserti*
(Temminck, 1825)
Desert Wheatear

1825. *Saxicola deserti* Temminck, *Pl. col.* (60), pl. 539, fig. 2 (Egypt).

1847. *Saxicola atrogularis* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 131 (Agra).

1924. Baker, *FBI* No. 513, 2 : 51.

Diagnostics : Size : Sparrow; c. 15 cm. The only wheatear has all-black tail contrasting with white rump, which is the best character, in both sexes at all ages.

Male (summer) : Sandy-brown upperparts, with distinct white superciliary stripe; black face and throat, the black extending down through sides of neck to shoulders; largely black wings; and white remaining underparts, with buff tinge on the breast. In winter (non-breeding and the first-winter) males have black of face and throat partly obscured by whitish fringes; and have broad white or buff fringes to coverts and tertials.

Female (summer) : Lacks black throat of male, though may show some black on ear-coverts and lower throat; remaining upperparts like male but greyer; and lighter brown wings and tail. In winter (non-breeding and the first-winter) females lack black on face and throat.

Habitat : S (3000 m) 3600-4600 m (5100 m). W >plains. Semi-desert, dry fallow and waste land.

Distribution : Uttarakhand : Dehra Dun : New Forest (Mohan 1993, 1996), (Singh 2000). CTR (Khatri 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

493(1706) *Oenanthe isabellina* (Temminck, 1829)
Isabelline Wheatear

1829. *Saxicola isabellina* Temminck, *Pl. Col.* (79), pl. 47, fig. 1 (Nubia, Africa).

1924. Baker, *FBI* No. 512, 2 : 49.

Diagnostics : Size : Sparrow +; c. 16 cm. Sexes alike. Also known as 'Isabelline Chat' is distinguished from confusable female Desert Wheatear by its plumper build, plain sandy-brown and buff plumage, upright stance, heavier bill and head, and short tail (the white subterminal prominent in flight, which is buffish in *deserti*).

Adult (summer) : Sandy-brown upperparts, with a pale supercilium and eye-ring; dark lores; dark brown wings, with contrasting black alula and buff edges to coverts and tertials/ secondaries; white uppertail-coverts and base of tail, with buff tipped blackish remaining tail; pale creamy buff underparts, darker on breast and flanks. In spring/ summer appear browner and more uniform than in autumn/ winter.

Juvenile : With faint mottling on upperparts and dark markings on breast.

Habitat : Plains (up to 3000 m). Sandy semi-desert; arid sparse scrub and fields.

Distribution : Uttarakhand: Dehra Dun: New Forest (Mohan 1996), Khaddar (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : It is a migratory insectivorous bird, which breeds in southern Russia and central Asia to northern Pakistan; winters in Africa and India.

494(1692) *Cercomela fusca* (Blyth, 1851)

Indian Chat

1851. *Saxicola fusca* Blyth, *Jour. Asiat. Soc. Bengal* 20 : 523 (Muttra).

1939. *Cercomela fusca ruinarum* Koelz, *Proc. Biol. Soc. Washington* 52 : 66 (Sanchi, Bhopal State).

1924. Baker, *FBI* No. 516, 2 : 54.

Diagnostics : Size : Sparrow +; c. 17 cm. Sexes alike. Also known as 'Brown Rock Chat', sometimes written as 'Brown Rock-Chat'

Adult : Uniformly rufous-brown, with darker wings, more rufescent underparts, and blackish tail. At rest confusable with female Indian Robin, but larger and lacks the chestnut patch under tail.

Juvenile : Darker brown without rufous.

Habitat : <1300 m. Rocky areas, quarries, ruins, old forts.

Distribution : Uttarakhand : Dehra Dun : (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a & b), Asan Barage (Gandhi & Singh 1995), New Forest (Mohan 1996, Singh 2000). Haridwar (Osmaston 1935). Rudraprayag : Kedarnath (Lavkumar 1956b). Tehri : Ranichauri, near Kanatal, Nagni (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

TIMALIINAE

(Laughingthrushes, Babblers, Scimitar-Babbler, Wren-Babbler, Liothrix, Minla, Sibia & Yuhinas)

Large and diverse group of small to medium-sized passerines, with soft and loose plumage, short or fairly short wings and strong legs and feet. Feed mainly on insects; inhabit forest and scrub. Many are gregarious; most are noisy and have wide range of chatters, rattles, and whistles. Sexes are alike in most species. Laughingthrushes are large, stocky, long-tailed, babblers which usually feed on the ground and in the undergrowth. Most species are gregarious, keeping together in large family groups of six to a dozen, sometimes even 50 or more, particularly outside the breeding season. They tend to move in follow-in-my-leader fashion, and are usually rather wary, trying to keep plenty of vegetation between themselves and the observer. When disturbed they may strike up a cacophony of cackling, squealing, babbling, chattering or laughing notes – hence the name. Babblers form a diverse group of small to medium-sized passerines with soft plumage, short rounded wings and strong legs. They are largely insectivorous inhabitants of forest and scrub. Many species are gregarious and noisy with a variety of musical notes as well as chattering, rattling and babbling calls. Most are sedentary, some moving to higher or lower altitudes according to season. Sexes usually alike. Scimitar-Babblers are distinguished by their long downcurved bills. They are usually found in pairs or small parties, sometimes in mixed hunting groups with other species, feeding on the forest floor, in the undergrowth and low trees. They are quite vocal with male and female often calling to each other in short resonant antiphonal duet. The female reply is usually so immediate that the two parts sound as though given by one bird. Wren-Babbler are generally small, dumpy brown birds that spend most of their time foraging on or near the ground in the undergrowth of dense forests, bamboo and thick scrub. Many have conspicuously short tail. Their habits and habitat tend to make them inconspicuous, though not always shy. Most species are solitary or in pairs. Liothrix are small, colourful, gregarious inhabitants of humid forest undergrowth. Minla are colourful slim babblers with straight bill and medium-long square-ended

tail. Gregarious. Sibia are medium-sized birds with decurved bill and very long graduated tail. Arboreal and gregarious. Yuhinas are generally slimmer, crested, not so bull-necked, with somewhat finer more pointed bill, longer, more pointed wings and more arboreal habits.

**495(1273-1274) *Garrulax albogularis* (Gould, 1836)
White-throated Laughingthrush**

1836 (8 April). *Ianthocincla albogularis* Gould, *Proc. Zool. Soc. London* : 187 (Nepal).

1922. Baker, *FBI* No. 137, 1 : 153.

Collection records : Uttarakhand : Tehri : Magra, 2♂ and 1 ♀, 9.vii.1973, coll. Raj Tilak.

Diagnostics : Size : Myna +; c. 28 cm. Sexes alike.

Adult : Striking white throat and upper breast, contrasting with olive-brown lower breast-band; pale rufous-orange underparts; tawny forehead, black lores and eye-rim; uniform brownish-olive upperparts, with grey edges to primaries forming indistinct grey panel on wing; and olive-brown graduated tail broadly tipped with white terminal band (prominent in flight).

Juvenile : Like adult, but with less breast-band, rufous-buff belly and flank.

Habitat : S 1800-3300 m (treeline). W > (450 m) 900 m. Dense forest, scrubby hillsides, (gardens).

Distribution : Uttarakhand : Garhwal (Osmaston 1921), Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Khati, Dhakuri (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Narainbagh (ZSI Survey 2004), Mandal (Singh 2005a). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935, Bhatnagar & Misra 1972a), Chakrata (Singh 2000). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997), Ranibagh (ZSI Survey 2005). Pauri (Osmaston 1921, Tak 1995). Pithoragarh (Tak 1995), Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : (Osmaston 1921), Trijugi Narayan, Deohra Tal and Tungnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Tehri : Bheling valley (Searight 1926), Uttarkashi : Govind NP : Sankri (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

**496(1283-1284) *Garrulax leucolophus*
(Hardwicke, 1815)
White-crested Laughingthrush**

1815. *Corvus leucolophus* Hardwicke, *Trans. Linn. Soc. London* : 11 : 208, pl. 15 (Mts above Hardwar).

1922. Baker, *FBI* No. 128 (part), 1 : 146.

Diagnostics : Size : Myna +; c. 28 cm. Sexes alike. More often heard than seen, an unmistakable, large, distinctive laughingthrush easily identified by its breathless call- sudden bursts of cackling laughter-like sound, *pick-wo..pick-wo* etc. made while following each other through bushes and middle of trees. When sighted, the white crest, throat and upper breast becoming slightly ashy on nape; contrasting black broad eye-stripe; and olive-brown remaining plumage including wings, belly and tail are the clues.

Habitat : <1700 m (2100 m). Forest undergrowth, secondary scrub, bamboo.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Karva Pani, Lachchiwala (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Dhaul river basin- 2004, Gori river basin- 2002, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : lower Mandakini (Lavkumar 1956b). Tehri : Bheling valley (Searight 1926). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). (Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002).

**497(1279-1282) *Garrulax striatus* (Vigors, 1831)
Striated Laughingthrush**

1831. *Garrulus striatus* Vigors, *Proc. Zool. Soc. London* : 7 (Himalaya Mountains, restricted to Naini Tal by Baker, 1920, *JBNS* 27 : 245).

1922. Baker, *FBI* No. 177 (part), 1 : 184.

Collection records : Uttarakhand : Uttarkashi : Janki Chatti, 1 ♂, 18.i.1975, 1 ex., 22.i.1975, 1 ♀, 31.i.1975, coll. Raj Tilak.

Diagnostics : Size : Myna +; c. 28 cm. Sexes alike. A large, brownish laughingthrush with heavy black bill; soft crest, giving rise to dome-headed appearance; chestnut crown; chocolate upperparts, with unmistakable conspicuous buffish-white streaks; rufous-brown wings with greyish-white panel; brownish-grey underparts, with paler streaks. Not really confusable with any other laughingthrush, however, distinguished from the species *G. virgatus* mainly by its larger size, crest, and lack of supercilium; and *G. lineatus* is much smaller with dusky streaks.

Habitat : S (1200 m) 1500-2750 m (2850 m). W > foothills. Dense forest, scrub.

Distribution : Uttarakhand : Bageshwar : Loharkhet – Khati (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Wan (Tak 1997), Gwaldam, Narainbagrh (ZSI Survey 2004), Mandal (Singh 2005a). Dehra Dun : Mussoorie, Matkangra near Chakrata (Osmaston 1935), (Bhatnagar & Misra 1972a & b), New Forest (George 1957, Mohan 1993, 1996), Chakrata, New Forest (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Osmaston 1921, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : (Osmaston 1921), Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba undated, internet list).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

498(1292-1296) *Garrulax rufogularis* (Gould, 1835)
Rufous-chinned Laughingthrush

1835. *Ianthocincla rufogularis* Gould, *Proc. Zool. Soc. London* : 48 (Himalayas = Sikkim).

1836. *Cinclosoma rufimentum* Hodgson, *Asiat. Res.* 19 : 148 (Nepal = Kathmandu).

1922. Baker, *FBI* No. 143, 1 : 148.

Diagnostics : Size : Myna; c. 22 cm. It is a complex-patterned laughingthrush.

Adult : Black cap, diffuse black malar stripe, buff lores, black ear-coverts; brownish sides of head and back, the latter with black scaling; black and grey wings with whitish outer edges, the secondaries with subterminal black band tipped with a white crescent; rufous chin and undertail-coverts; whitish throat with black sides; pale greyish breast and olive-brown flanks both spotted with black spots; and whitish belly.

Juvenile : Lacks black scaling on upperparts.

Habitat : (600 m) 1000-1800 m (3500? m). Forest undergrowth, scrub, second growth. In pairs or small groups.

Distribution : Uttarakhand : Dehra Dun : Viceroy's Body Guard (now President's) (Osmaston 1935, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

499(1298-1299) *Garrulax ocellatus* (Vigors, 1831)
Spotted Laughingthrush

1831. *Cinclosoma ocellatum* Vigors, *Proc. Zool. Soc. London* : 55 (Himalaya Mts, restricted to Darjeeling by Baker, *FBI* 1 : 156).

1922. Baker, *FBI* No. 140, 1 : 155.

Diagnostics : Size : Pigeon; c. 32 cm. Also known as 'White-spotted Laughing Thrush' is an unmistakable and a very large thrush, has chestnut upperparts profusely spotted with black-based white spots; black cap; rufous supercilium, lores and chin; deep chestnut ear-coverts; chestnut-and-black wings with grey panel and white tips to primaries; blackish throat diffusing into black barring on breast; buff lower breast and belly; and white tips to chestnut, grey and black tail.

Habitat : 2100-3660 m. Undergrowth in mixed evergreen forest, bushes, rhododendron scrub.

Distribution : Uttarakhand : Chamoli : Mandal (Singh 2005a). Dehra Dun : New Forest (Mohan 1993), (Singh 2000). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba undated).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

500(1312-1316) *Garrulax lineatus* (Vigors, 1831)
Streaked Laughingthrush

1831. *Cinclosoma lineatum* Vigors, *Proc. Zool. Soc. London* : 56 (Himalaya Mts = NW. Himalayas *vide* Hume, 1875, *Stray Feathers* 3 : 396 = Simla-Almora area).

1909. *Ianthrocinccla lineatum grisescentor* Harter, 1909, *Vog. pal. Fauna* 1 : 636 (Western Himalayas, Simla).

1922. Baker, *FBI* No. 172, 1 : 142.

Collection records : Uttarakhand : Uttarkashi : Janki Chatti, 1♂ and 1♀, 9.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Bulbul ±; c. 20 cm. Sexes alike. A small, finely streaked, and rather uniform brown or greyish and brown laughingthrush, has grey crown and upperback with dark brown streaks; middle back with white streaks; olive-brown rump; rufous ear-coverts and wings; rounded rufous tail with pale grey terminal band; throat and breast streaked with rufous; and olive-brown belly.

Habitat : S (1200 m) 1800-3000 m (3900 m). W (600 m) 1000 m (2750 m). Scrub, bushes, undergrowth, gardens.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNP (Tak & Kumar 1987), around Joshimath (Sankaran 1993, 1994), (Tak 1995), Dibrugheta, Latakharak, Beltakharak (Sathyakumar 2003), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935), Chakrata, Mussoorie, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi (Tak 1995), Sankri to Khabugad (Singh 2005b). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

501(1289-1290) *Garrulax variegatus* (Vigors, 1831)
Variegated Laughingthrush

1831. *Cinclosoma variegatum* Vigors, *Proc. Zool. Soc. London* : 56 (Himalayas = Simla-Almora area, according to Ticehurst & Whistler, 1924, *Ibis* : 471).

1922. Baker, *FBI* No. 162, 1 : 173.

Diagnostics : Size : Myna ±; c. 24 cm. Sexes alike. Largely a grey or olive bird with complex colour-pattern on plumage; has rufous-buff forehead and malar stripe; black lores, chin and centre of throat; dark grey crown, nape and ear-coverts with a short white streak behind eyes; olive-brown back, rump and upper tail-coverts; silvery grey wings with a black and a rufous shoulder patch and a larger black patch on centre of wings; blackish secondaries with white tips; and black tail, distally grey with white tip.

Habitat : S (1800 m) 2400-treeline. W 1000-2100 m (2700 m). Dense undergrowth, ringal bamboo, rhododendron.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Bageshwar : Phurkia (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNP (Tak & Kumar 1987), Belta Kharak, Auli (Sankaran 1993, 1994), (Tak 1995), Belta, Wan-Gairoli Patali (Tak 1997), Latakharak, Beltakharak (Sathyakumar 2003), enroute Tunganath (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata, Deoban and Mussoorie (Osmaston 1935, Bhatnagar & Misra 1972b), [Dhanaulty] (Singh 2000). Pauri (Osmaston 1921, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (internet list).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

502(1322-1323) *Garrulax affinis* Blyth, 1843
Black-faced Laughingthrush

1843. *Garrulax affinis* Blyth, *Jour. Asiat. Soc. Bengal* 12 : 950 (Nepal = central Nepal).

1953. *Garrulax affinis flemingi* Rand, *Nat. Hist. Miscellanea*, No. 116 : 2 (Lete, Baglung Dist., West Nepal).

1956. *Garrulax affinis bethelae* Rand & Fleming, *Fieldiana*, Zool. 39, No. 1 : 2 (Thangu, Sikkim).

1922. Baker, *FBI* No. 161 (part), 1 : 172.

Diagnostics : Size : Myna $\pm$; c. 25 cm. Sexes alike. Chiefly a rufous-brown laughingthrush; has black supercilium and ear-coverts; white malar stripe, semi-circular eye-ring and patch on sides of neck; variable mottling on mantle and back with a olive-yellow panel on mainly blue-grey wings; black primary-covert patch; black chin and centre of throat; greyish-white scaling on breast; and olive-yellow tail with broad grey tip.

Habitat : S 2750-4000 m. W 1250-3660 m. Forest bushes, montane shrubbery.

Distribution : Uttarakhand : Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

503(1324-1330) *Garrulax erythrocephalus*
 (Vigors, 1832)
Red-headed Laughingthrush

1832. *Cinclosoma erythrocephalum* Vigors, *Proc. Zool. Soc. London* : 171 (Himalayas, restricted to Chamba by Baker, 1920, 'Handlist' : 15, an action which takes precedence over the restriction to Simla-Almora area by Ticehurst & Whistler, 1924, *Ibis* : 468-73, or to Simla by Vaurie, 1953, *Bull. Brit. Orn. Cl.* 73 : 78).

1922. Baker, *FBI* No. 148 (part), 1 : 163.

Diagnostics : Size: Myna $\pm$; c. 28 cm. Sexes alike.

Adult : Has rufous-chestnut crown and nape; chestnut ear-coverts with white fringes; dark spotting/ scaling on mantle and breast; black chin; olive-yellow wings and sides of tail; a chestnut shoulder patch; and buffish underparts.

Juvenile : Lacks spotting.

Habitat : S (1800) 2100-3000 m (3300 m). W (600 m) 1200-2000 m (2700 m). Dense undergrowth and scrub.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie, Chakrata and Deoban (Osmaston 1935), [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002).

504(1152-1159) *Pellorneum ruficeps* Swainson,
 1832
Spotted Babbler

1832. *Pellorneum ruficeps* Swainson, *Fauna Boreali-Americana* : 487 (India = Coonoor, Nilgiris, restricted by Deignan, *op. cit.*).

1922. Baker, *FBI* No. 240, 1 : 138.

Diagnostics : Size : Bulbul -; c. 15 cm. Sexes alike. Also known as Puff-throated Babbler; has short rounded wings, long tail and pale fleshy legs; chestnut-brown cap; prominent buff supercilium extending well behind the eye; brown ear-coverts; dusky cheeks; plain brown back; white throat (often puffed out- giving it its English name); whitish remaining underparts with broad brown streaking on breast and flanks.

Races : Two races are recognized, viz., the nominate race of Himalayas has streaked mantle and sides of neck while the other *P. r. mandellii* is unstreaked.

Habitat : <1800 m. Forest undergrowth, woodland scrub.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Karva Pani, New Forest, Timli, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak

& Sati 2007). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

505(1181-1183) *Pomatorhinus erythrogenys*
Vigors, 1832

Rusty-cheeked Scimitar-Babbler

1832. *Pomatorhinus erythrogenys* Vigors, *Proc. Zool. Soc.*
London : 172 (Himalayas = Simla-Almora area).

1836. *Pomatorhinus ferrugilatus* Hodgson, *Asiat. Res.* 19 :
180 (Nepal).

1922. Baker, *FBI* No. 219, 1 : 220.

Collection records : Uttarakhand : Tehri :
Kempty, 1 ♂, 11.vii.1973, coll. Raj Tilak.

Diagnostics : Size : Myna ±; c. 25cm. Sexes
alike. A conspicuous Scimitar-Babbler with long
downcurved bill, fluffy plumage, soft tail and long-
legs.

Adult : Has olive-brown upperparts; light-
coloured iris; black malar; rusty lores, sides of
head, neck, flanks, thighs and vent; and whitish
remaining underparts. The flight is weak.

Juvenile : Paler above with rusty parts duller,
paler and less distinct.

Habitat : 450-2200 m (2700 m). Thick scrub
at forest edge; overgrown nullahs; bushes slopes.

Distribution : Uttarakhand : Almora : Ranikhet
(Briggs 1931), (Tak 1995). Chamoli (Tak 1995),
Wan (Tak 1997), Mandal (Singh 2005a). Dehra
Dun: Deoban (Osmaston 1935, Wright 1957,
Bhatnagar & Misra 1972a), New Forest (George
1957, Mohan 1996), Malsi Deer Park, Mussoorie,
New Forest (Singh 2000), Forests around Asan
(Singh 2001), Shiwaliks of SW Dehra Dun (Tak
& Sati 2007). Naini Tal (Hudson 1930, Tak 1995).
Pauri (Tak 1995). Rudraprayag : Mandakini valley
(Lavkumar 1956b), Kedarnath Sanctuary (Green
1986, Myers & Singh 2006). CTR (Lamba &
Bhatnagar 1977-79, Lamba undated, Khati 2004,
internet list, Ghosh & Chatterjee 2006). RNP
(Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal
movement. Schedule IV (BNHS 2002). BRS (08)
i.e. Sino-Himalayan Subtropical Forest
(Jhunjhunwala *et al.* 2001).

506(1172-1177) *Pomatorhinus horsfieldii*
Sykes, 1832

Indian Scimitar-Babbler

1832. *Pomatorhinus horsfieldii* Sykes, *Proc. Zool. Soc.*
London : 89 (Mahableshwar, Western Ghats).

1922. Baker, *FBI* No. 206, 1 : 210.

Diagnostics : Size : Between Bulbul and Myna;
c. 22 cm. Sexes alike. It is the only scimitar
babbler occurring in Peninsular India and Sri
Lanka. Has dark brown upperparts; long
downcurved yellow bill; has prominent white
supercilium contrasting with grey to blackish ear-
coverts (forming black band through the eye);
white throat, breast and centre of belly; and brown
rest of underparts. The nominate Indian race has
grey or blackish flanks and breast sides, but the
Sri Lankan race *P. h. melanurus*, has these areas
olive or concolorous with its upperparts.

Habitat : Forest, thorn scrub, bamboo,
cardamom.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Residential status not known. Schedule
IV (BNHS 2002). BRS (10) *i.e.* Indian Peninsula
Tropical Moist Forest (Jhunjhunwala *et al.* 2001).

507(1168-1171) *Pomatorhinus schisticeps*
Hodgson, 1836

Hodgson's Scimitar-Babbler

1836. *Pomatorhinus schisticeps* Hodgson, *Asiat. Res.* 19 :
181 (Nepal).

1847. *Pomatorhinus assamensis* Blyth, *Jour. Asiat. Soc.*
Bengal 16 : 451 (Assam, restricted to the Khasi Hills
by Ripley, Synopsis : 349).

1922. Baker, *FBI* No. 199, 1 : 206.

Diagnostics : Size : between bulbul and myna;
c. 23cm. Sexes alike. It distinguished from all other
scimitar babblers in its range (except Indian and
Streak-breasted) by a combination of striking white
supercilium contrasting with blackish ear-coverts,
yellow eye and downcurved yellow bill. From
Streak-breasted identified by its clean white breast
and belly and chestnut sides to breast and from
the Indian by its olive-brown (not dark brown)
upperparts, lower flanks and undertail-coverts; and
rusty border to white throat and breast.

Habitat : Edge of plains-1500 m (2000+ m).
Forest undergrowth, secondary growth and scrub.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996, Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). Information not available in BNHS 2002.

508(1178-1180) *Pomatorhinus ruficollis*

Hodgson, 1836

Rufous-necked Scimitar-Babbler

1836. *Pomatorhinus ruficollis* Hodgson, *Asiat. Res.* 19 : 182 (Nepal, restricted to Kathmandu Valley, by Ripley, Synopsis).

1922. Baker, *FBI* No. 214, 1 : 216.

Diagnostics : Size : Bulbul $\pm$; c. 19 cm. Sexes alike. Also known as Streak-breasted Scimitar Babbler; is a small bird with dark eyes.

Adult : Distinguished by heavy rufous to greyish streaks on whitish lower throat and breast and distinct rufous patch on sides of neck. Has olive-brown upperparts, lower flanks and undertail-coverts; prominent white supercilium from bill to nape; black lores and ear-coverts forming a black band; and shorter and less curved yellow bill.

Juvenile : With almost straight bill and brighter rufous plumage.

Habitat : 700-3300 m. Forest and scrubby hillsides.

Distribution : Uttarakhand : Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated internet list).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002).

509(1197-1198) *Pnoepyga albiventer* (Hodgson, 1837)

Greater Scaly-breasted Wren-Babbler

1837 Feb. *Tesia albiventer* Hodgson, *Jour. Asiat. Soc. Bengal* 6 : 102 [Nepal, restricted by Ripley (Synopsis : 357) to Ilam dist., eastern Nepal, re-restricted to Chandragiri above Thankot by Biswas (*JBNHS* 59 : 204-5)].

1837 Aug. *Microura squamata* Gould, *Icones Av.*, pl. 5 (Cachar).

1954. *Pnoepyga albiventer vegeta* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 11 (Kohima, Naga Hills).

1922. Baker, *FBI* No. 471 (part), 1 : 458.

Diagnostics : Size : Sparrow -; c. 10 cm. Dimorphic, in two colour phases (morphs); sexes alike in both (white and fulvous). Also known as Scaly-breasted Wren-Warbler; is a plump, almost tail-less small bird which occurs in two phases : **White phase** : Olive-brown upperparts with slight scaling; nearly white throat; white breast, and belly, each feather with a dark centre and a narrow dark margin producing scaly effect; and olive-brown scaly flanks.

Fulvous phase : Olive-brown upperparts with a fulvous drop on each feather; underparts as in white phase but replaced by fulvous. Distinguished from Nepal Wren-Babbler by warm dark brown upperparts; spotted (not streaked) underparts; and spotting on head, mantle, wing-coverts.

Habitat : S 1000-4000 m, usually higher than Pygmy Wren Babbler. W > (270 m) 1000 m. Moist undergrowth; mossy boulders.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Dehra Dun : New Forest (Mohan 1993, 1996, Singh 2000). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006); Tehri : Bhillung valley (Matthews 1918), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident depicts altitudinal movement. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

510(N) *Pnoepyga immaculata* Martens & Eck, 1991

Nepal Wren-Babbler

1991. *Pnoepyga immaculate* Martens, J. & Eck. *J. Orn.* 132 : 179, 180.

Not given in Baker, *FBI*.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Similar to Greater Scaly-breasted Wren-Warbler (above), although with

comparatively longer and heavier bill; but lacks pale speckling on upperparts and wings, with narrower, longitudinal dark centres to underparts. Feathers creating a streaked appearance, particularly on breast, with isolated narrow dark malar line.

Habitat : S 2000-3100 m. W > plains. Dense undergrowth and clearing in mixed forest.

Distribution : Uttarakhand : Chamoli : Mandal (Singh 2005a). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (internet list).

Status : Sparse winter visitor (status uncertain). Information not available in BNHS 2002.

**511(1211) *Stachyris pyrrhops* Blyth, 1844
Black-chinned Babbler**

1844. *Stachyris pyrrhops* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 379 (Nepal).

1954. *Stachyris pyrrhops ochrops* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 6 (Kotla, Kangra Dist., Punjab).

1922. Baker, *FBI* No. 281, 1 : 271.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. It is a distinctive, small, and slightly bull-headed babbler with monochromatic olive-buff upperparts; black chin and lores; olive-buff crown with fine dark streaks; buffish ear-coverts; orange-buff underparts; and red eyes.

Habitat : (300 m) 750-2000 m (2400 m). Light forest, scrub, bamboo, overgrown streams, hedges.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972b), New Forest (George 1957, Mohan 1996), Karva Pani, Mussoorie, New Forest, Timli, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995). CTR (Khatri 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

**512(1212-1213) *Stachyris chrysaea* Blyth, 1844
Gold-headed Babbler**

1844. *Stachyris chrysaea* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 379 (Nepal).

1954. *Stachyris chrysaea chrysocoma* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 5 (Karong, Manipur).

1922. Baker, *FBI* No. 273, 1 : 265.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. A distinctive babbler with golden yellow forehead, crown and nape, the last two with black streaks; black lores and short moustachial stripe; greenish-olive upperparts and flanks; bright yellow underparts; and dark crimson eyes.

Habitat : 300-2600 m. Dense undergrowth in moist evergreen forest and second growth.

Distribution : Uttarakhand : Chamoli : Mandal (Singh 2005a). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006).

Status : Residential status not known. Schedule IV (BNHS 2002).

**513(1219-1223) *Dumetia hyperythra*
(Franklin, 1831)
Rufous-bellied Babbler**

1831. *Timalia hyperythra* Franklin, *Proc. Zool. Soc. London* : 118 (Ganges near Benares).

1922. Baker, *FBI* No. 229, 1 : 228.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. Also known as Tawny-bellied Babbler; is a small, longish-tailed olive-brown babbler.

Adult : Has reddish-brown forehead and forecrown (cap); olive-brown upperparts; orange-buff sides of head and underparts; and brown wings and tail.

Juvenile : Lacks rufous-brown forehead and much paler below.

Races : Two races are recognized: the nominate of N, C & E region (also occurring in Uttarakhand) has concolorous throat and the *albogularis* of W & S region has white throat.

Habitat : <1800 m. Grassland, scrub, bamboo, deciduous forest.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972b), New Forest (Singh 1999, 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

514(1229) *Timalia pileata* Horsfield, 1821
Red-capped Babbler

1872. *Timalia bengalensis* Godwin-Austen, *Jour. Asiat. Soc. Bengal* 41 : 143 (Khasi Hills).

1952. *Timalia pileata arundicola* Koelz, *Jour. Zool. Soc. India* 4 : 153 (Karong, Manipur).

1922. Baker, *FBI* No.227, 1 : 226.

Diagnostics : Size : Sparrow +; c. 17 cm. Sexes alike. A small babbler with rather thick neck and a fairly long graduated faintly barred tail. Easily distinguished by its thick black bill and lores (forming a black mask); chestnut cap; white supercilium, cheeks, throat and upper breast; fine dark streaks on lower throat and breast; grey sides of neck and breast; olive-brown upperparts and flanks; and buff belly.

Habitat : <1200 m. Mainly floodplains. Damp tall grassy and scrubby areas.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : The Old World babblers or timaliids are a large family of mostly Old World passerine birds. The timaliids are one of two unrelated groups of birds known as babblers, the other being the Australasian Babblers of the family Pomatostomidae (also known as pseudo-babblers). Members of timalia are small babblers with thick shortish bills and rather long tails; found mostly in grassland and scrub. Generally skulking.

515(1230-1232) *Chrysomma sinense* (Gmelin, 1789)
Yellow-eyed Babbler

1789. *Parus sinensis* Gmelin, *Syst. Nat.* 1 : 1012 (China).

1922. *Pyetorhis sinensis saturator* Ticehurst, *Bull. Brit. Orn. Cl.* 42 : 57 (Bhutan Duars).

1954. *Chrysomma sinensis negaense* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 4 (Karong, Manipur).

1922. Baker, *FBI* No.234, 1 : 233.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1 ♂ and 1 ♀, 22.viii.1973, coll. Nathu Singh. 1 ex., 20.xi.1974, 1 ♀, 12.xii.1974, coll. S. K. Serin; 1 ♂, 12.xii.1974, coll. Surender Singh; 1 ♀, 7.xi.1975, 1 ♂, 4.i.1978, coll. D. N. Basu.

Diagnostics : Size : Bulbul -; c.18 cm. Sexes alike. A rather small, long-tailed babbler with a short stout black bill; yellow iris with broad orange eye-ring; rufous-brown back, with cinnamon wings; white lores, eyebrow, throat and breast; buffish remaining underparts; and yellow legs and feet.

Habitat : <1200 m (1800 m). Variety of scrubby and coarse grassy habitats.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Asan wetland (Tak & Sati 2003), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

516(1253-1254) *Turdoides caudatus*
(Dumont, 1823)
Common Babbler

1823. *Cossyphus caudatus* Dumont, *Dict. sci. nat.* ed. Levrault 29 : 268 (India).

1877. *Chatorhea [sic] eclipses* Hume, *Stray Feathers* 5 : 337 ('Punjab, Trans-Indus' = Peshawar).

1922. Baker, *FBI* No.192, 1 : 198.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1 ♂, 8.ix.1972, coll. D. N. Basu; 37-Chakrata road, 1 ♂ and 1 ♀, 10.i.1973, 1 ♀, 25.i.1975, coll. P. K. Bose; 1 ♀, 28.x.1974, 1 ♀, 28.vii.1975, coll. Surender Singh; 2 ♂, 1.ji.1975, 1 ♀, 14.iv.1975, 1 ♀, 15.iv.1975, coll. D. N. Basu;

1♂, 7.i.1977, coll. Ram Das. Naini Tal : Ramnagar, 1♂ and 1♀, 9.vi.1972, coll. D. N. Basu.

Diagnostics : Size : Bulbul +; c. 22 cm. Sexes alike. A relatively slim, pale, brownish-buff babbler with dark streaks on head and back; slender slightly downcurved brown bill; dark (brown to yellowish-brown) eyes (*contra* light of Jungle Babbler); unstreaked white throat and breast (*contra* streaked of Striated Babbler) very long and cross-barred tail; and yellowish legs and feet.

Habitat : <1200 m (2100 m). Dry open scrub, semi-desert.

Distribution : Uttarakhand : Almora : Gagas, Chanthariya, Mansi, Someshwar (ZSI Survey 2004). Bageshwar : Kausani, around Bageshwar (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Asan Barrage, Khaddar, New Forest, [Dholkhand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Ramnagar (ZSI Survey 2005). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

517(1255-1256) *Turdoides earlei* (Blyth, 1844)
Striated Babbler

1844. *Malacocercus Earlei* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 369 (vicinity of Calcutta).

1922. Baker, *FBI* No. 191 (part), 1 : 197.

Diagnostics : Size : Bulbul; c. 21 cm. Sexes alike. A rather extensively streaked brown babbler with long and cross-barred tail; streaked throat and breast (*contra* unstreaked of Common Babbler); golden-yellow iris; buffy breast and belly; and blue-grey legs and feet.

Habitat : Tall grassland, reeds and *Acacia* scrub in lowland river plains.

Distribution : Uttarakhand : Dehra Dun : Asan Barrage (Singh 2000). Rudraprayag : Gandhari (ZSI Survey 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (12) *i.e.* Indo-Gangetic Plains (Jhunjhunwala *et al.* 2001).

518(1258) *Turdoides malcolmi* (Sykes, 1832)
Large Grey Babbler

1832. *Timalia malcolmi* Sykes, *Proc. Zool. Soc. London* : 88 (Dukhun = Poona).

1922. Baker, *FBI* No. 195, 1 : 200.

Diagnostics : Size : Myna; c. 28 cm. Sexes alike. It is the largest of all other babbler occurring in the region; has dark lores and upper mandible (distinguishing it from Jungle Babbler); greyish brown upperparts, with silvery forehead; creamy underparts, with pinkish tinge on throat and breast; bright yellow eyes; and whitish outer feathers of the long graduated tail (prominent in flight).

Habitat : < 1200 m. Dry open areas with sparse scrub.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972b), New Forest (Singh 1999), Asan Barrage, Khaddar, Tea Garden (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : Their nests are parasitized by the Pied Crested Cuckoo (*Clamator jacobinus*).

519(1261-1265) *Turdoides striatus* (Dumont, 1823)
Jungle Babbler

1823. *Cossyphus striatus* Dumont, *Dict. sci. nat.* (ed. Levaulli).

1922. Baker, *FBI* No. 183 (part), 1 : 191.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1♂, 25.vii.1963, coll. R. K. Bhatnagar; 1♀, 24.ix.1964, 2 exs., 13.xi.1969, coll. P. K. Bose; Herbatpur, 2 exs., 24.x.1967, coll. P. K. Bose; Jashpur, 2 ex., 14.x.1968, coll. P. K. Bose; Jantanwala, 1 ex., 22.ii.1969, coll. P. K. Bose; Bhanaiawala, 1♂, 30.xii.1972, coll. Raj Tilak; 37-Chakrata road, 1 ex., 16.viii.1973, 1♂, 20.viii.1973, coll. Nathu Singh; 1♀, 11.xii.1975, coll. D. N. Basu.

Diagnostics : Size : Myna; c. 25 cm. Sexes alike. It is one of the most widespread and familiar babblers of the region with short rounded wings, longish rufous-brown tail and weak flight.

Adult : Earthy-brown upperparts with dark primary flight feathers; grey-brown underparts; some mottling and streaking on the throat and breast; creamy white eyes; pale lores; and stout yellow bill and legs.

Juvenile : Browner-tinged overall.

Habitat : <1200 m (1800 m). Mainly plains cultivation, gardens, scrub deciduous forest.

Distribution : Uttarakhand : Almora : Petshal, Chanthariya, Mansi (ZSI Survey 2004). Chamoli : Mandal, Pipalkoti, Narainbagrh (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal : Ramnagar, Mohaan, Lalkuaon (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Mandakini valley (Lavkumar 1956b), Gandhari, Ukhimath (ZSI Survey 2004). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Fatehpur (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : The Jungle Babbler lives in flock of seven to ten or more; is a noisy bird, and the presence of a flock may generally be known at some distance by the harsh mewing calls, continual chattering, squeaking and chirping produced by its members. It is commonly known as "Seven Sisters" or "Seven Brothers" or in Hindi equivalent of "Sat-bhai"

520(1333-1334) *Leiothrix argenteauris*
(Hodgson, 1838)
Silver-eared Leiothrix

1837. *Mesia Argenteauris* Hodgson, *Ind. Rev.* 2(2) : 88 (Nepal).

1922. Baker, *FBI* No.376 (part), 1 : 354.

Diagnostics : Size : Sparrow; c. 15 cm. A bright-coloured small olive-and-yellow arboreal babbler with silver-grey ear-coverts; orange-yellow patch on forehead; black cap and moustchial stripe; orange-yellow throat, breast, and mantle; crimson and yellow panel on wing; and yellow sides to black tail.

Male : Crimson uppertail- and undertail-coverts.

Female : Olive-yellow uppertail-coverts; and orange-buff undertail-coverts.

Juvenile : Like female, but with brown crown.

Habitat : 200-2100 m. Bushes and low trees in evergreen and secondary forest, scrub, margins of cultivation.

Distribution : Uttarakhand : Dehra Dun : Mussoorie (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002).

521(1335-1337) *Leiothrix lutea* (Scopoli, 1786)
Red-billed Leiothrix

1943. *Leiothrix lutea kumaiensis* Whistler, *Bull. Brit. Orn. Cl.* 63 : 62 (Dehra Dun, United Provinces).

1922. Baker, *FBI* No.351 (part), 1 : 328.

Diagnostics : Size : Sparrow -; c. 13 cm. A small, active greyish-olive bird; distinguished by scarlet bill; pale face, lores and eye-ring; black wing with yellow-and-crimson edges and a small orange patch; forked tail (black above and olive below), the outer rectrices slightly curved outwards; and yellow undertail-coverts.

Male : Golden-olive crown and nape, yellowish lores and orbital area, and more olive ear-coverts; orange rufous upper breast contrasts with deep yellow to orange-yellow throat.

Female : Greyer upperparts; crimson of wing replaced by yellow; paler throat and breast; and tail-fork shallower.

Juvenile : Like female, but with paler bill.

Habitat : S 1000-2400 m (2750 m). W (350 m) 600-2100 m. Forest undergrowth, scrub, second growth, wooded gullies.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). D  hra Dun : the Body Guard (Osmaston 1935), (Bhatnagar & Misra 1972a), New Forest (Mohan 1996, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, Ghosh & Chatterjee 2006).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (08) i.e. Sino-Himalayan Subtropical Forest (Jnunjhunwala *et al.* 2001).

522(1341) *Pteruthius flaviscapis* (Temminck, 1836)
Red-winged Shrike Babbler

1831. *Lanius erythropterus* Vigors, *Proc. Zool. Soc. London* : 22 (Himalaya Mountains = Murree, Punjab, *vide* Baker, 1922, 'Fauna' 1 : 331), *nec Lanius erythropterus* shaw, 1809, preoccupied.

1951. *Pteruhius erythropterus validirostris* Koelz, *Jour. Zool. Soc. India* 3 : 28 (Kohima Naga Hills, Assam).

1952. *Pteruhius erythropterus nocrecus* Koelz, *Jour. Zool. Soc. India* 4 : 40 (Tura Mountain, Garo Hills).

1954. *Pteruhius erythropterus glauconotus* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 9 (Sangau, Lushai Hills).

1960. *Pteruhius validirostris riplei* Biswas, *Bull. Brit. Orn. Cl.* 80 : 106. New name for *Lanius erythropterus* Vigors, preoccupied.

1922. Baker, *FBI* No.354, 1 : 331.

Diagnostics : Size : Myna -; c. 16 cm. Also known as White-browed Shrike-Babbler is a stocky black and white arboreal bird with chestnut in wings.

Male : Rufous tertials; black head with white post-ocular stripe (supercilium); ashy-grey back; black wings with white tips; pale grey throat and underparts; and short black tail.

Female : Greyish cap; greyish-olive upperparts, with green-gold wings and tail; and small white tips to flight feathers.

Juvenile : Duller version of their respective sexes.

Habitat : S 1500-2500 m. W (300 m) 1200+m. Mature forest.

Distribution : Uttarakhand : Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), Mussoorie (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

523(1342-1344) *Pteruthius xanthochlorus*
Gray, 1846
Green Shrike-Babbler

1846. *Pteruhius xanthochlorus* Gray, *Cat. Mamms. Bds. Nepal* : 95, 155 (Nepal).

1922. Baker, *FBI* No.358, 1 : 335.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes like, but female with paler olive-grey crown.

Adult : Grey head; olive green upperparts with blackish shoulder-patch; whitish tip to tertials, secondaries and tail feathers; whitish to pale ashy underparts.

Juvenile : Like female, but with more olive wash to upperparts and yellowish lower underparts.

Habitat : S (1800 m) 2100-2700 m (3600 m). W 1200-3050 m. Forest. Arboreal. Usually in mixed flocks.

Distribution : Uttarakhand : Dehra Dun : Chakrata (Osmaston 1935), (Bhatnagar & Misra 1972a, Singh 2000). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (internet list).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jnunjhunwala *et al.* 2001).

524(1362) *Minla cyanouroptera* (Hodgson, 1838)
Blue-winged Minla

1837. *Silva Cyanouroptera* Hodgson, *Ind. Rev.* 2(2) : 88 (Nepal).

1839. *Leiothrix lepida* Horsfield, *Proc. Zool. Soc. London* : 162 *ex* McClelland MS. (Assam = Naga Hills, *fide* Koelz, 1954, *op. cit.*, below : 8).

1942. *Siva cyanoptera aglae* Deignan, *Notulae Naturae*, Philadelphia, No. 100 : 2 (Mt Victoria, 2600 metres, Chin Hills, near Pakokku, Burma).

1954. *Siva cyanoptera thalia* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 8 (Mawphlang, Khasi Hills).

1954. *Siva cyanoptera rama* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 8 (near Nokrek, Garo Hills).

1922. Baker, *FBI* No. 335, 1 : 314.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike, but female slightly duller.

Adult : Bluish-grey crown (duller in female) with dark lateral border and streaked forecrown; whitish supercilium; warm brown upperparts; blue wings with pale violet-grey panel formed by fringes to tertials and secondaries (visible at closer range); vinous grey underparts; and longish, square-cut blue tail (dark grey above with blue edges and narrow white tip).

Juvenile : Browner, with weakly streaked crown and buffish underparts.

Habitat : S 1400-2500 m (2750 m). W (200 m) 1000-1830 m (2290 m). Forest.

Distribution : Uttarakhand : Naini Tal (Hudson 1930, Tak 1995). CTR (Khati 2004, internet list, Ghosh & Chatterjee 2006).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jnunjhunwala *et al.* 2001).

525(1358-1361) *Minla strigula* (Hodgson, 1838) **Bar-throated Minla**

1837. *Siva Strigula* Hodgson, *Ind. Rev.* 2(2) : 89 (Nepal).

1922. Baker, *FBI* No.333 (part), 1 : 313.

Diagnostics : Size : Sparrow; c. 14 cm. Sexes alike. This strikingly patterned tawny-olive bird is also known as Bar-throated Siva.

Adult : Orange slightly tufted crown and nape; pale yellow eye-ring; grey ear-coverts with black malar (moustachial stripe); orange-yellow panel on wings with black primary-covert patch (shoulder-patch), grey fringes to black centered tertials and olive-brown mantle and rump; whitish throat narrowly barred with black; yellow chin and underparts. Tail black, partly chestnut on the basal half, edged and tipped with bright yellow.

Juvenile : Greyer with broken narrow throat bars.

Habitat : S 1800-3750 m. Oak and rhododendron. W (1030 m) 1300-2750 m (3700 m). Forest, low bushes and scrub.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : as far north as Pipalkoti (Osmaston 1921), Dibrugheta, Deodi (Sankaran 1993, 1994), (Tak 1995), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), (Bhatnagar & Misra 1972a), Mussoorie (Singh 2000). Naini Tal (Tak 1995). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Govind NP : Jakhol, Saruka Tal (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba undated, Khati 2004).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jnunjhunwala *et al.* 2001).

526(1380-1383) *Alcippe vinipectus* (Hodgson, 1837) **White-browed Tit-Babbler**

1837. *Siva Vinipectus* Hodgson, *Ind. Rev.* 2(2) : 89 (Nepal, restricted to central Nepal by Ripley, Synopsis : 412).

1922. Baker, *FBI* No.304 (part), 1 : 290.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known as White-browed Fulvetta.

Adult : Brown crown and back; grey-brown to blackish-brown ear-coverts (depending on race); a broad white supercilium from eye to nape; a darker brown stripe above the white supercilium; rusty wings and rumps; a black line and a pale outer edge on the closed rusty wings; white throat and breast with olive-brown lower belly.

Juvenile : Rustier above, with less distinct dark lateral crown stripes and paler flanks.

Races : Four races are recognized from the subcontinent. Two western races have a white throat: *A. v. kangrae* of the W Himalayas has a chestnut-brown crown and darker ear-coverts compared with *A. v. vinipectus* of Nepal, which has duller crown concolorous with ear-coverts. The remaining two eastern races have a streaked throat.

Habitat : S (2400 m) 2700-4200 m. W 1500-3000 m. Mountane scrub, forest undergrowth, ringal bamboo.

Distribution : Uttarakhand : Chamoli : Dhanpur range (Osmaston 1921), Mandal (Singh 2005a). Dehra Dun (Osmaston 1935, Singh 2000). Rudraprayag: Kedarnath Sanctuary (Green 1986, Myers & Singh 2006).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jnunhunwala *et al.* 2001).

527(1396-1398) *Heterophasia capistrata*
(Vigors, 1831)
Rufous Sibia

1831. *Cinclosoma capistratum* Vigors, *Proc. Zool. Soc.* London : 56 (Himalayas; restricted to Simla by Ripley, Synopsis).

1891. *Malacias capistrata pallida* Hartert, *Kat. Vog. Mus.* Senkenb: 21 (northwestern India; restricted to Simla by Baker, 1921, *BNHS* 27 : 460).

1922. Baker, *FBI* No.311 (part), 312, 1 : 296, 298.

Collection records : Uttarakhand : Uttarkashi : Rana, 1 ♂, 5.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Bulbul +; c. 21 cm. Sexes alike. Also known as Black-capped Sibia.

Adult : Black erectile crest, crown and ear-coverts; rufous or cinnamon-buff nape and underparts; greyish-brown remaining upperparts; mainly black wings with grey panelling; and rufous tail with grey terminal and black subterminal band.

Juvenile : Similar, but with brownish-black cap.

Races : Of the three recognized Himalayan races, the nominate race of the Western Himalaya has paler cinnamon-buff nape and underparts; grey-brown mantle and back; and whitish throat.

Habitat : S (1600 m) 1800-3500 m. W (100 m) 1000-2750 m. Forest, especially mixed evergreen.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath (Reed 1979), Auli (Sankaran 1993, 1994), (Tak 1995), Latakhark, Beltakharak (Sathyakumar 2003), Mandal (Singh 2005a), Chenab Valley

(Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), Chakrata, Mussoorie, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Gori river basin-2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). Uttarkashi (Tak 1995), Govind NP : Sankri, Dhaura (Tak *et al.* 2004), Silkyara (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jnunhunwala *et al.* 2001).

528(1367-1370) *Yuhina flavicollis* Hodgson, 1836
Yellow-naped Yuhina

1836. *Yuhina? flavicollis* Hodgson, *Asiat. Res.* 19 : 167 (Nepal, restricted to central Nepal by Ripley, Synopsis : 408).

1914. *Yuhina flavicollis baileyi* Baker, *Bull. Brit. Orn. Cl.* 35 : 17 (Tembang, Drang Valley, 7000 ft).

1922. Baker, *FBI* No.345 (part), 1 : 322.

Diagnostics : Size : Sparrow; c. 13 cm. Sexes alike. Also known as Whiskered Yuhina. Grey head with blackish crest; conspicuous black malar (moustachial stripe); white-eye ring and throat; golden-yellow nuchal collar (hind collar); olive-brown remaining upperparts; narrow blackish-brown streaks on lower throat and upperbreast; whitish underparts and brownish flanks with white streaking; and buff undertail-coverts.

Races : Of the three recognized Himalayan races, *Y. f. albicollis* of the Western Himalaya is easily recognized by its paler hindcollar which is yellowish-buff in the centre.

Habitat : S 1700-3000 m. W Plains edge-2750 m. Broadleaved forest, second growth.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : [Dhanaulty] (Singh 2000). Naini Tal (Hudson

1930). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Khati 2004, internet list).

Status : Widespread resident undertakes altitudinal movements. Schedule IV (BNHS 2002).

**529(1371-1372) *Yuhina gularis* Hodgson, 1836
Stripe-throated Yuhina**

1836. *Yuhina gularis* Hodgson, *Asiat. Soc. Res.* **19** : 166 (Nepal).

1902. *Yuhina yangpiensis* Sharpe, *Bull. Brit. Orn. Cl.* **13** : 12 (Yang-pi, Tali-fu road, Yunnan).

1921. *Yuhina gularis griseothincta* Rotschild, *Novit. Zool.* **28** : 24 (Shweli-Salwin Divide, Yunnan).

1922. Baker, *FBI* No.339 and 340, **1** : 317, 318.

Diagnostics : Size : Sparrow; c. 14 cm. Sexes alike.

Adult : The largest of the Yuhinas found in the region is a plump active little olive-brown bird readily diagnosed by the concolourous erectile crest; black primaries with some whitish trim and rufous-orange secondaries (forming black and orange wing panel); black streaks on pale vinaceous throat; and brownish-orange belly and vent.

Juvenile : With shorter crest and weaker streaks on throat.

Habitat : S (2400 m) 2700-3700 m. W (foothills) 1700-3050 m. Forest, (scrub, bamboo).

Distribution : Uttarakhand : Chamoli : Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Singh 2000). Pauri (Tak 1995). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi: Govind NP: Duni (Tak *et al.* 2004). CTR (internet list).

Status : Widespread resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jnunjhunwala *et al.* 2001).

**530(1374) *Yuhina nigrimenta* Hodgson, 1845
Black-chinned Yuhina**

1845. *Yuhina nigrimenta* Hodgson, in Blyth, *Jour. Asiat. Soc. Bengal* **14** : 562 (Nepal).

1954. *Yuhina nigrimenta titania* Koelz, *Contrib. Inst. Regional Exploration*, No. **1** : 9 (Karong, Manipur).

1922. Baker, *FBI* No.343, **1** : 320.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. It is a small and delicate greyish-brown short-tailed Yuhina.

Adult : Has erectile black crest with spiky grey edgings; black chin and lores; grey ear-coverts, nape and hindneck; red lower mandible and black upper mandible (forming the red-and-black slightly decurved bill); white to pale grey throat and upper breast contrasting with buffish remaining underparts; and orange-yellow legs and feet.

Juvenile : Browner; shorter crest with less distinct grayish edges.

Habitat : 300-1800 m. Evergreen forest, second growth.

Distribution : Uttarakhand : Dehra Dun : Mussoorie (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jnunjhunwala *et al.* 2001).

**531(1375) *Yuhina zantholeuca* (Hodgson, 1844)
White-bellied Yuhina**

1844. *Erp. [ornis] zantholeuca [sic]* Hodgson in Blyth, *Jour. Asiat. Soc. Bengal* : **13** : 380 (central region of Nepal).

1922. Baker, *FBI* No.350, **1** : 325.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. It is an unusual short-crested olive-yellow and whitish Yuhina.

Adult : Olive-yellow crest and upperparts with pale grey lores and ear-coverts; beady black eye; pinkish bill (with browner culmen) and legs; and pale grey underparts with bright yellow undertail-coverts.

Juvenile : Duller, with brownish cast to upperparts; shorter crest and duskier bill.

Habitat : (Plains) 360-1650 m (2290 m). Forest and second growth, especially clearings.

Distribution : Uttarakhand : CTR (Khati 2004, internet list, Ghosh & Chatterjee 2006).

Status : Widespread resident undertakes altitudinal movements. Schedule IV (BNHS 2002).

PANURINAE (Parrotbills)

Parrotbills are distinguished by short deep, parrot-like bill with curved cutting edges to the mandibles used for cutting grass and bamboo stems. They are gregarious but shy inhabitants of bamboo and grassland.

532(1236) *Conostoma oemodium* Hodgson, 1841 Great Parrotbill

1841. *Conostoma aemodius* Hodgson, *Jour. Asiat. Soc. Bengal* 10 : 857 (Nepal).

1922. Baker, *FBI* No.89, 1 : 104.

Diagnostics : Size : Myna; c. 28 cm. Sexes alike. A large grey-brown bird with huge conical pale orange- yellow bill; greyish-white forehead; dark brown lores; pale yellow eyes; rufescent-brown secondaries and wing-coverts; uniform grey-brown sides of head, throat and breast; and grey sides to tail.

Habitat : S 2700-3600 m. W >2100 m. Ringal bamboo, rhododendron.

Distribution : Uttarakhand : Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006).

Status : Sparse local winter visitor. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jnunjhunwala *et al.* 2001).

533(1239a-1244) *Paradoxornis nipalensis* (Hodgson, 1837)

Black-throated Parrotbill

1837. *Suthora Nipalensis* Hodgson, *Ind. Rev.* 2(1) : 32 (Nepal; restricted to Kathmandu Valley by Ripley, Synopsis : 370).

1922. Baker, *FBI* No.93, 1 : 109.

Diagnostics : Size: Sparrow; c. 10 cm. Sexes alike. Also known as 'Orange Suthora' or 'Ashy-eared/ Black-fronted/ Small Suthora' or 'Nepal Parrotbill' It is the smallest orange-brown Parrotbill found in the region.

Adult : Has grey crown and cheek; blackish lateral crown-stripes and throat-patch; white face (including short brow and moustache); brown upperparts with orange-rufous wings and tail; black primary-covert patch with silvery and black wing-slashes; and bright rufous-buff breast and flanks.

Habitat : 530-3300 m, but altitudinal limits very widely from one part of the range to another. Ringal bamboo, rhododendron, forest undergrowth.

Distribution : Uttarakhand : Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006).

Status : Sparse local resident. Schedule IV (BNHS 2002).

SYLVIINAE (Goldcrest, Fantails, Prinias, Tesias, Warblers: Bush, Reed, Leaf, etc.)

They are largely insectivorous inhabitants of various types of grassland, though some also make use of adjoining scrub and mixed habitat. Goldcrest are tiny, brightly coloured arboreal warblers. Fantails are small birds with short rounded wings and long broad tail habitually held cocked and fanned. Usually found in the lower and mid-storey, they often switch from side to side in order to disturb their insect prey. Prinias are small to medium-sized warblers with short rounded wings and long thin graduated tails often held cocked and/or rather loosely waved around. Rectrices show white tip, which may be lost by abrasion. Forage, often in loose parties. Tesias have very short tails and long legs. Warblers are with fairly broad graduated tail; skulking except for striated grassbird. Bush and Reed Warblers are small insectivorous birds which generally keep inside dense bushes, long grass and undergrowth, where they are difficult to observe. Plumage patterns are not highly differentiated, being largely a mixture of greys and browns. Reed Warblers provide perhaps the most difficult identification challenges to birdwatchers. With practice and patience it is, however, possible to sort out these tricky 'little brown jobs' The members of the genus *Acrocephalus* are typically fairly slim with relatively long bill, flat crown and head, and rounded tails. Plumage is brown above and pale below. The song is usually repetitive and churring but can include mimicry. They mostly fairly skulking, keeping low down in dense vegetation, and the best chances of observation are often in the early morning when they may climb to the top of a reed or bush to preen and sun themselves. Tailorbirds are small warblers with fairly long thin graduated tails, greenish upperparts, rufous crown

and long, thin slightly downcurved bill. They are named after their habit of stitching leaves together to build a nest. The Chiffchaff or the *Sylvia* warblers are fairly small, sturdy and mostly round-headed with relatively short stubby bills compared to other warblers. The tail is usually square-ended, often with whitish outer tail feathers. They generally inhabit scrub, semi-desert, light woodland, parks and gardens in drier habitats. Leaf Warblers of the genus *Phylloscopus* are small active birds which mainly feed on insects and spiders among the foliage of trees and bushes. Their plumage is generally dominated by brown and olive tones with contrasting dark, yellow, buff or white markings. All species show a more-or-less distinct supercilium and dark line through the eye. They tail is normally fairly square-cut with a slight notch and rounded corners. Specific identification within this group is also a difficult and challenging task for the birdwatcher. Therefore, it is important to note the as many of the following features as possible- the exact colour of under- and upperparts; number and colour of wing-bars, presence or absence of crown-stripe, pale rump, white in the outer tail feathers and pale fringes to the tertials; exact length, shape, colour and distinctness of the supercilium; length of primary projection; bill shape and colour; leg colour. In addition to individual variation, moult and feather wear seasonally affect plumage colouration, with most species appearing brighter in fresh plumage. Range, behaviour and habitat may be useful additional pointer.

**534(1628-1631) *Regulus regulus* (Linnaeus, 1758)
Goldcrest**

1856. *Regulus himalayensis* Bonaparte, *Compt. Rend. Acad. Sci. Paris* 42, No. 17 : 767 ('les monts Himalaya', restricted to Kotgarh, Simla Hill States by Deignan, 1956, *Bull. Brit. Orn. Cl.* 76 : 106).

1863. *Regulus Himalayensis* Jerdon, *Bds. India* 2 : 206 (NW. Himalaya = Kotgarh vide Ticehurst, 1926, *Jour. Bombay nat. Hist. Soc.* 31 : 499).

1954. *Regulus regulus salimii* Deignan, *Bull. Brit. Orn. Cl.* 74 : 104 (Kotgarh). New name for *Regulus Himalayensis* 'Blyth' = Jerdon, 1863.

1924. Baker, *FBI* No.944 (part), 2 : 539.

Diagnostics : Size : Sparrow -; c. 8 cm. Similar to smaller 'crowned' *Phylloscopus* (Leaf Warbler) but has two prominent yellowish white wing-bars.

Male : Crown with a golden median stripe bordered by two bold black lateral bands; whitish eye-ring; greyish olive-green upperparts; rump tinged with yellow; a dark patch on wing; and pale greyish fulvous underparts, tinged with olive on flanks.

Female : Similar to male but with yellow median stripe on crown *contra* orange (in male).

Juvenile : Lacks crown patch of adult.

Habitat : S 2200-3600 m (4000 m). Mainly conifers. W 1500-3050m. Firs, (other forest), orchards, groves, gardens.

Distribution : Uttarakhand : Chamoli : Deodi-Ramani (Reed 1979), NDNP (Tak & Kumar 1987), Dibrugheta (Sankaran 1993, 1994), (Tak 1995), Dibrugheta, Deodi, Ramani (Tak 1997). Dehra Dun: beyond Chakrata (Osmaston 1935), (Singh 2000). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993), Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002).

**535(1498-1500a) *Cisticola juncidis*
(Rafinesque, 1810)**

Streaked Fantail-Warbler

1831. *Prinia cursitans* Franklin, *Proc. Zool. Soc. London* : 118 (between Calcutta and Benares).

1924. Baker, *FBI* No.825 (part), 2 : 422.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Zitting Cisticola', previously also called 'Fan-tailed Warbler', is a tiny rufous-brown warbler with faint whitish brow; boldly streaked with black on mantle; prominent white-tipped fan-shaped tail; and whitish buff underparts, darker on flanks.

Adult (breeding) : Has diffusely streaked grey-brown crown, and distinct rufous rump.

Adult (non-breeding) : More heavily streaked upperparts and often less distinct rump. The first winter bird is similar to adult, but with sulphur-yellow wash to underparts and less heavily streaked upperparts.

Habitat : <1350 m (2100 m). Mainly damp grassland, reeds, crops.

Distribution : Uttarakhand : Dehra Dun (Wright 1957), New Forest (Mohan 1996), Khaddar, [Mohand] (Singh 2000), Asan wetland (Tak & Sati 2003), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

536(1496-1497) *Cisticola exilis* (Vigors & Horsfield, 1827)

Golden-headed Fantail-Warbler

1863. *Cistola Tytleri* Jerdon, *Bds. India* 2 : 176 (Dacca, Bengal).

1924. Baker, *FBI* No.823, 2 : 420.

Diagnostics : Size : Sparrow -; c. 10 cm. Also known as Bright-capped Cisticola, Bright-headed/ Golden-headed Cistola or Fantail Warbler, is a very small warbler of grassy hill slopes.

Male (breeding) : Rufous crown, nape, and neck sides; and uniformly dark tail with narrow buffy-brown tip. The unstreaked rufous crown distinguishes it from Zitting Cisticola (*C. juncidis*).

Male (non-breeding) and **Female** : Crown and back boldly streaked with black; brown tail narrowly tipped with buff; whitish buff underparts, darker on flanks and white on belly. It is differentiated from *C. juncidis* by the rufous-brown nuchal collar and by the longer tail being tipped with greyish buff (not white).

Habitat : <800 m (1200 m). Tall grass.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status: Sparse local resident. Schedule IV (BNHS 2002).

Remarks : It is known as the finest tailor of the birds, often using stolen spiders' thread to stitch together its nest. It is found in rank vegetation in and around wetlands.

537(1526-1528) *Prinia criniger* Hodgson, 1836
Brown Prinia

1836. *Prinia? Suva cringer* Hodgson, *Asiat. Res.* 19 : 183 (Nepal).

1924. Baker, *FBI* No. 923, 2 : 518.

Diagnostics : Sparrow -; 16 cm. Sexes alike. Also known as 'Striated Prinia' or 'Brown (Longtailed) Hill Warbler' or 'Brown Hill Prinia' is a large Prinia with a stout bill and long graduated blunt tail. Tail feathers are rather pale-tipped with dark subterminal spots.

Breeding : Dark grey-brown upperparts with ill-defined streaking; dark lores; and buffish-white underparts with varying dark mottling on throat and breast.

Non-breeding : Rufous-brown upperparts with bold dark brown streaking on crown and upper mantle; buff lores and eye-ring; whitish-buff underparts with warm buff on flanks; and rufous-buff tips and dark subterminal bands on underside of tail.

Habitat : S 900-2300 m (3100 m). W < 2140 m. Rank grass, steep scrubby hillside, grassy open pine forest, terraced fields.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935), [Dholkhand, Kampti Falls] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

Remarks : The prinias are sometimes referred to as wren-warblers. They are a little known group of the tropical and subtropical Old World, the roughly thirty species being divided fairly equally between Africa and Asia.

538(1507) *Prinia cinereocapilla* (Moore, 1854)
Hodgson's Prinia

1854. *Prinia cinereocapilla* Hodgson, in Horsfield & Moore, *Cat. Bds. Mus. E.I. Co.* 1 : 322 (Nepal).

1924. Baker, *FBI* No. 830, 2 : 428.

Diagnostics : Size : Sparrow -; c. 11 cm. Also known as 'Grey-crowned/ capped Prinia' or

'Hodgson's Wren-/ Longtailed Warbler, is easily identified by its slaty crown and nape; orange-buff supercilium; blackish lores; rufous-brown upperparts (including tail); and buffy underparts. In breeding plumage, crown and nape are dark grey and lores blacker. In non-breeding plumage, rufescent base of forehead and supercilium and more rufescent underparts are diagnostics.

Habitat : 1350 m (1600 m). Clearings in dense jungle, second growth. Relatively arboreal.

Distribution : Uttarakhand : Dehra Dun : Ubiquitous (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Rare. Vulnerable (IUCN 2007). Schedule IV (BNHS 2002). BRS (09) *i.e.* Indo-Chinese Tropical Moist Forest (Jhunjhunwala *et al.* 2001).

539(1506) *Prinia buchanani* Blyth, 1844
Rufous-fronted Prinia

1844. *P.(rinia) Buchanani* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 376, new name for *Prinia rufifrons* Jerdon, 1840, *nec Prinia rufifrons* Ruppell, 1835.

1840. *Prinia rufifrons* Jerdon, *Madras Jour. Lit. Sci.* 11 : 4 (neighbourhood of Jalna, northwestern Hyderabad).

1867. *F.(rankilinia) cleghorniae* Blyth, *Ibis* : 24 (northwest of Delhi).

1924. Baker, *FBI* No. 831, 2 : 429.

Diagnostics : Size : Sparrow -; c. 12 cm. Sexes alike. Also known as 'Rufous-fronted Wren-Warbler' or 'Rufous-fronted Wren-/ Longtailed Warbler', is a dull brown prinia with bright rufous forehead and crown; whitish narrow supercilium and lores; grey ear-coverts merging with grey throat sides; grey-brown upperparts; white underparts with variable greyish cast; broad white tips to all but central tail feathers (prominent in flight).

Habitat : <1220 m. Coarse grass, scrub jungle, bushes in stony semi-desert, (crops). Drier areas than Franklin's Prinia.

Distribution : Uttarakhand : Dehra Dun : Asan wetland (Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

540(1502-1505) *Prinia hodgsonii* Blyth, 1844
Franklin's Prinia

1844. *Pr.(inia) Hodgsonii* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 376 New name for *Prinia gracilis* Franklin, 1831, not *Sylvia* (= *Prinia*) *gracilis* Lichtenstein, 1823.

1831. *Prinia gracilis* Franklin, *Proc. Zool. Soc. London* : 119 (Mirzapur District, restricted by Ticehurst & Whistler, *Ibis* 1939 : 763).

1950. *Prinia hodgsonii pallidior* Koelz, *Amer. Mus. Novit.*, No. 1452 : 8 (Sihor, Kathiawar).

1924. Baker, *FBI* No. 827 (part), 2 : 425.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known as 'Franklin's Wren-Warbler' or 'Hodgson's Prinia' is a small, comparatively short-tailed prinia with short rounded wings (with rufous wing panel), orange eye-ring, strong legs, and a short black bill.

Adult (breeding) : Brownish-grey to slate-grey upperparts; cloudy-grey breast-band contrasting with whitish remaining underparts; and greyer tail with white tips.

Non-breeding : In the northern part of the range loses breast-band, though some may retain a trace; upperparts vary from brown to rufous-brown; less clear white supercilium; and browner upperparts. It is distinguished from Rufescent Prinia by brownish-grey (*vs* rufescent) tail.

Juvenile : Like non-breeding adult, but with more rufous upperparts and faint yellowish wash to underparts.

Habitat : <1200 m (1900 m). Bushes, scrub, (grass, bamboo, mangrove, reeds, and coffee).

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Asan wetland (Tak & Sati 2003), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

541(1508-1509) *Prinia gracilis* (Lichtenstein, 1823)
Graceful Prinia

1844. *P. (rinia) lepida* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 376 (Indus territories = Sind *fide* Whistler & Kinnear, 1933, *JBNHS* 36 : 579).

1924. Baker, *FBI* No. 931, 2 : 526.

Diagnostics : Size: Sparrow -; c. 13 cm. Also known as 'Streaked Wren-Warbler' or 'Graceful Stripe-backed Prinia' or 'Fulvous-streaked Prinia' is a small greyish prinia.

Breeding (summer) : Streaked sandy grey-brown upperparts; whitish underparts with buffish wash on flanks; faintly cross-barred and graduated tail, each feather (the rectrices) tipped whitish with a subterminal dusky spot. The dark streaking on crown and mantle distinguishes it from all other prinias, except the much larger Striated and Rufous-vented.

Non-breeding : Brighter sandy brown upperparts with weaker streaking; tinged rufous on belly, flanks and vent; and paler bill.

Habitat : Lowlands (up to 1000). Long grass, scrub, tamarisks; often near water.

Distribution : Uttarakhand : Dehra Dun (Wright 1957), Asan wetland (Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

542(1519-1523) *Prinia sylvatica* Jerdon, 1840
Jungle Prinia

1840. *Prinia sylvatica* Jerdon, *Madras Jour. Lit. Sci.* 11 : 4 (Seegore Ghat, Nilgiris).

1939. *Prinia sylvatica palniensis* Koelz, *Proc. Biol. Soc. Washington* 52 : 72 (Kodaikanal, Palni Hills).

1924. Baker, *FBI* No. 937 (part), 2 : 532.

Diagnostics : Size : Sparrow -; c. 15 cm. Sexes alike, except blacker bill and mouth of male in breeding season. Also known as 'Jungle Wren- / Longtail Warbler' or 'Large Prinia' is a large brownish prinia. It differs from very similar 'Plain Prinia' by its stouter bill; less prominent pale supercilium; and broader, bulkier, and 'loosely inserted' tail. **Breeding male** has black bill; dark

grey upperparts and face (without pale brow or supercilium); pale yellowish-buff underparts; and shorter tail. **Non-breeding** has paler base to lower mandible; reddish-brown upperparts with pale supercilium and darker ear-coverts; buff underparts with dusky flanks; and longer tail (with brownish outer feathers, buff tips, and dusky subterminal spots).

Habitat : <1500 m (1800 m). Dry stony scrub, bush jungle, euphorbia. Usually drier habitats than Plain Prinia.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a & b), New Forest (George 1957, Mohan 1996), [Mohand] (Singh 2000), Asan wetland (Tak & Sati 2003), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

543(1524-1525) *Prinia flaviventris* (Delessert, 1840)
Yellow-bellied Prinia

1840. *Orthotomus flaviventris* Delessert, *Rev. Zool.* : 101 (N. Bengal).

1952. *Prinia flaviventris fulviventr* Koelz, *Jour. Zool. Soc. India* 4 : 154 (Karong, Manipur).

1924. Baker, *FBI* No. 933, 2 : 528.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. Also known as 'Yellow-bellied Wren- / Longtail Warbler' is an elegant prinia with fine white supercilium (sometimes lacking), greenish upperparts and yellowish underparts.

Adult : White throat and breast; yellow belly; slate-grey tinge on crown and olive-green tinge on upperparts.

Juvenile : With uniform yellowish olive-brown upperparts and yellowish underparts.

Races : Two races are recognized from the subcontinent : *P. f. sindhiana* of NW is duller and paler overall than nominate of NE.

Habitat : <800 m (1200 m). Grassland, reeds and bushes near water.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

**544(1515-1518) *Prinia socialis* Sykes, 1832
Ashy Prinia**

1832. *Prinia socialis* Sykes, *Proc. Zool. Soc. London* : 89 (Dukhun).

1924. Baker, *FBI* No. 935 (part), 2 : 530.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. Also known as 'Ashy Wren-/ Long-tailed Warbler', is a grey-crowned prinia with short rounded wings, small black billed, red eyes, strong legs, and a longish tail.

Breeding : Blackish crown and cheek; grey mantle; rufescent wings; lacks supercilium and a black eye stripe; whitish underparts with yellow wash on flanks.

Non-breeding : Short white brow (in some individuals); grey-head; and rich tawny underparts.

Juvenile : Greenish upperparts, long narrow pale olive supercilium over dark eye line; and buffish-yellow wash on underparts.

Races : Two races are recognized from India: *P. s. stewarti* of North India is much browner above with longer tail.

Habitat : <1200 m. Grass scrub, sparse jungle, crops, gardens, more humid areas than Plain Prinia.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a & b), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Asan Barrage, Khaddar, Karva Pani, New Forest, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

**545(1510-1514) *Prinia inornata* Sykes, 1832
Plain Prinia**

1832. *Prinia inornata* Sykes, *Proc. Zool. Soc. London* : 89 (Dukhun).

1924. Baker, *FBI* No. 940 (part), 2 : 534.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. Also known as 'Plain Wren-/ Longtail Warbler' or 'White-browed Prinia', is a plain, sand-coloured wren-warbler with a longish, graduated tail; short rounded wings; strong legs and a short black bill.

Adult (breeding) : Grey-brown upperparts, with a short white supercilium and pale rufous fringes on the closed wings (to tertials); and whitish-buff underparts. In winter (non-breeding), the upperparts are a warmer brown, and the underparts more buff. The tail is longer than in summer.

Juvenile : More rufescent than adult breeding with similar-length tail. There are a number of races differing in plumage shade.

Races : Four races are recognized from the subcontinent: *P. i. fusca* of northeast (with darker brown upperparts and browner underparts); *P. i. franklinii* of SW India and *P. i. insularis* of Sri Lanka (with longer bill) both with darker and greyer (darkest) upperparts and more fulvous underparts (with difference between breeding and non-breeding plumages) and the nominate, which is described here.

Habitat : <1200 m (1800 m). Scrub, rank grass, crops, second growth, and (mangroves). Constantly waves tail around.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957), Asan Barrage, Khaddar (Singh 2000), Asan wetland (Tak & Sati 2003). Naini Tal (Tak 1995). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

**546(1473) *Tesia castaneocoronata* (Burton, 1836)
Chestnut-headed Tesia**

1836. *Sylvia castaneo-coronata* Burton, *Proc. Zool. Soc. London* : 152 (Himalayas, restricted to Nepal by Ripley, Synopsis : 441).

1954. *Tesia castaneocoronata regia* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 11 (Blue Mountain, Lushai Hills).

1922. Baker, *FBI* No. 476, 1 : 465.

Diagnostics : Size : Sparrow -; c. 8 cm. Sexes alike. Also known as 'Chestnut-headed Ground Warbler' is a tiny, wren-like bird.

Adult : Chestnut head; olive-green remaining upperparts; bright yellow underparts, with olive wash on flanks and belly; and an extremely short tail.

Juvenile : Very different, has dark olive upperparts with brownish cast (lacking chestnut head of adult); and dark rufous underparts.

Habitat : S (1800 m) 2400-3300 m (4000 m). W <1830. Undergrowth, especially near streams.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli (Osmaston 1921), Mandal (Singh 2005a). Dehra Dun: New Forest (Mohan 1996), Tons Valley Forest (Singh 2000). Rudraprayag: Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

547(1471) *Tesia cyaniventer* Hodgson, 1837 **Grey-bellied Tesia**

1837. *Tesia cyaniventer* Hodgson, *Jour. Asiat. Soc. Bengal* 6 : 101 (Nepal).

1922. Baker, *FBI* No. 475 (part), 1 : 463.

Diagnostics : Size : Sparrow -; c. 9 cm. Sexes alike. Also known as 'Dull Slaty-bellied Ground Warbler' or 'Slaty-bellied Ground Warbler' is a tiny, tailless, dark coloured, wren-like terrestrial bird.

Adult : Very similar to Slaty-bellied Tesia, but distinguished by its paler grey underparts, becoming almost whitish on throat and centre of belly; olive-green upperparts, with brighter lime-green supercilium and prominent black stripe behind eye; stouter bill tipped dark with yellow basal two-thirds to lower mandible.

Juvenile : Different, with olive-brown upperparts and live cast to grey underparts; has brighter green supercilium and dark eye-stripe.

Habitat : S 1500-2550 m. W (Plains) foothill-1830 m. Damp forest undergrowth.

Distribution : Uttarakhand : Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

548(1474-1475) *Cettia pallidipes* (Blanford, 1872) **Blanford's Bush-Warbler**

1872. *Phylloscopus pallidipes* Blandford, *Jour. Asiat. Soc. Bengal* 41 : 162 (Sikkim).

1924. Baker, *FBI* No. 913, 2 : 508.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known as 'Pale-footed Bush-Warbler' is a small warbler of the foothills, has rufous-brown upperparts; a pale supercilium and a noticeable dark stripe through eye; shortish square tail; and creamy coloured underparts, with yellowish legs.

Habitat : S foothills, W > Plains. Undergrowth at forest edge, tall grass, secondary growth.

Distribution : Uttarakhand : Dehra Dun : between Dehra and Asarori (Osmaston 1935, Bhatnagar & Misra 1972a), New Forest (George 1957, Singh 1999), New Forest, Tons Valley Forest (Singh 2000), Asan wetland (Tak & Sati 2003). Tehri: Bhagirathi valley (Osmaston 1921). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

549(1477-1478) *Cettia fortipes* (Horsfield, 1845) **Brown-flanked Bush-Warbler**

1872. *Horeites pallidus* Brooks, *Jour. Asiat. Soc. Bengal* 41 : 78 (Kashmir).

1924. Baker, *FBI* No. 912, 2 : 507.

Diagnostics : Size2 : Sparrow -; c. 11 cm. Sexes alike. Also known as 'Strong-footed Bush

Warbler' is small skulking bush warbler identified by its distinctive whistled, explosive song: a loud whistle, *weeee*, followed by an explosive *chiwiyou*.

Adult : Olive-grey to olive-brown upperparts, with pale brow and slightly rufescent wings, slightly paler centre of throat and belly; and shorter and greyer tail.

Juvenile : Brown upperparts; and yellow underparts.

Habitat : S 1800-3200 m. W (plains) foothills-2140 m. Undergrowth; scrubby slopes.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Belta Kharak, above Joshimath (Sankaran 1993, 1994). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (Singh 1999), Chakrata, New Forest, Tons Valley Forest (Singh 2000). Pauri (Osmaston 1921). Rudraprayag (Osmaston 1921), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bhilling valley (Matthews 1918). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba undated, Khati 2004, internet list).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

550(1479-1480) *Cettia major* (Moore, 1854)
Chestnut-crowned Bush-Warbler

1854. *Horeites major* Moore, in Horsfield & Moore, *Cat. Bds. Mus. E.I. Co.* 1 : 323 (Nepal).

1924. Baker, *FBI* No. 915, 2 : 510.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. Also known as 'Large Bush Warbler' is distinguished from other bush warblers (except Grey-sided) by a combination of chestnut head and nape; dark brown upperparts; and whitish underparts with grayish-olive sides of breast and brownish-olive flanks.

Adult : Differs from Greysided by larger size; larger bill; longer supercilium (which is indistinct and buffish-white behind the eye), and whiter underparts, particularly throat and centre of breast.

Juvenile : Plain and dark.

Habitat : S (1800 m) 3300-4100 m. Rhododendron. W >plains. Reedbeds.

Distribution : Uttarakhand : Chamoli : Dibrugheta (Sankaran 1993, 1994). CTR (Khati 2004, internet list).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

551(1481-1483) *Cettia flavolivacea* (Blyth, 1845)
Aberrant Bush-Warbler

1845. *N. (eornis) flavolivacea* Hodgson, in Blyth, *Jour. Asiat. Soc. Bengal* 14 : 590 (Nepal).

1924. Baker, *FBI* No. 906, 2 : 502.

Diagnostics : Size : Sparrow -; c. 13 cm. It superficially resembles a leaf-warbler (*Phylloscopus*) with yellowish underparts and no wing-bars.

Adult : Olive-brown upperparts with yellowish-green cast (distinguishes it from other bush-warblers); a pale yellowish supercilium and a dark line through eye; sides of head mottled yellow and brown; and yellowish underparts tinged with olive on throat and flanks.

Juvenile : Like adult, but with more uniform buffish-yellow underparts.

Habitat : S 2400-3600 m. W 700-2700 m. Long grass, scrub, undergrowth, bamboo.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

552(1484) *Cettia acanthizoides* (Verreaux, 1871)
Yellow-bellied Bush-Warbler

1872. *Horeites brunescens* Hume, *Ibis* : 109 (neighbourhood or Darjeeling).

1924. Baker, *FBI* No. 909, 2 : 505.

Diagnostics : Size : Sparrow -; c. 11cm. Sexes alike. Also known as 'Yellowish-bellied Bush Warbler' or 'Verreaux's Bush Warbler' or 'Hume's Bush Warbler' is the smallest of the bush-warblers, has brown upperparts washed

rufous (vs olive on Aberrant Bush-Warbler); buff supercilium; and yellowish belly and vent contrasting with greenish-white throat and breast.

Habitat : S 2400-3600 m. W >1350. Ringal bamboo; scrub.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

553(1485-1487) *Cettia brunnifrons* (Hodgson, 1845)
Grey-sided Bush-Warbler

1923. *Horeites brunnifrons whistleri* Ticehurst, *Bull. Brit. Orn. Cl.* 44 : 28 (Simla).

1924. Baker, *FBI* No. 918, 2 : 513.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Rufous-capped Bush Warbler'

Adult : Rufous-brown upperparts with a rufous-chestnut crown, long buff supercilium and dark stripe from lores through eye; white throat and belly; grey breast and sides (distinguishing it from Chestnut-crowned) and olive-brown flanks and vent.

Juvenile : With yellowish-olive on belly (separates it from juvenile Chestnut-crowned); and lacks chestnut crown.

Habitat : S 2700-4000 m. Shrubbery. W <2200 m. Dense grass, bushes.

Distribution : Uttarakhand : Bageshwar : Bharari (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Dehra Dun : beyond Chakrata (Osmaston 1935), New Forest (Mohan 1993, 1996), Malsi Deer Park, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Osmaston 1921). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Tons valley, Kedar Kanta (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS

(07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

554(1489-1490) *Bradypterus thoracicus*
(Blyth, 1845)
Spotted Bush-Warbler

1845. *D. (umeticola) thoracica* Blyth, *Jour. Asiat. Soc. Bengal* 14 : 584 (Nepal).

1924. Baker, *FBI* No. 810 (part), 2 : 405.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. A skulking plain brown bird of scrub and shrubbery, the boldly spotted throat, grey breast and barred undertail-coverts are diagnostic.

Adult : Dark olive-brown upperparts with rufescent cast; whitish supercilium; grey ear-coverts, sides of neck and breast; bold spotting on throat and breast; white centre of belly; olive-brown flanks; and olive-brown undertail-coverts barred with white.

Juvenile : Lacks grey on underparts, but has olive-brown spotting on throat and breast.

Habitat : S 3000-4350 m. Shrubbery above treeline. W >palins. Coarse grass, reeds, scrub.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Pindar valley (Osmaston 1921). Dehra Dun (Osmaston 1935), New Forest (Singh 1999, 2000). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Kedar Kanta (Osmaston 1935). CTR (Lamba undated, internet list).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002).

555(1491) *Bradypterus major* (Brooks, 1871)
Long-billed Bush-Warbler

1871. *Dumeticola major* Brooks, *Proc. Asiat. Soc. Bengal* : 210 (Cashmir).

1924. Baker, *FBI* No. 808, 2 : 403.

Diagnostics : Size : Sparrow -; c. 15 cm. Sexes alike. Also known as 'Large-billed Bush Warbler' is larger than 'Spotted Bush Warbler' with much longer and finer bill, and longer tail.

Adult : Olive-brown (in fresh plumage) to cold greyish-olive (in worn plumage) upperparts with a short white supercilium (more prominent behind the

eye); whiter underparts, with white chin and throat, the latter spotted, and buffish flanks; and unmarked undertail-coverts.

Juvenile : With less distinct spotting on throat and breast and yellowish wash to underparts.

Habitat : S 2400-3600 m. W >1200 m. Coarse grasss.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : Breeds in W Himalayas from N Pakistan east to Kashmir; presumed to winter in the foothills. Globally Threatened. India: was locally fairly common but few recent records; breeds 2400-3600 m (Grimmett *et al.* 1998).

556(1493) *Bradypterus luteoventris*
(Hodgson, 1845)
Brown Bush-Warbler

1845. *Tribura luteoventris* Hodgson, *Proc. Zool. Soc.*
London : 30 (Nepal).

1924. Baker, *FBI* No. 811, 2 : 406.

Diagnostics : Size : Sparrow -; c. 14 cm. Sexes alike.

Adult : Rufescent-brown upperparts, with rufous-buff supercilium and pale lower mandible; rufous-buff breast sides and flanks; whitish throat, centre of breast and belly; plain undertail-coverts; and lacks spotting on throat and breast, which is usually present in other bush warblers. The first-winter birds are with yellowish wash to under parts.

Juveniles : With darker upperparts and yellowish underparts.

Habitat : S 2100-3300 m (1200-1600 m). W Foothills.

Distribution : Uttarakhand : Chamoli : Pindar (Osmaston 1921). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

557(1545) *Locustella naevia* (Boddaert, 1783)
Pale Grasshopper-Warbler (1545)

1881. *Locustella straminea* Seeböhm, *Cat. Bds. Brit. Mus.* 5
: 117, ex. Severtzov, 1872, *nom. nud.* (Turkestan).

1924. Baker, *FBI* No. 807, 2 : 402.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. A brownish warbler has streaked brown upperparts, with indistinct supercilium; and whistish grey underparts, usually unmarked except fine arrow-heads on vent. The first-winter birds can have yellowish wash on much less streaked underparts.

Habitat : <1800 m. Waterside grass, bushes, reeds, grassy hillsides, shoals fringes.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : Local winter visitor; mainly in Western Ghats. India: generally uncommon; plains & hills, up to 1800 m in the peninsula (Grimmett *et al.* 1998). It breeds across much of temperate Europe and Asia. It is migratory, wintering from northwest Africa to India. The song, which gives this species its name, is a monotonous mechanical insect-like reeling, often given at dusk.

558(1495) *Acrocephalus melanopogon*
(Temminck, 1823)
Moustached Warbler

1903. *Luscinola mimica* Madarasz, *Vorlauf. Neuen Rohrsanger* [a leaflet] (Transcaspia and Persia = Tedjen in Transcaspia, and Khorasan and Seistan in Iran).

1924. Baker, *FBI* No. 821, 2 : 418.

Diagnostics : Size : Sparrow; c. 13 cm. Sexes alike. Also known as 'Moustached Sedge Warbler'

Adult : Distinguished from other *Acrocephalus* warblers of the subcontinent by a combination of broad white square-ended supercilium, which broadens behind eye and contrasts with blackish sides of crown and black eye-stripe; indistinctly streaked rufous-brown mantle; white underparts with bright cinnamon flanks and vent; shorter primary projection (50%); rump not warmer than mantle; and often cocks (raises) and flicks tail.

Juvenile : More heavily streaked and have markings on the breast.

Habitat : Plains (up to 1400 m). Reeds and bushes near water.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

559(1557-1558) *Acrocephalus agricola*
(Jerdon, 1845)

Paddyfield Warbler

1845. *Sylvia (acrocephalus) agricola* Jerdon, *Madras Jour. Lit. Sci.* 13 : 131 (neighbourhood of Nellore).

1924. Baker, *FBI* No. 800 (part), 2 : 394.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. It is distinguished from Blyth's Reed Warbler by more rufescent upperparts; warm buff flanks, shorter bill, and more prominent white supercilium.

Adult : Unstreaked rufescent upperparts with a warm brown rump; white supercilium bordered above by diffuse dark line; and buff underparts. In fresh plumage has bright orange-buff sides and breast-band contrasting with white throat, centre of belly and paler buff vent.

Juvenile : With richer buff underparts.

Habitat : Lowlands, reeds, marsh vegetation, paddies.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local winter visitor. Schedule IV (BNHS 2002).

560(1556) *Acrocephalus dumetorum* Blyth, 1849
Blyth's Reed-Warbler

1849. *Acrocephalus dumetorum* Blyth, *Jour. Asiat. Soc. Bengal* 18 : 815 (No locality = Calcutta, see Biswas, 1962, *JBNHS* 59 : 410).

1924. Baker, *FBI* No. 799, 2 : 393.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. It is distinguished from Paddyfield by colder olive-grey upperparts; and is a smaller replica of Indian Great Reed-Warbler with rather flat forehead, long bill and uniform wings.

Adult : Olive-grey upperparts; small pale supercilium; white throat; and whitish remaining underparts. In fresh plumage, have drab brown upperparts with rufescent rump; and pale underparts with yellowish buff flanks.

Juvenile : With yellower underparts.

Habitat : <2100 m. Dense bushes, (trees). Commonly in drier bushy habitats than other *Acrocephalus* in winter, except Thick-billed Warbler which is much larger.

Distribution : Uttarakhand : Dehra Dun : New Forest (Mohan 1993, 1996), New Forest, Tons Valley Forest, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Asan wetland (Tak & Sati 2003), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local passage migrant. Schedule IV (BNHS 2002).

561(1550-1552) *Acrocephalus stentoreus*
(Hemprich & Ehrenberg, 1833)
Indian Great Reed-Warbler

1839. *A. (grobates) brunescens* Jerdon, *Madras Jour. Lit. Sci.* 10 : 269.

1924. Baker, *FBI* No. 795 (part), 2 : 389.

Diagnostics : Size : Bulbul; c. 19 cm. Sexes alike. Also known as 'Clamorous Reed Warbler' or 'Great Reed Warbler' or 'Large-billed Reed Warbler' or '*A. orinus*' is a large plain olive-brown warbler with pale supercilium, long decurved-looking bill (darker on distal lower mandible), and short primary projection (roughly two-thirds of length of tertials or 70%) with 6 or 7 exposed primary tips visible beyond tertials.

Adult : Greyish-brown upperparts and greyish-white underparts. In fresh plumage, may be quite buffy and less yellow underparts with variable buff wash to breast and flanks.

Habitat : <1600 m. Usually in waterside reeds, bushes and trees except on passage.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002).

562(1562-1563) *Hippolais caligata*

(Lichtenstein, 1823)

Booted Warbler

1823. *Sylvia caligata* Lichtenstein, in Eversmann's *Reise Orenburg Buchara* : 128 (Ilck River, near Orenburg).

1843. *Sylvia scita* Eversmann, *Add. Pallas Zoogr. Rosso-Asiat.*, fasc. 3 : 12 (Ural Mts).

1924. Baker, *FBI* No. 842, 2 : 244.

Diagnostics : Size : Sparrow -; c. 12 cm. Sexes alike. Also known as 'Booted Tree Warbler' or 'Syke's Warbler' is small bird with more rounded head, slightly shorter finer bill (with dusky tipped lower mandible), shorter and squarer tail, and paler legs. Has pale olive-brown upperparts with whitish supercilium; and buffish white underparts with buffish flanks.

Habitat : Scrub, clumps of grass, bushes, trees crops, (reeds).

Distribution : Uttarakhand : Dehra Dun : New Forest (Singh 1999), Khaddar, New Forest (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Schedule IV (BNHS 2002).

563(1535-1539) *Orthotomus sutorius*

(Pennant, 1769)

Common Tailorbird

1769. *Motacilla sutoria* Pennant, *Ind. Zool. Pl.* 7 (Ceylon).

1924. Baker, *FBI* No. 813 (part), 2 : 410.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike, but tail usually longer in male. Also known as 'Tailor Bird' is a common and familiar garden bird.

Adult : Rufous crown; greenish upperparts; and whitish underparts with peach-buff wash on flanks. Breeding male has elongated central rectrices (tail feathers).

Juvenile : Duller, with less chestnut on crown and slight mottling on underparts.

Habitat : <1800 m (2000 m). Parks, gardens, scrub, hedge-rows, and undergrowth at edge of wooded areas.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Asan wetland (Tak & Sati 2003), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Govind NP : Naitwar (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : Tailorbirds get their name from the way their nest is constructed. The edges of a large leaf are pierced and swen together with plant fibre or spiders web to make a cradle in which the actual grass nest is built in a shrub.

564(1574-1575) *Phylloscopus collybita*

(Vieillot, 1817)

Common Chiffchaff

1817. *Sylvia collybita* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. ed., 11 : 235 (France, restricted to Normandy by Mayaud, 1941, L'Oiseau : 89).

Not in Baker, *FBI*.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known 'Brown Leaf Warbler' or 'Chiffchaff' has greenish brown upperparts with whitish or buffish supercilium and olive-green cast to rump, edges of remiges and rectrices; whitish underparts with greyish wash on breast sides and flanks; and black bill and legs.

Habitat : <2100 m (higher on passage). Bushes, trees, open forest, scrub, reeds, and crops.

Distribution : Uttarakhand : Dehra Dun : New Forest (Singh 1999), Khaddar, Mathurawala Swamp (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : This warbler gets its name from its simple song, a repetitive cheerful “chiff-chaff” This song is one of the first avian sings that spring has returned.

**565(1577) *Phylloscopus neglectus* Hume, 1870
Plain Leaf-Warbler**

1870. *Phylloscopus neglectus* Hume, *Ibis* : 143 (Punjab and Doab).

1924. Baker, *FBI* No. 856, 2 : 458.

Diagnostics : Size : Sparrow -; c. 9.5 cm. Sexes alike. A tiny, very short-tailed and palest leaf-warbler with greyish olive-brown upperparts (without green or yellow tinge); a whitish supercilium; whitish underparts tinged with buff on flanks; a small dark bill and feet. It is distinguished from Common Chiffchaff by smaller size; relatively larger and more rounded head; and short primary projection. Also it does not bob tail.

Habitat : S 2000-3000 m. Low bushes, juniper. W Plains and foothills.

Distribution : Uttarakhand : CTR (internet list, ZSI Surveys 2002-05).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : These are active, constantly moving, warblers always associated with trees. Most of the species are markedly territorial both in their summer and winter quarters.

**566(1584-1586) *Phylloscopus fuscatus* (Blyth, 1842)
Dusky Warbler**

1842. *Phyllopneuste fuscata* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 113 (neighbourhood of Calcutta).

1883. *Phyllopneuste homeyeri* Dybowski, *Bull. Soc. Zool. France* : 358 (tigil, Kamtchatka Peninsula).

1925. *Oreopneuste fuscata altaica* Sushkin, *Distrib. Bds. Russian Altai* : 73-4 (south slopes of Sailughem Range, Altai).

1924. Baker, *FBI* No. 860 (part) and 861, 2 : 461-2.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known as ‘Dusky Leaf Warbler’ is a plain dark brown-and-whitish leaf warbler with fine bill; plain brown upperparts; narrow whitish supercilium (distinct in front of eye brownish and less distinct behind); whitish underparts with grey on breast and buff on vent.

Habitat : Plains and foothills (higher on passage). Low trees, bushes and long grass near water, damp cultivation, mangroves.

Distribution : Uttarakhand : Dehra Dun : New Forest (Singh 1999), Asan Barrage, New Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**567(1582-1583) *Phylloscopus fuligiventer*
(Hodgson, 1845)
Smoky Warbler**

1845. *H.(orornis) fuligiventer* Hodgson, *Proc. Zool. Soc. London* : 31 (Nepal).

1924. Baker, *FBI* No. 859, 2 : 460.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. A very dark warbler with dark longish bill, except pale base to lower mandible; whitish supercilium; dark olive-brown upperparts; dull greenish yellow underparts with yellowish to whitish centre of belly; and dark vent, short dark tail and darker legs.

Habitat : S 3600-4300 m (5000 m). Low shrubbery above treeline; alpine meadows. W Plains and foothills (3200). Watersides bushes, moist scrub and grass.

Distribution : Uttarakhand : Chamoli : Nanda Devi Base Camp (Reed 1979), (Tak 1995). Dehra Dun (Bhatnagar & Misra 1972b). CTR (internet list).

Status : Sparse summer as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

**568(1579) *Phylloscopus affinis* (Tickell, 1833)
Tickell's Warbler**

1833. *Motacilla affinis* [sic] Tickell, *Jour. Asiat. Soc. Bengal* 2 : 576 (Borabhum and Dholbhum).

1924. Baker, *FBI* No. 852, 2 : 454.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known as ‘Tickell's Leaf Warbler’ is a greenish-and-yellow warbler.

Adult : Long and bold lemon-yellow supercilium over dark eye-stripe and yellowish ear-coverts; greenish-brown upperparts with greenish edges to primaries and secondaries; and brighter lemon-yellow underparts.

Juvenile : Darker brown upperparts; brown breast and flanks; and lemon-yellow throat and belly.

Habitat : S 2400-4500 m. Stony slopes with scattered vegetation, juniper, willows along river beds. W <1000 m. Rocky areas, old forts and ruins, deciduous forest. Usually on or near ground, or creeping over tree trunks, branches, rocky and old walls.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Girithi valley (Osmaston 1921), Bampa (Lavkumar 1956b), Nanda Devi Sanctuary (Reed 1979), (Tak 1995), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Chakrata (Singh 2000). Rudrapur : Chopta and Duggalbitta (Bannerjee 1993). Tehri (Tak 1995). Uttarkashi : Govind NP : Jakhol (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread winter visitor. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

569(1580) *Phylloscopus subaffinis* Ogilvie-Grant, 1900

Buff-throated Warbler

1950. *Phylloscopus subaffinis arcanus* Ripley, *Proc. Biol. Soc. Washington* 63 : 105 (Tikapur, Kailali District, western Nepal).

Not in Baker, *FBI*.

Diagnostics : Size : Sparrow -; c. 10.5 cm. Sexes alike. Also known as '*P. affinis*' is very similar in size, shape and colour to Tickell's Leaf, but lower mandible more extensively dark on tip; buffish-yellow supercilium and more yellowish-buff underparts (paler on centre of belly).

Habitat : >1200 m. Bushes and open scrub.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse winter visitor. Vagrant. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : One specimen was collected in Meghalaya in winter; possibly overlooked and may be more regular (Rasmussen 1996, Grimmett *et al.* 1998).

570(1581) *Phylloscopus griseolus* Blyth, 1847
Olivaceous Leaf-Warbler

1847. *Ph. (ylloscopus) griseolus* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 443 (banks of the Hoogly River, near Calcutta).

1924. Baker, *FBI* No. 858, 2 : 459.

Diagnostics : Size : Sparrow -; c. 11.5 cm. Also known as 'Sulphur-bellied Warbler' is a dark warbler with rather heavy bill, long wings, short and slightly notched tail. Resembles to Tickell's Warbler, but stouter and has pale drab brown upperparts with prominent bright yellow supercilium; dull distinctive greyish-yellow underparts with pure dull yellow centre of belly; and pale legs.

Habitat : S 2400-4500 m. Stony slopes with scattered vegetation, juniper, and willows along river beds. W <1000 m. Rocky areas, old fort and ruins, deciduous forest. Usually on or near ground, or creeping over tree trunks, branches, rocky and old walls.

Distribution : Uttarakhand : Chamoli : Sarsonpatil (Sankaran 1993, 1994). Dehra Dun : New Forest (Mohan 1993, 1996), Mussoorie, New Forest, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). CTR (Khatri 2004). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

571(1587-1589) *Phylloscopus pulcher* Blyth, 1845
Orange-barred Leaf-Warbler

1845. *Ph. (ylloscopus) pulcher* Blyth, *Jour. Asiat. Soc. Bengal* 14 : 592 (Nepal, restricted to Nepal Valley by Biswas, 1962, *JBNHS* 59 : 413; cf. also 414).

1846. *Phylloscopus erochroa* Gray, *Cat. Mamms. Bds. Nepal* : 66, 152 (Nepal, restricted to Chandragiri Pass, central Nepal Valley, by Ripley, 1950 *JBNHS* 49 : 401).

1954. *Phylloscopus pulcher pernix* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 16 (Blue Mountain, Lushai Hills).

1924. Baker, *FBI* No. 864, 2 : 464.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known 'Buff-barred Warbler' is similar in shape and size to Hume's Warbler, but easily identified by two orange-yellow wing-bars (lower very prominent); bright olive-green upperparts with sooty olive crown, an indistinct median stripe on crown, and prominent yellow supercilium extending up to nape; yellow rump; greyish underparts; and white inner webs of outer rectrices (prominent in flight).

Habitat : S (2450 m) 3400-4100 m (4300 m). Mixed fir, rhododendron and birch forests; shrubbery above treeline. Often flicks tail open to show white in outer rectrices. W (Plains) 500-3050+ m. Dense forest.

Distribution : Uttarakhand : Chamoli : Dhauli river (Osmaston 1921), enroute Tunganath (Singh 2005a). Dehra Dun (Singh 2000). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Whymper 1907). CTR (Lamba undated, Khati 2004, internet list).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

572(1597-1599) *Phylloscopus maculipennis*
(Blyth, 1867)

Grey-faced Leaf-Warbler

1867. *Abrornis maculipennis* Blyth, *Ibis* : 27 (Nepal, restricted to Ilam District, eastern Nepal, by Ripley, 1950, *Proc. Biol. Soc. Washington* 63 : 106).

1952. *Phylloscopus maculipennis papilio* Koelz, *Jour. Zool. Soc. India* 4 : 42 (Mawphlang, Khasi Hills).

1924. Baker, *FBI* No. 863 (part), 2 : 463.

Diagnostics : Size : Sparrow -; c. 9 cm. Sexes alike. Also known as 'Ashy-throated Warbler' is a tiny green leaf-warbler with bright olive-green

upperparts; white supercilium, greyish crown-stripe and dark grey ear-coverts; orange-yellow double wing-bars; bold yellow rump-patch; silvery-grey throat and breast contrasting with fairly bright yellow belly; and white inner webs on short tail (visible when tail is flicked open).

Habitat : S 2450-3500 m. Primary forest, W (Foothills) 1400-2300 m (2900 m). Broadleaved forest, second growth.

Distribution : Uttarakhand : Almora : Ranikhet (ZSI Survey 2004); Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Mandal, Pipalkoti, Gwaldam, Narainbagrh (ZSI Survey 2004), Mandal (Singh 2005a). Dehra Dun (Tak 1995, Singh 2000). Pithoragarh : District survey- 2005, Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Ukhimath (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Govind NP : Sunkhundi, Jakhol (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

573(1594-1596) *Phylloscopus chloronotus*
(G.R. Gray & J.E. Gray, 1846)
Lemon-rumped Warbler

1846. *Abrornis chloronotus* Gray, *Cat. Mamms. Bds. Nepal* : 66, 152 (Nepal, restricted to Katmandu Valley by Ripley, *JBNHS* 49 : 466).

1924. Baker, *FBI* No. 866 (part), 2 : 466.

Diagnostics : Size : Sparrow -; c. 9.5 cm. Sexes alike. Also known as 'Pallas's leaf Warbler' or 'Yellow-rumped leaf Warbler' or 'Pale-rumped Warbler' or '*P. proregulus*' is a fluffy leaf warbler with olive-green upperparts; yellowish supercilium and crown stripe; dark streak through eye broadening behind the eye and hooking down behind ear-coverts; two yellowish-white wing-bars; prominent pale yellow rump-band; and dull white underparts tinged with yellow. It is distinguished from all leaf warblers by pale yellow rump-patch, except *pulcher* and *maculipennis*, both of which have white in tail.

Races : *P. c. simlaensis* of W Himalayas is with brighter yellowish-green upperparts, and

brighter yellow supercilium, crown-stripe and cheeks, compared with *P. c. chloronotus* of E Himalayas.

Habitat : S (2200 m) 2700-4000 m (4200 m). Fir, oak and rhododendron forests. W (foothill) 1200-2000 m (2750 m). Woods, bushy hillsides.

Distribution : Uttarakhand : Almora : Ranikhet, Mansi (ZSI Survey 2004). Bageshwar : Kausani, Bharari, Kapkot (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli (Osmaston 1921), NDNP (Tak & Kumar 1987), Doodganga (Sankaran 1993, 1994). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Asan Barrage, Karva Pani, New Forest, Sulphur Springs, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pithoragarh: Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

**574(1593) *Phylloscopus subviridis* (Brooks, 1872)
Brooks's Leaf-Warbler**

1872. *Reguloides subviridis* Brooks, *Proc. Asiat. Soc. Bengal* : 148 (Etawah, U.P.).

1924. Baker, *FBI* No. 869, 2 : 468.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. A small leaf-warbler has some pale at base of lower mandible; brighter golden-olive upperparts (than other leaf-warblers) with yellowish head, cheeks and rump; a conspicuous yellow supercilium; indistinct yellowish median coronal stripe; and two yellowish-white wing-bars, lower prominent and upper indistinct. In fresh plumage, entire underparts are washed with buffish-yellow. In worn plumage, underparts and wing-bars are whiter. From Hume's Warbler it is distinguished by narrow, poorly defined, greenish-yellow crown-stripe.

Habitat : S 2100-3600 m. Coniferous and mixed forest. W Plains-1800 m. Acacias, bushes, olives.

Distribution : Uttarakhand : Naini Tal (Hudson 1930). CTR (internet list). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Schedule IV (BNHS 2002). RRS (4) *i.e.* Western Himalayas (Jhunjhunwala *et al.* 2001).

**575(1592) *Phylloscopus inornatus* (Blyth, 1842)
Yellow-browed Warbler**

1842. *Regulus inornatus* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 191 (Darjeeling).

1915. *Phylloscopus humii praemium* Mathews & Iredale, *Aust. Av. Rec.* 3 : 44, new name for *Motacilla superciliosa* Boddaert, 1783.

1924. Baker, *FBI* No. 871 (part), 2 : 470.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Plain Leaf Warbler' or 'Inornate Warbler', is a fairly bright small leaf-warbler, which shares greenish upperparts and off-white underparts with typical leaf-warblers; and distinguished from confusable Hume's Leaf Warbler by two bold yellowish wing-bars; large clear-cut white tertials tips, yellowish supercilium; green crown with or without paler central stripe; whitish underparts with lemon-yellow wash. In worn plumage, has whitish supercilium and wing-bars; and pale tips to tertials.

Habitat : <1880 m. All kinds of wooded areas.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Singh 1999). Naini Tal (Hudson 1930). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi : Govind NP : Jakhol (Tak *et al.* 2004). CTR (Khati 2004, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**576(1590-1591) *Phylloscopus humei* (Brooks, 1878)
Hume's Warbler**

1879. *Reguloides Mandellii* Brooks, *Stray Feathers* 8 : 389 (Sikkim).

1924. Baker, *FBI* No. 871 (part), 2 : 470.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. This bird is named after Allan

Octavian Hume. Also known as 'Plain Leaf Warbler' or 'Yellow-browed Warbler' or '*Phylloscopus inornatus humei*' is similar to Yellow-browed Warbler, sharing a long off-white supercilium, crown stripe and well-marked tailfeathers. It has mostly dark bill and legs; greenish upperparts and off-white underparts. In fresh plumage, grey-green above with brighter moss-green rump, two buff wing-bars (faint upper bar) wearing to white, and whitish supercilium above the prominent eye-line; and underparts evenly washed pale buff, wearing to off-white.

Habitat : S (2100 m) 2700-3650 m. Mixed fir and birch. W <2150 m (2550 m). Dry deciduous forest, acacias, gardens, orchards.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : New Forest (Mohan 1996), New Forest, Sulphur Springs, [Dhulkhand] (Singh 2000). Tehri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

577(1602-1605) *Phylloscopus trochiloides*
(Sundevall, 1837)

Greenish Leaf-Warbler

1838. *Acanthiza trochiloides* Sundevall, *Fysiogr. Sällskap. Tidskr.* Lund 1 : 76 (Calcutta).

1924. Baker, *FBI* No. 875 (part), 2 : 474.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1♂, 25.iii.1976, coll. D. N. Basu.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known as 'Dull Green Warbler' or 'Greenish Tree Warbler' or 'Green Tree Warbler' or 'Green Warbler' or 'Green Leaf Warbler' or '*P. nitidus*' is a very variable medium-sized typical leaf-warbler with greyish-green upperparts with usually one thin yellowish-white wing-bar, occasionally two; a well defined pale supercilium with a dark streak through eye; mottled olive yellowish cheeks; and off-white underparts.

Races : Two distinct forms are recognized from the Himalayan region: NW Himalayan breeding form (*viridanus*) has pale lower mandible, pale

olive-green upperparts with a single prominent wing-bar (which may wear off), and dull whitish, unmottled underparts with central yellow tinge and olive-tinged flanks; while the nominate race of C and E Himalayas is slightly larger and much darker.

Habitat : S (1800 m) 2700-4000 m (4600 m). Conifers mixed fir, rhododendron and birch forest. W <2600 m. All kinds of wooded areas. Largely arboreal, preferring the canopy.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Nanda Devi Sanctuary (Reed 1979), Dibrugheta (Sankaran 1993, 1994), (Tak 1995). Dehra Dun : beyond Chakrata (Osmaston 1935), New Forest (Mohan 1996, Singh 2000). Naini Tal (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Whymper 1907), Bhiling valley (Matthews 1918), the proposed Tehri Dam site (Tak unpublished). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

578(1601) *Phylloscopus magnirostris* Blyth, 1843
Large-billed Leaf-Warbler

1843. *Ph. (ylloscopus) magnirostris* Blyth, *Jour. Asiat. Soc. Bengal* 12 : 966 (Calcutta).

1924. Baker, *FBI* No. 878, 2 : 476.

Diagnostics : Size : Sparrow -; c. 12.5 m. Sexes alike. Also known as 'Large-billed Tree Warbler' is the largest of all Indian leaf-warblers. It is similar to Greenish Leaf-Warbler, but has large dark bill with pale only at base of lower mandible; crown darker than mantle; olive-brownish upperparts with paler green on lower back, rump and wing endings; two wing-bars, upper indistinct and often absent; a prominent yellowish supercilium and a dark streak through eye; mottled yellowish and dusky cheek; and yellowish-white underparts with grey on breast and throat.

Habitat : S (1800 m) 2100-3600 m. Himalayan streamside trees (and bushes). W <1200 m (2700 m). Evergreen and riverine forest. Chiefly mid-storey.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Deodi, Dibrugheta, Belta Kharak (Sankaran 1993, 1994). Dehra Dun : Chakrata (Osmaston 1935). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

579(1578) *Phylloscopus tytleri* Brooks, 1872
Tytler's Leaf-Warbler

1872. *Phylloscopus tytleri* Brooks, *Ibis* : 23 (Kashmir and Simla).

1924. Baker, *FBI* No. 853, 2 : 455.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Slender-billed Warbler' is a dull brown leaf-warbler with longish, thin finely tapering bill- all dark except for slightly paler base of lower mandible; olive upperparts (lacking wing-bars); a well-marked yellowish white supercilium; yellowish white cheeks and ear-coverts with dusky mottling; whitish underparts with brighter yellow streaks on throat, breast and belly. In fresh plumage, has brighter green upperparts; and dull whitish underparts with pale yellow streaks. In breeding (worn), has much greyer upperparts and whitish underparts.

Habitat : S 2300 to treeline+ m. Forest edge, conifers, hedges, dwarf willows, birches. Above treeline post-breeding. W lower. Dwarf broadleaved forest.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972b, Singh 2000). CTR (internet list). RNP (Pandey *et al.* 1994).

Status : Sparse passage migrant. Near Threatened (IUCN 2007). Schedule IV (BNHS 2002). RRS (4) *i.e.* Western Himalayas (Jhunjhunwala *et al.* 2001).

580(1606) *Phylloscopus occipitalis* (Blyth, 1845)
Western Crowned Warbler

1845. *Phylloscopus occipitalis* Blyth, *Jour. Asiat. Soc. Bengal* 14 : 593 (Southern India).

1924. Baker, *FBI* No. 881, 2 : 479.

Diagnostics : Size : Sparrow -; c. 11.5 cm. Also known as 'Large Crowned Leaf Warbler' or

'*Reguloides occipitalis*' is rather large-sized pale leaf-warbler has a flatter bill: paler upper and brighter lower mandible with orange base (a distinctive character); pale median crown-stripe with a broad, dusky olive band on either side, darker on nape; greyish-green upperparts; two (yellowish) white wing-bars, the upper wing-bar often indistinct or absent; yellowish wings with yellow shoulders; a conspicuous pale yellow supercilium; a dark line through eye; and whitish underparts with grey tinge on breast and flanks, slightly streaked with yellow on breast and belly.

Habitat : S (1800 m) 2000-2500 m (3350 m). Coniferous, deciduous and mixed forest; willows. Often flicks wing alternately, a habit only shared with Blyth's Leaf-Warbler. W (Plains) foothills-2100 m. Humid forest.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Rishi Ganga gorge (Sankaran 1993, 1994), (Tak 1995). Dehra Dun : Chakrata (Osmaston 1935), (Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Vanyakund (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi (Tak 1995), Govind NP : Istragad (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

581(1608-1611) *Phylloscopus reguloides*
(Blyth, 1842)
Blyth's Leaf-Warbler

1842. *Phyllopneuste reguloides* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 481 (Darjeeling).

1924. Baker, *FBI* No. 883 (part), 2 : 481.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known as 'Crowned Leaf Warbler' is a smaller version of *P. occipitalis*, but readily distinguishable by prominent yellowish to whitish supercilium, pale median crown stripe, pale lower

mandible; two broad yellow-buff to white wing-bars with dark panel across greater coverts; fairly bright green upperparts; yellowish on underparts; and well marked white tip on inner webs of outer rectrices. Like Eastern Crowned Warbler, often flicks wings open alternately, which habit helps separate it other *Phylloscopus*.

Races : *P. r. kashmiriensis* of the W Himalayas tends to have brighter yellowish-green upperparts than the nominate race of the C Himalayas.

Habitat : S (1400 m) 2450-3300 m (3800 m). Fir, oak and rhododendron forest. W Plains-1500 m (2750 m).

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Dood Ganga, Dibrugheta (Sankaran 1993, 1994), Mandal (Singh 2005a). Dehra Dun (Wright 1957), Deoban (Singh 2000). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

582(1612) *Phylloscopus cantator* (Tickell, 1833) **Black-browed Leaf-Warbler**

1833. *Motacilla Cantator* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 576 (Borabhum and Dolbhum).

1924. Baker, *FBI* No. 895, 2 : 492.

Diagnostics : Size : Sparrow -; c. 9.5 cm. Sexes alike. Also known as 'Black-browed Leaf Warbler' or 'Yellow-throated Leaf Warbler' is easily distinguished from other 'crowned leaf-warblers' by its bright yellow crown-stripe contrasting with darker lateral crown-stripes; bright yellow supercilium; dull yellowish lower mandible; bright olive upperparts with narrow yellow wing-bar on greater coverts (sometimes slight wing-bar on median); and yellow throat, upper breast, undertail-coverts contrasting with white lower breast and belly.

Habitat : S 1200-2000+ m. Dense evergreen forest. W > plains. Forest.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Residential status not known. Schedule IV (BNHS 2002). RRS (5) i.e. Eastern Himalayas (Jhunjhunwala *et al.* 2001).

583(1615) = (1616-1619) *Seicercus burkii* (Burton, 1836)

Gold-spectacled Flycatcher-Warbler

1836. *Sylvia Burkii* Burton, *Proc. Zool. Soc. London* : 153 (Himalaya Mts, restricted to Sikkim by Ticehurst, 1925, *Bull. Brit. Orn. Cl.* 46 : 23).

1954. *Seicercus burkii nemoralis* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 17 (Sangau, Lushai Hills).

1924. Baker, *FBI* No. 889 (part), 2 : 487.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Black-browed Flycatcher Warbler' or 'Yellow-eyed Warbler' is a fairly large warbler with bright yellow underparts; two broad black lateral stripes on crown; fine yellow eye-ring; yellowish green face; and olive-green supercilium, sides of head, and upperparts (with weak or absent wing-bar).

Habitat : S (1000 m) 1800-3800 m. W <2140 m. Forest undergrowth, scrub.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Birai Ganga valley, Lata village in Dhauri valley (Osmaston 1921), Dibrugheta (Sankaran 1993, 1994, Tak 1997). Dehra Dun : Chakrata (Osmaston 1935), (Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Nagni (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident as well as sparse winter visitor. Schedule IV (BNHS 2002).

584(1614) *Seicercus whistleri* Ticehurst, 1925 **Whistler's Flycatcher-Warbler**

1925. *Seicercus burkii whistleri* Ticehurst, *Bull. Brit. Orn. Cl.* 46 : 22 (Dharamsala, Punjab Himalayas).

1924. Baker, *FBI* No. 889 (part), 2 : 487.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. It is very similar to *Seicercus burkii*,

but separated by its smaller bill with entirely pale lower mandible. Has bright yellow underparts, yellow eye-ring, dusky lateral crown-stripe on olive crown, and narrow yellow wing-bar.

Habitat : S 1800-3000 m; W >1800 m; dense deciduous or mixed forest; breeds in temperate forests.

Distribution : Uttarakhand : Dehra Dun : New Forest, Tons Valley Forest (Singh 2000). Uttarkashi: Sankri to Khabugad (Singh 2005b). CTR (Lamba undated).

Status : Sparse summer visitor. Information not available (BNHS 2002).

585(1616-1619) *Seicercus xanthoschistos*

(G.R. Gray & J.E. Gray, 1846)

Grey-headed Flycatcher-Warbler

1846. *Phylloperneuste xanthoschistos* 'Hodgs.' = Gray, *Cat. Mamms. Bds. Nepal* : 63, 151 (Nepal).

1924. Baker, *FBI* No. 891 (part), 2 : 489.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Grey-hooded Warbler' or 'Grey-headed Warbler' is a small olive warbler with bright yellow underparts; grey crown, cheek and mantle with broad blackish lateral crown stripe and dark eye-line enclosing a silvery supercilium; and white outer tail feathers.

Races : *S. x. albosuperciliaris* of W Himalayas is much paler than the nominate race of C and E Himalayas.

Habitat : (300 m) 1000-2300 m (2750 m). W Foothills (2000+ m). Forest, orchards etc.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Doodganga (Sankaran 1993, 1994, Tak 1997), (Tak 1995), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1972b), New Forest (George 1957, Mohan 1996), Asan Barrage, Chakrata, Mussoorie, New Forest, Sulphur Springs, Timli, Tons Valley Forest, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh (Tak 1995), District survey-

2005, Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

**586(1620) *Seicercus poliogenys* (Blyth, 1847)
Grey-cheeked Flycatcher-Warbler**

1847. *C. (ulicipeta) poliogenys* Blyth, *Jour. Asiat. Soc. Bengal* 10 : 441 (Darjeeling).

1924. Baker, *FBI* No. 893, 2 : 491.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Grey-cheeked Warbler' is a dark, olive warbler with bright yellow underparts, slaty head and prominent white eye-ring. Has two black coronal bands on slaty-grey head and nape; a conspicuous white eye-ring broken in front of eye; olive-green remaining upperparts with a yellowish wing-bar; whitish chin and upper throat; and longer tail with three outer rectrices largely white.

Habitat : S 1200-3200 m. W Foothills-1800 m. Open evergreen forest, bamboo.

Distribution : Uttarakhand : Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

**587(1621) *Seicercus castaniceps* (Blyth, 1845)
Chestnut-crowned Flycatcher-Warbler**

1845. *Abornis castaniceps* Hodgson, in Blyth, *Jour. Asiat. Soc. Bengal* 14 : 593 (Nepal).

1951. *Seicercus castaniceps nagaensis* Koelz, *Jour. Zool. Soc. India* 3 : 29 (Kohima, Naga Hills, Assam).

1924. Baker, *FBI* No. 894, 2 : 492.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Chestnut-crowned

Warbler' or 'Chestnut-headed Flycatcher Warbler' is distinguished from other *Seicercus* warblers by combination of small size; chestnut crown with dark lateral bands becoming black on nape, and white spots on nape on either side and between the black bands; grey nape and sides of head; a white eye-ring; yellowish olive wings and back; two yellow wing-bars; bright yellow rump; grey throat and upper breast contrasting with white lower breast and belly, and bright yellow flanks; and white inner web to outer rectrices.

Habitat : Foothills-2750 m. Dense forest.

Distribution : Uttarakhand : Pauri (Osmaston 1921). CTR (internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

588(1624-1625) *Abroscopus schisticeps* (G. E. Gray & J. R. Gray, 1846)

Black-faced Flycatcher-Warbler

1846. *Culicipeta schisticeps* Gray, *Cat. Mamms. Bds. Nepal* : 76 : 153 (Nepal).

1924. Baker, *FBI* No. 899 (part), 2 : 496.

Diagnostics : Size : Sparrow -; c. 9 cm. Sexes alike. Also known as 'Black-faced Warbler' is separated from the *Seicercus* and from other *Abroscopus* warblers by yellow supercilium nearly meeting on forehead and black mask. Has grey crown, nape and rear of ear-coverts; black lores and round the eye; olive-green remaining upperparts without any wing-bar; yellow on breast (*A. s. schisticeps*) tinged with olive and paling to white on belly; and white inner webs of outer tail feathers. Superficially resembles with Yellow-bellied Fantail Flycatcher, but easily differentiated by its much shorter open and partially cocked tail and behaviour.

Races : The eastern *A. s. flavimentalis* has yellow restricted to throat.

Habitat : (600 m) 1500-2700 m. Forest glades, bamboo, second growth, scrub.

Distribution : Uttarakhand : Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) i.e. Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

589(1622-1623) *Abroscopus superciliaris* (Blyth, 1859)

Yellow-bellied Flycatcher-Warbler

1863. *Abrornis flaviventris* Jerdon, *Birds India* 2(1) : 203 (Darjeeling, northern West Bengal). New name for *Abrornis albigularis* Blyth, 1861, preoccupied *Abrornis albigularis* Blyth, *Proc. Zool. Soc. London* : 200 (Sikkim). Not *Abrornis albogularis* Moore, 1854.

1947. *Abroscopus superciliaris drasticus* Deignan, *Proc. Biol. Soc. Washington* 60 : 20 (Margherita, Lakhimpur District, Assam Province, India).

1924. Baker, *FBI* No. 896 (part), 2 : 494, 495.

Diagnostics : Size : Sparrow -; c. 9 cm. Sexes alike. Also known as 'Yellow-bellied Warbler' is a dull-coloured warbler in comparison to the *Seicercus* and other *Abroscopus* warblers. Has brownish grey forecrown; a broad, white supercilium over black eyeline; pale grey sides of head mottled with dark; yellowish-olive remaining upperparts; whitish throat and breast; and bright yellow remainder underparts.

Habitat : S 500-1800 m. W > plains.

Distribution : Uttarakhand : Chamoli : Joshimath (Reed 1979).

Status : Residential status not known. Schedule IV (BNHS 2002).

590(1548) *Megalurus palustris* Horsfield, 1821
Striated Marsh-Warbler

1843. *Turdus tokloo* Blyth, *Jour. Asiat. Soc. Bengal* 12 : 179 (Calcutta), ex 1842. *Jour. Asiat. Soc. Bengal* 11 : 603, and 1843, *Ann. Mag. Nat. Hist.* 12 : 99; *ibid.* Blyth.

1844, *J.A.S.B.* 13 : 372 *Mrgalurus palustris andrewsi* Banges. 1921 *Bull. Amer. Mus. Nat. Hist.* 44 : 592 (Malipa, Burma = Mengting, Yunnan).

1924. Baker, *FBI* No. 836, 2 : 435.

Diagnostics : Size : Bulbul +; c. 25 cm. Sexes alike. Also known as 'Striated Grassbird' or 'Striated Warbler' is a very large babbler-like 'grass warbler' and at first may be confused with grass-haunting Common or Striated Babbler.

Breeding : It is identified by brownish buff upperparts with bold black streaks; whitish supercilium; whitish underparts with fine brown streaking on breast and flanks; a long pointed and graduate tail, and very heavy legs and feet.

Non-breeding (fresh plumage) : More rufous upperparts with narrower streaking (partially obscured); buffier or yellow-tinged underparts and supercilium; and more rounded tail at tip.

Habitat : Tall grass, reeds and scrub, usually near water.

Distribution : Uttarakhand : Dehra Dun : Asan wetland (Tak & Sati 2003). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

591(1547) *Chaetornis striatus* (Jerdon, 1841)
Bristled Grass-Warbler

1841. *Megalurus? Striatus* Jerdon, *Suppl. Cat. Bds.* : 88 (Nilgiris).

1924. Baker, *FBI* No. 838, 2 : 438.

Diagnostics : Size : Sparrow +; c. 20 cm. Sexes alike. Also known as 'Bristled Grassbird' is a large brown warbler with a heavy broad rounded tail (white tipped); prominent black rectal bristles (at the base of bill); fulvous brown upperparts with bold black streaks on back; buffy supercilium; whitish on throat; and pale buff underparts, sometimes with a necklace formed by the dark shafts of breast-feathers. Breeding (worn): plumage greyer above and whiter below, more heavily streaked.

Habitat : Plains. Coarse grassland with bushes, especially near water.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972b). CTR (internet list).

Status : Residential status not known. Vulnerable (IUCN 2007). Schedule IV (BNHS 2002). BRS (12) i.e. Indo-Gangetic Plains (Jhunjhunwala *et al.* 2001).

Remarks : It is the monotypic genus *Chaetornis*. *Chaetornis striata* is endemic to the Indian subcontinent, where it is patchily and locally distributed in India, Nepal and Pakistan. Formerly described as common in at least Gujarat, Andhra Pradesh and West Bengal (India) and parts of Bangladesh, but now it has declined.

592(1566) *Sylvia communis* (Latham, 1787)
Greater Whitethroat

1832. *Sylvia icterops* Menetries, *Cat. Rais. Caucase* : 34 (Talych, eastern Transcaucasia).

1928. *Sylvia communis rubicola* Stresemann, *Jour. f. Orn.* 76 : 378 (Kuldja, Chinese Turkestan).

1924. Baker, *FBI* No. 845, 2 : 447.

Diagnostics : Size : Sparrow -; c. 14 cm. Sexes practically alike, both sexes are mainly brown above and buff below. Also known as 'Whitethroat' or 'Common Whitethroat' is a fairly large, pale warbler has dark-tipped bill; orange eye with white broken eye-ring; largely rufous wing; bright white throat; pinkish buffy breast and flanks; longish and dark brown tail with buffy or white outer feathers; and pale flesh-toned legs.

Male : Grey head and cheek contrasting with brownish mantle; and white throat.

Female : Lacks grey head; and duller throat.

First-winter : Has dark iris.

Habitat : S 2100-2300 m (<4500? m on passage). Scrub, bushes, hedges.

Distribution : Uttarakhand : CTR (Khati 2004). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Schedule IV (BNHS 2002).

593(1567-1568) *Sylvia curruca* (Linnaeus, 1758)
Common Lesser Whitethroat

1933. *Sylvia curruca blythi* Ticehurst & Whistler, *Ibis* : 556 (Cawnpore).

1924. Baker, *FBI* No.849, 2 : 45.

Diagnostics : Size : Sparrow -; c. 13.5 cm. Sexes alike. Also known as 'Lesser Whitethroat' or 'Hume's Lesser Whitethroat' or 'Hume's Whitethroat' or 'Small Whitethroat' is a mid-sized *Sylvia* has prominent dark grey cheek-patch; paler grey crown; worn brown mantle and rump; whitish throat; cinnamon-brown tinge on breast, sides and vent; and dark brown tail with white outer rectrices.

Races : *S. c. althaea* (which breeds in the W Himalayas and winters widely through the peninsula) is largest and darker race; while *minula* (which is a passage migrant and winter visitor to NW subcontinent) is slightly smaller with pale, sandy grey-brown upperparts.

Habitat : <900 m (3300 m on passage). Scrub, undergrowth, semi-desert, acacias.

Distribution : Uttarakhand : Dehra Dun (Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Khaddar, [Dholkhand], Kampti Falls, Maldeota, Mohand (Singh 2000). CTR (Khati 2004, internet list, Ghosh & Chatterjee 2006).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**594(1565) *Sylvia hortensis* (Gmelin, 1789)
Orphean Warbler**

1847. C. (*urruca*) *Jerdoni* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 439 (Southern India).

1924. Baker, *FBI* No. 846, 2 : 448.

Diagnostics : Size : Sparrow $\pm$; c. 15 cm. A large grey warbler with a long bill; white throat; dark crown and cheeks; pale eyes; plain grey upperparts and whitish underparts with greyish centres and diffuse whitish fringes to undertail-coverts; and blackish legs.

Male : Black head; grey rest of upperparts; white throat; buffish white underparts; and blackish tail with white outer rectrices.

Female : Dark grey head with blacker ear-coverts contrasting with white throat; sandy-brown cast to mantle; pale brownish grey wings; and grey tail with white outer rectrices.

First-year : Uniformly greyish upperparts; and darker grey ear-coverts.

Habitat : S shrubbery not far from water. W Dry scrub, thorn forest.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

MUSCICAPINAE (Flycatchers)

Flycatchers form a large varied group of insectivorous passerines which feed mostly by making short sallies from a perch to catch flying insects but some also glean prey items from foliage. Bill is generally short, slightly broad and flat and surrounded by rictal bristles; legs thin. Usually perch rather upright. Occur singly, in loose pairs or small groups. Calls are harsh or ticking; songs usually thin and warbling.

**595(1403, 1404) *Muscicapa striata* (Pallas, 1764)
Spotted Flycatcher**

1928. *Muscicapa siata sarudnyi* Snigirewski, *Jour. f. Orn.* 76 : 595, new name for *Butalis griseola* var. *pallida* Zarudny, 1903, nec *Muscicapa pallida* Muller (Eastern Iran and Transcaspia).

1924. Baker, *FBI* No. 631, 2 : 202 (= *neumanni*).

Diagnostics : Size : Sparrow; c. 13 cm. Sexes alike. A grey-brown and white flycatcher with streaked crown; lightly streaked breast; long black bill; relatively long wings and tail; and short and black legs.

Adult : Has dull brown upperparts with darker wings and tail; whitish edgings to dark brown tertials; pale and dark brown noticeable streaking on crown; whitish underparts with some dark streaking on throat and breast.

Juvenile : Browner with spots on the upperparts which give this species its name.

Habitat : (plains) 2100-2300 m (4200 m). Open forest.

Distribution : Uttarakhand : Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993).

Status : Residential status not known. Schedule IV (BNHS 2002).

**596(1405-1406) *Muscicapa sibirica* Gmelin, 1789
Sooty Flycatcher**

1923. *Hemichelidon sibirica gulmergi* Baker, *Bull. Brit. Orn.* 43 : 155 (Gulmerg, Kashmir).

1924. Baker, *FBI* No. 633, 2 : 205.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. Also known as 'Dark-sided Flycatcher' or 'Asian Sooty Flycatcher' is a small, dark olive-grey flycatcher with exceptionally short black bill and long primary projection (exposed primaries are equal to or distinctly longer than tertials).

Adult : Grey-brown upperparts with noticeably large eyes and a pale eye-ring; grey-brown underparts with a narrow whitish centre of throat; and broad dark grey-brown breast-band and flanks contrasting with whitish centre of belly and vent.

Juvenile : Dark, with small white streaks on blackish forehead, buffy spots on blackish mantle, buffy-rufous contrasting wing-edgings, and heavily spotted breast.

Races : The West Himalayan *M. s. gulmergi* is paler than the C and E Himalayan *M. s. cacabata*.

Habitat : S (1500 m) 2100-3300 m (3900 m). W >foothills. Forest; clearings.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Dehra Dun : Chakrata (Osmaston 1935), New Forest (George 1957, Mohan 1996), Chakrata, Karva Pani, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Tungnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). CTR (Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002).

**597(1407) *Muscicapa dauurica* Pallas, 1811
Asian Brown Flycatcher**

1822. *Muscicapa latirostris* Raffles, *Trans. Linn. Soc. London* 13 : 312 (Sumatra).

1811. *Muscicapa grisola* var. *daurica* Pallas, *Zoogr. Rosso-Asiat.* 1 : 461 (Dauria).

1832. *Muscicapa Poonensis* Sykes, *Proc. Zool. Soc. London* : 85 (Poona).

1847. *Butalis terricolor* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 120, ex Hodgson MS. (Nepal).

1924. Baker, *FBI* No. 674, 675, 2 : 248, 249.

Diagnostics : Size : Sparrow $\pm$; c. 14 cm. Sexes alike. Also known as 'Brown Flycatcher' or '*M. latirostris*'

Adult : Is a dull grey-brown flycatcher has short dark bill (with pale lower mandible); large eye with prominent eye-ring (forming weak whitish spectacles); whitish throat; and greyish breast and flanks faintly streaked with ashy brown. Its paler underparts and shorter wings (in proportion to tail) distinguish it from Dark-sided.

Juvenile : Pale-streaked crown, buff-spotted upperparts, buffy rufous wing edgings, and dark mottled breast and upper flanks and whitish remaining underparts.

Habitat : <2000 m. Open forest, groves, forest edge, plantations.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Base Camp valley (Reed 1979), (Tak 1995). Dehra Dun (Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Timli, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

**598(1409) *Muscicapa ruficauda* Swainson, 1838
Rusty-tailed Flycatcher**

1838. *Muscicapa ruficauda* Swainson, *Nat. Library, Flycatchers* : 251 (India = Kashmir).

1924. Baker, *FBI* No. 676, 2 : 250.

Diagnostics : Size : Sparrow -; c. 14 cm. Sexes alike. Also known as 'Rufous-tailed Flycatcher' is dull brown flycatcher distinguished from the other brown flycatchers by its rufous rump and tail.

Adult : Rufescent upperparts with bright rufous rump and tail; dark bill (with pale orange lower mandible); a noticeable pale eye-ring; grey-brown throat and breast; and whitish belly.

Juvenile : Like adult has rufous rump and tail with white streaked forehead, spotted mantle, dark-streaked breast, and buffy wing-barks.

Habitat : S 2100-3660 m. Forest. W <1000 m. Forest edge.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Singh 2000). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Khati 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

**599(1418) *Ficedula hodgsonii* (Verreaux, 1871)
Slaty-backed Flycatcher**

1871. *Siphia hodgsonii* Verreaux, */bull. Nouv. Arch. Mus. Hist. Nat. Paris* 6 : 34 (Chinese Tibet = Paohing, eastern Sikang).

1947. *Muscicapa amabilis* Deignan, *Proc. Biol. Soc. Washington* 60 : 166. New name for *S. hodgsonii* Verreaux, 1871, nec *Nemura hodgsoni* Moore, 1854.

1922. Baker, *FBI* No. 642, 1 : 216.

Diagnostics : Size : Sparrow -; c. 13 cm. Also known as 'Rusty-breasted Blue Flycatcher' or '*Muscicapa hodgsonii*' is small, slim, long-tailed flycatcher with tiny black bill.

Male : Bluish-slate upperparts; velvety black lores and cheeks; blackish brown tail with bases of all but central pair of rectrices white; orange-rufous throat, breast and flanks; and buffish lower belly and undertail-coverts. *First-winter* male similar to female; often breeds in this 'female plumage'

Female : Olive-brown upperparts with a pale eye-ring; and olive-buff underparts with whitish belly. It is distinguished from the similarly plumaged female Red-throated Flycatcher (*F. parva*) by its plain brown tail (v. black tail with white bases) and the lack of whitish throat-patch.

Juvenile : Buff spotting on upperparts; and dark scaling on buff underparts, with whitish throat.

Habitat : S (1200 m) 2400-3600 m (3900 m). W <2000 m. Forest; dense scrub.

Distribution : Uttarakhand : CTR (internet list).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : Resident, subject to altitudinal movements; Himalayas from WC Nepal east to Arunachal Pradesh. India : Rare; breeds 2100-3900 m in Himalayas, down to 1200 m south of the Brahmaputra river; winters in foothills up to 2000 m (Grimmett *et al.* 1998).

600(1414) *Ficedula strophiiata* (Hodgson, 1837)
Orange-gorgeted Flycatcher

1837. *Siphia Strophiiata* Hodgson, *Ind. Rev.* 1(12) : 651-2 (Nepa).

1939. *Muscicapa strophiiata euphonia* Koelz, *Proc. Biol. Soc. Washington* 52 : 67 (Kulu, Kangra Dt, Punjab).

1922. Baker, *FBI* No. 636, 1 : 208.

Diagnostics : Size : Sparrow; c. 13 cm. Also known as 'Rufous-gorgeted Flycatcher' is distinct

flycatcher with triangular rufous upper breast-patch (gorget).

Male : Olive-brown upperparts with white forehead; an orange-rufous patch on lower throat surrounded by dark slaty on breast, sides of neck and head; by black on upper throat and chin; ashy belly, gradually becoming white on vent; olive-brown flanks; and black tail with white on either side of basal half.

Female : Paler and smaller gorget, with ashy chin and throat is the true female dress; frequently wears a plumage identical with that of male.

Juvenile : Darker with dark brown upperparts heavily streaked with buff; buffy underparts heavily mottled with blackish; lower underparts whiter; and with tail pattern as adult.

Habitat : S 1800-3700 m (3950 m). W <2400 m. Forest.

Distribution : Uttarakhand : Chamoli : Deodi, Trisul nalla, and Rishiganga confluence (Sankaran 1993, 1994), Chopta Chatti (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Karva Pani, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi : Govind NP : Taluka (Tak *et al.* 2004). CTR (Khatri 2004, internet list); RNP (Pandey *et al.* 1994).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

601(1411-1412) *Ficedula parva* (Bechstein, 1792)
Red-throated Flycatcher

1794. *Muscicapa parva* Bechstein, *Allg. Uber Vog.* 2 : 356 (Thuringerwald).

1924. Baker, *FBI* No. 638, 2 : 210.

Diagnostics : Size : Sparrow -; c. 13 cm. Also known as 'Red-breasted Flycatcher' or '*Muscicapa parva*'

Male : Pale brown upperparts; white underparts, grey head; reddish-orange chin and throat; and black tail with white patches at either side of basal half. The tail is often flicked upwards, and is usually carried erect like a robin's, with the wings partly drooping at the sides.

Female : Has a whitish throat and buffy breast. Non-breeding males, females and juveniles have brown heads and lack the throat collar, but are easily distinguished from other *Ficedula* flycatcher on size and the wheatear-like tail pattern, with an inverted dark T against the white tail sides.

Races : Male *M. p. albicilla* has grey breast-band; compared with nominate, female has black uppertail-coverts and dark base to bill.

Habitat : Open forest, groves etc.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, [Dholkhand] (Singh 2000). Naini Tal : Mohaan (ZSI Survey 2005). CTR (Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread winter visitor. Schedule IV (BNHS 2002).

**602(1417) *Ficedula hyperythra* (Blyth, 1842)
Rufous-breasted Blue Flycatcher**

1842. *M. (uscicapa) hyperythra* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 885, new name for *D. (imorpha) superciliaris* Blyth, 1841, *Jour. Asiat. Soc. Bengal* 11 : 190 (Darjeeling), *nec M. superciliaris* Jerdon, 1840.

1924. Baker, *FBI* No. 643, 2 : 217.

Diagnostics : Size : Sparrow -; c. 11 cm. Also known as 'Snowy-browed Flycatcher' or '*Muscicapa hyperythra*' has rufous-brown wings.

Male : Slaty blue upperparts with a short and conspicuous white supercilium; black forehead and cheeks; black chin; and orange-rufous remaining underparts; and blue-black tail, with white at base (not conspicuous).

Female : Olive-brown upperparts; fulvous supercilium and eye-ring; and rufous-orange underparts (duller than male, some breeding females without rufous on breast).

Juvenile : Like female with orange-buff streaking on upperparts, orange-buff greater-covert wing-bar, and diffuse dark streaking on dull orange-buff underparts.

Habitat : S 1200-3000 m. W <1700 m. Primary forest undergrowth.

Distribution : Uttarakhand : Chamoli : Belta Kharak (Sankaran 1993, 1994). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (Mohan 1993, 1996, Singh 2000). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

**603(1419-1420) *Ficedula westermanni*
(Sharpe, 1888)
Little Pied Flycatcher**

1925. *Muscicapa collini* Rothschild, *Bull. Brit. Orn. Cl.* 45 : 90, substitute name for *Muscicapa blythi* Rothschild, 1921, *Novit. Zool.* 28 : 48, *nec Muscicapa blythi* Giebel, 1875. New name for *Muscicapa melanoleuca* Blyth, 1843, *Jour. Asiat. Soc. Bengal* 12 : 940 (Nepal, Darjeeling), *nec Muscicapa melanoleuca* Forster, 1817, or *Muscicapa melanoleuca* Guldenstadt, 1775.

1924. Baker, *FBI* No. 649 (part), 2 : 224.

Diagnostics : Size : Sparrow -; c. 10 cm. Also known as 'Westermann's Flycatcher' or '*Muscicapa westermanni*'

Male : Black upperparts with a conspicuous white supercilium from lores to nape; a large white wing-patch; white basal sides of tail; and white underparts.

Female : Brownish-grey upperparts with warm brown tinge on forehead, lores and around eye, rufous cast to rump and uppertail-coverts (separates it from the confusable female Ultramarine); and whitish underparts with brownish-grey wash to breast and flanks.

Juvenile : Has buff spotting on upperparts and tips to coverts; whitish underparts with dark scaling on breast; juvenile male has white on wings and tail (like adult male), while juvenile female has rufous-brown uppertail-coverts and base of tail, white underparts and streaked scapulars (separates it from juvenile Slaty-blue).

Habitat : S (80 m) 1200-3000 m. W <1800 m. Forest, woodland, orchards.

Distribution : Uttarakhand : Almora (Tak 1995). Chamoli : Joshimath (Reed 1979), (Tak 1995), Mandal, Pipalkoti, Narainbagh (ZSI Survey 2004). Dehra Dun : Chakrata, Mussoorie, [Dhanaulty] (Singh 2000). Naini Tal : Mohaan (ZSI Survey 2005). Pithoragarh : District survey- 2005, Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993), Guptakashi, Gauri Kund, Ukhimath (ZSI Survey 2004). Tehri : Ranichauri (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Taluka (Tak *et al.* 2004). CTR (Khatri 2004, internet list, Ghosh & Chatterjee 2006).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

604(1421-1422) *Ficedula superciliaris*
(Jerdon, 1840)

Ultramarine Flycatcher

1840. *M. (uscicapa) superciliaris* Jerdon, *Madras Jour. Lit. Sci.* 11 : 16 (Ajunta, N. Ghats).

1924. Baker, *FBI* No. 647, 2 : 221.

Collection records : Uttarakhand : Dehra Dun : Rajpur, 1 ♂, 27.iii.1976, coll. P. K. Bose.

Diagnostics : Size : Sparrow -; c. 10 cm. Also known as 'White-browed Blue Flycatcher' or '*Muscicapa superciliaris*' is small, stocky build, arboreal flycatcher.

Male : Deep blue upperparts, sides of head, and neck; a white supercilium from eye to nape, and a white patch on either side of basal half of tail; and white centre of throat, breast and whole belly with greyish patches on sides of breast.

Female : Greyish-brown upperparts; whitish underparts, with greyish patches on sides of breast; and some have blue cast to uppertail-coverts and tail.

First-winter/first-summer male : Resembles female, but has blue cast to mantle and blue rump/uppertail coverts, wings and tail; has buff greater-covert wing-bar and whitish fringes to tertials.

Juvenile : With buffish-white spotting on upperparts; and dark scaling on whitish underparts.

Habitat : S 1500-3200 m. W > foothills. Open forest, bushy areas, groves, gardens.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Gagas, Mansi (ZSI Survey 2004). Bageshwar: Pindari-Kafni Trek (Mohan 2007). Chamoli : Latakharak, Beltakharak (Sathyakumar 2003), Narainbagh (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata (Osmaston 1935), New Forest (George 1957, 1962a, Mohan 1996), (Bhatnagar & Misra 1972a), New Forest, Tons Valley Forest, [Dhanaulty] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Vaya Kund (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993), Guptakashi (ZSI Survey 2004). Uttarkashi : Govind NP : Naitwar, Sankri, Taluka, Saruka Tal, Istragad (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : The amount of white on the brow and tail show clinal variation from West to East along the Himalayan foothills, which is sometimes taken to distinguish three races: The western race from the western Himalayas has a distinctive white supercilium and white bases to the outer tail feathers. The eastern race (*aestigma*) from the eastern Himalayas lacks distinct white patches. The population from the south Assam hill (sometimes designated a third race *cleta*) completely lack any supercilium.

605(1423-1425) *Ficedula tricolor* (Hodgson, 1845)
Slaty-blue Flycatcher

1845. *Digenea leucomelanura* Hodgson, *Proc. Zool. Soc. London* : 26 (Nepal = central hills of Nepal according to Gray & Gray, 1846, and Biswas, 1962, *JBNHS* 59 : 812).

1845. *D. (igenea) tricolor* Hodgson, 1845, *Proc. Zool. Soc. London* : 26 (Nepal). Preoccupied by *Muscicapa*

tricolor Hartlaub, 1845, and *Muscicapa tricolor* Vieillot, 1818 *Cyornis tricolor notatus* Whistler, 1930, *Bull. Brit. Orn. Cl.* 50 : 70 (Gund, Kashmir). [See Biswas, *loc. cit.* above.].

1922. Baker, *FBI* No. 645, 1 : 219.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1 ex., 14.xi.1974, coll. P. K. Bose.

Diagnostics : Size : Sparrow -; c. 10 cm. Also known as '*Muscicapa leucomelanura*'

Male : Dark slaty blue upperparts, with brighter blue forehead; blue-black sides of head and breast; whitish throat; greyish-white belly and flanks (indentifying the nominate race); and blue-black tail with white patches on either side of base (displayed by constant flicking).

Female : Olive-brown upperparts; buffish underparts; and rufous tail.

Juvenile : Warm buff streaking on upperparts and dark scaling on buff underparts.

Races : *F. t. cerviniventris* of NE subcontinent has orange-buff belly and flanks (vs. greyish-white in nominate race).

Habitat : S 1500-4000 m. W <2100 m. Forest understorey, reeds, bushes, tall grass.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Karva Pani, New Forest, Tapkeshwar, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Mohaan (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), Kali river basin-1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri : Ranichauri (ZSI Survey 2005). Uttarkashi : Govind NP : Taluka (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

606(1445) *Eumyias thalassina* (Swainson, 1838) Verditer Flycatcher

1838. *Muscicapa thalassina* Swainson, *Nat. Library, Flycatchers* 21 : 252 (India).

1832. *Muscicapa melanops* Vigors, *Proc. Zool. Soc. London* : 172, *nec M. melanops* Vieillot, 1818.

1924. Baker, *FBI* No. 665, 2 : 239.

Collection records : Uttarakhand : Dehra Dun : Herbatpur, 1 ex., 10.x.1968, coll. P. K. Bose; Rajpur, Kutal Gate, 1 ♂, 18.viii.1973, coll. P. K. Bose. Naini Tal : Ramnagar, Chilkia, 1 ♀, 25.xii.1968, 1 ♂, 29.xii.1968, coll. P. K. Bose; Ramnagar, 1 ♂, 30.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Sparrow ±; c. 15 cm. Also known as '*Muscicapa thalassina*' It is named after its distinctive shade of copper-sulphate blue and has a dark patch between the eyes and above the bill base.

Male : Entirely blue-green or verdigris (colour of oxydized copper), brighter on head and throat, darker on wings and tail; a black patch in front of eyes (lores) very prominent.

Female : Duller and greyer with dusky lores, but without accompanying male to compare with, difficult to sex.

Juvenile : Has turquoise cast to grey-brown upperparts, with fine orange-buff spotting; bold orange-buff spotting on brown underparts; and wings and tail like adult.

Habitat : S 1200-2700 m (3000 m). W >plains. Light forest.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath (Reed 1979), (Tak 1995), Dibrugheta (Sathyakumar 2003), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), (Wright 1957, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Chakrata, Mussoorie, New Forest, [Dhanaulty] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997), Mohaan (ZSI Survey 2005). Pauri

(Tak 1995). Pithoragarh (Tak 1995), Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri (Tak 1995), Ranichauri (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Jakhol (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

Remarks : The Verditer Flycatcher (*Eumyias thalassina*) is an Old World flycatcher found in the Indian Subcontinent, especially in the Lower Himalaya. They are also interesting among the flycatchers in that they forage above the canopy level and perching on electric wires or exposed tree top branches.

607(1444) *Eumyias sordida* (Walden, 1870)
Dusky-blue Flycatcher

1870. *Glaucomyias sordida* Walden, *Ann. Mag. Nat. Hist.* 5 : 218 (Ceylon).

1924. Baker, *FBI* No. 667, 2 : 241.

Diagnostics : Size : Sparrow -; c. 14 cm. Sexes nearly alike; female very slightly duller. Also known as '*Muscicapa sordida*' is an ashy-blue flycatcher with whitish belly.

Adult : Dull ashy-blue upperparts; greyish-white underparts; black lores and chin (bordered above and below by bright azure-blue (cobalt-blue) especially noticeable on forehead.

Juvenile : Brown upperparts with buff spotting and diffuse black scaling; buffish throat and breast with black scaling; and the flight feathers broadly edged with blue-grey.

Habitat : (450 m) 900-2100 m. Forest, wooded gulies, parks and gardens.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002).

608(1428) *Niltava grandis* (Blyth, 1842)
Large Niltava

1842. *Chaitaris grandis* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 189 (Darjeeling).

1954. *Niltava grandis pangpui* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 14 (Sangau, Lushai Hills).

1924. Baker, *FBI* No. 682, 2 : 257.

Diagnostics : Size : Bulbul; c. 20 cm. Also known '*Muscicapa grandis*' It is distinguished from all blue-flycatchers by its black throat and breast, and lack of any rufous. A large, relatively sluggish, and can look entirely black at a distance or in poor light.

Male : Dark blue; blackish face; tufted forehead; brilliant blue crown, neck patch (the niltava hall-mark, which lacks only in Vivid Niltava of NE subcontinent), shoulder patches and rump.

Female : Blue patch on side of neck (may be obscured); rufous-buff forecrown and lores; buff throat patch; and rufescent wings and tail. Separated from female Rufous-bellied Niltava by larger size, streaked ear-coverts and underparts, and lack of oval white patch on lower throat.

Juvenile : Rufous-brown upperparts with orange-buff streaking and diffuse blackish scaling; rufous underparts with profuse blackish scaling and barring. Male juvenile has bluish wings with orange-buff to greater coverts; and bluish tail.

Habitat : S 900-2850 m. W <2000 m. Low to mid-storey in evergreen forest.

Distribution : Uttarakhand: CTR (Khati 2004).

Status : Residential status not known. Schedule IV (BNHS 2002).

609(1429-1430) *Niltava macgrigoriae*
(Burton, 1836)
Small Niltava

1835. *Phoenicurus macgrigoriae* Burton, *Proc. Zool. Soc. London* : 152 (Himalayas, restricted to western Himalayas by Rand & Fleming, 1957, *Fieldiana* 41 : 178).

1924. Baker, *FBI* No. 685 (part), 2 : 260.

Diagnostics : Size : Sparrow -; c. 11 cm. Also known as '*Muscicapa macgrigorie*' is a smaller version of Large Niltava, its smaller size and blue patch on either of neck of both the sexes distinguish it from others.

Male : Dark blue with brilliant blue forehead, neck patch and rump; blackish face, throat and breast; and dusky grey belly and vent (underparts paler, with whitish belly, in W and C Himalayan populations).

Female : Dark olive-brown upperparts with blue patch on side of neck (often obscured), rufescent wings and tail; olive-brown underparts with paler belly and vent.

Juvenile : Brown upperparts with orange-buff shaft streaking; buffish breast with diffuse brown streaking; rufescent wings and tail with buff tips to coverts.

Habitat : S 900-2200 m. W <1400 m. Broadleaved evergreen forest understory.

Distribution : Uttarakhand : Dehra Dun : New Forest (George 1962a, Mohan 1996), Karva Pani, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Mohaan (ZSI Survey 2005). Pithoragarh (Tak 1995), Kali river basin-1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident undertakes altitudinal movements. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

610(1431-1432) *Niltava sundara* (Hodgson, 1837)
Rufous-bellied Niltava

1837. *Niltava Sundara* Hodgson, *Ind. Rev.* 1(12) : 650 (Nepal).

1840. *Cyanecula fastuosa* Lesson, *Rev. Zool.* : 266 (Mont. Himal., restricted to Murree by Baker, 1930, *Fauna Brit. India*, Bds. 8 : 632, re-restricted to NE. Himalayas by Ticehurst, 1931, *Ibis* : 351).

1924. Baker, *FBI* No. 684 (part), 2 : 259.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Beautiful Niltava' or '*Muscicapa sundara*'

Male : Dark blue upperparts and orange underparts with brilliant blue crown, neck patch, shoulder patch and rump. It is easily distinguished from similarly plumaged Blue-throated Flycatcher by larger size, niltava shape (large, rectangular-shaped head), well-defined patches of brilliant blue against darker blue upperparts, and orange underparts extending to vent.

Female : Well-defined oval-shaped throat patch (separates it from other female niltavas); small blue

patch on side of neck (often obscured, hence difficult to see); olive-brown upperparts with orange-buff forehead and lores and rufescent wings and tail; and grey-brown underparts.

Juvenile : With oval-shaped buff throat patch (separates it from other juvenile niltavas).

Habitat : S 900 m (3200 m). W <2300 m. Forest undergrowth/lower storey, damp overgrown gullies, secondary growth.

Distribution : Uttarakhand : Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), New Forest (George 1957, 1962a, Mohan 1996), Karva Pani, Mussoorie, New Forest, Tons Valley Forest, [Maldeota] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Gori river basin-2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995), Govind NP : Satta (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local resident as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

611(1436-1438) *Cyornis poliogenys* Brooks, 1879
Brooks's Flycatcher

1879. *Cyornis poliogenys* Brooks, *Stray Feathers* 8 : 469 (Salbari, Sikkim Terai).

1924. Baker, *FBI* No. 673 (part), 2 : 247.

Diagnostics : Size : Sparrow -; c. 14 cm. Sexes alike. Also known as 'Pale-chinned Flycatcher' or 'Pale-chinned Blue Flycatcher' or '*Muscicapa poliogenys*'

Adult : Has brownish-grey head; olive-brown remaining upperparts; a prominent buffish eye-ring and lores; whitish or buff throat (separates it from female Tickell's Blue Flycatcher which has an orange-rufous throat); creamy-orange remaining underparts, darker on breast; and rufous-brown tail.

Juvenile : With diffusely marked upperparts, well-defined buff throat, and barring on flanks.

Habitat : <1500 m. Forest undergrowth.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Sparse winter visitor (status uncertain). Schedule IV (BNHS 2002). BRS (09) *i.e.* Indo-Chinese Tropical Moist Forest (Jhunjhunwala *et al.* 2001).

**612(1439) *Cyornis unicolor* Blyth, 1843
Pale Blue-Flycatcher**

1843. *Cyornis unicolor* Blyth, *Jour. Asiat. Soc. Bengal* 12 : 1007 (Darjeeling).

1924. Baker, *FBI* No. 655, 2 : 230.

Diagnostics : Size : Sparrow $\pm$; c. 16 cm. Also known as '*Muscicapa unicolor*'

Male : Pale blue overall with brighter forehead, supercilium, and shoulder; pale blue throat, blue breast changing to whitish on belly; grey and white scalloping on undertail-coverts; and deeper coloured tail. May be confused with male Verditer Flycatcher, which is bluer with greenish cast (blue-green) and greyer belly.

Female : Olive-brown upperparts with pale lores and eye-ring, and browner wings and tail; and pale grey-brown underparts. May be confused with female Slaty-backed Flycatcher (*Ficedula hodgsonii*), which is smaller, has an olive-buff throat and whitish belly.

Juvenile : Has bold orange-buff spotting on scapulars and heavily scaled underparts.

Habitat : Foothills-1800 m. Light broadleaved evergreen forest.

Distribution : Uttarakhand : Chamoli : Pindar valley, Parson Gadh (Osmaston 1921). Tehri : Ranichauri (ZSI Survey 2005). Uttarkashi : Govind NP : Naitwar, Himri, Satta, Istragad (Tak *et al.* 2004). CTR (Khati 2004).

Status : Sparse winter visitor (status uncertain). Schedule IV (BNHS 2002).

**613(1440) *Cyornis rubeculoides* (Vigors, 1831)
Blue-throated Flycatcher**

1831. *Phoenicurus rubeculoides* Vigors, *Proc. Zool. Soc. London* : 35 (Darjeeling).

1924. Baker, *FBI* No. 657, 2 : 231.

Diagnostics : Size : Sparrow -; c. 14 cm. Also known as '*Muscicapa rubeculoides*' is distinguished by its distinctly tri-coloured underparts, *i.e.*, dark blue throat, rufous breast, and buffish belly.

Male : Blue upperparts with brighter on forehead and supercilium; black lores; dark blue throat; rufous breast; whitish belly and undertail-coverts washed with buff.

Female : Olive-brown head and upperparts with rufous-brown rump and tail (separate it from female Tickell's, which has bluish); creamy-orange throat and breast with white belly and undertail-coverts.

Juvenile : With orange-buff spotting and diffuse blackish scaling on olive-brown upperparts; and black scaling on buffish breast.

Habitat : <1800 m (2100 m). Forest undergrowth, well-wooded areas. Usually in moister facies than Tickell's Blue Flycatcher.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Malsi Deer Park, New Forest, Timli, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (internet list).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

**614(1442-1443) *Cyornis tickelliae* Blyth, 1843
Tickell's Blue-Flycatcher**

1843. *C. (yornis) Tickelliae* blyth, *Jour. Asiat. Soc. Bengal* 12 : 941 (Central India = Borabhum).

1924. Baker, *FBI* No. 660, 2 : 234.

Diagnostics : Size : Sparrow -; c. 14 cm. Also known as 'Orange-breasted Blue Flycatcher' or '*Muscicapa tickelliae*'

Male : Bright blue upperparts with brighter blue forehead, supercilium and shoulders; and orange-rufous throat and breast with clear horizontal division from white flanks and belly (except in Sri Lanka). Confusable with Blue-throated Flycatcher (*Cyornis rubeculoides*), which has blue throat.

Female : Duller and greyer above, with bluish or whitish lores, and the rufous on breast paler (reduced in intensity and extend). Confusable with Brooks's Flycatcher (*Cyornis polioegenys*), which has whitish throat.

Juvenile : With scaly brown upperparts, head and breast with blue wings and tail.

Races : *C. t. jerdoni* of Sri Lanka is distinguished from male of the nominate race (described herewith) by darker, deeper blue upperparts, and longer bill; orange of breast extending onto upper belly, lacking clear division from white of remaining underparts.

Habitat : <1500 m. Forest, groves, parks, gardens, overgrown gullies, orchards.

Distribution : Uttarakhand : Dehra Dun : Shiwaliks (Osmaston 1935), New Forest (George 1957, Mohan 1996), [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

615(1448-1449) *Culicicapa ceylonensis*

(Swainson, 1820)

Grey-headed Flycatcher

1820. *Platyrhynchus ceylonensis* Swainson, *Zool. Ill.* 1, No. 3, pl. 13 and text (Ceylon).

1838. *Cryptolopha poiocephala* Swainson, in *Nat. Library, Flycatchers* 21 : 200. New name for *P. ceylonensis* Swainson.

1924. Baker, *FBI* No. 679 (part), 2 : 254.

Diagnostics : Size : Sparrow -; c. 9 cm. Sexes alike. Also known as 'Grey-headed Canary Flycatcher' is a distinctive flycatcher; its upright stance, long-tail, crested appearance, and flycatcher behaviour serve to distinguish it from the similarly plumaged *Seicercus* and *Abroscopus* warblers. It has grey head and breast, greenish upperparts, and bright yellow remaining underparts.

Habitat : <2700 m (3100 m). Forest open wooded country.

Distribution : Uttarakhand : Garhwal (Osmaston 1921, Lavkumar 1956b). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Auli (Sankaran 1993, 1994), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Mussoorie, New Forest, Timli, Tons Valley Forest, [Dhanaulty, Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995), Mohaan (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005). Uttarkashi : Govind NP : Sankri, Taluka, Himri, Duni (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

MONARCHINAE (Monarch-Flycatchers & Paradise-Flycatchers)

Most species are small to medium-sized, with long, pointed wings and a medium-length to long tail. They feed mainly on insects.

616(1460-1464) *Terpsiphone paradisi*

(Linnaeus, 1758)

Asian Paradise-Flycatcher

1758. *Corvus paradise* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 107 (in India = Chandernagor, see Stresemann, 1952, *Ibis* 94 : 517).

1924. Baker, *FBI* No. 688 (part), 2 : 264.

Collection records : Uttarakhand : Bageshwar, 2♂, 1.vii.1972, coll. D. N. Basu. Dehra Dun : Sahashpur, 1♂, 4.v.1963, coll. P. K. Bose; Sahastradhara, 1♂, 29.iv.1965, coll. R. K. Bhatnagar; Ballupur, 1♂, 25.vi.1975, coll. P. K. Bose; Rajpur, 1♂, 6.iv.1976, coll. Surender Singh. Uttarkashi : Gangani, 1♂, 2.vi.1973, coll. Raj Tilak; Purola, 1♀, 20.vi.1973, 1♂, 22.vi.1973, 1♂, 23.vi.1973, 1♂ and 1♀, 24.vi.1973, 1♂, 23.viii.1975, coll. Raj Tilak; Barkot, 1♂, 29.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Bulbul $\pm$; c. 20 cm (adult male long tail-streamers up to additional 35 cm). Also known as 'Paradise Flycatcher' has shiny black crested head, blue eye-ring, and blue-grey bill.

Male : Occurs in two colour morphs : (i) young/rufous phase, and (ii) old/white phase (intermediates also occur). (i) *White morph* (old male of 4 years or more) : almost entirely white, except the blue-black crested head, black primaries and secondaries, black outer tail feathers, and black shaft to the central tail feathers. (ii) *Rufous morph* : rufous mantle, wing and tail; and white to greyish underparts merging into glossy black to greyish-black throat. The intermediate birds with rufous and white in plumage also occur.

Female : Like rufous male, but with shorter crest and short square-ended tail (lacking tail-streamers); and greyer throat and ear-coverts.

Juvenile : Like female, but with indistinct pale centres and dark fringes to breast feathers

Habitat : <1800 m (3100 m). Low to mid-storey in open forest, groves, gardens, bamboo, scrub jungle.

Distribution : Uttarakhand : Chamoli : above Joshimath (Sankaran 1993, 1994). Dehra Dun : Shiwaliks and Himalayas (Osmaston 1935), (Wright 1957, Tak 1995), New Forest (George 1957, Mohan 1996), Malsi Deer Park, Mussoorie, New Forest, Timli, [Dholkhand, Maldeota, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Gupta Kashi (Lavkumar 1956b). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Dhanotri (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated; Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

617(1465-1469) *Hypothymis azurea*
(Boddaert, 1783)

Black-naped Monarch-Flycatcher

1898. *Siphia styani* Hartlaub, *Abh. Nat. Ver. Bremen* 16 : 248
(Harhow, Hainan).

1920. *Hypothymis azurea sykesi* Baker, *Bull. Brit. Orn. Cl.* 41 : 8. New name for *Muscicapa caeruleocephala* Sykes, 1832, *nec M. caeruleocephala* Scopoli, 1786
Hypothymis azurea similis Koelz, *Proc. Biol. Soc. Washington* 52 : 68 (Londa, Bombay Presidency).

1924. Baker, *FBI* No. 692 and 693, 2 : 270, 271.

Diagnostics : Size : Sparrow; c. 16 cm. Also known as 'Black-naped Flycatcher' or 'Azure Flycatcher (*Monarcha azurea*)' has short legs and sits very upright while perched prominently, like a shrike.

Male : Almost entirely azure-blue (pale/navy blue), except whitish lower belly, and is duller on wings; has black velvety black patch on nape and thin black crescent across throat (a neat black gorget).

Female : Duller, with blue crown and brown remaining upperparts; ashy blue underparts fading to whitish on belly; and no black nape-patch or necklet (black gorget).

Habitat : <900 m (1500 m). Midstorey in well-wooded areas.

Distribution : Uttarakhand : Dehra Dun : Thano, Lachiwala and Karwapani (Osmaston 1935), New Forest (Mohan 1993, 1996), Kansrao, Mussoorie, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

RHIPIDURINAE (Fantail-Flycatchers)

Small, confiding, arboreal birds, perpetually on the move in search of insects. Characteristically, they erect and spread the tail like a fan, and droop the wings, while pirouetting and turning from side to side with jerky, restless movements. When foraging, they flit from branch to branch, making frequent aerial sallies after winged insects, often rising vertically and tumbling, twisting or looping in the air, before returning to a perch. They call continually. Fantails are usually found singly or in pairs, and often join mixed hunting parties with other insectivorous birds.

618(1450) *Rhipidura hypoxantha* Blyth, 1843
Yellow-bellied Fantail-Flycatcher

1843. *Rhipidura hypoxantha* Blyth, *Jour. Asiat. Soc. Bengal* 12 : 930, 935 (Darjeeling).

1939. *Chelidorhynch hypoxantha noa* Koelz, *Proc. Biol. Soc. Washington* 52 : 68 (Nagar, Kulu).

1924. Baker, *FBI* No. 699, 2 : 275.

Diagnostics : Size : Sparrow -; c. 8 cm. Also known as 'Yellow-bellied Fantail' is a restless, tiny fantail flycatcher.

Adult : Distinguished from other fantails by yellow forehead and supercilium; a broad black band from lores through eye and ear-coverts (or mask, which is dark olive-brown in female); dark greyish olive upperparts; bright yellow underparts; and blackish tail which is boldly tipped with white.

Juvenile : Like female, but lacks yellow on forehead; has duller and paler supercilium and underparts, and greyer upperparts.

Habitat : S (1000 m) 1800 m treeline +. W >adjacent plains. Evergreen habitats.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli : Dibrugheta camp in the Sanctuary (Reed 1979), NDNP (Tak & Kumar 1987), Maltoni to Ramani (Sankaran 1993, 1994), (Tak 1995), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, 1962a, Mohan 1996), Chakrata, Mussoorie, New Forest, Timli, Tons Valley Forest, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Tungnath (Lavkumar 1956b), Augstyamuni (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Govind NP : Naitwar, Dhaura (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

619(1454-1459) *Rhipidura albicollis* (Vieillot, 1818)
White-throated Fantail-Flycatcher

1818. *Platyrhynchus albicollis* Vieillot, *Nouv. Dict. d'Hist. Nat.* 27 : 13 (Bengale).

1924. Baker, *FBI* No. 703 (part), 2 : 279.

Collection records : Uttarakhand : Dehra Dun : Jashpur, 1 ex., 14.x.1968, coll. P. K. Bose; Hathibarkala, 1 ♀, 2.i.1976, B. S. Lamba.

Diagnostics : Size : Bulbul -; c. 17 cm. Sexes alike. Also known as 'White-throated Fantail'

Adult : Is a dark, slaty brown fan-tailed flycatcher with a narrow white supercilium and dark ear-coverts; olive-brown to slate-grey upperparts; white throat; and dark brown to blackish fan-shaped tail tipped with white.

Juvenile : Browner, with rufous tipped body feathers, wing-coverts and tertials; and pale or dark less well-defined throat.

Races : Six races are known from the subcontinent : three from the Himalayas and NW subcontinent with slate-grey underparts; two from the peninsula with white-spotted grey breast and buff belly; and one from the NE peninsula with unspotted grey breast and buff belly.

Habitat : S <1700 m (3000 m). W Plains, foothills (2100 m). Forest, groves, gardens, scrub.

Distribution : Uttarakhand : Bageshwar : around Bageshwar, Bharari, Kapkot (ZSI Survey 2004). Chamoli : Pindar valley (Osmaston 1921), Deodi in the Sanctuary (Reed 1979), (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Osmaston 1921, Tak 1995). Pithoragarh : Dhauri river basin- 2004, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag (Osmaston 1921), Gandhari (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

620(1451-1453) *Rhipidura aureola* Lesson, 1830
White-browed Fantail-Flycatcher

1830. *Rhipidura arueola* Lesson, *Traite d'Orn.* : 290 (Bengal).

1924. Baker, *FBI* No. 700(part), 2 : 277.

Diagnostics : Size : Bulbul -; c. 17 cm. Sexes alike, but female slightly paler and browner on head. A cheery restless fan-tailed smoke-brown flycatcher with broad white forehead and white underparts; has black crown and ear-coverts; white forehead and broad supercilium; dark grey-brown back and wings, the latter with two rows of white spots (spotted coverts); black throat; whitish chin and sides of throat; black sides of breast; white remaining breast and belly; and blackish tail with white outer rectrices, others, except central pair, tipped with white. Distinguished from White-throated (*R. albicollis*) by its broad white supercilium extending to nape and pure white breast and belly.

Habitat : <1000(1500). Mainly lowlands. Drier forest, groves, scrub, gardens.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972b), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Gori river basin- 2002, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Augstyamuni (ZSI Survey 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-5). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

AEGITHALIDAE (Long-tailed Tits)

The Long-tailed tits, Aegithalidae, are family of small passerine birds with medium to long tails. They make woven bag nests in trees. Most eat a mixed diet that includes insects.

621(1818-1820) *Aegithalos concinnus* (Gould, 1855)
Red-headed Tit

1920. *Aegithaliscus concinna iredalei* Baker, *Bull. Brit. Orn. Cl.* 41 : 8, new name for *Parus erythrocephalus* Vigors, 1831, *nec P. erythrocephalus* Linnaeus (Himalayas, restricted to Simla).

1922. Baker, *FBI* No. 77 (part), 1 : 93.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Black-throated Tit'

Adult : Is identified by white rear supercilium above broader, more clearly defined black mask (lores to ear-coverts); rufous-chestnut crown; yellowish white eye; grey back; brown wings with a darker shoulder-patch; white chin and sides of throat; black centre of throat; pale buff remaining underparts; and brown tail with white outer edge and tips.

Juvenile : With paler rufous crown, white throat and paler underparts.

Habitat : S 1400-2700 m (3200? m). W 600-3600 m. Open forest, second growth.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Alakananda and Dhauli valleys (Lavkumar 1956b), NDNP (Tak & Kumar 1987), (Tak 1995), Belta (Tak 1997), Chopta Chatti (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a), Chakrata, Mussoorie, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Osmaston 1921, Tak 1995). Pithoragarh : District survey- 2005, Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag (Osmaston 1921), Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri : Bheling valley (Searight 1926). Uttarkashi : Govind NP : Sankri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

Remarks : It ranges from India to China and Taiwan. The species feeds on small insects and spiders and lives in open broadleaf forest as well as pine forest. The nest is constructed out of moss and lichen and hangs from the branches of trees.

622(1822) *Aegithalos niveogularis* (Gould, 1855)
White-throated Tit

1855. *Acanthiparus niveogularis* Gould, *Bds. Asia* 2(7), pl. 67 (North India, restricted to northern Punjab by Vaurie, 1957, *Amer. Mus. Novit.*, No. 1853 : 20).

1922. Baker, *FBI* No. 84, 1 : 98.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike.

Adult : Is distinguished from other *Aegithalos* by white forehead and forecrown; brownish iris (not yellow); a broad black eye-stripe, the two bands partially meeting on nape; a narrow buffish brown band across upper back; grey remainder upperparts; greyish brown wings with dark shoulders; dusky throat; white sides of neck forming a collar broken up on back; a brown band across breast; pale buff belly; and greyish brown tail with white outer edge.

Juvenile : Like adult, but with dull dusky throat, darker breast band, brown upperparts and paler lower breast and belly.

Habitat : S 2400-3970 m. Forest and shrubbery near the treeline (subtropical and tropical moist montanes) W > 1800 m.

Distribution : Uttarakhand : Chamoli : Dhauli valley in Painkhanda Malla (Osmaston 1921), Deodi, Dibrugheta (Sankaran 1993, 1994, Tak 1997). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972b, Singh 2000). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Whymper 1907). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Widespread resident depicts altitudinal movement. Schedule IV (BNHS 2002). RRS (4) *i.e.* Western Himalayas (Jhunjhunwala *et al.* 2001).

REMIZIDAE (Penduline-Tits)

The penduline tits are a family of small passerine birds, related to the true tits. All but the Verdin and Fire-capped Tit make elaborate bag nests hanging from trees, usually over water. They are insectivores. Sometimes, these birds are included as subfamily Remizinae in the titmice family Paridae.

623(1815-1816) *Cephalopyrus flammiceps* (Burton, 1836) Fire-capped Tit

1836 (1835). *Aegitalus* [sic] *flammiceps* Burton, *Proc. Zool. Soc. London* : 153 (*apud* Montes Himalayensis, restricted to Mussoorie by Whistler, 1924, *Bull. Brit. Orn. Cl.* 45 : 15).

1924. Baker, *FBI* No. 949 (part), 2 : 545.

Diagnostics : Size : Sparrow -; c. 9 cm. It is a flowerpecker-like, short and stout bird with greenish upperparts, yellowish underparts and a short-tail.

Male (summer/ breeding) : Bright orange-scarlet forecrown; greenish upperparts; brown wings with two yellow wing-bars (the lower one broader and more prominent); bright orange-scarlet chin and throat grading to saffron yellow on breast, and pale yellow on belly.

Female (breeding) : Yellowish forecrown and olive-yellow throat and breast.

Non-breeding (male/ female) : Similar to breeding female, but with whitish throat; female usually duller than male.

Juvenile : Like non-breeding adult, but with duller olive rump and pale grey underparts.

Habitat : S 2000-3500 m. W > Plains. Forest, orchards, dense jungle.

Distribution : Uttarakhand : Chamoli : Near Trisul nalla, Rishi Ganga confluence, Joshimath (Sankaran 1993, 1994, Tak 1997). Dehra Dun : beyond Chakrata (Osmaston 1935), (Singh 2000). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-5). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

PARIDAE (Tits)

Tits are small acrobatic birds with short conical bill, short to medium rounded wings, medium to long tail, short strong legs. Subsist chiefly on insects, but also take seeds and fruit. Mostly arboreal, though may feed on the ground. Usually live in small flocks, often mixed with other species. *Parus* and *Sylviparus* are chiefly tree cavity-nesters. The others mostly build hanging balls of moss, lichens, hair, feathers, etc.

624 (1804) *Parus rufonuchalis* Blyth, 1849 Simla Crested Tit

1849. *Parus rufonuchalis* Blyth, *Jour. Asiat. Soc. Bengal* 18 : 810 (range beyond Simla).

1938. *Parus rufonuchalis blanchardi* Meinertzhagen, *Bull. Brit. Orn. Cl.* 58 : 95 (N. W. side of Gardez Forest, Afghanistan).

1922. Baker, *FBI* No. 66, 1 : 85.

Diagnostics : Size : Sparrow $\pm$; c. 13 cm. Sexes alike. Also known as 'Rufous-naped Tit' or 'Dark-grey Tit' or 'Simla Black Tit' is a black-crested tit with white cheeks and black throat and breast.

Adult : Is distinguished from similar *P. melanolophus* by more extensive black on upperparts and absence of wing-bars. Has black crown, crest and sides of neck; white cheeks; white nuchal patch tinged with rufous near back (diagnostic, but difficult to see); grey remaining upperparts; black throat, breast and upper belly; grey lower belly; and rufous undertail-coverts and a patch on flanks.

Juvenile : Like adult, but has shorter crest; brownish mantle and belly; buff undertail-coverts; and duller and less extensive black bib.

Habitat : S 2700-4000 m. W >1500 m. Chiefly conifer and oak-rhododendron forest.

Distribution : Uttarakhand : Chamoli : Dibrugheta (Reed 1979), (Tak 1995). Dehra Dun (Osmaston 1935), Chakrata (Singh 2000). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Tehri : Bheling valley (Searight 1926). CTR (Lamba undated, Khati 2004, internet list).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

Remarks : This tit is a native of the western Himalayas, but has very large range, including India, China, Pakistan, Turkestan, Kyrgyzstan, and Afghanistan.

625(1805-1806a) *Parus rubidiventris* Blyth, 1847 Rufous-bellied Crested Tit

1847. *P. (arus) rubidiventris* Blyth, *Jour. Asiat. Soc. Bengal* 16 : 445 (Nepal and Sikkim, restricted to Kathmandu Valley by Ripley, 1961, *Synopsis* : 550).

1922. Baker, *FBI* No. 65, 1 : 84.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Rufous-vented Tit'

or 'Rufous-breasted Black Tit' is very similar to Simla Crested Tit (Rufous-naped) with black crest, white nape and cheeks; and black throat and breast.

Adult : Is distinguished by its smaller size, rufous undertail-coverts concolorous with belly; and less extensive black bib (not extending onto belly).

Juvenile : Like adult, but with shorter crest and duller cap; yellowish tinge on cheeks, and less clearly defined bib.

Races : *P. r. beavani* of E Himalayas is distinguished from the nominate race (described herewith) by greyish belly (especially in fresh plumage).

Habitat : S 2700-4250 m. W >1500 m (foothills). Mainly conifer forest.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : NDNP (Tak & Kumar 1987), Deodi, confluence of Trishul nalla and Rishiganga (Sankaran 1993, 1994), Dibrugheta, Deodi, confluence of Trisul nalla and Rishi Gorge, between Tolma and Himtoli/Dunagiri (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Pithoragarh (Tak 1995), Gori river basin- 2002, Panchchuli expedition- 1998 Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

626(1802) *Parus melanolophus* Vigors, 1831 Spot-winged Crested Tit

1831. *Parus melanolophus* Vigors, *Proc. Zool. Soc. London* : 23 (Himalayan Mountains = Simla-Almora area).

1922. Baker, *FBI* No. 63, 1 : 83.

Diagnostics : Size : Sparrow -; c. 11 cm. Sexes alike. Also known as 'Crested Black Tit' or 'Black-crested Tit' or 'Spot-winged Black Tit' or 'Spot-winged Tit' is a small, slaty, black-crested tit.

Adult : Has black crown, crest and sides of neck; white cheeks and nuchal patch; dark slaty

remaining upperparts with two rusty white wing-bars (or rows of spots formed due to whitish tips to median and greater coverts); black throat and breast; slaty belly with a rufous patch on flanks; and rufous undertail-coverts. It is distinguished from 'Rufous-bellied Crested Tit' and 'Simla Crested Tit' by two wing-bars of white spots; and from 'Coal Tit' by grey breast and belly with contrasting rufous flanks (and pale rufous vent):

Juvenile : With duller black bib and shorter crest, faint yellow wash to cheeks, rusty-buff wing spots, greyish-olive upperparts and buffish-grey underparts. Resembles Coal Tit, but has rufous flanks and greyer belly.

Habitat : S 2000-3700 m. W >foothills. Forest, preferring conifers.

Distribution : Uttarakhand : Almora : Chanthariya, Panduwakhal, Mansi (ZSI Survey 2004). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Bampa (Lavkumar 1956b), NDNP (Tak & Kumar 1987), Belta Kharak, Reni to Ramani, Bethartoli (Sankaran 1993, 1994, Tak 1997), (Tak 1995), Deodi, Dibrugheta (Sathyakumar 2003), Mandal, Vishnuprayag, Nandprayag, Gwāldam, Narain'agrh (ZSI Survey 2004), Chopta Chatti (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972b), New Forest (George 1957, Mohan 1996), Chakrata, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag: Vanya kund, Tungnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993), Gandhari, Shivpuri, Ukhimath, Dugalbitta, Soak Kharak (ZSI Survey 2004). Uttarkashi (Tak 1995), Govind NP : Taluka (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

627(1803) *Parus ater* Linnaeus, 1758
Coal Tit

1844. *P. (arus) aemodius* Hodgson, in Blyth *Jour. Asiat. Soc. Bengal* 13 : 943 (Nepal).

1922. Baker, *FBI* No. 64, 1 : 84.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. A small, black-crested tit with white cheeks; glossy black crown, crest and sides of neck; white cheeks and a distinctive large nuchal crest; dark grey back; two whitish wing-bars (rows of spots); black throat; and fulvous-buff remaining underparts.

Adult : Is distinguished from Rufous-bellied Crested Tit by double wing-bars, lack of rufous on flanks, and fulvous (not slaty) belly; and from Spot-winged Crested Tit, which also has white double wing-bar, by fulvous-buff (not slaty) belly. Hybrids with Spot-winged Crested Tit occur where overlap ranges (western Nepal and westward).

Juvenile : Duller, lacks gloss on black, and has yellow tinge to white of nape, cheeks, and belly (which later turns to fulvous-buff in adult).

Habitat : S (2500 m) 2800-4250 m. W 1800-3600 m (4270 m). Mainly conifer forest.

Distribution : Uttarakhand : Chamoli : Lata Kharak and at 3960m in the Gorge (Reed 1979), Lata Kharak (Tak 1997). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006).

Status : Residential status not known. Schedule IV (BNHS 2002).

628(1807-1808) *Parus dichrous* Blyth, 1844
Brown Crested Tit

1932. *Lophophanes dichrous kangrae* Whistler, *Bull. Brit. Orn. Cl.* 53 : 20 (Koti State, near Simla).

1922. Baker, *FBI* No. 68 (part), 1 : 87.

Diagnostics : Size : Sparrow -; c. 12 cm. Sexes alike. Also known as 'Grey-crested Tit' or 'Crested Brown Tit' is a plain grey and buff crested tit.

Adult : Has greyish cap and upperparts with pointed erect crest; a prominent buffish-white collar, broken on back and submoustachial stripe; greyish-buff throat; and orange-buff underparts.

Juvenile : Has shorter crest, and paler and less uniform underparts.

Habitat : S 2400 m - treeline. W>2000 m. Variety of forest types.

Distribution : Uttarakhand : Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Dibrugheta (Tak 1997). Dehra Dun : Chakrata (Osmaston 1935, Bhatnagar & Misra 1972a), Mussoorie (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

629(1790-1797) *Parus major* Linnaeus, 1758
Great Tit

1905. *Parus major caschmirensis* Hartert, *Vog. pal. Fauna* 1 : 345 (Gilgit).

1922. Baker, *FBI* No. 53, 1 : 76.

Collection records : Uttarakhand : Almora : Kathpuria, 2♂, 20.xii.1968, 2♂, 21.xii.1968, coll. P. K. Bose. Dehra Dun : Sathyanarain, 1♀, 3.iii.1973, coll. Raj Tilak. Tehri : Kempty, 1♀, 10.vii.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow ±; c. 13 cm. Sexes alike. Also known as 'Grey Tit'

Adult : Is a unique tit, has white cheeks and nape patch; black rest of head; grey back; white greater-coverts wing-bar and fringes to tertials; and black throat continued in a broad band running down the middle of white underparts (broader in male) with ashy flanks. It is distinguished from Green-backed Tit by grey back (*vs* green) mantle; and greyish-white (*vs* yellow) on underparts.

Juvenile : With brownish black cap and throat; and yellowish-white cheeks and underparts.

Races : Seven races are recognised from the subcontinent; *P. m. ziaratensis* of NW subcontinent has pale blue-grey upperparts and almost white underparts.

Habitat : <3600 m. Light forest, wooded areas.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Dhakuri, between Dwali and Phurkia (Tak 1997). Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Tolma, between Lohajung and Wan (Tak 1997), Chenab

Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Dhauli river basin- 2004, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Istragad (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

630 (1799) *Parus monticolus* Vigors, 1831
Green-backed Tit

1831. *Parus monticolus* Vigors, *Proc. Zool. Soc. London* : 22 (Himalayan Mountains = Simla).

1926. *Parus monticolus lepcharum* R. & A. Meinertzhagen, *Bull. Brit. Orn. Cl.* 46 : 97 (Gangtok, Sikkim).

1922. Baker, *FBI* No. 59, 1 : 80.

Collection records : Uttarakhand : Uttarkashi : Jarmola, 1♂, 16.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow ±; c. 13 cm.

Adult : Distinguished from Great tit by green mantle and back; yellow on underparts; and double wing-bar. Has black crown and sides of neck; white cheeks and nuchal patch; yellowish-olive back; grey rump; bluish wings with two white wing-bars and white tips to tertials; black throat and a broad band down the middle of belly; yellow remaining underparts; and bluish tail with white tips to outer rectrices.

Juvenile : Duller with yellow wash.

Habitat : S 1200-3600 m (3900 m). W >foothills (plains). Forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931, ZSI Survey 2004), (Tak 1995), Soni (ZSI Survey 2004). Bageshwar : Kausani (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007).

Chamoli : Joshimath (Reed 1979), NDNP (Tak & Kumar 1987), up to Chinwari, Auli (Sankaran 1993, 1994), (Tak 1995), Belta (Tak 1997), Beltakharak (Sathyakumar 2003), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata and Mussoorie (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Chakrata, Mussoorie, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926). Uttarkashi : Govind NP : Sankri, Taluka, Jakhol, Himri, Dahula, Duni, Mashri, Istragad (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

631(1809-1811) *Parus xanthogenys* Vigors, 1831
Black-lored Yellow Tit

1831. *Parus xanthogenys* Vigors, *Proc. Zool. Soc. London* : 23 (Himalayan Mountains, restricted to Murree by Baker, 1923, *Handlist* : 9).

1922. Baker, *FBI* No. 75, 1 : 91.

Collection records : Uttarakhand : Dehra Dun : Mussoorie, 1 ex., 8.xii.1969, coll. P. K. Bose. Naini Tal : Bhim Tal, 1 ♂, 21.vi.1972, coll. D. N. Basu.

Diagnostics : Size : Sparrow $\pm$; c. 14 cm. Sexes practically alike. Also known as 'Yellow-cheeked Tit' is easily identified by the erect black crest, yellow supercilium and whitish or yellowish wing-bars.

Adult : Has black crown, pointed upstanding crest, and band behind eye; a few crest-feathers tipped with yellow; a long yellow supercilium meeting with prominent yellow nape-patch; olive-green back; black wings with yellow spots and black on shoulder, and a white longitudinal patch; white tips and edges to tertials; bright yellow underparts with a broad black median band from chin to vent (broader in the male); and blackish slate tail with white outer tail feathers.

Juvenile : Like adult, but duller with shorter crest.

Races : The nominate race of the Himalayas has yellow tips to wing-coverts, these being white on adults.

Habitat : <2400 m. Hill forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Mandal (Singh 2005a). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935), Chakrata, Mussoorie (Singh 2000). Naini Tal (Hudson 1930, Ahmed 1997), Lalkuaon (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : lower Mandakini, Ukhimath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : Woodpecker or barbet holes are used for a nest, and this species will also excavate its own hole or use man-made sites.

632(1812-1812a) *Parus spilonotus* Bonaparte, 1850
Black-spotted Yellow Tit

1855. *Parus subviridis* Blyth (ex Tickell MS.), *Jour. Asiat. Soc. Bengal* 24 : 267 (Tenasserim).

1922. Baker, *FBI* No. 74, 1 : 91.

Diagnostics : Size : Sparrow $\pm$; c. 14 cm. Sexes practically alike. Also known as 'Yellow-cheeked Tit' is a black-crested tit with yellow cheeks and black stripe behind eye. It is distinguished from Black-lored Tit (*P. xanthogenys*) by yellow lores and forehead (black in Black-lored), and black streaking on back; and from Green-backed Tit (*P. monticolus*) by black streaking on back and crest.

Adult : Has yellow forehead and lores; black streaking on greenish mantle; grey rump; and white wing-bars (where ranges overlap).

Juvenile : Duller, with shorter and dull black crest, browner wing-coverts, and yellowish-white wing-bars; and dull yellow underparts.

Habitat : 1200-2400 m. Mainly light hill forest.

Distribution : Uttarakhand : Naini Tal : Bhawali (ZSI Survey 2005). Pithoragarh (Tak 1995), Gori river basin- 2002 (Tak & Sati 2006).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

633(1813-1814) *Sylviparus modestus* Burton, 1836
Yellow-browed Tit

1836 (1835). *Sylviparus modestus* Burton, *Proc. Zool. Soc.* London : 154 (*apud* Montes Himalayensis = Nepal *vide* Baker, 1920, *Handlist* : 8).

1906. *Sylviparus saturator* Rippon, *Bull. Brit. Orn. Cl.* 16 : 87 (Mt. Victoria).

1922. Baker, *FBI* No. 70, 1 : 88.

Diagnostics : Size : Sparrow -; c. 9 cm. Sexes alike. A small olive-green bird easily mistaken for a leaf warbler; often overlooked due to its small size and greenish plumage. However, distinguished by its behaviour and slightly raised crest. Has olive-green upperparts with a pale eye-ring; a short tuft-like crest often raised; a short bright yellow supercilium (sometimes not visible in field, but clearly visible when the tiny crest is erected in agitation or court-ship); paler olive-buff underparts; and a remnant bill.

Races : The West Himalayan race *S. m. simlaensis* has brighter yellowish-olive upperparts and yellowish underparts compared with the C and E Himalayan *S. m. modestus*.

Habitat : S 2100-3200 m (4200 m). W1500-2900 m. Forest; timberline scrub.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath (Reed 1979), (Tak 1995), Wan (Tak 1997), Mandal (Singh 2005a). Dehra Dun (Singh 2000). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba undated).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

SITTIDAE (Nuthatches, Wallcreeper)

Nuthatches are small and stocky with short tails and strong, straight pointed bill. Plumage largely blue/ grey above, white/ rusty/ chestnut/ buff below. They feed on insects, spiders, nuts and seeds and forage mainly on tree trunks and branches climbing up, sideways, down or upside-down with equal facility. Solitary or in pairs, sometimes in mixed flocks. The related Wallcreeper is unmistakably unique with its long slender bill and broad, rounded butterfly wings marked with deep red, which are often flicked open to disturb its insect prey as it creeps over the cliff faces of its mountain habitat.

634(1827-1831) *Sitta castanea* Lesson, 1830
Chestnut-bellied Nuthatch

1930. *S. (itta) castaneoventris almora* Kinnear & Whistler, *Bull. Brit. Orn. Cl.* 51 : 27 (Valley of Ramganga between Almora and Pethora).

1922. Baker, *FBI* No. 111 (part), 1 : 125.

Collection records : Uttarakhand : Almora : Ranikhet, 1 ♂ and 1 ♀, 17.xii.1968, 1 ♂, 18.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Sparrow -; c. 13 cm.

Male : Bluish slaty upperparts; a black band from lores to upper back; striking white malar patch; expanded tail shows black rectrices with white subterminal spots; white chin; deep chestnut remaining underparts; and white and chestnut undertail-coverts.

Female : Similar, but has cinnamon underparts. In W Himalayas, confusable with Kashmir Nuthatch, but separated by whitish or grey scalloping on undertail-coverts; more clearly defined white chin and cheeks; and richer and more uniform underparts.

Habitat : <1830 m. Usually in open broadleaved forest.

Distribution : Uttarakhand : Dehra Dun : Rajpur (Osmaston 1935), (Wright 1957), New Forest (George 1957, Mohan 1996), Malsi Deer Park, Tons Valley Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006), Augstiyamuni (ZSI Survey 2004).

Tehri : Bheling valley (Searight 1926). Uttarkashi : Govind NP : Jakhol, Saruka Tal (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

635(1834-1835) *Sitta himalayensis* Jardine & Selby, 1835

White-tailed Nuthatch

1835. *Sitta himalayensis* Jardine & Selby, *Ill. Orn.* 3, pl. 144 (Himalaya Mts. = Simla *fide* Meinertzhagen).

1922. Baker, *FBI* No. 108 (part), 1 : 122.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike. It is separated from nuthatches by the diagnostic white patch at base of tail, which is very difficult to be seen in the field. Has bluish slaty upperparts; a black eye-stripe from lores to nape; a white patch at base of tail; expanded tail shows black rectrices with white spots (also shown by other species); and the white chin and cheeks gradually becoming buff throat, ochraceous on breast, and deep rufous on lower parts (separate this from Chestnut-bellied and White-cheeked). In flight, a white patch under wing prominent.

Habitat : S 1500-3400 m. W > 920 m. Broadleaved (mossy) forest.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Chopta Chatti (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), Chakrata (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Tungnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident depicts altitudinal movements. Not Listed in the Act (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

636 (1832-1833) *Sitta leucopsis* Gould, 1850
White-cheeked Nuthatch

1850. *Sitta leucopsis* Gould, *Bds. Asia* 2(1), pl. 46 (Himalayas).

1922. Baker, *FBI* No. 117, 1 : 130.

Diagnostics : Size : Sparrow -; c. 13 cm.

Adult : Distinctive with black crown and sides of nape; contrasting white sides of head including supercilium and face, enclosing beady eyes; dark bluish slaty remaining upperparts; and buffish white underparts with rich chestnut lower flanks and undertail-coverts. The expanded tail shows black outer rectrices with a white subterminal spot on the three outer pairs and a narrow white streak along the outer edge of the outermost.

Juvenile : Duller with faint barring on underparts.

Habitat : S 2100 m - treeline. W > 1800 m. Coniferous (and mixed) forest.

Distribution : Uttarakhand : Chamoli : Dhauli valley (Osmaston 1921), Dunagiri Ghad (Lavkumar 1956b), NDNP (Tak & Kumar 1987), (Tak 1995), Dibrugheta (Sankaran 1993, 1994, Tak 1997). Dehra Dun : Chakrata (Osmaston 1935), (Singh 2000). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Govind NP : Taluka, Jakhol, Saruka Tal (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, ZSI Surveys 2002-5).

Status : Sparse local resident depicts altitudinal movements. Not Listed in the Act (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

637(1838) *Sitta frontalis* Swainson, 1820
Velvet-fronted Nuthatch

1820. *Sitta frontalis* Swainson, *Zool. Ill.* (1), pl. 2 (Ceylon).

1836. *Sitta coralline* Hodgson, *Jour. Asiat. Soc. Bengal* 5 : 779 (Nepal).

1939. *Sitta frontalis simplex* Koelz, *Proc. Biol. Soc. Washington* 52 : 63 (Londa, Bombay Presidency).

1922. Baker, *FBI* No. 119, 1 : 132.

Diagnostics : Size : Sparrow -; c. 12 cm. Also known as 'Velvet-fronted Blue Nuthatch' is a small striking purplish blue nuthatch with velvety black forehead, black-tipped red bill, orange-yellow orbital skin and yellow eye.

Male : Black forehead and a long supercilium; lavender ear-coverts; purplish blue remaining

upperparts; and white chin and centre of throat grading to light brown more or less suffused with lavender on lower parts. Tail when expanded shows black rectrices with greyish terminal band.

Female : Similar, but without the black supercilium.

Juvenile : Duller versions of the adult.

Habitat : <1500 m (2200 m). Variely of less-dry forested or wooded habitats.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Dehra Dun : New Forest (Mohan 1993, 1996), Karva Pani, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Not Listed in the Act (BNHS 2002).

Remarks : It has the ability, like other nuthatches, to climb down trees, unlike species such as woodpeckers which can only go upwards. It is an active feeder on insects and spiders, and may be found in mixed feeding flocks with other passerines.

638(1839) *Tichodroma muraria* (Linnaeus, 1766) Wallcreeper

1850. *T. (ichodroma) nepalensis* Bonaparte, *Consp. Gen. Av.* 1 : 225 (Central Asia).

1922. Baker, *FBI* No. 457, 1 : 441.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♂, 13.xii.1976, coll. M. L. Narang.

Diagnostics : Size : Sparrow; c. 17 cm. An unmistakable bird; usually dwelling in rock and cliff-face and inaccessible haunts; easily identified by stunning crimson wings continually flicked while climbing. In flight, wings are rounded and reveal largely crimson wing-coverts and bases to black flight feathers, with two rows of white spots across primaries and white corners to tail.

Male (breeding) : Black throat and upper breast; and dusky underparts.

Female (breeding) : Whitish chin, and variable blackish patch on lower throat and upper breast.

Non-breeding (male and female) : White throat and upper breast with brown cast to crown.

Juvenile : Straighter bill, and paler and more uniform grey underparts.

Habitat : S >3300 m. W plains-5000 m (5730 m). Cliffs, gorges, quarries, stony riverbeds, old buldings etc.

Distribution : Uttarakhand : Almora : Kwarab (ZSI Survey 2004). Bageshwar : Khati (Tak 1997). Chamoli : Mana and Bampa (Lavkumar 1956b), Base Camp valley (Reed 1979), NDNF (Tak & Kumar 1987), (Tak 1995), between Belta and Lata Kharak, Sarsopatal (Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Asan Barrage, New Forest, Sulphur Springs, Tapkeshwar (Singh 2000). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Gori river basin- 2002, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Lamprey (1954). Uttarkashi (Tak 1995), Govind NP : Sunkhundi (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-5). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Not Listed in the Act (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

CERTHIIDAE (Tree-Creepers)

Tree-Creepers are small plump passerines with long, slender downcurved bill, short pointed tail and short slim legs. Upperparts are largely brown above, spotted and bared with buff and white; underparts chiefly whitish. They creep up treetrunks and branches, usually in spiral fashion using the stiff tail as a support, probing in crevices for their insect prey. Often solitary but may join bird waves outside the breeding season. Voices are thin and high-pitched.

639(1842-1844) *Certhia familiaris* Linnaeus, 1758 Eurasian Tree-Creeper

1874. *Certhia Mandellii* Brook, *Jour. Asiat. Soc. Bengal* 42 : 256 (Sikkim).

1922. Baker, *FBI* No. 448 (part), 1 : 433.

Diagnostics : Size: Sparrow -; c. 12 cm. Sexes alike. Also known as 'Tree Creeper' or 'Common Treecreeper' or 'Northern Tree Creeper' has fulvous brown upperparts with whitish on crown and back; and a white supercilium. Its whiter underparts with discoloured buff restricted to rear flanks and vent (separates it from other tree-creepers, including Rusty-flanked). It's shorter, less downcurved bill; a short wing-bar and a prominent buff banding across wing; and longish, pointed unbarred brown tail (distinguish it from Bar-tailed Tree-creeper).

Races : Three races are recognized from the subcontinent: *C. f. hodgsoni* of W Himalayas is comparatively pale and grey above, with pronounced whitish streaking. *C. f. mandellii* and *C. f. khamensis* of C and E Himalayas are darker and browner.

Habitat : 1700 m – treeline. Coniferous, birch, rhododendron and mixed forest.

Distribution : Uttarakhand : Almora : Binsar WLS, Soni, Bhatronj Khan, Chanthariya (ZSI Survey 2004). Bageshwar : Kanda, Jakheri, Rauteli-khet (ZSI Survey 2004). Chamoli : Joshimath and the Rishi Gorge (Reed 1979), NDNP (Tak & Kumar 1987), Dibrugheta (Sankaran 1993, 1994), (Tak 1995), Dibrugheta, Rishi Gorge (Tak 1997). Naini Tal (Ahmed 1997). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Augstyamuni (ZSI Survey 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Widespread resident depicts altitudinal movements. Information not available (BNHS 2002).

640(1845-1848) *Certhia himalayana* Vigors, 1832
Bar-tailed Tree-Creeper

1832 (1831). *Certhia Himalayana* Vigors, *Proc. Zool. Soc.* London : 174 (Himalayan Mountains, restricted to Kumaon or Garhwal by Meinertzhagen, 1922, *Bull. Brit. Orn. Cl.* 42 : 140).

1922. Baker, *FBI* No. 444 (part), 1 : 430.

Collection records : Uttarakhand : Almora : Ranikhet, Dhobighat, 1 ex., 16.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Sparrow -; c. 14 cm. Sexes alike. Also known as 'Himalayan Tree-Creeper' is at close range, distinguished from the foregoing *C. familiaris* by longer, more downcurved bill and dark cross-barring on tail. Has brown upperparts mottled with pale grey; whitish supercilium; a short whitish bar and an oblique buff band on wing (conspicuous in flight); and white chin and throat grading to buffish on belly and smoky on flanks.

Races : The W Himalayan Birds have colder and browner upperparts as compared to the E Himalayan birds, which are more rufous, with more pronounced whitish streaking.

Habitat : (1500 m) 2000 m - treeline. Chiefly coniferous forest. W <1800 m (2400 m). Orchards, groves, wooded compounds.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931). (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Alakananda and Dhaulī valleys (Lavkumar 1956b), at 2500m (Reed 1979), NDNP (Tak & Kumar 1987), Dibrugheta, Deodi, Trisul nalla, Rishi Ganga confluence (Sankaran 1993, 1994), (Tak 1995), Dibrugheta, Deodi, confluence of Trisul nalla and Rishi Ganga, between Tolma and Himtoli/Doonagiri (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Chakrata, Mussoorie, New Forest, (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Vanyakund and Tungnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi (Tak 1995), Govind NP : Taluka, Himri, Dhaulā, Duni, Satta (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movements. Information not available (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

641(1851) *Certhia nipalensis* Blyth, 1845
Rusty-flanked Tree-Creeper

1845. *C. (erthia)* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 42 : 581 (Nepal).

1874. *Certhia Stoliczkae* Brook, *Jour. Asiat. Soc. Bengal* 42 : 256 (Sikkim).

1922. Baker, *FBI* No. 455, 1 : 438.

Diagnostics : Size: Sparrow -; c. 14 cm. Sexes alike. Also known as 'Nepal Tree-Creeper' is easily distinguished from other Tree-Creepers by a combination of shorter, straighter bill; well-defined buffish supercilium; distinct dark ear-coverts; and extensively rusty flanks (duller in juvenile); from Bar-tailed by unbarred tail and rusty rump; and from Eurasian by extensively rusty flanks (vs discoloured buff restricted to rear flanks and vent); well-defined buffish supercilium; and darker ear-coverts (vs paler).

Habitat : S 2550-3660 m. W 1500-3500 m. Oak and mixed forests.

Distribution : Uttarakhand : Chamoli : Chopta Chatti (Singh 2005a). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movements. Information not available (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

DICAEIDAE (Flowerpeckers)

Flowerpeckers are small, plump and short-tailed with short bills. They feed on berries, nectar and insects. Very partial to *Loranthus*. Rather restless, flitting about from tree canopy to tree canopy; sometimes descend to bushes. Quite vocal with characteristic short sharp notes often given in flight. In some species sexes alike; in others female much duller than male and difficult to identify.

642(1892-1894) *Dicaeum agile* (Tickell, 1833)
Thick-billed Flowerpecker

1833. *Fringilla Agilis* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 578 (Borabhum and Dholbhum).

1939. *Piprisoma agile saturatior* Koelz, *Proc. Biol. Soc. Washington* 52 : 77 (Londa, Bombay Presidency).

1952. *Dicaeum agile deignani* Ripley, *J. Bombay nat. Hist. Soc.* 50 : 510 (Kohima, Assam).

1926. Baker, *FBI* No. 131 i (part), 3 : 435.

Diagnostics : Size : Sparrow -; c. 9 cm. Sexes alike.

Adult : Is a dull, olive-grey and whitish flowerpecker distinguished from other flowerpeckers by combination of stout bluish-grey bill, indistinct dark malar stripe, orange-red iris; olive-grey upperparts; greyish white underparts with faint brown streaking on breast and flanks and comparatively long and broad, fairly dark tail with white tip (which can be rather indistinct). In fresh plumage, has olive-green cast to back, rump, and edges of wings and tail.

Juvenile : Has pinkish bill.

Habitat : S <2100 m (3000 m). W <800 m. Wide range of habitats wherever there are fruiting or flowering trees and shrubs.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, Timli, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Rudraprayag : Tungnath (Lavkumar 1956b), Dugalbitta, Soak Kharak (ZSI Surveys 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movements. Schedule IV (BNHS 2002).

643(1896) *Dicaeum melanoxanthum* (Blyth, 1843)
Yellow-bellied Flowerpecker

1843. *P. (achyglossa) melanozantha* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 12 : 1010 (Nepal).

1926. Baker, *FBI* No. 1315, 3 : 439.

Diagnostics : Size : Sparrow -; c. 12 cm. A relatively large, short-tailed black-and-yellow flowerpecker.

Male : Entirely slaty black upperparts; white spots on tail; slaty black sides of head, neck and breast; a white band from chin down centre of throat and centre of breast; and bright yellow remaining underparts (belly and vent).

Female : Like male, but black replaced by olive-brown, paler on sides of head, neck and breast; greyish white instead of white; and yellow

replacing the bright yellow of male. White stripe down centre of throat and breast separates female from similar female of Fire-breasted Flowerpecker.

Habitat : S 2000-3600 m. W 1400-1800 m. Tall trees in open forest and forest clearings.

Distribution : Uttarakhand : Chamoli : Reni-Kalikona (Sankaran 1993, 1994, Tak 1997). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

644 (1899-1900) *Dicaeum erythrorhynchos*
(Latham, 1790)

Tickell's Flowerpecker

1790. *Certhia erythrorhynchos* Latham, *Index Orn.* 1 : 299
(India, restricted to Bombay by Baker, 1926, 'Fauna'
cd. 2, vol. 3 : 432).

1926. Baker, *FBI* No. 1308, 3 : 432.

Diagnostics : Size : Sparrow -; c. 8 cm. Sexes alike. Also known as 'Pale-billed Flowerpecker' or 'Small Flowerpecker' is a plain olive-brown flowerpecker with a flesh-coloured bill; greyish-olive upperparts with slight greenish cast; and greyish white underparts with variable yellowish-buff wash.

Juvenile : Like adult, but with orange-yellow bill and greyer plumage.

Races : *D. e. ceylonense* of Sri Lanka is separated from the nominate race described herewith by dark brown upper mandible and darker, more olive upperparts.

Habitat : <2000 m, lower in winter. Moist-deciduous forest, second growth, plantations, groves and gardens.

Distribution : Uttarakhand : Dehra Dun : New Forest (George 1957, Mohan 1996, Singh 2000), (Bhatnagar & Misra 1972b), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Uttarkashi : Govind NP : Naitwar (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

645(1905) *Dicaeum ignipectus* (Blyth, 1843)
Fire-breasted Flowerpecker

1843. *M. (yzanthe) ignipectus* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 12 : 983 (Nepal and Bootan).

1954. *Dicaeum ignipectus pulchellum* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 21 (Sangau, Lushai Hills).

1926. Baker, *FBI* No. 1303, 3 : 427.

Collection records : Uttarakhand : Dehra Dun : Hathibarkala, 1 ♀, 30.xii.1975, coll. B. S. Lamba.

Diagnostics : Size : Sparrow -; c. 7 cm. Also known as 'Buff-bellied Flowerpecker' is a distinctive flowerpecker.

Male : Metallic blue/ green upperparts; rich buff underparts with a scarlet patch on breast, a black patch below this on centre of belly and olive on flanks.

Female : Olive-green upperparts with yellower rump; and orange-buff throat, centre of breast and belly with olive breast sides and flanks.

Juvenile : Duller than female with whiter throat merging into pale greyish-olive remaining underparts.

Habitat : S 1400-2700 m (3000 m). W 600-2500 m. Forest, second growth, orchards.

Distribution : Uttarakhand : Dehra Dun (Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Bhawali (ZSI Survey 2005). Pauri (Tak 1995). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002).

NECTARINIIDAE (Sunbirds, etc.)

Sunbirds are the Old World equivalent of hummingbirds; small with long slender decurved bill, short rounded wings, square-cut tail, often hovering in front of flowers. They feed on nectar, insects, spiders and small berries. Male is usually

brightly plumaged, female usually drab. Most *Aethopyga* males have elongated central tail feathers. Some *Nectarinia* males have an eclipse plumage. *Nectarinia* females are largely yellow. *Aethopyga* generally olive.

**646(1916-1918) *Nectarinia asiatica* (Latham, 1790)
Purple Sunbird**

1790. *Certhia asiatica* Latham, *Index. Orn.* 1 : 288 (India = Gurgaon).

1926. Baker, *FBI* No. 1278, 3 : 396.

Collection records : Uttarakhand : Dehra Dun : Sathyanarain, 1 ♂, 3.iii.1973, coll. Raj Tilak; Rajpur, 1 ♂, 31.iii.1976, coll. Surender Singh.

Diagnostics : Size : Sparrow -; c. 10 cm. Adult male is distinguished from most sunbirds by glossy purple plumage.

Male (breeding) : Metallic dark blue and purple upperparts; metallic purple throat and breast, with blue-green sides; dark purple belly separated from breast by a narrow, inconspicuous reddish brown band; bright yellow and scarlet pectoral tufts. From a distance, the bird appears all black. Non-breeding (or eclipse male): Pale olive-brown upperparts with blackish wings and tail; yellow underparts with a broad blue-black band down middle of throat and breast (as in female). Both breeding and non-breeding males may be seen in almost any season.

Female : Olive-brown upperparts; dull yellow underparts with a broad blue-black band down middle of throat and breast (as in eclipse male).

Habitat : <1600 m (2400 m). Open broadleaf forest, second growth, gardens.

Distribution : Uttarakhand : Almora (Tak 1995). Chamoli : Mandal, Pipalkoti (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Tak 1995), Bhim Tal (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh : Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Mandakini below Gupta Kashi (Lavkumar 1956b), Ukhimath (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR

(Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-5). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Sparse local resident as well as sparse summer visitor. Schedule IV (BNHS 2002).

Remarks : Although they are completely unrelated, the sunbirds find counterparts in the hummingbirds of the Americas and the honeyeater of Australia. These resemblances are due to convergent evolution due to the similar nectar-feeding lifestyle. The sunbirds are tropical species, with representatives from Africa to Australasia; however, the greatest variety of species is in Africa where the group probably arose. Most species are sedentary or short-distance seasonal migrants. Like the hummingbirds, they are strongly sexually dimorphic, with the males usually brilliantly plumaged in metallic colours. Sunbirds have long thin down-curved bill and brush tipped tubular tongues, both adaptations to their nectar feeding.

**647(1919-1921) *Aethopyga gouldiae* (Gould, 1831)
Mrs. Gould's Sunbird**

1831. *Cinnyris Gouldiae* Vigors, *Proc. Zool. Soc. London* : 44 (Himalayan mountains = Simla-Almora area, *vide* Ticehurst & Whistler, 1924, *Ibis* : 471).

1926. Baker, *FBI* No. 1269, 3 : 385.

Diagnostics : Size : Sparrow -; c. 15 cm (male) and 10 cm (female). Also known as 'Gould's Sunbird'.

Male : Metallic purple-blue crown, ear-coverts and a patch on the sides of neck; crimson sides of head, neck, supercilium, nape and back (crimson of mantle and back reaching yellow rump); bright yellow rump; blue uppertail-coverts and upper surface of tail; metallic purple-blue throat; yellow remaining underparts with scarlet streaks on breast and olive tinge on vent; and graduated tail with buffish tipped brown outer rectrices, central rectrices greatly elongated.

Female : Grey head and nape; olive remaining upperparts; yellowish rump; grey throat; yellow remaining underparts; and prominent white on tail.

Habitat : Seasonally foothills-3650 m. Forest, scrub.

Distribution : Uttarakhand : Dehra Dun : beyond Chakrata (Osmaston 1935), New Forest

(Mohan 1993, 1996), Mussoorie, New Forest, Tons Valley Forest (Singh 2000). Pauri (Tak 1995). Rudraprayag: Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi: Kedar Kanta (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002).

648(1922-1924) *Aethopyga nipalensis*
(Hodgson, 1836)
Green-tailed Sunbird

1836. *Cinnyris Nipalensis* Hodgson, *Ind. Rev.* 1(7) : 273 (Nepal, restricted to Chandragiri Pass, central Nepal, by Ripley, 1961, *Synopsis* : 588).

1908. *Aethopyga griseiceps* Benthams, *Rec. Ind. Mus.* 2 : 167 (Darjeeling).

1926. Baker, *FBI* No. 1274 (part), 3 : 391.

Diagnostics : Size : Sparrow -; c. 14 cm (male, including elongated rectrices) and 10 cm (female). Also known as 'Nepal Sunbird' or 'Nepal Yellow-backed Sunbird' is distinguished from Mrs Gould's Sunbird by maroon mantle and olive-green back.

Male : Metallic blue-green crown and nape (separating from male Mrs. Gould's Sunbird, Fire-tailed Sunbird & Crimson Sunbird) bordered by a maroon band on upper back and sides of neck; olive-green wings and middle of back; bright yellow rump; black cheeks, metallic blue-green throat; bright yellow remaining underparts with scarlet streaks on breast; and metallic blue-green tail.

Female : Olive-green; and outer rectrices tipped with white.

Habitat : Seasonally 300-2750 m (3600 m). Dense forest, scrub, gardens.

Distribution : Uttarakhand : Bageshwar : between Dhakuri and Khati (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Mandal (Singh 2005a). Dehra Dun (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Lilam (Tak 1997), Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). CTR (Khatri 2004, internet list).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002).

649(1925-1926) *Aethopyga saturata*
(Hodgson, 1836)
Black-throated Sunbird

1836. *Cinnyris Saturata* Hodgson, *Ind. Rev.* 1(7) : 273 (Nepal).

1926. Baker, *FBI* No. 1272 (part), 3 : 388.

Diagnostics : Size : Sparrow -; c. 15 cm (male, including elongated rectrices) and 10 cm (female). Also known as 'Black-breasted Sunbird' is separated from other male sunbirds by its blackish throat and breast.

Male : Metallic purple crown, nape and a broad malar stripe; crimson-brown back and sides of neck; blackish brown wings; a narrow yellow band on rump; metallic purple uppertail-coverts and upper surface of tail (with two central rectrices elongated); dull blackish throat and breast; and greyish olive remaining underparts.

Female : Dusky olive-green underparts, darker upperparts with well-defined yellow rump.

Habitat : (plains) foothills-1800 m (2000 m). Dense forest (edge), scrub, second growth, areas of scattered bushes.

Distribution : Uttarakhand : Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

650(1927-1929a) *Aethopyga siparaja*
(Raffles, 1822)
Crimson Sunbird

1833. *Nectarinia Seheriae* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 577 (near Seheria in Borabhum).

1925. *Aethopyga siparaja mussooriensis* Baker, *Bull. Brit. Orn. Cl.* 46 : 12 (Mussoorie).

1926. Baker, *FBI* No. 1262 (part) and 1263, 3 : 378, 380.

Collection records : Uttarakhand : Bageshwar, 1♂, 30.vi.1972, coll. D. N. Basu. Dehra Dun : Rajpur, 1♂ and 1♀, 27.iii.1976, coll. Surender Singh. Tehri : Kempt, 1♂, 12.vii.1973, coll. Raj Tilak. Uttarkashi : Gangani, 1♂, 27.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow -; c. 15 cm (male, including elongated rectrices) and 10 cm (female). Also known as 'Yellow-backed Sunbird' or 'Scarlet-breasted Sunbird' is the national bird of the Republic of Singapore.

Male : Metallic green crown; maroon (dark crimson) head and mantle; bright yellow rump; scarlet throat and breast; metallic purple malar streak; yellowish olive belly; and metallic green tail, with two central rectrices elongated.

Female : Olive-green upperparts, yellowish breast and white tips to outer tail feathers. *Eclipse male/ female*: May have red throat and breast.

Juvenile : Similar to female, but has scarlet wash to throat and breast.

Races : Four subspecies are recognized from the subcontinent: *A. s. seheriae* and *A. s. labecula* of the Himalayas and NE subcontinent are covered by the description provided herewith, while *A. s. nicobarica* of the Nicobar Islands and *A. s. vigorsii* of the Western Ghats of India lack the long central tail feathers.

Habitat : S <1800 m. W <1400 m. Forest, scrub, gardens, orchards, groves.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), New Forest, [Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Tehri : Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002).

651(1930) *Aethopyga ignicauda* (Hodgson, 1836)
Fire-tailed Sunbird

1836. (*Cinnyris*) *Ignicauda* Hodgson, *Ind. Rev.* 1(7) : 273 (Nepal).

1926. Baker, *FBI* No. 1266, 3 : 383.

Diagnostics : Size : Sparrow -; c. 15 cm (male, including elongated rectrices) and 10 cm (female).

An unmistakable sunbird easily identified by the bright crimson elongated central pair of tail feathers.

Male : Metallic purple crown; bright crimson sides of crown from eye to nape, uppertail-coverts and tail; yellow rump; olive wings; metallic purple throat; and yellow remaining underparts with orange wash on breast.

Female : Darker olive upperparts with more yellow on rump; olive underparts with yellow centre of belly; and brownish-orange tail sides. *Eclipse male/ female* : Like female, but has scarlet uppertail-coverts and sides to tail, and brighter yellow belly.

Habitat : S 3000-4000 m. W 1050-2150 m (2900 m). Open forest, alpine shrubbery.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : beyond Chakrata (Osmaston 1935, Wright 1957), New Forest (Singh 1999), New Forest, [Dhanaulty] (Singh 2000). Pauri (Tak 1995), Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Udham Singh Nagar : Nanak Matta (ZSI Survey 2005). Uttarkashi : Tons valley (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

ZOSTEROPIDAE (White-eyes)

White-eyes are small active birds reminiscent of warblers with rounded wings, fairly short legs, medium-length, slightly decurved bill and distinct white eye-ring. Arboreal, usually keeping in flocks feeding on insects, nectar and berries.

652(1933-1936) *Zosterops palpebrosus*
(Temminck, 1824)

Oriental White-eye

1824. *Sylvia palpebrosa* Temminck, *Pl. Col. d'Ois.* 49, pl. 293, fig. 3 (Bengale).

1911. *Zosterops egregia* Madarsz, *Ann. Mus. Hist.-Nat. Natl. Hung.* 9 : 422, pl. 16 fig. I (Kandy, Ceylon).

1922. *Zosterops palpebroso elwesi* Baker, *Ibis* : 144 (Sikkim).
1922. *Zosterops palpebroso cacharensis* Baker, *Ibis* : 144 (Gunjong, N. Cachar).
1927. *Zosterops palpebroso occidentis* Ticehurst, *Bull. Brit. Orn. Cl.* 47 : 88 (Simla).
1950. *Zosterops palpebroso amabilis* Koelz, *Amer. Mus. Novit.*, No. 1452 : 9 (Sasan, Junagarh, Kathiawar).
1926. Baker, *FBI* Nos. 1247 (part), 1248, 1249 and 1250, 3 : 358-61.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1 ♀, 25.i.1975, coll. D. N. Basu; 1 ♂, 26.vii.1975, coll. Surender Singh; Badripur, 2 ♀, 3.iii.1976, donated by Sailendra Lamba. Uttarkashi : Purola, 1 ♂, 23.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'White-eye' or 'Small White-eye' is a distinctive bird with prominent white eye-ring of white feathers round the eyes (*Zosterops* being Greek for 'girdle-eye'); black lores; green to yellowish-green upperparts; bright yellow throat and vent; whistish belly; and rounded wings and strong legs.

Habitat : <1800 m (3000 m). Forested/wooded, mainly hilly, habitats.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Someshwar (ZSI Survey 2004). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Auli (Sankaran 1993, 1994), Pipalkoti, Narainbagh (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998, Kali river basin- 1989 (Tak & Sati 2006). Rudrapur : lower Mandakini and Rudrapur (Lavkumar 1956b), Augstiyamuni (ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Jakhol, Sirga, Saruka Tal (Tak *et al.* 2004). CTR (Lamba &

Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Information not available (BNHS 2002).

EMBERIZINAE (Buntings)

Buntings are small birds similar to finches, but the conical bill is usually finer, tail often longer, frequently with white outer tail feathers. Plumage of males often duller in the non-breeding season. They forage predominantly on the ground, generally preferring grass seeds. Gregarious, often forming large flocks outside the breeding season. Many species have similar *tzick* calls. Most are migratory, only visiting the subcontinent in winter.

653(2060) *Melophus lathami* (Gray, 1831) Crested Bunting

1831. *Emberiza lathami* Gray, *Zool. Misc.* 1 : 2 (Canton, Kwangtung).

1832. *Emberiza subcristata* Sykes, *Proc. Zool. Soc. London* : 93 (Dukhun).

1926. Baker, *FBI* No. 1132, 3 : 221.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 3 ♂, 8.iv.1965, coll. R. K. Bhatnagar; 1 ♂ and 1 ♀, 6.v.1965, 1 ♂, 28.v.1965, coll. P. K. Bose. Pauri : Narkota, 1 ♂, 29.vi.1969, coll. P. K. Bose.

Diagnostics : Size : Sparrow; c. 15 cm.

Male : Bluish-black crest, head and body; and chestnut wings and tail.

Female : Olive-brown upperparts with dark brown streaks; shorter crest; chestnut edges to wings and outer rectrices; yellowish buff underparts with dark streaks on breast and dark moustachial streak. *First-winter male* as female, but has heavily streaked darker brown upperparts; and olive-grey underparts heavily streaked with blackish-brown.

Juvenile : Like female, but buffier, more heavily streaked underparts, and shorter crest.

Habitat : <2400 m. Scrubby hillsides, fallow fields.

Distribution : Uttarakhand : Chamoli : lower reaches of Alakananda (Lavkumar 1956b), (Tak

1995), Deodi (Reed 1979, Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Chakrata, Khaddar, Mussoorie, [Maldeota] (Singh 2000). Pauri (Tak 1995). Pithoragarh: Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995). CTR (Lamba undated, Khati 2004, internet list).

Status : Sparse summer visitor as well as winter visitor. Schedule IV (BNHS 2002).

**654(2042) *Emberiza leucocephala* Gmelin, 1771
Pine Bunting**

1771. *Emberiza leucocephala* S. G. Gmelin, *Nov. Comm. Sci. Petropol.* 15 : 480, pl. 23, fig. 3 (Astrakhan).

1926. Baker, *FBI* No. 1123, 3 : 202.

Diagnostics : Size : Sparrow +; c. 17 cm. A long-tailed bunting with chestnut rump.

Male (non-breeding) : Whitish crown and patch on ear-coverts; blackish forehead and sides of crown; a broad chestnut supercilium; whitish gorget below chestnut throat, and chestnut streaking on breast and flanks. The breeding male has black and chestnut head pattern with stronger white head (due to pale fringes to head feathers).

Female : Greyish supercilium, nape, and sides of neck; dark streaking mixed with some chestnut on breast.

Habitat : Dry bushy slopes; fallow fields and stubble in hill country.

Distribution : Uttarakhand : Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Belta (Tak 1997). Pauri (Tak 1995). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

**655(2051-2052) *Emberiza cia* Linnaeus, 1766
Rock Bunting**

1856 (1855). *Emberiza stracheyi* Moore, *Proc. Zool. Soc. London* : 215, pl. 112 (Kumaon).

1926. Baker, *FBI* No. 1125, 3 : 205.

Diagnostics : Size : Sparrow; c. 16 cm. Also known as 'Eurasian Rock-Bunting' is distinguished from rather similar *E. fucata* (Grey-headed) and *E. stewarti* (White-capped) by bluish grey breast.

Male (breeding) : Grey head and breast, with black lateral crown-stripes, supercilium (eye-stripe) and moustachial streak looping up to join eye-stripe behind cheeks (bordering ear-coverts); rufous-brown mantle, with dark brown streaks; and deep rufous rump and remaining underparts. Non-breeding and first-winter male are similar; but have less striking head pattern; pale rufous underparts, with faint brown streaks.

Female : Duller or washed-out version of male.

Juvenile : Like female; warm buff, with heavy brown streaking, and rufous tinge to rump and belly.

Races : Male *E. c. par* of extreme NW subcontinent is paler than *E. c. stracheyi* of W and C Himalayas.

Habitat : S 2000-4600 m. W 600-2100 m (3600 m). Bushy rocky slopes, juniper, open pine forest, field's margins.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Bageshwar : Khati (Tak 1997). Chamoli: Badrinath to Mana in Alakananda valley and Bampa in Dhauri valley (Lavkumar 1956b), Dibrugheta, Deodi and Base Camp (Reed 1979), (Tak 1995), Deodi, Dibrugheta, Lata, Tolma (Tak 1997), Dibrugheta (Sarsopatal, Devstan bc, Patalkhan, Bhojgara, Ramni, Betartoli, Deodi, Dibrugheta (Sathyakumar 2003), Mandal village (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Chakrata (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Rilkote, Burfu (Tak 1997), Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995), Govind NP : Dahula (Tak *et al.* 2004). CTR (Lamba undated, internet list).

Status : Widespread resident depicts altitudinal movements. Schedule IV (BNHS 2002).

656(2048) *Emberiza stewarti* (Blyth, 1854)
White-capped Bunting

1854. *Euspiza Stewarti* Blyth, *Jour. Asiat. Soc. Bengal* 23 : 215 (Landour and Dehra Dun).

1926. Baker, *FBI* No. 1124, 3 : 203.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Chestnut-breasted Bunting' is easily distinguished from Rock Bunting by black throat and supercilium, and chestnut on breast.

Male (breeding) : Grey head; broad black eye-strip from lores to nape; chestnut back and rump; black throat; white breast; deep chestnut lower breast; fulvous remaining underparts; and brown tail with white outer rectrices. In non-breeding (fresh) plumage, head and body patterns are partly obscured by grey and buff feather fringes.

Female : Greyish brown head; fulvous lores and round the eye; upperparts streaked with dark brown; chestnut-rufous rump; fulvous-buff throat with dark streaks; rufous breast; remaining underparts finely streaked and washed with buff.

Habitat : S 1200-3600 m. W <1400 m (2500 m). Rocky, grassy scrub.

Distribution : Uttarakhand : Chamoli : lower Dhaul valley (Lavkumar 1956b). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Khaddar, [Dhanaulty (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

657(2057) *Emberiza striolata* (Lichtenstein, 1823)
Striolated Bunting

1823. *F. (ringella) striolata* Lichtenstein, *Verz. Doubl. Mus.* Berlin : 24 (Ambukol, Nubia).

1954. *Emberiza striolata tescicola* Koelz, *Contrib. Inst. Regional Exploration* No. 1 : 20 (Isin, Iran).

1926. Baker, *FBI* No. 1136, 3 : 217.

Diagnostics : Size : Sparrow -; c. 14 cm. Also known as 'House Bunting' is smaller and shorter-tailed than the similarly plumaged Rock Bunting.

Male (breeding) : Greyish head and brownish upperparts, with darker streaking, prominent white

supercilium and submoustachial stripe, blackish eye-stripe and moustachial stripe, and blackish streaking on greyish crown, throat and breast (more profuse on the latter two); rufous wings contrasting with sandy-brown mantle and scapular; brownish-buff underparts, with variable rufous tinge.

Female : Duller version of male, but has brown head and throat with darker streaks. In flight, at a distance, rufous wings are suggestive of female Crested Bunting.

Juvenile : Browner than female, with less distinct head pattern and darker yellowish-cinnamon underparts.

Habitat : Rocky ground with sparse scrub.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : The breeding range of this species in India has been noted in recent times to include more southernly locations such as near Saswad, Pune.

658(2055-2055a) *Emberiza fucata* Pallas, 1776
Grey-headed Bunting

1776. *Emberiza fucata* Pallas, *Reise Russ. Reichs* 3 : 698 (Onon and Ingoda Rivers).

1926. Baker, *FBI* No. 1120, 3 : 198.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike, but female duller. Also known as 'Chestnut-eared Bunting'

Male (breeding) : Chestnut ear-coverts; finely streaked grey crown and nape; dense black streaking on white breast; and unstreaked chestnut lower breast and flanks together distinguish it from other buntings; while rufous rump, brown wings, black tertials edged with rufous-chestnut, rufous shoulder, and white outer rectrices are additional clues. In non-breeding (fresh plumage), basic patterning (chestnut ear-coverts, black streaks on breast, and chestnut on lower breast) much obscured.

Female : Similar to males, but duller with a less distinct head and breast. Some first-winter birds are rather nondescript.

Juvenile : With prominent white supercilium and dark-bordered whitish ear-coverts.

Habitat : S 1650-2700 m. Bushy and scrubby hillsides. W <1600 m. Marshy areas, cultivation.

Distribution : Uttarakhand : Chamoli : Joshimath and Lata (Reed 1979), (Tak 1995), Lata (Tak 1997). Dehra Dun : beyond Chakrata (Osmaston 1935), New Forest (George 1957, Mohan 1996), Chakrata, Khaddar (Singh 2000). CTR (Lamba undated, Khati 2004, internet list).

Status : Sparse local resident as well as sparse winter visitor. Schedule IV (BNHS 2002).

659(2056) *Emberiza pusilla* Pallas, 1776
Little Bunting

1776. *Emberiza pusilla* Pallas, *Reise Russ. Reichs* 3 : 697 (Transbaikalian Alps).

1926. Baker, *FBI* No. 1122, 3 : 200.

Diagnostics : Size : Sparrow -; c. 13 cm. Sexes alike, but female duller. A small bunting with distinctive head pattern.

Male : A central rufous stripe between two broad black stripes (weaker in fresh/ non-breeding) on crown; supercilium and ear-coverts chestnut (in breeding plumage), which is paler buffish-white (in non-breeding plumage); pale eye-ringing; a fine dark border to the rear of chestnut cheeks; rufous-brown remaining upperparts with black streaks; rufous chin; white remaining underparts with black streaks; black on breast and flanks; and white outer rectrices.

Female : Similar, but duller. The first-winter birds much like adult but with duller head pattern.

Habitat : <2000 m (3050 m). Scrub, bushes, stubble, grass, cultivation, orchards.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : It breeds in far northeast of Europe and northern Asia. It is migratory, wintering in the subtropics in northern India, southern China and the northern parts of Southeast Asia. It is rare wanderer to Western Europe.

660(2045) *Emberiza rutila* Pallas, 1776
Chestnut Bunting

1776. *Emberiza rutila* Pallas, *Reise Russ. Reichs* 3 : 698 (Onon R., SE. Transbaikalia).

1926. Baker, *FBI* No. 1155, 3 : 216.

Diagnostics : Size : Sparrow ±; c. 14 cm. It is a fairly small bunting with short-tail, which has little or no white on the outer rectrices.

Male (breeding) : Bright chestnut-brown upperparts (including head, throat and breast); and pale yellow belly. In non-breeding plumage, the chestnut of head and upperparts is duller due to pale fringes.

Female and first winter : Buff throat and yellow underparts; head pattern less striking than on Yellow-breasted; and unstreaked rufous rump distinguishes it from Black-faced Bunting.

Juvenile : Similar to female, but more heavily streaked with whiter and more prominent supercilium.

Habitat : <4500 m. Rice stubble, bushes near cultivation, forest edge.

Distribution : Uttarakhand : CTR (Khati 2004).

Status : Residential status not known. Schedule IV (BNHS 2002).

661(2043) *Emberiza melanocephala* Scopoli, 1769
Black-headed Bunting

1769. *Emberiza melanocephala* Scopoli, *Annus I, Hist. Nat.* : 142 (Carniola).

1926. Baker, *FBI* No. 1133, 3 : 213.

Diagnostics : Size : Sparrow +; c. 18 cm. A large bunting with a long tail that lacks any white.

Male (breeding) : Black head and chestnut upperparts, with a whitish double wing-bar (distinguish it from Red-headed); bright yellow underparts, with chestnut sides of breast. In non-breeding plumage, black of head and chestnut of upperparts are largely obscured by pale fringes.

Female : Washed-out version of male, with greyish head; grey-brown back; and paler underparts.

Juvenile : Is similar, and both can be difficult to separate from the corresponding plumages of the closely related Red-headed Bunting.

Habitat : Plains. Grain crops and grasses.

Distribution : Uttarakhand : Dehra Dun (Wright 1957, Singh 2000), New Forest (George 1957, Mohan 1996).

Status : Sparse passage migrant. Schedule IV (BNHS 2002).

662(2044) *Emberiza bruniceps* Brandt, 1841
Red-headed Bunting

1841. *Emberiza bruniceps* Brandt, *Bull. Sci. Acad. Imp. St. Petersb.* 9, col. 12 (Turkmenia).

1842. *Emberiza icterica* Eversmann, *Add. Pallas Zoogr. Rosso-Asiat.* 2 : 10 (Transcaspia).

1926. Baker, *FBI* No. 1134, 3 : 215.

Diagnostics : Size : Sparrow +; c. 17 cm. It is long-tailed bunting which is larger than Reed Bunting.

Male (breeding) : Brownish-red face; yellowish-green upperparts with dark streaking; and bright underparts; and a whitish double wing-bar. In non-breeding (fresh) plumage, rufous of head is partly obscured by pale fringes.

Female and first-year : Washed-out version of male, with paler upperparts streaked with darker brown; and buffish underparts washed with yellow.

Juvenile : Similar, and difficult to separate from the corresponding plumages of Black-headed Bunting.

Habitat : S 1600-2400 m. W plains (<4600 m on passage). Grain crops and grass.

Distribution : Uttarakhand : Dehra Dun : Shiwaliks of SW Dehra Dun (Tak & Sati 2007). CTR (internet list). RNP (Narang 1994).

Status : Residential status not known. Schedule IV (BNHS 2002).

663(2047) *Emberiza spodocephala* Pallas, 1776
Black-faced Bunting

1845 (1844). *E. (mberiza) sordida* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 13 : 958 (Nepal).

1845. *E. (mberiza) melanops* Blyth, *Jour. Asiat. Soc. Bengal* 14 : 554 (Tipperah).

1926. Baker, *FBI* No. 1132, 3 : 212.

Diagnostics : Size : Sparrow; c. 15 cm. Distinguished from Chestnut Bunting by greyish-olive (rather than chestnut) rump and uppertail-coverts and prominent white outer rectrices.

Male (breeding) : Distinctive with olive-grey head merging into black face; a mix of yellow,

green and black between the bill and eye; brown upperparts with blackish streaks, except on the rump; a whitish and a buff wing-bar; chin black; olive-grey throat and breast; and pale yellow belly, with some dark brown streaks on flanks. In fresh (non-breeding) plumage, head is duller, may show yellowish throat and submoustachial stripe, indistinct yellowish supercilium, and dark malar stripe.

Female : Yellowish supercilium, yellow throat, olive rump, and creamy yellow underparts heavily streaked with dark brown.

Habitat : <1000 m (1300 m). Long grass, bushes, scrub, bamboo; usually near water.

Distribution : Uttarakhand : CTR (Khati 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

664(2058-2059) *Emberiza schoeniclus*
(Linnaeus, 1758)
Reed Bunting

1904. *Emberiza schoeniclus pallidior* Hartert, *Vog. Pal. Fauna* 1 : 197 (Aiderli, Turkestan).

1926. Baker, *FBI* No. 1119, 3 : 197.

Diagnostics : Size : Sparrow -; c. 14 cm. Also known as 'Common Reed-Bunting'

Male (breeding) : Easily told from other buntings by blackish head, throat and breast with prominent white neck collar and white submoustachial stripe joining the neck collar; and brown upperparts with broad black streaks; and whitish underparts streaked with chestnut on flanks. Non-breeding (fresh plumage), black of head, throat and breast is obscured by brownish fringes and shows dark lateral crown stripes and buffish supercilium and submoustachial stripe.

Female : Much duller, brown head with dark streaks, buff supercilium, and more streaked underparts. In breeding (worn) plumage, crown and ear-coverts are uniformly dark, contrasting with white supercilium and submoustachial stripe.

Habitat : Reeds and bushes near water.

Distribution : Uttarakhand : RNP (Pandey *et al.* 1994).

Status : Residential status not known. Schedule IV (BNHS 2002).

**665(2041) *Miliaria calandra* Linnaeus, 1758
Corn Bunting**

1758. *Emberiza Calandra* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 176 (Sweden).

1907. *Emberiza calandra buturlini* Johansen, *Orn. Jahrb.* : 202 (Kastek, Semirechia).

1926. Baker, *FBI* No. 1137, 3 : 218.

Diagnostics : Size : Bulbul; c. 18 cm. Sexes alike. It is the sole member of the genus *Miliaria*, although a few authorities place it in the large genus *Emberiza*, hence, also known as '*Emberiza calandra*' Reminiscent of female House Sparrow, but larger and dumpier; distinguished from other buntings by bulky build and extensive streaking on underparts. A large, buff-brown and well-streaked bunting without white on tail; has greyish brown upperparts streaked with dark brown; cream coloured neck and throat becoming greyish white on belly, streaked with dark brown, more heavily on breast.

Habitat : Waste ground, cultivation.

Distribution : Uttarakhand : CTR (internet list).

Status : Vagrant. Sparse winter visitor. Schedule IV (BNHS 2002).

FRINGILLIDAE (Finches)

Finches form a large varied group of small or medium-sized passerines with short, conical bill and medium narrow notched tail. They chiefly subsist on seeds but also take fruits and insects. Some are relatively arboreal, others are more terrestrial in their feeding habits. Most are fairly colourful though females are usually duller than males. Often congregate in large flocks. Flight fast and undulating.

**666(1979) *Fringilla coelebs* Linnaeus, 1758
Chaffinch**

1758. *Fringilla coelebs* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 179 (Europa = Sweden).

1926. Baker, *FBI* No. 1092, 3 : 163.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Common Chaffinch' is easily identified by double white wing-bars; white tail edges and greenish rump.

Male (breeding) : Distinct, has blue-grey cap (crown and nape); maroon brown mantle; two

broad white wing-bars; orange-pink face and underparts; and black tail with white outer rectrices. Non-breeding birds are duller.

Female : Greyish brown mantle and scapulars; two broad white wing-bars; yellowish-white (rather than orange) greater-coverts wing-bar; and dull greyish-buff underparts grading to whitish on belly.

Habitat : Woodland, orchads, gardens and cultivation.

Distribution : Uttarakhand : Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Khatri 2004, internet list).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : This species is uncommon to rare (or sparse) winter visitor not seen in full breeding plumage.

**667(1998) *Serinus pusillus* (Pallas, 1811)
Fire-fronted Serin**

1811. *Passer pusillus* Pallas, *Zoogr. Rosso-Asiat.* 2 : 28, pl. 43, fig. 1 (Caucasus).

1926. Baker, *FBI* No. 1088, 3 : 158.

Diagnostics : Size : Sparrow -; c. 12 cm. Also known as 'Red-fronted Serin' or 'Gold-fronted Finch' is a small dark finch with blackish head and glistening scarlet forehead. It prefers high mountain regions.

Male : Scarlet forehead and largely black head and breast; mantle and belly or flanks washed with olive-yellow and boldly streaked with black; double buffish orange wing-bars and olive-yellow rump or uppertail-coverts.

Female : Duller with less scarlet on forehead, and black of head and breast is browner. In fresh plumage, black of head on both sexes is partly obscured by buff-fringes.

Juvenile : Cinnamon-brown head.

Habitat : S 2400-4000 m (4500 m). W (750 m) 1500-3300 m. Hillsides with bushes and stunted trees, screes, dwarf juniper, forest edge, fields.

Distribution : Uttarakhand : Chamoli : near Niti village (Osmaston 1921), Dhauri Valley, Bampa (Lavkumar 1956b), around Joshimath (Sankaran 1993, 1994). Dehra Dun (Wright 1957), New

Forest (Singh 2000). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-5).

Status : Sparse local resident as well as winter visitor. Schedule IV (BNHS 2002).

Remarks : They bathe daily if water is accessible.

668(1990, 1992) *Carduelis spinoides* Vigors, 1831
Yellow-breasted Greenfinch

1831. *Carduelis spinoides* Vigors, *Proc. Zool. Soc. London* : 44 (Himalayas = Simla).

1926. Baker, *FBI* No. 1089 (part), 3 : 160.

Diagnostics : Size : Sparrow -; c. 14 cm. Also known as 'Himalayan Greenfinch' or 'Himalayan Goldfinch'

Male : Distinctive, with blackish-olive crown, ear-coverts, malar stripe and mantle; dark brown wings with a large yellow patch, inner secondaries edged with white; yellow forehead, supercilium, crescent below eye and behind ear-coverts (sides of neck), submoustachial stripe, rump and underparts; and dark brown tail with basal half of outer rectrices yellow.

Female : Similarly patterned, but has paler olive upperparts with faint streaking, less distinct head pattern, and duller yellow underparts.

Juvenile : Heavily streaked.

Races : *C. s. heinrichi* of Nagaland and Manipur lacks yellow submoustachial stripe and crescent below eye of the nominate race, described here.

Habitat : S 1800-4400 m. W (150 m) 900-1500 m (2700 m). Forest, forest edge, gardens and scrub.

Distribution : Uttarakhand : Almora (Tak 1995). Bageshwar : Khati, Dhakuri (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Malari to Joshimath in Dhaul valley (Lavkumar 1956b), Nanda Devi and the Rishiganga basin (Dang, Hari 1963), Joshimath (Reed 1979), (Tak 1995), Reni, Belta, Surathota, Tolma, Malari, Wan (Tak 1997). Dehra Dun : around Mussoorie & Chakrata and beyond (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest

(George 1957, Mohan 1996), Chakrata, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Bugdiyar, Burfu (Tak 1997), Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi (Tak 1995), Govind NP : Sankri, Taluka, Jakhol, Sunkhundi, Sirga, Saruka Tal, Dhaul (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

669(1987-1989) *Carduelis carduelis*
(Linnaeus, 1758)
Eurasian Goldfinch

1831. *Carduelis caniceps* Vigors, *Proc. Zool. Soc. London* : 23 (Himalayan Mountain = Simla-Almora area).

1926. Baker, *FBI* No. 1081, 3 : 150.

Diagnostics : Size : Sparrow; c. 14 cm. Also known as 'European Goldfinch' or 'Goldfinch'

Adult : Distinctive, with red face, grey-brown head and mantle; black wings with yellow panel and white tertials; white rump; and grey-brown breast and flanks. In flight, a yellowish band across wings, bordered with brown in front and behind, conspicuous white rump and white-and-black tail diagnostic.

Juvenile : Lacks red face of adult; grey-brown back and breast with faint streaking, and yellow wing stripe.

Races : *C. c. major* a rare winter vagrant to subcontinent: differs by white sides to face and throat (bordering red), black crown and sides of head, ginger-brown nape and mantle, and ginger breast and flanks.

Habitat : S (1500 m) 2400-4200 m. W (75 m) 1900-2400 m. Orchards, forest, fields.

Distribution : Uttarakhand : Chamoli : Dhaul valley from Joshimath to borders of Tibet (Osmaston 1921). Dehra Dun : near Mussoorie and

Chakrata (Osmaston 1935), (Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Khaddar (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident as well as sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : It has been introduced to many areas of the world.

670(1995-1996) *Carduelis flavirostris*
(Linnaeus, 1758)
Twite

1873. *Linota montanella* Hume, *Lahore to Yarkand* : 261, pl. 26 (Arpalak River, Yarkand).

1905. *Linota rufostriata* Walton, *Bull. Brit. Orn. Cl.* 15 : 93 (Khamba Jong, Tibet).

1926. *Acanthis flavirostris ladacensis* R. & A. Meinertzhagen, *Bull. Brit. Orn. Cl.* 46 : 96 (Leh).

1926. Baker, *FBI* No. 1086, 1087 3 : 157.

Diagnostics : Size : Sparrow -; c. 13 cm. Also known as 'Tibetan Twite' is a small brown finch with with small yellowish bill, heavily streaked upperparts; buff supercilium, cheeks and throat; white panel on wings formed by white edges to primaries; and white edges to tail feathers. In fresh plumage, buff or whitish median-and greater-coverts form wing-bars.

Male : With pink rump, this is partly obscured in fresh plumage,

Races : Two races are recognised from the subcontinent: *C. f. montanella* of the western most Himalayas is sandy-buff and is lightly streaked on breast and flanks. While *C. f. rufostriata* of Ladakh eastwards is much darker with heavily streaked upperparts, breast and flanks; and rich buff breast and flanks.

Habitat : S (3400 m) 3600-4500 m (4800 m); W not much lower; high-altitude semi-desert.

Distribution : Uttarakhand : Chamoli : Base Camp valley (Reed 1979).

Status : Residential not known. Schedule IV (BNHS 2002).

671(1999-2000) *Leucosticte nemoricola*
(Hodgson, 1836)

Hodgson's Mountain-Finch

1836. *F. (ringilauda) Nemoricola* Hodgson, *Asiat. Res.* 19 : 158 (Nepal).

1926. Baker, *FBI* No. 1115, 3 : 191.

Diagnostics : Size : Sparrow; c. 15 cm. Sexes alike. Also known as 'Plain Mountain Finch' resembles a dark slim female House Sparrow, with finer bill and distinctly forked tail.

Adult : Brown upperparts with darker brown streaks; a pale supercilium; dark brown wings with two thin pale wing-bars (a buff bar and buff edges to tertials); grey rump; pale grey-brown underparts, with sides of breast and flanks streaked with dark brown; and white tipped uppertail-coverts; dark brown tail.

Juvenile : Warmer rufous-buff on crown, ear-coverts, mantle and underparts than adult and less heavily streaked.

Habitat : S (3300 m) 3600-5300 m opens habitats above treeline. W >1500 m (1000 m). Villages and open forest.

Distribution : Uttarakhand : Almora : Kwarab (ZSI Survey 2004). Chamoli : Mana (Lavkumar 1956b), Base Camp valley and Changabang Base Camp (Reed 1979), (Tak 1995), North Sanctuary (Sankaran 1993, 1994, Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : beyond Chakrata (Osmaston 1935), (Singh 2000). Pauri (Tak 1995). Pithoragarh : Gori river basin-2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005). CTR (Lamba undated).

Status : Sparse local resident as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (05) i.e. Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

672(2001-2005) *Leucosticte brandti*
Bonaparte, 1850

Black-headed Mountain-Finch

1850. *Leucosticte brandti* Bonaparte, *Consp. Gen. Avium* 1 : 537 (Siberia, *errore* = Turkestan, restricted to Zailistki Ala Tau by Vaurie, 1959, *Bds. Pal. Fauna* 2 : 621.

1926. Baker, *FBI* No. 1117 (part), 3 : 193.

Diagnostics : Size : Sparrow +; c. 18 cm. Sexes alike. Also known as 'Brandt's Mountain Finch' is a dark-coloured finch rosy rump.

Adult (breeding) : Sooty-black head and nape; remaining upperparts paler brown, with unstreaked to lightly streaked mantle and more striking white panel on wing (formed due to broad white edges to primary coverts and to tertials/ secondaries); pink or rosy rump; dull grey underparts; and fork tail with prominent white edges to outer rectrices. Non-breeding birds similar, but not so darker.

Juvenile and first-summer : Brownish-buff with indistinct streaking on mantle and warm buff edging to wing-coverts.

Habitat : S (3900 m) 4200-6000 m. W >3000 m. Barren, open high-altitude habitats preferring wet areas often near melting snow.

Distribution : Uttarakhand : CTR (Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

673(1997) *Callacanthus burtoni* (Gould, 1838)
Spectacled Finch

1838. *Carduelis Burtoni* Gould, *Proc. Zool. Soc. London*: (1837) : 90 (Himalaya = Srinagar).

1926. Baker, *FBI* No. 1083, 3 : 152.

Diagnostics : Size : Sparrow +; c. 17 cm. Also known as 'Red-browed Finch' has white-spotted wings and wide crimson/ red (male) or yellow (female) ring round the eye ('spectacle').

Male : Crimson forehead, supercilium and spectacle; black crown; brown back; black wings spotted with white; crimson/ red chin and throat; black sides of throat and cheeks; fulvous remaining underparts, with pinkish red wash; and black tail, with white tipped outer rectrices.

Female : Orange-yellow forehead, supercilium and spectacle; dark brown crown; olive-brown back; buffish-brown underparts with yellowish wash on breast; and white tips to wing feathers less prominent than on male.

Juvenile : Like female, but lacks 'spectacles'; has browner head with rufous-buff eye-patch and buffish spots on wings.

Habitat : S (2400 m) 2700-3000 m (treeline). W (800 m) 1800-3000 m. Open coniferous forest.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972b), Mussoorie (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). RRS (4) *i.e.* Western Himalayas (Jhunjhunwala *et al.* 2001).

674(2014-2015) *Carpodacus nipalensis*
(Hodgson, 1836)
Dark-breasted Rosefinch

1836. *C. (arduelis) Nepalensis* Hodgson, *Asiat. Res.* 19 : 157 (Nepal, central and northern regions):

1926. Baker, *FBI* No. 1076 (part), 3 : 146.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Nepal Rosefinch' is a slim-bodied rosefinch with slender bill.

Male : Overall very dark; dark maroon-brown breast-band contrasting with rosy-pink throat and belly; dark eye-stripe; reddish-pink forecrown and supercilium; and maroon-brown upperparts with indistinct dark streaking.

Female : Like a sparrow, with olive-brown upperparts; two buffish wing-bars and tips to tertials; white throat; unstreaked remaining underparts, almost concolorous with upperparts; and lacks supercilium.

Juvenile : Much like female.

Habitat : S 3000-4400 m. W (700 m) 1800-2700 m. Rhododendron, silver fir, meadows with bushes above treeline, clearings, bushes, cultivation.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : at 4270m in the Rishi Ganga valley (Reed 1979), (Tak 1995), Sarsonpatal (Tak 1997). Dehra Dun : beyond Chakrata (Osmaston 1935), [Dhanaulty] (Singh 2000). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi : Govind NP : Satta, Marri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

675(2010-2013) *Carpodacus erythrinus*
(Pallas, 1770)

Common Rosefinch

1770. *Loxia erythrina* Pallas, *Nov. Comm. Acad. Sci. St. Petersb.* 14 : 587, pl. 23, fig. 1 (Volga, south Russia).

1926. Baker, *FBI* No. 1132, 3 : 212.

Collection records : Uttarakhand : Dehra Dun : Mussoorie, 1♂ and 1♀, 8.xii.1969, coll. P. K. Bose.

Diagnostics : Size : Sparrow; c. 15 cm. A compact rosefinch with short, stout and heavy bill.

Male : Brilliant red head, breast and rump; darker brownish ear-coverts; red wash to streaked mantle; dark brown wings with two indistinct wing-bars; and white belly and vent.

Female and young males : Nondescript; streaked yellowish-brown upperparts; double wing-bar; and buff underparts with dark streaking.

Juvenile : Like female, but with more prominent streaking on upperparts and underparts.

Habitat : S 2000-3900 m (4200 m). W <2400 m. Bushes, open forest, scrub, cultivation.

Distribution : Uttarakhand : Almora (Tak 1995), Mansi (ZSI Survey 2004). Bageshwar : Phurkia (Tak 1997). Chamoli : Girthi valley (Osmaston 1921), Mana, Bampa (Lavkumar 1956b), Rishi Ganga valley (Reed 1979), Dibrugetha (Sankaran 1993, 1994), (Tak 1995), Lata, Surathota, Reni-Dibrugetha (Tak 1997), Dibrugetha, Latakhark (Sarsopatal, Devstan bc, Pataalkhan, Bhojgara, Ramni, Betartoli, Deodi, Dibrugetha (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957, Tak 1995), New Forest (George 1957, Mohan 1996), Chakrata, Karva Pani, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995). Rudraprayag : Mandal, Kedarnath (Lavkumar 1956b), Chopta and Duggalbitta (Bannerjee 1993). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995). CTR

(Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002).

676(2023-2024) *Carpodacus pulcherrimus*
(Moore, 1855)

Beautiful Rosefinch

1855. *Propasser pulcherrimus* Moore, *Proc. Zool. Soc. London* : 216 (Nepal).

1926. Baker, *FBI* No. 1059, 3 : 126.

Diagnostics : Size : Sparrow; c. 14 cm.

Male : Rosy-pink supercilium, rump and underparts; ashy-brown crown and mantle with dark brown heavy streaking; and two indistinct pinkish wing-bars together distinguish it from the similarly but deeply coloured male Pink-browed.

Female : Heavily streaked buffish-grey upperparts with well streaked dark brown ear-coverts and poorly defined supercilium; and white underparts also with heavy streaking.

Races : *C. p. waltoni* of Arunachal Pradesh has brighter and more reddish-pink supercilium and underparts (closer in colouration to Pink-browed), and paler sandy-brown upperparts.

Habitat : S (3600 m) 3800-4200 m (4500 m). W 2100-3600 m. Alpine shrubby, open scrubby slopes, forest and cultivation edge.

Distribution : Uttarakhand : Chamoli : Girthi valley (Osmaston 1921), Bethartoli (Sankaran 1993, 1994, Tak 1997). Pauri (Tak 1995). CTR (Lamba undated).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

677(2017) *Carpodacus rodochrous* (Vigors, 1831)
Pink-browed Rosefinch

1831. *Fringilla rodochroa* [sic] Vigors, *Proc. Zool. Soc. London* : 23 (Himayan Mountains = Simla-Almora area).

1926. Baker, *FBI* No. 1062, 3 : 129.

Diagnostics : Size : Sparrow; c. 15 cm.

Male : Differs from male Beautiful Rosefinch by deeper pink supercilium, rump and underparts; unstreaked or lightly streaked maroon-pink crown, eye-stripe and nape; pink-brown streaked mantle and back; and absence of streaking on flanks, vent and undertail-coverts.

Female : Distinguished from female Beautiful Rosefinch by prominent buff supercilium contrasting with dark ear-coverts; and fulvous ground colour to rump, belly and flanks. The absences of wing-bars differentiate it from female White-browed.

Habitat : S 2800-4200 m. W (600 m) 1200-2400 m (3000 m). Open fir and birch forest, willow, dwarf juniper, oak, scrub, grassy slopes, gardens, villages.

Distribution : Uttarakhand : Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Badrinath, Bampa in Dhaul valley (Lavkumar 1956b), NDNP (Tak & Kumar 1987), (Tak 1995), Dibrugheta, Patalkhan (Sankaran 1993, 1994, Tak 1997). Dehra Dun : (Osmaston 1935), Chakrata (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Rilkote - Milam (Tak 1997), Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Uttarkashi : Tons valley : below Harke Dun (Osmaston 1935), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

678(2019) *Carpodacus rodopeplus* (Vigors, 1831)
Spot-winged Rosefinch

1831. *Fringilla rodopepla* [sic] Vigors, *Proc. Zool. Soc.* London : 23 (Himalayan Mountains, restricted to Simla-Almora area).

1926. Baker, *FBI* No. 1063, 3 : 130.

Diagnostics : Size : Sparrow +; c. 19 cm.

Male : Distinguished from the only confusable Dark-rumped by its conspicuous rosy white wing-

bars (formed due to very prominent pink tips to median and greater coverts and tertials); irregular indistinct pink streaking (splashes) on darker maroon mantle and rump; and lack of darker band across breast.

Female : Distinguished from female Pink-browed by its larger size; more heavily streaked throat and breast; and well-defined pale buff tips to greater coverts and outer edges of tertials. From Dark-rumped by its broader and more distinct supercilium contrasting with well-defined dark ear-coverts; paler and more heavily streaked throat and breast; and more prominent tips to greater coverts and tertials.

Habitat : S 3050-4000 m. W 2000-3050 m. Dwarf rhododendron, grassy slopes, dense forest undergrowth, and damp ravines.

Distribution : Uttarakhand : Bageshwar : Dwali (Tak 1997). Chamoli : Deodi, North Sanctuary, Joshimath (Sankaran 1993, 1994, Tak 1997), Patalkhan, Bhojgara, Ramni, Dibrugheta (Sathyakumar 2003). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

679(2018) *Carpodacus rhodochlamys*
(Brandt, 1843)
Red-mantled Rosefinch

1849. *Carpodacus grandis* Blyth, *Jour. Asiat. Soc. Bengal* 18 : 810 (Range beyond Simla).

1949. *Carpodacus rhodochlamys bendi* Koelz, *Auk* 66 : 209 (Burchao Pass, Bend-i-Turkestan Range, western Afghanistan).

1926. Baker, *FBI* No. 1061, 3 : 128.

Diagnostics : Size : Sparrow +; c. 18 cm. Also known as 'Blyth's Rosefinch' is comparatively a large, longtailed rosefinch with large bill.

Male : Distinguished from most Rosefinches by silverly-white streaks on feathery pink supercilium, ear-coverts and throat; and from White-browed by supercilium not extending across forehead and also lacks prominent wing-bars. Has reddish crown and head; a broad pale pink

supercilium; pale brown back with pinkish wash and dark brown streaks; pink rump; rosy brown wings and tail; like supercilium pale pink throat and sides of head; and remaining underparts rosy red.

Female : Pale grey and heavily streaked throughout (including belly) with indistinct supercilium.

Habitat : S 2700-3800 m. W foothills-2600 m. Dry alpine shrubs, thorny scrub, gardens, cultivation.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

680(2020-2022) *Carpodacus thura* Bonaparte
& Schlegel, 1850
White-browed Rosefinch

1850. *Carpodacus thura* Bonaparte & Schlegel, *Monogr. Loxiens* : 21, pl. 23 (Himalayas = Sikkim).

1926. Baker, *FBI* No. 1055, 3 : 123.

Diagnostics : Size : Sparrow +; c. 17 cm.

Male : Distinguished from most male Rosefinches by a distinctive pattern- brown crown and back streaked with blackish; pinkish white forehead; silvery-pink supercilium ending in white (and meeting in front to form pinkish white forehead); deep crimson lores; dark brown stripe behind eye; rosy pink rump; brown wings with a pink bar and finer white bar; rosy pink underparts with paler throat and silky white streaking; and brown tail.

Female : Has prominent supercilium with dark eye-stripe, ginger-brown throat and breast and olive-yellow rump.

Habitat : S 3000-4200 m. W 1800-3900 m. Alpine meadows and shrubbery, forest edge, bamboo.

Distribution : Uttarakhand : Chamoli : Dibrugheta (Sankaran 1993, 1994, Tak 1997). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

681(2028) *Carpodacus rubicilloides*
Przevalski, 1876
Streaked Great Rosefinch

1926. *Carpodacus rubicilloides lucifer* R. & A. Meinertzhagen, *Bull. Brit. Orn. Cl.* 46 : 83 (Chusha, southern Tibet).

1926. *Carpodacus rubicilloides lapersonnei* R. & A. Meinertzhagen, *Bull. Brit. Orn. Cl.* 46 : 83 (Shushal, eastern Ladak).

1926. Baker, *FBI* No. 1070 (part), 3 : 138.

Diagnostics : Size : Bulbul $\pm$; c. 19 cm. Also known as 'Streakd Rosefinch' or 'Eastern Great Rosefinch' is confusable only with male Common Great Rosefinch (*C. rubicilla*) which paler sandy-brown with almost unstreaked upperparts.

Male : Deep crimson-red head and underparts with thin (narrower as compared to *C. rubicilla*) and clearly defined white spotting; and prominent dark brown streaking on nape, mantle and scapulars.

Female : Rather nondescript lacks supercilium; distinguished from female Common Great by darker grey upperparts with heavy streaking on nape, mantle and scapulars, more heavily streaked ear-coverts and underparts; centres to wing-coverts and remiges (especially tertials) are much darker brownish black.

Habitat : S 3700-4800 m. W 2200-4800 m. Alpine scrub and willows.

Distribution : Uttarakhand : Chamoli (Tak 1995), Rishi Ganga valley (Reed 1979, Tak 1997).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

682(2027) *Carpodacus rubicilla* (Guldenstadt, 1775)
Common Great Rosefinch

1886. *Carpodacus severtzovi* Sharpe, *Proc. Zool. Soc. London* : 354 (Turkestan and Yarkland = Toghra near Shadulla, Karakoram).

1939. *Erythrura rubicilla eblis* Koelz, *Proc. Biol. Soc. Washington* 52 : 74 (Puga, Rupshu, Kashmir).

1943. *Carpodacus rubicilla niethammeri* Keve, Anz. Akad. Wiss. Wien 80 : 17 (Spiti to the Pamirs).

1926. Baker, FBI No. 1071, 3 : 139.

Diagnostics : Size : Bulbul $\pm$; c. 19 cm.

Male : Similar to male Streaked Great Rosefinch, but distinguished by paler rose-pink head and underparts (not deep crimson-red); white spotting fading to pink on belly and flanks, becoming indistinct (not clearly defined); and lightly or unstreaked sandy-brown upperparts (instead of prominent dark brown).

Female : Similar to female Streaked Great, but distinguished by pale sandy-brown upperparts with faint dark brown streaks; less heavily streaked ear-coverts and underparts; unstreaked rump and uppertail-coverts; more prominent streaking on crown and throat than on mantle and rest of underparts; and paler grey-brown centres to coverts and remiges.

Habitat : S (3300 m) 3900-4800 m (5250 m). W (1500 m) 2600-4500 m. Rocky alpine meadows and scrub.

Distribution : Uttarakhand : CTR (Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjunwala *et al.* 2001).

683(2029-2031) *Carpodacus puniceus* (Blyth, 1845)
Red-fronted Rosefinch

1845 (1844). *P.(yrrhospiza) punicea* 'Hodgson' = Blyth, Jour. Asiat. Soc. Bengal 13 : 953 (Himalaya = Nepal *vide* Sharpe, 1888, Cat. Bds. Brit. Mus. 12 : 433).

1926. Baker, FBI No. 1053, 3 : 120.

Diagnostics : Size : Bulbul $\pm$; c. 20 cm. Also known as 'Red-breasted Rosefinch' is distinguished from both Common Great (*C. rubicilla*) and Streaked Great (*C. cubicilloides*) by scarlet-red, less distinct white spotting, broad brown stripe behind eye, and grey-brown lower belly.

Male : Bright scarlet-red forehead and supercilium; grey-brown crown and back with dark brown streaks; a brown post-ocular stripe; rosy red rump; brown wings and tail; scarlet-red throat

and breast with white spots; and grey-brown remaining underparts.

Female : Grey-brown upperparts streaked heavily with dark brown; lacks supercilium; has olive-yellow lower rump; and cream-buff underparts boldly streaked with dark brown.

Juvenile : Like female, but usually more heavily streaked, lacks supercilium and yellow, and males showing red by second summer.

Habitat : S (3900 m) 4200-5500 m. W (1500 m) 2700-4550 m. Steep rocky slopes.

Distribution : Uttarakhand : Chamoli : Rishi Ganga valley (Reed 1979), (Tak 1995), Dibrugheta, Ramani, Sarsonpatal, Joshimath (Sankaran 1993, 1994, Tak 1997). Rudraprayag : Kedarnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba undated).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjunwala *et al.* 2001).

684(2033) *Propyrrhula subhimachala*
(Hodgson, 1836)
Crimson-browed Finch

1836. *Corythus? Subhimachala* Hodgson, Asiat. Res. 19 : 152 (Nepal; northern region; in winter found in the central region) *Propyrrhula subhimachala intensior* Rothschild, 1922, Bull. Brit. Orn. Cl. 43 : 12 (Lichiang Range, Yunnan).

1926. Baker, FBI No. 1052, 3 : 119.

Diagnostics : Size : Bulbul; c. 20 cm. Also known as 'Red-headed Rosefinch' or 'Juniper Rosefinch' or '*Pinicola subhimachalus*' is rather grosbeak-like in appearance with short and thick bill.

Male : Red forehead, supercilium, throat, upper breast and rump; remaining upperparts variegated green; pinikish-white spots on breast; and underparts grey mixed with olive.

Female : Bright olive-yellow forehead and supercilium; greyish nape, ear-coverts and throat; greenish-olive remaining upperparts often with olive-yellow rump; and grey remaining underparts. Some older females may have orange supercilium and breast.

Habitat : S 3500-4200 m. W 1800-3600 m.

Scrub near treeline, light forest with dense undergrowth.

Distribution : Uttarakhand : Chamoli : Sarsonpatal or Base Camp valley (Reed 1979, Tak 1997). CTR (Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

685(2034) *Haematospiza sipahi* (Hodgson, 1836)
Scarlet Finch

1836. *C. (orythus) Sipahi* Hodgson, *Asiat. Res.* 19 : 151 (Nepal).

1928. Baker, *FBI* No. 1051, 5 : 117.

Diagnostics : Size : Bulbul $\pm$; c. 18 cm. A thickset finch with stout bill and short tail.

Male : Brilliant scarlet overall with brown wings and tail, a darker line through eye, and yellow bill. The first-summer male resembles female, but has orange rump; and orange-brown tinge to crown, nape and mantle.

Female : Bright yellow rump; olive-green upperparts with diffuse dark centres to feathers (may show white mottling on crown and mantle); and greyer underparts, paler towards vent.

Habitat : S 1600-3100 m. W 600-2600 m. Open pine and oak forest, streamside vegetation.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006).

Status : Sparse summer visitor as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

686(2032) *Loxia curvirostra* Linnaeus, 1758
Red Crossbill

1845 (1844). *L. (oxia) himalayensis* 'Hodgson' = Blyth, *Jour. Asiat. Soc. Bengal* 13 : 952 (Nepal).

1926. Baker, *FBI* No. 1050, 3 : 115.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Common Crossbill' is easily identified from other finches by unique bill shape: upper and lower mandibles cross over towards tip; and also by the deeply forked tail.

Male : Rusty-red, with darker wings and tail. The first winter/ summer male is duller orange-red, with much variation.

Female : Olive-green, with brighter greenish-yellow rump; and dark wings and tail.

Juvenile : Heavily streaked.

Habitat : (1500 m) 2600-4000 m. Conifers. Erratic in movements. Follows good crops of fir cones on which it feeds.

Distribution : Uttarakhand : Dehra Dun (Singh 2000). CTR (Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : The crossbills are characterised by the mandibles crossing at their tips, which gives the group its English name. They are specialist feeders of conifer cones, particularly the various species of spruce, fir, pine, etc. The unusual shape is an adaptation to assist the extraction of the seed from the cone.

687(2036-2037) *Pyrhula nipalensis* Hodgson, 1836
Brown Bullfinch

1836. *P. (pyrrhula) Nipalensis* Hodgson, *Asiat. Res.* 19 : 155 (Northern and central regions, Nepal).

1926. Baker, *FBI* No. 1047, 3 : 112.

Diagnostics : Size : Sparrow +; c. 17 cm.

Adult : Greyish upper-and-underparts distinguish it from other bullfinches. The additional clues being : scaly ashy brown crown; a narrow black band round the base of bill; a small white spot under eye; purplish black rump with a small white patch on lower rump; and glossy purplish black wings and tail with velvety black tips to the feathers. At close look, crimson-pink outer edge to inner tertials separate male from female (with yellow).

Juvenile : Brownish-buff upperparts and warm buff underparts, and lacks adult head pattern.

Races : *P. n. ricketti* of Arunachal Pradesh is darker with more scaly crown (appearing blackish), and lack or with indistinct small white patch below eye.

Habitat : S (1800 m) 2100-3000 m (3900 m). W >1500 m. Dense fir oak and rhododendron forest.

Distribution : Uttarakhand : Dehra Dun : beyond Chakrata (Osmaston 1935), (Singh 2000). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Sankri to Khabugad (Singh 2005b). CTR (Lamba undated).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

688 (2040) *Pyrrhula aurantiaca* Gould, 1858
Orange Bullfinch

1858 (1857). *Pyrrhula aurantiaca* Gould, *Proc. Zool. Soc.*
London : 222 (Western Himalaya, restricted to Kashmir by Baker, 1926, *FBI* 3 : 109).

1926. Baker, *FBI* No. 1043, 3 : 109.

Diagnostics : Size : Sparrow $\pm$; c. 14 cm.

Male : Easily distinguished from Red-headed by brownish-orange (not grey) mantle, scapulars and back; orange-buff wing-bars (instead of white); lack of white surround to black face; and deep orange underparts. Some first-year males have paler orange on plumage.

Female : Told from female Red-headed by grey (not yellow) crown and nape; buff-brown upperparts; brownish-orange underparts; and buffish wing-bars.

Juvenile : Like female, but with pale orange plumage and black of face much reduced.

Habitat : S 2700-3300 m. W >1600 m. Open fir, birch and mixed forest.

Distribution : Uttarakhand : Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Belta, Dibrugetha (Tak 1997). Dehra Dun (Bhatnagar & Misra 1972b). Pauri (Tak 1995).

Status : Residential status not known. Schedule IV (BNHS 2002). RRS (4) *i.e.* Western Himalayas (Jhunjhunwala *et al.* 2001).

689(2039) *Pyrrhula erythrocephala* Vigors, 1832
Red-headed Bullfinch

1832. *Pyrrhula erythrocephala* Vigors, *Proc. Zool. Soc.*
London : 174 (Himalayan Mountain = Simla-Almora area).

1926. Baker, *FBI* No. 1044, 3 : 110.

Diagnostics : Size : Sparrow +; c. 17 cm.

Male : Grey (not orange) mantle, scapulars and back; greyish-white wing-bars; white surrounding to black face, and paler orange underparts with white belly separate it from Orange Bullfinch. Its reddish-orange crown and nape, and absence of blackish band across upper rump separate it from male Grey-headed. The first-summer male is identified by yellow breast and upper flanks, otherwise like female.

Female : Distinguished from female Orange and Grey-headed by olive-yellow crown and nape; grey mantle, scapulars and back; greyish-white wing-bars; and pale grey underparts.

Juvenile : Like female, but browner with rufous-brown upperparts.

Habitat : S 2400-4200 m. W > (1000 m) 1500 m. Mainly deciduous forest.

Distribution : Uttarakhand : Chamoli : NDNP (Tak & Kumar 1987), near Ramani (Sankaran 1993, 1994), (Tak 1995), Lata Kharak, Deodi, Ramani (Tak 1997). Dehra Dun : beyond Chakrata (Osmaston 1935, Bhatnagar & Misra 1972b), Chakrata, [Dhanaulty] (Singh 2000). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi (Tak 1995), Sankri to Khabugad (Singh 2005b). CTR (Lamba undated).

Status : Sparse local resident as well as sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

690(1982) *Mycerobas icteroides* (Vigors, 1831)
Black-and-Yellow Grosbeak

1831. *Coccothraustes icteroides* Vigors, *Proc. Zool. Soc.*
London : 8 (Himalayan Mountains = Simla-Almora area).

1926. Baker, *FBI* No. 1039, 3 : 102.

Collection records : Uttarakhand : Uttarkashi : Rana, 1 σ and 1 ϕ , 5.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Myna; c. 22 cm. Also known as '*Coccothraustes icteroides*' is a large black-and-yellow finch with massive bill.

Male : Black head, wings and tail; yellow broad collar, centre of back and rump; black sides of head, throat and thighs; and yellow remaining underparts.

Female : Pale grey head, mantle and breast; blackish wings and tail; and peachy-orange rump and belly.

Juvenile (male) : Like female, but with yellow rump; blackish wings and tail; and black patches on scapulars and throat.

Habitat : S 1800-3500 m. Pine, silver fir and deodar forest. W > (750 m) 1500 m. Also oak forest.

Distribution : Uttarakhand : Auli (Sankaran 1993, 1994), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : beyond Chakrata (Osmaston 1935), (Bhatnagar & Misra 1972a, Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993), Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

**691(1983) *Mycerobas affinis* (Blyth, 1855)
Collared Grosbeak**

1855. *Hesperiphona affinis* Blyth, *Jour. Asiat. Soc. Bengal* 24 : 179 (Alpine Punjab, restricted to Hazara by Whistler, 1925, *JBNHS* 30 : 700).

1926. Baker, *FBI* No. 1040, 3 : 103.

Diagnostics : Size : Myna; c. 22 cm. Also known as 'Allied Grosbeak' or '*Coccothraustes affinis*' is also a large black-and-yellow finch with massive dull yellowish-green bill.

Male : General colour pattern is similar to *M. icterioides*, but distinguished by orange wash to hind-collar and rump; yellow thighs; and strongly glossed deep black on head and wings.

Female : Dark grey head, olive-green remaining upperparts with more yellow on collar and rump; blackish wings and tail; grey throat; and yellowish-olive remaining underparts.

Juvenile : Duller versions of their respective sex; but male juvenile with browner head and black mottling on mantle; and female juvenile with paler throat, duller underparts and variable amount of yellow on rump.

Habitat : S (2700 m) 3000-4200 m. W > (1100 m) 1800 m. Oak, rhododendron and mixed forests.

Distribution : Uttarakhand : Chamoli : Dudatoli and Dasoli (Osmaston 1921), Joshimath (Reed 1979), NDNP (Tak & Kumar 1987), (Tak 1995), Belta (Tak 1997). Dehra Dun (Osmaston 1935), [Dhanaulty] (Singh 2000). Pauri (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Govind NP : Sankri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse winter visitor. Schedule IV (BNHS 2002). BRS (07) i.e. Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

**692(1986) *Mycerobas melanozanthos*
Hodgson, 1836
Spotted-winged Grosbeak**

1836. *Coc. (cothraustes) Melanozanthos* Hodgson, *Asiat. Res.* 19 : 150 (Nepal).

1954. *Mycerobas melanozanthus ossifragus* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 19 (Kohima, Naga Hills).

1954. *Mycerobas melanozanthus pangpui* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 20 (Sangau, Lushai Hills).

1926. Baker, *FBI* No. 1042, 3 : 105.

Diagnostics : Size : Myna; c. 22 cm. Also known as 'Spot-winged Grosbeak' or '*Coccothraustes melanozanthos*' is also a black-and-yellow finch, but easily distinguished by its different colour pattern, prominent white spots on closed wings, and comparatively short tail.

Male : Entirely blackish upperparts with white tips to greater coverts, tertials and secondaries; black throat and upper breast; and deep yellow remaining underparts.

Female : Distinctive, with heavy black streaking on yellowish crown, mantle and underparts; striking head pattern of yellow supercilium, broad black stripe through ear-coverts and black malar stripe; and blackish wings with broad whitish tips to greater coverts, tertials and secondaries.

Juvenile : Like female, but yellow of plumage replaced by pale yellow, whitish or buff.

Habitat : S 2400-3600 m. W > (600 m) 1200 m. Mixed forests.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Chamoli : Belta Kharak, Dibrugheta, Auli (Sankaran 1993, 1994), Belta, Dibrugheta (Tak 1997), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : beyond Chakrata (Osmaston 1935), (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). CTR (Lamba undated).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjunwala *et al.* 2001).

693(1984-1985) *Mycerobas carnipes*
(Hodgson, 1836)
White-winged Grosbeak

1836. *Coc. (cothraustes) Carnipes* Hodgson, *Asiat. Res.* 19 : 151 (Nepal).

1926. Baker, *FBI* No. 1041 (part), 3 : 104.

Diagnostics : Size : Myna; c. 22 cm. Also known as '*Coccothraustes carnipes*' is a large, dark finch with large white wing-patch (conspicuous in flight) and undulating flight.

Male : Dark grey head, mantle and breast; yellowish olive rump; yellow tips to greater-coverts and tertials; large white patch at the base of primaries; and yellow belly.

Female : Resembles male, but black of plumage replaced by sooty-grey.

Juvenile : Like female, but browner.

Habitat : S 3000-4200 m. W > (1500 m) 2700 m. Pine, juniper, fir and rhododendron forests.

Distribution : Uttarakhand : Chamoli : Base Camp valley (Reed 1979), (Tak 1995), Sarsopatal (Tak 1997). CTR (Lamba undated).

Status : Sparse local resident depicts altitudinal movements. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjunwala *et al.* 2001).

694(2035) *Pyrrhoplectes epauletta* (Hodgson, 1836)
Gold-naped Black Finch

1836. *Pyrrhula ? Epauletta* Hodgson, *Asiat. Res.* 19 : 156. (Morthen and central regions, Nepal)

1926. Baker, *FBI* No. 1049, 3 : 114.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Gold-headed Black Finch' or Gold-crowned Black Finch' is small thickset finch with white 'stripe' along tertials.

Male : Orange-yellow rear crown and nape; dull black remaining upperparts with white inner webs to tertials; and orange flash at sides of breast.

Female : Olive-green head; grey nape and mantle; rufous-brown wing-coverts, scapulars with white inner webs to tertials (as in male); and rufous-brown underparts.

Juvenile : Like female, but duller.

Habitat : S 2800-3900 m. Rhododendron, ringal bamboo. W 1400-3600 m. Dense vegetation in forest, forest edge, scrub.

Distribution : Uttarakhand : Tehri (Tak 1995). Uttarkashi : Govind NP : Duni (Tak *et al.* 2004). CTR (Lamba undated).

Status : Residential status not known. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjunwala *et al.* 2001).

ESTRILDIDAE (Munias-Estrildid Finches)

Munias or Estrildid Finches are small, strongly patterned, finch-like birds which live in tight flocks. Strong conical bills are an obvious adaptation to their granivorous diet. Usually found in grassland, scrub and cultivation, often feeding on the ground. Young birds mostly drab and difficult to identify, but flocks usually contain some distinctive adults. In our region this group includes the avadavats, Indian Silverbill and locally introduced Java Sparrow.

695(1964) *Amandava amandava* (Linnaeus, 1758)
Red Munia

1758. *Fringilla Amandava* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 180 (eastern India, restricted to Calcutta, West Bengal, by Baker, 1921, *JBNHS* 27 : 725. Whistler & Kinneer, 1933, *JBNHS* 36 : 837, designate northern Gujarat, apparently unaware of the earlier restriction).

1926. Baker, *FBI* No. 1036, 3 : 96.

Diagnostics : Size : Sparrow -; c. 10 cm. Also known as 'Red Avadavat' or '*Estrilda amandava*' has red bill, black lores, and pink legs and feet.

Male (breeding) : Largely bright red with irregular white spots on breast sides, flanks and lower scapulars; dark brown wings and tail with white-tipped coverts and tertials, and blackish undertail-coverts.

Male (non-breeding) and **female** : Red bill, rump and uppertail-coverts (the latter with a few white spots); brownish upperparts; dark brown wing with a few white spots; black lores; and greyish buff underparts.

Juvenile : Lacks red in plumage, but with two buff wing-bars and pale fringes to tertials.

Habitat : <1800 m. Scrub, reeds, grassy areas, sugarcane fields, overgrown parts of parks and gardens.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (Mohan 1993, 1996), Asan Barrage, Khaddar (Singh 2000), Asan wetland (Tak & Sati 2003). Pauri (Tak 1995). Pithoragarh : District survey- 2005, Goriganga valley- 1994 (Tak & Sati 2006). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : They are popular cage birds due to colourful plumage of the males in their breeding season. They are also known as 'Red Avadavat'. The species name *amandava* and the common name of *avadavat* is derived from the city of Ahmedabad in Gujarat from where these birds were exported into the pet trade. The species is native to Bangladesh, Cambodia, China, Egypt, India, Indonesia, Myanmar, Nepal, Pakistan, Thailand and Vietnam. Introduced populations also exist in southern Spain, Brunei, Fiji, Malaysia, Portugal, Puerto Rico, Singapore and Hawaii. They are found in South Asia with an estimated extent of occurrence of 1,00,00,000 km².

696(1966) *Lonchura malabarica* (Linnaeus, 1758)
White-throated Munia

1758. *Loxia malabarica* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 175 (India).

1926. Baker, *FBI* No. 1030, 3 : 89.

Diagnostics : Size : Sparrow -; c. 10 cm. Also known as 'Common/ Indian Silverbill' or 'White-throated Silverbill' is a tiny gregarious bird.

Adult : Short slender grey bill; buff-brown upperparts; white underparts with fine rufous-buff barring on flanks; dark wings; and long black tail (with elongated and pointed central rectrices and white rump and uppertail-coverts).

Juvenile : Similar, but with more buff on underparts; brown mottling on rump and uppertail-coverts; central rectrices shorter and rounded and lacks barring on flanks.

Habitat : <1200 m. Prefers drier open scrub, cultivation, grassland and light secondary growth.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Asan Barrage, Khaddar (Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

697(1967-1970) *Lonchura striata* (Linnaeus, 1766)
White-rumped Munia

1766. *Loxia striata* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 306 (Isle of Bourbon, *errore* = Ceylon).

1939. *Lonchura striata estriata* Koelz, *Proc. Biol. Soc. Washington* 52 : 73 (Jagalbed, Bombay Presidency).

1926. Baker, *FBI* No. 1021, 3 : 83.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'White-backed Munia' or 'Striated Munia' or 'Sharp-tailed Munia' is a tiny, gregarious, brown-and-white finch with a heavy bluish conical bill and long, pointed, black tail.

Adult : Pale brown forehead, wings and remaining upperparts (with very fine pale shaft-streaks); white rump; blackish brown throat and breast; and creamy white belly.

Juvenile : Less cleanly marked than adult, with faint streaking on upperparts, and has buff fringes to breast feathers.

Races : Northern *L. s. acuticauda* of the Himalayan foothills and NE subcontinent has pale brown upperparts and breast; buff underparts; and white rump. The south Indian *L. s. striata* has dark brown upperparts, head, breast and wings; and white rump and underparts.

Habitat : <1800 m. Light scrub, secondary jungle, grassy areas and cultivation.

Distribution : Uttarakhand : Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995). CTR (Khatri 2004, Ghosh & Chatterjee 2006).

Status : Residential status not known. Schedule IV (BNHS 2002).

698(1974-1975) *Lonchura punctulata*

(Linnaeus, 1758)

Spotted Munia

1758. *Loxia punctulata* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 173 (Asia = Calcutta).

1836. *M.(unia) Lineoventer* Hodgson, *Asiat. Res.* 19 : 154 (Nepal).

1926. Baker, *FBI* No. 1031, 3 : 91.

Collection records : Uttarakhand : Dehra Dun : Harbertpur, 1 ex., 8.ix.1970, coll. NRS/ZSI Survey Party; 37-Chakrata road, 1 ♀, 23.iv.1975, coll. M. L. Narang.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Scaly-breasted Munia' or 'Nutmeg Mannikin' is a distinctive bird.

Adult : Chestnut-brown face, throat and upper breast; olive-brown upperparts with olive-yellow to rufous-orange uppertail-coverts and edges to tail; whitish underparts boldly scaled with black.

Juvenile : Similar to juvenile Black-headed Munia, but with blackish bill.

Races : *L. p. subundulata* of the NE subcontinent has brown rather than black scaling on lower breast and belly.

Habitat : <2400 m. Open areas with grass and scrub, scrubby hillsides, secondary growth, cultivation and gardens.

Distribution : Uttarakhand : Almora : Kwarab (ZSI Survey 2004). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), New Forest, Timli, [Dholkhand, Mohand] (Singh 2000), Asan wetland (Tak & Sati 2003), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda (ZSI Surveys 2004-06). Pauri (Tak 1995). Pithoragarh : Dhauri river basin- 2004 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary

(Myers & Singh 2006). Udham Singh Nagar : Nanak Matta (ZSI Survey 2005). Uttarkashi : Govind NP : Govind NP : Naitwar (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

699 (1976-1978) *Lonchura malacca*

(Linnaeus, 1766)

Black-headed Munia

1836. *M. (unia) Rubroniger* Hodgson, *Asiat. Res.* 19 : 153 (Nepal).

1926. Baker, *FBI* No. 1020 (part), 3 : 81.

Diagnostics : Size : Sparrow -; c. 10 cm. Sexes alike. Also known as 'Chestnut Munia' is a Tri-coloured (black, brown, and white) bird.

Adult : Black head, neck, upper breast, centre of belly, and undertail-coverts; rufous-brown upperparts; and white or chestnut lower breast and flanks.

Juvenile : Brown upperparts and buff to whitish underparts; and blue-grey bill.

Habitat : <2100 m. Long grass, cultivation and marshy areas.

Distribution : Uttarakhand : Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Schedule IV (BNHS 2002).

PLOCEIDAE

PASSERINAE (Sparrows)

Sparrows and Petronias are small birds with largely brown and grey plumage, short conical pointed bills and lightly notched tails. They generally subsist on seeds and grain for which they forage on the ground or in ripening fields of cereal and grass. Most species tend to associate in flocks, particularly in the non-breeding season, and will often roost and nest together in colonies. The House Sparrow is a common Commensal of man throughout much of the subcontinent and worth studying in order to compare similar species.

700(1938-1939a) *Passer domesticus*
(Linnaeus, 1758)
House Sparrow

1835. *Passer indicus* Jardine & Selby, *Ill. Orn.* 3, pl. 118 (India, restricted to Bangalore by Kinnear, 1925, *Ibis* : 751).
1838. *Pyrgita nigricollis* Burton, *Cat. Bds. Mus. Fort Pitt, Chatham* : 23 (South India).
1853. *Passer confucius* Bonaparte, *Compt. Rend. Acad. Sci. Paris* 37 : 915 (China, *errore* = Rangoon).
1903. *Passer enigmaticus* Sarudny, *Orn. Monatsb.* 11 : 130-31 (Hurruk and Kamschar, Persian Baluchistan). Specimens based on intersexes *vide* Mayr, 1949, *Ibis* 91 : 304-6.
1946. *Passer domesticus soror* Ripley, *Spolia Zeylanica* 24 : 241 (Nikawella State Farm, Rattota, Matale district, Ceylon).
1926. Baker, *FBI* No. 1096 and 1097 (part), 3 : 170, 172.

Collection records : Uttarakhand : Bageshwar, 1♂, 30.vi.1972, coll. D. N. Basu. Dehra Dun : Sahastradhara, 1♂, 21.ii.1963, coll. R. K. Bhatnagar. Pauri : Kotdwar, 1♂, 5.vi.1972, coll. D. N. Basu; 37-Chakrata road, 1♂, 20.iii.1975, 1♂, 15.ix.1976, coll. D. N. Basu. Naini Tal : Bhim Tal, 3♂ and 1♀, 21.vi.1972, coll. D. N. Basu. Uttarkashi : Purola, 1♀, 20.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Bulbul -; c. 15 cm.

Adult (male breeding) : Distinct head pattern (grey crown, chestnut nape, black lores and throat extending onto upper breast, and black bill); chestnut upperparts streaked with black; rufous wings with a white shoulder-patch/ bar; grey-brown rump; white sides of throat; black centre of throat and breast; greyish remaining underparts; and dark brown tail. Non-breeding males become much duller, with chestnut nape usually obscured by greyish fringes and black throat reduced due to greyish-white fringes.

Female : Pale buff supercilium; buffish upperparts with dark brown streaking on mantle; and greyish underparts with faint buff wash on flanks.

Juvenile : Like female, but with broader buff-brown fringes to upperparts.

Habitat : <4000 m (4500 m). Common birds in urban areas throughout most of the subcontinent.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931, ZSI Survey 2004), (Tak 1995), Petshal, Kwarab, Kosi, Soni, Bhatronj Khan, Chanthariya, Mansi, Someshwar (ZSI Survey 2004). Bageshwar : Kausani, around Bageshwar, Bharari, Kanda, Jakheri, Rauteli-khet (ZSI Survey 2004). Chamoli : Joshimath (Reed 1979), around Joshimath (Sankaran 1993, 1994, ZSI Survey 2004), (Tak 1995), Beltakharak (Sathyakumar 2003), Mandal, Pipalkoti, Vishnuprayag, Nandprayag, Gwaldam, Narainbagrh (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun: upto Chakrata and beyond (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Gandhari, Ukhimath (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Sankri (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It occurs naturally in most of Europe and much of Asia. It has also followed humans all over the world and has been intentionally or accidentally introduced to most of the Americas, sub-Saharan Africa, New Zealand and Australia as well as urban areas in other parts of the world. In the United States it is also known as the English Sparrow, to distinguish it from native species, as the large North American population is descended from birds deliberately imported from Britain in the late 19th century. They were introduced

independently in a number of American cities in the years between 1850 and 1875 as means of pest control. Wherever people build, House Sparrows sooner or later come to share their abodes. Though described as tame and semi-domestic, neither is strictly ture; humans provide food and home, not companionship. The House sparrow remains wary of man. A more proper term is 'synanthropic'. It is abundant in temperate climates, but not universally common; in many hilly districts it is scarce. In cities, towns and villages, even around isolated farms, it can be the most abundant bird. The House Sparrow is gregarious at all seasons in its nesting colonies, when feeding and in communal roosts. Although the Sparrows' young are fed on the larvae of insects, often destructive species, this species eats seeds, including grain where it is available. In spring, flowers- especially those with yellow colours- are often eaten; it may also hunt butterflies.

**701(1946-1947) *Passer rutilans* Temminck, 1835
Cinnamon Tree Sparrow**

1835. *Pyrgita cinnamomea* Gould, *Proc. Zool. Soc. London* : 185 ('apud montes Himalayenses', restricted to NW. Himalayas by Ticehurst, 1927, *JBNHS* 32 : 347).

1904. *Passer rutilans debilis* Hartert, *Vog. pal. Fauna* 1 : 162 (Sind-Tal in Kaschmir).

1939. *Passer rutilans schaeferi* Stresemann, *Orn. Monatsb.* 47 : 176 (Sud-Tibet : Schigatse).

1926. Baker, *FBI* No. 1106, 3 : 181.

Collection records : Uttarakhand : Uttarkashi : Gangani, 1♂, 2.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Russet Sparrow' or 'Cinnamon Sparrow' is confusable with male Eurasian Tree Sparrow, but lacks that species' black cheek-patch.

Male : Distinctive, bright rufous-chestnut upperparts streaked with black on mantle; a broad and a narrow white wing-bar; variable yellow wash on ear-coverts and underparts (with yellowish grey breast and flanks, and pale yellow centre of belly); black chin and centre of throat; and black bill (when breeding, becoming greyish-horn in non-breeding season).

Female : Brown upperparts, with dark brown streaks; rufous-brown scapulars, lower back and

rump; white wing-bars; prominent whitish supercilium; stronger dark eye-stripe; and pale yellowish wash on underparts. The latter three easily distinguish it from confusable female House Sparrow.

Juvenile : Like female, but duller whiter underparts.

Habitat : S 1200-2700 m (370-4200 m). W 500-1500 m (150 m). Light forest and cultivation often in the vicinity of human settlements in the hills where house sparrow is absent.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Lohajung (Tak 1997), Mandal village (Singh 2005a). Champawat (ZSI Survey 2005). Dehra Dun : in hills beyond Chakrata (Osmaston 1935), (Wright 1957), New Forest (Mohan 1993, 1996), Chakrata, Khaddar, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh : Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005). Uttarkashi : Govind NP : Naitwar, Taluka, Sunkhundi, Jakhol, Sirga, Saruka Tal (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994).

Status : Widespread resident depicts altitudinal movements. Schedule IV (BNHS 2002).

**702(1941-1944) *Passer montanus* (Linnaeus, 1758)
Eurasian Tree Sparrow**

1885. *Passer malaccensis* Dubois, *Faune Ill. Ver. Belg.*, Ois, 1 : 1572 (Malacca).

1926. Baker, *FBI* No. 1102, 3 : 177.

Diagnostics : Size : House Sparrow; c. 15 cm. Sexes alike. Also known as 'Tree Sparrow' is often confused with the larger House Sparrow, but it is distinguished by its rich brown, chestnut head; a black patch on its white cheeks; and double white wing-bars.

Adult : Chestnut crown and nape, white sides of head with a black patch on ear-coverts; brown remaining upperparts with black streaks; two distinct white wing-bars on brown wings; black

chin and centre of throat; and greyish white remaining underparts. In summer, the bill is lead-blue; and in winter it is black.

Juvenile : Duller, with paler chestnut on head and diffuse black patches on ear-coverts.

Habitat : S 450-2700 m (3900 m). W Lower. Villages and cultivation.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : [Dhanaulty] (Singh 2000). Pithoragarh (Tak 1995). Uttarkashi : Govind NP : Naitwar, Sankri, Jakhol, Duni, Mashri, Isragad (Tak *et al.* 2004). CTR (internet list). RNP (Pandey *et al.* 1994).

Status : Widespread resident depicts altitudinal movements. Schedule IV (BNHS 2002).

703(1948-1949) *Petronia xanthocollis* (Burton, 1838)
Yellow-throated Sparrow

1838. *Fringilla xanthocollis* Burton, *Cat. Bds. Mus. Fort Pitt*, Chatham : 23, new name for *fringilla flavicollis* Franklin, 1831, *nec F. flavicollis* Gmelin, 1789 (Ganges between Calcutta and Benares).

1926. Baker, *FBI* No. 1094, 3 : 166.

Collection records : Uttarakhand : Pauri : Kotdwar, 1 ♀, 6.vi.1972, coll. D. N. Basu.

Diagnostics : Size : Sparrow -; c. 14 cm. Sexes more or less alike; throat-patch in female much paler, and shoulder-patch rufous not chestnut. Also known as 'Chestnut-shoulder Petronia' or 'Chestnut-shoulder Rock Sparrow' differs from other sparrows by a combination of chestnut lesser coverts (brownier in female), uniform brownish-grey upperparts, yellow patch on lower throat, and long and fine bill.

Male : Chestnut lesser coverts (or shoulder-patch, may be obscured), white tips to median and greater coverts forming double wing-bars (upper one broader); and black bill (when breeding), becoming yellowish in non-breeding season.

Female : Like male, but with brown lesser coverts, buff-tinged tips to median coverts and yellow patch on throat either faint yellow or absent.

Juvenile : Like female, but with more sandy-brown upperparts, and lacks yellow on throat.

Habitat : <1200 m. Open dry deciduous and thorn forest; trees and hedges near villages and cultivation.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Khaddar, New Forest, [Dholkhand, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Rudraprayag : Mandakini valley (Lavkumar 1956b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

PLOCEINAE (Weavers)

Weavers are superficially sparrow-like birds with heavier bills and colourful black-and-yellow patterning in breeding males. They have a similar diet of seeds and grains but are less likely to be found in urban settings. They build distinctive hanging woven nests in colonies, usually near or over water. They forage in large gatherings during the winter months.

704(1961) *Ploceus benghalensis* (Linnaeus, 1758)
Black-breasted Weaver

1758. *Loxia benghalensis* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 175 (Benghala).

1926. Baker, *FBI* No. 1012, 3 : 72.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Black-throated Weaver Bird' or 'Black-throated Weaver', similar to other male weavers has lemon-yellow to golden-yellow crown.

Male (breeding) : Brilliant golden-yellow crown surrounded by a black circlet (headband); remaining upperparts dark brown with pale edges; fulvous-whitish underparts with a broad dark breast-band; and interesting variant has white ear-coverts and throat.

Non-breeding male, female and juvenile : Brown crown (lack yellow on crown), but always show black on breast. This black can be less developed (non-breeding male); variably broken by whitish fringes to feathers or can be restricted to black patches on sides (female); but always fringed

with fulvous (identify this species). In addition, a yellow prominent supercilium; distinct yellow patch on sides of neck; and narrow yellow moustachial stripe with black malar are also the clues.

Habitat : <300 m. Reedy marshes and grassland to flooding.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a & b, Singh 2000). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (12) i.e. Indo-Gangetic Plains (Jhunjhunwala *et al.* 2001).

Remarks : Like the other weavers, the male constructs the nest single-handedly, with a group of females visiting it during late construction stage, jumping on the *helmets* and tugging and testing, presumably for strengths. If a female appears interested, the male bows low before her, presenting golden crown at her. Flaps wings deliberately and sings softly *tsi-tsisik-tissik-tsik-tsik* like chirp of cricket or subdued squeaking of unoiled bicycle wheel. Once female agrees and permits copulation, he quickly finishes the rest of the nest, and she lays eggs inside; he immediately Commoncing on a second nest near by to attract other females, and occasionally a third, very rarely even a fourth (Polygynous). Nests not accepted by females may be torn down by the builder himself.

**705(1962-1963) *Ploceus manyar* (Horsfield, 1821)
Streaked Weaver**

1831. *Ploceus flaviceps* Lesson, *Traite d'Orn.* : 435 (Pondichery).

1842. *Euplectes striatus* Blyth, *Jour. Asiat. Soc. Bengal* 11 : 873 (Sind).

1926. Baker, *FBI* No. 1013, 1014, 3 : 73, 74.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Striated Weaver' or 'Streaked Weaver Bird' is distinguished from Black-breasted and Baya by heavily streaked breast and flanks.

Male (breeding) : Golden yellow crown; dark brown sides of head; dark brown remaining upperparts with heavily fulvous streaking; brown throat; and buff remaining underparts with dark brown streaking (especially on breast and flanks).

Female, non-breeding male and juvenile : Boldly streaked throat, breast and flanks usually separate it from other weavers. However, some birds are only lightly streaked on underparts and then confusable with Baya. But other characters such as: arrowheaded-shaped streaks; yellow supercilium, yellow crescent below eye, and well-defined yellow patch on side of neck; heavy streaking on crown with still heavily streaked on ear-coverts; and dark malar and moustachial stripes are the diagnostics.

Habitat : <1000 m. Mainly lowland marshy areas and riverbeds. Prefers reeds and pushes.

Distribution : Uttarakhand : Dehra Dun : [Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

**706(1957-1959) *Ploceus philippinus*
(Linnaeus, 1766)
Baya Weaver**

1766. *Loxia Philippina* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 305 (Philippines, *errore* = Ceylon).

1844. *Pl. (oceus) baya* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 945 (India).

1886. *Ploceus passerinus* Reichenow, *ex Hodgson, Zool. Jahrb.* 1 : 156 (Nepal), *nec Ploceus passerinus* Gray, 1846, *Cat. Bds. Mamms. Nepal* : 105, synonym of *P. flaviceps* Swainson.

1890. *Ploceus atrigula* Sharpe, *ex Hodgson, Cat. Bds. Brit. Mus.* 13 : 491 (Nepal).

1952. *Ploceus philippinus sardarpateli* Koelz, *Jour. Zool. Soc. India* 4 : 43 (Ratnapur, Bhabanagar [*sic* = Bhavnagar], Saurashtra).

1926. Baker, *FBI* No. 1008 (part), 3 : 67.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♂, 12.vi.1963, 1 ♂, 18.vii.1963, 1 ♀, 25.vii.1963, R. K. Bhatnagar; 1 ♂, 27.viii.1964, coll. T. D. Soota; 4 ♂ and 2 ♀, 20.ix.1966, coll. P. K. Bose; Doonga, 2 ♂, 8.viii.1966, coll. P. K. Bose; Herbatpur, 1 ♂, 11.viii.1966, coll. P. K. Bose, 1 ex., 8.ix.1970, coll. NRS/ZSI Survey Party; Ballupur, 1 ♂, 28.vi.1975, coll. P. K. Bose.

Diagnostics : Size : Sparrow; c. 15 cm. Also known as 'Baya' is distinguished from other male weavers in breeding plumage by yellow mantle and scapulars with dark streaks and unstreaked yellow breast. Both males and females in breeding plumage resemble female house sparrow.

Male (breeding) : Unstreaked yellow crown and breast, and streaked mantle and scapulars; dark brown ear-coverts and throat; cream-buff remaining underparts; and dark blackish-brown bill.

Male (non-breeding), **female** and **juvenile** : Yellowish buff crown and back with dark brown streaking; yellowish buff prominent supercilium and sides of neck; dark brown ear-coverts; white throat with yellow tinge; and buffish underparts (either unstreaked or with diffuse streaking on sides of breast and flanks).

Races : Breeding male *P. p. burmanicus* of NE subcontinent has buff rather than yellow breast, grey throat, and lacks yellow on mantle. Female *burmanicus* has rufous-buff supercilium, breast and flanks. The nominate race is described herewith.

Habitat : <1400 m. Open country with scattered trees, scrub and cultivation.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, 1962a, Mohan 1996), Asan Barage (Gandhi & Singh 1995, Tak & Sati 2003), Asan Barrage, New Forest, Tea Garden, [Dholkhand, Mohand] (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

707(1960-1960a) *Ploceus megarhynchus*
Hume, 1869
Finn's Weaver

1869. *Ploceus megarhynchus* Hume, *Ibis* : 356 (terai = Kaladoongi [sometimes Kaladhungi], below Naini Tal, U.P.).

1899. *Ploceus rutledgii* Finn, *Proc. Asiat. Soc. Bengal* : 78 (Naini Tal) Cf. Ali, Salim & Crook, J. H., 1959, *JBNHS* 56 : 457-83.

1926. Baker, *FBI* No. 1009 (part), 3 : 69.

Diagnostics : Size : Sparrow; c. 16 cm. Also known as 'Finn's Baya' or 'Yellow Weaver' is a large sized waver with large bill. It is found in the Ganges and Brahmaputra valleys in India and also in Nepal.

Male (breeding) : Bright golden-yellow head and nape contrasting with dark brown ear-coverts; yellow rump and uppertail-coverts; brownish remaining upperparts boldly streaked with dark; and bright golden-yellow underparts (from chin to vent, including flanks) with dark pectoral collar or broken breast-band (in some examples complete and well defined).

Female (breeding) and **first-year male** : Pale yellow to yellowish-brown head; brown remaining upperparts with dark brown streaks; and pale yellow to buffish-white underparts. **Non-breeding adults** and **immature** birds lack yellow.

Races : Breeding male of *P. m. salimalii* of NE subcontinent differs from nominate race (described here) by purer yellow head, less yellow on rump, and white undertail-coverts.

Habitat : <300 m. Very local in terai marshes, tree-dotted grass: the tall grassland typically *Typha* or *Phragmites* reed covered swamps; also in grasslands with *Saccharum spontaneum*.

Distribution : Uttarakhand : Dehra Dun (Bhatnagar & Misra 1972b). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, internet list).

Status : Sparse local resident. Rare. Vulnerable (IUCN 2007). Schedule IV (BNHS 2002). BRS (12) *i.e.* Indo-Gangetic Plains (Jhunjhunwala *et al.* 2001).

Remarks : The species was first noted by Frank Finn and named by Hume (1869). Males are successively polygamous, mating with 1 to 4 females. The female alone incubates. They feed mostly on seeds, sometimes foraging on fallen seed on roadsides. They also take insects. Males are successively polygamous, mating with 1 to 4 females. They breed from May to September. The nest is built on top of trees or in reeds. The nest is different in structure from the other weaver species found in India but like in other weavers woven from strips of leaves and reeds. It is lined

on the entire inside unlike the other weavers which line only the floor of the nest. Males strip the leaves of the nest tree making the globular nests clearly visible.

STURNIDAE (Starlings & Mynas)

Starlings are medium-sized birds with a straight pointed bill, relatively short triangular wings and a shortish, squarish tail. The flight is fast and direct. On the ground they walk or run rather than hop. They are often highly gregarious especially in winter when huge flocks may form. Some species are largely arboreal feeding on the nectar of flowers, fruit and insects while others also forage on the ground. Most are rather noisy with a variety of loud chattering, squeaking and whistling calls. Some are good mimics. The mynas are related with the starlings, are bulkier with a strong, slightly decurved bill. The wings are more rounded and adorned by a pale wing-patch (at the base of primaries), more obvious in flight. Some species have distinctively coloured bare skin around the eye. They enjoy a fairly wide-ranging diet and are equally at home on the ground as on trees, bushes and buildings. They are rather noisy with a range often loud chattering, ringing and squeaking notes. The Common Myna is one of the most familiar birds as it is commonly found around human habitation. The hill mynas (or grackles) are equal in size or somewhat larger than the other myna species. They are glossy black birds with distinctive yellow wattles on the head and a white wing-patch. Largely arboreal, they feed on fruit, flowers, nectar and insects. They are quite sociable and noisy. In the wild they can be recognised by their loud whistling notes but their skills as mimics in captivity make them popular cagebirds.

708(984) *Saroglossa spiloptera* (Vigors, 1831) Spot-winged Starling

1831. *Lamprotornis spilopterus* Vigors, *Proc. Zool. Soc.* London : 35 (Himalayan Mountains, restricted to Simla-Almora).

1924. *Psaroglossa spiloptera assamensis* Baker, *Bull. Brit. Orn. Cl.* 45 : 14 (Khasia Hills).

1926. Baker, *FBI* No. 970, 971, 3 : 25, 26.

Diagnostics : Size : Bulbul $\pm$; c. 19 cm. Also known as 'Spot-winged Stare' or 'Spotted-winged Stare' is a slim, little and gregarious myna with a

white wing-patch at the base of primaries and whitish iris; and is a suggestive of Grey-headed Myna.

Male : Brownish-grey upperparts scalloped with black on crown and brown on mantle (giving a marbled effect); blackish mask extending through ear-coverts to sides of neck; chestnut-rufous throat; and rusty-white remaining underparts with rusty-orange on breast and flanks.

Female : Sooty brown upperparts with greyish centres to feathers (giving a pattern similar to male); darker ear-coverts; whitish throat spotted and streaked with greyish-brown, and more diffuse brownish-grey mottling on breast.

Juvenile : Like female, but with buff tips to median and greater-coverts resulting in double wing-bar; male juvenile with faint blotches of rufous on throat.

Habitat : S foothills-2000 m. W <1000 m. Tall open broadleaved forest.

Distribution : Uttarakhand : Chamoli : Malari (Lavkumar 1956b). Dehra Dun (Wright 1957, Bhatnagar & Misra 1972b), New Forest (George 1957, Mohan 1996, Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Rudraprayag : Mandakini valley (Lavkumar 1956b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Narang 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

709(987-989) *Sturnus malabaricus* (Gmelin, 1789) Grey-headed Starling

1789. *Turdus malabaricus* Gmelin, *Syst. Nat.* 1 : 816 (Malabar Coast).

1954. *Sturnia malabarica assamica* Koelz, *Contrib. Inst. Regional Exploration*, No. 1 : 19 (Nichuguard, Naga Hills).

1926. Baker, *FBI* No. 982, 3 : 39.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1♂, 6.x.1972, coll. P. K. Bose; 37-Chakrata road, 1♂ and 1♀, 13.i.1975, 2♂, 18.i.1975, coll. P. K. Bose.

Diagnostics : Size : Myna -; c. 21 cm. Sexes more or less similar. Also known as 'Chestnut-tailed Starling' or 'Grey-headed Myna' is a silvery grey-and-rufous sociable myna.

Adult : Silvery grey upperparts with whitish forehead and throat; whitish lanceolate feathers across crown, nape, sides of neck and breast; rufous underparts; and mainly chestnut tail with grey central feathers.

Juvenile : Sandy-grey upperparts; greyish-white underparts; and darker brownish-grey wings and tail.

Races : Male *S. m. blythii* of SW peninsula and Western Ghats differs from the widespread nominate race, described herewith, in having white head and breast, while female *blythii* has white of head restricted to forehead and forecrown, and underparts are pale rufous.

Habitat : <1500m (2000 m). Open woodland, secondary growth, young plantations, gardens.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Malsi Deer Park, New Forest, Timli, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : Like most starling, the Chestnut-tailed Starling is fairly omnivorous, eating fruit, nectar and insects. They fly in tight flocks and often rapidly change directions with great synchrony. The White-headed Myna is usually considered a subspecies *blythii* of the present species, but some (e.g. Rasmussen & Anderton 2005) treat it as a distinct species.

**710(994) *Sturnus pagodarum* (Gmelin, 1789)
Brahminy Starling**

1789. *Turdus pagodarum* Gmelin, *Syst. Nat.*, 1 : 816 (Malabar).

1939. *Temenuchus pagodarum sylvestris* Koelz, *Proc. Biol. Soc. Washington* 52 : 73 (Lucknow), *lapsus* for (*Maina*) *Sylvestris* Hodgson, 1837, *nec Sturnus sylvestris* Brehm, 1831.

1939. *Temenuchus pagodarum afghanorum* Koelz, *Proc. Biol. Soc. Washington* 52 : 73 (Tagan, Afghanistan).

1926. Baker, *FBI* No. 991, 3 : 47.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♀, 2.vii.1964, coll. R. K. Bhatnagar; 1 ♂, 22.vii.1965, coll. P. K. Bose; 37-Chakrata road, 1 ♀, 15.ii.1973, coll. Nathu Singh; 1 ♀, 3.vi.1975, 1 ♂, 29.vii.1975, coll. P. K. Bose; 1 ♂, 3.xii.1976, 1 ♀, 2.i.1978, coll. D. N. Basu; 1 ♀, 3.xii.1976, 1 ♂, 4.xii.1976, coll. Ram Das. Naini Tal : Ramnagar, 1 ♀, 8.vi.1972, coll. D. N. Basu.

Diagnostics : Size : Myna -; c. 22 cm. Sexes alike, but crest of female shorter. Also known as 'Black-headed Myna' or Brahminy Mynah' is a crested starling with thick neck, stout-bill, and rounded wings. A combination of smaller size, white sides and tip to dark tail, and uniform wings without white wing-patch separates this species from mynas.

Adult : Black forehead, crown and nape; grey upperparts with darker flight feathers; rufous-orange underparts with paler shaft streaking; and yellowish bill with blue base.

Juvenile : Lacks crest, but has sooty brown cap and orange-buff underparts (without shaft streaking).

Habitat : <1600 m (2400 m). Open broadleaved forest, gardens, secondary growth, and cultivation.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a & b), New Forest (George 1957, 1962a, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : English name refer to the traditional Brahmin *choti* hairstyle. The bird is popularly

known as a myna-Salim Ali (1972) describes it as a "typical myna" in its behaviour and appearance-whereas more recently (e.g. Grimmett *et al.* 1998) the term "starling" is preferred. Like most starlings, the Brahminy Starling is fairly omnivorous, eating fruit and insects. It builds a nest in holes. Mynas are not a natural, monophyletic group, but a name for a number of unrelated South Asian starlings. The present species appears to be neatly intermediate between the "true" or typical mynas (genus *Acridotheres*) and some of the birds unequivocally termed "starling". Its closest relatives are quite possibly the genus *Sturnus*-all called "starlings".

711(996) *Sturnus roseus* (Linnaeus, 1758)
Rosy Starling

1758. *Turdus roseus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 171 (Lapland, Switzerland).

1926. Baker, *FBI* No. 972, 3 : 29.

Diagnostics : Size : Myna $\pm$; c. 23 cm. Sexes alike. Also known as 'Rosy Pastor' or 'Rose-coloured Starling' is a distinctive rose-pink starling with pinkish bill, legs and feet.

Adult (summer) : Purple-black head with shaggy crest; pink bill with black base; pink mantle and underparts; and black wings and tail with blue-green sheen. In winter, the pink of plumage turns duller due to brownish-buff fringes; has greyish fringes to black of head, nape and breast; and dull brownish-pink bill. The first-winter resembles adult winter, but duller (especially female) with broad buffish fringes to head, nape and breast; fawn-brown mantle with hardly any pink; and pinkish-buff underparts.

Juvenile : Mainly sandy-brown, with yellowish bill and broad pale fringes to wing feathers.

Habitat : Lowland open country, cultivation, scrub, grassland.

Distribution : Uttarakhand : CTR (internet list).

Status : Sparse passage migrant. Schedule IV (BNHS 2002).

Remarks : Winter visitor to Gujarat and peninsular India; passage migrant in NW subcontinent (Grimmett *et al.* 1998). The Rosy Starling is sometimes given its own, monotypic genus *Pastor* and then called *Pastor roseus*. The

breeding range of this bird is from easternmost Europe across temperate southern Asia. It is a strong migrant, and winters in India and tropical Asia. In India in winter, it often appears to outnumber the local starlings and mynas. It highly gregarious, forming large winter flocks.

712(997-1001) *Sturnus vulgaris* Linnaeus, 1758
Common Starling

1878. *St. (urnus) poltaratskyi* Finsch, *Proc. Zool. Soc.* London : 713 (Marka-kul, Eastern Kazakhstan).

1926. Baker, *FBI* No. 976, 3 : 34.

Collection records : Uttarakhand : Dehra Dun : Rishikesh, Pashulok, 1 ex., 6.i.1969, coll. P. K. Bose; Haridwar road, 1 ex., 7.i.1970, coll. NRS/ZSI Survey Party; 1 ex., 12.i.1970, coll. P. K. Bose.

Diagnostics : Size : Myna -; c. 19 cm. Sexes more or less alike; female duller. Also known as 'Starling' or 'Eurasian Starling' is a distinct winter visitor with shiny black plumage spangled with white.

Adult (breeding) : Glossy black plumage with metallic green and purple reflections; fine golden-buff tips to feathers of mantle (appearing finely stippled or speckled); yellow bill; and dull red legs and feet. Non-breeding birds are heavily spangled with buff on upperparts; broad buff fringes to wing feathers; and bold white spotting on underparts.

Juvenile : Entirely dusky brown, with whiter throat, and buff fringes to wing-coverts and flight feathers.

Habitat : Cultivation, grassland, lake margins.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, 1962a, Mohan 1996), Asan Barrage, Khaddar (Singh 2000). Pauri (Tak 1995). CTR (Lamba undated, Khati 2004, internet list). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse winter visitor. Schedule IV (BNHS 2002).

Remarks : Starlings walk rather than hop. Their flight is quite strong and direct; they look triangular-winged and short-tailed in flight.

713(1002-1004) *Sturnus contra* Linnaeus, 1758
Asian Pied Starling

1758. *Sturnus Contra* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 167 (India, restricted to Chandernagor [Hooghly dist., W. Bengal] by Stresemann, 1952, *Ibis* 94 : 517).

1926. Baker, *FBI* No. 1005, 3 : 63.

Collection records : Uttarakhand : Dehra Dun : Sayed Mohalla, 1 ♂, 6.iv.1972, coll. D. N. Basu; 37-Chakrata road, 1 ♂, 8.i.1973, 1 ♂, 11.xii.1974, coll. D. N. Basu; 1 ♂, 4.xi.1974, 1 ♂, 28.xi.1974, coll. S. K. Serin; 1 ♂, 17.xii.1974, coll. P. K. Bose; 1 ♂, 22.iv.1975, 1 ♂, 2.v.1975, coll. M. L. Narang; 1 ♂, 20.xii.1976, coll. Ram Das. Sathyanarain, 1 ex., 3.iii.1973, coll. Raj Tilak. Naini Tal : Haldwani, 1 ex., 4.xii.1968, coll. P. K. Bose; Ramnagar, 1 ♂ and 1 ♀, 8.vi.1972, coll. D. N. Basu.

Diagnostics : Size : Myna ±; c. 23 cm. Sexes alike. Also known as 'Pied Myna' or 'Asian/Indian Pied Myna' is an elegant black and white (pied) myna.

Adult : Pied plumage with orange-red orbital skin; large white patch behind eye; and a large, pointed, and bright orange-yellow bill.

Juvenile : Browner (the black of plumage replaced by brown and has brownish wash to white).

Races : *S. c. superciliaris* of Manipur, differs from the other races in the subcontinent by white streaks on forehead and forecrown.

Habitat : Damp lowland grassy habitats, cultivation, towns.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

714(1006-1007) *Acridotheres tristis*
(Linnaeus, 1766)
Common Myna

1766. *Paradisea tristis* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 167
(Philippines, *errore* = Calcutta *vide* Baker 'Fauna' 3:
53 = Pondichery *vide* Stresemann, 1952, *Ibis* : 515).

1926. Baker, *FBI* No. 996, 3 : 53.

Collection records : Uttarakhand : Bageshwar, 1 ♀, 28.vi.1972, coll. D. N. Basu. Chamoli : Power House, 1 ♂, 4.7.1969, coll. P. K. Bose. Champawat : Tanakpur, 1 ♂, 29.x.1976, coll. Asket Singh. Dehra Dun : NRS compound, 1 ♀, 29.xii.1961, coll. P.K. Mitra; Dharampur, 1 ex., 23.iv.1962, coll. T. D. Soota; Rishikesh, 1 ex., 24.viii.1968, coll. P. K. Bose; Rishikesh, Pashulok, 1 ex., 8.viii.1969, NRS/ZSI Survey Party; Sahastradhara, 1 ex., 30.viii.1968, coll. P. K. Bose; Jantanwala, 1 ♀, 22.ii.1969, coll. P. K. Bose; Badripur, 2 exs., 25.xi.1975, 1 ex., 4.ix.1976, coll. M. L. Narang. Pauri : Kotdwar, 1 ♀, 6.vi.1972, coll. D. N. Basu. Uttarkashi : Nagani, 1 ♀, 20.vi.1969, coll. P. K. Bose.

Diagnostics : Size : Dove -; c. 23 cm. Sexes alike. Also known as 'Indian Myna' or 'Common Mynah' is the most familiar, elegant, energetic and well-groomed dark brown bird with a strong direct flight.

Adult : Dark grey to glossy black head and breast merging into maroon-brown of remaining body; large white wing-patch at the base of primaries (prominent in flight); white vent; white tip to tail; and bright yellow orbital skin (bare skin around the eyes), bill and strong legs.

Juvenile : Duller.

Habitat : <3050 m. Around human habitation.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Kaparkhan, Petshal, Kwarab, Kosi, Soni, Bhatronj Khan, Gagas, Chanthariya, Panduwakhal, Mansi (ZSI Survey 2004). Bageshwar : Loharkhet, Khati (Tak 1997), Kausani, around Bageshwar, Kapkot, Baijnath, Kanda, Jakheri, Wajula, Garur, Rauteli-khet (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : Joshimath (Reed 1979), around Joshimath (Sankaran 1993, 1994), (Tak 1995), Lohajung, Wan (Tak 1997), Beltakharak (Sathyakumar 2003), Pipalkoti, Joshimath, Vishnuprayag, Nandprayag, Ghat, Gwaldam, Narainbagrh, Narainbagrh (ZSI Survey 2004), Mandal village (ZSI Survey 2004, Singh 2005a). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of

SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995), Ramnagar, Lalkuaon, Ranibagh, Bhimtal (ZSI Survey 2005); Pauri (Tak 1995). Pithoragarh (Tak 1995), Lilam, Bugdiyar (Tak 1997), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993), Gandhari, Augstyamuni, Shivpuri, Guptakashi, Ukhimath (ZSI Survey 2004). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Aam Pokhara-Kashipur, Fatehpur, near Panthnagar, Bakra Dam site, Haripur Dam site & Dineshpur (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Naitwar, Sankri, Taluka, Jakhol, Duni (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It forages on the ground among grass for insects, and especially for grasshoppers, from which it gets the generic name *Acridotheres*, "grasshopper hunter" Like most starlings, it is omnivorous and feeds on insects and fruits and discarded waste from human habitation. It walks on the ground with occasional hops. The song includes croaks, squawks, chirps, clicks and whistles, and the bird often fluffs its feathers and bobs its head in singing. It screeches warning to its mate or other birds in cases of predators in proximity. It is popular as cage birds for its singing and speaking abilities. Mynas mate for life. Although this is an adaptable species, its population has been decreasing significantly in Singapore and Malaysia due to competition with its cousin, the introduced Javan Myna.

715(1008) *Acridotheres ginginianus*
(Latham, 1790)
Bank Myna

1790. *Turdus ginginianus* Latham, *Index Orn.* 1 : 362 (Gingee).

1926. Baker, *FBI* No. 998, 3 : 55.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1 immature, 19.xii.1974, coll. P. K. Bose.

Diagnostics : Size : Myna -; c. 21 cm. Sexes alike. It is similar in colouration and shares its rage with the Common Myna, but is slightly smaller.

Adult : Orange -red facial skin; orange-yellow bill; glossy black crown and ear-coverts; bluish-grey body with orange-buff patch at the base of primaries (prominent in flight); buff vent and undertail-coverts, and orange-buff tip to tail. Also shows short but prominent tuft on forehead.

Juvenile : Paler and browner, with dark brown crown and ear-coverts; browner plumage; brown wings; and narrow rufous tips to greater coverts and tertials.

Habitat : <800 m (1200 m). Around human habitation and cultivation.

Distribution : Uttarakhand : Almora (Tak 1995). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a & b), New Forest (George 1957, Mohan 1996), Asan Barrage (Gandhi & Singh 1995, Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Garjia Temple (ZSI Survey 2005). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

Remarks : Gregarious, often flocks, usually very tame, often seen on railway station, wandering confidently along platforms, in and out of the feet and baggage of passengers, picking up bits of food. Haunts municipal refuse dumps for scraps and tidbits and attends on grazing cattle for insects. Also seen in markets, secretly hopping onto vendors' handcrafts to steal scraps. Often follow herds of cattle.

716(1009-1011) *Acridotheres fuscus* (Wagler, 1827)
Jungle Myna

1827. *Pastor fuscus* Wagler, *Syst. Av. Pastor* sp. 6 [India = E Bengal, Baker, 1921 = Sikkim (Whistler, 1933, *JBNHS* 36 : 590)].

1926. Baker, *FBI* No. 999 (part), 3 : 57.

Collection records : Uttarakhand : Dehra Dun : 37-Chakrata road, 1 ex., 16.viii.1973, 1 ♂, 20.viii.1973, coll. Nathu Singh; 1 ♂, 20.xi.1974, coll. Pratap Singh; 1 ♂, 20.xi.1974, coll. S. K. Serin; 1 ♀, 14.i.1976, 1 ♀, 7.ix.1976, coll. D. N. Basu; 71-Chakrata road, 1 ♂, 20.ii.1978, coll. D. N. Basu. Jantanwala, 1 ♀, 11.viii.1975, coll. P. K. Bose. Uttarkashi : Gangani, 1 ♂, 2.vi.1973, coll. Raj Tilak; Purola, 1 ♀, 19.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Common Myna; c. 23 cm. Sexes alike. Chiefly, it is a greyer myna with darker head and wings, and prominent tuft on forehead.

Adult : Blackish crown and ear-coverts merges into grey or grey-brown upperparts; grey of throat merges into pinkish-grey remaining underparts, buffish lower belly, and whitish undertail-coverts; prominent tuft of feathers at base of bill; yellow iris; white patch at base of primaries; and white tip to tail.

Juvenile : Browner, with reduced forehead tuft.

Races : Three races are recognized from the subcontinent: *A. f. maharattensis* (with blue iris) of peninsular India is browner on upperparts as compared to nominate race of N and NE subcontinent, white *A. f. fumidus* of extreme northeast is darker and more sooty.

Habitat : <2400 m. Well-wooded areas near habitation/cultivation.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), New Forest, Timli, [Dhanaulty, Mohand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal : Garjia Temple (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), Gori river basin- 2002, Kali river basin- 1989 (Tak & Sati 2006). Rudrapur : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : near Pratapur, Haripur Dam

site & Dineshpur (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

717(1015, 1017; 1018) *Gracula religiosa*
Linnaeus, 1758
Common Hill-Myna

1844. *Gracula intermedia* A. Hay, *Madras Jour. Lit. Sci.* 13 : 157 (Cachar).

1926. Baker, *FBI* No. 964 (part), 3 : 19.

Diagnostics : Size : Myna +; c. 29 cm. Sexes alike. Also known as 'Hill Myna' or 'Talking Myna' is a large, thickset, and jet-black myna with large orange-yellow bill and legs.

Adult : Entire plumage black with purple tinge on head and neck, and green sheen on the remaining plumage; bright orange-yellow eye wattles distinctly separated from the nape wattles, the latter extending up sides of crown; and a broad white band on primaries (particularly conspicuous in flight).

Juvenile : Duller, with yellowish-orange bill, paler yellow wattles, and less gloss to plumage.

Habitat : <2000 m. Broadleaved semi-evergreen forest, arboreal.

Distribution : Uttarakhand : CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : The Hill Myna builds a nest in hole. It is a popular cage bird, renowned for its ability to imitate speech. Demand in the West outstrips breeding capacity so they are rarely found in pet stores. It is becoming increasingly rare in regions of Northeastern India due to capture for the illegal pet trade. In Garo Hills area of Meghalaya, the locals induce the birds to breed in artificial nests made of a split-bamboo framework covered with grass and put up in accessible positions in tall trees in a forest clearing or at the edge of a small village. The villagers are thus enabled to extract the young at the proper time for easy hand-rearing, making Hill Myna farming a profitable minor cottage industry.

In the wild state, the Hill Myna does not imitate other birds, unlike other species such as the Racket-tailed Drongo, although this is a widely held misconception. On the other hand, in captivity, the hill myna is renowned mimic, learning to reproduce many everyday sounds, particularly the human voice, and even whistled tunes, with astonishing accuracy and clarity.

Like most starlings, the Hill Myna is fairly omnivorous, eating fruit, nectar and insects. It is often detected by its loud shrill descending whistles followed by other calls. It is most vocal at dawn and dusk when it is found in small groups in forest clearings high in the canopy. It hops sideways along the branch, unlike the characteristic jaunty walk of other mynas.

Both sexes make an extraordinary wide range of loud calls- whistles, wails, screeches, and gurgles, sometimes melodious and often very human-like in quality. Each individual has a repertoire between 3 and 13 such call types, which may be shared with some near neighbours of the same sex, being learned when young. There is a very rapid change of dialect with distance, such that birds living more than 15 km apart have no call-types in common with one another.

ORIOLIDAE (Orioles)

Orioles are sturdy colourful thrush-sized birds. Males are usually black and yellow or similarly conspicuous colours; females and young often duller. Normally solitary or in pairs feeding on berries, fruit and insects in the tree canopy. Flight is fast and slightly undulating. Song melodious with a flute-like quality; calls often harsh with a cat-like nasal tone.

718(952-953) *Oriolus oriolus* (Linnaeus, 1758) Eurasian Golden Oriole

1758. *Coracias Oriolus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 107 (Sweden).

1926. Baker, *FBI* No. 952, 3 : 5.

Collection records : Uttarakhand : Dehra Dun : Sahashpur, 1 ♂, 10.v.1963, coll. P. K. Bose; Sahastradhara, 1 ♂ and 1 ♀, 25.vi.1964, 1 ♀, 9.vii.1964, coll. R. K. Bhatnagar; 1 ♂, 15.ix.1964, coll. T. D. Soota; 1 ♂, 28.v.1965, 1 ex., 23.vii.1971, coll. P. K. Bose; Herbatpur, 1 ex., 7.vii.1967, 1 ♀

and 1 ex., 25.v.1971, coll. P. K. Bose; Rishikesh, 1 ex., 24.viii.1968, coll. P. K. Bose; Rishikesh, Pashulok, 1 ♂, 5.x.1972, coll. P. K. Bose; Dakpathar, 1 ♀, 5.ix.1973, coll. Raj Tilak. Rudhraprayag : Rampur, 1 ♀, 30.vi.1969, coll. P. K. Bose. Tehri : Devprayag, Mulya, 1 ♀, 11.vii.1969, coll. P. K. Bose. Uttarkashi : Purola, 1 ♂, 24.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Myna; c. 25 cm. Also known as 'Golden Oriole' is a striking bird with black-and-yellow plumage (male) or drabber green plumage (female).

Adult : Male has small black eye-patch; golden-yellow head and body; mainly black wings with yellow primary coverts and tips to tertials/secondaries, and a yellow-patch on primary coverts; yellow-and-black tail. While female and immature birds have yellowish-green upperparts with brownish-olive wings and tail; yellow rump; and whitish underparts with blackish streaking.

Habitat : <2000 m (3500 m). Open wooded country, groves.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : at 2130m (Reed 1979), (Tak 1995), Reni, Lata (Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1971, 1972a), New Forest (George 1957, 1962a, Mohan 1996), Ubiquitous (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal : Bhimtal (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh : Dhauri river basin- 2004, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

Remarks : The name "oriole" was first recorded (in the Latin form *oriolus*), by Albertus Magnus in about 1250, and was stated by him to be onomatopoeic, from the song of the Golden

Oriole. The flight is somewhat like a thrush, strong and direct with some shallow dips over longer distances. The call is a screech like a jay, but the song is a beautiful fluting *weela-wee-ooo* or *or-iii-ole*, unmistakable once heard.

719(958-960a) *Oriolus xanthornus* (Linnaeus, 1758)
Black-headed Oriole

1758. (*Coracias*) *Xanthornus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 108 (in America = Chandernagor, Bengal).

1926. Baker, *FBI* No. 958 (part), 3 : 11.

Collection records : Uttarakhand : Dehra Dun : Haridwar road, 1 ex., 7.i.1970, coll. NRS/ZSI Survey Party; Badripur, 1 ♂, 8.iii.1976, coll. M. L. Narang. Rishikesh, Pashulok, 1 ♂, 29.xii.1972, coll. D. N. Basu.

Diagnostics : Size : Myna; c. 25 cm. Also known as 'Black-hooded Oriole' is (in all plumages) distinguished from other orioles by blackish crown and nape contrasting with predominantly yellow plumage and red bill.

Adult : Male has glossy jet black 'hood' (head, throat and upper breast); and bright yellow plumage with some black in wings and tail. Female is similar, but has greenish upperparts; the 'hood' is not solidly black, especially on the throat.

Immature : Has blackish (rather than red) bill, yellow forehead, yellow streaking on crown and sides of head, and black streaking on white throat.

Habitat : <1200 m (2000 m). Well-wooded country, parks, gardens, orchards.

Distribution : Uttarakhand : Chamoli : Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), Karva Pani, New Forest, Timli (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Pauri (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : It is more often heard than seen because, it is difficult to be seen in the dappled

(speckled) yellow and green leaves of the canopy. Its flight is somewhat like a thrush, strong and direct with some shallow dips over longer distances.

720(961) *Oriolus traillii* (Vigors, 1832)
Maroon Oriole

1832. *Pastor Traillii* Vigors, *Proc. Zool. Soc.* London, pt. 1 : 175 (Himalayas-Darjeeling *vide* Baker,

1921, *Jour. Bombay nat. Hist. Soc.* 27 : 698).

1926. Baker, *FBI* No. 961, 3 : 14.

Diagnostics : Size : Myna +; c. 28 cm.

Adult : Male over-all glossy maroon with black head, neck and wings; and chestnut-maroon tail. Female has male-like upperparts; however, underparts are whitish with maroon-grey streaks. Immature like female, but has more uniformly brown upperparts, including wings; whitish underparts streaked with dark brown; and brown iris.

Habitat : <2400 m. Evergreen forest.

Distribution : Uttarakhand : Chamoli (Tak 1995), Belta forest on Nanda Devi Trek (Reed 1979, Tak 1997), Mandal (Singh 2005a). Dehra Dun (Wright 1957, Tak 1995), New Forest (George 1957, 1962a, Mohan 1996), New Forest, Tea Garden (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Uttarkashi : Govind NP : Istragad (Tak *et al.* 2004). CTR (Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

DICRURIDAE (Drongos)

Drongos are medium-sized birds with strong, slightly downcurved bills and medium to very long tails that are forked or otherwise characteristic, but be careful of birds with broken or moulting tail feathers. In most species the plumage is largely black with varying degree of gloss. Rather upright when perched, they are very agile in flight when

chasing winged insects. Some species which are otherwise solitary may congregate around swarms of insects. All but the black Drongo are primarily forest birds. With practice some species can be identified by voice, but many have a wide range of vocalizations and are skillful at confusing the observer by their superb mimicry of other birds.

**721(962-964) *Dicrurus macrocercus* Vieillot, 1817
Black Drongo**

1817. *Dicrurus macrocercus* Vieillot, *Nouv. Dict. d'H. Nat., nouv. ed.*, 9 : 588, based on 'Le Drongolon' of Leraillant, 1805, *Ois. D'Afr.* 4, pl. 174: 72 (India, restricted to Orissa by Baker, 1924, *FBI* 2 : 356, re-restricted to Madras City by Vaurie, 1949, *loc. cit.* : 237).

1932. *Dicrurus macrocercus peninsularis* Ticehurst, *Bull. Brit. Orn. Cl.* 53 : 20 (Madras city).

1924. Baker, *FBI* No. 766, 2 : 356.

Collection records : Uttarakhand : Bageshwar, 1♂, 30.vi.1972, coll. D. N. Basu. Chamoli : Mangroli, 1♂, 3.7.1969, coll. P. K. Bose. Dehra Dun : Sahastradhara, 1♂, 18.vii.1963, coll. R. K. Bhatnagar; 1 ex., 14.vii.1966, coll. P. K. Bose; Sathyanarayan, 1♀, 14.ix.1971, coll. P. K. Bose; 1♂, 3.iii.1973, coll. Raj Tilak. Naini Tal : Kathgodam, 1 ex., 8.xii.1968, coll. P. K. Bose. Uttarkashi : Rana, 1♀, 5.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Bulbul +; c. 31 cm. Sexes alike. Also known as 'King Crow' or '*D. adsimilis*' is a slim black bird with short legs and deeply forked tail. It sits very upright whilst perched prominently, like a shrike.

Adult : Glossy blue-black upperparts; duller wings; a white spot in front of the eye/ rictal spot (often apparent at close range; not shown by other drongo species); and long deeply forked tail (although fork usually lost during moult, giving the bird a curiously puzzling look). *First-winter* birds have diffuse whitish fringes to dull black breast, belly and undertail- and uppertail-coverts; upperparts and breast have a glossy sheen.

Juvenile : Dull dark brown.

Habitat : <2100 m. Open country, cultivation, open woodland, marshes; avoids dense forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Chanthariya, Mansi

(ZSI Survey 2004). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930, Tak 1995), Bhimtal (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), Dhauli river basin- 2004, Gori river basin- 2002, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudrapur : Mandakani (Lavkumar 1956b), Kedarnath Sanctuary (Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Surai, Nanak Matta (ZSI Survey 2005). Uttarkashi : Govind NP : Naitwar, Dhaula, Istragad (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : These are aggressive and fearless birds, and will attack much larger species if their nest or young are threatened. There are also some cases of Drongos preying on small birds. They have also been, on occasion, seen feeding on dead fish. They eat insects and other small animals.

**722(965-966b) *Dicrurus leucophaeus* Vieillot, 1817
Ashy Drongo**

1845. (*Dicrurus*) *longicaudatus* Lord Arthur Hay, in Jerdon, *Madras Jour. Lit. Sci.* 13 : 121 *nom. nud.*

1854. *Dicrurus longicaudatus* A. Hay, in Horsfield & Moore, 1854, *Cat. Bds. Mus. E.I. Co.* 1 : 152 (Segour Pass, Neilgherries) : also A. Hay in Jerdon, 1862, *Bds. India* 1 : 430.

1918. *Dicrurus leucophaeus minimus* Baker, *Novit. Zool.* 25 : 296 (Ceylon).

1949. *Dicrurus leucophaeus beavani* Vaurie, *Bull. Amer. Mus. Nat. Hist.* 93 : 243 (Khudi Khel, eastern Afghanistan).

1924. Baker, *FBI* No. 775, 2 : 362.

Diagnostics : Size : Bulbul +; c. 30 cm. Sexes alike. Also known as 'Grey Drongo' is easily

distinguished from Black Drongo by ashy-grey (rather than blue-black) upperparts with blue-grey shine; unglossed dark grey (rather than black) underparts; and bright (vs dark) red eyes. *First-winter* has brownish-grey underparts with indistinct pale fringes.

Juvenile : Dull brownish grey.

Habitat : <3300 m. Forest and well-wooded country. Singly, in pairs and small parties.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Nandprayag, Tapoban (Osmaston 1921), NDNP (Tak & Kumar 1987), around Joshimath (Sankaran 1993, 1994), (Tak 1995), Lata (Tak 1997), Beltakharak (Sathyakumar 2003), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), New Forest (George 1962a, Mohan 1996), Karva Pani, New Forest (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh: Dhaul river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Ranichauri (ZSI Survey 2005). Uttarkashi : Govind NP : Naitwar, Sankri, Jakhol (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse summer visitor. Schedule IV (BNHS 2002).

Remarks : Usually, it is seen in forest (except on passage) whereas Black Drongo is a bird of more open country and cultivation.

**723(967-969) *Dicrurus caerulescens*
(Linnaeus, 1758)
White-bellied Drongo**

1758. *Lanius caerulescens* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 95 (Benghala).

1924. Baker, *FBI* No. 777 (part), 2 : 365.

Diagnostics : Size : Bulbul +; c. 24 cm. Sexes alike. Also known as 'White-vented Drongo' is a typical drongo with a forked tail.

Adult : Glossy indigo (cerulean) upperparts; brownish grey throat and breast; white belly and undertail-coverts (separating it from all other drongos); and shorter tail with characteristically shallower fork than the two species: Black and Ashy (above).

First-winter : Throat and breast browner and broader between breast and white belly is less clearly defined.

Juvenile : Duller with brownish-grey breast.

Races : Indian race (*D. c. caerulescens*) has larger white area on underparts from belly to down; while Sri Lankan race (*D. c. leucopygialis*) has white restricted to vent and undertail-coverts.

Habitat : <2000 m. Broadleaved forest; forest edge; well-wooded areas. Singly, in twos and threes, often in mixed flocks.

Distribution : Uttarakhand : Dehra Dun : New Forest (Mohan 1993, 1996), New Forest, Tea Garden (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Udham Singh Nagar : Surai, Nanak Matta (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjunwala *et al.* 2001).

**724(970) *Dicrurus annectans* (Hodgson, 1836)
Crow-billed Drongo**

1836. (*Bhuchanga*) *Annectans* Hodgson, *Ind. Rev.* 1(8) : 326 (Nepal).

1924. Baker, *FBI* No. 765, 2 : 353.

Diagnostics : Size : Myna +; c. 27 cm. Sexes alike. A glossy jet black drongo very like the familiar King Crow or Black Drongo.

Adult : Distinguished from Black Drongo by the larger and heavier bill; shorter, less deeply forked and widely splayed (at tip) tail, outer feathers more noticeably curving outwards; tuft on forecrown; and indicative habitat of dense forest (vs open country).

First-winter : Bird has white spotting on breast, belly and flanks, and undertail-coverts; and less pronounced tail-fork than adult.

Juvenile : Uniform brownish-black plumage with unglossed underparts.

Habitat : <700 m. Moist, dense broadleaved forest; well-wooded areas.

Distribution : Uttarakhand : Udham Singh Nagar: Haripur Dam site & Dineshpur, Nanak Matta (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, ZSI Surveys 2002-05).

Status : Sparse summer visitor. Schedule IV (BNHS 2002). BRS (09) i.e. Indo-Chinese Tropical Moist Forest (Jhunjhunwala *et al.* 2001).

725(971) *Dicrurus aeneus* Vieillot, 1817
Bronzed Drongo

1817. *Dicrurus aeneus* Vieillot, *Nouv. Dict. d'Hist. Nat.* 9 : 586 (Bengal, restricted to Dacca by Baker, *Fauna Br. India*, Birds 2 : 368).

1924. Baker, *FBI* No. 780, 781 2 : 368, 369.

Diagnostics : Size : Bulbul +; c. 24 cm. Sexes alike. Also known as 'Little Bronzed Drongo' superficially resembles to familiar Black Drongo, but is noticeably small, hyperactive and black forest drongo.

Adult : Black strongly glossed with metallic blue-green particularly on crown, mantle and breast; broad bill flattened like flycatchers; and less deeply forked tail.

Juvenile : Duller upperparts, with no gloss initially; and sooty brown uniform underparts.

Habitat : <2000 m. Evergreen forest, forest edge, bamboo, plantations. Singly, in twos and threes, often in mixed hunting parties.

Distribution : Uttarakhand : Pauri (Tak 1995). Tehri : Ranichauri (ZSI Survey 2005). Udham Singh Nagar : Haripur Dam site & Dineshpur (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, Ghosh & Chatterjee 2006).

Status : Sparse local resident. Schedule IV (BNHS 2002).

726(972) *Dicrurus remifer* (Temminck, 1823)
Lesser Racket-tailed Drongo

1836. (*Bhringa*) *Tectirostris* Hodgson, *Ind. Rev.* 1(8) : 325 (Nepal).

1924. Baker, *FBI* No. 786, 2 : 375.

Diagnostics : Size : Myna +; c. 28 cm. Sexes alike. Also known as 'Small Racquet-tailed Drongo' is a black forest drongo with a square-ended tail.

Adult : Glossy metallic black plumage with a velvety pad-like tuft of feathers above base of bill; two unusually elongated wire-like outer tail-feathers ending in spatulae or 'rackets' fully webbed on both sides of shaft (i.e. symmetrical about tail-shafts); and tail-streamers and rackets can be either broken or missing. In the flying bird these rackets, undulating behind, look singularly like a pair of angry bumble-bees in hot pursuit.

Immature : Lacks tail-streamers and rackets, and with less gloss on upperparts and underparts.

Habitat : Humid broadleaved forests. In ones, twos and threes, regularly associating with mixed hunting parties.

Distribution : Uttarakhand : Dehra Dun (Osmaston 1935, Singh 2000). Haridwar (Osmaston 1935). Pithoragarh (Tak 1995). Rudrapur : Kedarnath Sanctuary (Myers & Singh 2006). Uttarkashi : Tons valley, Thadiar and Deota (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Sparse local resident. Schedule IV (BNHS 2002).

727(973) *Dicrurus hottentottus* (Linnaeus, 1766)
Spangled Drongo

1766. *Corvus hottentotus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 155 (Cape of Good Hope, restricted to Sikkim by Baker, 1919, re-restricted to 'region between Ayuthia and head of the Gulf', Siam, Kloss, 1921, *Jour. Fed. Malay States Mus.* 10 : 223. Re-restricted to Chandernagor by Stresemann, 1952, *Ibis* 94 : 517, 521).

1836. *Edolius Chrishna* Gould, *Proc. Zool. Soc. London* : 5 (Nepalia).

1939. *Chibia hottentotta landae* Koelz, *Proc. Biol. Soc. Washington* 52 : 70 (Londa, Bombay Presidency).

1924. Baker, *FBI* No. 782, 2 : 370.

Diagnostics : Size : Myna ± with longer tail; c. 31 cm. Sexes alike. Also known as 'Hair-crested Drongo' is a large, stocky, forest-dwelling drongo. They move in small flocks and are very noisy.

Adult : Shining glossed and spangled blue-black; distinguished from other drongos by a few fine hair-like feathers springing from forehead and extending over hind-crown and upper back forming hair-like crest (visible only at close range); characteristic longish, almost square-cut tail, curled up at the outer ends; and long, pointed and noticeably downcurved bill.

Juvenile : Browner; lacks hair-like feathers and spangling of adult; and less pronounced upward twist to outer tail feathers.

Habitat : <1400 m (2000 m). Largely associated with flowering forest trees.

Distribution : Uttarakhand : Chamoli : NDNP (Tak & Kumar 1987), (Tak 1995), Lata (Tak 1997). Dehra Dun (Osmaston 1935, Wright 1957), New Forest (George 1957, Mohan 1996), New Forest, Timli, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Uttarkashi : Tons Valley, Mautar Gadh (Osmaston 1935). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Narang 1994, Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

728(976-981) *Dicrurus paradiseus* (Linnaeus, 1766)
Greater Racket-tailed Drongo

1766. *Cuculus paradiseus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 172 (Siam, restricted to 'to the region between Ayuthia and the head of the Gulf' by Kloss, 1919, *Jour. nat. Hist. Soc. Siam* 3 : 453).

1790. *Lanius malabaricus* Latham, *Index Orn.* 1 : 66 (Malabar).

1924. Baker, *FBI* No. 792, 2 : 381.

Diagnostics : Size : Myna; with a tail c. 35 cm. Sexes alike. Also known as 'Large Racket-tailed Drongo' or 'Racket-tailed Drongo' or 'Ceylon Crested Drongo' is a large metallic black with green-blue shine, pendant-tailed, forest-dwelling drongo.

Adult : Easily distinguished by a combination of large conspicuous backward-curving tuft or crest on forehead; and shallowly forked tail with two long wire-like twisted spatula-tipped streamers

(outermost feathers, which are webbed on only one side of shaft). These tail-streamers and rackets can be missing or broken, and tail can appear almost square-ended when in moult (or in juvenile plumage).

Juvenile : Duller, less glossed with much reduced crest; and lacks rackets, initially.

Habitat : <1700 m. Forest and secondary jungle.

Distribution : Uttarakhand : Udham Singh Nagar : Surai (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : These are aggressive and fearless birds, and will attack much larger species if their nest or young are threatened. This courageous drongo usually leads the mixed feeding flocks in Asian jungle habitats.

ARTAMIDAE (Woodswallows/Swallow-Shrikes)

Woodswallows are small chunky birds with broad triangular wings, short square tails and short broad-based bill with a wide gape. They feed by catching insects on the wing in a characteristic gliding flight. They perch openly on tops of bare trees, telegraph wires etc., often in close contact with neighbouring birds.

729(982) *Artamus fuscus* Vieillot, 1817
Ashy Woodswallow

1817. *Artamus fuscus* Vieillot, *Nouv. Dict. d'Hist. Nat.* 17 : 297 (Bengal).

1924. Baker, *FBI* No. 763, 2 : 348.

Diagnostics : Size : Bulbul $\pm$; c. 19 cm. Sexes alike. Also known as 'Ashy Swallow-shrike' is a dark slaty grey bird with a stout blue-grey bill; slate-grey head; greyish-maroon mantle; paler rump; pinkish-grey underparts; and narrow whitish horseshoe-shaped band across uppertail-coverts. At rest, looks top-heavy, with large head and full breast and slim tapering body with tips of closed wings reaching end of tail. In flight, long glides broken by short bouts of rapid wing-flapping; broad-based, pointed wings held stiff and flat; whitish underwing; and white-tipped broad and rounded tail are the clues.

Habitat : <1700 m (2100 m). Open wooded country, often in the neighbourhood of palms.

Distribution : Uttarakhand : Dehra Dun : New Forest (Singh 1999), Tons Valley Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Udham Singh Nagar : Surai (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list). RNP (Pandey *et al.* 1994).

Status : Residential status not known. Not Listed in the Act (BNHS 2002). BRS (11) *i.e.* Indo-Malayan Tropical Dry Zone (Jhunjhunwala *et al.* 2001).

CORVIDAE (Jays, Magpies, Treepies, Nutcrackers, Choughs, Crows)

Jays are bright medium-sized corvids with rounded wings, bushy crest and medium-long tail. They inhabit temperate Himalayan forests and utter a variety of harsh notes but also with some mimicry. Magpies and Treepies are colourful members of the crow tribe with very long tails and omnivorous, noisy and sociable in habits. Nutcrackers have a similar build to the jay but the tail is comparatively short, the plumage brown with white spotting and the bill is longer, more conical, adapted to feeding on nuts and pine seeds. Choughs are intermediate in size between jackdaws and crows with the typical black plumage, comparatively, slim, red or yellow downcurved bill and rounded, long-fingered wings. Flight is graceful and acrobatic, often utilizing the updraughts in the mountains they frequent. Gregarious and often tame. Crows (including Rook) and Ravens are perhaps the most typical of the corvids with their largely black plumage, strong build and heavy bill. They are noisy and gregarious, and often wary but not shy. The House Crow is among the most familiar of our Indian birds.

730(1020-1021) *Garrulus glandarius*
(Linnaeus, 1758)
Eurasian Jay

1831. *Garrulus bispecularis* Vigors, *Proc. Zool. Soc. London* : 7 (Himalayan Mountains = Murree. Baker).

1922. Baker, *FBI* No. 42, 1 : 63.

Collection records : Uttarakhand : Chamoli : Joshimath, Auli, 1 ♂, 9.7.1969, coll. P. K. Bose.

Dehra Dun : Mussoorie, Municipal Garden, 1 ex., 3.viii.1968, coll. P. K. Bose. Naini Tal : Saryia Tal, 1 ♂ and 2 ♀, 13.xii.1968, coll. P. K. Bose.

Diagnostics : Size : Dove; c. 33 cm. Sexes alike. Also known as 'Jay' is an unmistakable pinkish brown (vinaceous fawn) bird with stout black bill; a broad velvety black moustachial band; black wings; cobalt-blue barring on wing-coverts and on bases of some secondaries; white rump and vent; and velvety black tail. In flight, the fawn coloured back and shiny white rump-patch contrasting sharply with black tail diagnostic.

Races : *G. g. bispecularis* of the W Himalayas has vinaceous-fawn body, while *G. g. interstinctus* of the E Himalayas has a darker reddish-brown body.

Habitat : (1000 m) 1500-3000 m (3600 m). Moist mixed forest. Equally at home on the ground and in trees.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Loharkhet (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli (Lavkumar 1956b), Auli (Sankaran 1993, 1994), Bakarigad, Wan (Tak 1997), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935), Chakrata, Mussoorie (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Deohra Tal (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), Ranichauri (ZSI Survey 2005). Udham Singh Nagar : near Panthnagar (ZSI Survey 2005). Uttarkashi : Govind NP : Seema (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : The Eurasian Jay was one of the many species originally described by Linnaeus in his 18th century work *Systema Nature*. He recognized its affinity with other corvids, naming it *Corvus glandarius*. In Europe, "Jay" is used by people who speak the English language as a synonym for the Eurasian Jay. Its usual call is the alarm call which is a harsh, rasping screech and

is used upon sighting various predatory animals, but the Jay is well known for its mimicry, often sounding so like a different species that it is virtually impossible to distinguish its true identity unless the Jay is seen. It even imitate the sound of the bird it is attacking, such as a Tawny Owl, which it does mercilessly, if attacking during the day. However, the Jay is a potential prey item for owls at night and other birds of prey such as Goshawks and Peregrines during the day.

**731(1022) *Garrulus lanceolatus* Vigors, 1831
Black-headed Jay**

1831. *Garrulus lanceolatus* Vigors, *Proc. Zool. Soc. London* : 7 (Himalayan Mountains = Simla-Almora district).

1922. Baker, *FBI* No. 39, 1 : 60.

Collection records : Uttarakhand : Tehri : Magra, 1 ♂, 9.vii.1973, coll. Raj Tilak. Uttarkashi : Jarmola, 1 ♀, 16.vi.1973, 5 exs., 17.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Dove; c. 33 cm. Sexes alike. Also known as 'Black-throated Jay' or 'Lanceolated Jay'

Adult : Is easily distinguished from Eurasian Jay by black crest and ear-coverts; pinkish-fawn upperparts and underparts with varying blue-grey wash; white patches on black wings due to white tips to secondaries and tertiaries; black throat with white streaks; and white tipped longer blue tail with black cross-bars. Like Eurasian Jay, it also has blue barring on black wings.

Juvenile : Are similar, but duller with browner body.

Habitat : 900-2500 m (3000 m). Open mixed forest, often near habitation. Similar habits to Eurasian Jay.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Binsar WLS, Soni (ZSI Survey 2004). Bageshwar : Pindari-Kafni Trek (Mohan 2007). Chamoli : Auli (Sankaran 1993, 1994), Mandal (Singh 2005a). Dehra Dun : Mussoorie and Chakrata (Osmaston 1935), (Bhatnagar & Misra 1972a & b), Chakrata, Lachhiwala, Mussoorie (Singh 2000). Naini Tal (Hudson 1930, Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Gori river basin- 2002, Panchchuli expedition- 1998,

Kali river basin- 1989 (Tak & Sati 2006) Rudraprayag : Tungnath, Deohra Tal, Madarini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri : Bheling valley (Searight 1926). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (08) i.e. Sino-Himalayan Subtropical Forest (Jhunjhunwala *et al.* 2001).

**732(1025-1026) *Urocissa flavirostris* (Blyth, 1846)
Yellow-billed Blue Magpie**

1846. *Ps. (ilorhinus) flavirostris* Blyth, *Jour. Asiat. Soc. Bengal* 15 : 28 (Darjeeling).

1922. Baker, *FBI* No. 22, 1 : 43.

Diagnostics : Size : Pigeon ±; c. 66 cm overall (including 39-43 cm long tail). Sexes alike. Also known as 'Gold-billed Magpie' or '*Cissa flavirostris*' is a purplish blue bird with exceptionally long, graduated black-and white-tipped blue tail. It flies with a few rapid wingbeats, followed by a glide with tail feathers spread.

Adult : Distinguished from Red-billed Blue Magpie by yellow or orange-yellow bill and white crescent on nape. Upperparts are duller blue-grey with mantle and wings; black head, neck and breast; white underparts; and bright orange legs and feet.

Juvenile : Duller, with dull olive-yellow bill.

Races : The eastern nominate race has yellow wash to underparts.

Habitat : S 1600-2700 m (3660 m). W >800 m. Mixed forest, normally at higher altitudes than Red-billed Blue Magpie. Chiefly arboreal.

Distribution : Uttarakhand : Garhwal (Osmaston 1921). Almora : Ranikhet (Briggs 1931), (Tak 1995). Bageshwar : Loharkhet to Khatri (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli (Lavkumar 1956b), Lohajung - Wan, Wan (Tak 1997), Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Chakrata (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Osmaston 1921, Tak 1995). Pithoragarh : Gori river basin- 2002, Panchchuli

expedition- 1998 (Tak & Sati 2006). Rudraprayag (Osmaston 1921, Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993). Tehri : Bheling valley (Searight 1926), Ranichauri (ZSI Survey 2005). Uttarkashi : Govind NP : Naitwar (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (07) *i.e.* Sino-Himalayan Temperate Forest (Jhunjhunwala *et al.* 2001).

733(1027-1028) *Urocissa erythrorhyncha*
(Boddaert, 1783)

Red-billed Blue Magpie

1846. *Ps. (ilorhinus) occilitalis* Blyth, *Jour. Asiat. Soc. Bengal* 15 : 27 (Nepal and to the N.W., as at Mussooree).

1922. Baker, *FBI* No. 20, 1 : 41.

Collection records : Uttarakhand : Almora : Ranikhet, 1 ♂, 17.xii.1968, coll. P. K. Bose. Dehra Dun : Rajpur, 1 ex., 15.i.1968, coll. P. K. Bose. Rudraprayag : Gholtir, 2 ♂, 1.7.1969, coll. P. K. Bose. Uttarkashi : Nagani, 1 ♀, 20.vi.1969, coll. P. K. Bose; Gangani, 1 ex. and 1 ♀, 27.v.1973, 1 ♀, 2.vi.1973, coll. Raj Tilak; Nand Gaon, 1 ♂, 3.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Pigeon ±; c. 70 cm overall (including 39-43 cm long tail). Sexes alike. Also known as 'Red-billed Magpie' or '*Cissa erythrorhyncha*' is also a purplish blue bird with exceptionally long, graduated black-and white-tipped blue tail.

Adult : Is similar to Yellow-billed Blue Magpie, but distinguished by red-bill (*vs* yellow) and a large white patch on nape extending from crown to mantle. Underparts below breast greyish white.

Juvenile : Duller, with brownish-red bill and still whiter on crown.

Habitat : Foorhills-1600 m (3050 m). Mixed forest.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995), Kaparkhan, Binsar WLS, Kwarab, Kosi, Soni, Bhatronj Khan, Chanthariya, Mansi, Someshwar (ZSI Survey 2004). Bageshwar : around Bageshwar (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007).

Chamoli (Lavkumar 1956b), Auli (Sankaran 1993, 1994), Tolma (Tak 1997), Beltakharak (Sathyakumar 2003), Mandal (Singh 2005a). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, George 1957, Wright 1957, Bhatnagar & Misra 1972a), New Forest (Mohan 1996), Chakrata, Mussoorie, New Forest, [Dhanaulty] (Singh 2000). Naini Tal (Hudson 1930, Tak 1995, Ahmed 1997). Pauri (Tak 1995). Pithoragarh (Tak 1995), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Ukhimath (Lavkumar 1956b, ZSI Survey 2004), Kedarnath Sanctuary (Myers & Singh 2006). Tehri (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Naitwar, Jakhol (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002).

734(1023) *Cissa chinensis* (Boddaert, 1783)
Common Green Magpie

1783. *Coracias chinensis* Boddaert, *Table Pl. enlum.* : 38 (China, corrected to southern Thailand by Robinson & Kloss, 1923 = Mergui *vide* Stresemann, 1952, *Ibis* 94 : 516).

1922. Baker, *FBI* No. 24, 1 : 45.

Diagnostics : Size : Myna ± with a long tail; c. 38 cm. Sexes alike. It is a distinctive member of the family.

Adult : Striking green plumage; red bill, reddish fleshy eye-rim and legs; a broad black band running backward through eye to meet on nape; attractive rufous-chestnut wings with black-and-white-tipped tertials and secondaries; and white tipped long green tail marked with black-and-white. In worn plumage, green colour can lighten to pale blue and chestnut wings can fade to olive-brown.

Juvenile : With dull yellow bill and legs, paler underparts, and shorter crest.

Habitat : <1200 m (1600 m). Moist forest, bamboo, scrubby understorey.

Distribution : Uttarakhand : Dehra Dun : Himalayan foothills (Osmaston 1935), (Singh 2000). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Pandey *et al.* 1994).

Status : Sparse local resident. Schedule IV (BNHS 2002).

735(1030a-1034) *Dendrocitta vagabunda*
(Latham, 1790)
Indian Treepie

1790. *Coracias vagabunda* Latham, *Index Orn.* 1 : 171
(India, restricted to Calcutta by Ticehurst, 1922, *Ibis* : 537).

1922. Baker, *FBI* No. 26, 1 : 48.

Collection records : Uttarakhand : Dehra Dun : Sahastradhara, 1 ♂, 8.x.1964, coll. S. K. Mitra; 1 ♂, 12.xi.1964, coll. R. K. Bhatnagar; Jantanwala, 1 ex., 22.ii.1968, coll. P. K. Bose; Doonga, 1 ♀, 17.viii.1970, coll. NRS/ZSI Survey Party; Hathibarkala, 1 ♀, 1.iii.1976, donated by Sailendra Lamba; Badripur, 1 ♂, 22.ix.1976, coll. M. L. Narang. Pauri : Dugada, 1 ♂ and 1 ♀, 26.vi.1969, coll. P. K. Bose; Chamdhar, 2 ♀, 27.vi.1969, coll. P. K. Bose. Tehri : Devprayag, Bageshwar, 1 ♀, 12.7.1969, coll. P. K. Bose.

Diagnostics : Size : Myna +; c. 50 cm overall (including 30 cm long tail). Sexes alike. Also known as 'Rufous Treepie' is the most common and widespread treepie.

Adult : Distinguished, from other treepies, by slate-grey hood (extending to breast and hindneck); rufous-brown mantle and scapulars; black wings with pale-grey wing-coverts and band across tertials; buffish underparts; and black-tipped silvery-grey proportionately longer tail with whitish subterminal tail-band.

Juvenile : Like adult, but has brown hood and pale buffish tips to tail feathers.

Habitat : <1400 m (2100 m). Well-wooded areas, open forest, parks etc.

Distribution : Uttarakhand : Chamoli : Narainbagrh (ZSI Survey 2004), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun : Shiwaliks and Himalayan foothills (Osmaston 1935), (George 1957, Wright 1957, Bhatnagar & Misra 1972a), New Forest (Mohan 1996), Asan

Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal : Ramnagar (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh : Dhauli river basin- 2004 (Tak & Sati 2006). Rudraprayag : Gandhari, Tilwara, Augstyamuni (ZSI Survey 2004). Tehri : Bheling valley (Searight 1926). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khati 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : This is a typically arboreal species feeding almost completely in trees on fruits, invertebrates, small reptiles and the eggs and young of birds; it has also been known to take flesh from recently killed carcasses. It is extremely agile while searching for food, slinging and clambering through the branches and sometimes travels in small mixed hunting parties with unrelated species such as drongos and babblers.

736(1037-1039) *Dendrocitta formosae*
Swinhoe, 1863
Grey Treepie

1925. *Dendrocitta formosae occidentalis* Ticehurst, *Bull. Brit. Orn. Cl.* 46 : 22 (Simla).

1922. Baker, *FBI* No. 32 (part), 1 : 52.

Collection records : Uttarakhand : Chamoli : Nandprayag, 1 ♂, 3.7.1969, coll. P. K. Bose. Dehra Dun : Sahastradhara, 2 exs., 4.x.1968, coll. P. K. Bose; Bhauwala, 1 ex., 6.xi.1968, coll. P. K. Bose; Jantanwala, 1 ♀, 22.ii.1969, coll. P. K. Bose. Uttarkashi : Sewla, 2 ♂, 18.vi.1969, coll. P. K. Bose; Gangani, 1 ♀, 27.v.1973; 1 ♂, 1.vi.1973, coll. Raj Tilak; Pali Nala, 1 ♂, 29.v.1973, coll. Raj Tilak; Nand Gaon, 1 ♂, 3.vi.1973, coll. Raj Tilak.

Diagnostics : Size : Myna ±; overall c. 43 cm (including 25 cm long tail). Sexes alike. Also known as 'Himalayan Tree Pie' is the dullest of the treepies.

Adult : Distinguished from other treepies by black face (forehead, ear-coverts and throat); grey crown and nape; dull brown mantle; black wings with small white patch at the base of primaries (wing-patch); dark sooty brown chin and throat;

greyish remaining underparts with chestnut undertail-coverts; and broadly black-tipped ashy grey elongated central rectrices (blunt and rather spatulate). It is similar to Indian/ Rufous Treepie, but in flight, distinguished by black wings with small white wing patch, grey (vs rufous) rump, and absence of whitish subterminal band to tail.

Juvenile : Like adult, but has narrower black forehead, browner crown and nape, rufous tips to wing-coverts, dusky throat and breast, and whitish belly.

Habitat : <2100 m (2300 m). Broadleaved forest, secondary jungle, overgrown plantations. Mainly arboreal. Small parties and loose flocks, often with other species.

Distribution : Uttarakhand : Garhwal (Lavkumar 1956b). Almora : Kosi, Chanthariya (ZSI Survey 2004). Bageshwar : Loharkhet Dhakuri (Tak 1997), around Bageshwar (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli (Lavkumar 1956b), Auli (Sankaran 1993, 1994), Beltakharak (Sathyakumar 2003), Mandal, Pipalkoti, Narainbagrh (ZSI Survey 2004, Mandal (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, Wright 1957, Bhatnagar & Misra 1972a), New Forest (George 1957, 1962a, Mohan 1996), Karva Pani, New Forest, [Dholkhand] (Singh 2000), Forests around Asan (Singh 2001), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Pauri (Tak 1995). Pithoragarh (Tak 1995), Lilam (Tak 1997), District survey-2005, Dhauli river basin- 2004, Gori river basin-2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Ukhimath (ZSI Survey 2004), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006). Tehri : Bheling valley (Searight 1926), (Tak 1995), Ranichauri (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi : Govind NP : Naitwar, Sankri, Osla (Tak *et al.* 2004). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05, Ghosh & Chatterjee 2006). RNP (Pandey *et al.* 1994).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (08) *i.e.* Sino-Himalayan Subtropical Forest (Jhunjunwala *et al.* 2001).

737(1042-1044) *Nucifraga caryocatactes*
(Linnaeus, 1758)

Spotted Nutcracker

1831. *Nucifraga hemispila* Vigors, *Proc. Zool. Soc. London* : 8 (Himalayan mountains, restricted to Simla-Almora dist. By Ticehurst & Whistler, 1924, *tom. cit.*).

1922. Baker, *FBI* No. 46 (part), 1 : 66.

Diagnostics : Size : Pigeon $\pm$; c. 33 cm. Sexes alike. Also known as 'Eurasian Nutcracker' or 'Nutcracker' is a chocolate brown crow with white spotting, larger bill and shorter tail.

Adult : Chocolate brown with bold white spotting and streaking all over on head and body, except on the unspotted brown crown; black stout, wedge-shaped and pointed bill (for cracking nuts); comparatively unmarked brownish-black wings upper tail with greenish-blue gloss; wholly white undertail-coverts; and white tipped black central rectrices.

Juvenile : Duller, with unglossed wings, and less spotting.

Races : Three races are recognized from the subcontinent: *N. c. multipunctata* of the W Himalayas (has large dense white spots on body; and fine white spotting on throat, scapulars, lower back to uppertail-coverts, flanks, greater and primary coverts and tertials), *N. c. hemispila* and *N. c. macella* both occurring from Himachal Pradesh eastwards (have profuse white spotting on ear-coverts and sides of neck; comparatively sparse on mantle and breast; and almost unspotted flanks and lower belly).

Habitat : (300 m) 2000-3300 m (4000 m). Oak, rhododendron and coniferous forest.

Distribution : Uttarakhand : Bageshwar : Dwali - Phurkia (Tak 1997). Chamoli : Dudatoli and Dhanpur (Osmaston 1921), Pipalkoti (Lavkumar 1956b), NDNP (Tak & Kumar 1987), Reni/ Lata to Ramani (Sankaran 1993, 1994), (Tak 1995), Gairola Patali (Tak 1997), Deodi, Dibrugheta, Latakharak, Beltakharak (Sathyakumar 2003). Dehra Dun : Chakrata (Osmaston 1935), (Bhatnagar & Misra 1972a), [Dhanaulty] (Singh 2000). Pauri (Tak 1995). Pithoragarh : Panchchuli expedition- 1998 (Tak & Sati 2006). Rudraprayag : Mandakini valley (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006).

Tehri (Whymper 1907), Bheling valley (Searight 1926). Uttarkashi : Govind NP : Naitwar, Sankri, Jaura Tal (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b). CTR (Lamba & Bhatnagar 1977-79, Lamba undated).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : The most important food resources for this species are the seeds of various species of Pines (*Pinus* spp.), Spruce (*Picea* spp.) and Hazel nuts (*Corylus* spp.). Nutcracker has thicker bill for cracking hard shells, with special ridge on the inside of the bill edge near the base. If the shell is too hard, it holds the nut between its feet and hacks (slashes) at it with its bill like a chisel. Surplus seed is always stored for later use and it is this species that is responsible for the sowing of new trees of their favoured pines, including the re-establishment of the Swiss Pine over large areas in the Alps of central Europe formerly cleared by man. Various insects are also taken, and also birds' eggs and nestlings, and it takes meat from animals caught in trappers' traps, including fish if that is used as bait. It digs out humble bee and wasp nests avidly to get at the grubs.

738(1046-1047) *Pyrrhonorax pyrrhonorax*
(Linnaeus, 1758)

Red-billed Chough

1862. *Fregilus himalayanus* Gould, *Proc. Zool. Soc. London* : 125 (Himalayan Mountains = Kumaon, restricted by Meinertzhagen, 1927, *Ibis* : 372).

1922. Baker, *FBI* No. 48 (part), 1 : 68.

Diagnostics : Size : House Crow $\pm$; c. 45 cm; 68-80 cm wingspan. Sexes alike. A glossy jet-black crow distinguished from all other crows by long slightly down-curved red bill and from Yellow-billed Chough by longer and thinner, more downcurved, red bill and red legs. They have long broad wings for soaring and are often spectacular aeronauts.

Adult : Predominantly glossy jet-black plumage; longer and thinner, more downcurved, red bill; and bright red legs and feet. In flight, differs from Yellow-billed Chough by squarer tail with angular corners; and longer, relatively slimmer, more angled wings with longer primary 'fingers'

Juvenile : With shorter and orange-brown bill.

Habitat : S 2400-4800 m (7950 m) W > (1450 m) 1600 m open montane habitats. Usually at slightly lower elevations than Yellow-billed Chough but sometimes found together.

Distribution : Uttarakhand : Bageshwar : Phurkia – Pindari zero point (Tak 1997), Pindari-Kafni Trek (Mohan 2007). Chamoli : Dhaul river near Surai Thota (Osmaston 1921), Badrinath, Lata and Dunagiri (Lavkumar 1956b), Rishi Gorge at Ramani and in the Sanctuary (Reed 1979), NDNP (Tak & Kumar 1987), Maltoni pass to Patalkhan (Sankaran 1993, 1994), (Tak 1995), Lata Kharak – Sarsopatal, Bedni Bhagwabasa (Tak 1997), Patalkhan, Bhojgara, Ramni, Betartoli, Deodi, Dibrugheta, Dharansi (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Singh 2000). Pithoragarh : Bugdiyar Burfu (Tak 1997), Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Kedarnath (Lavkumar 1956b), Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993); Tehri : Bheling valley (Searight 1926), Lamprey (1954). Uttarkashi (Tak 1995), Govind NP : Taluka, Osla (Tak *et al.* 2004), Mahidanda, Harsil (ZSI Survey 2005).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : *Pyrrhonorax* is the name of a genus of black European birds in the Corvidae (crow) family. They are given the name of 'chough' because of the sound they make. Red-billed Chough is found in the upper reaches of the Himalayas where it comes down to 2000 m in winter. It is often quite tame; has an aloof and easy flight; soars above the cliffs with wide-spread primaries; the tips bend upwards as it curves and turns, sweeping round gracefully. With wings almost closed it shoots towards the surf at the foot of crags (cliffs), then checking itself, sweep into its breeding cave. Its movement on the ground has been described as "a short and very quick run" but it walks as sedately as a rook. Its food consists of insects, terrestrial molluscs and other invertebrates.

739(1045) *Pyrrhonorax graculus* (Linnaeus, 1766)
Yellow-billed Chough

1833. *Pyrrhonorax alpinus* var. *digitatus* Hemprich & Ehrenberg, *Symb. Phys.*, fol. 2 (Syria).

1874. *P. (yrrhocorax) Forsythi* Stoliczka, *Stray Feathers* 2 : 462 (Lamaguru to the Indus).

1922. Baker, *FBI* No. 49, 1 : 70.

Diagnostics : Size : House Crow -; c. 38 cm (slightly smaller than Red-billed); 65-74 cm wingspan. Sexes alike. Also known as Alpine Chough is closely related to Red-billed Chough and shares its glossy black plumage and red legs.

Adult : Almost straight and yellow bill (separating it from all crows). In flight, separated from Red-billed Chough by rounded tail; and shorter, straighter, relatively broader and more rounded wings with shorter primary 'fingers'

Juvenile : With duller bill and brownish legs.

Habitat : S (2700 m) 3500-5000 m (8600 m). W > (1800)2400. Open montane habitats. Usually at somewhat higher elevations than Red-billed Chough.

Distribution : Uttarakhand : Chamoli : above Juma in Niti valley (Osmaston 1921), Vasudhara Falls, Bampa and Chor Hoti pass (Lavkumar 1956b), Rishi Gorge at Ramani and in the Sanctuary (Reed 1979), NDNP (Tak & Kumar 1987), Ramani to Sarsonpatal (Sankaran 1993, 1994), (Tak 1995), Lata Kharak-Sarsopatal, North sanctuary, Trishul bc, Dunagiri bc (Tak 1997), Sarsopatal, Devstan bc, Bhojgara, Ramni (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Dehra Dun (Osmaston 1935, Bhatnagar & Misra 1972a, Singh 2000). Pithoragarh : Malari, Burfu – Milam (Tak 1997), Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993). Tehri Lamprey (1954). Uttarkashi (Tak 1995), Govind NP : Harkidun (Tak *et al.* 2004), Harsil (ZSI Survey 2005).

Status : Widespread resident. Schedule IV (BNHS 2002). BRS (05) *i.e.* Eurasian High Montane (Alpine and Tibetan) (Jhunjhunwala *et al.* 2001).

740(1048-1051) *Corvus splendens* Vieillot, 1817
House Crow

1817. *Corvus splendens* Vieillot, *Nouv. Dict. d'Hist. Nat.* 8 : 44 (Bengal).

1922. Baker, *FBI* No. 11, 1 : 33.

Diagnostics : Size : Pigeon +; c. 43 cm. Sexes alike. It is a medium-sized, two-toned: the black and the grey (contrast varying with race), familiar corvid around human settlements through most of the subcontinent.

Adult : Richly glossed black forehead, crown and throat; lighter grey or mouse-grey on nape, neck (all round) and upper breast and upper back (giving rise to collared appearance); and glossy black wings, tail and legs.

Juvenile : Lacks gloss, and the 'collar' is less defined.

Races : Based on the thickness of the bill and the depth of colour in areas of plumage, four races are recognized from the subcontinent: *C. s. zugmayeri* of northwest (with paler smoky-white 'collar'); the widely distribute nominate race (with darker 'collar'); and the remaining two races found in S India, Sri Lanka and the Maldives have less well defined 'collar'.

Habitat : <1600 m (2100 m). Towns and larger villages.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931), (Tak 1995). Chamoli : Around Joshimath (Sankaran 1993, 1994), (Tak 1995), Beltakharak (Sathyakumar 2003), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun (Osmaston 1935, George 1957, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Froest (Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Tak 1995). Pauri (Tak 1995). Pithoragarh (Tak 1995), Dhauli river basin- 2004, Gori river basin- 2002, Kali river basin- 1989 (Tak & Sati 2006). Tehri (Tak 1995), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Uttarkashi (Tak 1995). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule V (BNHS 2002).

741(1058, 1058a) *Corvus corone* Linnaeus, 1758
Carrion Crow

1841. *Corvus orientalis* Eversman, *Add. Pallas Zoogr.* 2 : 7 (Naryn R., Turkestan).

1889. *Corvus sharpie* Oates, *Fauna Brit. India, Bds. 1* : 20 ('Siberia, Turkestan, Afghanistan and a portion of India". Type from Mardan, Punjab, *vide* Ticehurst, 1926, *JBNHS* 31 : 93).

1922. Baker, *FBI* Nos. 4, 10 1 : 24, 32.

Diagnostics : Size : House Crow +; c. 48 cm. Sexes alike. Also known a 'Hooded Crow' is a uniformly glossy jet-black crow.

Adult : Glossy black plumage with green or purple sheen; a heavy black bill with straighter culmen (distinctly arched on Large-billed/ Jungle Crow) and covered nostrils (*vs* bare on Rook); black legs and feet; and deep harsh (rough) voice. It is distinguished from the Common Raven by its size (48-52 cm length).

Juvenile : Dull blackish brown.

Races : *C. c. sharpii* occurs as a winter visitor to the region, and differs markedly from *C. c. orientalis*, described herewith, in having grey hindneck and mantle and mainly grey underparts.

Habitat : 2000-3600 m. Open barren areas with patches of cultivation and forest; often around habitation.

Distribution : Uttarakhand : Chamoli : Dibrugheta in Nanda Devi (Reed 1979, Tak 1995).

Status : Residential status not known. Schedule IV (BNHS 2002).

Remarks : The Carrion Crow was one of the many species originally described by Linnaeus in his 18th century work *Systema Nature* and it still bears its original name of *Corvus corone*. The specific epithet *corone* known is the Greek word for "crow"

742(1054-1057) *Corvus macrorhynchos*
Wagler, 1827
Jungle Crow

1859. *Corvus intermedius* Adams, *Proc. Zool. Soc. London* : 171 (Kashmir, Dagshai and Simla, restricted to Kashmir by Stresemann, 1916, *Verh. Orn. Ges. Bayern* 12 : 282).

1922. Baker, *FBI* No. 7, 1 : 28.

Collection records : Uttarakhand : Dehra Dun : Mussoorie, Kemptyfall, 1 ex., 5.vi.1968, coll. P. K. Bose; 13-Subhas road, 1 ex., 21.x.1974, coll. Asket Singh. Naini Tal : Bhim Tal, 1 ♂, 21.vi.1972, coll. D. N. Basu.

Diagnostics : Size : House Crow +; c. 46-59 cm. Sexes alike. Also known as 'Large-billed Crow' or 'Black Crow' or '*C. levaillantii*' is a large uniformly black crow with metallic purplish sheen; heavy black bill with arched culmen (more pronounced curve to culmen); and domed head. Generally, all forms have dark greyish plumage from the back of the head, neck, shoulders and lower body. Their wings, tail, face and throat are glossy black. The depth of the grey shading varies across its range to almost black in the Indian form. Adult has glossy black plumage, which is dull black in juvenile. On ground, the Himalayan races are separated from Common Raven by domed crown, longer tail extension beyond closed wings, and absence of prominent throat hackles (hairs); while in flight, by shorter neck, shorter and broader (less angled) wings, and less strongly wedge-shaped tail.

Habitat : (a) <1000 m (2300 m). Forest, well-wooded compounds on the outskirts of towns and villages, (b) 1800-4500 m (6400 m). Mixed forest, alpine meadows, vicinity of habitation.

Distribution : Uttarakhand : Almora : Ranikhet (Briggs 1931, ZSI Survey 2004), (Tak 1995), Kaparkhan, Binsar WLS, Petshal, Kwarab, Kosi, Soni, Bhatronj Khan, Gagas, Chanthariya, Panduwakhal, Mansi (ZSI Survey 2004). Bageshwar : Dhakuri - Phurkia (Tak 1997), Kausani, around Bageshwar, Kapkot, Baijnath, Jakheri, Wajula. Garur, Rauteli-khet (ZSI Survey 2004), Pindari-Kafni Trek (Mohan 2007). Chamoli : Amrit Ganga Valley (Lavkumar 1956b), Joshimath and Lata (Reed 1979), NDNP (Tak & Kumar 1987), Joshimath to Dibrugheta (Sankaran 1993, 1994), (Tak 1995), Lata - Dibrugheta, Reni, Surathota, Malari, Lohajung- Bedni (Tak 1997), Dibrugheta, Dharansi, Jhandidhar, Satkula, Latakharak, Beltakharak (Sathyakumar 2003), Mandal, Pipalkoti, Joshimath, Ghat, Gwaldam, Narainbagrh (ZSI Survey 2004), Tunganath peak (Singh 2005a), Chenab Valley (Bhattacharya & Sathyakumar 2007). Champawat (ZSI Survey 2005). Dehra Dun : (Osmaston 1935, George 1957, Wright 1957, Bhatnagar & Misra 1972a, Tak 1995), New Forest (Mohan 1996), Asan Barage (Gandhi & Singh 1995), Ubiquitous (Singh 2000), Shiwaliks of SW Dehra Dun (Tak & Sati 2007). Haridwar : Ranipur, Bhimgoda, Jhilmil Jheel CR (ZSI Surveys 2004-06). Naini Tal (Hudson 1930,

Tak 1995), Mohaan, Lalkuaon, Ranibagh, Bhimtal (ZSI Survey 2005). Pauri (Tak 1995). Pithoragarh (Tak 1995), Lilam – Burfu (Tak 1997), District survey- 2005, Dhauli river basin- 2004, Gori river basin- 2002, Panchchuli expedition- 1998, Goriganga valley- 1994, Kali river basin- 1989 (Tak & Sati 2006). Rudraprayag : Kedarnath Sanctuary (Green 1986, Myers & Singh 2006), Chopta and Duggalbitta (Bannerjee 1993), Gandhari, Augstyamuni, Shivpuri, Guptakashi, Ukhimath, Dugalbitta, Chopta, Soak Kharak (ZSI Survey 2004). Tehri : Bheling valley (Searight 1926), Lamprey (1954), (Tak 1995), Ranichauri, Nagni (ZSI Survey 2005), Tehri Dam Submergence Zone (Adhikari *et al.* 2005). Udham Singh Nagar : Aam Pokhara-Kashipur, near Panthnagar, Haripur Dam site & Dineshpur (ZSI Survey 2005). Uttarkashi (Tak 1995), Govind NP : Throughout (Tak *et al.* 2004), Sankri to Khabugad (Singh 2005b), Harsil (ZSI Survey 2005). CTR (Lamba & Bhatnagar 1977-79, Lamba undated, Khatri 2004, internet list, ZSI Surveys 2002-05). RNP (Narang 1994, Pandey *et al.* 1994), Motichur area (Bhatt & Sharma 2000).

Status : Widespread resident. Schedule IV (BNHS 2002).

Remarks : The Jungle Crow is a very widespread Asian species of crow. They are very adaptable and are able to survive on a wide range of food sources making them capable of colonizing new areas due to which they have often been considered a nuisance, especially on islands. They have a large bill and due to this they are also sometimes called Large-billed Crow. It has an extensive range and stretches from the northeastern Asian seaboard to Afghanistan and eastern Iran in the west, and south to India down to Malaysian peninsula in the southeast. The Philippines also have a regional form. It prefers open country in the south of its range where it is not in competition with the Raven and Carrion Crow of the north.

743(1059-1060) *Corvus corax* Linnaeus, 1758
Common Raven

1849. *Corvus Tibetanus* Hodgson, *Ann. Mag. Nat. Hist.* 3 : 203 (Tibet).

1922. Baker, *FBI* No. 2, 1 : 23.

Diagnostics : Size : Kite +; c. 58-69 cm. Sexes alike. Also known as 'Northern Raven' is an

enlarged heavy replica of Jungle Crow : glistening jet-black with massive bill; and hoarse wooden bell-like caw. It is distinguished from most crows by large size; heavily bill and prominent throat feathers; and in flight by the long wedge-shaped tail; projecting head; and long 'fingers'. Adult has glossy black plumage, which is dull black in juvenile.

Races : *C. c. tibetanus* of the Himalayas is separated from *C. c. subcorax* of the W plains and foothills by larger size and longer throat hairs.

Habitat : Race *subcorax* <600 m. Desert and semi-desert. Race *tibetanus* (2500 m) 3500-5000 m (8240 m). Dry stony trans-Himalayan desert.

Distribution : Uttarakhand : Chamoli : Niti area (Osmaston 1921), (Tak 1995). Pithoragarh : Gori river basin- 2002 (Tak & Sati 2006). Rudraprayag : Chopta and Duggalbitta (Bannerjee 1993), Kedarnath Sanctuary (Myers & Singh 2006).

Status : Sparse local resident. Schedule IV (BNHS 2002).

Remarks : It is found across the northern hemisphere, it is the most widely distributed of all corvids. There are eight known subspecies with little variation in appearance. However, recent research has demonstrated significant genetic differences between populations from different regions. Common Ravens typically live about 10 to 15 years in the wild, although lifespans of up to 40 years have been recorded. Young birds may travel in flocks, but later mate for life, with each mated pair defend a territory. It has coexisted with humans for thousands of years, and in some areas has been so successful that it is considered a pest. Part of its success comes from its omnivorous diet; it is extremely versatile and opportunistic in finding sources of nutrition, feeding on carrion, insects and food waste, in addition to cereal grains, berries, fruits and small animals. Some remarkable achievements of problem-solving have been observed in the species, leading to the belief that it is highly intelligent. Over centuries, it has been the subject of mythology, folklore, art and literature. In many indigenous cultures, including those of Scandinavia, ancient Ireland and Wales, Bhutan and the northwest coast of North America, the Common Raven has been revered as a spiritual figure or god.

SUMMARY

The present chapter on aves deals with a total of 743 species of birds belonging to 311 genera, 75 families and 18 orders. This along with the earlier findings indicate that the state of Uttarakhand (Uttaranchal) supports the second highest number of bird species after Assam (750 species). Of these 743 species :

- 313 are resident, 98 resident with altitudinal movements, 119 winter visitor, 72 summer visitor, 8 passage migrant, 19 vagrant while the residential status of 114 species is not known for the state.
- 43 species have been listed under various threat categories (Critical : 8 species, Endangered : 3, Vulnerable : 14, and Near Threatened: 18) by the IUCN 2007.
- 58 species are listed under Schedule I, 615 under Schedule IV, one under Schedule I & IV, one under Schedule V of the Indian Wildlife (Protection) Act, 1972 (amended upto 2003).

- Eight species are Restricted Range Species RRS (4) and occur in endemic area number 4 i.e. Western Himalayas and one species is RRS (5) occurs in Eastern Himalayas.
- A total of 213 species are categorized as the Biome Restricted Species (BRS).

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REPTILIA

ARCHANA BAHUGUNA

Zoological Survey of India, Northern Regional Centre, Dehra Dun 248 195

E-mail : bahugunaarch_nandini@yahoo.co.in

INTRODUCTION

First consolidated work on reptiles of India was published by Gunther in 1864, further Malcolm Smith (1931, 1935, 1943) made outstanding contribution in reptiles in the form of "Fauna of British India". Since then, several scientists made notable contributions to the herpetology of India (Annandale 1907, 1914; Bhatnagar 1967, 1969, 1972; Prasad 1976; Dwivedi & Mathur 1978, Chopra 1979; Sanyal & Talukdar 1979; Gupta & Pande 1982, Murthy 1985; Lamba 1987, Osmaston & Sale 1989; Hussain 1995, Das 1991, 1995, 1997).

Waltner (1979) also gave a general account of geographical & altitudinal distribution of reptiles in the Himalaya: Husain (1995) has reported that in Western Himalaya there are altogether 70 species of reptiles belonging to 46 genera, 13 families and 3 orders, distributed in the area. Hitherto and Walton (1911) reported seven species (*Python morulus*, *Ptyas mucosus*, *Bungarus caeruleus*, *Naja naja*, *Ophiophagus hanna*, *Vipera russelli* and *Trimeresurus monticola*) from Dehra Dun. Bhatnagar (1969) reported *Elaphe radiata* from Doon valley and Doon Siwalik. Joshi and Kumar (1970) recorded five species (*Typhlops porrectus*, *Eryx johani*, *Python molurus*, *Ptyas mucosus* and *Naja naja*, while Gupta and Sinha (1978) recorded six species, viz. *Python morulus*, *Bungarus caeruleus*, *Ophiophagus hanna*, *Naja naja*, *Vipera russelli* and *Trimeresurus monticola* from Siwaliks. The records by Singh and Gupta (1979) were also same from eastern Dehra Dun. Sanyal *et al* in 1979 recorded three species, viz *Ptyas mucosus*, *Naja naja* and *Agkistrodon himalayanus* a high altitude species (between 2,134m and 4,877m) from Garhwal. Osmaston and Sale (1989) reported *Python morulus*, *Bungarus caeruleus*, *Naja naja* and *Ophiophagus hanna*

from the Rajaji National Park. In 1993, Husain and Ray reported the occurrence of *Lycodon jara* in the Rajaji National Park and Doon valley. Husain and Ray also reported in 1995, 38 species of snakes from Dehra Dun and Pauri Garhwal Districts. 28 species of snakes were reported by Husain and Tilak in 1995 from Rajaji National Park. Khati 2004 reported total 39 species belonging to 31 genera, 13 families under 3 orders from Corbett National Park in Uttarakhand (Table 1), representing more than 50% of reptile fauna from Uttarakhand.

Very little information is available about the distribution of turtles and tortoises in Uttarakhand. *Kachuga tecta* (Gray) has been reported from the river Ganga in the region (Siwalik) by Joshi and Kumar in 1970 and Gupta and Sinha in 1978. Rao (1998) reported 12 species of freshwater turtles from river Ganga from area Rishikesh to Kanpur. The turtles and tortoises described in the paper is based on local information, the distribution in the area as per literature records by Smith (1931), Gupta and Saxena (1979), Tikader and Sharma (1985), Murthy (1985) and Lamba (1987), Husain and Tilak 1995 and Rao (1998).

Nine species belonging to five families of lizards has been reported by Chopra (1995) from Raja ji National park and also reported by many workers from conservation areas of the State as well as from various districts of Uttarakhand (Table 1). Among lizard *Japalura kumaonensis* is restricted in Distribution to Districts of Kumon region whereas *Japalura major* is known to confine in Districts of Garhwal region. However *Laudakia tuberculata* shows its presence from District Dehra Dun to District Uttarkashi (from alt 1000m to 2498m, most common between altitudes 300-700 m). During survey it was observed that *Scincella himalayanum* is present throughout the

region and found to be very common at high altitudes in localities like Kanatal (District Tehri) and Nachiketa Tal, Harsil (District Uttarkashi).

During material examination, variations in dorsal scales (species describing character) have been noted in *Laudakia tuberculata* collected from various altitudes (Figs 8-11). The paper deals with 72 species (46 genera) belonging to 14 families under 3 orders (based on collection, local enquiries, sighted and reported by previous workers). Families of Sub order Serpentes; Boidae, Colubridae, Elapidae, Typhlopidae has been listed under Schedule IV of Wildlife (Protection) Act 1972. The status of various species listed is according to Wildlife Protection Act 1972 with amendments 2001 and Kumar and Khanna 2006 (for IUCN, CITES categories).

MATERIALS AND METHODS

The reptiles examined in this paper have been collected by survey parties of NRS, ZSI from various localities of districts of Uttarakhand. In the field, information has been taken wherever possible on the habits & habitats of the reptiles. Collection was made from bushes, soil, heap of rotten leaves or straw, burrows made on elevated banks of ponds & canals, dark corner of village huts, surface of barks, under stones, crevices of stones and aquatic bodies etc. The material was killed after collection by anaesthisising them with chloroform & then put into 5% solution of formaldehyde for fixation. A small incision (for bigger material) was made on the abdomen to ensure penetration of the solution inside. After fixation for two or three days, the materials along with the label containing the data of collection were taken out from the solution, & washed in water & then put in 90% alcohol for permanent preservation for the purpose of the study.

After observing variations by using hand lens, Scanning electron microscopy was done to find out the differences in dorsum scales of *Laudakia tuberculata* collected from Districts Uttarkashi and Tehri.

SYSTEMATIC LIST

Class REPTILIA

Order Crocodilia

Family GAVIALIDAE

1. *Gavialis gangeticus* (Gmelin)

Family CROCODYLIDAE

2. *Crocodylus plaustris* Lesson

Order Chelonia

Family BATAGURIDAE

3. *Hardella thurjii* (Gray)
4. *Kachuga kachuga* (Gray)
5. *Pangshura smithi* (Gray)
6. *Pangshura tectum* (Gray)
7. *Pangshura tentoria circumdata* Mertens
8. *Geoclemys hamiltoni* (Gray)
9. *Melanochelys tricarinata* (Blyth)
10. *Melanochelys trijuga trijuga* (Schweigger)

Family TRIONYCHIDAE

11. *Lissemys punctata punctata* (Lacepede)
12. *Chitra indica* (Gray)
13. *Aspideretes gangeticus* (Cuvier)

Order Squamata

Suborder Sauria

Family GEKKONIDAE

14. *Cyrtodactylus fasciolatus* (Blyth)
15. *Cyrtodactylus lawderanus* (Stoliczka)
16. *Hemidactylus brooki* Gray
17. *Hemidactylus leschenaulti* Dumeril and Birborn
18. *Hemidactylus flaviviridis* Ruppell

Family AGAMIDAE

19. *Japalura kumaonensis* (Annandale)
20. *Japalura major* (Jerdon)
21. *Calotes versicolor* (Daudin)
22. *Laudakia tuberculata* Hardwicke and Gray

Family SCINCIDAE

23. *Eumeces taeniolatus* (Blyth)
24. *Mabuya carinata* (Schneider)
25. *Mabuya macularia* (Blyth)
26. *Riopa punctata* (Linnaeus)
27. *Scincella himalayanum* (Günther)

Family LACERTIDAE

28. *Ophisops jerdoni* Blyth

Family VARANIDAE

29. *Varanus bengalensis* (Linnaeus)
30. *Varanus flavescens* (Gray)

Suborder Serpentes**Family TYPHLOPIDAE**

31. *Ramphotylops braminus* (Daudin)
32. *Typhlops diardi* Schlegel
33. *Typhlops porrectus* Stoliczka

Family BOIDAE

34. *Python morulus morulus* Linn
35. *Python morulus bivittatus* Linn
36. *Eryx conicus* (Schneider)
37. *Eryx johani johani* (Russell)

Family COLUBRIDAE**Subfamily COLUBRINAE**

38. *Ahaetulia nasutus* (Lacepede)
39. *Argyrogena ventromaculatus* (Gray and Hardwicke)
40. *Coelognathus helena helena* (Daudin)
41. *Coelognathus radiata* (Schlegel)
42. *Orthriophis hodgsoni* (Gunther)
43. *Liopeltis calmaria* (Gunther)
44. *Ptyas mucosa* (Linnaeus)
45. *Sphalerosophis articeps* Fischer
46. *Lycodon aulicus* (Linnaeus)
47. *Lycodon jara* (Shaw)
48. *Lycodon mackinnoni* Wall
49. *Lycodon striatus* (Shaw)
50. *Oligodon arnensis* (Shaw)
51. *Trachischium fuscum* (Blyth)
52. *Trachischium leave* Perracca
53. *Sibynophis sagittarius* (Cantor)
54. *Amphiesma platyceps* (Blyth)
55. *Amphiesma stolata* (Linnaeus)
56. *Xenochrophis piscator* (Schneider)
57. *Boiga trigonata* (Schneider)
58. *Boiga multifasciata* (Blyth)
59. *Boiga forsteni* (Dumeril and Birborn)

Subfamily HOMALOPSINAE

60. *Enhydryis enhydryis* (Schneider)
61. *Enhydryis seiboldii* (Schelgel)

Family ELAPIDAE

62. *Bungarus caeruleus* (Schneider)
63. *Bungarus fasciatus* (Schneider)

64. *Bungarus walli* Wall
65. *Callophis maccellandi* (Reinherdt)
66. *Naja naja* (Linnaeus)
67. *Naja naja oxiana* (Eichwald)
68. *Ophiophagus hannah* (Cantor)

Family VIPERIDAE

69. *Vipera russelli* (Shaw)
70. *Echis carinatus* (Schneider)
71. *Gloydius himalayanus* Gunther
72. *Ovophis monticola* Lacepede

SYSTEMATIC ACCOUNT**Order Crocodilia****Key to the families**

1. Snout very long and slender (three times longer than the basal width); 27-29 teeth on eachside of the maxilla; 25-30 teeth on eachside of the mandible. The lower teeth interdigitating with the upper teeth and do not fit into pits or notches in the upper jaw; the supratemporal fossae are large. The two rows of scutes present on the back and there is no scutes on the balley GAVIALIDAE
2. Snout not very long (not more than two times longer than its basal width); 16 –19 teeth on each side of the maxilla; 14-15 teeth on each side of the mandible; the lower teeth interlocking with the upper teeth and fit into notches or pits in the upper jaw; the supratemporal fossae are small; two or more rows of scutes on the back and no scutes on the bellyCROCODYLIDAE

Family GAVIALIDAE**Genus *Gavialis* Oppel 1811****1. *Gavialis gangeticus* (Gmelin)****Long-snouted Crocodile, Gharial**

1789. *Lacerta gangeticus* Gmelin, *Systema Nature*. 1057.

1931. *Gavialis gangeticus* Smith, *Fauna Brit. Ind.*, : 39.

Material Examined : Material was not collected but sighted at Corbett Tiger Reserve (District : Nainital). Description is based on literature (Smith 1931, Sharma 1998).

Etymology : "Gavial" is a mis-spelling of the word "Gharial" (derived from the Hindi *ghariyal*)

that refers to the *ghara* (Hindi for "pot") - a swelling around the nostrils of mature males, *gangeticus* means "of the Ganges (River)", where *-icus* means "belonging to" (Latin) *Gavialis gangeticus* is both taxonomically as well as structurally unique, having the longest and the most slender snout of all crocodilians. The snout of adult measures about 75-90cm.

Description : Adult : The body colour of adult gharial varies from light to dark olive dorsally, with dark cross bands. There are many indistinct black spots on the dorsal surface. The ventral surface is white or yellow in colour. Young ones are with lighter colour, spotted or barred with dark brown. The largest gharial authentically recorded measured 7m (Steel 1989). Short (1921) reported 4.20 m is the upper limit for female. Adult male Gharial has a bulbous excrescence at the tip of the snout. Snout is almost $3^{1/3}$ times longer than its basal width. The length of snout of young is $5^{1/2}$ times than the basal width.

Body is strongly armoured with nuchal and dorsal scutes. They are in 21 or 22 transverse rows of dorsal scutes, each row with 6 scutes, the outermost rows are sometimes indicated by less prominent scutes or keels; two small post- occipital scutes are also present; 18-20 double crested caudal scutes, 21-24 single crested caudal scutes and 30-31 transverse rows of ventral scales. The tail is initially double crested with 21-24 crests at the end (Wermith, 1953; Brazaitis, 1973). Fingers and toes are partially webbed (median finger one third and outer fingers two third webbed), with strongly serrated fringes. There are more than 24 sharp pointed teeth on each side of the jaw.

Distribution : India : Historically the gharial was abundant in all the large river systems of the north Indian subcontinent divided in a western (Indus) and eastern population (Mahanadi, Ganges, Brahmaputra, Kaladan, Irawaddy). The gharial is now restricted to scattered, isolated populations in India. In India, the breeding population of the gharial is found in two sites the Chambal and a 5 km stretch of the Girwa River in Katarniaghat Wildlife Sanctuary on Indo-Nepal border. In Uttarakhand it is restricted to Corbett Tiger Reserve.

Elsewhere : Its range extended throughout the Gangetic plain, west to the Indus River in Pakistan,

northwards and northeastwards to Nepal and Bhutan, eastwards to Myanmar and Southwards to Orissa in India (Neill, 1971). Outside India the species is restricted to scattered, isolated population in Nepal and Bangladesh. It has been reported to be now extinct in Burma and Pakistan (Behara and Singh, 1978)

Remarks : This is the oldest living crocodilian and its ancestry can be traced back in India up to Pliocene of the *Siwalik* hills and Narbada valley. Its ancestors were the strong rulers of the scene and one of them, *Rhamphosuchus crasidens* was a gigantic crocodilian reaching to a length up to 23 meters.

Riverine - more adapted to an aquatic life in areas of deep, fast-moving rivers. The gharial is poorly equipped for locomotion on land. It usually only leaves the water to bask and nest, both of which usually occur on sandbanks. *Gharial* feeds mainly on fish. Occasionally they supplement their fish diet by birds, dogs and other vertebrates. Nesting takes place from late March to mid-April in sand banks on the river-edge or in mid river. Between 18-40, elliptical eggs (85-90 mm long and 65-70 mm wide) are laid in quite deep nests.

Threats : Habitat modification and disturbance like flooding, fishing and the poaching of animal for skin, collection of eggs for food by some tribal are major threats to the survival of the species. Jackals, monitor lizards, birds of prey and larger Gharials, also predate both eggs and hatchlings. Recent report by IUCN says that the depleting number is due to irreversible habitat loss in India, because of construction of dam and irrigation canals. The nesting areas also severely affected due to sand mining.

Status : IUCN : EN C2a, IWPA Schedule I (II), CITES : I

Recently it has been declared critically endangered by IUCN (Ref. Times of India, Sep-14, 2007).

Family CROCODYLIDAE
Genus *Crocodylus* Gronovius 1763
2. *Crocodylus plaustris* Lesson
Snub-nosed crocodile, Mugger

1834. *Crocodylus plaustris* Lesson, in *Belang, Vov. Ind. Or., Zool.*

1890. *Crocodylus plaustis* Boulenger, *Fauna Brit. Ind.*, : 5.

1931. *Crocodylus plaustri* Smith, *Fauna Brit. Ind.*, : 47.

Material Examined : Material was not collected but sighted at Corbett Tiger Reserve (District : Nainital). Description is based on literature (Smith 1931, Sharma 1998).

Etymology : *Crocodylus* is derived from the Greek *krokodeilos* which means literally “pebble worm” (*kroko* = pebble; *deilos* = worm, or man) referring to the appearance of a crocodile, *palustris* means “marshy” or “swampy” (Latin), referring to extensive habitat where it is found and hence one of its common names “Marsh crocodile” “Mugger” is a distorted Hindi word which means “water monster”.

Description : Juveniles are olive green with dark crossbands on the tail and dark spots on the sides of the body. The pattern becomes obscure with age, the old adult being an almost uniform dark grey or olive above. There is no external characteristics for sexual dimorphism. The sexes however can be distinguished by their body sizes, males are heavier and larger, upto 5 m and female upto 3m. Maturity is reached at 2.7 m in males and 1.6 m in females.

The mugger, a large moderately broad-snouted crocodile reaches a length of 5 m. Snout. $1\frac{1}{3}$ to $1\frac{1}{2}$ as long as broad at the base and is generally devoid of ridges in front of the eyes.

Four bulges on the snout are arranged to form quadrate.

Two pairs of post-occipital scutes in transverse series, four large nuchals form a square with a small one on each side of the anterior row. The two median dorsal scute rows are strongly widened; most of the 16-17 transverse rows consist of four scutes, with some of six. Ventrals are in 28-32 transverse rows.

Fingers are webbed at the base, outer two toes are webbed to the end of the digits; in two middle toes the webbing is not up to the end of the digit; inner toes are half webbed. Outer aspects of the limbs bear serrated fringes. Upper jaws bear 17 to 19 sharp teeth on each side (5 in each premaxilla).

Distribution : India : Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Madhya Pradesh,

Maharashtra, Orissa, Gujarat, Rajasthan, Uttar Pradesh, Uttarakhand (in Corbett Tiger Reserve), Bihar, Haryana and West Bengal, except the state of Jammu and Kashmir, Himachal Pradesh and Punjab in the extreme north –west desert regions. The eastern limit of distribution extends beyond the Darrang district into Arunachal Pradesh.

Altitudinal distribution : In Sri Lanka, a single specimen was recorded at Kandy 450m above sea level (Whitaker and Whitaker, 1979) and in India; the highest confirmed record is at Corbett Park, 420 m above sea level. In Nepal most records from bodies of water below 200m.

Elsewhere : Bangladesh, Iran, Nepal, Pakistan and Sri Lanka.

Remarks : They prefer still water with depth of 3-5m. It can adjust itself into wide range of habitats like marshes, swamps, lakes, rivers; hill streams small jungle pools, saltwater lagoons, irrigation channels and man made reservoirs. Sympatric with *Gavialis gangeticus* in some areas of India, but usually separated by habitat. It is known to dig burrows for shelter and migrate a long distance over land for suitable habitat.

Threats : Habitat loss because of dam construction for hydroelectric power and irrigation canals. In India main threats to survival of Mugger are: fishing practices like use of net of nylon grill which usually set out in the evening and taken in the next morning when trapped crocodiles are clubbed to death; egg predation for food by human; mongoose, jackals, monitor lizards and sloth bears; hatchlings predation by birds like herons and storks; natural calamities like flooding; habitat destruction; poaching of crocodiles for medical use of crocodile parts and their eggs by human beings.

Status : Historically the species occupied a variety of habitats and once very common throughout its range (Short 1921), but now regarded as endangered in most of its former range, rare in Iran and near extinction in Pakistan. IUCN Red List : VU A1a, C2a (VULNERABLE) WPA Schedule I (II), CITES I

Order Chelonia

Family BATAGURIDAE (Asian pond turtle)

Turtles with well developed axillary and inguinal buttresses contacting the pleurals and

biconvex eighth cervical vertebrae. Recent species are aquatic, semiterrestrial or terrestrial, with scaled limbs and forehead. Limbs are with or without webs.

Asian pond turtles may be herbivorous or carnivorous, though the majorities are omnivorous.

Key to the Genus of family Bataguridae

1. Vertebral shields short-sided anteriorly
Axillary and inguinal buttresses well developed and extend almost upto vertebral shields; alveolar surface of jaws broad with one or two median ridges.
 - Fourth vertebral shield moderate not longer than broad, not longer than third vertebral shield; fore limbs with 5 claws *Hardella*
 - Fourth vertebral shield elongate, large, much longer than third vertebral shield; fore limbs with 5 claws *Kachuga*
2. Axillary and inguinal buttresses short do not extend even half way along the costal plates. Alveolar surface of jaws broad or narrow, without a median ridge *Geoclemys*
 - Vertebral shields short sided posteriorly.
3. Plastron united to carapace by a suture a Body temporal arch and squamosal bone present; upper jaw feebly notched at the middle; skin of hinder part of head divided into very largeshields; hind limbs flattened; fingers half webbed; more than half webbed or fully webbed *Melanochelys*

Genus *Hardella* Gray 1870

3. *Hardella thurjii* (Gray)

Brahminy River Turtle, Crowned River Turtle

1831. *Emys thurji* Gray, *Illus. Indian Zool., Pt. 7 ; Syn Rep.*; 22, 72 (type locality : India)

Material Examined : Material was not collected. Description based on literature (Smith 1931, Sharma 1998, Tikader and Sharma 1985, Sharma 1998, Das 1991, 1995)

Description : Completely aquatic tortoise with sexual dimorphism. Female: length 65 cm, Male : length 20 cm.

General dorsal colouration : dark brown black with a yellow margin in juveniles and adults.

This yellow margin fades out in aged individuals. The keel and the inner margins of the three costals are black. Ventrums are pale yellow with two large black spots on each side on the plastral bridge. Anterior mid portion of the plastron is with a blackish tinge. Abdominal scutes are with dark, large black spots. Other parts of the plastron are also spotted with black. Head is dark – brown to black; curved orange yellow bands are present on top of the snout, below the nostrils upto the eyes, behind the eyes emerging on the neck above the tympanum and along the rami of the lower jaws.

Limbs are brownish, margined with yellow behind. Limbs are fully webbed and have narrow transversely enlarged scales. Forelimbs are with five claws. Tail remains short throughout life.

The head is moderately large with pointed and projecting snout. The skin of the posterior portion of the head is divided into a large number of small scales arranged in transverse rows. The carapace is moderately depressed and unicarinate and the posterior portion of each vertebral shield has knob like structure. Vertebrae are elongate and somewhat hexagonal with a short anterior margin. The posterior portion of the carapace is slightly serrated. Nuchal shield is not very large and is broadest posteriorly. The first vertebral is generally longer than broad and its anterior margin is shorter than the posterior. Second to fourth vertebrae are generally broader than long in young individuals but are as broad as long and much narrower than the costals in the adult specimens. The plastron is as long as the carapace, angulate laterally in juveniles, truncate anteriorly; its hind lobe is much narrower than the opening of the shell, considerably shorter than the width of the bridge, notched posteriorly. The longest median suture is between the abdominal shields and the shortest between the gular, axillary and inguinal shields large. Plastron is intimately united to carapace by a suture. The axillary and inguinal buttresses are prominent and extend to the vertebrae.

Distribution : India : Northern India (Ganges-Brahmaputra river systems)

Elsewhere : Sindh in Pakistan, Sylhet (Bangladesh), Nepal.

Remarks : Threat : Overexploitation of adults and their eggs by animal predators and by man for

food; habitat destruction. Entirely aquatic and herbivorous, It avoids fast flowing river. Eggs are oval in shape.

Status : IUCN : Vulnerable (VU A1cd + 2cd v2. 3).

Genus *Kachuga*

Neural body shields are hexagonal with short anterior part. Carapace and plastron are joined with suture. Axillary and inguinal buttresses of plastron are strongly developed. The axillary buttress has a connection with the first rib. Entoplastron is present anterior to humero-pectoral suture. Skull is with a bony temporal arch. Jaws have broad alveolar surfaces and upper jaw is with a prominent median ridge. Fourth vertebral shield is much longer than broad, longer than third. Skin of the posterior upper part of head is divided into many shields. Limbs are with fully webbed digits.

Fossils of this genus have been recovered by previous workers from Siwalik hills and Narbada valley (Sharma 2002).

At present seven species of this genus present in India and out of them three resided in Uttarakhand.

Key to the species of the Genus *Kachuga*

1. Broad suture is formed between the third and fourth vertebral shields. The fourth vertebral shield overlaps 4 neural bones, which are always longer than broad.
 - Second vertebral shield with a straight transverse posterior margin; humeropectoral suture is curved or forming an obtuse angle. Alveolar surface of upper jaw is very broad, the median ridge almost near mid of jaw, choanae behind the level of the eyes *K. kachuga*
2. Fourth vertebral shield is pointed interiorly, having a slight contact with the third vertebral and overlap five neural bones.
 - 24 marginal shields are present; posterior margin of carapace is not or feebly serrated. Third vertebral shield elongate, quadrangular or pentagonal (in young) and with almost straight posterior border. The keel of the third vertebral shield terminates in a rounded projection *P. smithi*

- Third vertebral shield is not much elongate, always pentagonal and pointed behind. The keel of the third vertebral shield terminates in a backwardly projecting spine. Second vertebral shield longer than third *P. tecta*

4. *Kachuga kachuga* (Gray)

Bengal-Roofed Turtle or Painted roof Turtle, Sail Terrapin

1831. *Emys kachuga* Gray, *Illus. Ind. Zool.* pt. 5, pl. 9 & 74 (type loc. N. India).

1831. *Emys denfata* Gray, (in part), *Syn. Rept.*, 20

1831. *Emys lineata* Gray, *Syn. Rept.* 23 (based on two unpublished drawings of Hardwicke's Nos. 5 & 6 in *Brit. Mus.*; type loc. India).

Material Examined : Material was not collected and not observed during present surveys, but they are available in previous collections. Description based on literature (Smith 1931, Tikader and Sharma 1985, Sharma, 1998, Das 1991)

Description : Moderately large turtle in which also females are larger than males (maximum length up to 39 cm).

General dorsal colouration is olivaceous or brownish. Ventrums are yellowish. Neck is light brown, with seven reddish longitudinal stripes. Lateral aspects of head bluish; throat with a pair of oblong red or yellow markings. Top of head in male has a brilliant red colour during the breeding season.

The head is moderately long, snout is pointed, slightly upturned and shorter than the orbit and projecting much beyond the lower jaw. Skin of the posterior portion of head is divided into shields. Alveolar surface of jaws is very broad. The upper jaw with a strong and prominent median ridge. Upper jaw is feebly bicuspid in the adult individuals. The carapace is depressed unicarinate. The keel is interrupted and remains most prominent upon the second and third vertebral shields.

Nuchal shield is moderate in size, broadest at the posterior aspect. First vertebral shield as long as broad; second vertebral shield broader than long in the young, about as broad as long in the adult, longer than the third vertebral, with which it forms a straight transverse suture; fourth vertebral is

longest and forms a broad sutural margin with the third vertebral. The plastron consists of paired gular, humeral, axillary, pectoral, abdominal, inguinal, femoral and anal shields. The longest median plastral suture is between the abdominal shields, the shortest between the gular; humero-pectoral suture curved or forming an obtuse angle; inguinal shield large, axillary smallest.

Limbs are with fully and broadly webbed digits and have narrow, transversely enlarged scales. Forelimbs are provided with five claws. Tail remains quite short throughout life

Distribution : India : Ganga river system of Bengal, Bihar and Uttar Pradesh.

Elsewhere : Bangladesh and Nepal.

Remarks : The species is entirely aquatic and inhabits freshwater bodies. It is mainly herbivorous. Eggs are laid on the sandy banks of Ganga during March.

Threats : Threats are mainly due to overexploitation of adults and eggs for food and habitat destruction.

Status : Generally protected by legislation throughout its range but the conservation measures are not adequate. IWPA 1972 Schedule I, IUCN : CR A1cd :

5. *Pangshura smithi* (Gray)

= *Kachuga smithii* (Gray)

Brown River Turtle, Smith's Terrapin

1863. *Batagur smithi* Gray, *Proc. Zool. Soc.* 253 (type loc. Chenab River, Punjab; Brit. Mus.)

1890. *Kachuga smithi*, Boulenger, *Fauna Brit. Ind.*, 42.

1907. *Kachuga sylhetensis* Annandale, *Rec. Ind. Mus.*, 1 : 171.

Material Examined : Material was not collected and not sighted during present surveys. They are reported by previous workers (Table 1). Description is based on literature (Tikader and Sharma 1985, Sharma 1998, Das 1991, 1995).

Description : A small turtle (maximum length of 23 cm) with small head.

General dorsal coloration is pale olive. Vertebral keel is blackish. Ventrums are yellow and each plastral shield is provided with a dark brown tinge. In many individuals the shields of plastron are

completely black with narrow white borders. Top of head is black. Prominent reddish or pink spots are present behind the eyes. Neck has got light brown longitudinal stripes. Snout is pointed, shorter than the orbit and projecting much beyond the lower jaw. Skin of the posterior portion of head is divided into shields. Alveolar surface of jaws is very broad, that of the upper jaw with a prominent median ridge, which is nearer to the inner than the outer margin. Upper jaw is not notched at the middle.

Carapace and plastron features : The carapace is depressed, with obtuse, interrupted, vertebral keel; its posterior margin may be regular or in certain cases feebly serrated. Nuchal shield is not very large, broadest at the posterior aspect. First vertebral shield is longer than broad in the adult; second shortest, broader than long and almost with a straight posterior aspect, third longer than broad, pentagonal in the young but sub quadrangular in the adult, its posterior border is almost straight; fourth vertebral longest, with a narrow, pointed anterior margin forming a narrow suture articulation with the third vertebral; fourth vertebral distinctly broader than long and much broader than other vertebral shields. The plastron consists of paired gular, humeral, axillary, pectoral, abdominal, inguinal, femoral and anal shields. It is almost equal in length to the carapace. The longest median suture is between the abdominal shields.

Limbs are with fully webbed digits and have transversely enlarged scales. Fore limbs are provided with five claws. Tail remains quite short throughout life.

Distribution : India : Ganga-Brahmaputra river system, northern India.

Elsewhere : Indus river systems in Pakistan, Nepal and Bangladesh. Pakistan: Sind river system. Records are also available from Bangladesh.

Remarks : The species is aquatic and a rapid swimmer. It is omnivorous. Lays five to eight eggs on the sandy banks of river in a single clutch; eggs measure 33 mm. in length and 24 mm. in width.

Threats : Population is considerably reduced in recent years owing to mass exploitation for food and habitat destruction.

Status : IWPA 1972 : not listed, IUCN LR/nt.

**6. *Pangshura tectum* (Gray)
= *Kachuga tecta* (Gray)
North Indian Roofed Turtle**

1831. *Emys tectum* (*tecta*) Gray, *Syn. Rept.*, 23, p1. 5 (type loc India).

1831. *Emys trigibbosa*, Lesson, *Bull Sc. Nat.*, 25 : 120.

1890. *Kachuga tectum*, Boulenger, *Fauna Brit. Ind.*, : 43.

1931. *Kachuga tecta* Smith, *Fauna Brit. Ind.*, 1 : 26-128.

Material Examined : Material was not collected. Reported by local enquiries and by previous workers (Table 1). Description based on literature (Tikader and Sharma 1985, Sharma, 1988, Das 1995)

Description : Small species and the females never reach more than 23 cm. in length, males are still smaller.

General dorsal coloration is olivaceous with minute black spots and orange or reddish vertebral stripe. The vertebral stripe is most distinct on the anterior dorsum extending up to first three shields. In the adults coloration becomes dark olive-brown and the spots become inconspicuous. The rim of the shell remains pinkish-yellow throughout the life. Ventrums are reddish, yellowish or reddish-yellow with large dark brown or almost black spots. Head is blackish, temporal region orange or yellow; neck is blackish with thin yellow longitudinal lines, limbs dark olive with yellow spots. The head is moderately small, pointed, and shorter than the orbit. Skin of the posterior part of head is divided into large shields. Alveolar surfaces of jaws quite broad, upper jaw with a prominent median ridge, which is nearer to the inner than the outer margin. Upper jaw is not notched.

The carapace is elevated and rounded in adult individuals. Vertebral keel is prominent, abruptly transforms into a strong spinous process at the posterior margin of the third shield. Posterior margin of the carapace is generally not much serrated. Nuchal shield is usually broadest at the posterior margin; first vertebral shield is variable in shape, with straight lateral margins in juveniles. The anterior portion of this shield becomes narrower in the adults; second vertebral shield is generally longer than the third, and obtusely pointed posteriorly; third vertebral is pointed behind and touches the pointed extremity of the fourth

vertebral; fourth vertebral shield is much longer than the other vertebral shields; fifth vertebral shield is broader than long and is much broader than other vertebrals.

The plastron consists of paired gular, humeral, axillary, pectoral, abdominal, inguinal, femoral and anal shields. Plastron is almost as long as the carapace, angulated laterally, truncate anteriorly; hind plastral lobe is smaller than the shell opening, notched posteriorly, its length is slightly less or almost equal to the width of the plastral bridge; the longest median suture is between the abdominal shields, the shortest between the gular or the anal; axillary and inguinal shields are almost equal.

Limbs are with fully and broadly webbed digits and have transversely enlarged scales. Tail is short.

Distribution : India : Ganga and Brahmaputra river systems.

Elsewhere : Pakistan : Sind river system. Fossils have been recorded from the Pleistocene deposits of the Siwalik Hills.

Remarks : Fully aquatic, poor swimmer and inhabits freshwater bodies with plenty of aquatic vegetation. It feeds chiefly on vegetable matter.

Threats : Major threats due to over exploitation (eggs as well as adults) for food, habitat destruction, disturbance in the nesting areas and the scarcity of food.

Status : IPWA 1972 : Schedule I, IUCN status : Not available.

**7. *Pangshura tentoria circumdata* Mertens
South Indian roofed Turtle**

1969. *Kachuga tentoria circumdata* Mertens Eine neue Rasse der Dachschildkröte, *Kachuga tecta*, Senckenbergiana *biol.*, 50(1/2) : 23-30.

Material Examined : India, Uttarakhand, District Haridwar, Banganga, 1 ♂, 17.x.08, coll A. Bahuguna and Party (Reg no. 86).

Diagnostic character : The length of this small subspecies reaches upto 23 cm. It is similar to *Kachuga tentoria tentoria* from which it differs in general colouration and in having pink ring along the peripheral marginal junction. The carapace is olive brown in colour, dorsal keel is deep red. Plastron is yellow, with one black spot on each

plastral shield. Neck is with few distinct stripes. Limbs are devoid of spots and markings. Back side of the eye is spotted with pink.

Distribution : India : Madhya Pradesh, Rajasthan and Uttar Pradesh (Ganga river system), Uttarakhand.

Aquatic species and inhabits slow running water (still water bodies on the river side). It survives mainly on aquatic vegetation. Its nesting season is from late October to late December and nests are dug on the sandy river banks and sometimes on dead leaf litters (Tikader and Sharma 1985, Das 1991, 1996, Sharma 1998.).

Remarks : The species is reported for the first time from Uttarakhand.

Population trend : Decline of more than 20% population in last 10 years

Threats : Habitat destruction, consumption for eggs, meat and shells.

Status : IUCN : Vulnerable (in India) (www.cites.org/eng/cop/12/prop/E12-P24.pdf).

Genus *Geoclemys* Gray

1855 *Geoclemys* Gray (in part), *Cat. Sh. Rept.*, 1 : 17.

The main generic characters are: vertebral shields short-sided anteriorly, union of plastron to carapace by a suture; axillary and inguinal buttresses are short; entoplastron is anterior to the humero-pectoral suture. Skull is with a bony temporal arch; quadro-jugal is separated from the post orbital by the jugal. Alveolar surfaces of jaws are very broad and is devoid of median ridge. Skin of the posterior portion of head is divided into prominent shields. Digits are fully webbed. Tail very short. This genus is monotype.

8. *Geoclemys hamiltoni* (Gray) North Indian Freshwater tortoise or Black spotted pond turtle

1831. *Emys hamiltoni* Gray, *Syn. Rept.*, 21 & 72 (type loc. India).

1885. *Clemmys palaeindica*, Lydekker, *Paleont. Ind.*, 3(10) : 178, pl. 21.

1931. *Geoclemys hamiltoni*, Smith, *Fauna Brit. Ind.*, 1 : 111 & 112.

Material Examined : Material was not collected and not sighted during present surveys,

but they are available in previous collections at NRS, ZSI from localities of Uttarakhand. Description based on literature (Gray 1825, Tikader and Sharma 1985, Das 1991, Sharma, 1998)

Description : Large species, length reaching up to 31 cm. The head is large, broad, snout rounded, as long as the orbit and slightly projecting beyond the lower jaw. Skin of the posterior portion of head is divided into large shields. The carapace is tricarinate, strongly convex with three interrupted keels in addition to the vertebral and costal keels; posterior margin serrated. The nuchal shield is not very large, broadest at the posterior aspect. First vertebral shield longer than broad; second and third vertebrae about as broad as long in the adult individuals and reported to be broader than long in juveniles but these are narrower than the costal.

Plastron consists of paired gular, humeral, axillary, pectoral, abdominal, inguinal, femoral and anal shields. Plastron is strongly attached to the carapace by suture. Axillary and inguinal buttresses are strong but short and extend only up to the outer ends of the costal shields. Entoplastron is situated quite anterior to the humeropectoral suture. Plastron is almost equal to the carapace in length, angulated laterally, truncate anteriorly, posterior plastral lobe is much narrower than the opening of the shell and as long as the width of the plastral bridge, deeply notched posteriorly, the longest median suture is between the abdominal shields and shortest between the anal or the humeral, axillary and inguinal shields large.

Limbs are with fully-webbed digits and have transversely enlarged scales. Tail quite short in comparison to body, covered below with small granular scales. General dorsal coloration is dark brown to black and richly spotted and streaked with deep yellow. Soft parts dark brown to black with numerous round yellow spots, which are largest on the head and neck.

Distribution : India : Ganga and Sind river systems.

Elsewhere : Pakistan (Sind). Fossils have been recorded from the Siwalik Hills.

Remarks : The species is absolutely aquatic and prefers to live in calm shallow and clear water. The

species is carnivorous. Its diet mainly consists of snails. In captivity it relishes raw meat and fish but rejects any vegetable matter. Nothing is known about its breeding habits.

Threats : Overexploitation of their eggs and adults for food. Habitat destruction because of construction of hydro-electric dams and barrages. Nesting area are lost for commercial removal of sand and cleaning of riverside aquatic vegetation. This causes scarcity of food sources and exposes the banks to soil erosion.

Status : IWPA 1972 Schedule 1, IUCN VU A1d+2d.

Genus *Melanochelys* Gray

1869. *Melanochelys* Gray, *Proc. Zool. Soc. London*, 187.

Plastron united to carapace by a suture. Carapace is tricarinate; vertebral shields short-sided posteriorly. Skull is with a bony temporal arch; squamosal bone is present; ventral end of jugal is narrow, alveolar surfaces of jaws narrow, without median ridge; choanae on a level with the anterior portion of the orbit; upper jaw feebly notched at the middle; skin of the hinder part of head divided into very large shields; hind limbs flattened. Fingers half webbed, more than half webbed or fully webbed; toes with rudimentary webs. Tail short.

Key to the species

1. Carapace elongate, strongly arched, tricarinate; plastron is yellow
..... *tricarinata*
2. Carapace depressed, tricarinate; plastron is blackish, generally with a yellow margin
..... *trijuga*

9. *Melanochelys tricarinata* (Blyth)

Three Keeled tortoise or Tricarinate Hill Turtle

1856. *Geoemyda tricarinata* Blyth, *J. Asiat. Soc. Bengal*, 24 : 714 (type locality Chaibasa district, Chota Nagpur; Ind. Mus.).

1980. *Chaibassia theobaldi*, Boulenger, *Fauna Brit. Ind.*, : 28.

1931. *Geoemyda tricarinata*, Smith, *Fauna Brit. Ind.*, 1 : 95-96.

Material Examined : Material was not collected in the present surveys but available at

NRS, ZSI collection. Reported by many workers (Table 1). Description based on literature (Tikader and Sharma 1985, Das 1991, 1995, Sharma 1998).

Description : Length : 17 cm. The head is moderately small, snout shorter than the orbit, truncate, upper jaw feebly notched at the middle.

Dorsum is dark-plum colored with light brown keels (with dark brown outlines). Ventrums are yellowish brown. Head and limbs dark plum or blackish above; a broad red stripe on each side of the head, starting from the nostril, passing above the eye and the tympanum; a similar band below the angle of the mouth, along the inferior margin of the lower jaw. Limbs with or without yellow spots.

Posterior portion of head is divided into large shields. The carapace is much elongated, arched and with steep sides in fully-grown up males; with three obtuse keels; posterior border smooth, or feebly serrated. Second neural plate is octagonal; whereas other succeeding neural plates are narrow on the posterior border. Nuchal shield is not very large; first vertebral shield is broadest on the anterior margin; second, third, and fourth vertebral broader than long, narrower than the costal shields.

Plastron is intimately attached to the carapace by a suture, with short axillary and inguinal buttresses, which reach to the outer margins of the costal plates. Entoplastron intersected by the humeropectoral suture. Plastron is usually as long as the carapace. Hind plastron lobe is narrower than shell opening, longer than the width of the bridge, notched posteriorly; the longest median suture is between the abdominal or the pectoral shields, the shortest between the humeral or the femoral, axillary shield usually present, inguinal shield is usually missing.

Limbs are with long claws, fingers half webbed, toes with rudimentary webs. Front part of arms with enlarged, squarish somewhat pointed scales; hind limbs flattened. The anterior margins with keels and enlarged horny scales. Tail is short.

Distribution : India : Bihar (Chotanagpur), West Bengal, (Jalpaiguri district) and Assam (Dafla Hills and Bisnath Plain), Uttarakhand (Districts : Haridwar and Dehradun).

Remarks : Preferred habitats are hilly terrestrial areas. It is mainly herbivorous and generally 3 to 6 oval eggs are laid in a single clutch. Egg laying takes place throughout year.

Threats : Exploitation of eggs and adults for food by the local tribal and the habitat destruction are major threats to the survival of this species.

Status : Included in Wildlife (Protection) Act (1972), amended in 1991 in Schedule I (Part 2), IUCN : VU B1+2c.

10. *Melanochelys trijuga trijuga* (Schweigger) Indian Snail Eating Turtle

1814. *Emys trijuga* Schweigger, *Prodr. Monog. Chel.*, 41 (type loc : Java).

Material Examined : Material was not collected, but reported by previous workers (Table 1). Description based on literature (Tikader and Sharma 1985, Das 1991, Sharma 1998).

Description : Length of the species 23 cm. or slightly more.

Dorsum light brown in the juveniles and dark brown to blackish in the adults. The yellow margin of the plastron reported to be reduced in width by the advancement of age. Lateral keels are yellow in the young. Head is grayish or olivaceous with yellow or pink reticulations which are more prominent on the sides. But with advancement of age, these markings become obscured.

The head is shorter than the orbit, slightly projecting beyond the lower jaw. There is a notch in the middle of the upper jaw. Skin of the posterior portion of head smooth with large shields. The carapace is tricarinate, the lateral margins slightly reverted. Nuchal is moderately small; vertebral shields are variable in shape and proportions, as long as broad in juveniles or longer than broad in the adult, slightly narrower than the costals. Plastron is intimately attached to the carapace by a suture, with short axillary and inguinal buttresses which reach to the outer margins of the costal plates.

Entoplastron intersected by the humero-pectoral suture. The length of plastron and carapace is almost similar, truncate and emarginating anteriorly. The longest median suture is between the abdominal shields or the pectoral

shields, the shortest median suture is between the humeral shields. Axillary and inguinal shields are present.

Limbs are flattened and with completely webbed digits; front of arm and hinder part of leg with enlarged horny scales. Tail is very short.

Distribution : India : Goa, Karnataka, Kerala, Maharashtra and Tamil Nadu, Uttarakhand. It inhabits mainly the central portion of Indian peninsula.

Elsewhere : Nepal, Sri Lanka, Bangladesh, and Myanmar; found in the Maldive Islands and on Diego Garcia in the Chagos Islands, although possibly introduced (Boulenger, 1889 and Deraniyagala, 1939).

Remarks : Habits and habitat : Aquatic and completely vegetarian in habits.

Threats : The main threats to the subspecies are large-scale exploitation of eggs, adults for food and habitat destruction.

Status : Suitable conservation measures have not so far been implemented for the protection of this turtle.

Family TRIONYCHIDAE (Soft-shell turtles)

This family comprises the soft-shelled fresh water or mud turtles in which the head and neck is completely retractile. Their long and flexible neck which bends in a sigmoid curve in a vertical plane; ear is hidden. Carapace and plastron covered by a continuous layer of soft skin; without epidermal shields. The sides of the hinder portion of carapace are quite flexible; epi-plastron is separated from hypoplastron by a A- shaped entoplastron; plastron united to carapace by a ligamentous tissue; marginal bones of the carapace are missing or form an incomplete series, not attached to the ribs. Limbs are fully webbed, with only three claws on each foot. Only the three inner digits are clawed, forelimbs are semi paddle shaped.

Key to the Genera

1. Plastron with soft, semicircular flaps, which permit the retracted hind feet to be completely concealed. Marginal bones are present. Front part of the plastron is also flexible and suitable for the closure of the anterior shell opening.

Plastron with seven callosities in the adult. Carapace without definite pattern. Yellow spots may be present or absent. Snout comparatively short *Lissemys*

2. Plastron without flexible skin flaps and without cutaneous femoral valves. Marginal bones are not present. Plastron with four callosities only in the adult. Carapace with a definite pattern in juvenile specimens. Snout long.
3. Head small to moderate, its postorbital arch not reduced; neural shields do not separate all the costal plates, last one or two pairs of costal plates are in contact with one another medially.
 - Orbit nearer the temporal fossa than the nasal fossa; postorbital arch narrower than diameter of the orbit; proboscis as long as the eye opening *Trionyx*
 - Orbit nearer the nasal than the temporal fossa. a Postorbital arch two times broader than the diameter of the orbit; proboscis not much short and as long as the eye opening. *Chitra*

Genus *Lissemys* Smith 1931

11. *Lissemys punctata punctata* (Lacepede)
North Indian Flap-Shelled Turtle

1788. *Lissemys punctata punctata* Lacepede, La Tortue chagrinee. *Rist. Quad Quip.*, 1 : 171, pl. 11.

1931. *Lissemys punctata punctata*, Smith, *Fauna Brit. Ind.*, 1 : 157.

Type Locality "des grandes Indes"; restricted by Webb (1980b : 553) to "Pondicherry, Coromandel Coast, India".

Holotype : MNHN 7978.

Material Examined : India, Uttarakhand, District Haridwar, Banganga, Nainpur, 1 ♀, 8.vii.08, coll. A. Bahuguna and Party (live in captivity). One adult sighted at Ranjitpur, Banganga, District Haridwar by A. Bahuguna and Party 16.ix.08.

Measurements : Sub adult length 10 cm, max width 8 cm.

Diagnostic character : A small flat turtle (max length 24 cm), with head, which is moderately large, the snout is short and broad, and its length is less than the length of the eye opening.

Olive-brown above. Carapace is gray-green, with numerous black-bordered yellow spots, irregularly arranged and with a light yellow marginal rim.

Carapace and plastron features : The carapace and plastrons covered by a continuous sheet of soft skin and their callosities are finely granulated.

The lateral and the hinder portions of the carapace are most flexible. Plastron is with soft, semicircular flaps. The hind feet can be totally concealed in plastron. Plastron is with seven callosities in the adult, namely paired-hyo-hypo., xiphi. and epiplastral, and a single entoplastral (quite small in adults). Limbs are fully webbed, with only three claws on each foot. Tail is very short.

Distribution : India : Ganga river system, Sikkim, Kutch and Andaman Islands; introduced in the Andaman Islands (Das, 1991).

Elsewhere : Bangladesh, Myanmar (Akyab), Nepal, Pakistan (Sind river system) and Sri Lanka.

Remarks : The subspecies prefers to live in shallow, muddy, ditches, lakes and marshes. It is a carnivorous turtle and feeds mainly on frogs, fishes, shrimps and snails. It lays 12 eggs in a single clutch.

Threats : Suspected to be threatened on account of ruthless killing and overexploitation of adults and their eggs for protein-rich food. Major threats are: habitat destructions predation by otters, mongooses, jackals and dogs; construction of hydroelectric dams and barrages.

Status : IPWA Schedule I.

Genus *Chitra* Gray 1844

12. *Chitra indica* (Gray)
Narrow Headed Soft Shelled Turtle

1813. *Trionyx indicus*, Gray, *Syn. Rept.*, 47.

1890. *Chitra indica*, Boulenger, *Fauna Brit. Ind.*, 16.

1931. *Chitra indica*, Smith, *Fauna Brit. India*, 1 : 62.

Type Locality : "India, Ganges, Penang [Malaysia]"

Material Examined : Material was not collected during survey but sighted at Haridwar. (Table 1). Description is based on literature (Tikader and Sharma 1985, Das 1991, Sharma, 1998).

Description : A large size, flat soft-shelled species reaching to a length of 90 cm. or more.

Dorsal coloration is olivaceous yellow, with dark vermiculations or black dots in juveniles. In adults the black markings are replaced by large angular markings of light yellow color. Head and neck with light, black-edged longitudinal streaks and E shaped mark in the mid-line commencing just in front of the disc but in fully adults these markings become less distinct. The head is quite small in comparison to the body, somewhat elongated; snout is rounded; proboscis about as long as the eye opening. Skull is long and narrow, flat above. The alveolar surfaces of jaws are slightly expanded and the edges of jaws are extremely sharp. The eyes were displaced much forward.

Carapace and plastron features : Carapace is remarkably pitted and vermiculated; a single neural plate rests between the first pair of costals; outer extremity of nuchal plate overlapping the second dorsal rib; eight neural plates form a continuous series; eight pairs of costal plates are present, the last pair is in contact with the mid-line. Hyoplastron is distinct from hypoplastron; anterior limbs of epiplastron are long and slender, widely separated from one another; four well-developed hyo-hypo and xiphi plastral callosities are present in the adults.

Distribution : India : Uttar Pradesh, Bihar and West Bengal.

Elsewhere : Nepal, Pakistan, Malaysia and Thailand.

Remarks : The species lives in shallow rivers with sandy bottoms and banks. It is carnivorous fresh-water turtle and its food comprises mainly fish, gastropod mollusks and other small animals. While handling precautions must be taken as it suddenly shoots out its long neck and bites most savagely. It lays 8-10 spherical eggs in a single clutch; eggs measuring 36-42 mm. in diameter.

Threats : Major threats are excessive killing of adults and overexploitation of eggs for food and habitat destruction.

Status : IPWA 1972 Schedule IV, IUCN : EN A1cd+2cd.

Genus *Trionyx* Geoffroy

Normally eight pairs of costal plates are present; outer extremity of nuchal plate overlying

the second dorsal rib; normally eight neural plates; eight dorsal plates; the last one or two are in contact in the middle line.

13. *Aspideretes gangeticus* (Cuvier) = *Trionyx gangeticus* (Cuvier) **Indian Soft-Shelled Turtle** **or** **Ganga Soft-Shelled Turtle**

1824. *Trionyx gangeticus*, Cuvier, *Oss. Foss.* 5 : 186, 203, 206, pls. 11 & 12 (type loc. Ganges : Paris Mus. Nat. Hist.).

1890. *Trionyx gangeticus* Boulenger, *Fauna Brit. Ind.*, 12.

1931. *Trionyx gangeticus* Smith, *Fauna Brit. Ind.*, 1 : 167.

Reviewed by Smith (1931; as *Trionyx gangeticus*), Minton (1966; as *Trionyx gangeticus*), Tikader and Sharma (1985; as *Trionyx gangeticus*), Meylan (1987), and Das (1991).

Type Locality : Ganges River, India.

Syntypes : (4 specimens) MNHN 4148; MNHN 9387; MNHN 1887-838; MNHN A5226.

Material Examined : Material was not collected. Reported by previous workers from Uttarakhand (Table 1). Description is based on literature (Tikader and Sharma 1985, Sharma 1998, Conant and Collins. 1991).

Description : Soft-shelled turtle (45 cm. in length).

Dorsal coloration is olive-green; carapace is olive or greenish with irregular dark reticulations; plastron is ivory white; head is greenish, with a black longitudinal streak from between the eyes on the nape and three oblique black streaks on either side diverging from it; another streak starting from behind the eye. Juveniles are greenish with a reticulated pattern of four irregular ocelli on the carapace; sometimes with black longitudinal line on the top of the head.

Head is comparatively large and broad with torso-laterally situated eyes and quite thick and somewhat elongated proboscis. The snout is equal to the diameter of the orbit. Alveolar surface of upper jaw is flat, with a well defined medial axillary groove between them; mandibles with raised inner edges, which meet at the symphysis to form a short, median projection; length of symphysis is less than the diameter of the orbit in the adult.

Carapace and Plastron features : Two neural plates rest between the first pair of well developed costal plates; last pair of costal plates is generally in contact in the mid-line; all the plates of the carapace are coarsely pitted and vermiculated. Nuchal shield is not present. Epiplastron is long and slender, in contact with or narrowly separated from one another; four plastral callosities, hyohypoplastral and xiphoplastral are well developed in the fully adults, in aged turtles a fifth callosity is also present upon the entoplastron.

Limbs are with three claws. Tail is short in both sexes.

Distribution : India : Ganga, Sind and Mahanadi river systems.

Elsewhere : N.W. Pakistan, Bangladesh and the Nepal foothills.

Remarks : Aquatic inhabiting the deep rivers but it is frequently seen basking on sandy banks or resting in shallow water with its head striking out of water. It is an omnivorous species and the diet comprises a wide range of aquatic vegetarian and animal food like fish, molluscs, frogs and crustaceans. It is a very prominent scavenger. Breeding takes place in late September to October. The spherical and hard-shelled eggs with a diameter of 3 cm. are laid on the sandy riverbanks.

Threats : The species has become endangered on account of excessive killing of the adults for flesh, and overexploitation of eggs for food. The flesh of this turtle is highly liked as an important food item at various places in Bengal and Orissa. Habitat destruction is also a principal factor of threat to this species.

Status : IUCN (VU A1d+2d), IPWA 1972 : Schedule I.

Order Squamata Suborder Sauria

Key to the families of Order-Sauria

Body dorsoventrally flat, covered with granule like imbricate scales, no symmetrical shields on the top of the head. The digits are with adhesive pads. Eyes are without movable lids, eyeball is covered with a transparent membrane. Teeth are pleurodont. Tongue flashy, short, broad, protrusible and nicked anteriorly and is covered with villose papillae.

Skull is devoid of temporal and postorbital arcades, parietals are paired, without parietal foramen. Vertebrae are amphicoelous

..... GEKKONIDAE

Body dorsoventrally or laterally compressed with imbricate scales, no symmetrical shields on the top of the head. Eyes are without movable lids. Teeth are acrodont and pleurodont. Skull is with temporal and postorbital arcades. Tongue is broad and short, smooth or covered with villose papillae, not protrusible

..... AGAMIDAE

Body is circular in cross section, with cycloid, overlapping scales, osteoderms are present under the scales of head and body. Head with symmetrical shields above. Legs are short and in many species legs are not present at all. Teeth are pleurodont. Tongue is short, feebly nicked anteriorly, covered with scale like papillae. Only temporal arcade is present

..... SCINCIDAE

Body dorsoventrally flattened with scales. Head with scales are with osteoderms, no osteodermal plates on the body. Legs are well developed. Teeth are pleurodont. Tongue is long and forked anteriorly. Covered with scale like papillae. Skull is with both temporal and postorbital arcades

..... LACERTIDAE

Body stout, dorsoventrally flattened, with small scales. Scales are without osteoderms. The head is long, tail is very long and laterally compressed. Teeth are large, pointed, and pleurodont. Tongue is long, forked and snake like. Surface of tongue is smooth and retractile. The temporal arcade is present but post temporal arcade is incomplete

..... VARANIDAE

Family GEKKONIDAE

Gekkonidae is very ancient group and comprises of highly specialized lizards with remarkable adaptive radiations, evolutionary history, distribution pattern, varied habitat selection, flexibility for change and to evolve into new and more advance forms. They exhibit arboreal, scansorial, saltatorial, cursorial (running) and volant (gliding) adaptations very strongly. These are secretive nocturnal and diurnal, mainly insectivorous creatures.

Genus *Cyrtodactylus* Gray 182714. *Cyrtodactylus fasciolatus* (Blyth)= *Cyrtopodion fasciolatus* (Blyth)**Banded Bent-Toed Rock Gecko**

1860. *Nautilinus fasciolatus* Blyth, *J. Asiat. Soc. Beng.*, 29 : 114 (type loco Subathu, Simla dist.).

1876. *Gymnodactylus fasciolatus*, Theobald, *Cat. Rept. Brit. Ind.*, : 92.

1885. *Gymnodactylus fasciolatus*, Boulenger, *Cat. Liz. Brit. Mus.*, : 44.

1890. *Gymnodactylus fasciolatus*, Boulenger, *Fauna Brit. Ind.*, : 71.

1913. *Gymnodactylus fasciolatus*, Annandale, *Rec. Ind. Mus.*, 9 : 325, pl. xvi, fig. 3.

1935. *Gymnodactylus fasciolatus*, Smith, *Fauna Brit. Ind.*, : 45.

Material Examined : India, Uttarakhand, District : Nainital, Corbett Tiger Reserve, Jhirna and around, 1ex, 29.vi.06, coll J.P. Sati & Party (Reg. No. 66); Corbett Tiger Reserve Dhara Srot near Jhirna, 2exs, 2.iii.05, coll. A.N. Rizvi, & Party (Reg. No. 67); Corbett Tiger Reserve Nimboo booji Khiunauti, 1ex, 22.vi.02, coll J.P. Sati & Party (Reg. No. 68).

Measurements : Mean Snout to vent 82 mm.; tail length 110 mm.

Diagnostic character : A large nocturnal rock lizard. It is grayish above with 6-7 dark brown cross-bars on the dorsum, which assume W-shaped dark marking on their hinder margin; a dark curved streak starts from the nape and reaches up to the eyes; dorsal surface of head spotted with brown; tail is with dark brown and light cross bars arranged alternately; belly is whitish. The head is large and slightly depressed; its occipital is with small granular scales mixed with larger tubercles. Upper labials 10-13 and lower, labials 9-10. The eyes are prominent.

Dorsoventrally flattened body, with a distinct lateral fold. Dorsal scales on body and limbs are like small granules intermixed with much larger tubercles; the scales of the lateral folds, are slightly enlarged; belly is with 28-34 rows of large rounded imbricate scales across the middle of the body. Sub digital lamellae are well developed, nearly as broad as the digit; the hind-limb hardly reaches to the axilla. Tail above with, small flat, scales and

at its base there is a series of enlarged flat tubercles; underside of tail is with a series of transversely enlarged median plates. Females are with 15-16 enlarged preano-femoral plates on each side out of which few are pitted. Male with preanal and femoral pores.

Distribution : India : North-west India (West Himalaya, Subathu/Simla, Garhwal hills, Almora, Kumaon). Type locality Subathu, Simla. (Sharma 2001, Hussain and Ray 1993).

Remarks : This lizard has been observed in rocks up to 600 metres near. Kumaon. Food a variety of insects.

Status : Rare.

15. *Cyrtodactylus lawderanus* (Stoliczka) **Lawder's Bent-Toed Gecko**

1871. *Gymnodactylus lawderanus* Stoliczka, *P. Asiat. Soc. Beng.* : 194.

1913. *Alsophylax himalayensis* Annandale, *Rec. Ind. Mus.* 9 : 305, pl. 15 (type loc. Dharampur, Simla Dist.).

1935. *Gymnodactylus lawderanus*, Smith, *Fauna Brit. Ind.* : 58.

Material Examined : Material was not collected during survey but sighted. Description is based on literature (Smith 1934, Sharma, 2002).

Description : Standard length 40-55 mm., tail length 38-50 mm.

A small nocturnal gecko, whose colouration is almost like that of *C. stoliczkai*, dorsum is gray with darker wavy cross bars i.e. colour pattern is more broken up; cross-bands become merged and general colouration of dorsum becomes somewhat reticulated. Upper portion of head, tail and limbs are speckled with fine black dots; black bars on labials are broken up into fine small spots and belly is pale yellow. The head is moderately large with rounded snout, depressed, covered above with smaller granules. Ear opening is oval, half the size of pupil. Eyes are large with vertically elliptical pupil. Upper labials 9-11 and lower labials 8-9; postmentals 2. Body is flattened dorsoventrally, lateral fold is indistinct. Body and limbs covered above with small, rounded subimbricate or juxtaposed scales intermixed with few slightly larger, rounded, feebly keeled or smooth tubercles; which are not so clearly differentiated from the general smaller scales. The smaller scales on the

back are most variable in size and shape; belly is with 30-36 rows of small, rounded subimbricate scales across the mid-body. The hind limb reaches to the axilla; digits are moderately long and slender; sub digital lamellae narrower. Tail shorter than the head and body, unsegmented, more cylindrical, less broad, less swollen at base and not so tapering; upper portion is covered with small flat granules and with a series of large tubercles in 2-3 rows on each side. Males are with 4-5 preanal pores arranged in an angular series.

Distribution : India : Western Himalayas (Simla district, Kulu Valley, Almora, Garhwal, Ambala).

Remarks : Terra typica : Kumaon (Almora; Smith 1935).

The species is not so agile, nocturnal insectivorous and rock dwelling.

Status : Very common.

Genus *Hemidactylus* Oken 1817

16. *Hemidactylus brooki* Gray

Spotted Indian House Gecko, Brook's House Gecko

1845. *Hemidactylus brooki* Gray, *Cat. Liz. Brit. Mus.*, 153 (type lac. Borneo)
1858. *Hemidactylus cyanodactylus* Girard, *U.S. Explor. Exp. Herpet.*, : 254, pl. 35, figs. 17, 24 (type lac. Cape Verde Is.).
1864. *Gecko tyleri* Tytler, *J. Asiat. Soc. Beng.*, 33 : 547 (type lac. Moulmein).
1870. *Hemidactylus affinis* Steindachner, *Sitz. Akad. Wiss. Wien.*, 62(1), : 328 (type lac. Senegambia).
1873. *Hemidactylus guineensis* Bocage, *J. Sci. Lisbon.*, 4 : 209.
1884. *Hemidactylus gleadowi* Murray, 2001. *Sind* : 360, pl 9, fig. 3 (type loco Sind).
1884. *Hemidactylus kushmorensis* Murray, *Ann. Mag. Nat. Hist.*, (5)14 : 109 (type loc; Bhaner, Upper Sind).
1887. *Hemidactylus murrayi* Gleadow, *J. Bombay Nat. Hist. Soc.*, 2 : 49 (type loco Pimpry and Garvi near Surat).
1895. *Hemidactylus lenkatei* Lidth de Jeude, *Notes Leyden Mus.*, 16 : 121 (type loco Rotti E. Ind. Archipel.).
1905. *Hemidactylus subtriedroides* Annandale, *Ann. Mag. Nat. Hist.*, (7)15 : 29.
1935. *Hemidactylus brooki*, Smith, *Fauna Brit. Ind.*, 2 : 89.

Material Examined : India, Uttarakhand, District Dehradun, Karuvapani, 1ex, 01.vii.2002; coll. J.P. Sati & Party (Reg no. 24); Mohand Rao, Lalpul, Sharanpur Road, 6ex, 03.xi.2000, coll. Aklaq Husain & Party (Reg. No. 25); Sankranala, 1ex, 27.xi.2002, coll. S.K. Gupta & Party (Reg. No. 26).

Measurements : Snout to vent : 56 mm, tail length 58 mm.

Diagnostic character : Length of head and body 58 mm.; tail 60 mm. (Annandale 1905, Rooij 1915). Yellowish-brown above with irregular dark spots; one or two dark lines on the side of the head, passing through the eye; lips with dark bars. Lower parts white, all the scales finely dotted with dark brown. Young specimens have cross lines of white tubercles on the back; those on the tail all white.

Snout somewhat longer than the distance between the eye and the ear-opening, nearly twice the diameter of the orbit; forehead concave; ear-opening small, oval, vertical, about one third the diameter of the eye. Rostral quadrangular, with a median cleft; nostril bordered by the rostral. Upper labials 8-12 and lower labials are 7-9; mental shield is moderately large, subtriangular, almost two times longer than the adjacent labials; postmentals are generally represented by two pairs, the inner one is elongate and larger than the outer, in many individuals, a third pair is also available (in most of the specimens from Goa); rostral shield is quadrangular, not much broader than high; nostril is situated between the rostral, first labial and two or three small scales. Scales of the throat granular. Body covered with small granules, intermixed with large keeled trihedral tubercles, arranged in 16-20 longitudinal series, the keels of the outer ones indistinct; the diameter of the largest tubercles on the flanks exceeds the diameter of the ear-opening. Ventral scales larger than those on the throat, cycloid, imbricate. Male with 7-20 femoral pores on each side. Tail depressed, annulate, with rows of 8 or 6 spine-like tubercles, below with a series of transversely dilated plates. Limbs granular, the upper part of the hind limb with large keeled tubercles; digits free, dilated, the free distal joint long, 3-6 lamellae under the inner, 6-8 under the median toes.

Distribution : India : Widely distributed in whole of India.

Elsewhere : Widely distributed in Sri Lanka, Borneo, Pakistan, Myanmar, South China, West Indies, Tropical Asia and Northern half of Africa.

Remarks : This commonest house gecko prefers to live under the stones, beneath the dry bark of the wooden logs, old buildings, rocky areas in dense forests away from human dwellings. In Rajasthan this gecko leads a harmonious existence with *Cyrtodactylus scaber* and *Hemidactylus flaviviridis*. The food mainly comprises grasshoppers and their nymphs; beetles and their grubs; dipterous insects; cockroaches; termites; spiders, other insects, isopods, gastropods and seeds of wild plants. Breeding season extends through complete summer to October; two spherical eggs are laid in a single clutch; incubation period is of about 39 days (Sharma 2002).

Status : Very common.

17. *Hemidactylus leschenaulti* Dum. & Bibr. Bark Gecko

1836. *Hemidactylus leschenaulti* Dumeril & Birborn, *Erp. Gen.*, 3 : 364 (type loco Sri Lanka).

1845. *Hemidactylus bellii* Gray, *Cat. Liz. Brit. Mus.*, : 155 (Type loc. Not Known).

1852. *Hemidactylus coctaei*, Kelaart, *Prod. Faun. Zeyl.*, : 160.

1856. *Hemidactylus pustillosus* Lichtenstein, *Nomencl. Rept. Mus. Berol.*, : 5 (type loc. Sri Lanka).

1868. *Hemidactylus kelaarti* Theobald, *Cat. Rept. Asiat. Soc. Mus.*, : 29 (type loc. Sri Lanka).

1870. *Hemidactylus marmoratus*, Blanford, *J. Asiat. Soc. Bengal.*, 39(2) : 363, pl. 16, figs. 1-3, (type loc. near Nellore, Tamilnadu).

1935. *Hemidactylus leschenaulti*, Smith, *Fauna Brit. Ind.*, 2 : 97.

Material Examined : Material was not collected during survey but sighted. Description is based on literature (Smith 1934, Sharma, 2002).

Description : Standard length 32-33 mm; tail length 31-83 mm.

A large ashy grey gecko is with undulating crossbars or rhomboidal spots on the back; a black stripe emerges from behind the eye and extends up to flanks; belly is whitish. Head is large with a broad snout; ear opening is sub circular; head is

covered with small granular scales, which become quite large near the snout. Upper labials 10-12 and lower labials 8-10; mental shield is quite large, sub triangular; two pairs of postmentals, inner pair is larger than the outer pair; rostral shield is broader than high; nostril is situated between rostral, first labial. Dorsum is with small granular scales intermixed with few larger, rounded, feebly keeled tubercles; ventrum is with smooth, rounded, subimbricate scales, those on the gular region are quite small and flat. The hind-limb hardly reaches to the axilla; digits are free, moderately dilated, with slightly oblique lamellae; 6-7 lamellae under the first and 9-11 under the fourth toe.

Tail is almost equal to the head and body, strongly depressed, swollen at the base in the mature individuals, flat beneath, verticillate, covered above with small scales and series of 6 enlarged pointed tubercles; below with imbricate scales and a median series of transversely enlarged plates. Male with 10-17 femoral pores on each side.

Distribution : India : Peninsular India; Rajasthan, West Bengal.

Elsewhere : Sri Lanka, Pakistan.

Remarks : The species is arboreal, most favorable abodes are the large trees of banyan, tamarind, mango etc. During the day these lizards hide under the bark and in crevices of these trees. These lizards are insectivorous. Gravid females are available in March to May.

Status : Common.

18 *Hemidactylus flaviviridis* Ruppell Yellow bellied House Gecko

1835. *Hemidactylus flaviviridis* Ruppell, *Neue Wirb. Faun., Abyss* : 18, pl. 6, fig. 2 (type loc. Massana Is. Eritrea).

1836. *Hemidactylus coctaei* Dum. & Bibr., *Erp. Gen.*, 3 : 365 (type loco Bengal and Bombay).

1842. *Boltalia sublaevis* Gray, *Zool. Misc.*, : 58 (type loco India).

1871. *Hemidactylus bengaliensis* Anderson, *J. Asiat. Soc. Bengal.*, (2)40 : 14 (type loco Bengal).

1935. *Hemidactylus flaviviridis*, Smith, *Fauna Brit. Ind.*, 2 : 98.

Material Examined : India, Uttarakhand, Dehradun, Mohand Range, 1ex, 01.vii.2000, coll. J^D Sati & Party (Reg. No. 53).

Measurements : Snout to vent 56mm, tail length 86mm.

Diagnostic character : Standard length 42-90 mm.; tail length 38-90 mm.

A large and robust gecko is with a pale-grey or greenish-grey, brown or olive dorsum; back is with wavy, dark cross bands, which are clearly visible during the day; belly is yellowish. Head is large with a broad snout; ear opening is subcircular; head is covered with minute granules, which become more prominent and large on the snout. Upper labials 12-15 and lower labials 10-12; mental shield is large, subtriangular; two pairs of postmentals, inner one is larger than the outer pair; rostral is broader than high; nostril is situated between rostral, first labial and two or three small scales. Dorsum is with small granular scales, intermixed with very few larger, rounded, feebly keeled tubercles; ventrum is with smooth, rounded, imbricate scales, those on the gular region are quite small and flat. The hind-limb just reaches to the axilla; digits are free, moderately dilated, with oblique lamellae beneath; 7-10 lamellae under the first toe and 11-14 under the fourth. Tail is almost equal to the head and body, strongly depressed and swollen at the base in the adults, flat beneath. Upper surface covered with small scales and series of 6 enlarged tubercles; underside of the tail is with imbricate scales with a median series of transversely enlarged plates. Male with 5-7 femoral pores on each side.

Distribution : India : Whole of India, but widely distributed in North India above 20° N.

Elseshere : Arabia, Pakistan, Iran and shores of the Red Sea.

Remarks : Inhabits the buildings, most agile, a marked climber, generally nocturnal but can be seen during daytime also. Its voice is like a chirp of a small bird, which is audible from even a long distance. According to Sanyal and Prasad 1967 the reproductive cycle in *Hemidactylus flaviviridis* may be divided into three phases, (1) a quiescent phase (June and July), (2) a recrudescence phase (August and September), and (3) an active phase (October-May), production of spermatozoa in November and December. Breeding season is in March and April.

The main food comprises of Orthopterans (grass hoppers, mole crickets, gryllids); moths, butterflies,

caterpillars; beetles of the families Scarabaeidae and Elateridae; flies; bugs; ants; spiders; centipedes. These geckos maintain a territorial integrity and show an acute homing behaviour.

Status : Most common.

Family AGAMIDAE

Genus *Japalura* Gray 1853

19. *Japalura kumaonensis* (Annandale) Kumaon Mountain Lizard

1907. *Acanthosaura btmaonensis* Annandale, *Rec. Ind. Mus.*, 1 : 152 (type loco Nainital, W. Himalayas).

1914. *Acanthosaura major* (not of Jerdon), Annandale, *Rec. Ind. Mus.*, 10 : 320.

1935. *Japalura kumaonensis*, Smith, *Fauna Brit. Ind.*, 2 : 171.

Material Examined : India, Uttarakhand, District. Nainital, Near Mukteshwar, 1ex, 2.x.2005, coll A. Bahuguna and Party (Reg. No. 15).

Measurements : Snout to vent : 58 mm, tail length 152mm.

Diagnostic character : Standard length 60 mm.; tail length 155mm.

It closely resembles with *Japalura major* in colouration and general features but smaller in size. Back with strong triangular markings. It is with a row of much enlarged scales on the snout and anterior portion of the body, which are exactly parallel with the median dorsal rows of scales; upper labials are 6 in number; transverse gular fold is not present; the scales on the throat are almost as large as the ventral scales; fourth toe is longer than the third toe, as long as the tibia, the hind-limb reaches to the ear or the eye.

Distribution : India : Western Himalayas (Almora, Nainital, Kumaon).

Remarks : Rock dwelling, terrestrial, insectivorous and diurnal.

Status : Indeterminate.

20. *Japalura major* (Jerdon) Garhwaal mountain lizard

1870. *Oriocalotes major* Jerdon, *P. Asiat. Soc. Beng.*, : 77 (type loc. near Kotgarh, W. Himalayas).

1885. *Acanthosaura major*, Boulenger, *Cat. Liz. Brit. Mus.*, 1 : 306, pl. 23, fig. 3.

1935. *Japalura major*, Smith, *Fauna Brit. Ind.*, 2 : p. 171.

Material Examined : Material was not collected during survey but sighted. (Table 1) Description is based on literature (Sharma, 2002).

Description : Standard length 85mm; tail length 155mm.

A moderately large mountain lizard is with a slightly compressed body. Dorsal colouration is light-brown, with dark-brown V-shaped spots on the complete back up to the base of tail; upper side of the head is with deep-brown cross-bars; a dark-brown line is most prominent between the eye and the ear; flanks with dark-brown reticulations; belly is whitish; many individuals are with dark-brown spots or streaks on the ventrum. Dorsal body scales are large, intermixed with smaller scales; the scales on the lateral aspects are generally arranged in vertical series; the scales of the upper dorsal rows are pointing upwards and backwards, the scales in lower dorsal rows are pointing backwards; ventral scales are strongly keeled smaller than the largest dorsals. Gular pouch is in, the shape of a longitudinal fold; transversely the gular fold is covered with small scales; a feeble fold is visible in front of the shoulders; nuchal and dorsal crests are represented by a denticulation. Limbs are weak; fourth toe is longer than the third as long as the tibia; the hind-limb reaches to the ear or the eye. Tail much longer than the head and body, slightly compressed, covered above with small-keeled scales.

Distribution : India : Western Himalayas (Simla, Garhwal, Chamba).

Remarks : The species is terrestrial, rock dwelling, insectivorous, diurnal recorded up to 850 metres (Jamdar 1985).

Status : Indeterminate.

Genus *Calotes* Rafinesque 1815

21. *Calotes versicolor* (Daudin)
Indian Garden Lizard

1802. *Agama versicolor* Daudin, *Hist. Nat. Rep.*, 3 : 395, pl. 44, (type loco India).

1820. *Agama tiedmanni* Kuhl, *Beitr. Zool. Vergl., Anat.*, 1 : 109 (type loco Pondicherry).

1825. *Agama vultuosa* Harlan, *J. Acad. Philad.*, 4 : 296, pl. 19 (type loco Calcutta).

1827. *Agama indica* Gray, *Zool. Journ.*, 3 : 217 (type loco Dum-Dum, Calcutta).

1827. *Calotes tiedmanni* Kaup, *Isis.*, : 619, pl. 8.

1844. *Calotes cristatus* Jacquemont, *Voy. dans l'India, Zool. Atla.*, 2 : Descript des collections, pl. 11.

1846. *Calotes viridis* Gray, *Ann. Mag. Nat. Hist.*, 18 : 429 (type loco Madras).

1853. *Calotes versicolor*, Jerdon, *J. Asiat. Soc. Beng.*, 22 : 470.

1853. *Calotes gigas* Blyth, *J. Asiat. Soc. Beng.*, 12 : 648 (type loco Not known).

1921. *Calotes versicolor* Annandale, *Rec. Ind. Mus.*, 22 : 331.

1935. *Calotes versicolor*, Smith, *Fauna Brit. Ind.*, 2 : 189.

Material Examined : India, Uttarakhand, District Nainital, Corbett Tiger Reserve, Nakka Tal, near Malani, 2exs, 19.i.2004, coll V. Khanna and Party (Reg. No.56); Dist Dehradun., Singhniwala village around Asan River, 1ex; 4.v.2001, coll. Vinod Khanna & Party (Reg No. 27); District Dehradun, Sankranala, Badshahi Bag Road, 1ex, 4.x.2001., coll. J.P. Sati & Party (Reg. No.28); District Dehradun, Khajnarwala, 1ex., 12.iv.2002, coll. S.K. Gupta & Party (Reg. No. 29); District Tehri, Kodia 1ex, 29.iii.05, coll A. Bahuguna and Party (Reg. No. 39); District : Uttarkashi, Nachiketatal, 4exs., 2.iv.05. coll A. Bahuguna and Party (Reg. No. 48); Dist Dehra Dun, Kaulagarh, 2exs, 20.ii. 05, coll A. Bahuguna and Party (Reg. No. 55).

Measurements : Mean Snout to vent 110mm, tail length 346 mm.

Diagnostic character : Standard length 86-129 mm.; tail length 300-350 mm. Two small groups of spines perfectly separated from each other, above each tympanum. Dorsal crest moderately elevated on the neck and anterior part of the trunk, extending on to the root of the tail in large individuals and gradually disappearing on the middle of the trunk in younger ones. No fold in front of the shoulder, but the scales behind the lower jaw arc much smaller than the others; gular sac not developed. From thirty-nine to forty-three series of scales round the middle of the trunk. The hind foot (measured from the heel to the extremity of the fourth toe) is not much longer than the head in the adult, but longer in the young. The body is compressed, dorsal colour light-brown grayish,

transverse spots on back and sides, dark streak from eyes; head is large, swollen at angle of jaws in males; eye large; males with gular sac; limbs long well developed; digits long, slender, slightly compressed laterally, strongly clawed; tail almost round, slender. Head scales irregular, juxtaposed; 10-13 upper labials, 11-14 lower labials; body scales keeled, imbricate, with pointed tips; scales in 37-47 rows at mid-body; a dorsal crest is present, which is more prominent in males.

Distribution : India : whole of India.

Elsewhere : Sumatra to South China, Sri Lanka, Pakistan, Afghanistan.

Remarks : Arboreal species; most plentiful in the vicinity of streams, riversides, gardens, desert oases. These lizards are excellent climbers and can jump from branch to branch. These lizards are mainly insectivorous and the food comprises grasshoppers and their nymphs; butterflies, moths and their caterpillars; ants; beetles; earwigs; spiders; centipedes and vegetables matter like grass, leaves, arthropod eggs, honey bees, small crustaceans, bugs, dipterous maggots, twigs of delicate plants and seeds. The male gets a bright red throat in the breeding season leading to a common incorrect name of *Bloodsucker*. Breeding takes place in summer and in May and June males acquire most brilliant breeding colours and become most pugnacious and aggressive towards other males. About 6-25 eggs are laid generally between June to September.

Status : Most common, throughout its range.

Genus *Laudakia*

= *Agama* Daudin 1802

22. *Laudakia tuberculata* Hardwicke and Gray Indian Rock Lizard

1827. *Agama tuberculata* Hardwicke and Gray, 2001. *Journ.*, 3 : 218 (type loco Bengal).

1853. *Stellio indicus* Blyth, *J. Asiat. Soc. Beng.*, 22 : 646 (type loco Upper Hindustan).

1860. *Barycephalus sykesii* Gunther, *Proc. Zool. Soc.*, : 150, pl. 25, fig. A (type loco Simla).

1864. *Stellio tuberculatus*, Gunther *Rept. Brit. Ind.*, : 157.

1871. *Stellio dayanus* Stoliczka, *P. Asiat. Soc. Beng.*, : 194 (type loco Hardwar, U.P.).

1885. *Agama dayana*, Boulenger, *Cat. Liz. Brit. Mus.*, 1 : 362.

1935. *Agama tuberculata*, Smith, *Fauna Brit. Ind.*, 2 : 214.

1966. *Agama tuberculata*, Minton, *Bull. Amer. Mus. Nat. Hist.*, 134, p. 93.

Material Examined : India, Uttarakhand, District Tehri, Jardar, 2♂♂, 1♀ 31.x.05, coll. A. Bahuguna and Party (Reg. No. 5); District : Uttarkashi, Harsil, 1♂. 1♀, 6.iv.05, coll. A. Bahuguna and Party (Reg. No. 2); District : Tehri, Kodia, Kitaridhar, 2♂♂, 29.iii.05, coll. A. Bahuguna (Reg. No. 1); District : Tehri, Nagni, 1♂, 32.iii.05, coll. A. Bahuguna and Party, (Reg. No. 4); District Dehradun, Timli & around 1♂, 21.vi.06, coll. H.S. Mehta and Party (Reg. No. 54); District Dehradun, Mohand Rao, 2♂♂, 09.xi.2001, coll. Akhlaq Husain & party (Reg. No. 30); District Dehradun, Sankranala, Bhadshahi Bagh Road, 1♀, 28.xi.2001; coll. N.K. Sinha & Party (Reg. No. 31).

Measurement : In adult : Mean of Snout to vent length 109 mm, Tail length 197mm.

Diagnostic character : Head is depressed, more elongated, tympanum is large and superficial. Dorsal colour is Dark-olive brown with numerous dark-brown spots on either side of a lighter vertebral line. In adults the spots are replaced by a dark-brown and yellowish colouration; upper side of head is light brown; throat and chest are brownish, profusely spotted with dark blue; belly is whitish. Males during the breeding season acquire beautiful and brilliant shades of bright yellow, orange, bluish-black, purple and black on shoulders, breast, flanks, under-parts and throat. Upper head scales unequal, convex, smooth or may be keeled; nostril is situated below the canthus rostralis, pointing outwards; 10-12 upper labials; median dorsal scales are almost equal; rounded, hexagonal, imbricate, keeled, 10-15 across the middle of back; scales on the flanks quite smaller, with a few scattered, separated, enlarged keeled scales; ventral scales smooth, equal in size to the large dorsal scale; gular scales are much smaller than the ventral scales; gular sac is not formed; skin of the neck region is much loose. Limbs moderately strong, toes longer, compressed fifth toe extending beyond the first toe the hind-limb reaches to the ear or the eye. Tail depressed, longer than the-head and body, annulated, oval in the transverse section, the upper portion is with strongly keeled, almost equal scales, more than 40

round the thickest portion. Male with 6 or 7 rows of callose preanal scales; an elongated patch of enlarged scales on the middle of belly.

Distribution : India : Western Himalayas (Kashmir, Northern Punjab, Himachal Pradesh, Northern Uttar Pradesh).

Elsewhere : Afghanistan, Pakistan and Nepal (up to slightly east of Kathmandu).

Remarks : These lizards are strictly terrestrial inhabiting the holes, crevices and other rocky structures. In most of the localities of the range these agamas can be seen basking on rocks, more commonly between the altitudes of 300-700 metres; during the early hours of the day. Duda and Kaul (1976) described the seasonal changes in the size and nuclear morphology of the interstitial cells in the testes of a high altitude subtemperate agamid lizard *Agama tuberculata* Hardwicke Gray from Kashmir. While the climatic changes do not seem to influence the cyclical changes in these cells, active spermatogenesis seems to be restricted to the months of May, June, September and October, which correspond to early summer and fall in Kashmir when the temperature keeps around 27°C. In agamids, a positive correlation appears to exist between the spermatogenic and the interstitial cell activity.

The species is omnivorous and its food mainly comprises the insects like ants, small orthopterans, lepidoptera. It also eats on tender leaves, flowers and seeds of wild plants. Breeding season is May to August.

Variations are observed in the degree of keelation in dorsum scales in the examples collected along with some other minor, changes in morphological characters (Bahuguna, 2008; Figs 10-13 SEMicrographs of dorsum scales).

Status : Common.

Family SCINCIDAE

Genus *Eumeces* Wiegmann

23. *Eumeces taeniolatus* (Blyth) Yellow-Bellied Mole Skink

1854 *Eurylepis taeniolatus* Blyth, *J. Asiat. Soc. Beng.*, 23 : 470 (type loca Salt Range, Pakistan).

1868. *Plestiodon scutatus* Theobald, *Cat. Rept. Asiat. Soc. Mus.*, : 25 (based on Blyth's types of *taeniolatus*).

1870. *Plestiodon (Eumeces) scutatus* Jerdon, *P. Asiat. Soc. Beng.*, : 73.

1871. *Mabouia taeniolata*, Anderson, *P. Asiat. Soc. Beng.*, : 184.

1872. *Eumeces taeniolatus*, Stoliczka, *P. Asiat. Soc. Beng.*, : 75.

1887. *Eumeces scutatus*, Boulenger, *Cat. Liz. Brit. Mus.*, 3 : 382.

1905. *Eumeces taeniolatus*, Annandale, *J. Asiat. Soc. Beng.*, 1 : 148.

1935. *Eumeces taeniolatus*, Smith, *Fauna Brit. Ind.*, 2 : 342.

Material Examined : Material was not collected during survey. Description is based on literature (Griffith *et al.* 2000, Sharma, 2002).

Description : Standard length 120-150 mm.; tail length 180 mm.

Color pattern consists of gray-brown background, with pale, broad dorsolateral stripes, more distinct anteriorly, brown rectangular spots dominating posteriorly. The dorsum of this mole skink is sandy to light bronze, richly speckled with cream colour; three dark brown stripes enclosing the pale spots; tail variegated with black, brown or grey; lower parts including the belly are shining yellow. Head is small; lower eyelids are scaly; ear opening is like a vertical slit, with 2-3 small lobules anteriorly; upper labials are 8; lower labials are 6-8; postmentals are two; median dorsal scales are enlarged and almost two times wider than the other dorsals, these large dorsal shields are divided anteriorly, these large scales are in the longitudinal series of 72-80; scales round the middle of body are 20-23; limbs and toes are short; tail round and thick at the base, longer than the head and body.

Distribution : India : Gujarat (Cutch), Rajasthan, Kashmir.

Elsewhere : Northern extent of range poorly known; southern portion of distribution includes NW/W Saudi Arabia, S Yemen, NE Iran, Iraq, Afghanistan, Pakistan, S Turkmenistan.

Race arabicus : Arabia.

Race parthianicus : Turkmen-Khorassan (former USSR) area.

Remarks : This lizard has been observed to be equally comfortable in sandy burrows and under stones in rocky habitats. The food of this lizard comprises the beetles and their larvae and ants. This is a most secretive and agile lizard.

Status : Nowhere common but not endangered.

Genus *Mabuya* Fitzinger 1826

24. *Mabuya carinata* (Schneider)

Common Skink, Keeled Indian Mabuya

1801. *Scincus carinatus* (in part) Schneider, *Hist. Amphib.*, 2 : 183 (type loco not given)
1827. *Tiliqua carinata*, Gray, *Zool. Journ.*, 3 : 227 (Dum-Dum, Calcutta).
1829. *Tiliqua rnbriventrtris* Hardwicke & Gray, *Ill. Ind. Zool.*, 2 : pl. 75 (type loco Dum-Dum, Calcutta).
1837. *Euprepes sebae* (in part) Dum. & Bibr., *Erp. Gen.*, 5 : 692.
1864. *Euprepes rnfescens* (not of Shaw), Gunther, *Rept. Brit. Ind.*, : 79, pl. 10. fig. B (in part).
1864. *Euprepis carinatus*, Peters, *Mon. Akad. Berlin*, : 50.
1870. *Euprepis (Tiliqua) carinatus*, Blanford, *J. Asiat. Soc. Beng.*, 39 : 355.
1887. *Mabuia cannata*, Boulenger, *Cat. Liz. Brit. Mus.*, 3 : 181.
1935. *Mabuia carinata*, Smith, *Fauna Brit. Ind.*, 2 : 266.

Material Examined : Material was not collected during survey but sighted. (Table 1) Description is based on literature (Boulenger 1890, Sharma 2002).

Description : Standard length 125 mm.; tail length 165 mm.

The dorsal colouration is olivaceous-brown or shining bronz colour; back and antero-dorsal portion of the tail is with dark-brown to black spots or longitudinal lines along the lateral margins of the scales; lateral aspects are dark brown or slightly lighter in colour, generally with brown spots; two somewhat lighter dorsolateral stripes are present; belly is yellowish-white. Supranasals just touching or separated from one another; frontonasal is broader than long; prefrontals in contact with one another; a pair of nuchals is always present; postnasal is not available; lower eyelids are scaly, the two or three central scales are much enlarged and are larger than others; temporal scales are keeled; ear-opening circular, smaller than a lateral scale, with short, pointed lobules anteriorly; dorsal and lateral scales are almost equal, with 3-5 prominent keels; 30-34 scales round the middle of the body; digits are moderately long, with 14-18

smooth or obtusely keeled lamellae beneath the fourth toe; the hind-limb reaches to the wrist or the elbow.

Distribution : India : Indian Peninsula, Assam, Bengal.

Elsewhere : Sri Lanka, Nepal, Bangladesh, Maldives.

Remarks : Insectivorous, terrestrial, diurnal, oviparous, lays 22 or 23 in a clutch.

Status : Very common.

**25. *Mabuya macularia* (Blyth)
Little Skink**

1839. *Euprepes sebae* (in part) Dum. & Bibr., *Erp. Gen.*, 5 : 692.
1846. *Tiliqua rabriventrtris* (not of Gray, 1829), *Ann. Mag. Nat. Hist.*, 18 : 430.
1853. *Euprepes macularius* Blyth, *J. Asiat. Soc. Beng.*, 22 : 652 (type loco Rangpur, Bengal).
1864. *Euprepes rufescens* (not of Shaw), Gunther, *Rept. Brit. Ind.*, : 79 (in part).
1870. *Euprepes (Tiliqua) macularius*, Blanford, *J. Asiat. Soc. Beng.*, 39 : 358.
1875. *Eltiprepes brevis* Gunther, *Proc. Zool. Soc. London.*, : 225 (type loc. Travancore and Anaimalai Hills).
1879. *Euprepes macularius sltbunicolor* Blanford, *J. Asiat. Soc. Bengal.*, 48 : 112 (type loco Central Provinces)
1887. *Mabltia macularia*, Boulenger, *Cat. Liz. Brit. Mus.*, 3 : 183, pl. 11, fig. 1.
1897. *Mabuia madaraszi* Mehely, *Termes Fuzetek, Budapest*, 20 : 59 (type loco Ceylon).
1909. *Lygosoma dawsoni* Annandale, *Rec. Ind. Mus.*, 3 : 257 (type loc. Maddathorey, Travancore).
1935. *Mabuya macularia*, Smith, *Fauna Brit. Ind.*, 2 : 264.

Material Examined : India, Uttarakhand, District Dehradun, Sabhawala, 6exs, 20.xii.2001, coll J.P. Sati and Party (Reg. No. 22); Sabhawala, 1ex, 20.ii.02, coll J.P. Sati and Party (Reg. No. 23)

Measurements : Mean Snout to vent 67mm, tail length 136mm.

Diagnostic character : Snout short, obtusely keeled. Lower eyelid scaly. Nostril behind vertical

of suture between rostral and first labial; no postnasal; anterior loreal deeper and shorter than second; frontonasal as long as broad or a little broader than long, in contact with the rostral and also with the frontal; latter as long as the frontoparietals and interparietal together or a little longer, in contact with the second, or first and second, supraoculars; 4 supraoculars, second largest; 5 supraciliaries, third longest; frontoparietals distinct, larger than the interparietal, which entirely separates the parietals : a pair of nuchals; 4, exceptionally 3, labials anterior to the subocular, which is large and not narrowed below. Ear-opening oval, as large as a lateral scale, or a little smaller, with or without a few very indistinct lobules anteriorly. Dorsal, nuchal, and lateral scales with 5 to 7 sharp keels; 26 to 30 scales round the middle of the body, subequal. Digits short; subdigital lamellae smooth. Scales on upper surface of tibia mostly bicannate. Tail 1.25 to 1.75 times the length of head and body. Brown or olive-brown above, sides darker and usually with white black-edged spots; back uniform, or black-spotted, or with one or two black longitudinal lines; sometimes two light lateral lines on each side, well marked only on the neck; lower surfaces yellowish (in spirit).

Distribution : India : Whole of India.

Elsewhere : Myanmar, Pakistan, Thailand (Chuavnkern *et al* 2005), North Vietnam, South Vietnam, and Malaysia.

Habits and habitat : Insectivorous, diurnal, terrestrial, oviparous, lays 3-4 (11 mm.) eggs in April to May in hole dug by itself.

Status : Very common everywhere.

Genus *Riopa* Gray 1839

26. *Riopa punctata* (Linnaeus)

Dotted Garden Skink

1799. *Scincus punctatus* Gmelin, *Hist. Amphib.*, : 197, (based on Seba's fig. 2, pl. 12, fig. 6.)

1829. *Seps scincoides* Cuvier, *Regne Anim.*, 2nd ed. 2 : 54.

1845. *Riopa hardwickii* Gray, *Cat. Liz. Brit. Mus.*, : 96 (type loc. Madras).

1845. *Mabuya elegans* Gray, *Cat. Liz. Brit. Mus.*, : 95 (type loc. India).

1845. *Riopa punctata*, Gray, *Cat. Liz. Brit. Mus.*, : 96.

1887. *Lygosoma punctatum*, Boulenger, *Cat. Liz. Brit. Mus.*, 3 : 310.

1931. *Lygosoma (Riopa) punctata*, Deraniyagala, *Ceylon J. Sci.*, B, 16 : 172.

1935. *Riopa punctata*, Smith, *Fauna Brit. Ind.*, 2 : 318.

Material Examined : India, Uttarakhand, Kalagarh FRH, Corbett Tiger Reserve, District Nainital, 1ex, 23.i.04, coll : V. Khanna & Party (Reg. No. 57).

Measurement : Snout to vent 82mm, tail length 88 mm.

Diagnostic character : Standard length 85 mm., tail length 92 mm. The dorsum is brown, each scale is with a dark basal spot, which form longitudinal series and in juveniles and semiadult individuals confluent into 4-6 lines down the back; a yellow dorsolateral stripe from the snout; belly is yellowish-white, each scale dotted with black; tail is red in young lizards. Snout obtusely pointed; lower eyelid is with an undivided semi-transparent disc; supranasals are in contact with one another behind the rostral; frontal length is more than the combined length of fronto-parietal and interparietal; a pair of nuchal is always present; an enlarged temporal scale borders the outer margin of the parietal; ear-opening is small, with one or two minute lobules on the anterior margin; Upper labials are 7, the fifth is below the middle of the eye, longer than the other labials; body scales are smooth, almost equal, 24-28 scales round the body; 62-76 down the middle of the back; marginal preanals slightly enlarged; digits long, fourth toe is longer than the third, 11-14 keeled lamellae under the fourth toe. Tail swollen at the base, slightly longer than the head and body.

Distribution : India : Almost whole of India.

Elsewhere : Sri Lanka and Man-son mountains, Tonking.

Remark : Generally ground dwelling, insectivorous and oviparous.

Status : Most common.

Genus *Scincella* Mittleman

27. *Scincella himalayanum* (Gunther)

Himalayan Ground Skink

1864. *Eumeces himalayanus* Gunther, *Rept. Brit. Ind.* : 86, pl. 10, fig. H (type loc. W. Himalayas).

1869. *Euprepes blythi* Steindachner, *Reise Novara, Rept.* : 46 (type loc. Wangu Valley, Kashmir).

1872. *Mococa himalayana*, Stoliczka, *J. Asiat. Soc. Beng.*, 41 : 127.

1887. *Lygosoma himalayanum*, Boulenger, *Cat. Liz. Brit. Mus.*, 3 : 257. pl. 17. fig. 2.

1935. *Leiolopisma himalayanum*, Smith, *Fauna Brit. Ind.*, 2 : 299.

Material Examined : India, Uttarakhand, District Tehri, Kodia, Kitaridhar, 3exs, 29.iii.05, coll A. Bahuguna and Party (Reg. No. 6); District : Uttarkashi, Harsil, around Forest guest house, 2exs, 6.iv.05, coll. A. Bahuguna and Party (Reg. No. 7); District : Uttarkashi, Harsil, 2exs, 6.iv.05, coll A. Bahuguna and Party, (Reg. No. 9); District : Uttarkashi, Dhontri, Village Kamad, 5exs, 3.iv.05, coll A. Bahuguna and Party (Reg. No. 8) ; District : Tehri, Gajia, 2exs, 29.iii.05, coll A Bahuguna and Party, (Reg. No. 10); District : Uttarkashi, Mahidanda (ITBP campus), 2exs, 4.iv.05, coll A. Bahuguna and Party (Reg. No. 11); District : Tehri, Kanatal, 7ex, 30.iii.05, coll A. Bahuguna and Party (Reg. No. 12); District : Uttarkashi, Pachiyari, around Harsil, 3exs, 5.iv.05, coll A. Bahuguna and Party (Reg. No.13); District Uttarkashi, Buransh Khanda, 6exs, 2.iv.05, coll A. Bahuguna (Reg. No. 14); District : Tehri, Nachiketatal, 2exs, 29.v.02, coll J.P. Sati and Party (Reg. No. 58); District : Tehri, Dhanolti & around, 1ex, 23.iv.03, coll A. Bahuguna and Party, (Reg. No. 59); District : Rudra Prayag, village : Dugal Bitta, 3exs., 27.ii.04, coll J.P. Sati and Party (Reg. No. 60); District : Mussori, Chamba Road, 1ex, 5.vi.02, coll V. Khanna (Reg. No. 62); District : Nainital, Ramgarh 2exs, 1.x.05., coll A. Bahuguna and Party (Reg. No. 61), District : Nainital, Village Khabrai, Ramgarh, 3exs., 1.x.05, coll A. Bahuguna and Party (Reg. No. 63); District Nainital, Ramgarh, 2exs, 1.x.05, coll A. Bahuguna and Party (Reg. No. 61); District Nainital, Corbett Tiger Reserve, Sultan Forest Rest house 3 exs, 17.i.iv, coll V. Khanna & Party (Reg. No. 64); District Nainital, Corbett Tiger Reserve, Nakka Tal, near Malasi, 2exs, 19.i.04, coll V. Khanna & Party (Reg. No. 65); District Dehradun, Siwalik range, Sabhawala, 1ex, 20.xii.2001, coll. J.P. Sati and Party (Reg. No. 32); District Dehradun, Siwalik range, 6exs, 20.ii.2002, coll. J.P. Sati and Party, (Reg. No. 33); District : Uttarkashi, Nachiketa Tal, 4exs, 2.iv.05, coll : A. Bahuguna and Party (Reg. No. 50).

Measurements : Adult mean Snout and vent length 62 mm, tail length 89mm.

Diagnostic character :

This is a small skink with an iridescent bronze dorsum, with indistinct lighter and darker markings; many individuals are with a dark-brown vertebral stripe; lateral stripe is of brass colour and is having irregular margin; there is a broad, dark-brown stripe emerging from snout and reaching up to the proximal part of tail through eye and upper side of the fore-limbs; this lower broad stripe is bordered below by a narrow, irregular, white stripe edged with black; distal body portion is bronzy, with numerous light and dark-brown spots; top of the head and upper side of the limbs are bronzy, with dark dots all over; belly is bluish-white. The lower eyelids are with semitransparent disc; devoid of supranasals; four supraoculars; supraciliaries 6-8; six to seven upper labials; frontonasal and rostral wider than long; snout is bluntly pointed; ear-opening is oval, smaller than eye; frontoparietals paired; prefrontals are generally separated from each other; body scales are smooth, in 24-30 rows at middle of the body, the four median series of dorsal scales are nearly two times larger than the lateral scales; a pair of very large preanal scale is present; tail is 1 1/2 times longer than the head and body; limbs are weak, short, digits long, sub cylindrical, 14-20 smooth or obtusely keeled lamellae beneath the fourth toe. Standard length 65 mm., tail length 93 mm.

Distribution : India : Kashmir, Himachal Pradesh (Simla), Uttar Pradesh (Garhwal, Allahabad, Mussooree, Nainital).

Elsewhere : Pakistan, Nepal, S. Turkistan.

Remarks : Prefers damp areas or open grassy areas between 400 to 1200 metres, also available in lake sides, banks of rivers and gardens. The species is insectivorous viviparous (produces 3 or 4 young at a time).

Status : Very common in certain areas of its range.

Family LACERTIDAE

Genus *Ophisops* Menetries 1832

28. *Ophisops jerdoni* Blyth

Stripped Race Runner

1853. *Ophiops jerdonii* Blyth, *J. Asiat. Soc. Beng.*, 22 : 653
(type loc. Mhow, Indore, Madhya Pradesh).

1868. *Tropidosaura jerdoni*, Theobald, *Cat. Rept. Asiat. Soc. Mus.*, : 22.
1870. *Pseudophiops jerdoni*, Jerdon, *P. Asiat Soc. Beng.*, : 71.
1870. *Pseudophiops theobaldi* Jerdon, *P. Asiat. Soc. Beng.*, : 71 (type loc. Alpine Punjab).
1870. *Ophiops bivittata* Jerdon, in Beddome, Madras Month. *J. Med. Sci.*, 2 : (9), 172 (type loc. Punjab).
1884. *Calosaura chaperi* Sauvage, *Bull. Soc. Philom.*, (7)8 : 142 (type loc. Bellary, Karnataka).
1935. *Ophisops jerdoni*, Smith, *Fauna Brit. Ind.*, 2 : 377.

Material Examined : India, Uttarakhand, District : Udham Singh Nagar, Dineshpur, 8exs, 26.ix.05, coll A. Bahuguna and Party (Reg. No. 16).

Measurements : Average length Snout to vent 42 mm, tail length 88 mm.

Diagnostic character : Standard length 45mm.; tail length 90 mm.

The dorsum is olive-brown, golden or greyish with a golden tinge; with two golden lateral stripes, the upper is extending from the supraciliary margin to the tail, the lower stripe borders the upper lip and extends along the flanks to the base of the hind-limb; the space between the two stripes and the upper margin of the upper stripe is densely spotted with black, belly is yellowish white. Upper head shield strongly keeled and striated, smooth in juveniles; nostril is in a large anterior-nasal; two postnasals are generally present; frontonasal single; prefrontals in contact with one another or separated by a small scale; four supraoculars are generally available, the second and third are the largest and are separated from the supraciliaries by a row of small scales; interparietal is larger than the occipital; fifth labial is subocular; temporal scales are strongly keeled, the upper two form the border with the parietal are the largest; tympanic shield moderately large; no distinct collar is present, but the region is having enlarged scales; dorsal scales are almost equal, rhomboidal, almost as large as the caudal, in oblique longitudinal series converging towards the vertebral line; ventral plates are in 6 longitudinal and 23-29 transverse series; 28-35 scales round the middle of the body; a large preanal plate is present; digits with sharply keeled scales beneath, the hind limb reaches to the

ante-humeral fold or between it and the ear in male, to the axilla or nostril so far in the female; 6-12 femoral pores are available on each side. (Jerdon 1870, Boulenger 1890, Sharma 2002).

Distribution : India : Andhra Pradesh, Maharashtra, Gujarat (Cutch), Madhya Pradesh (Sarai, Rewa), Rajasthan, Uttarakhand, Tamil Nadu (Beddome 1870).

Elsewhere : Pakistan.

Remarks : Burrowing on soft soil, diurnal. The food consists of termites, caterpillars, ichneumonids, ants, orthopterans and their eggs and spiders.

Status : Commonly available in various localities of its range.

Family VARANIDAE

Genus *Varanus* Merrem 1820

29. *Varanus bengalensis* (Linnaeus 1758)

Common Monitor Lizard

1758. *Lacerta monitor* Linnaeus, *Syst. Nat. ed.*, 10 : 201 (type loc. India).
1768. *Stellio thalassinus* Laurenti, *Syst. Amphib.*, 57 (based on Seba's Illustration 1 : pl. 110, figs. 4 & 5, habitat "India Orientali").
1802. *Tupinambis bengalensis* Daudin, *Hist. Nat. Rept.*, 3 : 67 (type loc. Bengal).
1802. *Tupinambis cepedianus* Daudin, *Hist. Nat. Rept.*, 3 : 43, pl. 29.
1820. *Varanus punctatus* Merrem, *Tent. Syst. Amphib.*, : 59.
1827. *Monitor elegans* (not of Daudin) Gray, *Zool. Journ.*, 3 : 225 (based on Hardwicke's drawings, nos. 53-59, Vol. 2).
1831. *Monitor heraldicus* Gray, in Griffith's *Anim. King.*, 9 : 27 (type loc. Bengal).
1838. *Monitor dracaena* Gray, *Ann. Mag. Nat. Hist.*, 1 : 393 (type loc. India).
- 1844 (1829-44). *Monitor gemmatus* Guerin, *Icon. Regne Anim. King.*, 1 : pls. Reptile pl. 3. (type loc. not known).
1842. *Varanus bibronii* Blyth, *J. Asiat. Soc. Beng.*, 11 : 869 (type loc. not known).
1845. *Varanus lunatus* Gray, *Cat. Liz. Brit. Mus.*, : 10 (type loc. India).

1885. *Varanus bengalensis*, Boulenger, *Cat. Liz. Brit. Mus.*, 2 : 310.

1935. *Varanus monitor*, Smith, *Fauna Brit. Ind.*, 2 : 402.

1966. *Varanus bengalensis*, Minton, *Bull. Amer. Mus. nat. Hist.*, 134 : 112.

Material Examined : Material was not collected as listed under IWPA 1972 but sighted during surveys at many localities. Description is based on literature (Smith 1934, Sharma, 2002). Sighted at various localities during survey like : Nanakmatta, Corbett fall, around Corbett Tiger Reserve, Corbett Tiger Reserve (District : Nainital), Kharia village near Surai, (District : Udham Singh Nagar), many times at Kaulagarh (Dist Dehradun).

Description : Standard length 280-750 mm ,tail length 475-1000 mm.

Dorsal colouration of juveniles is dark olive, with transversely arranged dull spots or ocelli, some individuals with alternate darker spots or cross bars and in rare case only dark bars are available; dorsal aspect of the head is with faint spots; a prominent dark streak is present on the temporal region; ventrum is whitish, with thin dark transverse bars, which are sometimes broken into minute spots, arranged in most regular transverse series. Dorsal colour in adults is brownish or olive dorsally, generally speckled with black; throat is with numerous black spots. Ventrums are yellowish, in most cases with black dots or spots, belly may be uniformly yellow. The head is long and narrow, neck is long, snout is pointed; convex at the tip; its length from 2 to 2 ¹/₂ times its height; distance from nostril to eye is 55-75% of distance from nostril to tip of the snout; canthus rostralis is distinctly prominent; nostril is an oblique slit, slightly nearer to the orbit than to the tip of the snout; lateral fold on neck is well developed; lateral fold on body is feeble, ear-opening is like an oblique slit, its length is almost twice the width; teeth are acute and slightly compressed.

Scales on the crown of head are larger than the scales present on the nuchal region and fore part of the dorsum; which are rounded and devoid of the keels; posterior scales of the dorsum may or may not be keeled; scales of neck, back and belly are sub-equal, supraocular scales are small, almost equal; abdominal scales are smooth, in 90-

110 transverse rows; scales at middle of body are in 132-176 rows. Limbs are long and strong, digits are elongate. Tail is strongly compressed laterally, with a low double-toothed crest of scales above except at its base and tip; lateral caudal scales are keeled, slightly smaller than the subcaudal scales. Femoral pores are not present (Sharma 2002).

The males can grow up to 100cm. The females, on the other hand, do not grow this large. It has also been found that females have a much shorter tail and lack pre-anal flaps which can be found in males as patches of scales.

Distribution : Whole of India.

Elsewhere : Although called the Bengal Monitor, this species is among the most widely distributed of varanid lizards. It is found in river valleys in eastern Iran, Afghanistan, western Pakistan, India, Nepal, Sri Lanka, Bangladesh and Myanmar. A subspecies *Varanus bengalensis nebulosus* called the Clouded Monitor occurs in southern Burma, Vietnam, Kampuchea, Thailand, Malaysia, Sumatra, Java and the Sunda Islands (Mertens 1942).

Remarks : This diurnal monitor lizard is of the burrowing habits and prefers to live in varied habitats. Large adults may ascend vertical tree trunks where they sometimes stalk and capture roosting bats. Their normal prey consists of beetles, grubs, orthopterans, scorpions, snails, ants and other invertebrates. Vertebrate prey is comparatively rare and includes frogs, fish, lizards, snakes and rodents. The Bengal monitor *Varanus bengalensis* can be distinguished from the clouded monitor *Varanus bengalensis nebulosus* by larger scales above the eyes and fewer scales around the body. Bengal Monitors are usually solitary and usually found on the ground although the young are often seen on trees. *V. b. nebulosus* has a greater propensity for tree climbing (Mertens 1942). *Varanus bengalensis* and *Varanus bengalensis nebulosus* make use of abandoned termite mounds (Auffenberg, 1983a. Auffenberg, 1983b, Auffenberg, 1986).

They live in temporary hibernation from November to early March and are seen in large numbers during and after the rainy season. These monitors have been seen up to the altitude of 900 metres in hilly areas and generally avoid the wind-

blown sandy areas of desert. They feed on beetles, ants, grasshoppers, termites, small mammals, snakes, lizards, and vegetable matter. The main breeding season is from late June to early September.

Status : Endangered, as they are killed in large numbers for their skin and flesh. The flesh of this lizard is considered as delicacy and consumed by many people, throughout its range. Their eggs are also eaten in large numbers at various places.

30. *Varanus flavescens* (Gray) Barred Yellow Monitor Lizard

1827. *Monitor flavescens* Gray, *Zool. Journ.*, 3 : 226.

1830. *Varanus rosselii* Heyden, in *Ruppell's Atlas Reise nord., Afr.*, : 23 (type loco Bengal)

1836. *Varanus picquotii* Dumeril & Bibron, *Erp. Gen.*, 3 : 485 and Atlas, pl. 35, fig. Scales (type loc. Bengal).

1935. *Varartus flavescens*, Smith, *Fauna Brit. Ind.*, 2, p. 404.

Material Examined : Material was not collected as listed under IWPA 1972. Sighted during surveys at many localities. Description is based on literature (Smith 1934, Sharma, 2002).

Description : Standard length 365 mm., tail length 465 mm. Dorsal coloration in juveniles is dark brown, with yellowish spots transversely arranged, sometimes these unite and form distinct transverse bars; temporal region is with a dark streak, which gradually merges with the dark brown colour of the head; dark brown cross bars are present on the lips and throat; belly is with or without the dark brown cross bars; ventrum is usually yellowish. In adult individuals, as the age increases this colour pattern fades out and the whole body takes a dark brown or reddish brown hue, with distinct pattern of alternating transverse bars of reddish brown and dirty yellow.

Snout short, convex, measuring a little less than the distance from the anterior border of the orbit to the anterior border of the ear; *canthus rostralis* distinct. Nostril an oblique slit, a little nearer to the end of the snout than to the orbit. Digits short, the length of the fourth toe, measured from its articulation with the tarsus to the base of the claw, not exceeding the length of the femur. Tail feebly compressed, keeled above. Scales of head small, subequal; the median series of

supraocular scales slightly dilated transversely. Scales on upper surfaces moderate, oval, keeled. Abdominal scales smooth, in 65 to 75 transverse rows. Caudal scales keeled; the caudal keel with a very low, doubly-toothed crest (Boulenger 1890, Whitaker 1981, Auffenberg *et al* 1989, Sharma 2002).

Distribution : India (North India from Punjab to West Bengal and Assam; more common in Bihar).

Elsewhere : Pakistan (Salt range, Punjab; Sind), Nepal, Bangladesh.

Remark : Diurnal species, inhabiting burrows in groves and on the muddy walls (embankments) of pools and canals; it is a very good swimmer and preys on crabs, shrimps, aquatic insects and their larvae, which comprises its main food.

Threats : Habitat loss and poaching for skin and flesh are the major threats to survival of the species.

Status : IPWA : Schedule I, IUCN : LR.

Suborder Serpentes

Families present in Uttarakhand under Sub order Serpentes :

Family TYPHLOPIDAE

In worm snakes both dorsal and ventral surfaces of cylindrical body are covered with uniform cycloid scales; the eyes are rudimentary and are covered with scales. Mouth is small, ventrally situated and the lower jaw is devoid of teeth; the pterygoid bone of the skull does not reach the mandible or the quadrate; vestiges of pelvic girdle are reduced to a single bone; the maxilla is transverse, but loosely articulated with other skull bones; prefrontal is suturally articulated with the nasal, mandible is with coronoid bone; toothless; quadrate elongate and directed horizontally forwards; teeth are directed backwards.

Family BOIDAE

It includes Pythons and Boas which are largest of the snakes reaching upto length of 10 meters or more. The dorsal body scales are small and smooth; the ventral scales are transversely enlarged in a single row generally but sometimes two rows are also available in caudal region; the

head is quite distinct from the neck, broad and triangular; tail is short and prehensile; eyes are large in pythons with vertical pupil but they are small in Boas, with a vertically elliptic pupil. Boas are devoid of premaxillary teeth. Maxilla, palatine and pterygoid bones are movable and provide a great flexibility to the skull; vestiges of the pelvic girdle and hind limb are represented by distinct ilium, pubis, ischium and femur; the femur generally terminates in a claw-like spur visible on each side of the vent.

Family COLUBRIDAE

In colubrids dorsal scales are small, more or less rhomboidal in shape and are overlapping; the ventral scales are transversely enlarged to form a single row. The head may or may not be distinct from the neck; the tail is long; eyes are large; teeth are numerous, pointed, directed towards the backside, present on maxilla, dentary, palatine and pterygoid bones of the skull; the posterior maxillary teeth are grooved in certain species; mandible is devoid of coronoid bones. There is a flexible connection between the maxilla and extopterygoid. Vestiges of pelvis and hind limbs are found. All the bones of anterior skull region bear a most flexible and loosely movable condition on the cranium; the premaxilla and maxilla are separate; the prefrontal and nasal are also separate; supratemporal is generally freely movable on the cranium; the long quadrate slants backward to increase the gap of the jaw.

Family ELAPIDAE

It includes extremely poisonous snakes. They have grooved fangs in front part of the mouth, which are firmly attached to the anterior end of the maxillary bone. Other characters are same as in family Colubridae.

Family VIPERIDAE

It includes ordinary vipers, Pit vipers, Rattle snakes and Adders. In vipers dorsal scales are small, rhomboidal and overlapping; the ventral scales are transversely enlarged, in a single row; in some species tail ventrals are in two rows; the head is quite distinct from the neck; tail is short to moderate; in pit vipers there is a pit between the eye and nostril, which is heat sensitive. The eyes are of moderate size, maxilla is short, they have a single, large, erectile, tubular fang.

Family TYPHLOPIDAE

Genus *Typhlops* Oppel 1811

31. *Ramphotyphlops braminus* (Daudin) Brahminy Worm Snake, Common Blind Snake

1803 *Eryx braminus* Daudin, *Hist. Nat. Rept.*, 7, p. 279.

Material Examined : India, Uttarakhand, District : Nainital, Corbett tiger reserve : Sarpadisli FRH, 1ex, 18.i.2004, coll. V. Khanna & Party (Reg. No. 70); District Nainital, Corbett Tiger Reserve, Nakka Tal, near Malasi, Sexs, 19.i.2004, coll V. Khanna & Party (Reg. No. 71). Sighted during local tours in District Dehradun at various localities like Teen Pani.

Measurements : Mean length : 120mm.

Diagnostic character : Head is of same width as body, snout round. Tiny scale covered eye visible as black dot. Short, blunt tail ends in a tiny spine. Glossy body, almost uniform, reddish-brown or blackish-brown above; lighter below. Often mistaken for a worm, but close look will reveal the scales, eyes and tiny tongue. Only upper jaw (maxilla) has teeth.

Scalation : Scales in 20 rows around the body, smooth; 290-320 transverse rows of scales. Total length of snake 30-45 times diameter of body. Belly scales not broader than adjacent body scales. Average length of adults : 125mm (5 in) Maximum length reaches upto : 250 mm (9 in) (Smith 1943).

Distribution : The whole of South Asia. Introduced worldwide.

This species has spread via flowerpots almost all over the world even to Snake less islands like Lakshadweep, New Zealand and Hawaii (Whitaker and Captain 2004).

Remarks : Likely to be seen under stones, flowerpots or while digging in slightly damp earth. Also found in termite mounds and encountered in bathrooms and houses. Seen above ground after rains. Feeds on ants, other small insects and their larvae. One of the few parthenogenetic snakes known. No males have ever been found. As the females can lay fertile eggs without need to mate. Spends most of its life underground. Non venomous.

Status : common.

32. *Typhlops diardi* Schlegel Large Blind Snake, Diard's Blind snake

1839. *Typhlops diardi* Schlegel *Abbild. Amphib.* P. 39 (Indes Orientalis; Paris).

Material Examined : Material was not collected but reported by previous workers (Table 1). Description is based on literature (Smith 1943, Sharma 2003).

Description : Maximum length 430mm (17in). Small but one of the largest and thickest worm snakes. Scales small, smooth, highly polished. Head is not broader than neck. Snout rounded, strongly projecting. The tip of the snout has a single prominent, upturned scale, which is visible from above. Poorly developed eye visible as a tiny dark spot under scales. Very short tail ends in a small spine. Dorsal is black or dark brown black, whitish or paler underside. The two colours are not sharply separated. Only upper jaw (maxilla) has teeth.

Scalation : Scales 24-25 (rarely 22) rows around the body, smooth: 260-300 transverse scale rows. Breadth of rostral $1/3^{\text{rd}}$ to $3/5^{\text{th}}$ of head. Rostral often extends to level of eyes. Belly scales not broader than adjacent body scales. Total length of snake 26-32 times diameter of the body (Smith 1943).

Remark : Lives mostly underground in decaying wood or vegetation. Nonvenomous.

Distribution : India : to at least 1525m (5000ft) in Western Himalayas up to Dehradun, Eastern Himalayas to Arunachal Pradesh; West Bengal and Assam.

Elsewhere : Nepal, Bangladesh and Myanmar.

Status : Uncommon.

33. *Typhlops porrectus* Stoliczka Slender Blind snake

1871 *Typhlops porrectus* Stoliczka, J.A.S. Bengal, 40, p 426, pl 25, figs 1-4 (Bengal type lost).

Material Examined : Material was not collected. It was reported by other workers (Table 1). Description is based on literature.

Description : Average length : 290 mm. The body is slender. Snout is rounded; nostrils lateral. Dorsal colouration varies from brown to blackish; ventrum is light brown or paler. Snout and anal portion is whitish. Eyes are distinct. Tail is short and ends into a fine spine.

Scalation : Scales round the body are 18; 400-440 transverse rows of scales on the whole body length.

Distribution : Throughout India.

Remarks : The nocturnal worm snake lives subterranean. It lives under stones, wooden logs and lives in the association of various small insects like earwigs, silverfish and spiders. Nonvenomous.

Status : Very common.

Family BOIDAE

Genus *Python* Daudin 1803

34. *Python morulus morulus* Linn Indian Rock Python

1796. Russell, *Ind. Serp.* i, pp. 27 to 30, pls 22 to 24 ('Pedda Poda', Ganjam and Vizagapatam), and p. 44, pl 39 ('Bova' Calcutta).

1755. *Coluber morulus* Linn., *Syst. Nat.*, 10th ed. P. 225 (India).

1890. *Python morulus*, Boulenger, *F.B.I.*, p 246.

Material Examined : Material was not collected, but reported and sighted at various localities (Table 1). Description is based on literature (Smith 1943, Whitaker and Captain 2004).

Description : Average length of adults 3000 mm (118 in). Maximum length reaches upto 7620 mm (300 in).

Thick bodied, smooth-scaled. Head broader than neck; eye has vertical pupil. Scale at snout tip and first two upper lip scales have heat sensitive pits. Upper surface of head has large scales of different shapes and sizes. Yellowish to brown with asymmetrical dark brown, black edged blotches. Tip of arrowhead mark on head indistinct in adults; tongue and parts of head pale pink. Two dark streaks on side of head-one below, the other through 'behind eye. Underside white or yellowish. (Russell's Viper has keeled scales and a pattern similar in color, but with symmetrical blotches, that are either oval with pointed ends or round. Also the upper head scales are small).

Scalation : Scales in 60-75 rows, smooth. Ventrals 253-270, distinctly narrower than width of belly; anal undivided; subcaudals 58-73, paired. Rostral and first 2 supralabials pitted; supralabials 11-13 (6th or 7th touching eye).

Distribution : Throughout India (except the Islands) up to 2000m (6560 ft) above sea level. Common in parts of its range.

Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka.

Remarks : Nocturnal. Inhabit estuarine mangrove forests and scrub jungle, rainforests and grasslands. Preys on warm blooded (rodents, fruit bats, birds, jackals, civets, deer and wild boar). The pits (slits) on the rostral (snout scale) and upper lip scales sense warmth of predator. Both sexes have a spur (larger in males) on each side of the anal scale. These are considered to be vestigial hind limbs. Females lay up to 107 eggs in March-June and remain coiled on them for 60-80 days. The species is killed for its skin demand in the market. Non Venomous.

Status : Rare, IPWA : Schedule I, IUCN LR/nt ver 2.3 (1994), CITES I.

35. *Python morulus bivittatus* Linn Burmese Python

1755. *Coluber morulus* Linn. *Syst. Nat.*, 10th ed. P. 225 (India).

1890. *Python morulus*, Boulenger, *F.B.I.*, p 246.

Material Examined : Material was not collected, but reported by other (Whitaker and Captain 2004; Nawab and Srivastava 2008).

Description : Thick bodied, smooth-scaled. Head broader than neck; eye has vertical pupil. Scale at snout tip and first two upper lip scales have heat sensitive pits. Upper surface of head has large scales of different shapes and sizes. Yellowish to brown with asymmetrical dark brown, black edged blotches. Tip of arrowhead mark on head indistinct even in adults; tongue blue black, no pink on head. Two dark streaks on side of head-one below, the other through / behind eye. Underside white or yellowish. (Russell's Viper has keeled scales and a pattern similar in color, but with symmetrical blotches, that are either oval with pointed ends or round. Also the upper head scales are small).

Scalation : Scales in 60-75 rows, smooth. Ventrals 245-270, distinctly narrower than width of belly; anal undivided; subcaudals 58-73, paired. Rostral and first 2 supralabials pitted; supralabials 11-13, separated from eye by suboculars.

Distribution : India : Restricted to Northeast India and reported from as far west as Uttarakhand (Nawab and Srivastava 2008).

Elsewhere : Nepal, Myanmar, Bangladesh, China. Laos. Vietnam, Thailand, Cambodia, Indonesia.

Remarks : Nocturnal. Inhabit estuarine mangrove forests, rainforests and grasslands. Though adaptable, pythons need large, undisturbed areas to hunt and hide in. Preys mainly warm blooded (rodents, fruit bats, birds, jackals, civets, deer and wild boar). The pits (slits) on the rostral (snout scale) and upper lip scales sense warmth and help the snake hunt. Both sexes have a spur (larger in males) on each side of the anal scale. These are considered to be vestigial hind limbs. Females lay up to 107 eggs in March-June and remain coiled on them for 60-80 days. Muscular body contractions raise temperature a little to help incubate the eggs. Non Venomous.

Status : IPWA 1972 : Schedule 1.

Genus *Eryx* Daudin 1803

36. *Gongylophis conicus* (Schneider) (= *Eryx conicus* (Schneider))

Common Sand Boa, Russell's Sand Boa

1796. Russell, Ind. Serp. 1, p. 5, pl. 4 (Madras).

1801. *Boa conica* Schneider, *Hist. Amphib.*, 2, p. 268.

1821. *Boa conica* Dekschr. *Akad. Miinchen*, 7, p. 119, pl 6, fig 2 (based on Russell).

Material Examined : Material was not collected but reported (Table 1). Description is on the basis of literature (Smith 1943, Whitaker and Captain 2004).

Description : Maximum length reported to be 1000mm (39 in). In general the length of an adult is 500mm (20 in). The body is strong. Scales of head and tail are keeled. Colour is variable ranging from reddish - brown, yellowish- white, dark brown or black with irregular blotches of dark brown and black-edges. These markings are connected on the back. The belly is yellowish-white. The pupil of eye is vertical.

Scalation : Scales on head and tail are strongly keeled (sometimes tubercled). Scales on dorsal surface are in 40-55 rows. Ventrals are in 162-196 in numbers.; subcaudals 16-24, entire and anals are with a large median scale with a smaller scale on each side i.e. tripartite. Supralabials 12-14. Mental groove is absent.

The head has small scales on top whereas internasal and nasals are large in size. Scales in between eyes 8-10 scales, around eye 10-15.

Distribution : Throughout India (excluding Northeast and Andaman and Nicobar islands).

Elsewhere : Pakistan, Nepal, Bangladesh and Sri Lanka.

Remark : Young sand boa can be mistaken as saw scaled vipers, adults for Russell's vipers or pythons. Behaviour: Mainly nocturnal but may hunt in daytime. It feeds on lizards, insects, snakes, birds and rodents. They may attack on disturbance. Non-venomous

Status : Common.

**37. *Eryx johani johani* (Russell)
Red Sand Boa, John's Sand Boa**

1801. *Boa johnii* Russell, *Ind. Serp.*, 2, pp 18 & 20. 26 & 27 (Tranquebar).

1890. *Eryx johani*, Boulenger, *F.B.I.*, p 248, fig.

Material Examined : Material was not collected but reported (Table 1). Description is on the basis of literature (Smith 1943, Whitaker and Captain 2004).

Description : Maximum length of the snake reported to be 1000mm (39 in) In general the length of adult is 750 mm (30 in). Body is thick. The head is with a wide, shovel – shaped scale at the snout. Head is not broader than neck. The tail is blunt, resembles the head- thus giving the misbelief that it has two heads. Eye is with vertical pupil. The colour varies from reddish brown, dark brown, speckled grey, yellow or black. Belly is white spotted with brown or sometimes entirely brown. The tail is sometimes banded with a black bands.

Scalation : Scales weakly keeled in 53-67 rows. Ventrals : 190-210, subcaudals 20-34, entire. Anal is with large median scale with a smaller scales on each side. Supralabials 10-12; scales between eyes (across forehead) 6-9; scales around eye 10-11. Mental groove present.

Distribution : Throughout drier zones of the peninsula and the Northwest.

Elsewhere : Pakistan and Nepal.

Remarks : Look alike Diard's worm snake but the tail of Diard's worm snake ends in a spine. Nocturnal. It prefers dry places and sandy soil. It lives in rodent burrows. Usually docile. It preys upon lizards, snakes, birds, rodents. Females bears 6-8 live young with distinct banded tails. Non venomous.

Status : Common.

**Family COLUBRIDAE
Key to the subfamilies of the family
Colubridae**

Hypophyses absent or present on the posterior dorsal vertebral; nostril lateral; head shields are large and symmetrical; ventral shields are well developed; teeth are solid or the 2 or 3 posterior ones are grooved
.....COLUBRINAE

Hypophyses developed throughout the vertebral column; nostril crescentic on the upper surface of the snout.....
.....HOMALOPSINAE

**Sub family COLUBRINAE
Genus *Ahaetulia* Link 1807
38. *Ahaetulia nasutus* (Lacepede)
Common Whip snake**

1789. *Ahaetulia nasuta* Lacepede, *B. G. E. Histoire Naturelle des Quadrupèdes Ovipares et de Serpens*. Vol. 2. Imprimerie du Roi, Hôtel de Thou, Paris, 671 pp.

Material Examined : Material was not collected, the description is based on literature (George 1890, Wall 1908a, 1908b, 1910).

Description : Total length 5 feet: tail 2 feet. A slender green coloured tree snake also known as Green vine snake with a triangular head. Its eyes are large and give it near stereoscopic vision, which would clearly assist it in its hunting techniques. Its colouration varies from bright green with brownish stripes to emerald green with pink or buff coloured stripes. The snout is pointed, terminating in a dermal appendage, which is shorter than the eye and formed entirely by the rostral; the length of the snout, without the appendage, about twice the diameter of the eye or rather more. No loreal; internasals and prefrontals in contact with the labials; frontal as long as its distance from the rostral or a little longer, as long as the parietals or

a little longer; two preoculars and a small subocular (or one preocular and two suboculars), upper preocular in contact with the frontal; two postoculars; temporals 1+2 or 2+2; upper labials 8, fifth entering the eye; 4 lower labials in contact with the anterior chin-shields, which are shorter than the posterior.

Scalation : Scales in 15 rows. Ventrals 172-188; anal divided; subcaudals 140-166. Bright green or pale brownish, the interstitial skin between the scales black and white on the anterior part of the body, which appears striped when distended; a yellow line along each side of the lower surface.

Distribution : All over India except the very arid zones.

Elsewhere : Sri Lanka, Myanmar, Bangladesh, Thailand, Cambodia, Vietnam.

Remarks : This snake is diurnal, mildly venomous and normally feeds on frogs and lizards. They are usually slow moving and rely on their camouflage, looking like a vine in foliage. The species is viviparous, giving birth to young, which are often enclosed in the egg membrane. In south it was observed to be preying on skink endemic to Western Ghat *Ristella travancorica*. The venom is mild and causes swelling.

Genus *Argyrogena* Werner 1924

39. *Argyrogena ventromaculatus* (Gray and Hardwicke),
= *Coluber ventromaculatus* (Gray and Hardwicke),
Glossy Bellied Racer

1834. *Coluber ventromaculatus* Gray and Hardwicke, lii. *Ind. Zool.* 2, pl 80, fig. 1 (no type loc. given; London).

1890. *Zamenis ventromaculatus*, Boulenger, *F.B.I.* p 325.

1861. *Platycephalus semifasciatus* Blyth, *J.A.S. Bengal*, 29, p 114 (near Simla); Blanford, *ibid*, 44, 1875, p 208.

Material Examined : Material was not examined but reported (Table-1). Description is based on literature (Smith 1943; Sharma 2003; Whitaker and Captain 2004).

Description : Maximum length 1260 mm (50 inch). Smooth scales, head distinctly broader than neck, large eye with round pupil. Pale grayish white or pale reddish-brown with zigzag, short, darker grayish brown cross bands. Head marked with brown or gray in colour.

Nape has short black vertebral stripe. Smaller spots on sides of body alternate with markings on back. Pattern not very distinct on hind body and tail. Underside white.

Scalation : Scales in 19 : 19 : 13 or 15 rows, smooth. Ventrals : angulate laterally : males 195-209, females 199-213; anal divided; subcaudals paired : males 108-115; females 97-106. Supralabials 9, rarely 8 (5th and 6th touching eye) preoculars 2; postoculars 2-3; temporals 2+3.

Distribution : India : Jammu and Kashmir; Rajasthan (Sikar); Gujarat (Khandesh). Uttarakhand (Almora).

Elsewhere : Pakistan, Uzbekistan and Israel. Found at low altitudes usually below 200m (650ft).

Remarks : Diurnal/crepuscular; occasionally found at night. Eats geckos, lizards and small mammals. Hibernates during winter. Mildly venomous.

Status : Rare.

Genus *Elaphe* Fitzinger 1833

40. *Coelognathus helena helena* (Daudin)
= *Elaphe helena* (Daudin)
Common Trinket Snake

1803. *Coluber helena* Daudin, *Hist. nat. Rept.* 6, p. 277.

Material Examined : India, Uttarakhand, District Dehradun, Sabbawala, 1 ex., 1.ix.06, coll : V. Khanna and Party (Reg. No. 87).

Diagnostic character : Maximum length : 1680mm (66 in). Slender bodied. Olive and chocolate brown in colour with two black stripes on neck and light bands and/or checks on forebody. Hind body has two prominent dark brown or black stripes that continue onto tail. Belly is pearl white.

Scalation : Mid body scales smooth in 23 to 27 rows (rarely in 29 rows). Ventrals 210-244, angulate laterally; anal scale entire (rarely divided); subcaudals 73-100 paired. Supralabials 8-11 (5th and 6th/ 6th and 7th or rarely 4th and 5th /4th to 6th/ 5th to 7th touching eye; last supralabial below eye touching temporals); preocular 1; post oculars 2 (rarely 1) temporals 2+2, 2+3 or rarely 2+4.

Distribution : India : throughout upto Jammu and Kashmir (Poonch) in the North, to Manipur and Naga hills in the North east.

Elsewhere : Nepal. Bangladesh and Sri Lanka. According to Whitaker and Captain (2004), an old record from Pakistan needs confirmation.

Remarks : Non Venomous. In summer this species is found in termite mounds, rock piles and crevices. During cooler months it may be seen on leafy trees and bushes. It is active in day and night. Very commonly seen in human habitation. Prey upon rats, mice and squirrels, lizards, frogs and snakes. It coils forebody into a series of vertical S shaped loops and opens its mouth for striking repeatedly.

Status : Common.

**41. *Coelognathus radiatus* (Schlegel)
{= *Elaphe radiata* (Schlegel)}
Copper Headed Trinket Snake**

1837. *Coluber radiatus* Schlegel, *Phys. Serp.* 2, p. 135, pl 5, figs 5 & 6 (Java : Leiden).

Material Examined : Material was not collected. Description is based on literature (Smith 1943, Sharma 2001, Whitaker and Captain 2004).

Description : Length at hatching 250-300mm (10-12in), Adults average length 1500-1800mm (59-71in) Maximum reported 2300mm (91 in) Colour varies from grayish-brown, fawn, or yellowish-brown back with four black stripes on the forebody (sometimes also midbody). Upper stripes broad, outer pair usually broken into elongated spots. Head copper brown with black line across nape and three black streaks from below and behind eye (uppermost streak joins black line on nape). Underside uniform yellow or gray.

Scalation : Scales in 21 or 19 : 19 : 17 rows, weakly keeled on back in adults. Ventrals 207-250 with strong lateral keel; anal entire; subcaudals 80-108, paired. Supralabials 9 rarely 8 (4th to 6th or 3rd to 5th touching eye); preocular 1; postoculars 2; temporals usually 2+2.

Distribution : India : Uttarakhand (Dehra Dun) to Arunachal Pradesh (Miao) along the Himalayas, parts of Madhya Pradesh (Balaghat), Chattisgarh (Bastar), Orissa (Cuttack), West Bengal and Sikkim. Also Bangladesh, Nepal and throughout most of Southeast Asia. Found up to 1480m (4855ft).

Remarks : Diurnal. Though terrestrial climbs and swims well. Found in open areas close to forests. Eats small mammals, lizards, birds and occasionally frogs. Breeds throughout the year in warmer parts of range; lays 5-15 eggs. If cornered, inflates forebody vertically, forms a series of shaped curves and lifts off ground in defense. Also may open mouth, hiss, and strike. Non venomous

Status : Common.

**42. *Orthriophis hodgsoni* (Gunther) {=*Elaphe hodgsoni* (Gunther)}
Himalayan Trinket Snake**

1860. *Spilotes hodgsoni* Gunther, *P.Z.S.*, p 156, pl. 27 (Nepal, London).

1890. *Coluber hodgsoni*, Boulenger, *F.B.I.*, p. 332.

Material Examined : Material was not collected. Description is based on literature (Smith 1943, Sharma 2001, Whitaker and Captain 2004)

Description : Maximum length 2100mm. Slender bodied scales smooth or weakly keeled. Elongate head, slightly broader than neck. Yellow to olive brown at dorsal. Most of the scales are edged with black or white, which grouped together to form cross bands or mesh like pattern. Sometimes there is a central dark blotch on top of the head. Lip scales and underside yellowish. Outer edge of the belly scales distinctly keeled and spotted with black. Underside of the tail reddish brown to black.

Scalation : Scales in 21 or 23 : 23 : 17 rows, smooth or faintly keeled. Ventrals 228-247 with strong lateral keel; anal scale divided; subcaudals 72-92 paired. Supralabials 8 or rarely 9 (4th and 5th, 3rd and 4th, 3rd to 5th, or 4th to 6th touching eye); last supralabial below eye not touching temporals. It has one large preocular; rarely a small subocular in front of preocular; post oculars 2; temporals 2+2 or 2+3, rarely 3+3, 1+3 or 2+4.

Distribution : India : Jammu and Kashmir (near Kargil, Ladakh, Srinagar, Poonch), northern Punjab, Himachal Pradesh (Shimla, Dharamshala), Uttaranchal (Mussorie, Almora, Garhwal, Nainital) possibly northern Uttar Pradesh and Bihar, West Bengal (Darjeeling), Sikkim, Meghalaya (Garo Hills).

Elsewhere : Nepal and Tibet. Found between 1000-3200m (3280-10, 500 ft). There are two records from 4600m (15, 090ft) and 5000m (16,400ft) that need confirmation.

Remark : Diurnal. It is a montane form. It is found in moist deciduous forests, moist oak forests, dry coniferous forests, near urban habitation and edges of agriculture fields close to water. It feeds on rodents, toads and skinks. It lays six eggs. Non venomous.

Status : Common.

Genus *Liopeltis* Fitzinger 1843
43. *Liopeltis calmaria* (Gunther)
Faintly Striped Neck Snake

1858. *Cyclophis calmaria* Gunther, *Cat. Cod. Sn. Brit. Mus.*, P. 250 (Ceylon; London).

1864. *Cyclophis nasalis* Gunther, *Rep. Brit. Ind.*, P : 231, pl 17, figM (type locality unknown; London).

Material Examined : Material was not collected. Description is based on literature (Smith 1943, Sharma 2001).

Description : Total length in male 335, tail 108; female 390, tail 100mm Light brown, grayish-brown or grayish above the scales usually edged with black, showing more or less distinct longitudinal lines. The most conspicuous being one on each side of the vertebral region. They are separated from each other by five rows of scales. The areas enclosed between them may be darker in colour than rest of the body. Lower part yellow. A series of dark spots are present on each side of the head, the remnants of temporal stripes.

Maxillary teeth : 24-26; head not depressed, fairly distinct from neck. Snout not projecting, not twice as long as the eye; nostril very small in long undivided nasal, which is united with the loreal. Supralabials 7, rarely : 6, 3rd and 4th touching the eye. Anterior genitalia a little longer than the posterior.

Scalation : Scales in 15 : 15 : 15 rows. Ventrals in male : 126-142; in female 130-154. Caudals in male 68-78; in female 53-72.

Distribution : Found in hills. India : Western Ghats, Uttarakhand (Almora), Maharashtra (Chota Nagpur).

Elsewhere : Sri Lanka.

Remark : The variation in specimens from Burma (ventrals 127-134; caudals : 67-76). Non venomous.

Status : Uncommon.

Genus *Ptyas* Fitzinger 1843
44. *Ptyas mucosa* (Linnaeus)
Dhaman, Indian rat snake

1758. *Coluber mucosus*, Linn. *Mus. Ad. Frid.*, 1, p-37, pl 23 and *Syst. Nat. Ed.* 10, p. 226 (India : Stockholm).

1864. *Ptyas mucosus*, Gunther, *Rept. Brit. Ind.*, p. 249.

Material Examined : Sighted at various localities during surveys including NRS, ZSI campus, Kaulagarh, District : Dehradun. Description is based on literature (Smith 1935, Sharma 2001, Whitaker and Captain 2004).

Description : Maximum length reaches upto 3500mm (138in). Scales smooth or keeled (upper rows). Head broader than neck. Large eye has round pupil. The colour varies from pale yellow, olive brown, gray or black. Body lightly or strongly marked with black; markings usually distinct on tail. Lip scales usually separated by vertical black lines. Underside often has prominent dark crossbars.

Scalation : Scales in 17, 18 or 19 : 17 or 16 : 14 rows, smooth or upper rows more or less distinctly keeled. Ventrals 190-213; anal scale divided; subcaudals 100-146, paired. Normally 2 or 3 loreals and a presubocular (Smith 1943).

Remark : Inhabits a wide range of habitats-coastal, arid, wet, mountain, open fields and forests. Diurnal. Climbs well. Mainly prefers to stay in rat holes and termite mounds. It can be seen in paddy fields, high grass, trees, storage places and houses. Feeds on frogs, toads, lizards, birds, rats, bats and snakes and in one case a young tortoise. Rat snake does not constrict but subdue larger prey by holding it down. Smaller prey is simply swallowed alive. Lays 8-22 eggs between March- September (sometimes in winter months). Non venomous. Large rat snakes can inflict painful (though harmless) bites, but calm down with gentle handling. Look alikes : Cobras, Banded Racer, Indo-Chinese Rat Snake, King Cobra (Whitaker and Captain 2004).

Distribution : India : Throughout.

Elsewhere : Throughout South and South East Asia from sea –level to 4000m (13,120 ft).

Status : Common.

Genus *Sphalerosophis* Jan 1865

**45. *Sphalerosophis articeps* Fischer
Royal snake**

1885. *Zamenis diadema* var. *articeps* Fischer, *Jahrb. Hamburg Wiss. Anst.* 2, p102 (Himalayas).

Material Examined : Material was not collected, but reported (Table 1). Description is based on literature (Smith 1943, Sharma 2002).

Description : Average length in male 1940 mm; tail 403 mm; in female 1614 mm, tail 394mm. The pattern on dorsal surface is formed by irregular, dark brown or black spots scattered all over. The black colour is confined to individual scales or thickened in to large rhomboidal dorsal spots. The head partly or entirely black or with a deep red hue, which becomes deep red on nape and temples. Ventrals are pinkish with dark – grey mottling. Throat is white. Adult snake shows variations with yellow, orange, dusky pink and with extremely variable flecks and blotches on the whole of body. Head is quite long; snout is truncated, with a wide temporal region (it is wider than neck); rostral is higher than wide, nostrils are large and present in two distinct nasal shields; loreals are 2; eyes are large and are surrounded by a large supraocular 7-9 small scales; supralabials are 10-13; infralabials 11-14; posterior chin shield are smaller than the anterior ones; prefrontals are divided in to 5-8 scales; body with 27-31 rows of strongly keeled scales at mid – body; ventrals 232-254; subcaudals 96-114; anal is 1.

Distribution : India : Punjab (Ambala), Uttar Pradesh, Uttarakhand, Rajasthan (Jodhpur & Pali districts); Gujarat (Kachcha).

Remark : Nocturnal, active. Inhabit dense scrubby areas and lives in burrows, rock crevices; (from sea level to 6500 feet) abandoned old buildings. Mating takes place in March; 68-78 eggs are laid in May. They prey upon mice, rats and birds.

Status : Common. Non venomous.

Genus *Lycodon* Boie 1826

**46. *Lycodon aulicus* (Linnaeus)
Common Wolf Snake**

1754. *Coluber aulicus* Linn., Mus. Adolph. Frider. 1, p29, pl 12, fig 2 (America : type in Stockholm), and 1758, *Syst. Nat.* 10th Edit. P 220.

1864. *Lycodon aulicus*, Gunther, *Rep. Brit. Ind.*, p 316.

Material Examined : India, Uttarakhand, District Dehradun, Near Rajaji National Park (from Bihargarh Side), 1ex., 22.i.06, coll : J.P. Sati and Party (Reg. No. 19).

Measurements : Length 286mm.

Diagnostic character : The species is slender-bodied with smooth scales. The head is flattened and slightly broader than neck. The snout is broad and projects beyond lower jaw. Eye entirely black. Glossy gray, brown or black above, usually with 10-20 narrow white or yellow bands that fork on sides of body. Neck usually has whitish or yellowish collar. Bands most distinct on forebody and either faint or entirely absent on hind body. Upper lip white. Underside white.

Scalation : Scales in 17 : 17 : 15 rows, smooth. Ventrals 172-214, strongly angulate laterally; anal subdivided; subcaudals 57-80, paired. Loreal 1, in good contact with the internasal, not touching eye; preocular 1; postocular 2; temporals usually 2+2; supralabials 9 (3rd to 5th touching eye) (Sharma 2001, Whitaker and Captain 2004, Smith 1943).

Remarks : Strictly nocturnal. Found in and around caves, wells, stone piles, hollow trees and often in houses. Climbs rough vertical walls with ease. Adults eat geckos and skinks. Lays 5-7 eggs in December-January in the Chennai region; March-July in North India. Usually bites if handled. Non Venomous.

Distribution : India : Throughout India (including Lakshadweep but not the Andaman & Nicobar islands).

Elsewhere : Pakistan, Nepal, Sri Lanka, Bangladesh and Mayammar.

Status : Common.

47. *Lycodon jara* (Shaw)

Yellow speckled Wolf Snake, Twin spotted Wolf Snake

1802. *Coluber jara* Shaw, *Gen. Zool.* 3, p. 525 (based on Russell's plate)

1871. *Lycodon jara*, Stoliczka, *J. A.S. Bengal*, 40, p. 442.

Material Examined : India, Uttarakhand, District Dehradun, Kaulagarh, 1ex, 12.v.05. coll A.

Bahuguna and Party (Reg. No. 17); District : Dehradun, Kaulagarh, 1ex, 20.xi.05, coll A. Bahuguna and Party (Reg. No. 69).

Measurements : 1ex. with Reg no 17 : length 420mm, dorsal scale rows : 17, Ventrals : 164 and subcaudals 63. Other ex. With Reg No. 69 : length 450mm, dorsal scale rows 17, Ventrals 167, 52 subcaudals. Thus a variation was observed in number of ventrals in one of the examples (Reg no 17) examined.

Diagnostic character : Body slender with smooth scales. The head is flattened and slightly broader than neck. Snout does not project beyond lower jaw. Eye entirely black. Glossy brown or purplish- black above, speckled with yellow (most upper body scales have two small yellow or white spots/ short lines). The example examined showed colour as purplish black with yellow speckled markings on dorsal surface. Lip and belly scales white.

Scalation : Scales in 17 : 17 : 15 rows, smooth. Ventrals 167-188, not angulate laterally; anal divided; sub caudals 52-74, paired. Loreal 1, touches internasal; preocular 1; postoculars 2; temporals 1=2 or 2+3; supralabials 8 or 9 (3rd to 5th touching eye) (Smith 1943).

Distribution : India : Orissa (Ganjam), West Bengal to Arunachal Pradesh; western – most records from Dehradun. also Nepal and Bangladesh.

Remark : The snake was found among bushes at NRS, Campus, Kaulagarh. Dehradun. Little is known about this attractive snake. Nocturnal, eats geckos. Lays eggs. Non Venomous. Variation in ventrals was noted in one of the examples (Reg. No. 17).

Status : Uncommon.

48. *Lycodon mackinnoni* Wall Mussorie Wolf Snake

1906. *Lycodon mackinnoni* Wall, *J. Bombay N.H.S.* 17, p 29 (Mussorie : London).

1923. *Ophites mackinnoni*, Wall, *ibid.* 29, p. 614:

Material Examined : Material was not collected, but reported by others (Hussain and Ray 1995) and description is based on literature (Wall 1906, Smith 1943, Sharma 2001).

Description : Maximum length in a female: 365mm; tail 65mm. Colour on dorsal surface is dark brown with a network of white lines; Snout projecting beyond the lower jaw. 17 : 17 : rows of scales on dorsal surface. Ventrals 163-187, feebly angulate laterally. Subcaudals 48-56, anals 2.

Distribution : India Western Himalayas (Mussorie, Almora, Mukteswar (District Nainital). Described by Wall 1906, from collection at alt 6,100 ft from Mussorie.

Status : Rare.

49. *Lycodon striatus* (Shaw) Barred Wolf Snake

1802. *Coluber striatus* Shaw, *Gen. Zool.* 3, p 527 (based on Russell's pl 16).

1870. *Lycodon striatus* Stoliczka, *J.A.S. Bengal*, 39, p 200.

Material Examined : India, Uttarakhand, Jarat ka Nala, Ram Nagar, District : Nainital, 1ex, 21.ix.05, coll A. Bahuguna and Party (Reg. No. 18).

Diagnostic character : Maximum length recorded 488mm (19in).

The body of the snake is slender and covered with smooth scales.. The head is Flattened head, slightly broader than neck, snout broad and projects beyond lower jaw. Eye entirely black. The glossy blackish-brown black body has white, ochre or yellow cross-bands that widen on sides to enclose triangular spots. Bands may be less distinct towards tail. White collar (sometimes faint) usually present. Lip scales and undersides white. Specimens from Maharashtra have white bands with yellow (usually diamond shaped mid spots and are often mistaken for the Yellow-spotted Wolf Snake (Sharma 2001, Whitaker and Captain 2004).

Scalation : Scales in 17 : 17 : 15 rows; smooth, Ventrals (south of lat. 20°) 163-195; anal divided; subcaudals paired (south of lat 20°) 35-50, (north of lat 20°) 44-58. Loreal 1, touches internasal; pre ocular 1; post oculars 2; temporals 2+3, rarely 1+2; supralabials 8 (3rd to 5th touching eye) (Smith 1943, Whitaker and Captain 2004).

Distribution : India : Most of Penninsular India. From Jammu & Kashmir (Jammu), Himachal Pradesh (Shimla) and Punjab in the North to Gujarat in the West : Uttar Pradesh (Agra) east to Jharkhand (Chota Nagpur), Uttarakhand and Orissa; from Maharashtra through Karnataka, south to Tamil Nadu.

Elsewhere : Pakistan, Nepal and Sri Lanka. Found from sea level upto about 1830m (600ft).

Remark : Nocturnal. It feeds on geckos and skinks. Lays 2-4 eggs in August. Both male and female have been found together with eggs. Unlike the Common Wolf Snake, usually does not bite when handled. Non-Venomous.

Status : Common.

Genus *Oligodon* Boie 1827
 50. *Oligodon arnensis* (Shaw)
 Common Kukri Snake

1802. *Coluber arnensis* Shaw, *Gen. Zool.* 3, p 526 (based on Russell's fig 38).

1890. *Simotes arnensis* Boulenger, *F.B.I.*, p 314, and 1894, *Cat. Sn. Brit. Mus.* 2, p. 229.

Material Examined : Material was not examined but reported (Hussain and Ray 1995). Description based on literature.

Description : Length of adult 350mm, Maximum length reported 700mm. Scales smooth. Head slightly or not broader than neck with typical V shaped marks seen in most kukri snakes.

Scalation : Scales in 17 : 17 : 15 rows, smooth. Ventrals L males 161-199, females 166-201, angulate laterally; anal usually divided; subcaudals 41-59, paired. Loreal often united with prefrontal thus not present; supralabials 7 (3rd and 4th touching eye), rarely 6 or 8; anterior temporal (Smith 1943).

Distribution : India : Throughout India (except the Andaman & Nicobar islands and possibly the extreme Northeast).

Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka.

Look alike : Other kukris, Banded krait.

Remark : Inhabits termite mounds, crevices, tree holes and caves. It preys upon insects and their larvae, spiders and gecko eggs, adults eat reptile eggs, geckos, skinks and small mice. Nocturnal and crepuscular. Non venomous.

Status : Common.

Genus *Trachischium* Gunther 1858
 51 *Trachischium fuscum* (Blyth)
 Darjeeling Oriental Worm Snake
 Blackbelly Worm-eating Snake

1854. *Calamaria fusca* Blyth, *J.A.S. Bengal*, 23, p. 288 (Darjeeling : type lost).

1860. *Trachischium fuscum*, Gunther, *P.Z.S.* p. 161.

Material Examined : Material was not collected, description is based on literature.

Description : *Trachischium fuscum* is a species of snake with maximum length reaches up to 700mm according to Wall (male : 325 mm; tail : 55 mm and female 480mm, tail 65mm). Dark brown or reddish brown above, with or without indistinct longitudinal streaks. Yellowish or brown (coral red in life) below, uniform or scantily mottled with brown. Profrontal single, rarely divided. Scales in 13 rows, strongly keeled on the posterior part of the body. Ventrals 132-165. Subcaudals 28-43.

Distribution : India : Western Himalya, West Bengal (Darjeeling district); Assam; Sikkim and Eastern Himalaya.

Elsewhere : Nepal.

Remarks : Non venomous.

Status : Very common in the neighbourhood of Darjeeling at between 5000-7000 feet (Wall 1909).

52. *Trachischium leave* Perracca
 Olive oriental slender snake

1904. *Trachischium leave* Peracca, *Rev. Suisse Zool Geneva*, 12 : 665 (Indes Orientales : Geneva).

1911. *Trachischium quinquelabialis* Wall, *J. Bombay N.H.S.*, 21 : 201 (Mukteswar, 7500 feet, W. Himalayas; London; co type from Nainital dist; Calcutta).

Material Examined : Material was not examined but reported. Description based on literature (Smith 1943, Sharma 2003, Whitaker and Captain 2004).

Description : The adult : average length is 572mm. The body is cylindrical and covered with smooth scales, near anal region, scales are keeled. Head not broader than neck, small eye has round pupil. Body dark gray or olive brown with an iridescent sheen. Underside dark orange or coral red.

Scalation : Scales in 13 : 13 : 13 rows., keeled adjacent to anal in males. Ventrals 140-152; anal divided, subcaudals 29-40, paired. Prefrontals 2; pre ocular 1; postocular 1; supralabials 5 (3rd and 4th touching eye, last longest); temporals 1+1 or 1+2. (Smith 1943).

Distribution : India Western Himalaya-Uttarakhand (Pauri, Almora, Mukteshwar and near Nainital).

Elsewhere : Nepal. Found between 1650-2700m (5410-8860ft).

Remarks : Found under stones or logs, sometimes on forest paths after heavy showers. Lays 3-6 eggs. Diet : probably eats earthworm and small insects. Non venomous.

Status : Rare.

Genus *Sibynophis* Fitzinger 1843

53. *Sibynophis sagittarius* (Cantor)

Cantor's blind headed snake

1839. *Calamaria sagittaria* Cantor, P.Z.S. p. 49 (Trihut, O.; London; sketch in Bodleian lib.).

Material Examined : Material was not collected. Description is based on literature (Smith 1943, Das and Palden 2000, Sharma 2001, Whitaker and Captain 2004, Captain *et al* 2004).

Description : Maximum length : 305mm; tail 250mm. Dorsal colour is light brown with a series of black dots. Head and nape dark brown with a large elongate oval patch of yellow on each side of the back of the head; snout variegated with yellow; a yellow border to the nuchal patch behind. Ventral surface yellow with black dots on the outer edge of each ventral shield. Snout broader and more rounded.

Distribution : Western Himalayas; Ganga basin; lower Bengal, Madhya Pradesh and West Bengal.

Elsewhere : Nepal, Bhutan and Pakistan.

Status : Available throughout the range but no where common.

Genus *Amphiesma* Dumeril & Bibron 1854

54. *Amphiesma platyceps* (Blyth)

Mountain Keelback

1854. *Tropidonotus platyceps* Blyth, J.A.S. Bengal, 23, p 297 (Assam and Darjeeling; Calcutta).

Material Examined : Material was not examined, description is based on literature (Smith 1943, Sharma 2003, Whitaker and Captain 2004).

Description : Maximum length reaches 940 mm (37 in). The snake has slender body. Head is

broader than neck. The eye is large with round pupil. The colour varies from shades of brown or gray on the back, with small black spots and sometimes several series of short white lines that run along the body. Stripes may be present on the side of the body. A black streak is present running from snout tip to angle of mouth and another below eye. Lip scales are white or yellow. Belly is white, yellow cream or pale orange. Towards tail, sometimes-dark streaks may be present. Throat is sometimes black coloured and the underside of the tail mottled with black. The back of the head has two white, black edged lines or U shaped mark.

Scalation : Scales weakly keeled in 19 : 19 : 17 rows. Ventrals : 191-234. Subcaudals 78-98 paired. Loreal 1 (sometimes absent or fused to prefrontal). Prefrontal extend on the side of the head and supralabials are 7 or 8 (3rd to 5th touching eye) preocular 1; temporals 1+1 (3), rarely 2+2. Internasals truncate anteriorly.

Distribution : India : Himalayas from Kashmir in the West to the Abor and Khasi hills in the Northeast upto 3657m (12,000 ft).

Elsewhere : Pakistan, Nepal, Bhutan, Tibet and Bangladesh Old records from Myanmar (need confirmation).

Remark : The species is active in the evening eating fish, frogs, toads, skinks, snakes and their eggs and small mammals. It lays eggs. Mildly venomous.

Status : Common.

55. *Amphiesma stolata* (Linnaeus)
Stripped Keelback

1758. *Coluber stolata* Linn. Syst.Nat. 10th ed. p 219 and 12th Ed. 1766., p. 379 (Asia : Stockholm).

Material Examined : Material was not collected but reported (Hussain and Ray 1995) and sighted by author (at NRS, ZSI campus). Description based on literature.

Description : The body is slender with keeled scales. Back brown with two ribbons like yellowish stripes from neck to tip of tail. Forebody has additional black or dark brown cross-bars or spots that fade towards the tail. Head olive or light brown above. Lips and area in front of and behind eye yellowish. Throat white or yellow. Underside white. Belly scales may have black spots on either side.

Scalation : Scales in 19 (17 or 20) : 19 : 17 rows keeled; Ventrals 118-161; anal divided; subcaudals 46-89, paired. Internasals truncate, narrowed anteriorly. Supralabials 8 (3rd to 5th touching eye)

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka.

Remark : One of India's most common diurnal snakes. Frequently found in paddy fields, ponds, thick grass, bushes and gardens. Non venomous

Status : Common.

Genus *Xenochrophis* Gunther 1864

56. *Xenochrophis piscator* (Schneider)

Checkered Keelback

1799. *Hydrus piscator*, Schneider, *Hist. Amph.*, 1 : 247 (East Indies, based on Russell's Neeli Koea').

1803. *Coluber anostomosatus* Daudin, *Hist. Nat. Rept.*, 7 : 140.

1940. *Natrix piscator piscator* Smith, *Rec. Ind. Mus.*, 42, 1940, p. 483.

Material Examined : India, Uttarakhand, District Nainital, Corbett Tiger Reserve, Dhara Chaur, 1 ex, 27.vi.2002, coll : J.P. Sati & Party (Reg. No. 72).

Measurements : Length 120mm.

Diagnostic character : Maximum length 175mm (69 in). Scales keeled. Head broader than neck. Eye has round pupil. Two bold black streaks—one below, the other from eye to angle of mouth. Color varies from glossy olive green, olive brown, yellow, brown, gray or black, usually with a checkered body pattern. In between checks sometimes there are present varying shades of pink or red. Underside glossy white or yellowish white.

Scalation : Scales in 19 rows at mid body, keeled. Ventrals 122-158; anal usually divided; subcaudals (60) 70-97, paired. Internasals distinctly narrowed anteriorly. Supralabials 9 (4th and 5th touching eye, 6th excluded by lowest postocular); pre ocular 1; postoculars 3; temporals 2+2 or 2+3.

Remarks : Active by day and night. Found in and around freshwater bodies and paddy fields. Perhaps the most plentiful snake in India. Young

feeds on frog eggs, tadpoles and water insects; older snakes eat fish, frogs, occasionally rodents and birds.

Distribution : Throughout India and the rest of South Asia except the Andaman & Nicobar Islands.

Remarks : Many are killed on roads after the first rains arrive. Non-Venomous.

Status : Common, WPA Schedule II.

Genus *Boiga* Fitzinger 1826

57. *Boiga trigonata* (Schneider)

Common Cat snake

1802. *Coluber trigonatus* Schneider, in *Bechst. Transl. Lincep.*, 4, p. 256, pl. 40, fig 1 (Vizagapatam).

Material Examined : India, Uttarakhand, District : Nainital, Two kms away from Ranibag, 1 ex, 27.ix.05, coll A. Bahuguna and Party (Reg. No. 73).

Measurements : 500mm.

Diagnostic character : Body long, thin, laterally flattened, covered with smooth scales. Head distinctly broader than neck, large eye has vertical pupil; tail very long. Light brown with darker zigzag markings which may be connected. Top of head has distinct, pale Y shaped mark, which is sometimes black edged. Scales on top of head large, smooth and of different shapes. Underside white sometimes with small black spots on outer edge of each belly scale. The common cat snake is often mistaken for the Saw scaled viper (a stubby snake which has tiny uniform, rough scales on top of the head and a very short tail).

Scalation : Scales in 21 : 21 : 15 oblique rows, smooth. Vertebrae larger than the adjacent scales. Ventrals 206-256; anal entire; subcaudals 75-96, paired.

Distribution : India : Throughout, but not the Andaman & Nicobar Islands.

Elsewhere : Most of South Asia.

Remark : Nocturnal, spends the day among bushes, in thatched roofs, under tree bark or stones. An excellent climber. Common in many areas, often in houses, but, like other nocturnal snakes, rarely seen. Rear fanged. Mild venomous

can paralyze small prey (lizards, mice and small birds). In North India, 3-10 eggs laid in August/September. When disturbed, may coil tightly, strike repeatedly and vibrate tail.

Status : Common.

58. *Boiga multifasciata* (Blyth)

Himalayan Cat snake, Many banded Cat snake

1861. *Dipsas multifasciata* Blyth, *J.A.S. Bengal*, 29, p. 114 (Subathu, Simla : originally in Calcutta).

Material Examined : Material was not collected. Description is based on literature (Smith 1935, Sharma 2001, Whitaker and Captain 2004).

Description : Maximum 1160mm (46in). Body long, thin, and laterally flattened. Scales smooth. Head distinctly broader than neck; large eye has vertical pupil; tail long. Grayish- to reddish-brown back peppered with black, and additional thin, black (sometimes oblique) cross-lines, or forward-pointing V shaped marks -the angle of which often contains a white spot. Top of head has two black lines; another on neck; black streak behind eye. Lip scales and throat yellow in all color forms. Underside off-white or gray, heavily spotted with black.

Scalation : Scales in 21 or 19 : 21 or 19 : 15 oblique rows, smooth. Vertebral scales slightly enlarged. Ventrals 214-251; subcaudals 96-118, paired. Supralabials 8 or 9 (3rd to 5rd touching eye); preocular 1 or 2, reaches upper surface of head; temporals 1+2 or 2+3.

Distribution : India : Jammu & Kashmir (Udhampur); Western Himalayas-Uttaranchal (Subathu, Mussoorie, Nainital, Muktesar, Pauri, Dehradun district); eastern Himalayas-northwestern West Bengal (Darjeeling district) and Sikkim. Also Nepal. It has been recorded between 610m (2000ft) and 2130m (6990ft).

Remark : Nocturnal. Mainly arboreal; found in bushes and shrubs in forested areas. Probably eats birds, small mammals, and lizards. Mildly venomous.

Status : Uncommon.

59. *Boiga forsteni* (Dumeril and Birborn)

Forsten's Cat Snake

1854. *Triglyphodon forsteni* Dumeril and Birborn *Erp. Gen.* 7, p. 1077 (type locality unknown).

Material Examined : Material was not collected. Description is based on literature.

Description : Maximum length reaches upto: 2313mm (91in).

Body long and laterally flattened. Scales smooth. Head distinctly broader than neck, large eye has vertical pupil. The species has two main color forms. In each form, the body pattern varies considerably : (i) nearly uniform reddish-brown back with dull yellow markings; (ii) forebody with angular grayish-brown, brown or black blotches or bands that are interspersed with white patches. Hind body has checkered pattern of same colors. Overall coloration can be very pale to very dark. In all color forms, top of head has a dark mid-stripe, bounded on the neck by two additional marks. There is also a stripe from each eye to behind mouth. White/pale lip scales separated by dark lines. Plain-colored snakes have a whitish underside; strongly-marked ones have belly scales heavily spotted with brown or black.

Scalation : Scales in 25 or 27 : 27, 29 or 31 : 17 or 15 oblique rows, smooth. Vertebrales feebly or strongly enlarged. Ventrals 254-273 with distinct lateral keel; anal entire; subcaudals 102-119 (131), paired. Preocular 1, touching top of head; postoculars 2; temporals 3+3 or 3+4; supralabials 8-11 (3rd to 5th or 4th to 6th touching eye) (Smith 1943).

Distribution : India : the Western Ghats from Gujarat to Kerala; peninsular India -the Ganges valley (Orcha, Faizabad, Gorakhpur, Balrampur, Baraich, Purnea, Manbhum); Orissa (Berhampur); West Bengal (Sijna); eastern Himalayas (Darjeeling district); Western Himalayas (Nainital, Dehra dun, Pauri districts). Found in both plains and hills.

Remark : Nocturnal. Lives in tree hollows, abandoned nests, and tangles of leaves on branches. The largest cat snake. Feeds on lizards, birds, even domestic chickens, bird eggs, bats, and other small mammals. Sometimes eats snakes as well. Lays 5-10 eggs in April-May. When alarmed, inflates neck, forms forebody into coils, hisses, and vibrates tail. Mildly venomous.

Status : Common.

Sub family HOMALOSINAE

Genus *Enhydryis* Sonn. 7 Latr. 1802

60. *Enhydryis enhydryis* (Schneider)

Common smooth scaled water snake

1799. *Hydrus enhydryis* Schneider, *Hist. amph.* 1, p 245 ('Indae orientalis').

Material Examined : Material was not collected but reported by many workers (Hussain and Ray 1995, Whitaker and Captain 2004).

Diagnostic character : Length at birth 140mm (6in), maximum length reaches upto 972mm (38in).

Stout-bodied; smooth-scaled. Tail abruptly tapered. Olive, brown or gray back, either with a broad stripe on back that runs from head to tail tip, or three series of indistinct dark spots (one on back, one on each side). Belly scales yellow or white with brown outer edges on each side and usually with brown central spots. Young have three light lines on back. (The look-alike Olive Keelback has keeled scales and a uniform, yellow, orange or white underside).

Scalation : Scales in 21, rarely 19 or 23 rows at mid-body, smooth. Ventrals 134-177; anal divided; subcaudals 46-79, paired. Single internasal touches loreal; supralabials 8 (4th touching eye).

Distribution : India : coastal Andhra Pradesh (Vishakhapatnam), eastern Uttar Pradesh, Bihar, Orissa, West Bengal as far north as the Himalayan foothills in Assam. Also Bangladesh, Nepal and Myanmar.

Remarks : Diurnal. Inhabits fresh or brackish water bodies. Mostly eats fish, but also tadpoles, frogs, and lizards. It has slightly enlarged, grooved teeth in back of upper jaw and mildly toxic saliva. Give birth to 4-18 live young in March (Smith 1943). Mildly venomous.

Status : Common.

61. *Enhydris sieboldii* (Schelgel) Seibold's Smooth Scaled Water snake

1837. Sclegel. *Homalopsis sieboldii* *Phys Serp* 2, p 349, pl 13, figs. 4 & 5 (Bengal; Leiden).

Material Examined : India, Uttarakhand, District : Haridwar, near Har ki Pauri, 1ex, 21.xi.05, coll A. Bahuguna and Party (Reg. No. 74).

Measurements : Length : 520mm.

Diagnostic character : Maximum length reported : 780 mm (31 in).

Body stout with smooth scaled head. The head is slightly broader than neck, snout blunt; small eyes and nostrils placed high on head. Vertically elliptical pupil and crescent nostrils placed high on

head. Pale brown or off white back with very broad, closely spaced, dark brown or dull – olive green, squarish, back edged marks that are much broader than the pale cross-lines. Markings on the back (which often in along midline) alternate with a series of smaller spots on each side of the body. In some specimens the markings are so closely spaced that the snakes are dark olive green or brown with narrow, pale brown cross-lines. Top of head has three bold, dark brown stripes that join between the eyes. Underside white with black checks (more closely marked on tail) or pale brown, mottled with dark green.

Scalation : Scales in 27 or 29, rarely 31 or 33 rows at midbody, smooth. Ventrals 143-158; anal divided; subcaudals 43-56paired. Internasals 2; supralabials 7 or 8 (4th touching eye); loreal 1; preocular 1 or 2; post ocular 2; temporal 1+2 (or absent) (Smith 1943).

Distribution : India : Ganga, Yamuna, Brahmaputra rivers and their tributaries. Recorded from Delhi, Uttar Pradesh (Agra, Faizabad), Uttarakhand (Corbett National Park), Madhya Pradesh (Sagar), Bihar (Patna, Purnea, Chaparan), West Bengal (Pusa) and Nagaland (Samaguting). Old records from Mumbai and Coastal Kerala need confirmation.

Elsewhere : Nepal, Bangladesh and Myanmar.

Look alikes Checkered Keelback.

Remark : Active in the early morning. Found in or close to rivers and water bodies. Burrows deep into mud. It preys upon frogs, toads and fish. It has slightly enlarged grooved teeth in the back of upper jaw and mildly toxic saliva. Bears up to 7 live young around July. Young resembles adults. Strike fiercely if provoked. Mildly Venomous.

Status : Rare.

Family ELAPIDAE Genus *Bungarus* Daudin 1803 62. *Bungarus caeruleus* (Schneider) Common Krait

1801. *Pseudoboa caerulea* Schneider, *Hist. Amphib.*, 2, p. 284 (based on Russell).

1890. *Bungarus caeruleus* Boulenger, *F.B.I.*, p. 388 (in part).

Material Examined : Material was not collected but reported by many workers (Table 1, Hussain and Ray 1995, Whitaker and Captain 2004).

Description : At hatching 250-280mm (10-11 in). Adults 1000mm (39in). Maximum length reported to be 1750mm (69in) (Whitaker and Captain 2004). The body colour varies from a dark steely blue black to a pale faded bluish grey with narrow (sometimes paired) white cross-lines that continue to pointed tip of short tail. These lines usually absent on forebody or they are replaced by white vertebral spots. The average length is 1 meter. Subcaudal scales after the anal scales are not divided. It has large hexagonal scales running down its spine. The white cross bands are more prominent near the tail region. The male is larger than the female and also has a longer tail. Smooth-scaled. Head slightly broader than neck; eye entirely black, round pupil not visible in life. Uppermost scale row on back six-sided, broader than long and much larger than adjacent scales. Ventral surface glossy white or yellowish. Scales under tail entire and resemble belly scales (not divided by zigzag line running along middle). Young often marked throughout. Tongue pinkish-red.

Scalation : Scales in 15 : 15 : 15 rows, smooth. Ventrals 200-217 (234); anal undivided, subcaudals 33-52, entire. Preocular 1; postoculars 2; loreal absent; temporals 1+2; supralabials 7 (3rd and 4th touching eye) (Smith 1943).

Distribution : India : Most of mainland India including Uttarakhand up to 1700m (5580ft), uncommon where the Banded Krait occurs. Probably absent in the Northeast above Assam.

Elsewhere : Pakistan, Nepal, Bangladesh, and Sri Lanka.

Remark : Venomous. Nocturnal and during day time resting in termite mounds, rodent burrows, piles of brick and rubble, and even in rolled up carpets. It is fond of water and is frequently found in it or near it. The males aggressively maintain territories.

Mainly resides in farms and gardens near water. Eats snakes (even other kraits), sometimes rodents, lizards and frogs. Produces the most potent venom of all our land snakes. One of the Big Four medically important snakes of India (for which antivenom serum is available). Bites usually happen at night but are not painful like a cobra or viper bite (Whitaker 1978, Whitaker and Captain 2004).

Status : Common.

63. *Bungarus fasciatus* (Schneider) Banded Krait

1801. *Pseudoboa fasciata* Schneider, *Hist. Amph.*, 2, p. 283 (based on Russell's desc and fig).

1803. *Bungarus fasciatus*, Daudin, *Hist. Nat. Rept.*, 5, p. 263.

1803. *Bungarus annularis* Daudin, *Hist. Nat. Rept.* 5, p. 265, pl 5 (based on Russell's plate).

Material Examined : Material was not collected but reported by many workers (Hussain and Ray 1995, Whitaker and Captain 2004).

Description : Length at birth 250-400mm (10-16in), adults 1500mm (59in), Maximum 2250mm (89in).

Head is slightly broader than neck; eye entirely black (round pupil not visible in life); short tail has blunt, rounded tip. Body and tail triangular in cross-section; vertebral ridge prominent. All over body scales are smooth. The body is covered with equally spaced, wide yellow/pale brown/white and black bands. Uppermost scale row on back six-sided and much larger than adjacent scales. Scales under tail are entire and resemble belly scales (not divided by zigzag line running along middle). Banded Kukri Snakes and several wolf snakes are mistaken for this species.

Scalation : Scales in 15 : 15 : 15 rows, smooth. Ventrals 200-236; anal entire; subcaudals 23-39, entire. Preocular 1; postoculars 2; loreal absent; temporals 1+2; supralabials 7 (3rd and 4th touching eye) (Smith 1931, 1935, 1943).

Distribution : India : West Bengal, Bihar, Orissa, Assam upwards to Arunachal Pradesh. Also occurs in Gadchiroli district of Maharashtra, parts of Madhya Pradesh, northern Andhra Pradesh, and Uttar Pradesh, Uttarakhand. Not found in South, West or Northwest India. Also Bangladesh, Nepal, Bhutan, Myanmar, Thailand, Malaysia, China. Common in parts of range. Found up to 1500m (4920ft).

Remarks : *B. fasciatus* venom is neurotoxic. Nocturnal, lives in termite mounds and rodent burrows close to water. Venom much weaker than that of the Common Krait. (Whitaker and Captain 2004). They are most commonly seen in the rains. The banded krait feeds mainly on other snakes, but

is also known to eat fish, frogs, skinks and snake eggs. Among the snakes taken by banded kraits are : Chequered keelback, Buff-striped keelback, Rat snake or Dhaman, Indo-Chinese Rat snake and Cat snake (Daniel 2002).

Status : Not uncommon in Assam and Bangladesh but becomes progressively uncommon westwards in India. (Daniel 2002).

**64. *Bungarus walli* Wall
Wall's Krait**

1907. *Bungarus walli* Wall, *J. Bombay nat. Hist. Soc.*, 17(3) : 608-611, pl (type loc : Faizabad, U.P.).

Material Examined : Material was not collected but reported (Table 1).

Description is based on literature.

Diagnostic character : Scales smooth, vertebrals strongly enlarge: ventrals broad and subcaudals entire. Body bluish black dorsally, with 65-80 narrow white crossbars formed of transverse series of small spots. Preocular spot & vertebral spot absent. Lower parts white. Tail suffused with brown, 1.64m in length, female smaller.

Distribution : India (Uttar Pradesh, Bihar, West Bengal, Orissa).

Remarks : The species is very much allied to *B. caeruleus* from which it differs as follows :

- i. White cross bars not arranged in pairs in *B. walli*, but they are arranged in pairs in *B. caeruleus*.
- ii. Vertebral spot absent in Wall's krait while a series of vertebral spot may be present in Common krait.
- iii. Preocular spot absent in Wall's Krait which is usually present in Common Krait.
- iv. Dorsal, vertebrae form a ridge down the back in Wall's krait which is not the case in common krait.
- v. Tail ending obtusely in Wall's Krait whereas it is pointed in Common krait.

Status : Indeterminate.

Genus *Callophis* Gray 1834

**65. *Callophis maclellandi* (Reinherdt)
= *Sinomicrurus maclellandi* (Reinherdt)
Maclelland's Coral Snake**

1844. *Elaps maclellandii* Reinhardt, *Calcutta. J. Nat. Hist.*, 4, p 532 (Assam).

1855. *Elaps personatus* Blyth, *J.A.S. Bengal*, 23, p 298 (Assam).

1925. *Callophis maclellandi* var. *concolor*, Wall, *J. Bombay N.H.S.*, 30p : 820 (Huton, Kachin Hills; London).

Material Examined : Material was not collected but reported by many workers (Table 1) Description is based on literature (Hussain and Ray 1995, Whitaker and Captain 2004).

Description : Maximum length reaches upto 812 mm (32in).

Slender, cylindrical body covered with smooth scales. Head is slightly or not broader than neck. Small eye almost entirely black, has round pupil. The tail is with sharply pointed tip. Glossy reddish-brown with narrow, black cross-lines on dorsal surface. Cross-lines occasionally bordered with yellow or pale brown. There are sometimes small, (paired/single) black spots between cross-lines. Head glossy black, with broad, usually angular, enamel-white or pale yellow cross-band behind eyes. Tip of snout often enamel white. Underside pale yellow with black cross-bands or squarish spots. A subspecies, the Single-striped Maclelland's Coral Snake (*Sinomicrurus maclellandi univirgatus*) has a black (sometimes broken) stripe along the back and occasionally, additional cross-lines on sides of body.

Scalation : Scales in 13 : 13 : 13 rows, smooth. Ventrals : males 182-212, females 208-244; anal divided; subcaudals : males 28-36, females 25-33, paired, or some unpaired. Single Preocular 1, touches nasal; postoculars 2; temporals 1 + 1, supralabials 7 (3rd and 4th touching eye; 5th and 6th touching anterior temporal) (Smith 1943, Sharma 2001, Whitaker and Captain 2004).

Distribution : India : Northeast India from Darjeeling to Arunachal Pradesh. Single-striped Maclelland's Coral Snake: eastern Himalayas from Sikkim westwards.

Elsewhere : Bangladesh, China, Myanmar, Vietnam, Laos and Thailand, Nepal., Variety nigriventer : a single record from Himachal Pradesh (Kasauli). Found up to about 1040m (3410 ft).

Remarks : Venomous. Crepuscular or nocturnal and secretive. Usually found in hilly, forested areas. Eats snakes and small lizards. In Thailand severe

neurotoxic symptoms have been reported from coral snake bite. "Tail-curling" is not a reliable means of telling whether the snake is a coral snake or not, as several non venomous kukri snakes also exhibit this behavior (possibly mimicking venomous coral snakes) (Whitaker and Captain 2004).

Status : Rare.

Genus *Naja* Laurenti 1768

66. *Naja naja* (Linnaeus)

Spectacled Cobra, Binpcellate Cobra

1758. *Coluber naja* Linn., *Syst. Nat.* 10th ed. P. 221, based on Seba, *Thes.* 1, 1734, pl 44, figs 1 and 2, pls. 85, fig 1 and 89, figs. 1-4 and 90, figs. 1-2, and 97, figs. 1-4 (habitat in India) 1924. *Naja naja* Prater, *J. Bombay N.H.S.*, 30, p.175.

Material Examined : Material was not collected but reported by many workers (Table 1). Sighted during survey in Districts Tehri and Dehradun. Venomous. Description is based on literature (Smith 1943, Sharma 2003, Whitaker and Captain 2004).

Description : Length : At hatching 250-300mm (10-12in), Adults 1000 mm (39in), Maximum 2200mm (87in).

In India, the spectacled cobra is much respected and feared and even has its own place in Hindu mythology as a powerful deity. Head broad. Color, pattern and hood mark variable; hood mark sometimes absent. It is found in various shades of brown, yellow, gray or black, often with a speckled, sometimes banded pattern. The scales all over body are smooth and glossy. The "spectacled" marking (or variations) on hood is a major characteristic of the species. However dark or black patternless Spectacled Cobras are frequently mistaken for the Central Asian Cobra.

Scalation : Frontal clearly longer than broad. Scales smooth. Males. Scales in 23-37 rows (at 10th ventral) : 19-25 (at 20% of ventrals) : 21-25 (at 40% of ventrals) : 19-23 (at 60% of ventrals) : 13-18 (at 80% of ventrals) : 15-18 (at vent). Ventrals 171-197; subcaudals 53-67, paired. Females. Scales in 23-37 rows (at 10th ventral) : 19-25 (at 20% of ventrals) : 20-25 (at 40% of ventrals) : 17-24 (at 60% of ventrals) : 15-17 (at 80% of ventrals) : 15-18 (at vent). Ventrals 178-196; subcaudals 50-65, paired. Specimens in the

Northwest have lower dorsal scale row counts than southern and eastern populations.

Distribution : India : Throughout mainland India (excluding the Northeast).

Elsewhere : Pakistan, Sri Lanka, Bangladesh, Nepal, and Bhutan. Found from sea level up to 2000m (6560ft).

Remark : It is found to be active by day and night. It inhabits the areas in fields, near streams, rock piles, trees, granaries and grain shops. Often lives in rat holes or termite mounds. Feeds on rodents, toads, frogs, birds and snakes. A good swimmer. If alarmed, may raise forebody and spread hood. One of India's Big Four medically important snakes. Though responsible for many bites, only a small percentage are fatal. It was found that cardiotoxin of the Indian cobra (*Naja naja*) is a pyrophosphatase (Achyuthan and Ramachandran 1981).

Status : IWPA 1972 Schedule I, IUCN not evaluated.

67. *Naja naja oxiana* (Eichwald)

Central Asian Cobra, AceHate Cobra

1831. *Tomyris oxiana* Eichwald, *Zool. Spec.*, 3, p.171 (Transcaspia).

1889. *Naja oxiana*, Boulenger, *Tr. Zool. Soc.* (2)5, p. 103, pl 11, fig 2.

Material Examined : Material was not collected but reported by many workers (Table 1). Description is based on literature (Smith 1943, Sharma 2003, Whitaker and Captain 2004).

Description : Length of adults reaches 1100-1400mm (43-55in) and Maximum reported to be 1500mm (59in). Head is broad. Adults are found with various shades of brown above, very rarely black. Scales often light-edged. Underside has 2-6 bands near neck. Young have dark and light equidistant bands encircling forebody. Further back, bands are broken up; ventral surface is without band. With aging the bands are faded. It is also commonly called the Black Cobra, but usually not black. Black colored Spectacled Cobras without hood patterns are frequently mistaken for this species, thus mistakenly named black cobra (Smith 1943; Wüster and Thorpe 1992; Wüster 1998).

Scalation : Scales are smooth and glossy. Frontal clearly longer than broad, longer than

distance from rostral. Scales smooth. Males. Scales in 23-27 rows (at 10th ventral) : 19-23 (at 20% of ventrals) : 21-25 (at 40% of ventrals) : 19-23 (at 60% of ventrals) : 15-17 (at 80% of ventrals) : 15-18 (at vent). Ventrals 193-207; subcaudals 63-71, paired. Females : Scales in 23-26 rows (at 10th ventral) : 19-21 (at 20% of ventrals) : 21-23 (at 40% of ventrals) : 19-22 (at 60% of ventrals) : 15-17 (at 80% of ventrals) : 16-17 (at vent). Ventrals 191-210; subcaudals 57-70, paired (Smith 1943; Wüster and Thorpe 1992; Wüster 1998).

Distribution : India : Jammu and Kashmir (Poonch Valley, northwest of Jammu), Himachal Pradesh, probably Punjab (Ferozpur). Though reported from Rajasthan and Gujarat, Maharashtra (Melghat).

Elsewhere : Northern Pakistan, Afghanistan, and Central Asia. Found up to 2000m (6560ft).

Remark : Usually found in arid/semi-arid areas. Young eat amphibians and lizards; adults also eat small rodents. Shy, usually avoids confrontation. Fast and alert. When alarmed, spreads patternless hood and may hiss loudly. Lays eggs. Venom apparently as toxic as Spectacled Cobra venom. Being a rare snake, there are no records of bites in India. (Wüster 1993). Venomous.

Status : Rare, IUCN : DD, CITES II, IWPA 1972 Schedule I.

Genus *Ophiophagus* Gunther 1864

68. *Ophiophagus hannah* (Cantor)

King Cobra, Hamadryad

1836. *Hamadryad hannah* Cantor, *Asiat. Research*, 19., p. 187, pls. 10-11 (Sndarbans, near Calcutta).

1924. *Naja hannah*, Wall, *J. Bombay N.H.S.* 30, p. 189, and 1925, pp. 242, 820 and 31, 1926, p. 564, fig. Penis, and Pois. Sn.India, 1928, p. 27.

Material Examined : Material was not collected but reported by many workers (Table 1). Description is based on literature (Smith 1943, Sharma 2003, Whitaker and Captain 2004).

Description : Length at hatching 430-500mm (17-20in), Adults 3000mm (118in), Maximum length reported 4750mm (187in); 5850mm (230in) in Thailand. Scales smooth. Head is broader than neck. The colour varies from gray, black, dark olive

green or yellowish-brown, usually with white or yellowish cross-bands. Some forms in the Andaman Islands are deep rust-brown, unbanded and resemble Indian Rat Snakes; one was yellowish with black and white bands as reported by Whitaker and Captain 2004. Adults from Arunachal Pradesh are entirely bluish-black without bands. Head scales (in paler forms) often edged with black. Hood longer and narrower than that of the other cobras. Bands (if present) on hood and forebody are E shaped. Young (including those seen in Arunachal Pradesh) are black with narrow white or yellow bands that encircle the body and tail.

Scalation : Scales in 17 to 19 : 15 : 15 rows, smooth. Ventrals 240-254; subcaudals 84-104; anterior scales entire, others paired. Frontal not truncate anteriorly, a pair of large occipital shields that touch, behind parietals.

Distribution : India : the Western Ghats (Kamataka, Goa, Kerala, Tamil Nadu), Uttar Pradesh (Terai), Bihar, Orissa, West Bengal, and the Northeast (to Arunachal Pradesh) as well as the Andaman Islands.

Elsewhere : Bangladesh, Bhutan, Nepal all the way to the Philippines.

Remark : It has been reported by Whitaker and Captain 2004 that King Cobras inhabits thick primary forests and estuarine mangrove swamps. They have encountered it in tea estates in South India and Assam. It is a snake-eater species. Females build nests of dead leaves and stay with the eggs until they hatch. Fast and extremely alert. It is the longest venomous snake in the world. It is mostly reluctant to display aggression unless provoked. King Cobra venom is much less toxic than Spectacled Cobra venom, but it can inject huge quantities (up to 7ml) at a time. The only antivenom serum for its bite is made in Thailand. Fortunately bites are very rare since this snake avoids contact with humans. (Wüster and Thorpe 1992; Wüster 1998, Whitaker and Captain 2004).

Status : Rare.

Family VIPERIDAE

Genus *Vipera* Laurenti 1768

69. *Vipera russelli* (Shaw) {=*Daboia russelli* (Shaw)}

Russell's Viper

1796. Russell, *Ind. Serp.* 1, pl 8, and 2, pl. 32.

1797. *Coluber russelli* Shaw, *Nat. Misc.* 8, pl 291 (based on Russell's figure).

Material Examined : Material was not collected but reported by many workers (Table 1). Description is based on literature (Smith 1943, Sharma 2003, Whitaker and Captain 2004).

Description : Maximum length : Adults 1000mm (39in).

It is named after the pioneering herpetologist Dr. Patrick Russel.

Body stout, rough in appearance. Scales strongly keeled. Triangular head broader than neck; scales on upper surface of head small, strongly keeled; nostril very large. Eye has vertical pupil. Tail short, thin. Brown or yellowish-brown, with three longitudinal series of prominent, large brown or black oval or round spots. The "spots" may have pointed ends, may meet to form a chain-like pattern, or may have narrow white or cream margins. Top of head usually has narrow white / shaped mark and a pair of triangular/oval dark brown markings. Two dark triangular streaks behind and below eye. Lips scales mottled with brown. Underside white/speckled with crescent marks. Rostral : Broad and triangular Supraoculars : elongated and are usually separated from the eyes by smaller scales. These shields happen to be the only large shields present on the top of the head of this snake. Nasals : Characteristic to this species and follow the contours of the nasal passage. Supralabials : Ten pairs of which the fourth pair is the largest. Infralabials : Five pairs with the fifth being the largest. Sublinguals : undivided and touch the first four pairs of Infralabials. Ventrals : Span the full body width of the snake.

Scalation : Scales in 25-29 : 27-33 : 21-23 rows, strongly keeled; ventrals 153-180; subcaudals 41-64, paired. Canthus rostratis distinct; nostril very large; supranasal crescentic. Anal : Undivided (Smith 1943, Whitaker and Captain 2004).

Dentition : Maxillary : 2 (fangs) Palatine : 3 Pterygoid : 9 or 10, Mandibular : 12 or 13.

Distribution : India : Throughout India.

Elsewhere : Also Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, and parts of Southeast

Asia (Myanmar, Thailand). It has been found 2756m (9040ft) above sea level. (Wall 1921).

Remark : Usually nocturnal. Found in open grassy areas, scrub jungle, forest edges, rocky hillocks, and dense thorny hedge rows and in and around mangroves (Mumbai coast). Feeds on rodents, including the Indian Gerbil. Females bear 6-63 live young in May-July. Venomous.

Status : Common.

Genus *Echis* Merrem 1820

70. *Echis carinatus* (Schneider)

Saw Scaled Viper

1801. *Pseudoboa carinata* Schneider., *Hist. Amphib.* 2 p. 285 (based on Russell).

1874. *Echis carinata* Fayer, *Thanatoph. Ind.* pl 12.

Material Examined : Material was not collected but reported by many workers (Table 1). Description is based on literature (Smith 1943, Sharma 2003, Whitaker and Captain 2004).

Description : Adults reaches a length of 300-500mm (12-20in, larger in northern part of range).

Maximum recorded length : 800mm (32in).

Body short, stout. Scales strongly keeled, rough in appearance. Head distinctly broader than neck; scales on upper surface of head small, strongly keeled. Rostral : small and spans the length between the nostrils of the snake. Nasals : small and may be divided along the line of the nostrils. Large eye has vertical pupil. Tail very short, thin. Light, dark brown, brick red, gray or sand-colored with zigzag patterns on back. Top of head has usually distinct, arrow-head mark. Underside white speckled with brown. Several different color forms exist. Supralabials : Ten to twelve pairs of which fourth, fifth, sixth and seventh are the largest and are of roughly equal size. Infralabials : four pairs of which the first pair is elongated and the largest. Mental : Takes the form of a sharp triangle. Sublinguals : One enlarged pair, undivided and touches all four pairs of infralabials. Costals have a unique carinated structure which give them a rough appearance. Ultimate row significantly larger than the rest.

Scalation : Scales in 25 to 29 : 27 to 37 : 21 to 27 rows, strongly keeled. 4-7 lowest body scale rows (adjacent to ventrals) oblique, with serrated

keels. Ventrals 132-185; entire; anal entire or divided; subcaudals 23-39, entire, anal : entire. Supralabials 10-12. (Wall 1921, Smith 1943, Sharma 2001, Whitaker and Captain 2004).

Dentition : Maxillary : 2 (fangs), Palatine : 1 or 2, Pterygoid : 17 to 21, Mandibular : 15 to 19.

Distribution : India : Saw-scaled Viper : throughout mainland India (very common in some places) except West Bengal and the Northeast, Rajasthan and possibly Gujarat. (Sharma 2001, Whitaker and Captain 2004).

Elsewhere : Pakistan, Northern Sri Lanka, Sri Lanka. Reported up to 1500m (4920ft). North Africa, Middle East, *Echis carinatus sinhaleus* : Endemic to Sri Lanka (UETZ, Peter : EMBL Reptile Database, 2000. Five subspecies are known from the globe.

Remark : Usually nocturnal and bask in the morning sun. Mostly found in open dry, scrubland, sandy or rocky terrain in the plains and hills, and also in open, rocky regions of heavy rainfall. Rests under rocks, behind bark, at the base of thorny plants during the day. Climbs well. Feeds on mice, lizards, frogs, scorpions, and insects. Bears 4-8 live young between April-August. Venom is very toxic. It prefers deserts and arid environments. It frequently warms up on roads or paths at night. Venomous.

Status : Common.

Genus *Agkistrodon* Beauvois

71. *Gloydius himalayanus* Gunther
(=*Agkistrodon himalayanus* Gunther)
Himalayan Pit Viper

1864. *Halys himalayanus* Gunther, *Rept. Brit. Ind.* P. 393, pl 24, fig A (Garhwal, W. Himalayas; London).

Material Examined : India, Uttarakhand, District : Dehra Dun Mohand Iexs, 29.vii.2001, coll. Aklaq Husain & Party (Reg. No. 34).

Diagnostic character : Maximum length 864mm (34 in) The head is triangular (broader than neck). Scales strongly keeled. Head with large scales on head and upper surface of head usually darker than body. Eye has vertical pupil. Dark line from eye to angle of mouth. Heat sensitive pits present between eye and nostril. Tail is short. The colour is dull brown or gray with dark blackish-

brown spots or wavy cross-lines that are sometimes faint. Distinct angular edge around top of head. Pale brown or cream colouration of the upper lip spotted with dark brown. Ventral surface gray or off-white in colour, with marks of various shades of brown.

Scalation : Scales in 20-22 : 19-23 : 15-17 rows. The scales are strongly keeled. Ventrals : 140-175; anal entire; subcaudals 36-52 paired. Upper head scales large; sharp canthus rostralis; supraoculars broad; supralabials 5-7 (1st sometimes united with 2nd, last two extend intotemporal regions) (Smith 1943, Sharma 2001, Whitaker and Captain 2004).

Distribution : India : Western Himalayas - Uttarakhand, Kshmir, Himachal Pradesh, northern Punjab and Uttar Pradesh. It has also been recorded from a glacier in Himachal Pradesh (Dharamshala) at 4877m (16,000ft) –the highest point any snake has ever been found. (Whitaker and Captain 2004). Reports that this species occurs in Sikkim, India, need to be confirmed. The type locality given is "Garhwal, Himalaya, elevation 9000 ft." (McDiarmid *et al* 1999).

Elsewhere : Pakistan and Central Nepal, Afghanistan, Bangladesh (need confirmation). Recorded between 1500-4877m (4920-16,000ft). Found at 1524-3048 m altitude.

Remark : Venomous. Feeds on mice, skink and centipedes. Give birth to 5-7 live young in August-September.

Status : Common in all parts of its range.

Genus *Trimeresurus* Lacepede 1804

72. *Ovophis monticola* Gunther
(=*Trimeresurus monticola* Gunther)
Blotched pit viper, Mountain pit viper, Mountain viper, Chinese pit viper, Spotted pit viper

1864. *Trimeresurus monticola* Gunther, *Rept. Brit. India.* P. 388, pl 24.

Material Examined : Material was not collected but reported by many workers (Table 1). Description is based on literature (Smith 1943, Sharma 2003, Whitaker and Captain 2004).

Description : Total length of male : Max 49 cm, tail length 8 cm; females Max 110 cm, tail length 15 cm. (Leviton *et al* 2003).

The head is with short snout. The dorsal surface of the head is covered with small scales, the scales are smooth and feebly imbricate. The supraoculars are large, The first upper labial is not fused to the nasal and is completely separated by a suture. The internasals are usually not in contact with one another, separated by 2 small suprapostrostral scales. There are 7-10 upper labials, the second of which is usually fused to the scale bordering the facial sensory pit anteriorly. The fourth and fifth upper labials are beneath the eye and separated from orbit by a series of 2-4 small scales (Leviton *et al* 2003, Sharma 2001, Tilak *et al* 2003).

Scalation : The dorsal scales are smooth or weakly keeled in 23-25, occasionally in 19 or 21 longitudinal rows at midbody. Ventral scales : 137-176 and subcaudals : 36-62. Subcaudals : mixed, paired and single, occasionally all unpaired (Smith 1943).

Distribution : India : Assam, Sikkim. Type locality is described as Sikkim, India.

Elsewhere : Nepal, Myanmar, Tibet, China (Chekiang, Fukein, Szechwan, Yunnan, Xizang), Hong Kong, Taiwan, Cambodia, Thailand, Laos, Vietnam, West Malaysia, Singapore and Indonesia (Sumatra) (McDiarmid *et al* 1999, Sharma 2001).

Remarks : It is a venomous pit viper found in Asia. Currently 5 subspecies are recognized

(Integrated Taxonomic Information System, TSN 634899).

Status : Indeterminate.

SUMMARY

The paper describes 72 species (Order : Crocodilian : 2 species; Order Chelonia 11 species; Order Squamata 59 species), with 43 genera, under 14 families and three orders. Suborder Serpentes (52 species) constitutes the largest group in reptilia in the state. The state has many species of reptiles listed under Indian Wildlife Protection Act 1972. A variation in dorsum scale of taxonomic value was observed in *Laudakia tuberculata* Hardwicke and Gray and analyzed by Scanning electronmicrographs.

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Table 1 : Distribution of reptiles in some conservation areas in Uttarakhand (as reported by scientists of NRS, ZSI during surveys)

Taxa	Corbett Tiger Reserve (Dist Nainital, Pauri)	Rajaji National park (covering areas from Dist Dehra Dun, Haridwar)	Gobind Wildlife Sanctuary (covering areas from District : Uttarkashi)	Nanda Devi Biosphere Reserve (Covering areas from Districts : Chamoli, Pithoragarh, Almora)	Assan Barrage Conservation Center (Dist DehraDun)
1	2	3	4	5	6
Order Crocodylia Family CROCODYLIDAE					
<i>Crocodylus palustris</i> Lesson Snub-nosed Crocodile, Mugger	+				
Family GAVIALIDAE <i>Gavialis gangeticus</i> (Gmelin) Long-snouted Crocodile, Gharial	+				
Order Testudines Family EMYDIDAE					
<i>Geoclemys hamiltoni</i> (Gray) Spotted pond-turtle		+			
<i>Kachuga kachuga</i> (Gray), Sail Terrapin		+			
<i>Pangshura smithi</i> (Gray), Smith's Terrapin, Brown roofed turtle		+			
<i>Pangshura tectum</i> , Indian roofed turtle		+			
<i>Melanochelys tricarinata</i> (Blyth) Three-keeled Turtle	+	+			
<i>Melanochelys trijuga trijuga</i> (Schweigger) Indian Pond Terrapin	+	+			
Family TRIONYCHIDA <i>Lissemys punctata punctata</i> (Bonnaterre) Indian flap-shell Turtle	+	+			

1	2	3	4	5	6
<i>Chitra indica</i> (Gray) Narrow-necked Soft-shell turtle		+			
<i>Aspideretes gangeticus</i> Cuvier, Indian Soft Shell Turtle		+			
Order Sauria Family GEKKONIDAE					
<i>Cyrtodactylus fasciolatus</i> (Blyth), Rock Gecko	+				
<i>Cyrtodactylus lawderanus</i> (Stolioczka), Bent-toed Gecko	+				
<i>Hemidactylus brooki</i> Gray Spotted Indian House Gecko	+	+			
<i>Hemidactylus leschenaulti</i> Dummerill & Birborn, Bark Gecko	+				
<i>Hemidactylus flaviviridis</i> Ruppell Yellow bellied House Gecko	+	+			
Family AGAMIDAE <i>Laudakia tuberculata</i> Hardwicke & Gray Rock lizard	+	+	+	+	
<i>Calotes versicolor</i> (Daudin), Indian garden lizard	+	+			
<i>Japalura kumaonensis</i> (Annandale) Kumaon Mountain Lizard	+				
<i>Japalura major</i> (Jerdon), Garhwal Mountain lizard					
Family VARANIDAE <i>Varanus bengalensis</i> (Daudin), Monitor Lizard	+	+			
<i>Varanus flavescens</i> (Hardwick & Gray), Barred Yellow Monitor Lizard					

1	2	3	4	5	6
Family LACERTIDAE <i>Ophisops jerdoni</i> Blyth, Striped Race runner					
Family SCINCIDAE <i>Eumeces taeniolatus</i> (Blyth), Yellow-bellied Mole Skink			+		
<i>Mabuya carinata</i> (Schneider), Common skink					
<i>Mabuya macularia</i> (Blyth), Little skink		+			
<i>Riopa punctate</i> (Gmelin), Dotted garden skink	+	+			
<i>Scincella himalayanum</i> (Gunther) Himalayan Ground Skink	+		+	+	
Order Serpentes Family TYPHLOPIDAE <i>Ramphotyphlops braminus</i> (Daudin), Common blind Snake	+	+			
<i>Typhlops diardi</i> Schiegel, Large Blind Snake		+			
<i>Typhlops porrectus</i> <i>Stoliczka</i> , Slender Blind Snake	+	+			
Family BOIDAE <i>Phython molurus molurus</i> (Linn.) Asiatic Rock python	+	+			
<i>Eryx conicus</i> (Schneider), Common Sand Boa	+				
<i>Eryx johani johani</i> (Russell) Red Sand Boa	+	+	-	-	-
Family COLUBRIDAE <i>Lycodon aulicus</i> (Linnaeus), Common wolf Snake	+	+		-	

1	2	3	4	5	6
<i>Lycodon jara</i> (Shaw), Twin –spotted Wolf Snake		+			
<i>Lycodon mackinnoni</i> Wall, Mussoorie wolf snake					
<i>Lycodon striatus</i> (Shaw) Barred wolf snake		+			
<i>Oligodon arnesnsis</i> (Shaw) Common kukri snake		+			
<i>Trachischium leave</i> Perracea	+				
<i>Trachishium fuscum</i> (Blyth) Oriental Worm Snake		+			
<i>Sibynophis sagittarius</i> (Cantor) Cantor's Black headed Snake		+			
<i>Amphiesma stolata</i> (Linn.)		+			
<i>Amhiesma platyceps</i> (Blyth) Mountain keel-Back			+	+	
<i>Xenochrophis piscator</i> (Schneider), Checkered Keel-back	+	+			+
<i>Ahaetulia nasuta</i> (Lacepede), Common whip Snake		+			
<i>Argyrogena rhodorhachis</i> (Jan)	+				
<i>Argyrogena fasciolatus</i> (Shaw)	+				
<i>Argyrogena ventromaculatus</i> (Gray & Hardwicke), Glossy –bellied Racer	+	+			
<i>Elaphe helena</i> (Daudin), Common Trinket Snake		+			
<i>Orthriophis hodgsoni</i> (Gunther) (= <i>Elaphe hodgsoni</i> (Gunther)), Himalayan Trinket Snake	+				

1	2	3	4	5	6
<i>Elaphe radiata</i> (Schlegel), Copperhead		+			+
<i>Liopeltis calamaria</i> (Gunther), Striped-neck Snake					
<i>Ptyas mucosus</i> (Linnaeus), Rat Snake	+	+			
<i>Sphalerosophis articeps</i> Fischer, Diadem Snake		+			
<i>Boiga foresteni</i> (Dumeril & Birbron), Cat snake					
<i>Boiga multifasciata</i> (Blyth), Himalayan Cat Snake			+		
<i>Boiga trigonata</i> (Schneider), Common Wolf Snake		+	+		
<i>Enhydris sieboldi</i> (Schlegel) Siebold's Smooth Water Snake		+			
Family ELAPIDAE <i>Bungarus caeruleus</i> (Schneider), Common krait	+	+			
<i>Bungarus fasciatus</i> (Schneider), Banded Krait	+				
<i>Bungarus walli</i> Wall, Wall's Krait.		+			
<i>Calliophis maclellandi</i> (Reinhardt), McClelland's Coral Snake					
<i>Ophiophagus hannah</i> (Cantor), King cobra	+	+			
<i>Naja naja</i> (Linnaeus), Binocellate Cobra	+	+			
<i>Naja oxiana</i> (Eichwald), Acellate cobra					
Family VIPERIDAE <i>Echis carinatus</i> (Schneider), Saw scaled Viper	+	+			
<i>Vipera russelli</i> (Shaw), Russell's Viper	+	+		-	

1	2	3	4	5	6
Sub-Family CROTALINAE <i>Agkistrodon himalayanus</i> (Gunther), Himalayan Pit Viper					
<i>Trimeresurus montiola</i> Gunther, Blotched Pit Viler		+			

Based on literature

For CTR : Waltner 1974; Chopra 1979; Sanyal *et al* 1979; Singh 1986; Lamba 1987; Khati 2004; Bahuguna 2008.

For Nanda Devi Biosphere Reserve Husain and Pranjaleindu. 1997

For Raja ji National Park: Husain and Tilak 1995a, Husain and Tilak 1995b.

Chopra 1995.

For Gobind Wildlife Sanctuary

Husain 2004

For Assan Barrage Conservation Center

Husain 2003

AMPHIBIA

ARCHANA BAHUGUNA and P.T. BHUTIA

Zoological Survey of India, Northern Regional Center, Dehra Dun 248195

INTRODUCTION

Amphibians have existed on earth for over 300 million years, yet in just the last two decades there have been an alarming number of extinctions, nearly 168 species are believed to have gone extinct and at least 2,469 (43%) more have populations that are declining. This indicates that the number of extinct and threatened species will probably continue to rise (Stuart *et al.* 2004). Amphibians, a unique group of vertebrates containing over 3,300 known species, are threatened worldwide. A recent assessment of the entire group (iucnredlist.org/amphibians) found that nearly one-third (32%) of the world's amphibian species are threatened, representing 1,856 species. Amphibian diversity is highest in the tropics and Brazil has the most described species of 811 species.

The amphibians are ecologically important group of animals. They play a significant role in controlling harmful insects and pests that damage our crops and thus they are most useful biological animals among the vertebrates. Amphibians, specially the anurans, have been exploited for food and as medicine in India and abroad (Acharji 1950, Ray 1999). Amphibians form a very important link in evolutionary history of vertebrates. They have evolved into three diverse groups or orders. The first of these Gymnophiona or Apoda, commonly called as limbless frogs. The second Caudata or Urodela, commonly known as newts and salamanders. The third and largest order of modern amphibians Salientia or Anura to which frogs and toads belong. In India, this group of vertebrates represented by all the three types but predominant component is Anura. In north-western India, amphibian fauna represented by only the Anura.

The first comprehensive account of this group in India was published in 1890 by Boulenger. However, in recent years several papers describing

new taxa and reviewing species of many areas have been published (Inger and Dutta 1987, Bhatta and Prashanth 2004, Das and Dutta 1996, Radhakrishnan and Ravichandran 1999, Biju and Bossuyt 2005a, 2005b, Gururaja *et al* 2007, Biju and Bossuyt 2002, Biju and Bossuyt 2006b, Biju and Bossuyt 2009, Gururaja *et al* 2007a, 2007b, Radhakrishnan *et al* 2007, Fei and Ye 1992, Frost Darre 2007). Amphibian fauna of Western Himalaya has attracted the attention of Gunther (1858, 1864), Boulenger (1882, 1890, 1904, 1906, 1920, 1930), Annandale (1906, 1908, 1909, 1912, 1918), Nieden (1923, 1926), Dubois (1975), Waltner (1974), Tilak and Hussian (1977), Tilak and Mehta (1983), Tilak and Ray (1985).

Amphibians of the Himalayas (high altitude) are vividly different from those of plains of India and have adapted to this environment. The study of high altitude amphibia is, therefore, of much scientific importance.

Although Western Himalayan ecosystem, embraces all types of amphibians on account of its varied climate, topographical, altitudinal and vegetational conditions, the amphibian fauna of this area has not been adequately studied (Ray 1995).

A total of 85 exs were examined during extensive survey to Uttarakhand. Based on this 20 species of amphibian were identified belonging to 11 genera and 5 families of Amphibia.

The study further indicated the fact that amphibian fauna of this area is quite rich and is similar to that of Myanmar, Nepal and Pakistan in addition to the amphibian fauna found elsewhere in India. Of these 70% are exclusively forests and stream/ditch dwellers while the remainder inhabits near human settlement.

MATERIALS AND METHODS

Material for present study was collected by frequent visits to permanent and temporary aquatic

habitats including nearby forests, tree-holes, under logs, under stones and under leaf litters. Most of them collected by hand nets. Adults were narcotized and killed by dipping them into 4-8 % formaldehyde solution in a plastic container. After retaining them for 48 hrs, thoroughly washed in water and then transferred to spirit (70% alcohol) for long-range preservation and study.

SYSTEMATIC LIST

Class AMPHIBIA

Order Anura

Family BUFONIDAE

1. *Duttaphrynus himalayanus* (Guenther)
2. *Duttaphrynus melanostictus* (Schneider)
3. *Bufo stomaticus* Luetken

Family DICROGLOSSIDAE

Sub family DICROGLOSSINAE

4. *Euphlyctis cyanophlyctis* (Schneider)
5. *Fejervarya limnocharis* (Gravenhorst)
6. *Fejervarya syhadrensis* (Annandale)
7. *Hoplobatrachus crassus* (Jerdon))
8. *Hoplobatrachus tigerinus* (Daudin)
9. *Nanorana* = *Rana* = *Paa annandalei*
Boulenger
10. *Nanorana liebigii*=*Rana leibigii* (Gunther)
11. *Nanorana minica* = *Paa minica* (Dubois)
12. *Nanorana blanfordii* = *Paa blanfordii*
(Boulenger)
13. *Sphaerotheca breviceps* (Schneider, 1799)

Family MICROHYLIDAE

14. *Microhyla ornata* (Duméril & Bibron, 1841)
15. *Uperodon systoma* Schneider, 1799

Family RANIDAE

16. *Amolops afghanus* (Gunther)
17. *Amolops chakrataensis* Ray
18. *Amolops formosus* (Guenther)
19. *Amolops jaunsari* Ray

Family RHACOPHORIDAE

20. *Polypedates maculatus* (Gray, 1834).

SYSTEMATIC ACCOUNT

Order Anura

Key to the families

1. Large parotid glands behind the eyes ; jaws toothless; skin warty and dry
..... BUFONIDAE (True toads)
- 1' No large parotid glands 2
2. Not toad like, skin moist and smooth or with few warts; upper eyelid without sharp edge; snout tip not jutting wide over mouth 3
3. Head very small in relation to body; snout pointed, body roundish and stocky; either without tympanum and SVL = 35mm or tympanum present and SVL distinctly over 35mm: jaws toothless; pupil roundish or vertical
... MICROHYLIDAE (narrow mouth frogs)
4. Finger and toes have adhesive pads, fingers faintly to strongly webbed; upper jaw toothed; intercalary cartilage between distal and penultimate phalanges; arboreal forms
.... RHACOPHORIDAE (Asian tree frogs)
5. Fingers and toes with or without adhesive pads; if fingers bear pads; they are small and not webbed; upper jaw toothed; aquatic and terrestrial forms
..... RANIDAE (True frogs)
6. Forked tongued frog
..... DICROGLOSSIDAE

Order Anura

Family BUFONIDAE

Genus *Bufo* Laurenti

Description : Snout rounded. Pupil horizontal. No maxillary or vomerine teeth. Tongue elongate, ovate, entire and free behind. Skin warty or spinous. Nostrils lateral. Limbs short. Fingers free, toes half to 2/3rd webbed. Outer metatarsals united.

1. *Duttaphrynus*=*Bufo himalayanus* (Guenther)
Himalayan toad, Himalayan broad skulled toad,

Gunther's High Altitude toad, Darjeeling toad, Ahl's toad.

1864. *Bufo melanostictus* var. *himalayanus* Gunther, *Rept. Brit. Indian*, : 422.

1872. *Bufo sikkimensis* (Part) Stoliczka *Proc. Asiat. Soc. Bengal*, : 112.

1882. *Bufo himalayanus* Boulenger, *Cat. Batr. Sal. S. Eucaudata Brit. Mus.*, : 305.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Skin of the dorsal side covered with porous glands which differ in shape, size and texture. Head much wider than long. Crown concave with low blunt supraorbital ridges without bony elevation of frontoparietal. Tympanum very small, covered with lateral part of parotoids. Interorbital space broader than upper eyelid which is movable and at times of danger, it protects eye. The shape of parotoids is distinct and their anterior ends lie near the posterior narrow end. Head and body covered with flat glandules of different shapes and sizes. Snout short, tip blunt. Nostrils lie nearer tip of snout. The warty skin on the upper side of skull completely co-ossified with nasals and frontoparietal bones. Supratympanic area glandular, large glands near the angle of jaws. Upper jaw expanded sidewise from level of lower jaw.

According to Ray 1999 examples collected from Mussoorie bear spinous glands whereas those collected near Chakrata and Sahiya are smooth. Large size specimen shows no significant spinous glands. The ventral surface of all specimens is glandular.

Fore-limbs moderate and flabby. First finger extending well beyond second finger. Third finger longest and fourth shortest. Subarticular tubercles prominent, one each on metacarpal and phalangeal joints of first and second finger. Two subarticular tubercles on third and fourth finger, proximal subarticular tubercles bilobular. Palmar tubercle flat and broader than long. The tip of fingers and toes are covered with a black cornified layer forming a black cap.

Hind limbs muscular and short. Tarsometatarsal articulation reaching upto axil in females and upto tympanum in males. All toes with a fringe of dermal fold on each side apart from web. The webbing between toes extensive, three phalanges of fourth toe devoid of web, complete webbing in third and fifth toes. Inner metatarsal tubercle

elongated, anterior elevated and projected. Length of tibia 2.61-2.88 times of its max. diameter.

Colouration : Dorsal side of body and limbs dark olive to grey. Large sized specimens look very dirty and ugly but adult males are more glossy than females. The toes and fingers are crossbarred.

Sexual dimorphism : Males are almost half size of females and small. The males have subgular vocal sacs. Hind limb is comparatively larger in size in males than in females. During breeding season male possess nuptial callosities on outer aspect of first and second fingers.

Distribution : India : Darjeeling, Meghalaya, Arunachal Pradesh (Namdhapa National Park), Uttar Pradesh.

Elsewhere : Nepal, Sikkim, Pakistan.

Remarks : These large sized toads are abundantly found above an altitude of approx 2000mts. They are usually found near large water bodies, mostly the hill streams.

2. *Duttaphrynus*=*Bufo melanostictus* (Schneider)

Common Indian Toad

1769. *Bufo melastictus* Schneier, *Hist. Amph. I. Jena.*, p. 216.

1803. *Bufo scalar* Daudin, *Rain.*, : 94, pl. 34.

1803. *Bufo bengalensis* Duad, *Rain* : 96, pl. 35.

1834. *Bufo isos* Lesson, in. *Belang. Vo. Indian Or. Rept.* : 334.

1858. *Bufo gymnauchen* Bleeker, *Nat. tijdschr. Nedrel. Ind.*, XVI : 4.

1861. *Bufo spinipes* Fitzinger (), *Sitz Akad. Wien.*, 42 : 415.

Material examined : India : Uttarakhand, District Tehri, Kusum peri near Narendra nagar, 11.viii.08., 2exs, coll Khanna & party (Reg. No. 627), District : Dehradun, Naru Rhala, Lakhwar road, 5exs. 22.iii.2005. coll. V. Khanna & party, (Reg. no. 628).

Description : Snout shorter than upper eyelid. Interorbital space much broader than upper eyelid. Head with elevated bony ridges, viz. canathal ridge along canthus rostrails; a supraorbital ridge along inner edge of upper eyelid, which may be continues into preorbital and postorbital ridges and slightly backwards into a parietal ridge; and a supratympanic ridge. Crown of head deeply concave. Canthus rostralis angular. Loreal region

slightly oblique, nearly flat. Nostrils nearer tip of snout than anterior corner of eye. Tympanum more than half diameter of eye, nearer to eye.

Forelimbs moderate. Finger-tips usually more cornified and black. First finger extending beyond second, but in smaller specimens, length of first and second finger almost equal. Third finger longest. Second finger slightly shorter than fourth. Metacarpal tubercles present, spinous, intermingled with spinous warts.

Hind limbs short. Tips of toes obtuse. The web in between toes thick.

First toe, smallest and fourth longest. Third toe longer than fifth. Toes about half webbed, three distal phalanges of fourth toe free of web. Two metatarsal tubercles distinct, outer oval and inner elongated slightly projected anteriorly. Subarticular tubercles small. Tarsometatarsal articulation reaching shoulder or near tympanum. Upper parts densely covered with more or less prominent, often spinous warts and tubercles of various sizes.

A double series of round cornified large warts present on both side of vertebral line, commencing from cranio-vertebral joints to sacral zone. Parotoids moderate and elongated. The tubercles, the parotoids, the ridges on the head, the maxillary edges, and the tip of fingers and toes often with dark brown cornified substances. Granular beneath.

Colouration : Usually dark brown above, sometimes limbs crossbarred, ventral surface immaculate or more or less spotted or with a network of brown colour. The tips of glands are tubercular, sometimes with black spines.

Sexual Dimorphism : Breeding males with a subgular vocal sac. The nuptial pads of two inner fingers become cornified and covered with black spinules. The tip of digits is covered with black caps. Males are smaller than females.

Distribution : India : widely distributed in plains and also found at high altitudes (2500m)

Elsewhere : Sri Lanka, Nepal, Bangladesh, Myanmar and Malaya Archipelago.

Remarks : It is common terrestrial, nocturnal toad distributed throughout India upto an altitude of 2500mts. In DehraDun, the toad's population is

more concentrated towards Siwalik foothills. These toads are very social and play a major role in checking populations of undesirable domestic insect pests. There is marked size variation among specimens collected from various localities (Ray 1999). This is one of the most common toads usually found in lower elevations.

3. *Bufo stomaticus* Luetken, 1863 Assam toad

1863. *Bufo stomaticus* Luetken, *Vidensk. Meddr. Dansk. Naturh. Foren.*, 14 : 305.

1817. Anderson, *Proc. Zool. Soc. London* : 203.

1883. *Bufo andersonii* Boulenger, *Ann. Mag. Nat. Hist.*, ser. 5(12) : 163.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Skin of skull near snout is co-ossified with skull. Tympanum distinct rounded and almost $2/3^{\text{rd}}$ of maximum diameter of eye. Snout short, blunt at the tip. Nostrils nearer tip of snout than anterior corner of eye. Interorbital space flat broader than upper eyelid. Head wider than long, without any cranial ridges.

Fore limbs moderate. First finger slightly longer than second. Third finger longest and fourth shortest. The subarticular tubercles blunt, mixed with flat glands on palm. Palmer tubercle distinct, triangular and wider in front.

Hind limbs stout and short. Tarsometatarsal articulation reaches upto posterior corner of eye. Toes moderate with two-thirds webbing. Two moderate metatarsal tubercles. Subarticular tubercles simple and small.

Skin of upper surface, palm and soles covered with flat glands of various sizes. Parotoids flat, elliptical, placed on scapular region on both sides. Parotoids not so elevated as in *D. melanostictus*. The colouration varies with season and environment. In breeding season, some individuals show bright yellow mixed with brown patches. Ventrally immaculate. But most specimens bear dark olive colouration on dorsal side and are immaculate ventrally. Young individuals of this species indistinguishable from those of *D.*

melanostictus because the bony ridges on the skull is not developed in younger specimens.

Colouration : Dorsal aspect tends to display a hue of dark grey in life but after preservation colour transforms into brown or black. Ventral surface suffused with cream and brown but in breeding season colouration changes to yellow in both sexes. The males look brighter than females. Dorsum uniformly speckled with dark brown patches.

Sexual Dimorphism : Males smaller in size with subgular vocal sac. In breeding season, the nuptial callosities develop on outer aspect of first finger.

Distribution : India : Assam, Bihar, Himachal Pradesh, Karnataka, Jammu and Kashmir, Maharashtra, Orissa and West Bengal.

Elsewhere : Nepal, Sri Lanka, Arabia and Pakistan.

Remarks : They are nocturnal and in breeding season, i.e. on the onset of monsoon, males emit nuptial calls in a pitch of Rreong-Preong-Preong. The males are comparatively smaller than females.

Family DICROGLOSSIDAE

Sub family DICROGLOSSINAE

4. *Rana*=*Euphlyctis cyanophlyctis* Schneider, 1799 Skittering frog

1799. *Rana cyanophlyctis* Schneider, *Hist. Amp.*, I : 137.

1864. *Rana cyanophlyctis* Rept. Brit. India. Guenther : 406; 1867), Steindachner (*Novara. Amph.*, : 20).

1972. *Rana cyanophlyctis* Stoliczka, *Proc. Lat. Soc. Bengal.* : 102.

1976. *Rana cyanophlyctis* Blanford, *Zool. E. Persia.*, : 433.

1882. Boulenger *Cat Batr. Sal. S. Ecaudata. Brit. Mus.*, ed. 2 : 17 ;

1890. Boulenger, *Fauna Brit. India Rept. Batr.*, : 422.

1895. Anderson, *Proc. Zool. Soc. London.*, : 660.

1904. Ferguson, *J. Bombay nat. Hist. Soc.*, XV : 500.

1912. Boulenger (*Fauna. Mal. Pen. Rept.*

1918. Annandale and Rao), *Rec Checklist of world Amphibians up to 1 January 1970* : 113. ,

1975. Daniel, *J. Bombay nat. Hist. Soc.* 72 : 508.

1979. Pillai and Chanda, *Rec. zool. Sury. India*, 75 : 388.

1981. Pillai and Chanda, *Rec. zool. Surv. India*, : 162.

1984. Sarker, *Rec. zool Surv India*, 81(3 & 4) : 224.

1986. Pillai and Murthy in Majupuria. : 193.

1987. Inger and Dutta, *J. Bombay nat. Hist. Soc.* 83 (Suppl.) : 138.

1834. *Rana bengalensis* Gray, *Ills. India Zool.* I, pl. LXXXII, fig 2.

1852. *Rana bengalensis* Kelaart), *Prodr. Vaun. Zevr.*, I : 192.

1841. *Rana leschenaultia* Dumenil and Bibron, *Erpet. Gen.* VIII : 342.

1847. Cantor, *Cat. Mal. Rept.* : 138; Guenther. (1858), *Cat. Batr. Sal. Brit. Mus.*, : 11.

1985. *Euphlyctis cyanophlyctis* Poynton & Broadley, *Ann. Natal Mus.*, 27 : 124.

Material examined : India : Uttarakhand, District : Haridwar, Nainpur near Laksar, 3exs. 17.viii.09, coll. A. Bahuguna & party. (Reg. no. 629); 3exs. 30.xii.09 coll. A. Bahuguna & party (Reg. no. 630);. Landi, near Ajit pur Tanda 2exs. 9.xi.09. coll. A. Bahuguna & party, (Reg. no. 631); district Dehradun, Asan Nala 1ex. 14.12.04. coll. A. N. Rizvi & party, (Reg. no. 632); Water stream, Purola Lakhwar Road 7exs. 11.i.05. coll H.S. Mehta & party (Reg. no. 633); Kata pathar on Lakhwar road. 8exs coll. V.Khanna & party. (Reg. no.634); Asan river near Sahaspur, 7exs., 9.ix.2004. coll V. Khanna & party. (Reg. no. 637); Kata pathar & around, 15 exs. 22.iii.05. coll. V. Khanna & party. (Reg. no. 636); Hathyari, near Yammuna pul, 4exs. 5.xi.03. coll. V. Khanna & party (Reg. no. 635). Naru khala, Lakhwar road, 5exs. 23.iii.05. coll. V. Khanna & party. (Reg. no. 638); Kalsi & around, 3exs. 24.vi.05 coll. V. Khanna & party (Reg. no. 639). District Haridwar, Saung river, Raiwala, 8exs. 13.iv.05. coll. V.Khanna & party. (Reg. no. 640).; District Rishikesh Muni ki retti, 1ex, 11.viii.05, coll. V. Khanna & party (Reg. no. 641), District Dehradun, Maldevta and Gucchupani, 3exs, 4.vii.07 coll. P.T. Bhutia & party (Reg. no. 646); Timli Forest, 6exs, 13.viii.07, coll. P.T. Bhutia & party (Reg. no. 647); Kalsi river, 6exs, 22.xi.07, coll. P.T. Bhutia & party (Reg. no. 648); Bodoerwala Bridge, 15exs, 10.iv.08, coll. P.T. Bhutia & party (Reg. no. 649); Maldevta, 5exs, 12.vi.08, coll. P.T. Bhutia & party (Reg. no. 650); Raipur road, 8exs, 29.vii.08, coll. P.T. Bhutia & party (Reg. no. 651); Maldevta, 20exs, 20.viii.08, coll. P.T. Bhutia & party (Reg. no.); Bodowala bridge, 7exs. 23.xii.08, coll. P.T.

Bhutia & party (Reg. no. 652); Katta pathar, 9exs., 28.i.09, coll. P.T. Bhutia & party (Reg. no. 653); Badowala, 22exs., 13.xii.09, coll. P.T. Bhutia & party (Reg. no. 654); Maldevta, exs 4, 16.vi.09, coll. P.T. Bhutia & party (Reg. no. 655); Asan Barrage, 8exs., 21.viii.08, coll. P.T. Bhutia & party (Reg. no. 656); Santhaladevi, 4exs., 17.xi.09, coll. P.T. Bhutia & party (Reg. no. 657); Asan barrage, 12exs., 19.i.10, coll. P.T. Bhutia & party (Reg. no. 658); District Rishikesh, Daudi, 32exs., 28.x.08, coll. P.T. Bhutia & party (Reg. no. 659); Daudi village, 21exs., 15.x.09 coll. P.T. Bhutia & party (Reg. no. 660); District Dehradun, Assa barrage. 1ex., 5.i.06. coll. S.J.S. Hattar (Reg. no. 661); Punigrant near Timli, 1ex., 15.vi.09, coll. V. Khanna and party (Reg. no. 662); Koti village, Tons river, 4exs., 22.vii.04, coll. J.P. Sati and party (Reg. no. 663); Nahra kho;, Pasruna village, 4exs., 5.i.06, coll. S.J.S. Hattar and party (Reg no. 664).

Description : Skin with small tubercles and warts on back. A strong fold from posterior corner of eye to shoulder present. Lower parts smooth. In some specimens, there are porous warts or glands surrounding thoracic region in a girdle and continue laterally along each side of the belly to the region as its name *cynophlyctis* implies, it is

recognized by the presence of rounded dark spots on its back and limbs.

Head moderate and depressed. Snout pointed, tip slightly acuminate. Vomerine teeth in two small oblique series extending beyond hinder edge of choanae, equally distant from each other and from the latter; in some specimens they are closer. Width of head 1.23-1.64 times in length of head. Length of snout 1.00-1.21 times maximum diameter of eye. Canthus rostralis distinct. Loreal region oblique with concavity. Nostrils are nearer to tip of snout. In some, nostrils are near to the tip of snout. Internarial distance is greater than interorbital distance. Width of upper eye lid 1.53 to 1.91 time in interorbital width. Diameter of tympanum 0.65- 1.00 times in length of eye. Tongue deeply notched behind, coruna at the back of tongue longer and more pointed with a median process between them.

Forelimbs moderate with obtusely pointed fingers. First finger 1.00 to 1.15 times length of second finger. Third finger the longest. Fourth finger almost equal to second. All fingers pointed in same direction. Subarticular tubercles are small. Palmer tubercles also less developed. All finger are almost of equal thickness.

Table 1 Morphological measurements of examples examined.

IO	0.4	0.3	0.3
HW	2.1	1.1	1.5
HL	0.8	1.5	1.2
SL	0.9	0.9	0.7
SW	1.4	1.1	0.9
EN	0.3	0.4	0.3
ES	0.3	0.4	0.3
ED	0.6	0.6	0.6
Forelimbs	0.6 (I),	0.6 (I),	0.6 (I),
fingers	0.5 (II),	0.5 (II),	0.5 (II),
	0.78 (III),	0.78 (III),	0.78 (III),
	0.5 (IV),	0.5 (II),	0.5 (IV),
FL	1.6	0.9	1.3
Hind limbs	0.9 (I), 1.2	0.9 (I), 1.2	0.9 (I), 1.2
Foot	(II), 1.6 (III),	(II), 1.6 (III),	(II), 1.6 (III),
	2.1 (IV),	2.1 (IV),	2.1 (IV),
	1.8 (V)	1.8 (V)	1.8 (V)
FT L	2.6	2.6	2.3
F	2.6	2.0	1.
TL	1.9	1.9	1.0

IO Interorbital distance, HW Head width, HL Head length, SL snout length, SW snout width, EN Eye to nostril distance, ES Eye to snout distance, ED Eye diameter, FL Forelimb length, FTL foot length, F femur length, TL tibia length.

Hindlimb muscular, thigh robust, toes webbed to the tip.

Tibiotarsal articulation extends upto tympanum and eye. Heels just meet when limbs are folded at right angles to body. Tibia shorter than foot. Length of tibia 2.5 to 3.5 times of its diameter. Tips of toes swollen into small knob like structure. The web in between toes very extensive. The fourth toe is the longest. Outer metatarsals separated by web nearly up to base. Subarticular tubercles are small and feeble. A distinct dermal fringe on the outer aspect of fifth toe present. Inner metatarsal tubercle small, pointed and digitiform. There is no outer tubercle.

Colouration : Colouration varied; adults olive to dark brown; dorsal region with dark spots and a cream coloured band along each flank. Well marked spots on the limbs. Lower parts; white, cream, marbled or spotted, ornamentation in lower part sometimes transforming into a reticulum.

Sexual Dimorphism : Males quite smaller than females, with blackish external vocal sac on each side, projecting through a longitudinal slit close to posterior half of mandibular ramus; the slit as long as or a little longer than eye.

Distribution : India : Throughout.

Elsewhere : South Arabia, Baluchistan, Nepal, Ceylon, Pakistan.

Remarks : These frogs are common throughout the year near water pools. They are also present in good numbers near paddy fields. They hibernate under rocks or potholes close to a water body. It is observed that in winter they are present in good number under floating aquatic vegetation. In rainy season, they are very active.

It is the most commonest form of anurans recorded from the area. This frog skits on the surface of water and commonly called the skitter frog or skipper frog. It can tolerate considerable amount of contamination and organic pollution in temporary water pools. It is also reported from brackish water.

5. *Limnonectes* = *Rana* = *Fejervarya* *limnocharis* Boie (in Gravenhorst), 1829 **Paddy frog**

1829. *Rana limnocharis* Boie (in Gravenhorst) *Delic. Zool. Vrat.*, : 41.

1835. *Rana limnocharis* Wiegmann, N. *Acta Acad. Leop. Carol.*, 17(1) : 225.

1920. *Rana limnocharis limnocharis* : Boulenger, *Rec. India Mus.*, 20 : 28.

1954. *Rana limnocharis* Inger, *Fieldiana Zool.*, 33 : 193-531.

1975. *Rana limnocharis*. Daniel J. *Bombay nat. Hist. Soc.*, 72(2) : 515-516.

1974. *Rana (Dicroglossus) limnocharis limnocharis* : Dubois, *Bull. Mus. Natn. His. Nat. Paris*. Ser. 3e. no 213 (Zool. 143) : 382.

1917. *Rana (Dicroglossus) limnocharis* Annandale, *Mem. Asiat. Soc. Bengal*, VI : 128.

Material examined : India : Uttarakhand, District : Haridwar, Ranjithpur, near Ganga, 16.ix.09, 4exs, coll. A. Bahuguna & party (Reg no 642)., District Dehradun, 2exs., Kalsi river, 22.xi.07. col. P.T. Bhutia (Reg no. 661); District : Dehradun, Assan barrage, 21.xiii.08, col. P.T. Bhutia (Reg no. 662).

Description : Head as long as broad. Tip of snout obtusely pointed, projecting beyond anterior extremity of lower jaw. Snout as long as eye. Canthus rostralis obtuse. Loreal region oblique, concave. Nostrils equidistant from eye and tip of snout or nearer the latter. Interorbital space narrower than upper eyelid. Internarial distance greater than interorbital distance. Tympanum distinct, 0.50 to 0.66 times in diameter of eye, vomerine teeth in two oblique series between choanae or extending a little beyond their posterior level. Skin of back with narrow longitudinal glands. Supratympanic fold distinct, continues laterally upto shoulder. Lower parts smooth. Anal region and posterior side of thigh near anus glandular.

Fore limbs moderate. Fingers obtusely pointed, first extending beyond second. Third finger longest, almost equal to length of snout. In some specimens, this finger is slightly longer than snout. Fourth finger the shortest, almost equal to that of second finger. Subarticular tubercle well developed and very prominent.

Hind limb stout long. When hind limbs are folded at right angles to the body, heels more or less overlap. Tibiotarsal articulation extends upto posterior corner of eye. Toes obtusely pointed but slightly swollen at tips. Webbing between toes conspicuous (half webbed). Almost two and half digits of fourth toe free from web and one each of the rest of the toes without webbing. Outer metatarsals separated nearly to the base, web along outer side of metatarsals and fifth toe in form of a narrow fringe. Subarticular tubercles well developed, and prominent. Inner metatarsal tubercle oval or oblong, blunt $1/3^{\text{rd}}$ to $2/3^{\text{rd}}$ length of inner toe. Outer metatarsal tubercle distinct, round and small. Length of tibia 2.75 to 3.25 times of its diameter.

Colouration : Upper body region grey, brown, olive, even black with darker spots, with a 'V' shaped mark between the eyes; some specimens with a broad or narrow yellow, white, orange coloured vertebral streak. Dorsal aspect strewn with small pinkish warts. Posterior aspect of thigh yellow, marbled with dark brown. Hind limbs with irregular dark crossbars. Fore limbs also with dark crossbars but indistinct. Lips with dark vertical bars. Ventral surface whitish.

Sexual Dimorphism : Males are smaller in size with a vocal sac on each side, forming loose folds on the throat, which is brown to blackish on the sides. Fore limbs robust in males with a strong dark coloured nuptial pads on inner side of first finger.

Distribution : India : All over the plains, Himalaya extending upto at 2500 mts.

Elsewhere : East Asia, from Japan and China to Pakistan, Ceylon (Sri Lanka), Malayan Peninsula, Phillipines, Borneo and Lombok.

Remarks : These small frogs are available near small hill streams and water logged areas near paddy fields. The population of the species is more dense in eastern parts of the district Dehradun.

These frogs breed during monsoon (June to July) or even in August.

6. *Fejervarya syhadrensis* (Annandale, 1919) Southern cricket frog

1829. *Rana limnocharis syhadrensis*, Annandale, *Rec. Indian Mus.*, 16 : 123.

2005. *Limnonectes limnocharis*, Fauna Punjab Shiwalik, Punjab State Council for Science & Technology : 699.

Material examined : Material was not examined but reported by other worker (Mehta 2008).

Description : Light gray to brownish, small sized frogs, head as long wide or slightly longer, arrow shaped; snout obtusely pointed and projecting beyond lower jaw, nostrils near the snout; eyes large, equal to length of snout, interorbital width equals height of upper eyelid; tympanum distinct, nearly half in ocular diameter; a strong supratemporal fold from eye to tympanum and shoulder; first finger longer than second; subarticular tubercles of the fingers prominent; the metacarpal tubercles at the base of palm; hind limb short, tibia slightly longer than femur, toes half webbed.

Distribution : Eastern and western India, easter Pakistan, Bangladesh and Nepal at low to moderate elevations.

Key to *Hoplobatrachus* species

Large and irregular dark dots in gular & pectoral region; large shovel like and crescent shaped inner metatarsal tubercle; habitus sticky, legs relatively short

.....*Hoplobatrachus crassus*

Gular & pectoral region without dark spots; inner metatarsal tubercle flat, oblong and blunt; habitus not stocky; legs not relatively short .

.....*Holobatrachus tigrinus*

7. *Hoplobatrachus crassus* (Jerdon)

Jerdon's bull frog

1853. *Rana crassa* Jerdon *J. Asiat. Soc. Bengal*, 22 : 531.

1968. *Rana crassa* Theobald, *Cat. Rept. Acs. Soc. Mus.*, : 79.

1870. *Rana crassa* Jerdon *Proc. Asiat. Soc. Bengal*, : 68.

1871. *Rana crassa* Anderson *Proc. Zool. Soc. London*, : 199.

1918. *Rana crassa* Annandale and Rao, *Rec. Indian Mus.*, 15 : 35.

1918. *Rana crassa* Boulenger and Annandale *Rec. Indian Mus.*, 15 : 61-63.

1944. *Rana crassa* Bhaduri, *J. Bombay nat. Hist. Soc.*, 44 : 481-484.

1968. *Rana crassa* Chakko, *Proc. Indian Acad. Sci.*, Section B, 67 : 234.

1984. *Rana crassa* Sarkar, *Rec. zool. Surv. India*, 81(3 & 4) : 228.
1987. *Rana crassa* Inger and Dutta, *J. Bombay nat. Hist. Soc.*, 83(Suppl.) : 137.
1863. *Hoplobatrachus ceylanicus* Peters, *Mont. Berl. Acad.*, 449; Guenther, (1864), *Rept. Brit. India*, : 410.
1974. *Rana (Dicroglossus) crassa* : Dubois, *Bull. Mus. Natn. Hist. nat. Paris.*, (3) n° 213 (Zool. : 143). 379.
1974. *Rana tigrina crassa* : Gorham, *Checklist of world Amphibians upto 1 January 1970*, 153.
1975. *Rana (Rana) crassa* : Danial, *J. Bombay nat. Hist. Soc.*, 72(2) : 513.
1992. *Holobatrachus crassus* Dubois, *Bull. Mens. Soc. Linn. Lyon.*, 61 : 315.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Head broader than long being 1.06-1.15 times in its length. Head slope more than that of allied species (*Rana tigrina*). Tip of snout rounded and less pointed. Outer rim of the upper jaw expanded on side of head as seen from above. Diameter of eye 1.42-1.56 times in length of snout. Tip of snout projecting beyond mouth. Canthus rostralis obtuse, loreal region oblique more or less concave. Nostrils nearer tip of snout than to anterior corner of eye. Interorbital distance much narrower than upper eyelid. Tympanum distinct. Diameter of eye 1.33-1.40 times of diameter of tympanum.

Fore-limbs stout and flabby. Fingers obtusely pointed, first longer than second; third finger, the longest; fourth finger little shorter than second. Subarticular tubercles distinct and moderate. Hind limb short. Thigh and shank more muscular. Tibial length 1.80-2.59 times of its diameter. Toes with swollen tips. Webbing complete. Subarticular tubercles prominent. Inner metatarsal tubercle almost equal to length of inner toe. Tibiotarsal articulation extends upto posterior margin of tympanum but not beyond that. Heels quite apart when hind limbs are folded at right angle to the body. A distinct dermal fold on outer side of fifth toe and feeble one on inner side of first toe. Inner metatarsal tubercle situated forward on foot almost parallel to basal part to toe much more prominent and sharp. A slight concavity on inner aspect of

shovel-shaped metatarsal tubercle. The dorsal longitudinal glandular folds 9-10 in number and occupy entire dorsum, but not continuous. Dorsal surface of body with white tipped spinules and they are densely placed on dorsal surface of hind legs and anal region. Supratympanic fold strong and commences from posterior corner of eye to shoulder.

Colouration : The juveniles of *H. crassus* completely differ in colouration from those of *H. tigrinus*. *H. crassus* is grayish throughout with black rounded spots dorsally. Limbs more dark than rest of the body. The margin of lower jaw with bold brown bars. In males, throat is completely speckled with brown.

Sexual Dimorphism : Males with two lateral vocal sacs. During breeding season the dorsal aspect of metacarpals bear nuptial pad.

Distribution : India : Uttarpradesh, Uttarakhand, Andhra Pradesh, Bihar. Kerala, Orissa, Karnatka, Tamil Nadu, Madhya Pradesh, W. Bengal, Assam (Dutta, 1997).

Elsewhere : Sri Lanka, Nepal, Bangladesh (Frost, 2008).

Remarks : The species is quite rare in DehraDun and surrounding areas. They are burrowers. The specimens are mostly collected from their burrows made on elevated sides of rainwater pools. The species is closely allied to *H. tigrinus* (Rao, 1920).

Seasonally fossorial and quickly digs into soft substrate using its shovel like metatarsal tubercle. This habit is much less pronounced in *H. tigrinus* (Rao, 1920). *H. crassus* spends the dry season and rainless summer periods hidden under objects or dug into the soil (Kirtisinghe, 1957).

8. *Rana = Hoplobatrachus tigrina* (Daudin) Indian Bull frog

1803. *Rana tigrina* Daudin *Hist. Rain. Gren. Crap.*, : 64. plXX.
1907. *Rana tigrina* Stejneger *U.S. Nat. Mus., Smithsonian Inst.*, 58 : 139-142.
1920. *Rana tigrina tigrina* : Boulenger. *Rec. Indian Mus.*, 20 : 17.
1829. *Rana picta*, Gravenhorst *Delic. Mus. Zool. Vratisl.*, I : 39.

1917. *Rana rugulosa* (non Wiegmann), Annandale, *Mem. Asiat. Soc. Bengal.*, W : 126.

1917. Smith, J. *Nat. Hist. Soc. Siam.*, II : 263.

1918. Annandale, *Rec. Indian Mus.*, 15 : 60.

1992. *Hoplobatrachus tigerinus* –Dubois, *Bull. Mens. Soc. Linn. Lyon*, 61 : 315.

Material examined : India, Uttarakhand, District : Haridwar, Bhikampur pond, 2exs, 29.viii.09, coll A. Bahuguna and party (Reg. no. 643). 1ex, 18.vi.09., coll A. Bahuguna & party (Reg. no. 644). District Rishikesh, Muni ki reti, 1ex. 11.viii.2005. coll V. Khanna and party (Reg. no. 645).

Etymology : The name derived from tiger, the French adjective 'tigre' means spotted but not striped. The original French name means spotted frog and not tiger frog. The latter name does not characterize the real pattern.

Description : Snout pointed, head moderate, smaller than trunk. Tip of snout projecting beyond lower jaw. Head broader than long, head width 1.05-1.13 times in the length. Length of snout longer than eye, length of snout 1.63-1.82 times of eye diameter. Canthus rostralis obtuse; loreal region oblique with concavity on middle. Nostrils always nearer to tip of snout than anterior corner of eye. Interorbital space narrow than upper eyelid. Tympanum distinct, $\frac{2}{3}$ rd diameter of eye, 1.5 to 2.5 times its distance from the latter.

Skin of upper parts smooth with elongated prominent longitudinal glandular folds, which are interrupted throughout the entire dorsum. A strong glandular fold from eye to shoulder. Lower parts smooth. Anal region warty. Limbs with rough warts.

Eyes elevated well beyond skull. Vomerine teeth strong, obliquely placed rows in between choanae : tooth bands close to each other than to choanae. In some specimens, vomerine teeth extend beyond posterior margin of choanae. Lower jaw with two very prominent notches at symphyseal zone which fits into upper jaw.

Fore limbs : stout; fingers obtusely pointed with distinct well developed subarticular tubercles, first finger longer than second. Third finger the longest. Fourth finger almost equal to second or slightly longer. Length of palm; including longest finger

slightly longer than the fore-arm which is slightly greater than length of upper-arm.

Hind limbs muscular adapted for leaping, jumping and fast swimming. The tibiotarsal articulation reaching up to posterior corner of eye. Heels overlapping when limbs folded at right angles to body. The length of tibia 2.5 to 2.75 times in diameter. Toes obtuse, somewhat swollen at the tip. Metatarsals separated nearly to base, subarticular tubercles distinct but comparatively smaller in dimension. Inner metatarsal tubercle distinct, blunt, elongated, its length 1.25 to 2.00 times in length of inner toe. Outer metatarsal tubercle absent. A flap of skin on outer aspect of fifth toe present.

Colouration : Juveniles brilliantly green and yellow coloured with a distinct yellow vertebral streak. Another yellow oblique band starts from shoulder and continues upto belly as a lateral band. In adults, lateral band fades and turns white. A dark canthal streak present. Limbs with bold patches of dark olive colour. Hinder part of thigh marbled with black and yellow. Lower parts white, immaculate; occasional specimens with a blotched throat.

Sexual Dimorphism : Males with two lateral vocal sacs of bright blue colour on each side of throat. Fore limbs moderately thickened. A strong nuptial pad on inner side of metacarpal region of first finger.

Distribution : India : Found from base of the Himalaya of South India.

Elsewhere : Nepal, Sri Lanka, Myanmar, Thailand, South China and Taiwan.

Remarks : The breeding calls of male is the signal of onset of monsoon for villagers of plains. During breeding season males are very active in pools fed by rainwater. The overexploitation of the species for its leg has caused the threat to the survival of the species. This frog is more active at night.

Genus *Nanorana*

Etymology : Lat nanus : dwarf; rana : frog.

Diagnostic : During the reproductive period, males have nuptial pads and fields with small spines in the pectoral region (Dubois, 1992). Dorsolateral folds and enlarged terminal phalanges are absent.

Geographical range : China (Yunnan, W Sichuan, SE Gansu, Tibetan Plateau), Nepal, India.

**9. *Nanorana=Rana=Paa annandalei* Boulenger
Boulenger's Hill frog**

1920. *Rana annandalii* (part.) Boulenger, *Rec. Indian Mus.*, **20** : 77.

1992. *Rana (Paa) annandalii* Dubois, *Bull. Mens. Soc. Linn. Lyon*, **61** : 320.

2005. *Nanorana annandalii* Chen, Murphy, Lathrop, Ngo, Orlov, Ho and Somorjai, *Herpetol. J.*, **15** : 239.

2006. *Chaparana (Paa) annandalii* Ohler and Dubois, *Zoosystema*, **28** : 781.

Etymology : Dedicated to Thomas Nelson Annandale (1876-1924), zoologist and anthropologist from Edinburgh and founder of the Zoological Survey of India.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Medium sized with granulated dorsum and a dorsolateral fold fading in its posterior part. SVL of males 32.5-51.5 mm, of females 41.5-50.5 mm (Dubois, 1975a; Dubois & Matsui, 1983). The body is long and slender. The head is flat and a little wider than long. The snout is pointed and blunt and rounded in lateral view. The canthus rostralis is blunt and rounded and the loreal region is concave. The interorbital distance is 2/3-3/5 of the diameter of an upper eyelid. The nares are lateral and midway between the snout tip and anterior angles of the eyes. The tympanum is indistinct and small. The supratympanal fold is prominent and the pineal organ is visible as a pale dot between the anterior corners of the eye. The entire dorsal surface is covered with tiny pale warts and granules. The ventral is smooth and has transverse folds in the region between the axilla and groin.

Finger tips are rounded with a relative finger length $1=2<4<3$ and the first finger is slightly shorter than the second. The subarticular tubercles are rounded and slightly flattened.

The toes are strongly webbed. The toe tips are rounded with a relative toe length of $1<2<5<3<4$.

There is only an inner oblong oval metatarsal tubercle. The tibio tarsal joint reaches between nares and the tip of the snout.

Sexual dimorphism: The large and finger shaped oval inner metacarpal tubercle is well developed in males. Males have no vocal sacs.

Distribution : India : West Bengal and Darjeeling (Dutta, 1997), Uttarakhand (Ray 1999).

Elsewhere : Nepal (Frost, 2008).

Remarks : Its natural habitat are subtropical or tropical moist montane rivers and tundra wetlands. It is threatened by habitat loss.

**10. *Nanorana blanfordii* = *Paa blanfordii*
(Boulenger)**

1882. *Rana blanfordii* Boulenger, *Cat. Batr. Sal. Coll. Brit. Mus.*, *Ed. 2* : 23.

1920. *Rana annandalii* Boulenger, *Rec. Indian Mus.*, **20** : 8.

1975. *Rana (Paa) blanfordii* Dubois, *Bull. Mus. Natl. Hist. Nat. Paris, Ser. 3, Zool.*, **324** : 1098.

1977 *Rana yadongensis* Wu In *Sichuan Institute of Biology Herpetology Department, Acta Zool. Sinica*, **23** : 56, 62.

1991. *Rana (Paa) yadongensis* Fei, Ye & Huang '1990', *Key to Chinese Amph.* : 156.

1992. *Rana (Paa) blanfordii* Dubois, *Bull. Mens. Soc. Linn. Lyon*, **61** : 320.

2005. *Nanorana blanfordii* Chen, Murphy, Lathrop, Ngo, Orlov, Ho & Somorjai, *Herpetol. J.*, **15** : 239.

2006. *Chaparana (Paa) blanfordii* Ohler & Dubois, Ohler and Dubois, *Zoosystema*, **28** : 78.

Type locality : "Darjeeling in the Himalayas, at Mussoorie, at an altitude of 7000 to 8000 feet" West Bengal, India.

Etymology : Dedicated to William Thomas Blandford Esq, 1822-1905, a naturalist.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray, 1999; Schleich Kastle, 2002).

Description : SVL of reproductive males 36.0-40.5 mm. of females 41.0-48.0 mm (Dubois 1975a; Dubois & Matsui, 1983). A small species with smooth skin and rounded or elongated flat dorsolateral warts which are sometimes arranged into a dorsolateral fold. The males have hypertrophied upper arms and spines on the pectoral

region and on the first three fingers. The head is flat and minimally wider than long. The snout is rounded in both dorsal and lateral views. The canthus rostralis is rounded. The interorbital distance is equal to or less than the diameter of the upper eyelid. The nares are mid way between the snout tip and anterior corners of the eyes.

The tympanum is indistinct. The subtympanic fold is weak. The pineal organ is visible as a white dot.

The finger tips are pointed with a relative finger length of $1 < 2 < 4 < 3$ and only a slight difference between 4th and 3rd fingers. The subarticular tubercles are weak and indistinct. The inner metacarpal tubercle is indistinct, rounded and lies at the base of the 1st finger.

The toes are webbed with rounded tips. The subarticular tubercles are weak. The relative toe length is $1 < 2 < 5 < 3 < 4$ with only an inner metatarsal tubercle which is narrow and long but flat. The tibio tarsal joint reaches the nares in females, but it reaches the snout tip or beyond in males.

Colouration : The ground colour is reddish brown, faintly marbled with a dark color and with large green spots on the head and back. There is faint interorbital bar and a dark stripe extends along the canthus rostralis to the temporal region.

Sexual dimorphism : Males have spines on 1st and 2nd fingers, on inner side of the 3rd and on the pectoral region. They have no spines on the forelimbs. The upper and lower arm is hypertrophied.

Nuptial pads on fingers with relatively few large spines with a maximum of 24 on the 1st finger and 66 on one half of the body (Dubois & Matsui, 1983)

Typical female characteristics are the longer and less interrupted dorsolateral folds, a shorter and more rounded snout and the more protruding globular eyes.

Distribution : India : Darjeeling region, W. Bengal, Meghalaya, Uttar Pradesh.

Elsewhere : China, (Tibet), Nepal : low mountain regions of E. Nepal, other regions.

Remarks : Nocturnal remaining hidden by day in mountain brooks under stones and rocks.

Occupy habitat in moist climate, mountain brooks (Dubois 1976b).

Sympatric with *P. liebigii*, *Scutiger skimmensis* and upto 2,600 m, with *P. annandalii* (Dubois, 1976).

11. *Nanorana liebigii*=*Rana leibigii* (Gunther) Libig's frog

1855. *Megalophrys gigas* Blyth, '1854', *J. Asiat. Soc. Bengal*, 23 : 299.

1860. *Rana liebigii* Gunther, *Proc. Zool. Soc. London*, 1860 : 157.

1881. *Rana gigas* Peters, *Sitzungsber. Ges. Naturforsch. Freude Berlin*, 1881 : 87.

1920. *Rana sikkimensis* Boulenger, *Rec. Indian. Mus.*, 20 : 78.

1975. *Rana (Paa) liebigii* Dubois, *Bull. Mus. Natl. Hist. Nat. Paris, Ser. 3, Zool.*, 324 : 1098.

2005. *Nanorana liebigii* Chen, Murphy, Lathrop, Ngo, Orlov, Ho, and Somorai, *Herpetol. J.*, 15 : 239-240.

2006. *Chaparana (Paa) liebigii* Ohler and Dubois, *Zoosystema*, 28 : 781.

Etymology : Dedicated to the German chemist Justus von Liebig (1803-1873), one of the founders of organic chemistry.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Elongated sturdy body with long legs. Prominent dorsolateral folds are present (sometimes reduced or replaced by rows of single tubercles). The smooth dorsal skin texture has numerous, flat rounded warts. The dorsal color varies from yellowish ochre, grayish brown through orange-brown or reddish-brown to blackish brown. Males during the reproduction season are characterised by strongly hypertrophied humeri (upper arms) and the presence of spines on the metacarpal tubercle, the first three finger, the side of arms and the pectoral region. Measurement SVL of males 53.5-123 mm, of females 61.5-117.0mm (Boulenger, 1920a; Dubois, 1976). The largest specimen of our material is a male with a SVL of 114.5mm.

Head flat much wider than long. The head is pointed to the nares, but blunt between them. There is an occipital fold at the level of the

posterior corners of the eyes. The snout is blunt in lateral view and juts above the lower jaw. The canthus rostralis is rounded and the interorbital distance is up to 2/3 of or almost equal to the diameter of an upper eyelid. The position of the nares to the snout and anterior angles of the eye is variable. The tympanum is indistinct and about 1/3rd of the upper eyelid diameter with the tympanal membrane.

He explained the skin cover as an adaptation to protect the membrane against drifting sand in the turbid water. The supratympanal fold is large and prominent.

The finger tips are rounded with a relative finger length of $1 < 2 < 4 < 3$ with the 1st finger is minimally shorter than the 2nd and the 4th scarcely shorter than the 3rd (The subarticular tubercles are globular and distinct. There is a large oval inner metacarpal tubercle and a small ovoid outer metacarpal tubercle.

Dorsolateral folds are large, warty and prominent. They are frequently interrupted and similar in structure to the supratympanal folds and continue to the lumbar region. The dorsal skin is smooth with numerous flattened and other rounded warts on the sides of the body. There are similar warts on the dorsal region of the hind limbs and in the cloacal region. The hind limbs have additional tiny white dorsal warts. There are granules on the anterior and lateral head and in some specimens, the warts and granules have keratinized tips. The ventral surface is uniformly smooth.

Coloration : The ground color is very variable ranging from yellowish ochre through grayish brown, reddish brown to chocolate or blackish brown. In rare cases, it can also be greenish brown or olive grey, partially with pale or dark spots. A dark brown stripe extends along the snout, the canthus rostralis, the supratympanal fold and the dorsolateral fold. The hind limbs are weakly banded. The posterior sides of the thighs are marbled with pale and dark. The ventral side is uniformly white and partly has known speckles in the gular and pectoral regions. The margin of the jaw has dark spots. The iris is a uniform golden-yellow, golden greenish or golden beige crossed by two dark lines, a thin vertical and a wider horizontal one (Dubois, 1976).

Sexual dimorphism : Usually the females are significantly longer.

Males have strongly hypertrophied humeri, a larger metacarpal tubercle and a relatively longer lower leg.

Reproductive males have nuptial fields of keratinized spines on the 1st -3rd fingers, the metacarpal tubercle, the inner sides of the arms and in the pectoral region. Non-reproductive males have reduced pale nuptial fields on the inner side of the lower arm, the metacarpal tubercle, and dorsolaterally on the 1st finger and laterally on the 2nd finger (with traces also on the 3rd finger).

The high variability of spine number and distribution probably depends on the age and reproductive stage of the specimens (Dubois, 1976).

In adult males, the anal region is swollen in the form of a circular bladder.

Distribution : India : Uttar Pradesh, Sikkim, W. Bengal, Himachal Pradesh, Uttarakhand.

Elsewhere : China (S. Tibet), Nepal (locality : Midlands & lower mountain range of whole country).

Altitudinal distribution : For Darjeeling & Sikkim between 1,220-3050m (Stolickzka 1872a, Annandale 1912a)

Remarks : Habitat is usually in Oak and coniferous forest between 1,500 and 3,000 m in shaded mountain torrents and rapid brooks, with dense vegetation of ferns and moss, also on the banks. Nocturnal and shy.

12. *Nanorana minica* = *Paa minica* (Dubois) Tny frog

1975. *Rana (Paa) minica* Dubois, *Bull. Mus. Natl. Hist. Nat. Paris, Ser. 3, Zool.*, **324** : 1100.

1985. *Rana tuberculata* Tilak & Ray, *Zool. Anz.*, **215** : 231.

1992. *Nanorana (Paa) minica* Dubois, *Bull. Mens. Soc. Linn. Lyon*, **61** : 320.

2005. *Nanorana minica*-Chen, Murphy, Lathrop, Ngo, Orlov, Ho and Somorjai, *Herpetol. J.*, **15** : 239.

2008. *Chaparana (Paa) minica* Ohler and Dubois, *Zosystema*, **28** : 781.

Etymology : Dedicated to Dominique Payen, a colleague of A. Dubois MNHN, whose shortened forename "Minique" (Lat. Dominica - Minica) is at the same time an allusion to the fact that this species is the smallest one of the genus (Lat. minima : the smallest).

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Smallest species of the genus with a slender ovoid body shape. The dorsum is covered with numerous elongate tubercles and many small, pale warts. There is a lack of distinct dorsolateral folds. The dorsal coloration is olive with darker patches. During the reproductive period, males have white non-keratinized spines on the metacarpal tubercle and the first two finger. Some of them also have spines on the 3rd finger and some individuals have triangular nuptial pads in the pectoral region or, rarely, traces of pads on the arms. The male upper arms are not hypertrophied.

Head is minimally wider than long and the snout is pointed in both dorsal and lateral views. The nares are midway between the snout tip and the anterior corners of the eyes. The canthus rostralis is weakly developed and blunt. The interorbital distance is $\frac{1}{2}$ - $\frac{2}{3}$ of the upper eyelid diameter. The supratympanal fold is distinct and prominent.

The finger tips are rounded. The relative finger length is $1 < 2 < 4 < 3$ with a minimal difference between the 1st and 2nd fingers. Only the proximal subarticular tubercles are well developed and have a rounded conical form. There are two inconspicuous ovoid palmer tubercles and metacarpal tubercles. The dorsolateral fold is indistinct. Single oblong transversally oriented tubercles are found posterior to the eyes. The whole dorsum and the sides of the body are stubbed with numerous oblong tubercles and have many small rounded warts with fine points where the latter are also found on the dorsal part of the hind limbs. The venter is smooth.

The internal vocal sacs of males are paired (Dubois, 1976).

The toe webbing is complete, but deeply concave. Toe tips are enlarged with twice the

width of the toe phalanges and much wider than the tips. The proximal and distal subarticular tubercles are prominent and oblong. There is only an inner oblong oval metatarsal tubercle at the base of the 1st toe. The tibio tarsal joint reaches between the nares and the snout tip or beyond the snout.

Coloration : The dorsum is olive with black spots, although in preserved specimens, it is pale to grayish brown with larger, roundish or oblong irregular spots, part of which have pale centres. There are dark spots along the mouth cleft. The supratympanal fold is dark brown. Often there is an indistinct interorbital bar developed.

The limbs are distinctly banded with dark olive.

The ventral side is uniformly yellowish; partly speckled with dark on the throat and breast.

Sexual dimorphism : Females have a significantly longer SVL than males. Additionally in males, the head is relatively longer and wider than in females (Dubois, 1976). Throat and thighs turn red during the reproductive period (Boulenger, 1920a).

Reproductive males develop white keratinized spines on the metacarpal tubercles on the 1st and 2nd fingers, and sometimes on the 3rd; in some specimens as triangular field on the pectoral region or in traces on the inner side of the lower arms (Dubois, 1975, 1976). Reproductive males do not develop hypertrophied humeri.

Distribution : India (Uttar Pradesh, Uttarakhand, Himachal Pradesh).

Elsewhere : Midlands and lower mountain ranges of W. Nepal.

Remarks : An aquatic species which lives in springs and small brooks. Prefers aquatic habitats with dense shrub and wood environment. Survives dry periods hidden in the ground. Syntopic with *Sphaerotheca brevipeps*, *Bufo melanostictus* and *B. himalayanus*. Reproductive season: Possibly two phases in spring and autumn.

13. *Sphaerotheca breviceps* (Schneider) Indian Burrowing Frog

1799. *Rana breviceps* Schneider, *Hist. Amph.* : 142.

1863. *Rana breviceps* Peters, *Mont. Berl. Ac.* : 76.

1882. *Rana breviceps* Boulenger, *Cat. Batr. Sal. s. Ecaudata. Brit. Mus.*, 32.
1890. *Rana breviceps* Boulenger, *Faun. Brit. India, Rept. and Batr.*, : 451.
1904. *Rana breviceps* Ferguson, *J. Bombay nat. Hist. Soc.*, 15 : 502.
1987. *Tomopterna breviceps* : Inger and Dutta, *J. Bombay nat. Hist. Soc.*, 83(Suppl) : 184.
1999. *Sphaerotheca breviceps* Dubois, *J. South Asian Nat. Hist.*, 4 : 8.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray, 1999, Schleich Kastle, 2002).

Description : Fingers completely free : toes incompletely webbed, metatarsals bounded by muscles. Vomerine teeth in two oblique series. Inner metatarsal tubercle shovel-shaped with sharp margins. Tongue large, free and notched behind. Body rather short and stout. Head sloping anteriorly, broader than long, width of head 1.15-1.23 times of head length. Tip of snout rounded. Nostrils more nearer the tip of the snout than anterior corner of eye, mouth subterminal, canthus rostralis obtuse, loreal region depressed. Length of snout shorter than eye, length of eye 1.14-1.20 times of snout length. Internarial distance slightly greater than interorbital width, which is 0.50 to 0.75 times in upper eyelid. Upper eyelid wider than interorbital width. Tympanum distinct, vertically oval. Diameter of eye 1.50-1.58 times of tympanum. There is a supratympanic fold commencing from posterior corner of eye upto shoulder. Vomerine teeth in tow oblique groups, extending a little beyond hinder edge of choanae. Tongue free and deeply notched behind.

Skin of upper parts smooth with some scattered elongated tubercles. Belly and lower surface of thigh near anal region glandular.

Fingers free, first longer than second. First finger 1.33-1.65 times length of second finger. Third finger as long as first or slightly longer. Fourth finger shortest. First finger with a large, round subarticular tubercle on palmer surface. Subarticular tubercles on second, third and fourth almost equal in dimension and quite prominent. Palmar tubercle elongated. Fore-limb stout and more closer to body and head.

Hind limbs robust and toes moderate. Subarticular tubercles prominent but smaller in dimension than those of fingers. Tips of toes obtuse and with half web. Inner metatarsal tubercle shovel-shaped, compressed, placed obliquely at base of first toe. Length of first toe 1.50 to 1.66 times length of inner metatarsal tubercle, no outer tubercle. Outer metatarsals externally united by muscles. Hind limb short, tibiotarsal articulation reaching shoulder. Heels not meeting each other when folded at right angles to body. Tibia flabby with strong muscles. The length of tibioa 2 to 3 times its width and much shorter than foot.

Colouration : There is a considerable colour variation within the same population. In some individuals, dorsum completely brick-red in colour without a vertebral streak of black colour. The posterior aspect of limbs marbled with cream colour, ventrally immaculate. Some individuals yellowish brown, generally with a yellow vertebral brown bold patches. Crown with two oblique brown streaks separated by yellow band beginning from upper eyelid and converging in posterior region. Males with a dark brown vocal sac.

Distribution : India : Andhra Pradesh, Gujarat, Kerala, Karnataka, Maharastra, Rajasthan, Tamil Nadu, Uttar Pradesh (Allahabad and Agra), Uttarakhand, West Bengal, Bihar, Himachal Pradesh (Sirmour), Orrisa, Madhya Pradesh.

Elsewhere : Sri Lanka, Nepal, Upper Myanmar.

Family MICROHYLIDAE

Genus *Microhyla*

Distinguishing features : Pupil circular, tongue elliptical, entire and free behind. A dermal ridge across palate between choane and another in front of pharynx. Tympanum hidden. Fingers free. Toes blunt more or less dialated sometimes with feeble web. Coracoids united by a simple epicoracoid cartilage, precoracoid none, no omosternum, sternum cartilaginous. Diapophyses of sacral vertebr dilated. Vertebral column diplasiocoelous. Terminal phalanges simple or T shaped.

Distribution : India : From Cape to Himalayan foot hills.

Elsewhere : East Indies, China, Sri Lanka, Myanmar, Nepal.

**14. *Microhyla ornata* (Dumeril & Bibron)
Ornate-Yellow mouthed frog**

1882. *Microhyla ornata* Boulenger, *Cat. Batr. Sal. Brit. Mus. Ed.*, 2 : 165.
1920. *Microhyla eremite* Barbour, *Occ paper Mus. Zool Michigan*, LXXXVI : 3 (Type locality Nanking).
1841. *Engystoma ornatum* Dumeril and Bibron, *Erpet. Gen.*, VIII : 745 (Type locality : Malabar coast, India)
1859. *Diplopelma ornatum* Gunther, '1858', *Cat. Batr. sal. coll. Brit. Mus.*, : 50.
1882. *Microhyla ornata* Boulenger, *Cat Batr. Sal. Coll. Brit. Mus., Ed.*, 2 : 165.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Snout obtusely pointed, projecting beyond lower jaw. Maximum diameter of eye equals length of snout. Head narrower than body and longer than wide. Nostrils nearer tip of snout than anterior corner of eye. Interorbital distance slightly greater than internarial distance and greater than width of upper eye lid. Canthus rostralis obtuse, straight. Loreal region vertical. Tympanum hidden under skin. Tongue oval, entire. Jaws toothless. Smallest frog known in India.

Forelegs short and slender. First finger much shorter than second. Third the longest. Fourth slightly longer than second, subarticular tubercles well developed. Two elongated palmer tubercles. Terminal portion of all fingers swollen into a small round knob on ventral aspect.

Hind legs comparatively robust than fore legs. Tip of toes similar to those of fingers. Toes with rudiment of web at the base, subarticular tubercles distinct. Two metatarsal tubercles, inner one elongated, outer small and round. Diameter of tibia 3 to 3.5 times in its length. Heels overlapping when legs folded at right angles to body. Tibiotarsal articulation extends up to posterior corner of eye.

Small round tubercles on dorsal and lateral aspect of body. Limbs covered with small white tipped tubercular glands. Ventral surface smooth. Posterior portion of thigh near anal region covered with densely set tubercles.

Colouration : The species is brilliant in colour. A reddish brown well defined dark streak commences behind eyes and extends from shoulder to flank. The characteristic colour pattern, a dorsomedian dark patch, begins at about mid level of eyes, narrows slightly on the occiput, then widens a little finally spreading on to the sacral region. Limbs cross barred. Anterior portion of thigh and anal region darker. Lower surface cream coloured in life but transformed into white after preservation. The small tubercles present throughout dorsal region of body and limbs (red in life and white spotted in preserved condition).

Sexual Dimorphism : Males smaller and slimmer than females and with a subgular vocal sac during breeding season but always with a transverse fold of skin on throat even in nonbreeding season.

Remarks : They are nocturnal in habit. They conceal themselves under logs, stones, leaf litters and crevices of rocky river beds. The male emits an amazingly high pitch sound which seems unbelievable for a small creature. The ventral surface of males is densely pigmented, whereas females exhibit scattered pigmentation.

Genus *Uperodon* Dumeril and Bibron 1841

Distinguishing features : Pupil circular. Tongue sub circular, entire, attached on buccal floor. Choanae large and oval. Two small bony prominences close together, between and on a level with hinder edge of choanae, a small papilla on hind margin of each choana. A denticulate dermal ridge across the palate in front of pharynx preceded by a shorter curved one. Tympanum hidden. Digits not dilated at tip. Fingers free, toes with rudimentary web at base.

15. *Uperodon systoma* Schneider, 1799

1799. *Rana systoma* Schneider). *Hist. Amph.*, I : 144 (Type locality Eastern India).
1820. *Bombinator systoma* Merrem *Syst. Amph.*, : 178.
1864. *Cacopus systoma* Guenther, *Rep. Brit. India*, : 414.
1931. *Uperodon systoma* Parker, *Archiv. Zool. Ital*, XVI : 1234, fig 3.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Head small, snout rounded : snout length equal to the length of eye. Canthus rostralis indistinct. Loreal region oblique, slightly elevated. Nostrils nearer to tip of snout than anterior corner of eye. Interorbital space 1.75-2.00 times width of upper eyelid. Tympanum hidden. Tongue oval, entire free behind. Choanae very large, with a movable dermal flap, which can close the narial passage. Two small bony prominences, close together, between and on level with hinder edge of choanae, a small papilla on hinder margin of each choana, a narrow denticulated ridge across sphenoidal region; another very broad, in front of pharynx. Shape of body globular. Skin smooth dorsally except glandular anal region. A fold from posterior corner of eye to shoulder, ventral surface smooth.

Forearm stout. Fingers free, tips simple not dilated. First finger shorter than second which almost equal to fourth. Third finger longest. Subarticular tubercles indistinct

Hind limb highly muscular. Two metatarsal tubercles, inner small, horizontally placed and outer, large and obliquely placed, shovel shaped and adapted for fossorial living. Toes webbed at base. Subarticular tubercles like those of fingers. Toe tip simple. First toe smallest and fourth longest.

Colouration : Dark brown marbled; the colouration forming a conspicuous reticulum on the dorsal aspect of body; limbs are also of same colour. Ventrally immaculate.

Sexual Dimorphism : The males are smaller in size and with a dark brown inflated vocal sac on ventral aspect of lower jaw.

Distribution : India : Himachal Pradesh (Simour), Karnataka, Kerala, Orissa, Andhra Pradesh, Tamil Nadu, Uttar Pradesh (Agra, Allahabad, Sharanpur (Uttarakhand Dehradun), West Bengal.

Elsewhere : Sri Lanka.

Remarks : These rare microhylid frogs inhabit thickly wooded tracts of district Dehradun. They are nocturnal in habit and hence come out only at night for feeding and breeding purposes. They are well adapted for fossorial habit. They feed on termites, ants and similar terrestrial insects. The microhylid frog commonly called as Marbled

Balloon frog has so far been recorded from Agra, Allahabad, Saharanpur (Uttar Pradesh), Sirmour (Himachal Pradesh).

Family RANIDAE
Genus *Amolops* Cope, 1865

1865. *Amolop* Cope *Nat. Hist. Rev.*, : 117.

(Type species : *Polypedates afghana* Guenther 1858.

1865. *Staurois* Cope *Nat. Hist. Rev.*, : 117.

Diagnostics : Pupil horizontal, vomerine teeth obliquely placed between choanae, broad tongue deeply notched and free behind. Tips of fingers and toes dilated into distinct discs bearing crescentic groove, separating upper and lower surfaces. Fingers free. Toes extensively webbed. Outer metatarsals entirely separated by web or nearly so. Omosternal style not forked at the base. Terminal phalanges with transverse expansion (T-shaped). Tadpoles with ventral abdominal sucker.

Distribution : India : Eastern and Western Himalaya (alt. 1500 to 3000 mts.).

Elsewhere : The Himalaya; Nepal; Southern Yunnan; The hills of Myanmar as far south as Tenasserim and Siam.

Species known from India : *Amolops afghanus* (Gunter, 1858), *Amolops chakrataensis* Ray 1999, *Amolops formosus* (Gunter, 1875), *Amolops jaunsari* Ray, *Amolops monticola* (Anderson, 1871).

16. *Amolops afghanus* (Gunter, 1858)

1871. *Polypedates marmoratus* Anderson *Proc. Zool. Soc.*, London. : 209; and *Anat. Zool. Res. Yunnan* : 842.

1872. *Polypedates marmoratus* Stoliczka *Proc. Asiat. Soc. Bengal*, : 108.

1858. *Polypedates afghana* Gunther *Cat. Batr. Sal. Brit. Mus.*, : 81 (Type locality : Afghanistan; Types in British Museum).

1864. *Polypedates afghana* Gunther *Rept. Brit. India*, : 432.

1912. *Ixalus kakhienensis* Annandale *Rec. Indian Mus.*, 8 : 16-17, 33, pl. 3,

Material examined : Material was not collected but reported by previous workers (Ray 1999).

Description : Tip of snout rounded, slightly projected beyond the lower jaw. Head

dorsoventrally flattened. Head wider (24 mm) than long (22 mm). Snout longer than maximum diameter of eye (8 mm). Nostrils, present at tip of snout nearly oval with a small fleshy expansion on hinder part. Canthus rostralis rounded, loreal region concave. Inter-orbital distance equal to width of upper eyelid. Tympanum more or less rounded, its maximum diameter (2 mm) equals its distance to eye. Supratympanic fold present, continues from posterior corner of eye to angle of jaws.

Presence of small vestige of pineal ocellus. Maximum diameter of eye 1.25 times of tympanum. Vomerine teeth in two short series of 4 to 5 teeth, almost perpendicular to the axis of body, closer to each other than to choanae and longer than distance between them. Maxillary teeth well developed. Tongue wide, papillated, notched behind.

Forelimbs well developed with fingers with terminal discs. Distal part of foreleg more muscular than proximal part. A distinct groove present on upper surface of fingers at junction between penultimate and last phalanx. Discs flattened, rounded, much wider than long, with circummarginal groove. Disc of first finger less developed and smaller than the rest. Proximal sub-articular tubercles of fingers prominent, longer than wide. Distal tubercle indistinct. Internal metacarpal tubercles prominent but small. Two twin palmer tubercles elongated, flattened, moderately prominent. First and second finger almost large and quite separated from each other. Third finger the longest, fourth finger slightly greater than second. The first and second metacarpals free just above the base, whereas third and fourth adhere to each other throughout their length.

Hind limbs moderately well developed. Tibiotarsal articulation extends upto tip of snout but not beyond. Heels overlapping strongly when limbs folded at right angles to the body. Length of tibia 3.5 times of its width, slightly longer than distance from the base of inner metatarsal tubercle to the tip of longest (fourth) toe. Tips of toes with broad disc. External metatarsals separated by web. Webbing complete to the base of disc of each toe. There are two distinct metatarsal tubercles. Outer metatarsal small and circular, inner elongate almost half the length of inner toe. The proximal

subarticular tubercle round, distal subarticular tubercle indistinct.

Colouration : Skin of upper parts dark olive. Lateral aspects of body darker than rest of the body. Upper parts of limbs cross barred with dark brown colouration mottled with cream base. Ventrally immaculate except the margin of lower jaw, which speckled with brown. Dorsal aspect with round flattened elevated glands whereas laterodorsal aspect bear elongated glands of higher numbers and closely set. There is dark coloured discontinuous row of elongated glands resembles dorsolateral glandular folds.

Distribution : India : Uttarakhand, Dehradun (Ray 1999).

Remarks : Hill streams and adjoining areas usually conceal themselves under boulders facing water bodies. They breed during the month of April and June.

17. *Amolops chakrataensis* Ray Dehradun Stream Frog

1992. *Amolops chakrataensis* Ray, *Indian J. Forestry*, 15 : 346.

1999. *Amolops chakrataensis* Ray, P. Systematic studies on the Amphibia Fauna of the district Dehradun, Uttarpradesh, India IV (Published-Director Zoological Survey of India) *Memoirs of the Zoological Survey of India*, 18(3) pp 19-21.

Holotype : NRC/ZSI A-25 collected from a hill stream, nearly 14 kms. North-west of Charkrata on Tuni road, Tehsil Chakrata, Dehradun. Date 11.III.85, Coll. P. Roy.

Material examined : Material was not examined but reported by previous workers (Ray 1999). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : A medium sized frog with female of average length 55 mm (tip of snout to vent length), eye small (6 mm), diameter of eye greater than snout (7 mm); head wider (17 mm) than long (16 mm). Posterior of thigh bloched dark brown and creamy yellow. Length of tibia (27.5 mm) equal to half of the distance between snout tip to vent (55 mm).

Body moderately stout; head wider (17 mm) than long (16 mm), snout obtusely pointed, projecting well beyond the lower jaw. Head

dorsoventrally flattened. Upper eyelids not elevated almost in level with interorbital space. Eye diameter (6 mm) slightly shorter than length of snout (7 mm). Internarial distance (6 mm) slightly greater than interorbital distance (5.5 mm). Nostrils nearer anterior corner of eye than tip of snout. Interorbital distance greater than upper eyelid. The distance between tympanum and posterior corner of eye almost equal to the diameter of tympanum. Diameter of tympanum (3 mm) almost half the diameter of eye.

Pineal ocellus clearly visible, just on the middle line connecting anterior corners of orbits. Canthus rostralis distinct, oblique, loreal region concave. There is a glandule almost equal to diameter of tympanum, situated just above jaw commissures. Supratympanic fold distinct, commencing from posterior corner of eye and extending downwards laterally near the shoulder joint. Tympanum concealed below supratympanic fold. Vomerine teeth feeble, arranged obliquely in groups, Tooth bands separated by a distance slightly less than the width of one group, groups on line connecting rear rims of choanae; tongue broad, well notched behind, without well developed papilla. Body dorsally flat with little slope anteriorly. Two distinct elevated dorsolateral glandular folds commencing from posterior corner of upper eyelid, extend dorsolaterally upto sacral region, where they subdivide into small glands surrounding anal aperture. The distance between two folds is wider in anterior region than in posterior region. Lateral aspect of belly and shoulder region covered with elongated glands. Abdomen was full of ova during March.

Upper arm slender whereas the fore-arm more muscular and stout. Fingers long and slender, terminating in well developed discs. Discs almost equal to diameter of tympanum, as long as wide with distinct circummarginal groove, separating upper surface from that of lower.

Length of first finger (7 mm) almost equal to the snout length. Disc of first finger less in dimension than that of second, third and fourth. First finger (7 mm) shorter than second (7.5 mm) and fourth finger (8.5 mm). Third finger longest (12 mm). No supernumerary tubercles on metacarpals. Two elongated palmer tubercles

present. Subarticular tubercles well developed and rounded, placed on digital joints except distal joints of penultimate phalanges. On dorsal aspect there is an elevated fold of skin with groove on outer side at the joints of distal and penultimate phalanges. This fold of skin facilitates easy and flexible movement of the disc with penultimate phalanges. According to Ray 1999 this might be an adaptation to the hill-stream dwelling frogs which need firm flexible movement against fast flowing water and for jumping from one rock to other

Hind leg moderate, not slender; diameter of tibia (6 mm) approximately 4.66 times in its length (28mm). Length of thigh (27 mm) less than length of shank (tibia). The diameter of thigh (12 mm). 2.25 times in its length. Length of foot (28 mm) equal to length of articulation reaching only tympanum or just posterior corner of eye. Toes termination into discs smaller than those of fingers. Outermetatarsals separated by web near to the base. Toes almost completely webbed. There is a fold of skin on dorsal aspect of knee and ankle joints, forming a groove towards distal face.

The web reaching discs of all toes except a fringe on penultimate phalanx of fourth toe. Fourth toe, longest (21.5 mm). Third toe (17 mm) as long as fifth toe. First toe (7.5 mm) smaller than second toe (11 mm). Elongated bean-shaped inner metatarsal tubercle equal to its distance from first subarticular tubercle (proximal) of first toe. Subarticular tubercles of toes well developed and arranged in a manner as in other species of the genus. There is no outer metatarsal tubercle.

Colouration : Uniformly slaty brown on dorsal aspect. Lateral aspect below the dorsolateral glandular fold is dark green. A dark blackish-brown canthal streak running through loreal region upto to tympanic area. Golden yellowish band on upper jaw. Lower jaw with brown patch on out margin. The dorsolateral glandular folds with golden yellowish colour whereas margins are with black throughout. The ventrolateral aspect of belly mottled with brown and yellow. Ventrally immaculate. The digits are barred with brown colour. Posterior aspect of thigh dark brown, mottled with irregular light spots forming a reticulum. Abdomen and ventral surface of legs

with scattered spots of brown pigments. Fore and hind limbs have brown cross bars on olive ground colour on dorsal surface and cream colour on ventral side.

Distribution : India : Charkrata on Tuni road, Tehsil Charkrata, Dehradun, Uttarakhand.

Remarks : The frog is usually stay under rock in a stagnant pool near a fast flowing hill stream in remote areas of Charkrata Hill. According to Ray 1999 the present species is morphologically close to *Amolops monticola* but differs from it in many characters.

18. *Amolops formosus* (Guenther)

Beautiful Stream Frog, Assam cascade frog

1876. *Polypedates formosus* Gunther, '1875', *Proc. Zool. Soc. London*, 1875 : 570.

1882. *Rana formosa* : Boulenger, *Cat. Batr. Sal. s. Ecaudata*, *Brit. Mus.*, : 70.

1890. *Rana formosa* Boulenger, *Faun. Brit. India, Rept. & Batr.*, 463-464.

1907. *Rana formosa* Boulenger *Rec. Indian Mus.*, 1 : 151.

1951. *Rana formosa* Smith, *Ann. Mag. nat. Hist. Ser.*, 12(4) : 727.

1962. *Rana formosa* Swan and Leviton, *Proc. Calif. Acad. Sci.*, ser. 4, 32 : 108.

1974. *Rana formosa* Waltner, *J. Bombay nat. Hist. Soc.*, 72(3) : 894.

1890. Boulenger, *Faun. Brit. India, Rept. Batr.*, : 463.

1951. *Rana formosa* Acharjee and Kriplan, *Rec. Indian Mus.*, 49 : 183-184.

1974. *Amolops formosus* Dubois, *Bull. Mens. Soc. Linn. Lyon*, 61 : 321.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : Snout with round tip, slightly, projecting beyond lower jaw. Snout shorter than maximum diameter of orbit. Canthus rostralis rounded. Nostrils with a posterior knob, nearer tip of snout than anterior corner of eye, width of upper eyelid almost equal to the interorbital distance but equal to maximum diameter of orbit. Loreal region oblique and concave. Distinct tympanum with tympanic fold (running from posterior corner of eye to axils), almost 1/3 to

diameter of orbit. Small glandules surrounding angle of jaws and extra tympanic area. Dorso lateral folds indistinct.

Head much depressed, wider than long. Length of head 1.17-2.75, length of snout 2.22-2.75, maximum diameter of orbit 3.05-3.33 and internarial distance 3.66-4.23 times in width of head. Distal part of forelimb stronger and muscular than proximal part. First finger smallest and third the longest. First finger 1.81-1.87, second finger 1.32-1.38 times in the length of third finger. Fingers with large disc, wider than long with circummarginal groove separating upper surface from lower, which gives maximum flexibility to finger discs. Length of third finger being 2.5 to 3 times of snout length. On the dorsal aspect of swollen tip of digits, there is a transverse groove with a dermal fold corresponding to internal transverse bar of 'T' shaped bone of ultimate phalange. Subarticular tubercles distinct and oval. Supernumerary tubercles elongated, indistinct, present on ventral aspect of each metacarpal zone. Two palmer tubercles close to each other, outer elongated and longer than inner one.

Hind limb long. Tibiotarsal articulation extends upto tip of snout in life. Heels strongly overlapping, when limbs are folded at right angles to body. Length of tibia almost equal to length of foot. Diameter of tibia 3.20-3.76 times in its length. Toes with large discs those of third and fourth digits, the largest, webbing extensive two distal phalanges of fourth, toe bear a narrow fringe of web. Third and fifth toes having complete web upto disc. The discs more triangular than round, with a raised fold above the junction of penultimate and distal phalanges. Length of first toe 2.30-2.94, length of second toe 1.71-1.84, length third toe 1.27-1.45, length of fifth toe 1.15-1.26 times in length of fourth toes. Subarticular tubercles oval, distinct. Outermetatarsal separated near base. Inner metatarsal tubercles single, elongated and 2.25-3.25 times in length of first toe. No outer metatarsal tubercles.

Colouration : Ground colour is bright green with irregular distinct chocolate coloured patches at regular intervals throughout dorsal surface. Dorsal surface of limbs including foot and palm have similar colouration as of the body. These

patches are speckled with light green. Supratympanic fold is light brown. Ventral side silver intermingled with brown. Iris golden green. Brown coloured cross bands on thigh, shank and ankle. Anal region suffused with black tubercular glands.

Distribution : India (Himachal Pradesh, W. Bengal, Sikkim, Meghalaya, Punjab, Uttar Pradesh), Uttarakhand.

Elsewhere : Nepal (known from numerous localities in mountain region throughout the country, except the West), N. Myanmar.

Remarks : Sparse population can be found near hill streams. They are fast swimmers against strong current of water. The colouration of body is identical to the algae laden boulders and pebbles that it is hardly possible to make them.

19. *Amolops jaunsari* Ray Jaunsar Stream Frog

1992. *Amolops jaunsari* Ray, *Indian J. Forestry*, 15 : 348.

Holotype : Upstream near Sahiya Chakrata Tehsil, District Dehradun. Holotype : ZSI-NRS A-196; given as ZSI-NRS A23 by Ray, 1999, *Mem. Zool. Surv. India*, 18 : 24. Type locality: "India. Dehra Dun District, Chakrata, Uttar Pradesh; collected from Amlawa river, nearly 2 km upstream from Sahiya, 1800 m", northern India. 16 March 1985, Coll. P. Ray

Etymology : The specific name is derived from type locality where the famous Jaunsar tribals.

Material examined : Material was not examined but reported by previous workers (table 2). Description is based on literature (Ray 1999, Schleich Kastle, 2002).

Description : This species is a comparatively smaller form of *Amolops* with eyes large, diameter of eye is shorter than snout, head wide, rear thigh blotched with dark olive suffused with creamy base.

Body moderately stout, head as long as broad; head almost triangular; tip of snout obtusely pointed, projecting well beyond the lower jaw, eyes

elevated, canthus rostralis sharp, slightly concave, lores concave near eye and elevated towards jaw margin. Nostrils lateral with a posterior knob, just below canthus rostralis, almost equidistant or slightly nearer to the tip of snout than anterior corner of eye. Internarial distance almost equal to interorbital distance. Upper eyelid length is equal to interorbital distance. Tympanum distinct, small, surrounded by small elevated glands. Distance between the posterior corner of eye and the tympanum is equal to horizontal diameter of eye, which equals diameter of disc of first finger. Vomerine teeth weak, in small oblique groups, separated by less than width of each group; groups of teeth lie on an oblique line connecting rear rims of choanae. Tongue deeply notched, wide. Paired subgular vocal sacs form gular pouches at corners of throat; vocal openings just inside commissures of jaws. Skin of upper parts glandular, supratympanic fold elevated at posterior corner of eye and continues as a faint line towards axil. A series of beaded dorso-lateral glands extend from posterior corner of eye to the sacral region. Sides of trunk coarsely glandular. Dorsal aspect of fore-arm and tibia covered with white tipped spinules. Ventral aspect thin and smooth.

Hindlimbs long slender. The diameter of tibia almost five times its length. Heels overlapping when limbs are folded at right angles of body. Toes ending in disc, similar to that of finger but in less dimensions. The diameter of disc of first, second and fifth toe are equal whereas the disc of third and fourth toes are smaller in dimension and equal to each other.

Complete web, starting below base of disc, narrow fringe of dermal fold on the outer aspect of inner toe. Inner metatarsal tubercle elongated equal to distance between its dermal margin and proximal subarticular tubercle of first toe. Outer metatarsal tubercle rounded and distinct.

Forelimbs moderate. First finger almost equal in length of second finger. The tips expanded into distinct disc having circummarginal groove. The disc of third and fourth finger large, no fringe of dermal fold along the fingers. A small

supernumerary tubercle on palmer surface of each metacarpal. Nuptial pad distinct, well granulated, covering ventrolateral aspect on base of first metacarpal. Palmer tubercle elongated and trilobed. Round distinct sub-articular tubercles present on each phalangeal joints of metacarpal and phalanges except distal joints.

Colouration

Dorsum dark olive green, upper lips with light brown lighter spots. Lores with indistinct dark marking below canthus. Iris golden green, a blackish-brown band extends from posterior margin of eye upto the sacral region. Throat and anterior portion of breast region mottled with dark brown. Abdomen and ventral part of limbs immaculate. Limbs marked with alternating light and dark brown cross bars, darker bars are wider than lighter bars. Posterior part of thigh dark brown mottled with light green and cream colour forming a beautiful reticulum.

Distribution : Amlava river, Sahiya, Chakrata, Dist Dehra Dun, Uttarakhand.

Remarks : They are extremely rare small hill stream dwelling species collected from aquatic vegetation on the edge of famous Amlava river.

Their color pattern is so camouflaging with surrounding substratum on the stream, that it is hard to detect them.

Family RHACOPHORIDAE Genus *Polypedus* Taschudi, 1838

Distinguishing characters : Species of the genus are moderately large. Skin of body and limbs smooth. Digital discs large. Fingers webbed at the base. Omosternum slightly formed at the base. Vomerine teeth always present, distal end of metacarpal distinctly dilated; bony knob on distal metacarpal of third finger large. Terminal phalanges of fingers and toes Y shaped. An intercalary ossicle between penultimate and terminal phalange present.

Distribution : India, Myanmar, Sri Lanka, Thailand, Indochina, Formosa South West and south China, Hainan, Malaya Peninsula, Sumatra,

Borneo, Celebes, Java, Lesser Sunda Islands as far as Timor and the Philippine Islands.

20. *Polypedates maculates* (Gray, 1834)

1834. *Hyla maculate* Gray, III. *Ind. Zool.*, : 82.

1858. *Polypedates maculates* (Part) : Gunther, *Cat. Batr. Sal. Brit. Mus.*, : 78.

1871. *Polypedates biscutiger* Peters, *Mon. Berl. Ac.*, : 649.

1860. *Polypedatus megacephalus* Hallow, *Proc. Ac. Philad.*, : 48.

1882. *Rhacophorus maculates* Boulenger, *Cat. Batr. Sal. Ecaudata Brit. Mus.*, : 83.

1979. *Rhacophorus leucomystax* Pillai and Chanda *Rec. Zool. Sury. India*, 79 : 167.

Material examined : India : Uttarakhand.

District : Haridwar, Rajaji National Park FGH, 1ex, 11.iii.10, coll. A Baheeguna (Reg. No. 665).

Description : Tip snout obtusely pointed. Head slightly broader to almost equal in length. Length of snout 1.42 to 1.52 times diameter of eye. Canthus rostralis distinct, loreal region vertical and concave. Nostrils much nearer to tip of snout than anterior corner of eye. Interorbital distance slightly greater than upper eyelid. Tympanum distinct, its diameter 1.30 to 1.42 times diameter of eye. Tongue fairly large, wide, free and bifid behind. Vomerine teeth in two more or less oblique series between choanae and touching anterior margin of latter. Anal fold above the anus present.

Skin smooth and granular above head. Dorsal aspect of rest of body glossy. A fold above tympanum runs from posterior corner of eye and extends upto shoulder. Belly and lower surface of thigh glandular.

Fore limbs stout, with moderately enlarged terminal discs of fingers. Fingers with a rudiment of web, more pronounced in between third and fourth finger. A crest-like elevated fold of skin present on upper surface of all digits on joints of penultimate and distal phalanges serving as an indication of presence of intercalary ossicle. Discs of fingers large but smaller than tympanum. First

and second fingers are almost equal in length. The width of disc of first finger less than other discs. Third finger, the longest. Fourth finger slightly longer than second finger. Ventral aspect of metacarpals has glandular supernumerary tubercles. Subarticular tubercles well developed and rounded. Palmer tubercle elongated.

Hind limb slender, adapted for jumping. Two phalanges each of first, second and third digits are without web except for a minor fringe. Three phalanges of fourth digit devoid of web. Toes with discs of similar nature but smaller in dimension. Web between fingers not extending upto discs. Only fifth toes is webbed up to base of disc. Outer metatarsals separated by web up to base. Elongated subarticular tubercles distinct and longer than wide. Inner metatarsal tubercle single but distinct. Length of tibia 4.10 to 4.23 times of its diameter. Tibio tarsal articulation extends up to tip of snout.

Colouration : Colouration variable, dorsum cream with dark brown patches. Usually a large, dark brown coloured glass-shaped mark on hinder part of Canthal streak continues to tympanic area.

Canthal streak continues to the tympanic area and is coloured dark brown. Iris golden. The spots are very distinct in mature specimens. Limbs cross barred. Hinder side of thigh light brown with yellowish rounded spots.

Sexual Dimorphism : Males are smaller in size and with a vocal pouch on ventral surface of throat which is connected with buccal cavity through two openings by the side of tongue in lower jaw.

Breeding males show slight enlargement of first metacarpal region.

Distribution : Throughout India.

Remark : These tree frogs are seldom detected because of their secretive habitat and colouration matching with surroundings. In breeding season males attract females by their specific loud sound Thok Thok-Thok.

This species commonly hides in tree holes which are partly moist. They are strictly nocturnal.

SUMMARY

The paper describes 20 species belonging to 11 genera, 5 families and one order. The family Dicroglossidae has been added as currently it has been incorporated by many scientists for species of order anura (with characteristic of forked tongue). Four endemic species from Uttarakhand were reported for the first time by Ray in 1995 and further in 1999, also described in the present paper. The species *Euphlyctis cyanophlyctis* Schneider, Skittering frog was noted to be very common in the state. It is known to tolerate considerable amount of contamination and organic pollution in pools.

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Table 2 : Species recorded from conservation areas, from Western Doon Shiwalik and from various districts surveyed by ZSI (based on collection during surveys and publications by ZSI)

Species	Gobind Pashu Vihar (Uttarkashi)	Corbett Tiger Reserve (Pauri, Nainital, Almora)	Assan Barrage (Dehradun)	Nanda Devi Biosphere reserve (Chamoli, Almora, Pithoragarh)	Rajaji National Park (Dehradun, Haridwar, Pauri)	Western Doon Siwalik	From districts of Uttarakhand
		Family BUFONIDAE					
<i>Duttaphrynus himalayanus</i> (Guenther)	+	+		+			Dehradun, Tehri, Pauri, Uttarkashi, Chamoli, Nainital, almora, Pithoragarh
<i>Duttaphrynus melanostictus</i> (Schneider)	+	+	+	+	+	+	Dehradun, Tehri, Pauri, Uttarkashi, Chamoli, Nainital, almora, Pithoragarh
<i>Bufo stomaticus</i> Luetken		+			+	+	Dehradun, Tehri, Almora, Nainital, Pithoragarh
		Family DICROGLOSSIDAE					
<i>Euphlyctis cyanophlyctis</i> (Schneider)	+	+	+	-	-	+	Dehradun, Tehri, Pauri, Nainital, Almora, Pithoragarh
<i>Fejervarya limnocharis</i> (Gravenhorst)	+	-	+	-	-	+	Dehradun, Tehri, Pauri, Nainital, Almora
<i>Fejervarya syhadrensis</i> (Annandale)	-	+	-				Pauri, Nainital, Almora

<i>Hoplobatrachus crassus</i> (Jerdon)	+	-	-	-	-	-	Uttarkashi
<i>Hoplobatrachus tigerinus</i> (Daudin)		+				+	Dehradun, Tehri
<i>Nanorana</i> = <i>Rana</i> = <i>Paa annandalei</i> Boulenger				+			Chamoli, Almora
<i>Nanorana liebigii</i> = <i>Rana leibigii</i> (Gunther)	+						Chamoli
<i>Nanorana minica</i> = <i>Paa minica</i> (Dubois)		+					Chamoli, Almora
<i>Nanorana blanfordii</i> = <i>Paa blanfordii</i> (Boulenger)				+			D. Dun, Tehri, Pauri
							Uttarkashi, Chamoli
<i>Sphaerotheca breviceps</i> (Schneider, 1799)	+	+				+	Nainital, Almora, Pithorahgarh Dehradun, Tehri, Pauri, Pithorahgarh
		Family MICROHYLIDAE					
<i>Microhyla ornate</i> (Durmeril & Bibron, 1841)		+	+		+	+	Dehradun, Tehri,
							Nainital
<i>Uperodon systoma</i> Schneider, 1799		+			+	+	Dehradun
		Family RANIDAE					
<i>Amolops afghanus</i> (Gunther)				+			D. Dun, Tehri, Uttarkashi, Chamoli, Pithorahgarh
<i>Amolops chakrataensis</i> Ray							Dehradun
<i>Amolops formosus</i> (Guenther)				+			Dehradun, Pauri, Uttarkashi
<i>Amolops jaunsari</i> Ray							Dehradun
		Family RHACOPHORIDAE					
<i>Polypedates maculatus</i> (Gray, 1834)	+						Dehradun, Pauri, Almora

Based on publications : Husain. (2003), Ray (1995), Mehta. and Uniyal. (2007), Mehta (2008), Dinesh, Radhakrishnan and Bhatta, (2009), Pranjaleendu, & Tilak, (1995), Husain, (2004), Ray, (1997), Chopra (1977), Ray (1989).

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PISCES

DEVI PRASAD UNIYAL

Zoological Survey of India, Northern Regional Centre, Dehradun 248 195

INTRODUCTION

Streams, rivers and wetlands are among the most fascinating and complex ecosystems on earth. Touching all parts of the natural environment and nearly all aspects of human culture. The animals found in fresh water are extremely diverse and represent nearly all phyla. Among them fish of freshwater ecosystems are enormously important to humans. Much of the world inland fish serve as a major source of protein, (Wetzel, 2001). Globally a total of 21,723 species of fish has been recorded from varied ecosystems. In India 2,513 species of fish has been reported, which contributes the 11.1% of the world fish population out of which 1,580 are inhabitant to marine and 933 in freshwater ecosystem (Jayram, 1999). Uttarkhand is bestowed with rich drainage of Ganga and Yamuna rivers with a numbers of tributaries, lakes and reservoirs that provide an ideal habitat for fish fauna to flourish. Due to its geographical set up, it supports the diversified fish fauna i.e. warm water (plain area fish) and coldwater (hill streams fish which develop high adaptation for survival). The icy-streams harbors country's rich cold water fish-fauna including world famous Mahseer, catfishes and trout. The indigenous fishes have been a source of food for masses, whereas the introduction of exotic species like trout in the cold water of high altitude dated back to the yester century as the game fishes for the anglers and naturalists. Uttarkhand state having good net work of protected areas (PA'S), natural and man made lakes and wetland like Tehri reservoir, Asan & Jhimताल conservation reserves, Bhimgoda, Naini Tal, Dodital, Devaria Tal, Bhimtal, etc. where fish fauna is under protection either religiously or by the law of conservation of wetland. However, the fish resources of state has been adversely affected due to increased anthropogenic pressure in the name of development activities like unplanned exploration

power generation, deforestation, shrinkage of water bodies, pollution/weed infestation, introduction of exotic species in turn leads towards the destruction of fish habitat. Although state Government along with concerned departments is taking ambitious steps for fishery development and conservation. But for that in depth knowledge of fish resource of state is necessary, so that further action plans can be prepared. Uttarkhand state is an integral part of Western Himalaya and attracts the attention of Ichthyologists since the past. The important contributors are Hora (1937b, 1952), Menon (1954, 1962, 1974), Atkions (1974), Sehgal (1974), Tilak and Husain (1977), Karmakar (2000), Khan (2000), Joshi (2000), Mehta & Uniyal (2005) and Nautiyal (2005).

As per the appraisal of literature the important contributors on conservation and fish fauna of Uttarkhand are Hora and Mukherjee (1936), Hora (1937a), Menon (1949, 1999), Chaudhary and Khandelwal, (1960), Das (1960), Lal and Chatterjee (1963), Singh (1964), Tilak (1969), Pant (1970), Grover (1970,1979), Badola and Pant, (1973), Tilak and Husain (1974, 1976, 1977a,1977b, 1978), Badola, (1975), Husain (1976, 1995, 1997), Badola and Singh (1977a, 1977b, 1977c, 1981a, 1981b), Das & Pathania (1978), Singh and Badola (1978), Baloni (1980), Sharma (1983, 1984, 2004), Bhatt, *et al.* (1984), Tilak and Baloni (1984), Singh *et al.* (1987), Das and Nath (1988), Dobriyal & Kumar (1988), Nautiyal (1989, 1994, 2001, 2005), Khanna & Badola (1990), Dobriyal (1991), Dobriyal *et al.* (1992), Bhatt and Pathak (1992a 1992b), Joshi *et al.* (1993), Pathak & Bhatt (1993), Rautela *et al.* (1993), Singh *et al.* (1993), Grover *et al.* (1994), Joshi (1994), Husain and Tilak (1995), Singh and Sharma (1998), Joshi (1999), Pathania & Rautela (2000), Khan (2000), Chawan (2000), Bahuguna *et al.* (2001), Uniyal *et al.* (2001, 2002, 2006), Uniyal (2002, 2007, 2008a,b & 2009a,b,c), Uniyal and Kumar (2002, 2006), Negi

and Malik (2005), Uniyal and Mehta (2006) and Rauthan *et al.* (2008).

PHYSIOGRAPHY OF UTTARKHAND

The newly formed state of Uttarakhand was carved out from the Uttar Pradesh state by separating the hill region (situated between 28° 43'-31° 8' North latitude and 77° 35'-81° 2' East longitudes) with geographical area of 53,483 Km² supported by 13 district with an altitude from 400m-6000m, varying from lesser Himalaya to greater Himalayas, Doons and Shiwalik. The state is bestowed with rich net work of the rivers and the famous river Ganga (Mandakani, Alakananda, Nayar, Gori and Dhaul Ganga) and Yamuna (Tons, Amlawa, Aglar, etc.) originates and supported by large numbers of rivers, ponds, reservoir, streams etc. In present situation the large number of Hydro-power projects is coming up which results in fragmentation of fish habitat specially the migratory fishes.

METHODOLOGY

The description of fishes based on the collection housed in Northern Regional Station (NRS, Dehradun) which were collected under various field surveys by me and field party of the station and also the collection identified by me for the university/institutes researchers from different district of the state. Fish specimens were collected by applying various fishing methods in day and night time to get maximum representation of fishes. The district wise inventory of fish fauna has been prepared on the bases of material (specimen) identified by (following the morphometry and meristematic characters) author, available in Zoological Survey of India, Dehradun (U.A.) and also material received from various University/Institutes of Uttarakhand and collection identified by the Husain & Tilak (1995), Husain (1976, 1995) also consulted etc. Identification is based on the Talwar and Jhingran (1991), and Jayaram (1999), classification given by Nelson (1984) is followed with slight modification.

ARRANGEMENT OF DESCRIPTIONS

In the present study a total of 132 species of pisces belonging to 67 genera 27 families and 8 orders have been described from various water bodies of the state out of which two species are

the new records for the state i.e. *Glossogobius garius*, reported from Haridwar district, while *Bagrius bagrius*, reported from Dehradun and Haridwar districts, while *Garra lamta* is a new record for Dehradun district and *Nandus nandus* and *Colisa fasciatus* has also been reported for the first time from Garhwal Region (Table 1.). The family wise distribution of fishes revealed that 55 species belongs to family Cyprinidae, 16 species from Cobitidae, 15 species from Sisoridae, 5 species each from Bagridae and Ailindae, 4 species from Channidae, 3 species each from Siluridae and Salmonidae, 2 species each Notopridae, Centropomidae, Nanidae, Mugilidae, Gobiidae, Belontiidae and Mastacembelidae, 1 species each from Clupeidae Pisorhynchidae, Balitoridae, Amblycipitidae, Clariidae, Heteropneustidae, Belonidae, Aplocheilidae, Poeciliidae, Synbranchidae, Anabantidae and Osphronemidae. The district wise distribution of fish shows that maximum 101 species reported from Nainital, followed by 81 species from Dehradun, 75 species are present in Haridwar, 73 species in Udham Singh Nagar, 59 species from Pauri Garhwal. The reason for high fish diversity in these districts is low altitude, high temperature and rich drainage, where cold water as well as warm water fish is found. While 37 species reported from Rudrapur, 36 species from Almora, 35 species from Chamoli, 34 species from Bageshwar. While 32 species each inhabits in Pithoragarh and Champawat and 29 species each in Uttarkashi and Tehri Garhwal. The reason for less diversity of fishes in these districts is the high altitude and low water temperature, in this region fishes having high adaptation like suckers/adhesive pouch can survive, as they have to bear fast water current. While as per the CAMP -1998, 10 species (7.5%) are in the category of Endangered and need immediate protection and 10 species (7.5%) are exotic species which are introduced in the state mainly for biological control, game and commercial purpose. While 11 species (8.3%) are endemic to the Uttarakhand state, which act as a flag ship species for balancing the aquatic ecosystem.

All the known 132 species have been described along with their keys to the order, families, genera and species. In each species the synonymise, local name, english name, status (as per CAMP

assessment) material examined, distribution and remark is given where every specific point is to be cleared (*i.e.* sexual dimorphism, economic importance, new record, ethno-zoological importance, habitat etc.). The diagnostic characters follow as given by Talwar and Jhingran (1991), and Jayram (1998) and it is not mentioned in the text, however, where any change/new characters were noticed, mentioned in the remark.

SYSTEMATIC LIST OF FISHES OF UTTARKHAND

Phylum CHORDATA

Class PISCES

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

1. *Notopterus notopterus* (Pallas)

2. *N. Chitala* (Ham.-Buch)

Order CLUPEIFORMES

Family CLUPEIDAE

3. *Gudusia chapra* (Ham.-Buch)

Order CYPRINIFORMES

Family CYPRINIDAE

4. *Chela labuca* Ham.-Buch.

5. *Salmostoma bacaila* (Ham.-Buch.)

6. *S. Phula phulo* (Ham.-Buch.)

7. *Hypophthalmichthys molitrix* (Valenciennes)
(EX)

8. *Amblypharyngopodon mola* (Ham.-Buch)

9. *Aspidoparia jaya* (Ham.-Buch.)

10. *A. morar* (Ham.-Buch)

11. *Barilius barila* (Ham.-Buch)

12. *B. barna* (Ham.-Buch)

13. *B. bendelisis* (Ham.-Buch)

14. *B. dimorphicus* Tilak & Husain (EN)

15. *B. shacra* (Ham.-Buch)

16. *B. vagra* (Ham.-Buch)

17. *B. pectorilus* Tilak & Husain (EN)

18. *Raiamas bola* (Ham.-Buch) (TH)

19. *Brachydanio rerio* (Ham.-Buch)

20. *Danio devario* (Ham.-Buch)

21. *Esomus danricus* (Ham.-Buch.)

22. *Rasbora daniconius* (Ham.- Buch.)

23. *Carassius carassius* (Linnaeus) (EX)

24. *Catla catla* (Ham.-Buch.)

25. *Chagunius chagunio* (Ham.-Buch)

26. *Cirrhinus mrigala* (Ham.-Buch)

27. *C. reba* (Ham.-Buc)

28. *Cyprinus carpio* Linnaeus (EX)

29. *Cyprinus specularis* Lacepedes (EX)

30. *Labeo boga* (Ham.-Buch)

31. *L. bata* (Ham.- Buch.)

32. *L. calbasu* (Ham.- Buch.)

33. *L. dero* (Ham.- Buch.)

34. *L. dycoheilus* (McClelland)

35. *L. gonius* (Ham.- Buch.)

36. *L. rohita* (Ham.- Buch.)

37. *Osteobrama cotio cotio* (Ham.- Buch.)

38. *Puntius carletoni* Ham.-Buch.

39. *P. chola* (Ham.- Buch.)

40. *P. conchoni* (Ham.- Buch.)

41. *P. gelius* Ham.-Buch.

42. *P. sarana sarana* Ham.- Buch.

43. *P. Sophore* Ham.-Buch.

44. *P. terio* Ham.-Buch.

45. *P. ticto* Ham.-Buch.

46. *Tor chelynoides* (McClelland) (TH)

47. *T. putitora* (Ham.-Buch) (TH)

48. *T. tor* (Ham.-Buch.) (TH)

49. *Ctenopharygodon idellus* (Valenciennes)
(EX)

50. *Crossocheilus latius* (Ham.-Buch.)

51. *Garra gotyla gotyla* (Gray)

52. *G. lamta* Ham.-Buch.

53. *Schizothoracichthys progastus* (McClelland)

54. *Schizothorax esocinus* (Heckle)

55. *S. curvifrons* (Heckle)

56. *S. kumaonensis* Menon (EN)

57. *S. sinuatus* (Heckel)

58. *S. richardsonii* (Gray)

Family PSILORHYNCHIDAE

59. *Psilorhynchus balitora* (Ham.-Buch.)

Family BALITORIDAE

60. *Balitora brucei* Gray

Family COBITIDAE

61. *Botia alomrhae* Gray (EN)
62. *B. dario* (Hamilton-Buchanan)
63. *B. lochachata* Chaudhari
64. *B. rostrata* Gunter
65. *Lepidocephalus annandalei* Chaudhari
66. *L. caudofurcatus* Tilak & Husain (EN)
67. *L. guntea* (Ham.-Buch.)
68. *Nemachilus beavani* Gunter
69. *N. botia* (Ham.-Buch.)
70. *N. corica* (Ham.-Buch.)
71. *N. doonensis* (Tilak & Husain) (TH); (EN)
72. *N. gangeticus* (Menon) (EN)
73. *N. montanus* (McClelland) (TH); (EN)
74. *N. rupecola* (McClelland)
75. *N. savona* (Ham.-Buch.)
76. *N. submontanus* (Tilak & Husain)

Order SILURIFORMES

Family AMBLYCIPITIDAE

77. *Amblyceps mongois* (Ham.-Buch.)

Family BAGRIDAE

78. *Aorichthys seenghala* (Sykes)
79. *Mystus bleekeri* (Day)
80. *M. cavasius* (Bloach)
81. *M. vittatus* (Bloch)
82. *Pseudeutropius atherinoides* (Bloach)

Family SILURIDAE

83. *Ompok bimaculatus* (Bloach)
84. *O. pabda* (Ham.-Buch.) (TH)
85. *Wallago attu* (Schneider)

Family AILINDAE

86. *Ailia Coila* (Ham.-Buch.)
87. *Clupisoma garua* (Ham.-Buch.)
88. *C. montana* Hora
89. *Eutropiichthys vacha* (Ham.-Buch.)
90. *Silonia silondia* (Ham.-Buch.)

Family SISORIDAE

91. *Bagarius yarrelli* Sykes
92. *B. bagarius* (Ham.-Buch.)
93. *Euchiloglanis hodgarti* (Hora) (EN)
94. *Gagta cenia* (Ham.-Buch.)

95. *Glyphorax cavia* (Ham.-Buch.)
96. *G. conirostris* (Steindachner)
97. *G. dakapathari* Tilak & Husain (TH); (EN)
98. *G. garhwali* Tilak (TH); (EN)
99. *G. horai* Shaw & Shebberae
100. *G. pectinopterus* (McClelland)
102. *G. telchitta* (Ham.-Buch.)
103. *G. alakandi* Tilak (TH); (EN)
104. *Laguvia ribeiroi kapuri* Tilak & Husain
105. *Pseudechensis sclcatus* (McClelland)

Family CLARIIDAE

106. *Clarias batrachus* (Linna.)

Family HETEROPNEUSTIDAE

107. *Heteropneustes fossilis* (Bloch)

Order SALMONIFORMES

Family SALMONIDAE

108. *Salmo gairdnerii gairdnerii* Richardson (EX)
109. *S. gairdnerii irideus* Gibbons (EX)
110. *S. trutta fario* Linn. (EX)

Order CYPRINODONTIFORMES

Family BELONIDAE

111. *Xenentodon cancilia* (Ham.-Buch.)

Family APLOCHEILIDAE

112. *Aplocheilus panchax* (Ham.-Buch.)

Family POECILIIDAE

113. *Gambusia affinis holbrooki* Girard (EX)

Order SYNBRACHIFORMES

Family SYNBRANCHIDAE

114. *Monopterus couchia* (Ham.-Buch.)

Order PERCIFORMES

Family CENTROPOMIDAE

115. *Chanda nama* Ham.-Buch.
116. *C. raga* Ham.-Buch.

Family NANIDAE

117. *Nandius nandius* (Ham.-Buch.)
118. *Badis badis* (Ham.-Buch.)

Family MUGILIDAE

119. *Rhinomugil corsula* (Ham.-Buch.)
120. *Sicamugil cascasia* (Ham.-Buch.)
121. *Glossogobius gutum* (Ham.-Buch.)

122. *G. giuris* (Ham.-Buch.)

Family ANABANTIDAE

123. *Anabas testudineus* (Bloach)

Family BELONTIIDAE

124. *Colisa fascitus* (Schneider)125. *C. lalia* (Ham.-Buch.)

Family OSPHRONEMIDAE

126. *Osphronemus goramy* Lacepede (EX)

Family CHANNIDAE

128. *Channa marulius* Ham.-Buch.129. *C. punctatus* Bloch130. *C. straitus* Bloch

Order SYNBRANCHIFORMES

Family MASTACEMBELIDAE

131. *Macroganathus pancalus* Ham.-Buch.132. *Mastacemblus armatus* (Laceped)

+ : PRESENT; - : ABSENT; * : NEW
RECORD; TH : THREATENED (Endangered; As
per CAMP, Assesment-1998; 10 Species; 7.5%);
EN : ENDEMIC (11 Species; 8.3%) EX :
EXOTIC (10 Species; 7.5%).

SYSTEMATIC ACCOUNT

Class PISCES

Fishes are cold-blooded animals, typically with
backbones, gills and fins (rather than pentadactyl
limbs) and are primarily dependant on water as a
medium in which to live. Their study comprises
the pure and applied aspects of the science of
Ichthyology.

Key to the Orders

1. Body elongated, almost cylindrical and eel
like 2
Body not elongated, cylindrical and eel-
shaped, but fusiform and compressed 5
2. Gill openings small, confluent as a single
transverse opening
..... SYNBRANCHIFORMES
Gill openings wide, non-confluent as two
lateral slits 3
3. Pelvic girdle and fins absent
..... MASTACEMBELIFORMES
Pelvic girdle and fins present 4

4. Dorsal and anal fins far from caudal fin. Gill
openings wide, membranes of two sides
connected beneath isthmus. Scales moderately
large CHANNIFORMES

5. Dorsal and anal fins confluent with caudal fin
when the latter is present (absent in
Ophichthidae). Gill openings of moderate
extent situated near base of pectoral fins.
Scales present or absent, when present
embedded in skin ANGUILLIFORMES

6. Body short, rounded. Bones of upper and
lower jaw modified in the form of a beak
having a cutting edge and covered with a
layer of ivory-like substance
..... TETRAODONTIFORMES

Body fusiform. Bones of upper and lower jaw
normal without any modifications as above
..... 6

7. Skin without scales, either smooth or covered
with osseous plates or with scattered
tubercles. Pectoral fins with outer most ray
modified into osseous spine or thick ray ...
..... SILURIFORMES

Skin scaled or rarely without scales, but never
with osseous plates. Pectoral fins without any
such modifications 7

8. Abdominal edge keeled with single or double
serrations 8
Abdominal edge smooth, rounded 9

9. Lateral line present. Abdomen with double
serrations OSTEOGLOSSIFORMES

Lateral line absent. Abdomen with single
serration CLUPEIFORMES

10. Pelvic fins inserted in the thoracic region and
with spines. Dorsal and anal fins with spines.
Mostly dorsal fin in two parts, continuous or
separate, one spiny, another with soft rays ..
..... PERCIFORMES

Pelvic fins inserted in the abdominal region
and without spines. Dorsal and anal fins
without spines. Mostly with a single dorsal
spine 10

11. Head and body with scales. Teeth present on
jaws ATHERINIFORMES

Head without scales. Jaws without teeth
..... CYPRINIFORMES

Order OSTEGLLOSSIFORMES

Body and head strongly compressed, with ornamental scales. Abdomen non-keeled. Caudal region very long and tapering maxillaries welltoothed forming the greater part of the upper jaw. Maxilla and premaxilla bound together and have restricted mobility. Branchiostegal rays 3 to 5. Dorsal fin present or absent. Pelvic fins abdominal. Barbels absent. Anal fin long, united with Caudal fin. Caudal fin skeleton is greatly reduced and no distinct caudal fin.

Family NOTOPTERIDAE
Featherbacks or knifefishes

Body broad, elongated and greatly compressed with ornamental scales including head. Abdomen serrated anterior to pelvic fins, with almost 28 prepelvic double serration. Maxilla extending up to or beyond posterior border of the orbit. Maxilla well-toothed and firmly bound together with the premaxilla. Barbels absent. Dorsal fin small; tuftlike, with 8 to 10 rays. Anal fin very long, with 100 to 110 rays, confluent with caudal fin. No distinct caudal fin. Pelvic fins very small with 3 to 6 rays. Lateral line almost arched with 120 to 180 scales.

Genus *Notopterus* Lacepede

1800. *Notopterus* Lacepede, *Hist. nat. Poiss.*, 2 : 189.

(type-species : *Notopterus kaporat* Lacepede = *Gymnotus notopterus* Pallas).

1981. *Notopterus*, Jayaram. *Handbk. Freshw. Fish. India* : 53 (genus characters and distribution).

For characters of genus, consult characters of family.

Key to the species

Cleft of mouth extending beyond posterior margin of the orbit *N. chitala*

Cleft of mouth not extending beyond posterior margin of the orbit *N. notopterus*

1. *Notopterus notopterus* (Pallas)

1769. *Gymnotus notopterus* (Pallas). *Specil zool.*, 7 : 40. pl. 6. fig. 2.

Type-locality : Indian ocean.

1878. *Notopterus kaporat*. Day. *Fish. India* : 653 pl. 159. fig. 4 : 1889, Day *Fauna Br. India. Fish.* 1 : 406. fig. 129.

1981. *Notopterus*, Jayaram. *Handbk. Freshw. Fish. India* : 53 : 53. 54 (distribution and key to species).

Local name : Phouli.

English name : Feather back.

Materials examined : India : Uttarkhand : Chila barrage, Haridwar, 2ex., 12.v.2005, Coll. Vinod Khanna & Party; Champion CTR, 2ex., 13.x.2000, Coll. N.K. Sinha & party.

Distribution : Throughout Tripura and India.

Elsewhere : Pakistan, Nepal, Bangladesh, Myanmar, Thailand, Malaya and Indonesia.

Remarks : It is distributed in plain districts of the state and cultured in ponds, its carry high commercial value.

2. *Notopterus Chitala* (Ham.-Buch)

1822. *Mystus chitala* Hamilton Buchanan. *Fish. Ganges* : 236. (type-locality : larger freshwater rivers of Bengal).

1878. *Notopterus chitala*. Day. *Fish. India* : 653. pl. 159. fig. 5 : 1889. Day *Fauna Br. India Fish.* 1 : 407.

1981. *Notopterus chitala*, Jayaram. *Handbk. Freshw. Fish. India* : 53. (Distribution and key to species).

Local name : Chital.

English name : Humped feather-back.

Material examined : India : Uttarkhand : Champion CTR, 2ex., 13.x.2000, Coll. N.K. Sinha & party.

Distribution : North-East India and North India.

Elsewhere : Pakistan, Bangladesh, Myanmar, Thailand and Malaya Archipelago.

Remarks : It is restricted in lower altitude of the state.

Order CLUPEIFORMES

Body oblong, usually compressed, with cycloid scales. Abdomen with keeled scutes along the ventral midline. Branchiostegal rays numbering as high as 15 but generally fewer. Recessus lateral is present. Hypurals on 1 to 3 centra. Dorsal and anal fins without spines. Almost all marine though some enter estuaries and freshwater.

Family CLUPEIDAE Sardines, Shads

Clupeids are typically silvery fusiform fishes, with a complete series of scutes along the abdomen. Pelvic scutes always present. Mouth terminal, lower jaw short but deep, giving typical clupeid mouth shape. Barbels absent. Cycloid scales present on body but head scaleless. Fins spineless. Dorsal and pelvic fins usually present. Anal fin generally short (Less than 30 rays). Caudal fin deeply forked.

Genus *Gudusia* Fowler

1911. *Gudusia* Fowler *Proc. Acad. nat. Sci. Philad.* : 207
(type-species : *Clupanodon chapra* Ham.-Buch.).

1981. *Gudusia*, Jayaram, *Handbk. Freshw. Fish. India* : 40
(genus characters and distribution).

Body deep and compressed. Abdomen serrated and keeled with 18 to 19 prepelvic and 8 to 10 postpelvic scutes. Mouth terminal, slightly upturned. Maxilla extending to below the middle of the orbit. Upper jaw with a distinct median notch. Dorsal fin inserted above pelvic fin origin, with 16 rays. Anal fin with 21 to 24 rays, well behind dorsal fin base. Pelvic fin with 8 rays. Caudal fin deeply forked. Scales small, 77 to 91 in lateral series. Lateral line absent.

3. *Gudusia chapra* (Ham.-Buch)

1822. *Clupanodon chapra* Hamilton Buchanan, *Fish. Ganges*
: 248, (type-locality : Upper parts of the Ganges).

1878. *Clupea chapra*, Day, *Fish. India* : 639, pl. 161. fig. I
: 1889, Day, *Fauna Br. India, Fish*, 1 : 375.

1981. *Gudusia chapra*, Jayaram, *Handbk. Freshw. Fish. India* : (genus characters and distribution).

Local name : Khoira, Chapia.

English name : Ganges shad.

Materials examined : In present study no sample was collected; Reported by Husain (1995).

Distribution : Throughout India.

Elsewhere : Bangladesh (rivers of India and Bangladesh affluent to the Bay of Bengal chiefly the Ganges and Brahmaputra river systems and Mahanadi river of Orissa), Pakistan, Nepal, Myanmar and Malaya.

Order CYPRINIFORMES

Body usually with scales. Head scaleless. Head and body plates never developed. Branchiostegal rays 3 to 5. Jaws, palatine and pterygoid bones toothless. Suprabranchial organ absent. A single dorsal fin. Adipose fin absent. Barbels generally present. Lateral line usually present. Swimbladder free or often closed in a bony capsule in bottom dwelling forms. Weberian apparatus connects the swimbladder with the internal ear.

Key to the families

1. Paired fins horizontally inserted. Two or more anterior rays of pectoral fins simple 2
Paired fins laterally inserted. Not more than one anterior ray of pectoral fins simple or may be all branched 3
2. Barbels absent. Swimbladder free in the abdominal cavity SILORHYNCHIDAE
Barbels present. Swimbladder partly enclosed in a bony capsule HOMALOPTERIDAE
3. Barbels four or two or absent CYPRINIDAE
Barbels eight or six COBITIDAE

Family CYPRINIDAE Carp

Body with scales, generally compressed. Abdomen rounded or cutting. Mouth with or without a sucker, sometimes with a symphyseal knob. Lips developed in various stages, sometimes absent from one of the jaws or closely infesting both jaws or reflected from one of the other. Some genera sometimes provided with a horny cartilaginous covering to either of the lips or both. Gill openings wide. Barbels 4 or 2 or absent. Lateral line complete, incomplete or absent. Swimbladder divided into an anterior and a posterior chamber not surrounded by a capsule.

Key to the genera

Lower jaw with a symphyseal knob. Predorsal scales extend to the interorbital space. Pelvic fin with outer ray usually not elongated *Salmostoma*

Lower jaw without a symphyseal knob. Predorsal scales do not extend to the interorbital space. Pelvic fins with outer ray elongated *Chela*

Genus *Chela* Hamilton Buchanan

1822. *Chela* Hamilton Buchanan. *Fish. Ganges* : 258, (type-species *Cyprinus (Chela) cachius* Hamilton Buchanan).
1860. *Laubuca* Blecker. *Ichth. Archipel. Indici. Prodr.* 2, *Cyprini* (type-species : *Perilampus guttatus* McClelland = *Cyprinus (Chela) laubuca* (Hamilton Buchanan)).
1958. *Chela*, Silas, *J. Bombay nat. Hist. Soc.* 55(1) : 5499 (revision).

Body oblong, compressed with a cutting abdominal edge. Mouth directed upward, cleft extending to below anterior margin of the orbit. Lower jaw without a symphysial knob. Dorsal fin with 9 to 11 rays. Pelvic fins, with outer ray elongated. Anal fin with 17 to 25 rays. Caudal fin emarginate. Lateral line curved downwards, with 34 to 68 scales. Predorsal scales do not extend to interorbital space.

4. *Chela laubuca* (Ham.-Buch.)

1822. *Chela* Hamilton Buchanan. *Fish. Ganges* : 258, (type-species *Cyprinus (Chela) cachius* Hamilton Buchanan).
1878. *Perilampus laubuca*, Day, *Fish. India* : 598. pl. 151, fig. 5; 1889, Day *Fauna Br. India, Fish*, 1 : 360.
1958. *Chela (Chela) laubuca*, Silas, *J. Bombay nat. Hist. Soc.*, 55(1) : 70-85 (revision).

Local name : Chapkhowari, Dankena, Layubuka.

English name : Winged rasbora.

Materials examined : India : Uttarkhand : Vyashghat, confluence of Nayar and Ganga river, 2ex., 12.v.2003, Coll. D.P. Uniyal & Party; Champion CTR, 2ex., 13.x.2000, Coll. N.K. Sinha & party.

Distribution : India : North & South.

Elsewhere : Pakistan.

Remarks : It is also a larvicidal fish usually found to live in ditches and ponds along with rivers. It is a common species found in this state.

Genus *Salmostoma* Swainson

1839. *Salmostoma* Swainson, *Nat. Hist. Fish.* 2 : 184 (type-species : *Cyprinus bacaila* Hamilton Buchanan).
1968. *Salmostoma*, Banareseu. *Rev. Reum. Biol. Zool.* 13(1) : 3 (revision).

Body elongated and compressed. Abdomen keeled from pectoral fin to vent, keel not hardened. Mouth oblique, with a symphysial knob on lower jaw. Barbels absent. Dorsal fin usually inserted opposite to anal fin, with 9 to 10 rays. Pelvic fins outer ray generally not elongated. Anal fin with 13 to 22 rays. Caudal fin deeply forked. Lateral line complete, generally decurved with 39 to 112 scales. Predorsal scales extend to interorbital space.

Key to the species

1. 3 to 4 rows of scales between lateral line and base of pelvic fins. Gill rakers from 24 to 29 *S. Phula*
2. 4 to 6 rows of scales between lateral line and dorsal pelvic fin. Gill rakers from 17 to 21 *S. bacaila*

5. *Salmostoma bacaila* (Ham.-Buch)

1822. *Cyprinus bacaila* Hamilton Buchanan. *Fish. Ganges* : 265. pl. 8. fig. 76 (type-locality freshwater rivers of all the Gangetic provinces).
1878. *Chela bacaila*, Day, *Fish. India* : 603. pl. 152. fig. 5; 1889, Day, *Fauna Br. India, Fish*, 1 : 367.
1981. *Salmostoma bacaila*, Jayaram. *Handbk. Freshw. Fish. India* : 74 (distribution and key to species).

Local name : Chela, Jellahri.

English name : Chela.

Materials examined : India : Uttarkhand : Nanaksar barrage, Udham Singh Nagar, 2ex., 12.v.2005, Coll. Vinod Khanna & Party; Ramgang, 2ex., 15.x.2000, Coll. N.K. Sinha & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Nepal.

Remarks : This is one of the popular fish of the state for their taste and moderate price among the common people.

6. *Salmostoma Phula phulo* (Ham.-Buch.)

1795. *Cyprinus clupeoides* Bloch. *Nalurg. Ausland. Fische.* 12 : 49. pl. 408. fig. 2 (type-locality : Tranquehar, Tamil Nadu).
1878. *Chela clupeoides*, Day, *Fish. India*, : 602; 1889. Day, *Fauna Br. India, Fish*, 1 : 366.

1981. *Salmostoma clupeoides*. Jayaram. *Handbk. Freshw. Fish. India* : 74. (distribution and key to species).

Local name : Pulchi.

English Name : Chela.

Materials examined : India : Uttarkhand : Chila barrage, Haridwar, 1ex., 12.v.2005, Coll. Vinod Khanna & Party; Champion CTR, 4ex., 13.x.2000, Coll. N.K. Sinha & party.

Distribution : Throughout India.

Elsewhere : Myanmar.

Remarks : This species is recorded from plain districts of the state and carry high table value.

Genus *Hypophthalmichthys* Bleeker Silver Carp

1859. *Hypophthalmichthys* Bleeker. *Nat. Tijdschr. Ned. India* (type-species *Leuciscus molitrix* Valenciennes).

1981. *Hypophthalmichthys* Jayaram, *Handbk. Freshw. Fish. India* : 76 (genus characters and distribution).

Body stout and abdomen strongly compressed with a sharp keel from breast to vent. Barbels absent. Dorsal fin inserted behind pelvic fins or above tip of pectoral fins, with 10 rays. Anal fin with 14 to 17 rays. Caudal fin forked. Lateral line decurved, complete with 110 to 115 cycloid scales.

7. *Hypophthalmichthys molitrix* (Valenciennes) (EX)

1983. *Hypophthalmichthys molitrix*, Jhingran. *Fish and Fisheries of India* : 436.

Materials examined : India : Uttarkhand : Chila barrage, Haridwar, 1ex., 06.v.2005, Coll. Vinod Khanna & Party; Ramganga Barrage, 2ex., 13.x.2000, Coll. N.K. Sinha & party.

Distribution : Naturally occurs in the river systems of Yangtse, West river Kwangsi. Kwagtung in south and central China and in the Amur basin in U.S.S.R. In India, the first ever consignment of 360 fingerlings of silver carp was brought from Japan in 1959 to the Pond Culture Division of CIFRL Cuttack, Orissa (Jhingran, 1983).

Remark : Exotic species introduced in the water bodies for commercial purpose.

Key to the genera

Cleft of mouth extending beyond posterior border of the orbit Cleft of mouth not extending posterior border of the orbit 2

2. Lower lip absent. Lower jaw with a sharp crescentic edge *Aspidoparia*

Lower lip present. Lower jaw with or without a symphysial knob 3

3. Maxillary barbels very long. Symphysial knob on lower jaw absent *Esomus* Maxillary barbels short or absent. A symphysial knob on lower jaw present 4

4. Cleft of mouth extending up to middle of the orbit *Barilius*

Cleft of mouth not extending beyond anterior margin of the orbit 5

5. Upper lip absent *Amblypharyngodon*
Upper lip present 6

6. Lower Jaw with three prom *Rasbora*
Lower jaw with a single symphysial knob. Anal fin with 11 to 20 rays *Danio*

Genus *Amblypharyngodon* Bleeker

1860. *Amblypharyngodon* Bleeker. *Ichth. Arch. Ind. Prodr.*, 2 : 409 (type-species : *Cyprinus mola* Hamilton Buchanan).

1981. *Amblypharyngodon*, Jayaram, *Handbk. Freshw. Fish. India* : 86 (genus characters and distribution).

Body somewhat elongated with abdomen rounded. Upper lip absent. Barbels absent. Dorsal fin inserted slightly behind insertion of pelvic fin, with 9 rays and no spine. Anal fin with 7 rays. Caudal fin forked. Lateral line incomplete, with 55 to 75 scales.

8. *Amblypharyngopodon mola* (Ham.-Buch)

1822. *Cyprinus mola* Hamilton Buchanan. *Fish. Ganges*, : 334. pl.38, fig. 92 (type-locality : ponds and freshwater rivers in every part of the Gangetic Provinces).

1818. *Amblypharyngopodon mola*, Day. *Fish. India* : 555. pl. 135. fig. 4; 1889. Day, *Fauna Br. India, Fish.* 1 : 291, fig. 101.

1981. *Amblypharyngopodon mola*, Jayaram. *Handbk. Freshw. Fish. India* : 86 (distribution and key to species).

Local name : Maka.

English name : Mala, Indian carp let.

Materials examined : Uttarkhand : Ramganga nr. Garjia, 2ex., 22.i.2004, Coll. Vinod Khanna & party.

Distribution : Throughout India except Kerala.

Elsewhere : Nepal, Bangladesh, Pakistan and Myanmar.

Remarks : It is a cultured in plain district of the state.

Genus *Aspidoparia* Heckel

1843. *Aspidoparia* Heckel, in Fenzl. *Abbild. Thiere pfl. Syr. Fish* : 186 (type-species; *Aspidoparia sardina* Heckle = *Aspidoparia morar* (Hamilton Buchanan).

1981. *Aspidoparia*. Jayaram. *Handbk. Freshw. Fish. India*: 85 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Mouth small and inferior. Lower jaw without lip and with a sharp crescentic bony edge. Barbels absent. Dorsal fin inserted posterior to pelvic fins, with 9 to 10 rays and without any spine. Anal fin with 9 to 12 rays and no spine. Caudal fin forked. Lateral line concave, passing along the lower half of caudal fin base, with 38 to 60 scales.

Key to the Species

- Lateral line scales 52 to 60. 4 1/2 rows of scales between lateral line and base of pelvic fin *A. jaya*
- Lateral line scales 38 to 42. 2 1/2 to 3 rows of scales between lateral line and pelvic fin base *A. morar*

9. *Aspidoparia jaya* (Hamilton-Buchanan)

1822. *Cyprinus (Cabdio) jaya* Hamilton-Buchanan Fish. Ganges : 333. (type-locality : rivers of northern Bihar).

Local name : Chahl.

Material examined : 1ex., near Hardwar, Dist. Hardwar, 30.i.1972, Coll. R. N. Chopra.

Distribution : India (Northern India).

Elsewhere : Nepal; Bangladesh.

Remarks : It lives in slow moving streams with sandy bed and weeds.

10. *Aspidoparia morar* (Ham.-Buch)

1822. *Cyprinus morar* Hamilton Buchanan. Fish. Ganges, : 264. pl. 31. fig. 75 (type-locality: rivers of Yamuna and Teesta).

1878. *Aspidoparia morar*, Day. *Fish. India*, : 585. pl. 146. fig. 4; 1889. Day. *Fauna Br. India, Fish*, 1 : 338, fig. 108.

1981. *Aspidoparia morar*, Jayaram, *Handbk. Freshbk. Fish. India*. : 85. (distribution and key to species).

Local name : Morai, Morar.

English name : *Aspidoparia*.

Material examined : 3ex., near Hardwar, Dist. Hardwar, 31.i.1972, Coll. R. N. Chopra.

Distribution : India : Throughout India except the western coast and localities South of the Krishna river.

Elsewhere : Pakistan; Bangladesh; Myanmar and Thailand.

Remarks : This species is being cultured in plain district of the state.

Genus *Barilius* Hamilton Buchanan

1822. *Barilius* Hamilton Buchanan. Fish. Ganges. : 384 (type-species : *Cyprinus barila* Hamilton Buchanan).

1981. *Barilius*, Jayaram. *Handbk. Freshw Fish. India*. : 87 (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Mouth anterior or obliquely directed upwards. Maxilla extending below up to middle of the orbit. Upper jaw longer than lower which is generally provided with a symphyial knob. Barbels 2 pairs or 1 pair or absent. Dorsal fin inserted opposite interspace between pelvic and anal fins, with 9 to 13 rays and no spine. Anal fin with 9 to 17 rays. Caudal fin forked. Lateral lines complete, with 38 to 75 scales. Body generally with vertical bands or clusters of dots.

Key to the Species

1. Lateral line scales 60 to 75 2
- Lateral line scales 34 to 46 3
2. Barbels 2 pairs, well developed, equal to or longer than the orbit. Body with 12 vertical bars. Lateral line scales 60 to 70 *B. shacra*

3. Barbels absent or very Short, much shorter than the orbit. Body with 2 rows of spots. Lateral line scales 70 to 75 *B. tileo*
Body with a longitudinal darkish band
..... *B. dakapatharii*
– Body without a longitudinal band 4
4. Anal fin with 9 to 11 rays. Adult specimen with each scale provided with a black spot .
..... *B. bendelisis*
– Anal fin with 13 to 17 rays. Adult specimen provided with lateral vellicial bands 5
5. Anal fin with 15 to 17 rays. Dorsal and anal fins with dark bases *B. gatensis*
– Anal fin with 13 to 14 rays. Dorsal and anal fin with light bases 6
6. Lateral line with 43 to 46 scales. Body depth 4.77 to 5.22 in standard length *B. barna*
– Lateral line with 39 to 42 scales. Body depth 3.22 to 3.68 in standard length *B. bama*

11. *Barilius barila* (Ham.-Buch)

1822. *Cyprinus barila* Hamilton Buchanan, *Fish. Ganges*. : 267. (typc-locality : rivers of northern Bengal).
1878. *Barilius barila*, Day. *Fish. India*, : 591. pl. 148. fig. 4; 1889. Day. *Fauna Br. India, Fish.* 1 : 348.
1981. *Barilills barila*. Jayaram. *Handbk. Freshw. Fish. India*, : 88. (distribution and key to species).

Local name : Gilland, Caedra.

Material Examined : Uttarakhand 1ex., Motichur-Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 2exs., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak; 1ex., Small stream, Chila Forest, Dist. Pauri, 2.vi.1987, Coll. J. C. Tripathi; 8exs., Small stream, ca 5 km east of FRH, Chila Dist. Pauri 11. vi.1987 Coll. Raj Tilak; Uttarakhand, Dhikala, Leed khali Chaur, 02exs, 22.vi.2002, Reg. No. 4379; Mohan, 5exs, 17.i.2004, Reg. No. 4697; Jhirna FRH, 12exs., 27.i.2004, Reg. No. 4734; Jhima FRH & around, 25exs., 20.i.2002, Coll. J.P. Sati & Party, Asan river, vill. Jhiva –Redi, Shimla road, 10ex., 30.v.2000. Coll. A. Husian & party; Asan river, Badowala, Shimla road, 1ex., Lalonala, vill. Sodi Nagar, Mohand-Shakumbra devi road, 60ex., Sankra nala, Timli-Badshaibagh road, 110ex., 20.x.2000, Coll. A. Husain & party.

Distribution : India : (Assam, Bengal, Bihar, Orissa, Uttarakhand).

Elsewhere : Pakistan.

12. *Barilius barna* (Hamilton-Buchanan)

1822. *Cyprinius (Barilius) barna* Hamilton-Buchanan, *Fish Ganges*: 268. (type –locality : Yamuna and Brahmaputra rivers, extreme braches of Ganges).

Local name : Chukera.

English name : Hill Trout.

Status : Low Risk-near threatened (LRnt).

Material examined : India : Uttarkhand : 1ex. (73 mm), Motichur Rao, Koelpur Forest Block, Dist. Dehradun, 25.ii.1965, Coll. T. D. Soota; 2exs., Song river nr. Railway Bridge, Kansrao, Dist. Dehradun, 26.ii.1965, Coll. T. D. Soota; 1ex., Suswa river nr. Phandowala FRH, Dist. Dehradun, 4.vi.1965, Coll. T. D. Soota; 5exs., Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T. D. Soota; 2exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 4exs., Song river, Satyanarain, Dist. Dehradun, 5.vi. 1970, Coll. J. C. Tripathi; 8exs., Song river, Satyanarain, Dist., Dehradun, 14.ix.1972, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 15.ix.1972, Coll. Raj Tilak; 1ex., Motichur-Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 2exs., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak; 1ex., Small stream, Chila Forest, Dist. Pauri, 2.vi.1987, Coll. J. C. Tripathi; 8exs., Small stream, ca 5 km east of FRH, Chila Dist. Pauri 11.vi.1987 Coll Raj Tilak; 1ex. Ghasi Ram sot nr., FRH, Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 5exs., Song river, Satyanarian. Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak; 2exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak. Dhikala, Leed khali Chaur, 02exs, 22.vi.2002, Reg. No. 4379; Mohan, 5exs, 17.i.2004, Reg. No. 4697; Jhirna FRH, 12exs., 27.i.2004, Reg. No. 4734; Jhima FRH & around, 25exs., 20.i.2002, Coll. J.P. Sati & Party, Asan river, vill. Jhiva –Redi, Shimla road, 10ex., 30.v.2000. Coll. A. Husian & party; Sakra nala, Timli- Badshaibagh road 40ex., 30.v.2000, Coll.; Sankra nala, Timli-Badshaibagh road, 15ex., 12.ix.2000, Coll. A. Husain & party; Asan river, Badowala, Shimla road, 1ex., Lalonala, vill. Sodi

Nagar, Mohand-Shakumbra devi road, 60ex., Sankra nala, Timli-Badshaibagh road, 110ex., 20.x.2000, Coll. A. Husain & party Sankra nala, Timli-Badshaibagh road, 100ex., 13.x.2000, Coll. N.K. Sinha & party.

Distribution : India : (Assam, Bengal, Bihar, Orissa, Uttarakhand).

Elsewhere : Pakistan.

Remarks : It in habitats in clean water, some time used for aquarium purpose. Jaunsari tribes extract the juice of this fish for curing stomach ache, Uniyal (2002).

13. *Barilius bendelisis* (Hamilton-Buchanan)

1807. *Cyprinus bendelisis* Hamilton-Buchanan, *Jou. Mysore*, 3 : 345 (type-locality : Vedawati system, head water of Krishna near Hariura, Mysore).

1822. *Cyprinus (Barilius) bendelisis* Hamilton-Buchanan, *Fish Ganges* : 200.

Local name : Chilwa.

English name : Hill Trout.

Status : Low Risk- near threatened (LRnt).

Material examined : India : Uttarakhand, 85exs., Mohand Rao nr. Lalpul, Dist. Hardwar, 7. v. 1962, Coll. R. K. Bhatnagar; 32exs., Mohand Rao, Dist. Hardwar, 13.xi.1964, Coll. T. D. Soota; 4exs. Mohand Rao, Mohand, Dist. Hardwar, 20. xi. 1964, Coll. T. D. Soota; 34exs., Mohand Rao, Dist. Hardwar, 27.xi.1964, Coll. T. D. Soota; 15exs., Suswa river nr. Phandowala FRH, Dist. Dehradun, 4.xii.1964, Coll. T. D. Soota; 6exs., Mohand Rao, Lalpul, Dist. Hardwar, 18.xii.1964, Coll. T. D. Soota; 7exs., Chilkana Rao, Chillawali Forest Block, Dist. Hardwar, 18.xii.1964, Coll. T. D. Soota; 1ex., (155 mm), Song river, Kansrao Railway Station, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 16exs., (22-4 : i mm), Song, river, Kansrao Railway Bridge, Dist. Dehradun, 22). 1965, Coll. R. K. Bhatnagar; 9exs., (38-75 mm), Song river, Kansrao, Dist. Dehradun, 5.ii.1965, Coll. R. K. Bhatnagar; 36exs., (82-123 mm), Motichur Rao, Motichur, Dist. Dehradun; 25.ii.1965, Coll. T. D. Soota; 1ex., Song river or. Kansrao Railway Bridge, Dist. Dehradun, 26.ii.1965, Coll. T. D. Soota; 24exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 20.v.1965, Coll. T. D. Soota; 84exs., Small stream nr. Asarori,

Dist. Dehradun, 4.vi.1965, Coll. T. D. Soota; 13exs., Suswa river or. Phandowala FRH, Dist. Dehradun, 4.vi.1965, Coll. T. D. Soota; 54exs., Gaj Rao, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 2exs., Song river, Satyanarain, Dist. Dehradun, 29.vi.1965, Coll. T. D. Soota; 1ex., Song river, Satyanarain, Dist. Dehradun, 30.vi.1965, Coll. T. D. Soota; 6exs., Ilotichur Rao, Motichur, Dist. Dehradun, 30. vi.1965, Coll. T. D. Soota : 10exs., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T. D. Soota; 3exs., Kansrao, Dist. Dehradun, 27.x.1965, Coll. Akhlaq Husain; 3exs., Chilkana Rao, Chillawali Forest Block, Mohand Range, Dist. Hardwar, 26.iii.1965, Coll. T. D. Soota; 5exs., Mohand Rao, nr. Lalpul, Dist. Hardwar, 26.iii.1965, Coll. T. D. Soota; 2exs., Mohand Rao, Mohand, Dist. Hardwar, 30.iv.1965, Coll. T. D. Soota; 8exs., Beribara, Dholkhand Forest Range, Dist. Hardwar, 9.v.1965, Coll. A. P. Kapur; 10exs., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 3exs., Mohand Rao nr. Lalpul, Dist. Hardwar, 16.vii.1965; Coll. T. D. Soota; 1ex., Mohand Rao, Mohand, Dist. Hardwar, 18.ix.1965, Coll. R. K. Bhatnagar; 10exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 24.ix.1965, Coll. T. D. Soota; 27exs., Gaj Rao, Dist. Hardwar, 6.xii.1965, Coll. T. D. Soota; 62exs., Mohand rao, Mohand, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 24exs. Gaj Rao, Gaj Forest Block, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 18exs., Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 18.iii.1966, Coll. T. D. Soota; 18exs., Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T. D. Soota; 17exs., River Ganga, Gaurighat nr. Satyanarain, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 12exs., Song river nr. Kansrao FRH, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 16exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 13.iv.1966, Coll. T. D. Soota; 8exs., Suswa river, Clement Town, Dist. Dehradun, 14.iv.1966, Coll. T. D. Soota; 3 (fexs., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 14.iv.1966, Coll. T. D. Soota; 3exs., Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 25.v.1966, Coll. Asket Singh; 27exs., Mohand Rao, Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh; 51exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 2exs., Song river nr. Kansrao Railway Station, Dist. Dehradun, 1 -

ii.1966, Coll. Asket Singh; 14exs., Song river, Satyanarain, Dist. Dehradun; tv.1967, Coll. J. C. Tripathi; 2exs., Motichur Rao, Motichur, Dist. Dehradun, 23.v.1970, Coll. M. K. Biswas; 52exs., Song river, Satyanarain, Dist. Dehradun, 5.vi.1970, Coll. J. C. Tripathi; 7exs., Song river, Satyanarain, Dist. Dehradun, 23.iv.1971, Coll. J. C. Tripathi; 1ex., Song river, Kansrao, Dist. Dehradun, 27.v.1971, Coll. K. P. Singh; 2exs., Motichur Rao, Motichur, Dist. Dehradun, 28.x.1971. Coll. Asket Singh; 5exs., Motichur Rao, Motichur, Dist. Dehradun, 14.i.1972, Coll. M. K. Biswas; 15exs., Song river, Satyanarain, Dist. Dehradun, 22.i.1972, Coll. R. N. Chopra; 18exs., Ranipur Rao, Ranipur, Dist. Hardwar, 8.ii.1972; Coll. R. N. Chopra; 43exs., (32-87 mm), Betban Rao, Beribara, Dist. Hardwar, 8.ii.1972, Coll. R. N. Chopra; 50exs., (20-135 mm), Gaj Rao, Gaj Forest Block, Dist. Hardwar, 15.ii.1972, Coll. R. N. Chopra; 7exs., Dholkhand Rao, Dholkhand, Dist. Hardwar, 15.v.1972, Coll. R. N. Chopra; 4exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 2.iii.1973. Coll. Raj Tilak; 10exs. (22-33 mm), Betban Rao, Beribara, Dist. Hardwar, 24.iii.1973, Coll. Raj Tilak; 13exs., (22-61 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 24.ii.1973, Coll. Raj Tilak; 15exs. (29-66 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 27.iv.1973, Coll. Raj Tilak; 19exs., (51-112 mm), Mohand Rao, Mohand, Dist. Hardwar, 26.ix.1973, Coll. Raj Tilak; 34exs., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak; 15exs., Song river, Satyanarain, Dist. Dehradun, 22.iv.1980, Coll. A. Husain, 2exs., Song river, Satyanarain, Dist. Dehradun, 14.v.1980, Coll. Akhlaq Husain; 1ex., Song river, Satyanarain, Dist. Dehradun, 10.vii.1980, Coll. Akhlaq Husain, 5exs., Dholkhand Rao nr. Dholkhand FRH, Dist. Hardwar, 27.x.1986, Coll. N. K. Sinha; 85exs., Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 28.x.1986, Coll. N. K. Sinha; 32exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 30.x.1986, Coll. Raj Tilak; 100exs. Gaj Rao, Gaj Forest Block, Dist. Hardwar, 12.xii.1986, Coll. Raj Tilak i 40exs., Song river or. Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 2exs., Small stream, ca 6 km north-west

of.Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 9exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 9.i.1987, Coll. Raj Tilak; 29exs., Song river nr. Kansrao FRH, Dist. Dehradun, 13.i.1987, Coll N. K. Sinha; 8exs., (max. 46 mm), Song river nr. Kansrao FRH, Dist. -Dehradun, 22.i.1987; Coll. R.N. Chopra; 113exs., Suswa river or. FRH, Phandowala, Dist. Dehradun, 14.v.1987, Coll. Raj Tilak; 13exs., Small stream, ca 10 km east of Phandowala JRH, Dist. Dehradun, 15.v.1987, Coll. Raj Tilak; 126exs., Suswa river nr. FRH Phandowala, Dist. Dehradun, 18.v.1987, Coll. N. K. Sinha; 8exs., Small stream nr. Phandowala, ca 2 km from Clement Town, Dist. Dehradun, 19.v.1987, Coll. N. K. Sinha; 38exs., Suswa river, Phandowala, Dist. Dehradun, 21.v.1987, Coll. A. Husain, Small stream, ca 5 km east of FRH, Chila, Dist. Pauri, 11.v.1987, Coll. N. K. Sinha; 9exs., Small stream, ca 5 km west of FRH, Chila, Dist. Pauri, 12.vi.1987, Coll. N. K. Sinha; 10exs., Ghasi Ram Sot or. FRH, Chila, Dist. Pauri, 9.ix.1987, Coll. Raj Tilak; 33exs., Rawasan river, Laldhang, Dist. Pauri, 10.ix.1987, Coll. Raj Tilak; 1ex., Ganga canal seepage, ca 7 km east of Chila, Dist. Pauri 11.ix.1987, Coll. Raj Tilak; 32exs., Modhal sot or. FRH Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 13exs., Ghasi Ram Sot nr. FRH Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 13exs., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak; 3exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak; 69exs., Motichur Rao, Motichur, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak; 15exs., Mohand Rao, Mohand, Dist. Hardwar, 17.ix.1987, Coll. Raj Tilak; 121exs., Small stream nr. Mohand FRH, Dist. Hardwar, 17.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Dhikala, Leed khali, 46exs., 22.vi.2002, Reg. No. 4379; Sanguri Sot, nr. Gairal FRH, 80exs., 23.vi.2002, Reg. No. 4399, Dulwa Sot, 6 km from Sultan on way to Dhikala, 7exs., 25.iv.2002, Reg. No. 4413; Dhara Charu & Sot 6 kms Jhirna-Kalagarh Road, 10exs., 27.iv.2002; Reg. No. 4451; Kothirio, Jhirma, Dhela Beat, 27exs., 27-vi-2002, Jhirma, Reg. No. 4456; Lal Dhang, Jhirma, 52exs., 28.vi.2002, Reg. No. 4465; Pater Pani Sot, 6 km from Saidil Dam Road from Kalagarh, 10exs., 29.iv.2002, Reg. No. 4485, Coll. J.P. Sati & party; Bijrani, Garjia Sot, 20exs., 3.iv.2003, Reg. No. 4612; Mohan Sot, 4exs., 17.i.2004, Reg. No. 4697; Dhangarhi Gate on way

Mohan 20exs., 17.i.2004, Reg. No. 4700; Jhirna FRH, 9exs., 20.i.2004, Reg. No. 4734; Dhar Sot, 9exs., 22.i.2004, Reg. No. 4744; Kalagarh FRH & around, 1ex., Reg. No. 4753, Coll. V. Khanna & Party; Bijarani Sot, 3exs., 26.ii.2005, Reg. No. 5189; Kharar Sot, 25exs., 28.ii.2005, Reg. No. 5201; Kotira Sot, 4 km. from Jhirna FRH, 7exs., 1.iii.2005, Reg. No. 5310; Pater Pani Sot, 35exs., 2.iii.2005, Reg. No. 5323, Coll. A.N. Rizvi & Party, Dehradun dist., Badowala, Asan river, 24ex., 27.vi.2000, Coll. J.P. Sati & party; Jhima reddy vill. Asan river, 35ex., 30.vi.2001, Coll. A. Husian & party; Bhure Shah, 26exs., 6.ix.2001, Coll. N.K. Sinha & party; Karva pani, Asharori, 101ex., 30.vi.2001; 1ex., 22.xi.2001, Coll. J.P. Sati & party; 45ex., 28.vi.2001, Coll. A. Husian & party; Mohand Rao, 67ex., 1.ii.2001; 10exs., 8.viii.2001; 11ex., 24.viii.2001; 21ex., 9.xi.2001, 40ex., 19.x.2001, Coll. A. Husian & party; Sabhawala, 19ex., 29.vi.2000, Coll. J.P. Sati & party; Timli forest, 29exs., 6.vii.2001, Coll. Arun Kumar & party; 82exs., 10.viii.2001; 41ex., 19.ix.2001; 12exs., 27.xi.2001, Coll. J.P. Sati & party; Sankra nala on Badshaibagh road, 42exs., 6.ix.2001 Coll. N.K. Sinha & party.

Distribution : Throughout India except Kerala.

Elsewhere : Nepal, Myanmar and Sri Lanka.

Remarks : It is habitat in clean water, some time used for aquarium purpose. Jaunsari tribes extract the juice of this fish for curing stomach ache, Uniyal (2002). This fish exhibits sexual dimorphism.

14. *Barilus dimorphicus* Tilak & Husain

1990. *Barilus dimorphicus* Tilak & Husain, *J. Bombay nat. Hist. Soc.*, 87(1) : 102, figs 1-4 (type-locality : Song river, Satyanarain, Dist. Dehradun; Ghasi Ram sot near Chila, Dist. Pauri-Garhwal, Uttar Pradesh).

Local name : Chilwa.

Status : Endangered.

Material examined : 2exs. (94-112 mm), Paratypes, Ghasi Ram Sot, nr. FRH Chila. Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 6exs. (115-185 mm), Holotype and Para types, Song river, Satyanarain, Dist. Dehradun, 13ix.1987, Coll. Raj Tilak; 7exs., (104-147 mm), Paratypes, Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj

Tilak.

Distribution : Northern India (Dehradun and Pauri-Garhwal districts, Uttar Pradesh).

Elsewhere : Nepal, Myanmar and Sri Lanka.

Remark : It is habitat in clean water, some time used for aquarium purpose. Jaunsari tribes extract the juice of this fish for curing stomach ache, Uniyal (2002).

15. *Barilius shacra* (Ham.-Buch)

1822. *Cyprinills shacra* Hamilton Buchanan, *Fish. Ganges*. : 271. (type-locality : Kosi river).

Local name : Koksha.

English name : Hill trout.

Materials examined : No specimen obtained by me. Recorded by Husain (1995).

Distribution : India : Ganga, Yamuna, Brahmaputra river systems.

Elsewhere : Pakistan. Nepal and Bangladesh.

Remark : It is habitat in clean water, some time used for aquarium purpose. Jaunsari tribes extract the juice of this fish for curing stomach ache, Uniyal (2002).

16. *Barilius vagra* (Hamilton-Buchanan)

1822. *Cyprinius (Barilius) vagra* Hamilton- Buchanan, *Fish. Ganges* : 269 (type-locality : Ganga about Patna).

Local name : Chilwa.

English name : Hill Trout.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand : 77exs., Mohand Rao, Mohand, Dist. Hardwar, 13.xi.1964, Coll. T. D. Soota; 3exs., Mohand Rao, Mohand, Dist. Hardwar, 20.xi.1964, Coll. T. D. Soota; 188exs., Mohand Rao, Mohand, Dist. Hardwar, 27.xi.1964; Coll. T. D. Soota; 3exs., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 18.xii.1964, Coll. T. D. Soota; 2exs., Song river nr. Kansraci Railway Station, Dist. Dehradun, 8.ii.1965, Coll. Akhlaq Husain; 3exs., Ranipur Rao, Ranipur Forest Block, Dist. Hardwar, 24.ii.1965, Coll. T. D. Soota ; 1ex., Chilkana Rao, Chillawali Forest Block, Dist. Hardwar, 26.ii.1965, Coll. T. D. Soota; 9exs., Mohand Rao, Mohand,

Dist. Hardwar, 30) v.1965, Coll. T. D. Soota; 9ex, Beribara Forest Block, Dist. Hardwar, 9.v.1965, Coll. A. P. Kapur; 3exs., Motichur Rao Dr. Motichur FRH, Dist. Dehradun, 20.v. 1965, Coll. T. D. Soota; 5exs., Suswa river nr. Phandowala FRH, Dist. Dehradun, 4.vi.1965, Coll. T. D. Soota; 22exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 5exs., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 4exs., Song river, Satyanarain, Dist. Dehradun, 29.vi.1965, Coll. T. D. Soota; 2exs., Motichur Rao, Motichur, Dist. Dehradun, 30.vi.1965, Coll. T. D. Soota; 3exs., Ranipur Rao, Ranipur, Dist. Hardwar, 14.vii.1965, Coll. T. D. Soota; 2exs., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T. D. Soota; 3exs. Mohand Rao nr. Mohand, Dist. Hardwar, 24.ix.1965, Coll. T. D. Soota; 28exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 24.ix.1965, Coll. T. D. Soota; 1ex., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 6.xii.1965, Coll. T. D. Soota; 34exs., Mohand Rao, Mohand, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 12exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 5exs., Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 18.iii.1966, Coll. T. D. Soota; 2exs., Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T. D. Soota; 3exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 13.iv.1966, Coll. T. D. Soota; 3exs. Suswa river, Clement Town, Dist. Dehradun, 14.iv.1966, Coll. T. D. Soota; 8exs., Mohand Rao, Lalpul, Mohand, Dist. Hardwar, 14.iv.1966, Coll. T. D. Soota; 20exs. Mohand Rao nr. Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh; 5exs., Motichur Rao, Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 5exs., Song river, Satyanarain, Dist. Dehradun, 29.iv.1967, Coll. J. C. Tripathi; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 6.viii.1968, Coll. M. K. Biswas, 2exs., Song river, Satyanarain, Dist. Dehradun, 5.vi.1970, Coll. J. C. Tripathi; 3exs., (34-45mm), Betban Rao, Beribara, Dist. Hardwar, 8.ii.1972, Coll. R. N. Chopra; 2exs., Dholkhand Rao, Dholkhand, Dist. Hardwar, 15.v.1972, Coll. R. N. Chopra; 7exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 8exs., (28-45mm), Dholkhand Rao, Dist. Hardwar, 24.iii.1973, Coll. Raj Tilak; 16exs. (29-51 mm) Dholkhand Rao, Dholkhand, Dist. Hardwar, 27.iv.1973, Coll. Raj Tilak; 17exs. (25-

34 mm), Mohand Rao, Mohand, Dist. Hardwar, 27.viii.1973, Coll. Raj Tilak; 13exs. (36-69 mm) Mohand Rao, Mohand, Dist. Hardwar, 26.ix.1973, Coll. Raj Tilak; 4exs. (33-37 mm), Betban Rao, Beribara, Dist. Hardwar, 3.xii.1973, Coll. Raj Tilak; 2exs., Dholkhand Rao nr. Dholkhand FRH, Dist. Hardwar, 27.x.1986., Coll. N. K. Sinha; 17exs. Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 28.x.1986, Coll. N. K. Sinha; 11exs. (31-60 mm), Mohand Rao nr. Mohand, Dist. Hardwar, 30.x.1986. Coll. Raj Tilak, 2exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 30.x.1986, Coll. Raj Tilak; 5exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 12.xii.1986, Coll. Raj Tilak; 1ex., Song river nr. Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 1ex., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 9.i.1987, Coll. Raj Tilak; 5exs., Song River. nr. Kansrao FRH, Dist. Dehradun, 13.i.1987, Coll. N. K. Sinha; 5exs. (max. 62 mm), Song river nr. Kansrao FRH, Dist. Dehradun, 22.i.1987, Coll. R. N. Chopra; 1ex., Suswa river nr. FRE, Phanaowala, Dist. Dehradun, 14.v.1987, Coll. Raj Tilak; 1ex., Small stream nr. Phandowala, 4 km from Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain : 9exs., Ghasi Ram sot nr. FRH Chila, Dist. Pauri, 9.ix.1987, Coll. Raj Tilak; 5exs., Rawasan river, Laldhang, Dist. Pauri, 10.ix.1987, Coll. Raj Tilak; 1ex., Small stream above Ganga canal, ca 12 km from Chila, Dist. Pauri, 11.ix.1987, Coll. Raj Tilak; 9exs., Modhal Sot nr. FRH Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 23exs., Ghasi Ram Sot nr. FRH Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 33exs., Ranipur Rao, Ranipur, Dist. Hardwar, 15.ix.1987, Coll. Raj Tilak; 8exs., Mohand Rao, Mohand, Dist. Hardwar, 17.ix.1987, Coll. Raj Tilak; 23exs., Small stream nr. Mohand FRH, Dist. Hardwar, 17.ix.1987, Coll. Raj Tilak; 12exs., Ranipur Rao, Ranipur, Dist. Hardwar, 17.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Lal Dhang, 1ex., 28.vi.2002, Reg. No. 4465; Pater Pani Sot, 6 km from Saidil Dam Road from Kalagarh, 01ex., 29.iv.2002, Reg. No. 4485, Coll. J.P. Sati & Party; Bijrani, Garjia Sot, 08exs., 3.iv.2003, Reg. No. 4612; Pater Pani Sot, 3 exs., 6.iv.2003, Bijrani, Garjia Sot, 20exs., 3.iv.2003, Reg. No. 4648; Jhirna FRH, 17exs., 20.i.2004, Reg. No. 4734; Pater Pani Sot, 1ex., 21.i.2004, Reg. No. 4735; Coll. V. Khanna & Party; Bijarani Sot, 50exs., 26.ii.2005, Reg. No. 5189; Kharar Sot,

08exs., 28.ii.2005, Reg. No. 5201; Kotira Sot, 4 km. from Jhirna FRH, 7exs., 1.iii.2005, Reg. No. 5310, Coll. A.N. Rizvi & Party, Dehra Dun dist., Kulhal nala, 28exs., 8.viii.2001, Coll. A. Husain & party Sankra nala on Badshaibagh road, 14ex., 30.v.2000, Coll. A. Husain & party; Timli forest, 28exs., 20.xi.2000 Coll. N.K. Sinha & party.

Distribution : Northern India (Brahmaputra, Ganga, Indus, Yamuna system).

Elsewhere : Sri Lanka, Pakistan and Nepal.

Remarks : Its habitat is clean water, some time used for aquarium purpose. Its juice is used for curing stomach ache by the tribal of Junsar, Uniyal (2002).

17. *Barilius pectorilus* Tilak & Husain (EN)

Local name : Chilwa.

English name : Hill Trout.

Status : Vulnerable (VU).

Material examined : This species not collected by me, reported by Husain (1995).

Distribution : Dehradun, Uttarkhand.

Remarks : It is an endemic fish of the state.

Genus *Raiamas* Jordan

1919. *Raiamas* Jordan. Proc. Acad. Nat. Sci. Philad. 70 : 344 (type-species : *Cyprinus bola* Hamilton Buchanan).

1980. *Raiamas*. Howes. Bull. Br. Mils. Nat. Hist. Zool. 37(3) : 193 (*C. bola* has been segregated from *Barilius* of Hamilton Buchanan and included under this genus).

Body elongated, compressed with abdomen rounded. Mouth deeply cleft, maxilla extending beyond posterior border of the orbit. Barbels absent. Lower jaw always longer than the combined lengths of snout and orbit. Maximum length of the third intraorbital exceeds that of snout. Dorsal fin inserted opposite interspace between pelvic and anal fins, with 10 to 11 rays. Anal fin with 13 rays. Caudal fin forked.

18. *Raiamas bola* (Hamilton- Buchanan)

1822. *Cyprinus (Barilius) bola* Hamilton-Buchanan, Fish. Ganges : 274 (type-locality : Bhramaputra).

Status : Endangered (EN).

Local name : Bola.

English name : Indian Trout.

Material examined : India : Uttarakhand, : 2exs., Chilkana Rao, Chillawali Forest Block, Dist. Hardwar, 18.xii.1964, Coll. T. D. Soota; 34exs., Mohand Rao nr. Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh; 1ex., Song river, Satyanarain, Dist. Dehradun, 29.iv.1967, Coll. J. C. Tripathi; 1ex. (200 mm), Mohand Rao, Mohand, Dist. Hardwar, 26.ix.1973, Coll. Raj Tilak; 1ex., Small stream, ca 5 km west of FRH Chila, Dist. Pauri, 12.vi.1987, Coll. N. K. Sinha; 1ex., Ghasi Ram Sot nr. FRH Chila, Dist. Pauri, 9.ix.1987, Coll. Raj Tilak; 2exs., Modhal Sot nr. FRH Chila, Dist. Paud, 12.ix.1987, Coll. Raj Tilak. 3exs. Ghasi Ram Sot nr. FRH Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Pater Pani Sot, 6.vi.2003, Reg. No. 4648; Pater Pani Sot, 21.i.2004, Reg. No. 4735, Coll. V. Khanna & Party, Dehradun dist., Sankra nala, Badshai bagh road, 15.vi. 2001, coll. N.K. Sinha & party.

Distribution : Northern India upto Orrissa.

Elsewhere : Bangladesh, Myanmar and Nepal.

Remark : It is famous as angler fish, due to its fighting spirit. Due to excessive catch its abundance is going down. It is now listed under the category of Endangered.

Genus *Brachydanio* Hamilton Buchanan

Brachydanio Hamilton Buchanan. Fish. Ganges, 321, 310 (type-species : *Cyprinus dallgila* Hamilton Buchanan).

1916. *Brachrdanio* Weber and de heaufort, Fish IndoAustral. Archipel., 3 : 55 (type- species: *Brachwiallio alboineatus* Blyth).

1991. *Danio*, Barman, Rec. Zool. Surv, India Occ. Paper No. 137 : 1-91, text figs. 20 (synonymy & revision).

Body elongated or oblong, compressed with abdomen rounded. Mouth anterior, oblique directed upward., lower jaw with a symphysial knob. Maxilla not extending beyond anterior border of the orbit. Barbels 2 pairs or 1pair or absent. Dorsal fin with 6 to 17 branched rays, inserted opposite interspace between pelvic and anal fin, its posterior part extending at least above half of anal fin. Anal fin with 11 to 20 rays. Latera] line concave, complete, incomplete or absent, with

28 to 65 scales along the normal course of lateral line. Caudal fin emarginate, lunate or forked. Body usually with longitudinal bands.

19. *Brachydanio rerio* (Hamilton-Buchanan)

1822. *Cyprinus (Danio) rerio* Hamilton- Buchanan, *Fish. Ganges* : 323 (type-locality : Kosi river).

English name : Zebra Danio.

Status : Low Risk- near threatened (LRnt).

Material examined : India : Uttarakhand, 1ex., Mohand Rao, Mohand, Dist. Hardwar, 20.xi.1964, Coll. T. D. Soota; 34exs., Mohand Rao, Mohand, Dist. Hardwar, 27.xi.1964, Coll. T. D. Soota; 1ex., Mohand Rao Dr. Lalpul, Mohand, Dist. Hardwar, 18.xii.1965 Coll. T. D. Soota; 14exs. (26-35 mm), Song river, Kansrao Railway Bridge, Dist. Dehradun, 22.i.1965, Coll. R. K. Bhatnagar; 2exs. (32-34 mm), Song river, Kansrao, Dist. Dehradun, 5.ii.1965, Coll. R. K. Bhatnagar; 8exs., Ranipur Rao, Ranipur, Dist. Hardwar, 24.ii.1965, Coll. T. D. Soota 7exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 4exs., Motichur Rao, Motichur, Dist. Dehradun, 30.vi.1965, Coll. T. D. Soota; 120exs., Ranipur relo, Ranipur, Dist. Hardwar, 14.vii.1965, Coll. T. D. Soota; 1 ex., Mohand Rao nr. Lalpul, Dist. Hardwar, 16.vii.1965, Coll. T.D. Soota; 1ex., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. : T. D. Soota; 2exs., Mohand Rao, Mohand, Dist. Hardwar, 24.ix.1965, Coll. T. D. Soota; 1ex., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 24.ix.1965, Coll. T. D. Soota; 13exs., Mohand Rao, Mohand, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 3exs., Mohand Rao, Lalpul, Mohand, Dist. Hardwar, 14.iv.1966, Coll. T. D. Soota; 1ex., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh j 31exs. (26-35 mm), Betban Rao, Beribara, Dist. Hardwar, 8.ii.1972, Coll. R. N. Chopra; 2exs. (20-23 mm), Gaj Rao, Gaj Forest Block, Dist. Hardwar, 15.ii.1972, Coll. R. N. Chopra; 2exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xi.1972, Coll. Raj Tilak; 8exs. (24-40 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 24.iii.1973, Coll. Raj Tilak; 5exs. (26-35 mm), Ranipur Rao, Ranipur, Dist. Hardwar, 24.iii.1973, Coll. Raj Tilak; 7exs. (28-40 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 27.iv.1973, Coll. Raj Tilak; 4exs. (18-27mm), Mohand Rao, Mohand, Dist. Hardwar,

26.ix.1973, Coll. Raj Tilak; 166exs. FR 18, (22-40 mm), Betban Rao, Beribara, Dist. Hardwar, 3.xii.1973, Coll. Raj Tilak; 5exs., Song river nr. Kansrao FRH, Dist. Dehradun, 8.i.1987. Coll. Raj Tilak; 73exs., Small stream, ca 6 km north-west of Kansrao FRH. Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 5 exs., Song river nr. Kansrao FRH, Dist. Dehradun 9.i.1987, Coll. Raj Tjlak; 18exs., Song river nr. Kansrao Railway Station, Dist. Dehradun, 14.i.1987, Coll. N. K. Sinha 7exs., Song river nr. Kansrao FRH, Dist. Dehradun, 20j.1987, Coll. J. C. Tripathi; 22exs., Small stream, ca 10 km east of Phandowala FRH, Dist. Dehradun, 15.v.1987, Coll. Raj Tilak; 12exs., Small stream nr. Phandowala, ca 2 km from Clement Town, Dist. Dehradun, 20.v.1987, Coll. Akhlaq Husain; 69exs., Small stream nr. Phandowala, ca 4 km from Clement Town, Dist. Dehradun. 21.v.1987, Coll. Akhlaq Husain; 8exs., Small stream nr. Mohand FRH, Dist. Hardwar, 17.xi.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Nimboo boaji Water hole, nr. Kinnanoli, 3exs., 22.iv.2002, Reg. No. 4373; Dulwa Sot, 6 km from Sultan on way to Dhikala, 1ex., 25.vi.2002, Reg. No. 4413, Coll. J.P. Sati & Party; Jhirna FRH & around, 3exs., 20.i.2004, Reg. No. 4734, Coll. V. Khanna & Party; Kotirao Sot, 4 km from Jhirna FRH, 2exs., 1.iii.2005, Reg. No. 5310, Coll. A.N. Rizvi & Party, Dehradun dist Khajnawar nala, Shakumbhri road, 3exs., 12.iv.2002 Coll. S.K. Gupta & party; Karva pani, Asharori, 14exs., 27.xi.2001; 4exs., 18.i.2002; 6exs., 20.ii.2002; 15exs., 5.iv.2002, Coll. J.P. Sati & party; Kulahal, Kulhal nala, 1ex., 8.viii.2001, Coll. A. Husain & party Sankra nala, Badshaibagh road, 1ex., 13.vii.2001, Coll. N.K. Sinha & party; Sabhawala, 11ex., 5.iv.2002, Coll. J.P. Sati & party; Timli forest, 2erx., 6.vii.2001, Coll. Arun Kumar 7 party; 10exs., 7.iii.2002, Coll. J.P. Sati & party.

Distribution : India (West Bengal to Krishna river system in the south and Uttarakhand North).

Elsewhere : Bangladesh, Nepal and Pakistan.

Remarks : It is a popular aquarium fish and found in pool of slow moving water.

Genus *Danio* Hamilton Buchanan

1822. *Danio* Hamilton Buchanan, *Fish. Ganges*, 321. (type-species : *Cyprinus dallgila* Hamilton Buchanan).

1916. *Brachydanio* Weber and de heaufort, *Fish IndoAustral. Archipel*, 3 : 85 (type- species : *Brachwiallio albolineatus* Blyth).

1991. *Danio*, Barman, *Rec. Zool. Surv. India Occ. Paper No. 137* : 1-91, text figs. 20 (synonymy & revision).

Body elongated or oblong, compressed with abdomen rounded. Mouth anterior, obliquely directed upward. Lower jaw with a symphyseal knob. Maxilla not extending beyond anterior border of the orbit. Barbels 2 pairs or 1 pair or absent. Dorsal fin with 6 to 17 branched rays, inserted opposite interspace between pelvic and anal fin, its posterior part extending at least above half of anal fin. Anal fin with 11 to 20 rays. Lateral line concave, complete, incomplete or absent, with 28 to 65 scales along the normal course of lateral line. Caudal fin emarginate, lunate or forked. Body usually with longitudinal bands.

20. *Danio devario* (Hamilton-Buchanan)

1822. *Cyprinus (Cabdio) devario* Hamilton-Buchanan, *Fish. Ganges* : 341 (type-locality : rivers and ponds of Bengal).

English name : Devario Danio.

Status : Low Risk- near threatened (LRnt).

Material examined : India : Uttarakhand, 11exs. (60-75 mm, Suswa river nr. Forest Chauki, Jhabrawala Forest Block, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 2exs., Song river nr. Kansrao Railway Station, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 4exs Song river nr. Railway Bridge, Kansrao, Dist. Dehradun, 26.ii.1965 Coll. T. D. Soota; 9exs, Suswa river, Clement Town, Dist, Dehradun, 23.vii 1965, Coll. T. D. Soota; 3exs., Song river, Kansrao, Dist. Dehradun, 27.x.1965, Coll. Akhlaq Husain; 5exs., Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T. D. Soota; 7exs., Song river, Pritinagar nr. Gaurighat, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 9exs., Song river nr. Kansrao FRH, Dist. : Dehradun, 12.iv.1966, Coll. T. D. Soota; 5exs., Song river, Satyanarain, Dist. Dehradun, 15.ix.1972, Coll. Raj Tilak; 2exs., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak; 1ex. (75 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 20.v.1976. Coll. Arun Kumar; 3exs. (72-73 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 16.iii.1978, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Dhikala Road, Leed

Khali Chaur, 3exs., 22.vi.2202, Reg. No. 4379; Sanguri Sot, nr. Garial FRH, 1ex., 23.VI.2002, Reg. No. 4399, Coll. J.P. Sati & Party, Dehradun dist., Sabhawala, Asan river, 4ex., 14-xi-2000, Coll : D.P. Uniyal & party; Mohand Rao, 1ex., 18.v.2001 Coll. N.K. Sinha & party.

Distribution : India (Northern India).

Elsewhere : Bangladesh, Nepal and Pakistan.

Remark : It is a popular aquarium fish, also used for larvicidal purpose. It inhabits in clear water.

Genus *Esomus* Swainson

1839. *Esomus* Swainson. *Nat. Hist. Fishes. 2* : 285 (type species : *Esomus viuatatus* Swainson = *Cyprinus danrica* Hamilton Buchanan).

1928. *Esomus*. Hora and Mukherji, *Rec. Indian Mus.* **30**(1) : 41-50 (revision).

1981. *Esomus*. Jayaram, *Handbk. Freshw. Fish. India* : **77** (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Mouth narrow, directed obliquely upwards. Symphyseal knob absent. Barbels 2 pairs, maxillary pair extending up to anal fin. Dorsal fin inserted in the opposite interspace between pelvic and anal fin, nearer to anal fin than to pelvic fin, with 8 to 9 rays and without spine. Anal fin with 5 to 6 branched rays. Caudal fin forked. Lateral line, when present, passing to the lower half of caudal peduncle, with 27 to 34 scales.

21. *Esomus danricus* (Hamilton-Buchanan)

1822. *Cyprinus (Danio) danricus* Hamilton-Buchanan, *Fish. Ganges* : 325 (type-locality : Ponds & ditches of Bengal).

English name : Flying Barb.

Status : Low Risk-least concern (LRic).

Material examined : India : Uttarakhand, : 2exs., Ranipur Rao, Ranipur, Dist. Hardwar, 24.ii.1965, Coll. T. D. Soota; 7exs, Ranipur Rao, Ranipur, Dist. Hardwar, 14.vii.1965, Coll. T. D. Soota; 1ex., Mohand Rao, Mohand, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 1ex. (53 mm), Betban Rao, Beribara, Dist. Hardwar, 8.ii.1972, Coll. R. N. Chopra; 1ex., Song river, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak 1ex. (45 mm),

Ranipur Rao, Dist. Hardwar, 24.iii.1973, Coll. Raj Tilak, Corbett Tiger Reserve, Dhikala Road, Leed Khali Chaur, 3exs., 22.vi.2202, Reg. No. 4379; Sanguri Sot, nr. Garial FRH, 1ex., 23.vi.2002, Reg. No. 4399, Coll. J.P. Sati & Party, Dehradun dist. Karva pani, Asha rori, 1ex., 6.vii.2001, Coll. Arun Kumar & party; Mohand Rao, 1ex., 30.vi.2000, Coll. J.P. Sati & party; 2exs., 19.x.2001, Coll. A. Husain & party Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party.

Distribution : Throughout India.

Elsewhere : Bangladesh, Nepal, Myanmar, Srilanka and Pakistan.

Remark : It is a popular aquarium fish, also used for larvicidal purpose. It inhabits in shallow water with thick vegetation.

Genus *Rasbora* Bleeker

1860. *Rasbora* Bleeker. *Acta. Soc. Sci. Indo-Nepal.*, 7 : 435 (type-species : *Cyprinus rasbora* Hamilton Buchanan).

1981. *Rasbora*, Jayaram. *Handk. Freshw. Fish. India.* : 83 (genus character., and distribution).

Body elongated and compressed with abdomen rounded. Cleft of mouth oblique, lower jaw with one central and two lateral prominences. Barbels 1 pair or absent dorsal fin inserted posterior to pelvic fins, with 9 rays without any spine. Anal fin with 7 to 9 rays. Caudal fin emarginate or forked. Lateral lines complete, with 26 to 44, scales.

22. *Rasbora daniconius* (Hamilton- Buchanan)

1822. *Cyprinus (Danio) daniconius* Hamilton-Buchanan, *Fish. Ganges* : 327 (type-locality : rivers of southern Bengal).

English name : Striped Rasbora.

Status : Low Risk-near threatened (LRnt).

Material examined : India : Uttarakhand, 1ex., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T. D. Soota; 2exs., Song river, Pritinagar nr. Gaurighat, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 2exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 2exs., Song river, Satyanarain, Dist. Dehradun, 23.iv.1971, Coll. J. C. Tripathi; 1ex., Song river, Gaurighat nr. Satyanarain, Dist.

Dehradun 19.iv.1973, Coll. Raj Tilak; 2exs. (52-80 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 16.iii.1978. Coll. Raj Tilak; 1ex., small stream, ca 10 km east of Phandowala FRH, Dist. Dehradun, 15.v.1987, Coll. Raj Tilak; 1ex., small stream nr. Phandowala, ca 2 km from Clement Town Dist. Dehradun 21.v.1987 Coll. Akhlaq Husain. 2exs., Ganga canal seepage, ca 7 km east of Chila, Dist. Pauri, 11.ix.1987, Coll. Raj Tilak; 1ex., Ghasi Ram Sot nr. FRH Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Dhikala Road, Leed Khali Chaur, 3exs., 22.vi.2202, Reg. No. 4379; Sanguri Sot, nr. Garial FRH, 1ex., 23.vi.2002, Reg. No. 4399, Coll. J.P. Sati & Party, Dehradun dist., 1ex., 22.xi.2001, Coll. J.P. Sati & party; Sankranala, Badshaibagh road, 1ex., 12.ix.2000, Coll. A. Husain & party.

Distribution : Throughout India.

Elsewhere : Myanmar, Sri Lanka and Pakistan.

Remark : It is used for biological control of Mosquito larva and inhabits in clear and shallow water.

Genus *Carassius* Nilsson

1832. *Crassius* Nilsson, *Prodr. Ichthyol. Scandinaviae*, 4, p. 32 (type-species, *Cyprinus carassius* Linnaeus, by absolute tautonymy).

Body stout, rather high, compressed. Abdomen rounded Head small, top slightly depressed. Snout blunt. Mouth terminal, small, oblique, cleft not extended to anterior margin of eyes.

23. *Carassius carassius* (Linnaeus) (EX)

1758. *Cyprinus carassium* Linnaeus, *Systema Naturae*, ed. 10, 1 : 321 (type-locality : Europe).

1955. *Carassius carassius* : Munro, *Marine and fresh Water Fishes Ceylon* : 42, pl. 7.

English name : Crucian Carp.

Materials examined : 1exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 2exs., Song river, Satyanarain, Dist. Dehradun, 23.iv.1971, Coll. J. C. Tripathi; 1ex., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun 19.iv.1973, Coll. Raj Tilak; Dhikala Road, Leed Khali Chaur, 1ex., 22.vi.2202; Sanguri Sot, nr. Garial FRH, 1ex., 23.vi.2002.

Distribution : Introduced in different part of the India.

Elsewhere : Europe.

Remarks : This is an exotic species.

Key to the genera

1. Anal fin with anterior rays osseous, third spine serrated *Cyprinus*
Anal fin with anterior rays not osseous 2
2. Snout projecting over mouth, horizontally divided by a deep groove passing from one orbit to opposite one, giving the appearance of a blunt compressed knob between and before the orbit *Schismatorhynchus*
Snout plain, not divided 3
3. Dorsal fin inserted posterior to pelvic fins in the interspace between pelvic and anal fins, usually extending to over anal fin
..... *Osteobrama*
Dorsal fin inserted above pelvic fins or slightly anterior to it 4
A knob or a horny tubercle present at the symphysis of lower jaw 5
Symphysial knob on lower absent 6
5. Dorsal fin with 10 to 19 rays *Cirrhinus*
Dorsal fin with 24 to 28 rays *Semiplous*
6. Upper lip absent. Scales large (40 to 43 along Lateral line) *Catla*
Upper lip present 7
7. Lower lip with an uninterupted posterior groove, continuous around corners of the mouth 8
Lower lip with posterior groove intermpted in middle when a groove is present or without any groove 9
8. Barbels present. Dorsal fin with a spine
..... *Tor*
Barbels absent. Dorsal fin without a spine ..
..... *Ctenopharyngodon*
10. Snout with median and lateral lobes. Snout and cheeks beset with horny tubercles in both sexes. Anal fin rays elongated in male specimens but normal in female specimens .
..... *Chagunius*

Snout entire without any lobes. Cheeks free from tubercles. Snout rarely tuberculated. Anal fin rays not elongated 10

11. A horny covering on the inner side of the lips. Lips thick, fleshy, fringed, covering both jaws, continuous at the angle of mouth forming a labial fold *Labeo*
No such horny covering on the lips. Lower jaw covered by lip. Lower lip attached to the lower jaw along the entire mouth
..... *Puntius*
12. Lower lip suctorial *Schizothorax*
Lower lip with a central lobe
..... *Schizothoraichthys*

Genus *Catla* Valenciennes

1844. *Catla* Valenciennes, *Hist. Nat. Pois.* 18 : 140 (type species : *Cyprinus catla* Hamilton Buchanan).

1981. *Catla*. Jayaram. *Handbk. Freshw. Fish. India.* : 131 (genus characters and distribution).

Body deep and compressed with abdomen rounded. Mouth terminal without barbels. Upper lip absent. Lower jaw with a movable articulation at the symphysis, but without a prominent knob. Dorsal fin inserted above tip of pectoral fins, with 17 to 19 rays and no spine. Anal fin with 8 rays. Caudal fin forked. Lateral line complete, with 40 to 43 scales.

24. *Catla catla* (Hamilton Buchanan)

1822. *Cyprinus catla* Hamilton Buchanan, *Fish Ganges*. 287, pl. 13, fig. 8 1 (type-locality : in the rivers and tanks of Bengal).

1878. *Catla buehanani*. Day, *Fish. India.* : 553, pl. 134. fig. 5 : 1889. Day, *Fauna Br. India. Fish* 1 : 287. fig. 99.

1981. *Catla catla*. Jayaram, *Handk. Freshw. Fish India.* : 131 (distribution).

Local name : Catla.

English name : Catla.

Materials examined : Uttarkhand, 2exs. Asan river nr. Jhajra Village, Dehradun, 12-v-1999; Coll. D.P. Uniyal & Party; 3exs. Ramaganga reserviour, Nr. Dhakala, CTR, Nanital, 15-6-2004, Coll. Vinod Khanna & Party.

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka and Thailand.

Remarks : It is one of the very important major carps of considerable economic importance in India, Pakistan and Bangladesh and an esteemed food fish. It is largely employed for stocking tanks and reservoirs throughout the country.

Genus *Chagunius* H. M. Smith

1938. *Chagunius* H. M. Smith. *Pmc. bioi. Soc. Washington*, **51** : 157 (type-species : *Cyprinus chagunio* Hamilton Buchanan).

1981. *Chagunius*, Jayaram. *Handbk. Freshw. Fish. India*. 123 (genus characters and distribution).

Body elongated with abdomen rounded. Snout overhanging, divided into a central and two lateral lobes by a groove extending upward and forward from the base of each rostral barbel. Snout and cheek of male specimen beset with short, horny tubercles which are smaller and fewer in female specimens. Mouth subterminal, U-shaped, with two ends directed backwards. Barbels 2 pairs, a pair each of rostral and maxillary, well developed. Dorsal fin inserted slightly anterior to pelvic fins, with II rays and a stout, strong, serrated spine. Anal fin with 8 rays. Caudal fin forked. Lateral lines complete, with 44 to 48 scales.

25. *Chagunius chgunio* (Hamilton-Buchanan)

1822. *Cyprinius (Cyprinius) chgunio* Hamilton-Buchanan, *Fish. Ganges* : 295 (type-locality : Yamuna and in the northern rivers of Bihar and Bengal).

Status : Data Deficient (DD).

Material examined : India : Uttarakhand, 2exs. (123-172 mm), Motichur Rao, Koelpur Forest Block, Dist. Dehradun, 25.ii.1965, Coll. T. D. Soota; 3exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 20.v.1965, Coll. T. D. Soota; 1ex., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T. D. Soota; 6exs., Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T. D. Soota; 6exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 13.iv.1966, Coll. T. D. Soota; 3exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 6exs., Song river, Satyanarain, Dist. Dehradun, 29.ix.1967, Coll. J. C. Tripathi; 6exs., Song river, Satyanarain, Dist. Dehradun, 5.vi.1970, Coll. J. C.

Tripathi; 23exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak 1ex., Song river, Satyanarain, Dist. Dehradun, 15.ix.1972, Coll. Raj Tilak 1ex., Song river, Satyanarain, Dist. Dehradun, 10.vii.1980, Coll. Akhlaq Husain; 5exs., Rawasan river, Laldhang, Dist. Pauri, 10.ix.1987, Coll. Raj Tilak 7exs., Ganga canal seepage, ca 7 km east of Chila, Dist. Pauri, 11.ix.1987, Coll. Raj Tilak 22exs., Ghasi Ram Sot nr. FRH Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak 8exs., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak 3exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Kothree, Jhirna, Dhela beat, 1ex., 27.vi.2002, Reg. No. 4456; Lal Dhang, Jhirna, 2exs., 28.vi.2002, Reg. No. 4465; Jhirna Sot, 3exs., 29.vi.2002, Reg. No. 4478, Coll. J.P. Sati & Party, Dehradun dist Sankra nala, Badshaibagh road, 4ex., 13.vii.2001, Coll. N.K. Sinha & party; Khajnawar nala, Mohand-Badshibagh road, 1ex., 5.iv.2002, Coll. A. Husain & party.

Distribution : India (Northern portion along base of Himalayas).

Elsewhere : Nepal, Bangladesh, Myanmar and Thailand.

Remark : This species exhibits sexual dimorphism and inhabits in rocky bed of river/stream.

Genus *Cirrhinus* Oken

1817. *Cirrhinus* (Oken). Cuvier. *Regne Animal*. 2 ed. 1 : 193 (type-species : *Cirrhinus cirrhosus* Bloch).

1981. *Cirrhinus*, Jayaram. *Handbk. Freshw. Fish. India*. : 126 (genus characters and key to species).

Body elongated and compressed with abdomen rounded. Mouth broad, transverse. Upper lip fringed or entire not continuous with the lower lip. Lower jaw sharp with a symphyseal knob and without any cartilaginous covering inside the jaw. Dorsal fin inserted anterior to pelvic fins with 10 to 19 rays and without any osseous ray. Anal fin with 7 to 8 rays. Caudal fin forked. Lateral lines complete with 35 to 45 scales.

Key to the species

Dorsal fin with 8 to 9 branched rays. Lateral line scales 35 to 38 *C. reba*

Dorsal fin with 12 to 13 branched rays. Lateral line scales 40 to 45 *C. mrigala*

26. *Cirrhinus mrigala* (Ham.-Buch)

1822. *Cirrhinus mrigala* Hamilton Buchanan, *Fish. Ganges.* : 279, pl. 6, fig. 79 (type-locality : ponds and freshwater rivers of the Gangetic provinces).

1877. *Cirrhinus mrigala*. Day, *Fish. India.* : 547. pl. 129. fig. 4; 1889. Day, *Fauna Br. India. Fish.* 1 : 278.

1981. *Cirrhinus mrigala*. Jayaram. *Handbk. Freshw. Fish. India.* : 127 (distribution and key to species).

Local name : Mrigala, Mrigal.

English name : Mrigal.

Materials examined : None of the sample collected by me, reported by Husain (1995).

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Nepal and Myanmar.

Remarks : It is an excellent fish for stocking in tanks and reservoirs all over India and being a popular game it offers good sport on the rod.

27. *Cirrhinus reba* (Ham.-Buch)

1822. *Cyprinus reba* Hamilton Buchanan, *Fish. Ganges.* : 280, (type-locality : rivers and ponds of Bengal and Bihar).

1877. *Cirrhina reba*, Day *Fish. India.* : 549, pl. 130, fig. 3; 1889, Day, *Fauna Br. India. Fish.* 1 : 279, fig. 96.

1981. *Cirrhinus reba*. Jayaram, *Handbk. Freshw. Fish. India.* : 127 (distribution and key to species).

Local name : Batta.

English name : Reba.

Materials examined : None of the sample collected by me, reported by Husain (1995).

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal and Bangladesh.

Remarks : It is restricted in plain districts of the state.

Genus *Cyprinus* Linnaeus

1758. *Cyprinus* Linnaeus, *Syst. Nat. ed.* 10, 1 : 320 (typespecies : *Cyprinus carpio* Linnaeus).

1981. *Cyprinus*. Jayaram. *Handbk. Freshw. Fish India.* : 94 (genus characters and distribution).

Body robust anteriorly, almost compressed with abdomen rounded. Mouth terminal, oblique, gape not extending to anterior margin of orbit. Maxillary protractile reaching to anterior nostril. Barbels 2 pairs, one pair each of rostral and maxillary. Dorsal fin very long with 3 spines and 17 rays, third spine strongest and serrated. Anal fin with 3 spines and 5 rays. Caudal fin deeply emarginate. Lateral line complete and straight with 30 to 40 cycloid scales

28. *Cyprinus carpio* Linnaeus

1758. *Cyprinus carpio* Linnaeus, *syst. Nat. cd.* 10, 1 : 525 (type-locality : Eurpoe).

1981. *Cyprinus carpio carpio*. Jayaram. *Handbk. Freshw. Fish India.* : 94 (distribution).

Local name : Carpio.

English name : Common Carp.

Materials examined : None of the sample collected by me, reported by Husain (1995).

Distribution : Throughout India.

Elsewhere : China. Korea, Japan, Taiwan, Europe and America. This fish was introduced in India and Sri Lanka in 1939.

Remarks : It is an exotic fish introduced in different states of India in 1939.

29. *Cyprinus specularis* Lacepedes

1758. *Cyprinus carpio* Linnaeus, *syst. Nat. cd.* 10, 1 : 525 (type-locality : Eurpoe).

1981. *Cyprinus carpio carpio*. Jayaram. *Handbk. Freshw. Fish India.* : 94 (distribution).

Local name : Carpio.

English name : Common Carp.

Materials examined : None of the sample collected by me, reported by Husain (1995).

Distribution : Throughout India.

Elsewhere : China. Korea, Japan, Taiwan, Europe and America. This fish was introduced in India and Sri Lanka in 1939.

Remarks : It is an exotic fish introduced in different states of India in 1939.

Genus *Labeo* Cuvier

1817. *Labeo* Cuvier, *Regne Animal.*, 2, ed. 1 : 194 (type species : *Cyprinus niloticus* Forsskal).

1981. *Labeo*. Jayaram. *Handbk. Freshw. Fish. India.* : 116. 117 (genus characters and distribution).

Body moderately elongated with abdomen rounded. Mouth generally inferior, transverse and semioval. Lips thick covering the jaws, continuous at the angle of mouth and one or both having an inner transverse fold. A soft and movable horny covering, with a sharp margin on the inner side of one or both lips. Barbels, when present, 2 pairs or 1 pair, if there is only one pair, they are on the maxilla, the pair being on the snout. Dorsal fin inserted anterior to pelvic fins, with 11 to 26 rays and without any spine. Anal fin with 7 to 8 rays. Caudal fin emarginate or forked. Lateral lines complete, with 36 to 85 scales.

Key to the species

1. Dorsal fin rays not more than 13. Only one pair of barbels 2
 - Dorsal fin rays more than 13. Two pairs of barbels 4
2. Pectoral fins reaching pelvic fins *L. bata*
 - Pectoral fins not reaching pelvic fins 3
3. Snout with a distinct lateral lobe
 - *L. dycoheilus*
 - Snout without any lateral lobe *L. boga*
4. Lateral line scales 71 to 84 *L. gonius*
 - Lateral line scales less than 71 (40 to 44) ..
 - 5
5. Dorsal fin rays 24 to 26 *L. dero*
 - Dorsal fin rays less than 24 (15 to 18) 6
6. Dorsal fin rays 15 to 16. Scales between lateral line and base of pelvic fins 6 to 6 1/2, Dorsal fin rays 16 to 18. Scales between lateral line and base of pelvic fins 5 1/2 to 6. Head length 5.00 to 6.00 in total length. Body blackish becoming lighter below
 - *L. calbasu*

30. *Labeo boga* (Ham.-Buch)

1822. *Labeo boga* Hamilton Buchanan, *Fish. Ganges.* : 286. 386. pl. 28. fig. 80 (type-locality: River Bramaputra).

1877. *Labeo boga*. Day. *Fish. India.* : 543, pl. 128. fig. 3 and pl. 131. fig. 4; 1889, Day. *Fauna Br. India. Fish.* 1 : 269.

1981. *Labeo boga*. Jayaram. *Handbk. Freshw. Fish. India.* : 117-120 (distribution and key to species).

Local name : Bangum batao.

English name : Burmese fish, Jamuna fish.

Material examined : Uttarkhand : 2exs. Stream Nr. Chila Barrage, Haridwar, 14-v-2003, Coll. J.P. Sati & Party; 1ex. Nanak mata Barrage, Udham Singh Nagar, 21-vi-2004, A. Bahuguan.

Distribution : India : Punjab, Uttar Pradesh, Uttarkhand, N-E India, West Bengal.

Elsewhere : Bangladesh, Nepal, Myanmar and Pakistan.

31. *Labeo bata* (Ham.-Buch.)

1822. *Cyprinus bata* Hamilton Buchanan, *Fish. Ganges.* : 283 (type-locality : rivers and ponds of Bengal).

1877. *Labeo bata*. Day, *Fish. India.* : 542. pl. 129. fig. 5 : 1889. Day *Fauna Br. India. Fish.* 1 : 268.

1981. *Labeo batao* Jayaram. *Handbk. Freshw. Fish. India.* : 117. 119 (distribution and key to species).

Local name : Bhangna.

English name : Bata.

Materials examined : Uttarakhand : 2ex. Nanak mata Barrage, Udham Singh Nagar, 21-vi-2004, A. Bahuguan.

Distribution : Throughout India.

Elsewhere : Bangladesh, Nepal and Pakistan.

32. *Labeo calbasu* (Ham.-Buch.)

1822. *Cyprinus calbasu* Hamilton Buchanan. *Fish. Ganges.* : 297. pl. 2. Fig. 83 (type-locality : rivers and ponds Bengal and in the Western provinces).

1877. *Labeo calbasu*. Day, *Fish. India.* : 536, pl. 126, fig. 4; 1889. Day, *Fauna Br. India. Fish.* 1 : 259.

1981. *Labeo calbasu*. Jayaram. *Handbk. Freshw. Fish. India.* : 117. 121 (distribution and key to species).

Local name : Kalbasu.

English name : Calbasu, Orange fin labeo.

Materials examined : None of the specimen collected by me, reported by Husain (1995).

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Nepal, Myanmar, Thailand and Yunnan.

Remarks : It is an important food and game fish of India. It is largely used in stocking ponds throughout Tripura.

33. *Labeo dero* (Hamilton-Buchanan)

1822. *Cyprinus (Bangana) dero* Hamilton-Buchanan, *Fish. Ganges* : 277 (type-locality: Bhramaputra).

Local name : Dero.

English name : Hilly Labeo.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand, 1ex., Mohand Rao, Mohand, Dist. Hardwar, 27.xi.1964, Coll. T. D. Soota; 1ex., (186 mm), Song river nr. Raiway Station, Kansrao, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 1ex. (195 mm), Motichur Rao, Motichur, Dist. Dehradun, 25.ii.1965, Coll. T. D. Soota; 2exs., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 26.iii.1965, Coll. T. D. Soota; 10exs., Mohand Rao nr. Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 6.viii.1968, Coll. M. K. Biswas, 1ex., Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak; 1ex., Rawasan river, Laldhang, Dist. Pauri, 10.ix.1987, Coll. Raj Tilak; 1ex., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak and specimens seen in local catch from river Ganga, Corbett Tiger Reserve, Dhumanda Road, 3 km from Gairel 1ex., 25.vi.2002, Reg. No. 4423, Coll. J. P. Sati & Party; Pater Pani Sot, 9exs., 21.i.2004, Reg. No. 4735, Coll. V. Khanna & Party.

Distribution : Throughout peninsular India, ascending to about 8,000 feet in North-West Himalayas.

Elsewhere : Sri Lanka.

Remark : It is commercially important fish of the region and inhabits on the bank of river/streams. Jaunsar tribes use its fat for healing the wound, Uniyal (2002).

34. *Labeo dycoheilus* (McClelland)

1839. *Cyprinus (Labeo) dycoheilus* McClelland, *Asiat. Res.*, 19(2) : 268 (type-locality : Assam).

Local name :

English name : Brahmaputra Labeo.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand, 1ex., River Ganga, Gaurighat nr. Satyanarain, Dist. Dehradun, 12.iv.1966, Coll. T.D. Soota and specimens seen with local fishermen at Raiwala and near Hardwar, Corbett Tiger Reserve, Pater Pani, 1ex., 6.iv.2003, Reg. No. 4648, Coll. V.Khanna & Party; Pater Pani Sot, 11exs., 2.iii.2005, Reg. No. 5322, Coll. A.N. Rizvi & Party.

Distribution : India : Himalaya to Assam and plains adjoining the Himalayas including India.

Elsewhere : Pakistan.

Remark : It is commercially important fish of the region and inhabits on the bank of river/streams. Jaunsar tribes use its fat for healing the wound, Uniyal (2002).

35. *Labeo gonius* (Ham.- Buch.)

1822. *Cyprinus gonius* Hamilton Buchanan, *Fish. Ganges* : 292. (type-locality : Freshwater rivers and ponds of Bengal).

1877. *Labeo gonius*, Day, *Fish. India* : 537. pl. 127. fig. 1 : 1889. Day, *Fauna Br. India. Fish.* 1 : 261.

1981. *Labeo gonius*. Jayaram, *Handbk. Freshw. Fish. India*, : 118. 120 (distribution and key to species).

Local name : Gonya.

English name : Nil.

Materials examined : Uttarkhand : 4exs. Stream nr. Ramaganga river, (ca 10 km. from Mohan), 15-v-2004, Coll. Vinod Khanna & Party.

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bangladesh, and Myanmar.

Remarks : This is extensively employed for stocking tanks in the plain districts of the state mainly.

36. *Labeo rohita* (Ham.- Buch.)

1822. *Cyprinus rohita* Hamilton Buchanan, *Fish Ganges* : 301, 388, Pl. 36, fig. 85 (type-locality : Freshwater rivers of Gangetic provinces).

1877. *Labeo rohita*. Day, *Fish India*. : 538, pl. 127, fig. 4;
1889. Day, *Fauna Br. India. Fish.* 1 : 262.

1981. *Labeo rohita*, Jayaram, *Handbk. Freshw. Fish. India*,
: 118, 120 (distribution and key to species).

Local name : Rui, Rohu.

English name : Rohu.

Materials examined : Uttarkhand : Purched from fishermen nr. Chila barrage, Haridwar, 12-iii-2004 J.P.Sati & party and as reported by Husain (1995).

Remarks : This is one of the most commercially important fishes of India. It is extensively used and cultured almost throughout the state.

Genus *Osteobrama* Heckel

1842. *Osteobrama* Heckel, *Ichth. Russengger's Reisen in Europe, Asia and Africa*, 1 : 1033 (type-species : *Cyprinus cotio* Hamilton Buchanan).

1981. *Osteobrama*, Jayaram, *Handbk. Freshw. Fish. India*,
: 112, 113 (genus characters and distribution).

Body deep. Compressed with abdomen rounded. Mouth small, somewhat directed upwards. Barbels 2 pairs, 1 pair or absent. Dorsal fin inserted slightly posterior to pelvic fins, with 11 to 12 rays and a strong spine. Anal fin with 14 to 36 rays. Caudal fin deeply forked. Lateral lines complete with 42 to 80 scales

37. *Osteobrama cotio cotio* (Ham.-Buch.)

1822. *Cyprinus cotia* Hamilton Buchanan. *Fish. Ganges*. : 339. pl. 39. fig. 93 (type- locality : ponds and ditches of Bengal).

1878. *Rohtee Collo*. Day. *Fish. India* : 587. pl. 151. fig. 1 :
1889. Day. *Fauna Br. India. Fish.* 1 : 340.

1981. *Osteobrama cotio cotio*, Jayaram. *Handbk. Freshw. Fish. India* : 113 (distribution and key to species).

Local name : Gila Khani.

English name : Cotio.

Materials examined : None of the specimen collected by me, reported by Husain (1995).

Distribution : Throughout India, except Malabar.

Elsewhere : Bangladesh, Nepal, Pakistan and Myanmar.

Remarks : It is a restricted in few districts of the state.

Genus *Puntius* Hamilton Buchanan

1822. *Puntius*, Hamilton Buchanan, *Fish. Ganges*. 310, 388
(type-species : *Cyprinus sophore* Hamilton Buchanan).

1981. *Puntius*, Jayaram, *Handbk. Freshw. Fish. India*. 97,
98 (description of genus and distribution).

Body short to moderately elongated, compressed with abdomen rounded. Mouth arched, anterior or inferior. Lips thin covering the jaws, may have leathery lobes, but without any horny covering. Jaws simple, covered by lips, without any knob or tubercle at the symphysis. Barbels 2 pairs or 1 pair or absent. Dorsal fin inserted almost opposite to pelvic fins, with 9 to 13 rays with or without any spine. Anal fin with 7 to 9 rays. Caudal fin forked. Lateral line complete or incomplete, with 20 to 47 scales.

Key to the species

1. Barbels present 2
 - Barbels absent 4
2. Barbels 1 pair *P. chola*
 - Barbels 2 pairs 3
3. Lateral line scales 32 to 34
..... *P. sarana sarana*
 - Lateral line scales 42 *P. terio*
4. Lateral line complete. Dorsal spine smooth.
..... *P. sophore*
 - Lateral line incomplete. Dorsal spine serrated
..... 5
5. Body with vertical black coloured bands
..... *P. gelius*
 - Body without any vertical coloured bands ..
..... 6
6. Body depth 2.40 to 2.50 in total length
..... *P. Conchoni*
 - Body depth 3.00 to 3.50 in total length
..... *P. ticto*
7. *P. carletoni*

38. *Puntius carletoni* Ham.-Buch.

1822. *Cyprinus carletoni* Hamilton-Buchanan, *Fish. Ganges*
: 321 (type-locality : Bengal).

Local name : Phuto.

Status : Vulnerable (VU).

Material examined : None of the specimen collected by me, reported by Husain (1995).

Distribution : Throughout India.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka and Myanmar.

Remark : This fish used for aquarium purpose. It inhabits in the small and slow moving streams.

39. *Puntius chola* Hamilton-Buchanan

1822. *Cyprinus (Puntius) chola* Hamilton-Buchanan, *Fish. Ganges* : 321 (type-locality : North-eastern parts of Bengal).

Local name : Phuto.

English name : Bitter Carp.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand, 3exs., (75-87 mm), Suswa river nr. Forest Chuwki, Jhabrawala Forest Block, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 2exs., Song river nr. Railway Bridge, Kansrao, Dehradun, 26.ii.1965, Coll. T. D. Soota; 3exs., Song river, Kansrao, Dist. Dehradun, 27.x.1965, Coll. T. D. Soota; 1ex., Song river nr. Kansrao FRH, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 3exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 6exs., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak, Corbett Tiger Reserve, Dhikala Road, Leed Khali Chaur, 8exs., 22.vi.2002, Reg. No. 4379, Coll. J.P. Sati & party; Bijarani, Garjia Sot, 4exs., 3.iv.2003, Reg. No. 4612, Jhirna FRH & around, 2exs., 20.i.2004, Reg. No. 4734, Coll. V. Khanna & party, Jhirna FRH & around, 1ex., 28.ii.2005, Reg. No. 5199, Coll. A.N. Rizvi & party, Dehradun dist., Karva pani, Asharori, 1ex., 3.xi.2000; Mohan Rao, 1ex., 9.xi.2001 Coll. A. Husain & party, Punjana nadi, Badshahibagh road, 1ex., 28.xi.2001, Coll. N.K. Sinha & party; Sankra nala, 28.vi.2000; 2exs., 4.x.2001, Coll. J.P. Sati & party; 1ex., 15.vi.2001; 2exs., 18.vii.2000; 6exs., 11.x.2001; 1ex., 5.xii.2001, Coll. N.K. Sinha & party 1ex., 12.ix.2000, Coll. A. Husain & party; 2exs., 20.vii.2001, Coll. P.C. Tak & party; Sodinagar,

Shakumbhri road, 1ex., 24.vii.2001, Coll. A. Husain & party; Timli forest, 1ex., 20.xi.2000; 2exs., 15.vi.2001, Coll. N.K. Sinha & party; 2exs., 6.vii.2001, Coll. Arun Kumar & party; 1ex., 10.viii.2001, Coll. J.P. Sati & party.

Distribution : Throughout India.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka and Myanmar.

Remark : This fish used for aquarium purpose. It inhabits in the small and slow moving streams.

40. *Puntius conchoni* Hamilton-Buchanan

1822. *Cyprinus (Puntius) conchoni* Hamilton-Buchanan, *Fish. Ganges* : 317 (type-locality : ponds of north-east Bengal and rivers of Kosi and Ami).

English name : Red Barb.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand, 3exs., (59-80 mm), Suswa river nr. Forest Chauwki, Jhabrawala Forest Block, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 35exs. (54-85 mm), Song river, or. Railway Station, Kansrao, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 44exs. (14-55 mm), Song river, Kansrao Railway Bridge, Dist. Dehradun, 22.i.1965, Coll. R. K. Bhatnagar; 9exs. (25-40 mm), Song river, Kansrao, Dist. Dehradun, 5.ii.1965, Coll. R. K. Bhatnagar; 16exs., Ranipur Rao, Ranipur Forest, Dist. Hardwar, 24.ii.1965, Coll. T. D. Soota; 5exs. (55-68 mm), Motichur Rao nr. Motichur FRH, Dist. Dehradun, 25.ii.1965, Coll. T. D. Soota; 2exs., Song river nr. Railway Bridge, Kansrao, Dist. Dehradun, 26.ii.1965, Coll. T. D. Soota; 5exs., Motichur Rao, Motichur, Dist. Dehradun, 30.vi.1965, Coll. T. D. Soota; 31exs., Ranipur Rao, Ranipur, Dist. Hardwar, 14.vii.1965, Coll. T. D. Soota; 46exs., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T. D. Soota; 47exs., Song river, Kansrao, Dist. Dehradun, 27.x.1965, Coll. Akhlaq Husain; 15exs., Song river, Satyanarain, 7.iv.1966, Coll. T. D. Soota; 59exs., Song river, Pritinagar, nr. Gaurighat, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 12exs., Song river or. Kansrao FRH, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 14exs., Song river, Satyanarain, Dist. Dehradun, 5.vi.1970, Coll. J.C. Tripathi; 15exs., Song river, Satyanarain, Dist. Dehradun, 23.iv.1971 Coll. J. C. Tripathi; 21exs.,

Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak; 25exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 14exs., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun 19.iv.1973, Coll. Raj Tilak; 2exs., Song river, Pattapul, Kansrao, Dist. Dehradun, 16.iii.1972, Coll. Raj Tilak; 13exs., Song river, Satyanarain, Dist. Dehradun 26.xii.1979, Coll. Akhlaq Husain; 9exs., Song river, Satyanarain, Dist. Dehradun, 20.ii.1980, Coll. Akhlaq Husain; 9exs., Song river, Satyanarain, Dist. Dehradun, 10.iii.1980, Coll. Akhlaq Husain; 11exs., Song river, Satyanarain, Dist. Dehradun, 22.iv.1980, Coll. Akhlaq Husain; 10exs., Song river, Satyanarain, Dist. Dehradun, 14.v.1980, Coll. Akhlaq Husain 5exs., Song river, Satyanarain, Dist. Dehradun, 10.vii.1980 Coll. Akhlaq Husain 8 xs., Motichur Rao, Motichur, Dist. Dehradun, 3.xii.1985, Coll. R. N. Chopra, 2exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 30.x.1986, Coll. Raj Tilak 7exs., a stream, ca 6 km north-west of Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak 1ex., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 9.i.1987, Coll. Raj Tilak 1ex., Song river nr. Railway Station, Kansrao. Dist. Dehradun, 14.i.1987, Coll. N. K. Sinha 25exs., Song river, Kansrao Forest, Dist. Dehradun, 20.i.1987, Coll. J. C. Tripathi, 13exs., Suswa river nr. FRH, Phandowala, Dist. Dehradun, 14.v.1987, Coll. Raj Tilak 12exs., a stream, ca. 10 km east of Phandowala FRH, Dist. Dehradun, 15.v.1987, Coll. Raj Tilak; 54exs., Suswa river or. FRH, Phandowala, Dist. Dehradun, 18.v.1987, Coll. N. K. Sinha 5exs., a stream nr. Phandowala, (ca 2 km from Clement Town, Dist. Dehradun, 19.v.1979. Coll. N. K. Sinha 8exs., a stream nr. Phandowala, ca 2 km from Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain; 14exs., a stream nr. Phandowala, ca 4 km from Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain; 49 exs., Suswa river, Phandowala, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain; 1 ex., a stream, Chila Forest, Dist. Pauri, 2.vi.1987, Coll. J. C. Tripathi; 3exs., Ghasi Ram sot nr. Chila, Dist. Pauri, 3.vi.1987, Coll. Raj Tilak; 39exs., a stream, ca 5 km east of FRH, Chila, Dist. Pauri, 11.vi.1987, Coll. N. K. Sinha; 2exs., a stream, ca 5 km west of FRH, Chila, Dist. Pauri, 12.vi.1987, Coll. N. K. Sinha. 1ex. Ghasi Ram Sot nr. FRH, Chila, Dist. Pauri 9.ix.1987

Coll. Raj Tilak; 1ex., Rawasan river, Laldhang, Dist. Pauri, 10.ix.1987, Coll. Raj Tilak; 10exs., Ganga canal seepage, ca 7 km east of Chila, Dist. Pauri, 11.ix.1987, Coll. Raj Tilak; 5exs. Ghasi Ram Sot nr. FRH Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 7exs., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak; 15exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak; 8exs., Motichur Rao, Motichur, Dist. Dehradun, 14.ix.1987, Coll. Raj Tila Corbett Tiger Reserve, Mohan Sot, 36exs., 17.i.2004, Reg. No. 4697, Coll. V.Khanna & party; Bijarani Sot, 1ex., 26.ii.2005, Reg. No. 5189, Coll. A.N. Rizvi & party, Dehradun dist., Bhure Shah, 1ex., 28.vi.2001, Coll. A.Husian & party; 4exs., 6.ix.2001, Coll. N.K. Sinha & party; Mohand Rao, 1ex., 14.ix.2001, Coll. A. Husian & party; Karva pani Asharori, 8exs., 28.vi.2001, Coll. A. Husian & party; 2exs., 6.vii.2001, Coll. Arun Kumar party; Kulhal, Kulhal nala, 12exs., Coll. A. Husain & party Kirtipur near Mohan Rao, 1ex., 28.vii.2001, Coll. A. Husian & party; Punjana nadi, Badshahibagh road, 1ex., 28.xi.2001, Coll. N.K. Sinha & party; Sankra nala, 28.vi.2000; 2exs., 4.x.2001, Coll. J.P. Sati & party; 1ex., 15.vi.2001; 2exs., 18.vii.2000; 6exs., 11.x.2001; 1ex., 5.xii.2001, Coll. N.K. Sinha & party 1ex., 12.ix.2000, Coll. A. Husian & party; 2exs., 20.vii.2001, Coll. P.C. Tak & party; Sodinagar, Shakumbhri road, 1ex., 24.vii.2001, Coll. A. Husian & party; Timli forest, 1ex., 20.xi.2000; 2exs., 15.vi.2001, Coll. N.K. Sinha & party; 2exs., 6.vii.2001, Coll. Arun Kumar & party; 1ex., 10.viii.2001, Coll. J.P. Sati & party.

Distribution : India (Bharamaputra, Ganga, Mahai river system of Assam, Bihar, Uttar Pradesh, Uttarakhand, Orissa, W. Bengal).

Elsewhere : Pakistan, Bangladesh.

Remark : This species exhibits sexual dimorphism and used for aquarium purpose. It inhabits in clear streams water usually.

41. *Puntius gelius* Ham.-Buch

1981. *Puntius gelius*. Jayaram. *Handbk. freshw. Fish. India*. : 100. (distribution and key to species).

Local name : Puti.

Materials examined : None of the specimen collected by me, reported by Husain (1995).

Distribution : India : Assam, Bihar, Orissa, West Bengal, Andhra Pradesh and Uttarkhand.

Elsewhere : Bangladesh and Pakistan.

Remarks : This species is rarely recorded from the state.

42. *Puntius sarana sarana* Ham.-Buch.

1822. *Cyprinus (Cyprinus) sarana* Hamilton-Buchanan, *Fish. Ganges* : 387 (type-locality: ponds and rivers of India).

Local name : Phuta.

English name : Olive Barb.

Material examined : 1ex., 1965, Coll. T. D. Soota; 2exs., 1966, Coll. T. D. Soota; 1ex., Coll. Raj Tilak, Suswa river, Clement Town, Dist. Dehradun, 23.vii. Song river nr. Kansrao FRH, Dist. Dehradun, 12.iv. Ghasi Ram Sot nr. Chiia. Dist. Hardwar, 12.ix.1987, Dehradun dist., Badowala, Asan river, 2exs., 3.v.2000, Coll. A. Husian & party; Timli forest Darrari vill. 1ex., 28.vi.2000; Karva pani, Asharori, 1ex., 5.iv.2002, Coll. J.P. Sati & party.

Distribution : India : Assam, Bihar, Orissa, West Bengal, Andhra Pradesh and Uttarkhand.

Elsewhere : Bangladesh and Pakistan.

Remark : This species used as aquarium fish.

43. *Puntius sophore* Hamilton-Buchanan

1822. *Cyprinus (Puntius) sophore* Hamilton-Buchanan, *Fish. Ganges* : 311 (type-locality : ponds, locality not specified).

Local name :

English name : Soft-fin Barb.

Status : Low Risk-near threatened (LRnt).

Material examined : India : Uttarakhand, 1ex., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 30.vi.1965, Coll. T. D. Soota; 1ex., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T. D. Soota; 1ex., Song river, Satyanarain, Dist. Dehradun, 23.iv.1971, Coll. J. C. Tripathi; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak, 28exs., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj

Tilak, Corbett Tiger Reserve, Dhangarhi gate on way to Mohan, 15exs., 17.i.2004, Reg. No. 4700, Jhirna FRH & around, 6exs., 20.i.2004, Reg. No. 4734, Coll. V. Khanna & party; Pater pani Sot, 6exs., 2.iii.2005, Reg. No. 5322, Coll. A.N. Rizvi & party, Dehradun dist., Badowala, Asan River, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Bhure Shah, 2exs., 10.viii.2001, Coll. J.P. Sati & party; Mohand, Kaluwala, 1ex., 30.vi.2000, Coll. J.P. Sati & party; Karva pani, Asharori, 3exs., 3.xi.2000, Coll. A. Husian & party; Lalo nala, Sodinagar vill. Shakumbhri road, 1ex., 22.ix.2000, Coll. A. Husian & party; Mohand Rao, 3exs., 3.xi.2000; 1ex., 14.ix.2001, Coll. A. Husian & party; Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 2exs., 18.vii.2000; 2exs., 13.x.2000; 1ex., 13.vii.2001; 2exs., 11.x.2001, Coll. N.K. Sinha & party; Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; 1ex., 20.xi.2000, Coll. N.K. Sinha & party; 4exs., 6.vii.2001, Coll. Arun Kumar & party.

Distribution : Throughout India.

Elsewhere : Myanmar, Bangladesh and China.

Remark : This species exhibits sexual dimorphism and used for aquarium purpose. It inhabits in clear streams water usually.

44. *Puntius terio* Ham.-Buch.

1981. *Puntius terio*. Jayaram. *Handbk. freshw. Fish. India* : 109 (distribution and key to species).

Local name : Puti.

Materials examined : None of the specimen collected by me, reported by Husain (1995).

Distribution : India : Assam, Bihar, Orissa, West Bengal, Andhra Pradesh and Uttarkhand.

Elsewhere : Bangladesh and Pakistan.

Remarks : This species is rarely recorded from the state.

45. *Puntius ticto* Hamilton-Buchanan

1822. *Cyprinus (Puntius) ticto* Hamilton-Buchanan, *Fish. Ganges* : 314, (type-locality : south-east parts of Bengal).

English name : Two-spot Barb.

Status : Low Risk- near threatened (LRnt).

Material examined : India : Uttarakhand, 2exs. Suswa river nr. Forest Chauki, Jhablawala Forest Block, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 7exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 20.v.1965, Coll. T. D. Soota; 1ex., Suswa river nr. Phandowala FRH, Dist. Dehradun, 4.vi.1965, Coll. T. D. Soota; 9exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 5exs., Song river, Satyanarain, Dist. Dehradun, 29.vi.1965, Coll. T. D. Soota; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 30 : 65, Coll. T. D. Soota; 21exs., Suswa river, Clement Town, Dist. Dehradun, 23.ii.1965, Coll. T. D. Soota; 15exs., Song river, Kansrao, Dist. Dehradun, 27.x.1965; Coll. Akhlaq Husain; 3exs., Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T. D. Soota; 6exs., Song river, Pritinagar nr. Gaurighat, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 16exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 13.iv.1966, Coll. T. D. Soota; 14exs., Suswa river, Clement Town, Dist. Dehradun, 14.iv.1966, Coll. T. D. Soota; 20exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 15exs., Song river, Kansrao, Dist. Dehradun, 27.v.1971, Coll. K. P. Singh; 3exs., Motichur Rao, Motichur, Dist. Dehradun, 28.x.1971, Coll. Asket Singh; 1ex. (49 mm), Gaj Rao, Gaj Forest Block, Dist. Hardwar, 15.ii.1972, Coll. R. N. Chopra; 14exs., Song river, Satyanarain, Dist. Dehradun, 4.ix.1972, Coll. Raj Tilak; 4exs., Song river, Satyanarain, Dist. Dehradun, 15.ix.1972, Coll. Raj Tilak; 7exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 4exs., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak; 1ex. (23 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 27.iv.1973, Coll. Raj Tilak; 2exs., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak; 7exs. (34-70 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 20.v.1976, Coll. Arun Kumar; 1ex., Song river, Pattapul, Kansrao, Dist. Dehradun, 16.iii.1978, Coll. Raj Tilak; 3exs., Song river, Satyanarain, Dist. Dehradun, 12.xi.1979, Coll. Akhlaq Husain; 1ex., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Jhirna beat No. 3, 1ex., 26.vi.2002, Coll. Romesh Sharma & party; Dhara Chaur, 6 kms. on Jhirna-Kalagarh road, 1ex.,

28.vi.2002, Reg. No. 4445; Jhirna Sot, 1ex., 29.vi.2002, Reg. No. 4474, Coll. J.P. Sati & party, Dehradun dist., Badowala, Asan river, 1ex., 27.vi.2000, Coll. J.P. Sati & party; Kaluwala, Mohand, 1ex., 30.vi.2000, J.P. Sati & party; Karva pani, Asharori, 3exs., 3.xi.2000, Coll. A. Husian & party; Lalo nala, Sodinagar vill. Shakumbhri road, 1ex., 22.ix.2000, Coll. A. Husian & party; Mohand Rao, 3exs., 3.xi.2000; 1ex., 14.ix.2001, Coll. A. Husian & party; Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 2exs., 18.vii.2000; 2exs., 13.x.2000; 1ex., 13.vii.2001; 2exs., 11.x.2001, Coll. N.K. Sinha & party; Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; 1ex., 20.xi.2000 Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party.

Distribution : Throughout India.

Elsewhere : Nepal, Pakistan, Sri Lanka, Bangladesh and Myanmar.

Remark : It is a popular aquarium fish and inhabits in clear and shallow water of stream.

Genus *Tor* Gray **Mahseer**

1833-34. *Tor* Gray. Illustrations of *Indian Zoology*. Hardwicke. 2 : 86 (type-species: *Cyprinus tor* Hamilton Buchanan = *Tor hamiltoni* Gray).

1981. *Tor*. Jayaram. Handbk. *Freshw. Fish. India*. 123. 124 (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Lips fleshy, continuous at angle of mouth. Posterior lip with or without a median lobe and post labial groove continuous, lip condition variable. Barbels 2 pairs, a pair each of maxillary and rostral. Dorsal fin inserted above pelvic fins, with 12 to 13 rays and a strong, stout, smooth spine. A scaly sheath present at base of dorsal fin. Anal fin with 7 to 8 rays. Caudal fin forked. Lateral lines complete with 23 to 28 scales.

Key to the species

1. Length of head considerably greater than body depth *T. putitora*
2. Length of head shorter or more or less equal to body depth *T. tor*
3. Length of head more over equal to body depth *T. chelynoides*

46. *Tor chelynoides* (McClelland)

1839. *Barbus chelynoides* McClelland, : *Asiat. Res.*, 19(2) : 340, (type-locality: Shimla hills).

Local name : Kali Machali.

English name : Black Mahseer.

Status : Endangered (EN).

Material examined : India : Uttarakhand, Corbett Tiger Reserve, Dhara Chaur & Sot, 6 km from Jhirna, 1ex., 27.vi.2002, Reg. No. 4451, Coll. J.P. Sati & party.

Distribution : India : (along Himalayas).

Elsewhere : Pakistan.

Remark : It is an important game fish of the region and also known as angler delights. Now it is listed in the category of Endangered and need immediate protection.

47. *Tor putitora* (Hamilton-Buchanan)

1822. *Cyprinus (Cyprinus) putitora* Hamilton-Buchanan, *Fish. Ganges* : 303, (type-locality : eastern parts of Bengal).

Local name : Sunera Machali.

English name : Yellow-finned Mahseer.

Status : Endangered (EN).

Material examined : India : Uttarakhand, 4exs. (34-40 mm), Song river, Kansrao Railway Bridge, Dist. Dehradun, 22.i.1965, Coll. R. K. Bhatnagar; 3exs. (40-51 mm), Song river, Kansrao, Dist. Dehradun, 5.ii.1965, Coll. R. K. Bhatnagar; 4exs. (90-137 mm), Motichur Rao, Koelpur Forest Block, Dist. Dehradun, 25.ii.1964, Coll. T. D. Soota; 15exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 20.v.1965, Coll. T. D. Soota; 8exs., Song river, Satyanarain, Dist. Dehradun, 29.vi.1965, Coll. T. D. Soota; 1ex., Song river, Kansrao, Dist. Dehradun, 27.x.1965, Coll. Akhlaq Husain; 7exs. Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T. D. Soota; 2exs., River Ganga, Gaurighat nr. Satyanarain, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 2exs., Song river nr. Kansrao FRH, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 3exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 13.iv.1966, Coll. T. D. Soota; 31exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll.

Asket Singh; 2exs., Song river Dr. Kansrao Railway Station, Dist. Dehradun, 17.xii.1966, Coll. Asket Singh; 3exs., Song river, Satyanarain, Dist. Dehradun, 29.iv.1967, Coll. J. C. Tripathi 1ex., Motichur Rao, Motichur, Dist. Dehradun, 6.vii.1968, Coll. M. K. Biswas 1ex., Motichur Rao, Motichur, Dist. Dehradun, 23.v.1970, Coll. M. K. Biswas, 1ex., (158 mm). Gaj Rao, Gaj Forest Block, Dist. Hardwar, 15.ii.72, Coll. R. N. Chopra; 1ex., Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak 11exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 1ex., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak; 3exs. Song river nr. Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 1ex., Small stream, 5 km west of FRH, Chila, Dist. Pauri, 12.vi.1987, Coll. N. K. Sinha 3exs., Ghasi Ram Sot nr. FRH, Chila, Dist. Pauri, 9.ix.1987, Coll. Raj Tilak; 2exs., Rawasan river, Laldhang, Dist. Pauri, 10.ix.1987, Coll. Raj Tilak; 29exs., Modhal Sot Dr. FRH, Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 30exs., Ghasi Ram Sot Dr. FRH, Chila, Dist. Pami, 12.ix.1987, Coll. Raj Tilak; 3exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak and specimens seen in local catch from river Ganga and canal near Chila, Corbett Tiger Reserve, Dulwa Sot, 6 km from Sultan on way to Dhikala, 3exs., 25.vi.2002, Dhumanda Road, 3 km from Garial, 5exs., 25.vi.2002, Reg. No. 4433, Pater Pani Sot, 6 kms on Saidil dam road from Kalagarh, 4exs., 29.vi.2002, Reg. No. 4485, Coll. J.P. Sati & party; Dhangarhi gate on way to Mohan, 1ex., 17.i.2004, Reg. No. 4700, Pater Pani Sot, 4exs., 21.i.2004, Reg. No. 4735, Coll. V. Khanna & Party; Jhirna FRH & around, 1ex., 28.ii.2005, Reg. No. 5199; Kharar Sot, 3exs., 28.ii.2005, Reg. No. 5201; Kotirao Sot, 4 km from Jhirna FRH, 13exs., 1.ii.2005; Reg. No. 5310, Pater Pani Sot, 6exs., 2.iii.2005, Reg. No. 5322, Coll. A.N. Rizvi & Party.

Distribution : India (along Himalayas).

Elsewhere : Pakistan; Afganstan; Nepal; Banglades.

Remark : It is an important game fish of the region and also known as angler delights. Now it is listed in the category of Endangered and need

immediate protection. In CTR and Nayar valley there breeding ground is well protected and due to same there diversity is good and in other PAs same type of law regulation should be maintained.

48. *Tor tor* (Hamilton-Buchanan)

1822. *Cyprinus (Cyprinus) tor* Hamilton-Buchanan., Fish. Ganges : 305 (type-locality : Mahanadi river).

Local name : Lal Machali.

English name : Red-finned Mahseer.

Status : Endangered (EN).

Material examined : India : Uttarakhand, : 6exs., (145-205 mm), Song river nr. Railway Station, Kansrao, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 2exs, Suswa river nr. Phadowala FRH, Dist. Dehradun, 4.vi.1965, Coll. T. D. Soota; 1ex., Song river, Kansrao, Dist. Dehradun, 27.x.1965, Coll. Akhlaq Husain; 3exs., Song river nr. Kansrao FRH, Dist. Dehradun, 2.iv.1966, Coll. T.D. Soota; 4exs., Song river, Satyanarain, Dist. Dehradun, 5.vi.1970, Coll. J. C. Tripathi; 1ex., Song river, Satyanarain, Dist. Dehradun, 23.iv.1971, Coll. J. C. Tripathi; 5exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 15.ix.1972, Coll. Raj Tilak; 2exs. (90-105 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 16.ii.1978, Coll. Raj Tilak; 3exs., Ganga canal seepage, ca. 7 km east of Chila, Dist. Paud, 11.ix.1987, Coll. Raj Tilak; 2exs., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Corbett Tiger Reserve, Pater Pani Sot, 6 km on Saidil dam road from Kalagarh, 1ex., 29.vi.2002, Reg. No. 4485, Coll. J. P. Sati & party; Pater Pani Sot, 1ex., 6.iv.2003, Reg. No. 4648, Champion Ramganga, 13exs., 7.iv.2003, Reg. No. 4685, Mohan, 1ex., 17.i.2004, Reg. No. 4697, Jhirna FRH, 12exs., 20.i.2004, Reg. No. 4734, Coll. V. Khanna & Party, Dehradun dist., Mohand Rao, D. Dun-Delhi road, 2ex. 18.vii.2001, Bhure Shah nala, 1ex, 16.ix.2001, Coll. N. K. Sinha & party.

Distribution : India (Foothills of Himalaya, Assam, Bihar, Madhya Pradesh).

Elsewhere : Bangladesh and Pakistan.

Remark : It is an important game fish of the region and also known as angler delights. Now it is listed in the category of Endangered and need immediate protection. This species can be used for the biological control of aquatic weeds Tilak & Sharma (1982).

Genus *Ctenopharyngodon* Steindachner
Grass Carp, White Amur

1866. *Ctenopharyngodon* Steindachner, *Verh. Zool. Bot. Ges. Wien.* 16 : 782 (type-species : *Ctenopharyngodon laticeps* Steindachner).

1981. *Ctenopharyngodon*, Jayaram, *Handbk. Freshw. Fish. India.* : 131, (genus characters and distribution).

Body almost elongated, subcylindrical anteriorly and laterally compressed posteriorly, with abdomen rounded. Mouth terminal, maxilla not extending to front margin of the orbit. Upper jaw slightly longer than lower and protractile. Barbels absent. Dorsal fin origin slightly ahead of pelvic fins, nearer to tip of snout than to base of caudal fin, with 10 rays and without any spine. Anal fin with 10 rays, Caudal fin forked. Lateral lines complete with 40 to 45 scales.

49. *Ctenopharyngodon idellus* (Valenciennes)

1841. *Leuciscus idella* Valenciennes, *Hist. Nat. Poiss.*, 17 : 342 (type-locality : China).

1981. *Ctenopharyngodon idella*, Jayaram, *Handbk. Freshw. Fish. India* : 132 (distribution).

Local name : Grass Carp.

English name : Grass Carp.

Materials examined : Uttarkhand : 2exs. Ditch nr. Chilla Barrage, Haridwar, J.P. Sati & Party; 1ex. Stream nr. Tan Pani (Chidharwala), Dehradun, A. Bahuguna, 11-v-2003.

Local name : Puti.

Distribution : This fish is naturally available in Amur region (Siberia and Manchuria). China, U. S. S. R. lower reaches of River Amur. The ever consignment of grass carp brought to India from Hong Kong, originally brought to Hong Kong from mainland of China and kept there stunted in ponds before being transplanted to India on 29th December, 1959 and thereafter was distributed to various states of India (Jhingran, 1983).

Remarks : This fish has been introduced in different parts of state by the State Fisheries department.

Genus *Crossocheilus* van Hasselt

1823. *Crossocheilus* van Hasselt, *Algem. Konst. Letterbode.* 2 : 132 (type-species : *Crossocheilus oblong* van Hasselt).

1981. *Crossocheilus*. Jayaram. *Handbk. Freshw. Fish India*. : 133 (genus characters and distribution).

Body almost elongated with abdomen rounded. Mouth inferior. Upper and lower lip not continuous. Lower lip without any suctorial disc. Barbels 1 pair, rostral. Dorsal fin inserted considerably nearer to tip of snout than to base of caudal fin, with 10 to 11 rays and no spine. Anal fin with 7 rays. Caudal fin deeply forked. Lateral lines complete, with 38 to 40 scales.

50. *Crossocheilus latius* (Hamilton-Buchanan)

1822. *Cyprinus (Garra) latius* Hamilton-Buchanan, *Fish. Ganges* : 345, (type-locality : Tista river).

Local name :

English name : Gangentic Latia.

Status : Data deficient (D.D).

Material examined : India : Uttarakhand, : 1ex., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 18.xii.1964, Coll. T.D. Soota; 25exs. Mohand Rao nr. Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh; 1ex., Song river, Satyanarain, Dist. Dehradun, 15.ix.1972, Coll. Raj Tilak; 1ex., Ganga canal seepage, ca 7 km. east of Chila, Dist. Pauri 11.ix.1987, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Corbett Tiger Reserve, Pater Pani Sot, 6 km on Saidil dam road from Kalagarh, 8exs, 29.vi.2002, Reg. No. 4485, Coll. J.P. Sati & party; Paterpani Sot, 1ex., 6.iv.2003, Reg. No. 4648, Coll. V. Khanna & party; Ramganga river, nr. Gharial 6exs., 24.ii.2005, Reg. No. 5156, Coll. A.N. Rizvi & Party, Dehradun dist., Sankra nala, Badshahibagh road, 1ex., 12.ix.2000, Mohand Rao, D. Dun-Delhi road, 2ex., 14.ix.2001 Coll. A. Husian & party, Mohand Rao, D. Dun-Delhi road, 4ex., 14.iv.2001 Coll. N.K. Sinha & party.

Distribution : India (Bharamaputra, Ganga river system, Deolali, Maharasta, Uttarkhand).

Elsewhere : Bangladesh, Nepal and Pakistan.

Remark : It inhabits in between the boulders at the bottom of stream.

Genus *Garra* Hamilton Buchanan

1822. *Garra* Hamilton Buchanan. *Fish. Ganges*. : 343. (type-species : *Garra lamta* Hamilton Buchanan).

1981. *Garra*, Jayaram. *Handbk. Freshw. Fish. India*. 134 (genus characters and distribution).

Body elongated, subcylindrical, compressed with abdomen rounded. Mouth inferior, transverse and semicircular. Sometimes a proboscis present. A suctorial disc of semi-cartilaginous pad present on the chin, formed on the lower lip. Barbels 2 pairs or 1 pair. Dorsal fin inserted slightly anterior to pelvic fins, with 9 to 12 rays and without any spine. Anal fin with 6 to 8 rays. Caudal fin slightly emarginate. Lateral line complete with 32 to 40 scales.

Key to the species

1. Proboscis a single projection without lateral lobes *G. gotyla gotyla*
2. Proboscis trilobed projection, L. line scales 32-35 *G. lamta*

51. *Garra gotyla gotyla* (Gray)

1830-34. *Cyprinus gotyla* Gray, *III. Indian Zool.*, (type-locality : Northern India).

English name : Stone fish.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand : 3exs., Mohand Rao, Mohand, Dist. Hardwar, 13.xi.1964, Coll. T. D. Soota; 13exs., Mohand Rao, Mohand, Dist. Hardwar, 20.xi.1964, Coll. T. D. Soota; 1ex., Mohand Rao, Mohand, Dist. Hardwar, 27.xi.1964., Coll. T. D. Soota; 15exs., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 18.xii.1964, Coll. T. D. Soota; 1ex. (100 mm), Suswa river nr. Forest Chauki, Jhabrawala Forest Block, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 1ex. (100 mm), Motichur Rao, Koelpura Forest Block, Dist. Dehradun, 25.ii.1965, Coll. T. D. Soota; 6exs., Mohand Rao, Mohand, Dist. Hardwar, 30.iv.1965, Coll. T. D. Soota 9exs : Motichur Rao nr. Motichur FRH, Dist. Dehradun, 20.v.1965, Coll. T. D. Soota 1ex., Suswa river nr. Phandowala FRH, Dist. Dehradun, 4.vi.1965, Coll. T. D. Soota; 10exs., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 8exs., Motichur Rao, Motichur, Dist. Dehradun, 30.vi.1965, Coll. T. D. Soota; 4exs., Mohand Rao nr. Mohand, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 1ex., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 14.iv.1966, Coll.

T. D. Soota.; 1ex., River Ganga, Gaurighat nr. Satyanarain, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 2exs., Song river nr. Kansrao FRH, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota, 9exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 13.iv.1966, Coll. T. D. Soota; 1ex., Suswa river, Clement Town, Dist. Dehradun, 14.iv.1966, Coll. T. D. Soota; 1ex., Mohand Rao nr. Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh; 25exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 2exs., Motichur Rao, Motichur, Dist. Dehradun, 6.viii.1968, Coll. M. K. Biswas; 2exs., Song river, Satyanarain, Dist. Dehradun, 5.vi.1970, Coll. J. C. Tripathi, 1ex., Motichur Rao, Motichur, Dist. Dehradun, 28.x.1971, Coll. Asket Singh; 5exs. (73-102 mm), Gaj Rao, Gaj Forest Block, Dist. Hardwar, 15.ii.1972, Coll. R. N. Chopra. 6exs. Motichur Rao, Motichur, Dist. Dehradun, 28.xii. 1972, Coll. Raj Tilak; 3exs. (44-65 mm), Mohand Rao, Mohand, Dist. Hardwar, 26.ix.1973, Coll. Raj Tilak 6exs (53-85 mm) Mohand Rao, Mohand, Dist. Hardwar, 30.x.1986, Coll. Raj Tilak; 14exs., Rawasan river, Laldhang, Dist. Pauri, 10.ix.1987, Coll. Raj Tilak; 4exs. Motichur Rao, Motichur, Dist. Dehradun 14.ix.1987, Coll. Raj Thak; exs., Mohand Rao, Mohand, Dist. Hardwar, 17.ix.1987, Corbett Tiger Reserve, Dhumanda Road, 3 km from Gariyal, 5exs., 25.vi.2002, Reg. No. 4433, Pater Pani Sot, 6 kms on Saidil dam road from Kalagarh, 4exs., 29.vi.2002, Reg. No. 4485, Coll. J.P. Sati & party; Dhangarhi gate on way to Mohan, 1ex., 17.i.2004, Reg. No. 4700, Pater Pani Sot, 4exs., 21.i.2004, Reg. No. 4735, Coll. V. Khanna & Party; Jhirna FRH & around, 1ex., 28.ii.2005, Reg. No. 5199; Kharar Sot, 3exs., 28.ii.2005, Reg. No. 5201; Kotirao Sot, 4 km from Jhirna FRH, 13exs. 1.ii.2005; Reg. No. 5310, Pater Pani Sot, 6exs., 2.iii.2005, Reg. No. 5322, Coll. A.N. Rizvi & Party, Dehradun dist., Badowala, Asan river, 7ex., 27.vi.2000, Coll. J.P. Sati & party; Kaluwala, Mohand, 1ex., 30.vi.2000, J.P. Sati & party; Karva pani, Asharori, 11exs., 3.xi.2000, Coll. A. Husian & party; Lalo nala, Sodinagar vill. Shakumbhri road, 1ex., 22.ix.2000, Coll. A. Husian & party; Mohand Rao, 3exs., 3.xi.2000; 13ex., 14.ix.2001, Coll. A. Husian & party; Asan river, Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 32exs., 18.vii.2000; 2exs.,

13.x.2000; 1ex., 13.vii.2001; 24exs., 11.x.2001, Coll. N.K. Sinha & party; stream nr. Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; Badowal, Asan River, 18ex., 12.ix.2001, Coll. A. Husian & party; Timli forest, 11ex., 27.xi.2001; 10ex., 19.x.2002, Coll. J.P. Sati & party.

Distribution : India (All along the Himalaya).

Elsewhere : Nepal, Bangladesh, Pakistan and Srilanka.

Remark : It is found in abundance in torrential water, and adhesive pouch help them to bear the fast current of water.

52. *Gara lamta* (Hamilton-Buchanan)

1822. *Cyprinus lamta* Hamilton-Buchanan Fish. Ganges : 343, (type-locality : Rapti river, Gorakhpur, U.P.).

Local name :

English name : Stone fish.

Status : Data Deficient (DD).

Material examined : India : Uttarakhand : Corbett Tiger Reserve, Pater Pani Sot, 6 kms on Saidil dam road from Kalagarh, 2exs., 29.vi.2002, Reg. No. 4485, Coll. J.P. Sati & party; Jhirna FRH & around, 6exs., 28.ii.2005, Reg. No. 5199, Kotirao Sot, 4 km. from Jhirna FRH, 11exs., 1.iii.2005, Reg. No. 5310; Pater Pani Sot, 6exs., 2.iii.2005, Reg. No. 5322, Coll. A.N. Rizvi & party.

Distribution : India : Kashmir to Kumaon, Assam, West-Bengal.

Elsewhere : Sri Lanka and Myanmar.

Remark : It is found in abundance in torrential water, and adhesive pouch help them to bear the fast current of water.

Key to the Genera

1. Mouth inferior; hard and papillated labial plate (sucker) on chin present; lower jaw with a hard, horny and sharp edge *Schizothorax*
2. Barbels two pairs; last undivided ray of dorsal fin osseous and serrated; pharyngeal teeth in three rows *Schizothoraichthys*

Genus *Schizothoraichthys*

1962. *Schizothoraichthys* Misra, *Rec. Indian Mus.*, 57 : 48 (type-species : *Schizothorax esocinus* Heckel); Tilak, 1987, *Fauna of India, Pisces* : 118 (Review).

Body elongate and subcylindrical. Head large; snout obtuse, generally smooth but often studded with wart-like protuberances. Mouth arched, inferior or subinferior; lips thick and fleshy, continuous at angles of mouth; lower labial fold often interrupted; lower jaw without a horny edge; hard papillated structure (so-called sucker) on chin absent. Barbels two pairs, a rostral and maxillary pair. Pharyngeal teeth in three rows. Dorsal fin inserted about opposite to pelvic fins; last undivided ray of dorsal fin osseous, moderately strong and serrated posteriorly. Caudal fin forked. Scales very small, 95 to 190 in lateral line.

53. *Schizothoracichthys progastus* (McClelland)

1839. *Oreinus progastus* McClelland, *Asiat. Res.*, 19 : 274, pl. 40, fig.4 (type-locality : Upper Assam).

1982. *Schizothoracichthys progastus* : Tilak and Sharma, *Game Fishes of India and Angling* : 77, figs 25-27.

Local Name : Ansela.

English Name : Snow Trout.

Material Examined : Uttarkhand : 12exs. Sango ka talab, Sahiya, Dehradun 23-v-2001. Alu Mandi, Chakrata; 5exs. Seligothan, nr. Village. kotla, 15-i.2001, Dehradun; 14exs. Satiplui Town, Nayar river, 13-4-2003, Pauri Garhwal, Coll. D. P. Uniyal & party.

Distribution : India : Himalayan States.

Elsewhere : Nepal, Pakistan, Myanmar, Bhutan.

Remark : This is an important food fish of hill region of the state and aslo cultured by locals.

Genus *Schizothorax* Heckel

1838. *Schizothorax* Heckel (partim), *Fische aus Caschmir* : 11 (type-species : *Schizothorax plagiostomus* Heckel = *Cyprinus richardsonii* Gray); Menon, 1971, *Rec. zool. Surv. India*, 63 : 195 (Review).

1839. *Oreinus* McClelland (partim), *Asiat. Res.*, 19 : 273 (type-species : *Oreinus guttatus* McClelland); Tilak, 1987, *Fauna of India, Pisces* : 47-79 (Status discussed).

Body elongate and subcylindrical; ventral surface of head and anterior part of body flattish. Head fleshy, short, somewhat cone-shaped and blunt. Snout usually smooth, covered with warts in male. Interorbital space broad and flat. Mouth

inferior, wide and slightly arched; lips fleshy and continuous, marginally sharply attenuated, lower lip papillated and reflected from jaw; margin of lower jaw sharp, covered with firm and hard horny cartilage; a strip of hard papillated labial plate at chin present. Barbels two pairs (rostral and maxillary). Pharyngeal teeth in three rows. Dorsal fin inserted about opposite to pelvic fins; its last undivided ray osseous, strong and serrated posteriorly, shorter than head. Caudal fin deeply emarginate. Scales very small and elliptical; lipidosis irregular.

Key to the species

1. Head length 4 to 5 times in standard length *S. richardsonii*
2. Head shorter, 5.1 to 5.6 times in standard length *S. kumaonensis*
3. Head length more than 5 times in standard length *S. sinatus*
4. Cleft of mouth deep. Sides of body and back with small irregular spots *S. esocinus*
5. A horizontal line drawn from tip of snout to centre of caudal fin base cuts through half of eyes *S. curvifrons*

54. *Schizothorax esocinus* (Heckle)

1887. *Cyprinus esocinus* (Heckle) Day, *Fishes of India* : 521 : Day, 1889, *Fauna Br. India, Fishes*, 1 : 255.

Local name : Ansela.

English name : Snow Trout.

Materials Examined : Uttarakhand : Corbett Tiger Reserve, Pater Pani Sot, 6 kms on Saidil dam road from Kalagarh, 12exs., 29.vi.2002, Coll. J.P. Sati & party; Jhirna FRH & around, 6exs., 28.ii.2005, Kotirao Sot, 4 km. from Jhirna FRH, 17exs., 1.iii.2005, Pater Pani Sot, 18exs., 2.iii.2005, Coll. A.N. Rizvi & party.

Distribution : India : Himalayan region.

Elsewhere : Bhutan, Nepal, Pakistan, and Afghanistan.

Remark : This is an important food fish of hill region of the state and aslo cultured by locals.

55. *Schizothorax curvifrons* (Heckle)

1887. *Cyprinus curvifrons* (Heckle) Day, *Fishes of India* : 522 : Day, 1889, *Fauna Br. India, Fishes*, 1 : 256.

Local name : Ansela.

English name : Snow Trout.

Materials Examined : Uttarakhand : Corbett Tiger Reserve, Pater Pani Sot, 02exs., 29.vi.2002, Coll. J.P. Sati & party; Jhirna FRH & around, 6exs., 28.ii.2005, Kotirao Sot, 4 km. from Jhirna FRH, 17exs., 1.iii.2005, Pater Pani Sot, 18exs., 2.iii.2005, Coll. A.N. Rizvi & party.

Distribution : India : Himalayan region.

Elsewhere : Bhutan, Nepal, Pakistan, and Afganistan.

Remark : This is an important food fish of hill region of the state and aslo cultured by locals.

56. *Schizothorax kumaonensis* Menon

1971. *Schizothora kumaonensis* Menon, *Rec. Zool. Surv. India*, **63** : 205, pl. 1, fig. 3 (type-locality : Nanital, Uttar Pradesh); Tilak, 1987, *Fauna of India, Pisces* : 62, fig. 25-28.

Local name : Ansela.

English name : Kumaon snowtrout.

Materials examined : Uttarkhand : Corbett Tiger Reserve, Pater Pani Sot, 07exs., 29.vi.2002, Coll. J.P. Sati & party; EIA, Kali river, Jalgabi, Pithoragarh, 12exs. 12-7-2001, Coll. Arun Kumar & Party.

Distribution : Kumaon Himalayas (Uttarkhand).

Remark : This is an important food fish of the region and is endemic to the area.

57. *Schizothorax sinuatus* (Heckel)

1887. *Cyprinus sinuatus* (Heckle) Day, *Fishes of India* : 522 : Day, 1889, *Fauna Br. India, Fishes*, **1** : 256.

Local name : Ansela.

English name : Snow Trout.

Materials Examined : Uttarakhand : Aglar river, Bunder kot, Tehri Garhwal, 12exs. 13-v-2003, D.P. Uniyal; Corbett Tiger Reserve, Pater Pani Sot, 12exs., 30.vi.2002, Coll. J.P. Sati & party; Jhirna FRH & around, 6exs., 28.ii.2005, Kotirao Sot, 4 km. from Jhirna FRH, 17exs., 1.iii.2005, Pater Pani Sot, 7exs., 4.iii.2005, Coll. A.N. Rizvi & party.

Distribution : India : Himalayan region.

Elsewhere : Bhutan, Nepal, Pakistan, and Afganistan.

Remark : This is an important food fish of hill region of the state and aslo cultured by locals.

58. *Schizothorax richardsonii* (Gray)

1887. *Cyprinus richardsonii* (Heckle) Day, *Fishes of India* : 522 : Day, 1889, *Fauna Br. India, Fishes*, **1** : 256.

Local name : Ansela.

English name : Snow Trout.

Materials Examined : Uttarakhand, Satpuli Town, Nayar river, 18exs., 12-12-2002; Marora, Banghat, Western Nayar river, 13-12-2003, Pauri Garhwal, Corbett Tiger Reserve, Pater Pani Sot, 02exs., 23.vi.2002, Coll. J.P. Sati & party; Jhirna FRH & around, 6exs., 28.ii.2005, Kotirao Sot, 4 km. from Jhirna FRH, 17exs., 1.iii.2005, Pater Pani Sot, 11exs., 5.iii.2005, Coll. A.N. Rizvi & party.

Distribution : India : Himalayan region.

Elsewhere : Bhutan, Nepal, Pakistan, and Afganistan.

Remark : This is an important food fish of hill region of the state and aslo cultured by locals.

Family PSILORHYNCHIDAE

Body flattened on ventral surface. Head and ventral surface of body without scales. Mouth small, transverse and inferior. Barbels absent. Paired fins horizontally inserted, with outer rays simple; atleast 4 of pectoral and 2 of pelvic fin rays simple. Dorsal fin with 10 to 12 rays. Anal fin with 7 rays. Caudal fin forked, upper lobe longer. Lateral line complete, with 32 to 34 scales.

Genus *Psilorhynchus* McClelland

1839. *Psilorhynchus* McClelland. *Asiat. Res.*, **19** : 300. (type-species : *Cyprinus balitora* Hamilton Buchanan).

1981. *Psilorhynchus*, Jayaram. *Handbk. Freshw. Fish. India*. : 139-140 (genus characters and distribution).

Characters of genus are same as those of family characters.

59. *Psilorhynchus balitora* (Ham.-Buch.)

1822. *Cyprinus balitora* Hamilton Buchanan. *Fish. Ganges*. : 348. 394 (type-locality : rivers of north-eastern Bengal).

1877. *Psilorhynchus balitora*, Day. *Fish. India*, : 527. pl. 121. fig. 7 and pl. 122. fig. 3; 1889. Day *Fauna Br. India, Fish*, 1 : 244-245. fig. 86.

1981. *Psilorhynchus balitora*, Jayaram, Handhk. *Freshw. Fish. India*, : 140 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : None of the sample is collected, reported by Husain (1995).

Distribution : India : Assam, Tripura (South Tripura district), North Bengal, Yamuna river, in Delhi, Gomti river, Lucknow, Uttarkhand.

Elsewhere : Bangladesh and Myanmar.

Remarks : This fish is found to inhabit in hill streams and rapids. Commercially less important fish due to its small size.

Family BALITORIDAE

Body strongly depressed; head and abdomen flattened. Eyes small, almost on dorsal aspect of head, not visible from underside of head. Mouth inferior, arched, with both jaws covered by a horny sheath; rostral flap divided into three lobes, the median one largest between rostral barbels; both lips with one or two rows of papillae; lower lip not interrupted. Rostral barbels four, stout, arranged in a single row; one maxillary barbel at corner of mouth. Gill-openings extending

Genus *Balitora* Gray

1830. *Balitora* Gray, Illustrations of Indian Zoology, 1 : pl. 88, fig. 1 (type-species : *Balitora brucei* Gray); Hora, 1941, Rec. Indian Mus., 43(2) : 222 (Redefinition); Silas, 1953, Rec. Indian Mus., 50(2) : 205-208 (Review); Menon, 1987, Fauna of India, Pisces, 4 : 228-231 (Review); Kottelat, 1988, Revue suisse Zool., 95(2) : 489-500 (Revision).

Body strongly depressed; head and abdomen flattened. Eyes small, almost on dorsal aspect of head, not visible from underside of head. Mouth inferior, arched, with both jaws covered by a horny sheath; rostral flap divided into three lobes, the median one largest between rostral barbels; both lips with one or two rows of papillae; lower lip not interrupted. Rostral barbels four, stout, arranged in a single row; one maxillary barbel at

corner of mouth. Gill-openings extending on the ventral surface of head. Dorsal fin inserted above or slightly anterior to pelvic fins, with 11 or 12 rays (8 or 9 branched); anal fin short, with seven rays (five branched). Paired fins broad and horizontal; pectoral fin with 8 to 10 simple and 10 to 12 branched rays; two simple pelvic finrays; adhesive pads present on ventral surface of the 8 to 11 anteriormost pectoral rays and three or four anteriormost pelvic rays. Caudal fin forked. Scales small.

60. *Balitora brucei* Gray

Balitora brucei Gray, 1830, Illustrations of Indian Zoology, 1 : pl. 88, fig. 1 (type locality : Priang river nr. Cherrapunji, Meghalaya); Menon, 1987, *Fauna of India, Pisces*, 4 : 228, pl. 9, fig. 3; Kottelat, 1988, Revue suisse Zool., 95(2) : 492 (Type-locality restricted).

Balitora macula to Gray, 1830, Illustrations of Indian Zoology, 1 : pl. 88, figs 2, 2a (type-locality : mountain streams of India); Hora, 1920, Rec. Indian Mus., 19(5) : 196, fig. 2 and pl. 11, fig. 1; Kottelat, 1988, Revue suisse Zool., 95(2) : 492 (Status discussed).

English name : Gray's stone loach.

Materia Examined : Uttarkhand : Jwalpa devi, Eastern Nayar river, 2exs. 12-3-2003, Marora, Banghat, Nayar river, 6exs. 14-3-2003, Pauri Garhwal, Coll. D. P. Uniyal party.

Distribution : Through out India.

Family COBITIDAE

Loaches

Body worm-like to fusiform. Mouth subterminal. Lips thick, fleshy and papillated. Pharyngeal teeth in one row. Jaws and palate without teeth. Barbels present. An erectile spine present near the orbit. Vertical fins spineless. Lateral line complete, incomplete or absesnt. Body with cycloid scales when present, usually immersed in mucous, sometimes present on head. Swimbladder entirely or partially enclosed in a bony capsule.

Key to the Genus

1. Lateral line present. A bifid suborbital spine below or ahead of the orbit present *Botia*

2. Lateral line complete or incomplete. Mouth inferior. No preorbital spine on head
..... *Neomachilus*
3. Lateral line absent. Eyes not bulging, small. Snout blunt without any tubercles. Scale small
..... *Lepidocephalus*

Genus *Botia* Gray

1831. *Botia* Gray, *Zool. Misc.* : 8 (type-species : *Botia almorae* Gray).
1981. *Botia*, Jayaram, *Handbk. Freshw. Fish. India* : 175 (genus characters and distribution).

Body oblong, short, moderately deep with abdomen rounded. A bifid suborbital spine below or ahead of the orbit present. Barbels 3 or 4 pairs, 2 pairs rostral, united at their bases. Dorsal fin with 10 to 15 rays. Anal fin with 7 to 8 rays. Caudal fin forked or emarginate. Lateral line present.

Key to the species

1. Snout very long, its length considerably more than the postorbital part of head
..... *B. rostrata*
2. Snout not very long, its length equal to or less than the postorbital part of head
..... *B. dario*
3. Suborbital spine long, extends to below posterior edge of orbit; head and body reticulated *B. almorhae*
4. Suborbital spine shorter, not extending to below posterior edge of orbit; body with a series of Y-shaped markings
..... *B. lohachata*

61. *Botia almorhae* Gray

1831. *Botia almorhae* Gray, *Zool. Misc.*; 8 (type-locality : Almorha, Uttar Pradesh); Day, 1878, *Fishes of India*: 607, pl. 154, fig. 5; Day, 1889, *Fauna Br. India*, *Fishes*, 1 : 217; Menon, 1949, *J. Bombay nat. Hist. Soc.*, 48(2) : 542.

Local name : Gadra.

English name : Almora loach.

Materials Examined : Uttarkhand : Ramaganga Reserviour, nr. Dhikla, CTR, Nanital, 22exs., 12-6-2003, Coll. D.P. Uniyal & party.

Distribution : India : Almorha Hills, western Himalaya.

Elsewhere : Nepal.

Remark : This fish not carry any economic importance.

62. *Botia dario* (Hamilton Buchanan)

1822. *Cobilis dario* Hamilton Buchanan, *Fish. Ganges* : 354 Pl. 29. fig. 95 (type-locality : rivers of Bengal).

1878. *Botia dario*. Day, *Fish. India*: 606, pl. 154, fig. I :
1889. Day, *Fauna Br. India, Fish.* 1 : 216.

Status : Endemic.

Local name : Ranimach.

English name : Loach.

Materials examined : None of the sample were collected by me, reported by Husian (1995).

Distribution : India : Assam, Bihar, throughout Tripura, West Bengal, Meghalaya, Uttar Pradesh, Punjab and Uttarkhand.

Elsewhere : Bangladesh.

63. *Botia lohachata* Chaudhari

1909. *Botia loachata* Chaudhari, *Rec. Indian Mus.*, 3(4) : 339 (type-locality : Ropar, Punjab).

Status : Endangered (EN).

Material examined : India : Uttarakhand : Corbett Tiger Reserve, Dhikala Road, Leed Khali Chaur, 1ex., 22.vi.2002, 2exs., Reg. No. 4379; Jhima Soat, 2exs., 29.vi.202, Reg. 4478, Coll. J.P. Sati & party.

Distribution : India : Gandak river, Sarna district, Bihar, Dehi, Punjab, Rajasthan and Uttarakhand.

Elsewhere : Bangladesh, Nepal, Pakistan and Sindh.

Remark : It inhabits in the crevice and difficult to catch. This species listed in the Endangered category.

64. *Botia rostrata* Gunther

1868. *Botia rostrata* Gunther, *Cat. Fish. Brit. Mus.*, 7 : 367 (type-locality : Bengal, Ganges).

1878. *Botia geto* Day Hamilton-Buchanan (in part), *Fish. India*: 606-607, pl. 154, fig. 2; Day (nec. Hamilton-Buchanan) (in part), 1889, *Faun. Brit. India Fish*, 1 : 216-217.

1932. *Botia dayi* Hora, *Rec. Indian Mus.*, 34(4) : 571-573; Banarescu & Nalbant, 1968. *Mitt. Hamburg. Zool. Mus. Inst.* 65 : 327-351.

Local name : Boto.

English name : Gangetic Loach.

Material examined : 1 ex., Mohand Rao or Lalpul, Mohand, Dist. Hardwar, 26.ii.1965, Coll. T.D. Soota.

Distribution : India (along Himalaya, Madhya Pradesh) and Uttarkhand.

Elsewhere : Pakistan.

Remarks : It hides itself in crevices and among stones.

Genus *Lepidocephalus* Bleeker

1858. *Lepidocephalus* Bleeker, *Nat. Tijdschr. Ned. Inde*, 15 : 303 (type-species : *Cobitis macrochir* Bleeker).

1981. *Lepidocephalus* Jayaram. *Handbk. Freshw. Fish. India* : 180 (genus characters and distribution).

Body elongated and moderately compressed. Mouth inferior. Lips fleshy, thick, continuous at angle of mouth; lower lip interrupted in middle. Barbels 3 pairs. A large erectile bifid spine below or in front of the orbit. Dorsal fin with 8 to 9 rays and without any spine. Anal fin with 7 to 8 rays. Caudal fin truncate or slightly emarginate. Scales small. Lateral line absent.

Key to the species

1. 40 rows of scales present between anal fin base and back of body. Pectoral fin with 10 rays *L. caudofurcatus*
2. 0 to 30 rows of scales present between anal fin base and back of body. Pectoral fin with 7 to 8 rays 2
2. Two intensely dark spots encircled in white rings present on caudal fin *L. annandalei*
Only one dark spot present on caudal fin base *L. guntea*

65. *Lepidocephalus annandalei* Chaudhari

1912. *Lepidocephalus annandalei* Chaudhuri, *Rec. Indian Mus.*, 7 : 442, pl. 40, figs. 3, 3a, 3b (type-locality : Mahananda and Teesta rivers at Siliguri and Jalpaiguri, West Bengal).

1981. *Lepidocephalus (Lepidocephalichthys) annandalei*, Jayaram. *Handbk. Freshw. Fish. India* : 181-182 (distribution and key to species).

Local name : Gunte, Gutum.

English name : Loach.

Materials examined : Uttarkhand : Chila rahge, RNP, 4 exs., 12-3-2004, Dehradun, D.P. Uniyal & Party; Ramganga reservoir, nr. Dhikala, CTR, Nanital, 2 exs. 15-2-2003, Coll. J.P. Sati & Party.

Distribution : India : Assam, Tripura (South Tripura district), Meghalaya and Eastern Himalayas and Uttarkhand.

66. *Lepidocephalus caudofurcatus* Tilak & Husain

1978. *Lepidocephalus caudofurcatus* Tilak & Husain, Matsya, (3) : 60, figs 1-3 (type – locality : Rishikesh, Uttarkhand).

Common name : Tript.

English name : Tilak loach.

Status : Endangered.

Material Examined : None of the sample were collected by me, reported by Husain (1995).

Distribution : India : Doon valley, Uttarkhand and Brahmaputra drainage (Assam).

Remark : This fish carry no economic importance.

67. *Lepidocephalus guntea* (Hamilton-Buchanan)

1822. *Cobitis guntea* Hamilton-Buchanan. *Fish. Ganges* : 353 (type-locality : ponds and freshwater rivers of Bengal.).

Local name : Gadra.

English name : Guntea Loach.

Status : Not Evaluated (NE).

Material examined : India : Uttarakhand, : 4 exs., Mohand Rao, Mohand, Dist. Hardwar, 27.xi.1964, Coll., T.D. Soota; 1 ex. (53 mm), Song river, Kansrao Railway Bridge, Dist. Dehradun, 22.i.1965, Coll. R. K. Bhatnagar; 3 exs. (60-67 mm), Song river, Kansrao, Dist. Dehradun, 5.ii.1965, Coll. R.K. Bhatnagar; 5 exs., Ranipur Rao, Ranipur Forest, Dist. Hardwar, 24.ii.1965, Coll. T.D. Soota; 3 exs., Song river nr. Railway

- Bridge, Kansrao, Dist. Dehradun, 26.ii.1965, Coll. T.D. Soota; 1ex., Mohand Rao, Mohand, Dist. Hardwar, 30.iv.1965, Coll. T.D. Soota; 4exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 20.v.1965, Coll. T. D. Soota; 1ex., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 11.vi.1965, Coll. T.D. Soota; 14exs., Ranipur Rao, Ranipur, Dist. Hardwar, 14.vii.1965, Coll. T.D. Soota; 1ex., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T.D. Soota; 13exs., Mohand Rao nr. Mohand, Dist. Hardwar, 8.ii.1966, Coll. T.D. Soota; 1exs., Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 18.iii.1966, Coll. T.D. Soota; 1ex., Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T.D. Soota; 47exs., Suswa river, Clement Town, Dist. Dehradun, 14.iv.1966, Coll. T.D. Soota; 7exs., Mohand Rao Dr. Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh; 4exs., Song river Dr. Kansrao Railway Station, Dist. Dehradun, 17.xii.1966, Coll. Asket Singh; 1ex., Song river, Satyanarain, Dist. Dehradun, 23.iv.1971, Coll. J. C. Tripathi; 4exs., Song river, Kansrao, Dist. Dehradun, 27.v.1971, Coll. K.P. Singh; 3exs., Ranipur Rao, Ranipur, Dist. Hardwar, 8.ii.1972, Coll. R.N. Chopra; 9exs. (49-60 mm), Betban Rao, Beribara, Dist. Hardwar, 8.ii.1972, Coll. R.N. Chopra; 1ex. (59 mm), Gaj Rao, Gaj Forest Block, Dist. Hardwar, 15.ii.1972, Coll. R. N. Chopra; 4exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972; Coll. Raj Tilak; 3exs. (48-66 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 24.iii.1973, Coll. Raj Tilak; 19exs. (47-60 mm), Ranipur Rao, Ranipur, Dist. Hardwar, 24.iii.1973, Coll. Raj Tilak; 7exs. (35-51 mm), Mohand Rao, Mohand, Dist. Hardwar, 26.ix.1973, Coll. Raj Tilak; 2exs., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak; 78exs. (33-60 mm), Betban Rao, Beribara, Dist. Hardwar, 3.xii.1973, Coll. Raj Tilak; 1ex., Song river, Pattapu, Kansrao, Dist. Dehradun, 16.iii.1978 Coll. Raj Tilak; 4exs., Song river, Satyanarain, Dist. Dehradun, 26.xii.1979, Coll. Akhlaq Husain; 7exs., Song river, Satyanarain, Dist. Dehradun, 20.ii.1980, Coll. Akhlaq Husain; 1ex., Song river, Satyanarain, Dist. Dehradun, 10.iii.1980, Coll. Akhlaq Husain; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 3.xii.1985, Coll. R.N. Chopra; 3exs., Song river nr. Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 32exs., Small stream, ca 6 km north-west of Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 12exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 9.i.1987, Coll. Raj Tilak; 9exs., Song river nr. Kansrao FRH, Dehradun, 9.i.1987, Coll. Raj Tilak; 6exs., Song river Dr. Kansrao FRH, Dist. Dehradun, 13.i.1987, Coll. N.K. Sinha; 15exs., Song river. Kansrao Railway Station, Dist. Dehradun, 14.i.1987, Coll. N.K. Sinha; 10exs., Song river, Kansrao Forest, Dist. Dehradun, 20.i.1987, Coll. J.C. Tripathi; 17exs. (max. 58 mm), Song river nr. Kansrao FRH, Dist. Dehradun, 22.i.1987, Coll. R. N. Chopra; 1ex., Suswa river nr. FRH, Phandowala, Dist. Dehradun, 14.v.1987, Coll. Raj Tilak; 7exs., Small stream, ca 10 km east of Phandowala FRH, Dist. Dehradun, 15.v.1987, Coll. Raj Tilak; 24exs., Small stream nr. Phandowala, ca 2 km from Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain j 36exs., Small stream nr. Phandowala, ca 4 km from Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain; 9exs., Ghasi Ram Sot, Chila, Dist. Pauri, 3.vi.1987, Coll. Raj Tilak; 1ex., Ghasi Ram Sot nr. FRH, Chila. Dist. Pauri, 9.ix.1987, Coll. Raj Tilak; 8exs. Ranipur Rao, Ranipur, Dist. Hardwar, 15.ix. 1987 Coll. Raj Tilak, Corbett Tiger Reserve, Dhikala Road, Leed Khalichaur, 3exs., 22.vi.2002, Reg. 4379; Pater Pani Sot, 6 km on Saidil dam road from Kalagarh, 3exs., 29.vi.2002, Reg. 4385, Coll. J.P. Sati & Party; Pater Pani Sot, 2exs., 6.vi.2003, Reg. 4648; Jhirna FRH & around, 4exs., 20.i.2004, Reg. 4734, Coll. V. Khanna & Party; Bijarani Sot, 3exs., 26.ii.2005, Reg. No. 5189; Kharar Sot, 25exs., 28.ii.2005, Reg. No. 5201; Kotira Sot, 4 km. from Jhirna FRH, 7exs., 1.iii.2005, Reg. No. 5310; Pater Pani Sot, 35exs., 2.iii.2005, Reg. No. 5323, Coll. A.N. Rizvi & Party. Badowala, Asan river, 7ex., 27.vi.2000, Coll. J.P. Sati & party; Kaluwala, Mohand, 11ex., 30.vi.2000, Coll. J.P. Sati & party; Karva pani, Asharori, 11exs., 3.xi.2000, Coll. A. Husian & party; Lalo nala, Sodinagar vill. Shakumbhri road, 1ex., 22.ix.2000, Coll. A. Husian & party; Mohand Rao, 3exs., 3.xi.2000; 13ex., 14.ix.2001, Coll. A. Husian & party; Asan river, Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 32exs., 18.vii.2000; 2exs., 13.x.2000; 1ex., 13.vii.2001; 24exs., 11.x.2001, Coll. N.K. Sinha & party; stream nr. Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; Badowal, Asan River, 18ex., 12.ix.2001, Coll. A. Husian & party; Bhure

Shah, 1ex., 20.vii.2001, Coll. P.C. Tak & party;
 Mohand Rao, 1ex., 14.ix.2001, Coll. A. Husian &
 party; Karva pani, 1ex., 6.vii.2001, Coll. Arun
 Kumar & party; Timli forest, 1ex., 23.v.2001, Coll.
 Vinod Khanna & party; 1ex., 19.ix.2001, Coll. J.P.
 Sati & party.

Distribution : Throughout Northern India.

Elsewhere : Nepal and Bangladesh.

Remark : This species exhibit sexual
 dimorphism. It lives near the banks of slow
 moving streams with muddy bed.

Genus *Nemachilus* van Hasselt

1823. *Noemachilus* van Hasselt, *Alg. Konst. Letterbode*,
 2(35) : 133 (type-species : *Noemacheilus fasciatus* van
 Hasselt).

1987. *Noemacheilus*, Menon, *Fauna of India, Pisces*, 4(1) :
 36-29 (revision).

Body elongated and almost cylindrical. No
 preorbital spine on head. Mouth inferior. Dorsal
 fin with 8 to 20 rays and without any spine. Anal
 fin with 6 to 8 rays. Caudal fin emarginate truncate
 or lunate. Lateral line complete or incomplete.

Key to the species

1. Dorsal fin large (with 10-11 branched rays);
 upper half of caudal base with black spot ..
 *Nemachilus botia*
- Dorsal fin short (with less than 10-11
 branched rays); upper half of caudal base
 without black spot 2
2. Nasal barbules present; lateral line incomplete
 *Nemachilus doonensis*
- Nasal barbules absent; lateral line complete .
 3
3. 3rd ray of pectoral fin produced ; body with
 blotch *Nemachilus corica*
- 3rd ray of pectoral fin not produced; body with
 vertical bands 4
4. Head depressed *Nemachilus rupecula*
- Head not depressed 5
5. Vertical bands on body dark, broad (and
 fewer in number 6-9) and almost equal to
 light interspace *Nemachilus beavani*

Vertical bands on body yellowish, narrower
 than dark in colour 6

6. Body marked with 9-10 narrow yellowish
 band *Nemachilus Savona*

Body marked with 5-8 narrow yellowish band
 7

7. Caudal and dorsal fins each with a single row
 of spots *N. gangenticus*

Body with varying number of bands.; bands
 anterior to dorsal-fin often broken up into
 several narrow bars *N. montonus*

68. *Nemachilus beavani* Gunter

1869. *Nemachilus beavani* Gunter, *Cat. Fish. Brit. Mus.*, 7
 : 350 (type-locality : Kosi river).

Local name :

English name : Common Loach.

Status : Not Evaluated (NE).

Material examined : India : Uttarakhand, :
 7exs., Mohand Rao nr. Lalpul, Mohand, Dist.
 Hardwar, 11.vi.1965, Coll. T. D. Soota; 11exs.,
 Mohand Rao Dr. Mohand, Dist. Hardwar,
 8.ii.1966, Coll. T. D. Soota; 1ex. (31 mm),
 Dholkhand Rao, Dholkhand, Dist. Hardwar,
 24.iii.1973, Coll. Raj Tilak; 3exs. (34-54 mm),
 Dholkhand Rao, Dholkhand, Dist. Hardwar,
 27.iv.1973, Coll. Raj Tilak; 19exs. (25-40 mm),
 Mohand Rao, Mohand, Dist. Hardwar, 26.ix.1973,
 Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist.
 Dehradun, 25.x.1973, Coll. Raj Tilak, Corbett
 Tiger Reserve, Lal Dhang, Jhirna, 4exs.,
 28.vi.2002, Reg. No. 4465, Coll. J.P. Sati & party;
 Pater Pani Sot, 6exs., 21.i.2004, Reg. No. 4735,
 Coll. V. Khanna & party; Kotirao Sot, 4 km from
 Jhirna FRH, 4exs., 1.iii.2005, Reg. No. 5310, Coll.
 A.N. Rizvi & part. Dehradun dist., Asan river,
 Sabhawala, 10ex., 4.v.2001, Coll. Vinod Khanna
 & party; Sankra nala, Badshahibagh road, 32exs.,
 18.vii.2000; 2exs., 13.x.2000; 11ex., 13.vii.2001;
 24exs., 11.x.2001, Coll. N.K. Sinha & party;
 stream nr. Timli forest, 7ex., 15.xi.2000, Coll. D.P.
 Uniyal & party; Badowala, Asan River, 21ex.,
 20.iv.2001, Coll. Vinod Khanna & party.

Distribution : Northern India.

Elsewhere : Nepal.

Remark : It inhabits in the slow moving streams, Jaunsari tribes use the juice of this fish for curing the fever, Uniyal (2002).

69. *Nemachilus botia* (Hamilton-Buchanan)

1822. *Cobitis botia* Hamilton- Buchanan *Fish. Ganges* : 350,
(type-locality : river of north-eastern part of Bengal).

Local name :

English name : Botia Loach.

Status : Low Risk- near threatened (LRnt).

Material examined : India : Uttarakhand, 2exs., Mohand Rao, Mohand, Dist. Hardwar, 27.xi.1964, Coll. T. D. Soota; 1ex., Song river nr. Railway Station, Kansrao, Dist. Dehradun, 8.i.1965, Coll. Akhlaq Husain; 23exs. (23-54 mm), Song river nr. Railway Bridge, Kansrao, Dist. Dehradun, 22.i.1965, Coll. R. K. Bhatnagar; 28exs. (25-63 mm), Song river, Kansrao, Dist. Dehradun, 5.ii.1965, Coll. R. K. Bhatnagar; 4exs., Song river nr. Railway Bridge, Kansrao, Dist. Dehradun, 26.ii.1965, Coll. T. D. Soota; 3exs., Mohand Rao, Mohand, Dist. Hardwar, 30.iv.1965, Coll. T. D. Soota; 22exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 20.x.1965, Coll. T. D. Soota; 8exs., Suswa river nr. Phandowala FRH, Dist. Dehradun, 4.vi.1965, Coll. T. D. Soota; 1ex., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 2exs., Song river, Satyanarain, Dist. Dehradun, 29.vi.1965, Coll. T. D. Soota; 2exs., Motichur Rao, Motichur, Dist. Dehradun, 30.vi.1965, Coll. T. D. Soota; 4exs.) Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 16.vii.1965, Coll. T. D. Soota; 4exs., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T. D. Soota; 1ex., Mohand Rao, Mohand, Dist. Hardwar, 18.ix.1965, Coll. R. K. Bhatnagar; 3exs., Mohand Rao, Mohand, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 2exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 1ex. Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 18.iii.1966, Coll. T. D. Soota; 2exs., River Ganga, Gaurighat nr. Satyanarain, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 9exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 13.iv.1966, Coll. T. D. Soota; 13exs., Suswa river, Clement Town, '7 Dist. Dehradun, 14.iv.1966, Coll. T. D. Soota; 5exs., Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 25.v.1966, Coll. Asket Singh; 1ex.,

Mohand Rao nr. Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh; 2exs., Motichur Rao Dr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 8exs., Song river nr. Kansrao Railway Station, Dist. Dehradun, 17.xii.1966, Coll. Asket Singh; 4exs., Song river, Kansrao, Dist. Dehradun, 27.vi.1971, Coll. K. P. Singh; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 28.x.1971, Coll. Asket Singh; 11exs. (27-60 mm), Betban Rao, Beribara, Dist. Hardwar, 8.ii.1972, Coll. R. N. Chopra; 1ex., Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 15.ix.1972, Coll. Raj Tilak 60exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 2ex. (35-45 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 24.iii.1973, Coll. Raj Tilak; 1ex., Song river, Gaurighat Dr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak 3exs. (51-61 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 27.iv.1973, Coll. Raj Tilak; 10ex. (29-38 mm), Mohand Rao, Mohand, Dist. Hardwar, 26.ix.1973, Coll. Raj Tilak 10exs., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak; 5exs. (36-44 mm), Betban Rao, Beribara, Dist. Hardwar, 3.xii.1973, Coll. Raj Tilak, 1ex. (40 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 20.v.1976, Coll. Arun Kumar; 1ex., Song river, Satyanarain, Dist. Dehradun, 12.xi.1979, Coll. Akhlaq Husain; 1ex., Song river, Satyanarain, Dist. Dehradun, 26.xii.1979, Coll. Akhlaq Husain; 1ex., Song river, Satyanarain, Dist. Dehradun, 20.ii.1980, Coll. Akhlaq Husain; 3exs., Song river, Satyanarain, Dist. Dehradun, 10.iii.1980, Coll. Akhlaq Husain; 3exs., Song river, Satyanarain, Dist. Dehradun, 22.iv.1980, Coll. Akhlaq Husain; 9exs., Song river, Satyanarain, Dist. Dehradun, 14.v.1980, Coll. Akhlaq Husain; 1ex., Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 28.x.1986, Coll. N. K. Sinha; 11exs., Song river nr. Kansro FRH, Dist. Dehradun, 8.1987, Coll. Raj Tilak 5exs., Small stream, ca 6 km north-west of Kansrao FRH, Dist. Dehradun 8.1.1987, Coll. Raj Tilak; 2Sexs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 9.i.1987, Coll. Raj Tilak; 27exs., Song river nr. Kansrao FRH, Dist. Dehradun, 13.1.1987, Coll. N. K. Sinha; 2exs. (max. 63 mm), Song river nr. Kansrao FRH, Dist. Dehradun, 22.i.1987, Coll. R. N. Chopra; 1ex., Suswa river nr. FRH,

Phandowala, Dist. Dehradun, 14.v.1987, Coll. Raj Tilak; 8exs., Suswa river nr. FRH, Phandowala, Dist. Dehradun, 18.v.1987, Coll. N. K. Sinha; 2exs., Small stream nr. Phandowala, ca 2 km from Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain; 2exs., Small stream nr. Phandowala, ca 4 km from Clement Town, Dist. Dehradun, 21. v. 1 987, Coll. Akhlaq Husain; 7exs., Suswa river, Phandowala, Dist. Dehradun, 21.vi.1987, Coll. Akhlaq Husain; 11exs, Small stream, ca S km east of FRH Chila Dist. Pauri 11.vi. 1987, Coll. N. K. Sinha; 2exs., Small stream, ca S km west of FRH, Chila, Dist. Pauri, 12.vi.1987, Coll. N. K. Sinha; 1ex., Ghasi Ram Sot nr. FRH, Chila, Dist. Pauri, 9.ix.1987, Coll. Raj Tilak; 3exs., Rawasan river, Laldang, Dist. Pauri, 10.ix.1987, Coll. Raj Tilak; 2exs., Ghasi Ram Sot nr. FRH, Chila, Dist. Pauri, 12.ix.1987, Coll. Raj Tilak; 8exs., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak; 44exs., Motichur Rao, Motichur, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak., Corbett Tiger Reserve, Dhikala Road, Leed Khalichaur, 3exs., 22.vi.2002, Reg. 4379; Pater Pani Sot, 6 km on Saidil dam road from Kalagarh, 3exs., 29.vi.2002, Reg. 4385, Coll. J.P. Sati & Party; Pater Pani Sot, 2exs., 6.vi.2003, Reg. 4648; Jhima FRH & around, 4exs., 20.i.2004, Reg. 4734, Coll. V. Khanna & Party, Dehradun dist., Asan river, Sabhawala, 10ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 32exs., 18.vii.2000; 2exs., 13.x.2000; 11ex., 13.vii.2001; 24exs., 11.x.2001, Coll. N.K. Sinha & party; stream nr. Timli forest, 7ex., 15.xi.2000, Coll. D.P. Uniyal & party; Badowala, Asan River, 21ex., 20.iv.2001, Coll. Vinod Khanna & party. Stream nr. Timli FRH, 1ex., 20.xi.2000, Coll. N.K. Sinha & part.

Distribution : India (Assam, Bihar, Uttar Pradesh, Uttarakhand).

Elsewhere : Pakistan, Nepal, Bangladesh, Myanmar and Sri Lanka.

Remark : It inhabits in the slow moving streams, Jaunsari tribes use the juice of this fish for curing the fever, Uniyal (2002).

70. *Nemachilus corica* (Hamilton-Buchanan)

1822. *Cobitis corica* Hamilton-Buchanan *Fish. Ganges* : 359, (type-locality : river Kosi).

English name : Corica Loach.

Status : Low Risk-near threatened (LRnt).

Material examined : India : Uttarakhand : 1ex., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 1ex. (52 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 20.v.1976, Coll. Arun Kumar, Corbett Tiger Reserve, Aamgarhi Soat, 4 kms. from Sultan on Dhangarhi Road, 2exs., 25.vi.2002, Reg. No. 4426, Coll. J.P. Sati & party.

Distribution : India (along the base of Himalaya including, Uttarakhand).

Elsewhere : Pakistan, Nepal and Bangladesh.

Remark : It inhabits in the slow moving streams, Jaunsari tribes use the juice of this fish for curing the fever, Uniyal (2002).

71. *Nemachilus doonensis* Tilak & Husain

1977. *Noemachilus doonensis* Tilak & Husain. *Sci. & Cult.*, 43(3) : 133-135, fig. 1a-c (type-locality : Small stream near village Kandholi on way to Doonga and Soar Sahab wali khal-Small stream nr. Asarori, Dist. Dehradun, Uttar Pradesh).

Local names : Gadera, Nauni.

English name : Dehradun Loach.

Status : Endangered.

Material examined : 3exs., Small stream, Asarori Forest Block, Dist. Dehradun, 4.vi.1965, Coll. T.D. Soota; 89exs., Soar Sahab wali khal, Asarori, Dist. Dehradun, 11.vi.1965, Coll. T.D. Soota; 5exs., River Ganga, Gaurighat nr. Satyanarain, Dist. Dehradun, 12.iv.1966, Coll. T.D. Soota; 3exs., Dholkhand Rao nr. Dholkband FRH, Dist. Hardwar, 27.x.1986, Coll. N. K. Sinha; 1ex. (28 mm), Song river nr. Kansrao FRH, Dist. Dehradun, 22.i.1987, Coll. R. N. Chopra; 7exs., Small stream, Chila Forest, Dist. Paud, 2.vi.1987, Coll. J. C. Tripathi; 7exs. Small stream, ca 5 km east of FRH; Chila, Dist. pauri, 11.vi.1987, Coll. N. K. Sinha.

Distribution : Uttarkhand.

Remarks : It is a small sized loach described by the authors (Tilak & Husain, 1977) from the area. It inhabits slow moving hill streams.

72. *Nemachilus gangeticus* (Menon)

1987. *Nemachilus gangeticus* Menon, Fauna of India, Pisces, 4 : 82, pl. 12, fig. 6 (type-locality : Alaknanda river at Srinagar, Uttar Pradesh).

Local name : Gadera.

English name : Loach, Mountain.

Material examined : None of the sample were collected by me, reported by Husian (1995).

Distribution : India : Western Himalaya in Uttar Pradesh.

73. *Nemachilus montanus* (McClelland)

1838. *Schistura montanus* McClelland, J. Asiat. Soc. Beng., 7 : 947, (type-locality : Shimla).

Local name : Gadra.

English name : Mountain Loach.

Status : Endangered (EN).

Material examined : India : Uttarakhand, Corbett Tiger Reserve, Dhikala Road, Leed Khalichaur, 3exs., 22.vi.2002, Reg. 4379; Pater Pani Sot, 6 km on Saidil dam road from Kalagarh, 3exs., 29.vi.2002, Reg. 4385, Coll. J.P. Sati & Party; Pater Pani Sot, 2exs., 6.vi.2003, Reg. 4648; Jhima FRH & around, 4exs., 20.i.2004, Reg. 4734, Coll. V. Khanna & Party, Dehradun dist., Badowala, Asan River, 1 ex., 12.ix.2000, Coll. A. Husian & party; Bhure Shah Rao 1ex., 20.vii.2001, Coll. P.C. Tak & party; Mohand Rao, 2ex., 14.ix.2001; 19.x.2001. Coll. A. Husian & party.

Distribution : India (Bihar, Himachal Pradesh and Uttarakhand).

Elsewhere : Nepal and Bangladesh.

Remark : It inhabits in the slow moving streams, Jaunsari tribes use the juice of this fish for curing the fever, Uniyal (2002).

74. *Nemachilus rupecola* (McClelland)

1822. *Cobitis savona* Hamilton-Buchanan, *Fishes of Ganges* : 357, (type-locality : Kosi river at Nathpur, Uttar Pradesh).

Local name :

English name : Hill Loach.

Status : Low Risk-near threatened (LRnt).

Material examined : India : Uttarakhand, : 7exs., Small stream, Asarori Forest Block, Dist. Dehradun 4.vi.1965, Coll. T.D. Soota; 39exs., Small stream, Dehradun-Mohand road, Dist. Hardwar, 16.vii.1965, Coll. T.D. Soota; 10exs. (35-57 mm), Mohand Rao nr. Mohand, Dist. Hardwar, 1.vii.1966, Coll. Asket Singh, Corbett Tiger Reserve, Dhikala Road, Leed Khalichaur, 3exs., 22.vi.2002, Reg. 4379; Pater Pani Sot, 6 km on Saidil dam road from Kalagarh, 3exs., 29.vi.2002, Reg. 4385, Coll. J.P. Sati & Party; Pater Pani Sot, 2exs., 6.vi.2003, Reg. 4648; Jhima FRH & around, 4exs., 20.i.2004, Reg. 4734, Coll. V. Khanna & Party, Dehradun dist., Mohand, A nala near Daat mandir, 21ex., 24.viii.2001, Coll. A. Husain & party; Badowala, Asan River, 7ex., 27.vi.2000, Coll. J.P. Sati & party; Timli forest, 1ex., 6.vii.2001, Coll. Arun Kumar & party, stream nr. Timli forest, 7ex., 15.xi.2000, Coll. D.P. Uniyal & party; Badowala, Asan River, 21ex., 20.iv.2001, Coll. Vinod Khanna & party. Stream nr. Timli FRH, 1ex., 20.xi.2000, Coll. N.K. Sinha & party.

Distribution : India (Jammu & Kashmir, Himachal Pradesh, part of Uttar Pradesh and Uttarakhand).

Elsewhere : Pakistan.

Remark : It is found usually in lesser Himalaya zone. Rarely it is found in low areas. Jaunsari tribes use the juice of this fish for curing the fever, Uniyal (2002).

75. *Nemachilus savona* (Ham.-Buch.)

1822. *Cobitis savona* Hamilton-Buchanan, *Fishes of Ganges* : 357, (type-locality : Kosi river at Nathpur, Uttar Pradesh).

Local name : Gadera.

English name : Common Loaches.

Material examined : India : Uttarakhand, : 1ex. (32 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 16.iii.1978, Coll. Raj Tilak; 1ex., Mohand Rao, Mohand, Dist. Hardwar, 17.ix.1987, Coll. Raj Tilak; 1ex., Small stream nr. Mohand FRH, Dist. Hardwar, 17.ix.1987, Coll. Raj Tilak, Dehradun dist., Bhure Shah Rao, 4ex., 6.ix.2001, Coll. N.K. Sinha & party; 2ex., 10.viii.2001, Coll. J.P. Sati & party; Timli, Timli forest, 1exs., 19.ix.2001, Coll. J.P. Sati & party.

Distribution : Eastern and Western Himalayas.

Elsewhere : Nepal.

Remark : This species has no economic importance, but ecologically they are very important any known as water tracer.

76. *Nemachilus submontanous* (Tilak & Husain)

Local name : Gadera.

English name : Common Loaches.

Material examined : None of the sample were collected by me, reported by Husain (1995).

Distribution : India : Western Himalaya in Uttar Pradesh.

Elsewhere : Nepal.

Remark : This species has no economic importance, but ecologically they are very important and known as water tracer.

Order Siluriformes

Body without true scales, naked or covered with bony plates. Adipose dorsal fin generally absent. Spines usually present at the front of dorsal and pectoral fins, if present, only single in each fin. The second, third and fourth vertebrae of the Weberian apparatus are fused to a single ossification called a "complex vertebra" Barbels 1 to 4 pairs, whisker-like on upper and lower jaw. Caudal skeleton is variously developed, the number of principal rays differing considerably.

Key to the Families

1. Adipose dorsal fin absent 2
Adipose dorsal fin present as a smooth, short or long, high or low fin 5
2. Head squarish in outline, much depressed, head and body with many dermal papillae. Anal fin short, with 7 to 10 rays
..... CHACIDAE
3. Head obtuse, compressed. Head and body without any dermal papillae. Anal fin long, with more than 40 rays 3
Nasal barbels absent. No accessory respiratory organs SILURIDAE
4. Nasal barbels present. Accessory respiratory organs present on gills or in body cavity
..... 4

Dorsal fin long, with 23 to 76 rays. Accessory respiratory organs on gills present
..... CLARIIDAE

Dorsal fin short, with 6 to 7 rays. Accessory respiratory organs as tubular air sac in body cavity HETEROPNEUSTIDAE

5. Nostrils close together, slit-like, separated by nasal barbels, with very little interspace between the two 6

Nostrils wide apart, separated by some distance 7

6. Lateral line entirely absent. Gill membranes free from isthmus AMBLYCIPITIDAE

Lateral line always present. Gill membranes united with isthmus Sisoridae

7. Dorsal spine absent (exception Ailia Swainson, Schilbeidae where dorsal fin itself is absent) OLYRIDAE

Dorsal spine present 8

8. Anal fin short, with less than 20 rays (8 to 16 rays). Paired fins horizontally inserted
..... BAGRIDAE

Anal fin long, with more than 20 rays (24 to 90 rays), paired fins laterally inserted 9

8. Nasal barbels always present (exception Sionia Swainson with 40 to 46 anal fin rays) SCHILBEIDAE

Nasal barbels absent. (Anal fin with 30 to 34 rays) PANGASIIDA

Family AMBLYCIPITIDAE

Body elongated, subcylindrical and compressed. Abdomen rounded. Nostrils close together separated by nasal barbel. Barbels 4 pairs moderately developed. A fold of skin above and anterior to pectoral fin base and immediately behind gill openings present. Rayed dorsal fin inserted above half or first quarter of pectoral fin with 5 to 6 rays and a weak spine. A dipose dorsal fin not confluent with either rayed dorsal fin or caudal fin. Pectoral fins with 7 rays and a smooth weak spine. Pelvic fins with 6 rays. Anal fin with 8 to 11 rays. Caudal fin truncate or emarginate. Lateral line absent.

Genus *Amblyceps* Blyth

1858. *Amblyceps* Blyth. *Proc. Asiat. Soc. Bengal*, 27 : 282
(type-species : *Pimelodus mangois* Hamilton
Buchanan).

1981. *Amblyceps*, Jayaram, *Handbk. Freshw. Fish. India* :
227-228 (genus characters and distribution).

Characters of genus are same of those of the
family characters.

77. *Amblyceps mangois* (Ham.-Buch.)

1822. *Pimelodus mangios* Hamilton-Buchanan *Fish. Ganges*
: 199-201.

(type-locality : tanks of northern Bihar).

English name : Indian Torrent Catfish.

Status : Low Risk near threatened (LRnt).

Material examined : India : Uttarakhand, 1ex.,
Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar,
11.vi.1965, Coll. T. D. Soota 1ex., Suswa river,
Clement Town, Dist. Dehradun, 23.vii.1965, Coll.
T. D. Soota; 1ex., Mohand Rao nr. Mohand, Dist.
Hardwar, 18.ix.1965, Coll. R. K. Bhatnagar; 2exs.,
Gaj Rao, Gaj Forest Block, Dist. Hardwar,
6.xii.1965, Coll. T. D. Soota; 2exs., River Ganga,
Gaurighat nr. Satyanarain, Dist. Dehradun,
12.iv.1966, Coll. T. D. Soota; 1ex., Motichur Rao,
nr. Motichur FRH, Dist. Dehradun, 13.iv.1966,
Coll. T. D. Soota; 7exs., Suswa river, Clement
Town, Dist. Dehradun, 14.iv.1966, Coll. T. D.
Soota; 1ex., Motichur Rao nr. Motichur FRH, Dist.
FR 23 Dehradun, 16.ix.1966. Coll. Asket Singh;
1ex., Song river, Kansrao, Dist. Dehradun,
27.v.1971, Coll. K. P. Singh; 3exs., Song river,
Satyanarain, Dist. Dehradun, 14.ix.1971, Coll. Raj
Tilak; 1ex., Song river, Satyanarain, Dist.
Dehradun, 15.ix.1972, Coll. Raj Tilak; 2exs.,
Motichur Rao, Motichur, Dist. Dehradun,
28.xii.1972, Coll. Raj Tilak; 1ex, Song river,
Satyanarain, Dist. Dehradun, 2.iii.1973, Coll. Raj
Tilak 1ex. (48 mm), Mohand Rao, Mohand, Dist.
Hardwar, 26.ix.1973, Coll. Raj Tilak; 1ex. (50
mm), Betban Rao, Beribara, Dist. Hardwar,
3.xii.1973, Coll. Raj Tilak; 9exs. (41-60 mm),
Song river, Pattapul, Kansrao, Dist. Dehradun,
20.v.1976, Coll. Arun Kumar; 1ex., Song river,
Satyanarain Dist. Dehradun 12.xi.1979 Coll
Akhlq Husain 1ex. Song river, Satyanarain, Dist.,
Dehradun, 10.iii.1980, Coll. Akhlq Husain;

13ex., Song river, Satyanarain, Dist. Dehradun,
14.v.1988, Coll. Akhlq Husain; 2exs., Song river
nr. Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll.
Raj Tilak; 5exs. (max. 47 mm), Song river nr.
Kansrao FRH, Dist. Dehradun, 22.i.1987, Coll. R.
N. Chopra; 11exs., Suswa river nr. FRH,
Phadowala, Dist. Dehradun, 14.v.1987, Coll. Raj
Tilak; 2exs., Suswa river nr. FRH, Phadowala,
Dist. Dehradun, 18.v.1987, Coll. Raj Tilak; 1ex.,
Song river, Satyanarain, Dist. Dehradun,
13.ix.1987, Coll. Raj Tilak, Corbett Tiger
Reserve, Dhikala Road, Leed Khalichaur, 3exs.,
22.vi.2002, Reg. 4379; Pater Pani Sot, 6 km on
Saidil dam road from Kalagarh, 3exs., 29.vi.2002,
Reg. 4385, Coll. J.P. Sati & Party; Pater Pani Sot,
2exs., 6.vi.2003, Reg. 4648; Jhirma FRH & around,
4exs., 20.i.2004, Reg. 4734, Coll. V.Khanna &
Party, Badowala, Asan river, 7ex., 27.vi.2000,
Coll. J.P. Sati & party; Kaluwala, Mohand, 11ex.,
30.vi.2000, Coll. J.P. Sati & party; Karva pani,
Asharori, 11exs., 3.xi.2000, Coll. A. Husian &
party; Lalo nala, Sodinagar vill. Shakumbhri road,
1ex., 22.ix.2000, Coll. A. Husian & party; Mohand
Rao, 3exs., 3.xi.2000; 13ex., 14.ix.2001, Coll. A.
Husian & party; Asan river, Sabhawala, 1ex.,
4.v.2001, Coll. Vinod Khanna & party; Sankra
nala, Badshahibagh road, 32exs., 18.vii.2000;
2exs., 13.x.2000; 1ex., 13.vii.2001; 24exs.,
11.x.2001, Coll. N.K. Sinha & party; stream nr.
Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal &
party; Badowal, Asan River, 18ex., 12.ix.2001,
Coll. A. Husian & party; Bhure Shah, 1ex.,
20.vii.2001, Coll. P.C. Tak & party; Mohand Rao,
1ex., 14.ix.2001, Coll. A. Husian & party; Karva
pani, 1ex., 6.vii.2001, Coll. Arun Kumar & party;
Karva pani, Asharori, 1ex., 22.xi.2001; 1ex.,
5.iv.2002, Coll. J.P. sati & party; Sankra nala,
Badshahi bagh road, 1ex., 11.x.2001, Coll. N.K.
Sinha & party; Timli Forest, 1ex., 27.xi.2001,
Coll. J.P. Sati & party.

Distribution : India (Along the foothills of
Himalayas from Kangra valley to Assam and
Uttarkhand).

Elsewhere : Myanmar, Nepal, Pakistan and
Thailand.

Remark : It inhabits in cobble-pebble of river/
stream bed. It pears the spines and can infect
serious injury, its collection need special attention.

Family BAGRIDAE

Bagrid catfishes

Rayed dorsal fin with 6 to 8 rays and a spine. Adipose fin present, highly variable in size. Nostrils widely separated, above angle of mouth, anterior tubular on tip of snout, posterior nearer to orbit than tip of snout and with nasal barbels. Barbels 4 or 3 pairs, usually well developed. Gill openings wide. Paired fins inserted horizontally. Pectoral fins with a strong spine usually serrated. Anal fin with 8 to 16 rays. Caudal fin forked. Lateral line present, usually complete.

Key to the Genera

1. Barbels 3 pairs. Lateral line with well developed scutes along anterior quarters
..... *Pseudeutropius*
Barbels 4 pairs. Lateral line simple 2
2. Maxillary barbels shorter than head. Pores on ventral surface and sides of head
..... *Batasio*
Maxillary barbels much longer than head, extending beyond dorsal fin. No pores on ventral surface and sides of head 3
3. Interneural shield in between occipital process and basal bone of dorsal fin present
..... *Aorichthys*
Interneural shield absent *Mystus*

Genus *Aorichthys* Wu

1939. *Aorichthys* Wu. Sinensia. 10 : 131 (proposed originally as substitute name for *Aoria* Jerdon. 1919 preoccupied in Insecta Macrones Dumeril. 1856 preoccupied in Insecta. type-species : *Pimelodus aor* Hamilton Buchanan).
1981. *Aorichthys*. Jayaram. Handbk. Freshw. Fish. India : 204 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Head depressed. Snout spatulate or rounded. A distinct interneural shield in between basal bone of dorsal fin and occipital process. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular. Maxillary barbels extending beyond dorsal fin. Rayed dorsal fin, with 7 rays and a spine. Adipose fin low and long. Pectoral fins with 9 to 10 rays and a serrated spine. Pelvic fins with 6 rays. Anal fin with 11 to 13 rays. Caudal fin forked. Lateral line complete.

78. *Aorichthys seenghala* (Sykes)

1838. *Platystoma seenghala* Sykes, Trans. Zool. Soc. Lond., 2 : 371, pl. 65. fig. 2 (type locality : Mota Mola river, Puoe).

Local name : Singara.

English name : Giant River Catfish.

Material examined : The specimens were not collected by the author, but included the species on the basis of reports from local fishermen and the record by Grover (1970) from Song river near Raiwala.

Distribution : Throughout India.

Elsewhere : Pakistan; Afghanistan; Nepal; Bangladesh; China.

Remarks : This species exhibits sexual dimorphism (Bhatt, 1970). The males possess a minute urino-genital papilla, especially during the breeding season, which is absent in females. It is an important giant catfish.

Genus *Mystus* Scopoli

1777. *Mystus* Scopoli, Introd. Hist. Nat. : 451 (type-species : *Bagrus halepensis* Heckel = *Silurus pelusius* Solander).
1981. *Mystus*, Jayaram, Handbk. Freshw. Fish. India 195, 196 (genus characters and distribution).

Mouth terminal and transverse. Teeth villiform in jaws and palate, that on latter always uninterrupted. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular pairs. Rayed dorsal fin with 7 rays and a spine. Adipose fin low, of varying length. Pectoral fin with 6 to 10 rays and a strong spine. Pelvic fin with 6 rays. Anal fin with 9 to 16 rays. Caudal fin forked. Lateral line complete. Interneural shield in between basal bone of dorsal fin and occipital process absent.

Key to the Species

1. Adipose dorsal fin commencing almost after rayed dorsal fin 2
Adipose dorsal fin commencing after some considerable distance from rayed dorsal fin *M. vittatus*.
2. Maxillary barbels reach anal fin. Interorbital width less than 3.00 (2.00 to 3.00) in head

length. No dark spot at the base of dorsal fin
.....*M. bleekeri*

Maxillary barbels reach caudal fin base or beyond. Interorbital width more than 3.00 (3.00 to 4.00) in head length. A dark spot present at the base of dorsal fin
.....*M. cavasius*

79. *Mystus bleekeri* (Day)

1846. *Bagrus keletius* (nec Valenciennes) Bleeker, *Nat. Geneesk. Arch. Ned. India*, (2)3 : 135 (type – locality : Bengal).

1977. *Mystus bleekeri* : Jayaram, *Rec. zool. Surv. India. Occ. Pap.*, (8) : 29, fig. 21 B.

Local name : Kater, Trikanda.

English name : Day's *Mystus*.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand, : 1ex., Suswa river, Clement Town Dist. Dehradun 23.vii.1965, Coll. T. D. Soota; 1ex. (114 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 20.v.1976, Coll. Arun Kumar, Dehradun dist., Badowal, Asan River, 1ex., 27.vi.2000; Karva pani, 1ex., 1.vii.2000, Coll. J.P. Sati & party; Kajnawar nala, 2exs., 12.iv.2002, Coll. S.K. Gupta & party; Sabhawala, Asan river, 1ex., 4.v.2001, Coll. Vinod Khanna & party.

Distribution : Throughout India.

Elsewhere : Bangladesh, Nepal and Srilanka.

Remark : This species distributed in lower altitude of the state.

80. *Mystus cavasius* (Hamilton-Buchanan)

1822. *Pimelodus cavasius* Hamilton Buchanan. *Fish. Ganges*, : 203. pl. 1 I. fig. 67 (type-locality : Gangetic provinces).

1877. *Macrones cavasius*, Day. *Fish. India* : 447, pl. 100. fig. 1; 1889. Day. *Fauna British India, Fish.* 1 : 155.

1981. *Mystus cavasius*, Jayaram. *Handbk. Freshw. Fish. India* : 196, (distribution and key to species).

Local name : Tengra.

English name : Dwarf cat fish.

Materials examined : The specimens were not collected by the author, but included the species on the basis of reports from Husian (1995).

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Myanmar, Thailand, Malayasia, Java, Sumatra, Borneo and China.

Remarks : This species restricted in low altitude of the state.

81. *Mystus vittatus* (Bloch)

1797. *Silurus vittatus* Bloch, *Ichthyol. Hist. nat.*, 11 : 40, (type-locality : Tranquebar, Tamil Nadu).

Local name : Ticanda.

English name : Fiddler fish.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand : 1ex., Song river nr. Railway Bridge, Kansrao, Dist. Dehradun, 26.ii.1965, Coll. T. D. Soota; 1ex., Song river, Pritinagar nr. Gaurighat, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 2exs., Song river nr. Kansrao FRH, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota; 3exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak; 2exs., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak Corbett Tiger Reserve, Champion, Ram Ganga, 2exs., 7.iv.2003, Reg. No. 4658, Coll. V. Khanna & Party, Kavapani, 2exs., 16.xi.2000; stream nr. Timli FRH 1ex., 15.xi.2000, Coll. D.P. Uniyal & party, Kajnawar nala, 2exs., 12.iv.2002, Coll. S.K. Gupta & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Nepal, Srilanka, Thailand and Myanmar.

Remark : This species exhibit sexual dimorphism. It is usually found in middle stretch of river/ water body.

82. *Pseudeutropius atherinoides* (Bloach)

1794. *Silurus atherinoides* Bloch, *Nat. Ausl. Fische.*, 8 : 48, pl. 371, fig. 1 (type-locality : Tranquebar).

Local name : Tengra.

English name : Indian Potasi.

Material examined : 1ex. (47 mm), Song river nr. Kansrao FRH, Dist. Dehradun, 12.iv.1966, Coll. T. D. Soota.

Distribution : India (Uttar Pradesh, Punjab, Bihar, West Bengal, Assam, Madhya Pradesh, Karnataka, Tamil Nadu, Pondicherry, Kerala);

Elsewhere : Pakistan; Bangladesh; Myanmar.

Remarks : This species exhibits sexual dimorphism (Swarup & Swaroop, 1975). In males, the urino-genital papilla is well developed and caudal base thickened. The females lack these characters. It is known among aquarists for silvery colour and small size.

Family SILURIDAE Sheatfishes

Body elongated and compressed. Skin without scales, either smooth or covered with osseous plates or scattered tubercles. Gill openings wide. Rayed dorsal fin with 4 to 5 rays not preceded by a spine. Adipose fin absent. Paired fins laterally inserted. Pectoral fins with a strong spine, sometimes serrated. Anal fin very long, extending from just posterior to anal opening to caudal fin or confluent with it. Pelvic fins small, sometimes absent. Caudal fin deeply forked, lobes rounded or pointed or cut square. Lateral line straight and complete. The siluroid fishes are popularly known as Cat-fishes, owing to most of them being provided with long barbels around their mouth.

Key to the genera

1. Cleft of mouth wide, extending beyond the orbits posteriorly. Anal fin with 86 to 89 rays **Wallago**
2. Cleft of mouth not wide, not extending beyond the orbits posteriorly. Anal fin with 52 to 78 rays **Ompok**

Genus *Ompok* Lacepede

1803. *Ompok* Lacepede. *Hist. Nat. Poiss*, 5 : 49 (type-species : *Ompok siluroides* Lacepede).
1822. *Collichrous* Hamilton. *Fish. Ganges* : 19 (type-species : *Silurus bimaculatus* Bloch).
1981. *Ompok*, Jayaram. *Handbk. Freshw. Fish. India*. 207-209 (genus characters and distribution).

Body elongated. Compressed with abdomen rounded. Gape of mouth not extending to anterior border of orbit. Barbels 2 pairs, one pair each of maxillary and mandibular. Dorsal fin with 4 to 5

rays and without any spine. Pectoral fins with 11 to 14 rays and a weak spine, serrated or smooth. Pelvic fins with 7 to 10 rays. Anal fin with 52 to 75 rays, extending close to caudal fin, free from it or narrowly connected to it. Caudal fin forked. Lateral line complete.

Key to the species

1. Maxillary barbels longer than head extending up to or beyond anal fin *O. bimaculatus*
2. Maxillary barbels shorter than head. not extending up to anal fin *O. pabda*

83. *Ompok bimaculatus* (Bloach)

1797. *Silurus bimaculatus* Bloch. *Syst. Ichth.* 11 : 17. pl. 369 (type-locality : Malabar).
1877. *Collichrous bimaculatus*, Day, *Fish. India*. : 476. pl. 110. figs. 4 and 5 : 1889. Day. *Fauna Br. India: Fish*, I : 131. fig. 57.
1981. *Ompok bimaculatus*, Jayaram. *Handbk. Freshw. Fish. India* : 208. 209. fig. 12A (distribution and key to species).

Local name : Pabda.

English name : Butter cat-fish.

Materials examined : The specimens were not collected by the author, but included the species on the basis of report from Husian (1995).

Distribution : Through out India.

Elsewhere : Afghanistan, Pakistan, Srilanka and Bangladesh.

Remarks : This is commercially important fish and cultured in plain district of the state.

84. *Ompok pabda* (Hamilton-Buchanan)

1822. *Silurils pabda* Hamilton-Buchanan, *Fish. Ganges* : pl. 25, fig. 47 (type-locality : ponds and rivers of Bengal).
- Local name :** Pabda.
- English name :** Butter Fish.
- Material examined :** 1ex. (140 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 20.v.1976, Coll. Arun Kumar.

Distribution : India (Uttar Pradesh, Punjab, Bihar, West Bengal, Orissa, Andhra Pradesh and Uttarkhand).

Elsewhere : Pakistan; Afghanistan; Bangladesh; Myanmar; Singapore; Malaysia.

Remark : This fish is cultured in the plain district of the state.

Genus *Wallago* Bleeker

1851. *Wallago* Bleeker, *Nat. Tijdschr. Ned. Indië*, 2 : 202 (type-species : *Wallago dinema* Bleeker).

1981. *Wallago*, Jayaram, *Handbk. Freshw. Fish. India* : 209, 210 (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Maxilla extending beyond the orbits posteriorly. Gill openings wide. Barbels 2 pairs, one pair each of maxillary and mandibular. Dorsal fin inserted above half of pectoral fins with 5 rays and no spine. Pectoral fin with 13 to 15 rays and a weak, smooth spine. Pelvic fin with 5 to 10 rays. Anal fin long with 86 to 93 rays, free from caudal fin. Caudal fin forked. Lateral line complete.

85. *Wallago attu* (Schneider)

1801. *Silurus attu* Schneider, *Syst. Ichth. Blochii* 378, pl. 75 (type-locality : Malabar).

Local names : Lanchit Parhan.

English name : Freshwater Shark.

Material examined : The specimens were not actually collected, but it is included here, based on Husain (1995).

Distribution : Throughout India.

Elsewhere : Pakistan; Bangladesh; Myanmar; China; Malaysia; Thailand; Vietnam; Kampuchea; Sumatra; Java.

Remarks : This species exhibits sexual dimorphism (Husain, 1970, 1987). In mature males, the pectoral spine is strongly and prominently denticulated. In females, the spine is weakly built and finely serrated. It lives in large rivers. It is one of the largest freshwater catfishes. It gives good sport.

Family SCHILBEIDAE

Body elongated and compressed. Barbels 2 to 4 pairs, fairly well developed. Dorsal fin present with a short base of 5 to 7 soft rays and a spine present or absent. Adipose dorsal fin generally present, may be absent. Paired fins laterally

inserted. Pectoral fins with a strong spine, generally serrated. Anal fin very long with 40 to 46 rays, not confluent with caudal fin. Caudal fin forked. Lateral line usually complete. Dorsal fin and spine absent. Adipose dorsal fin very small. Teeth on vomer minute. Anal fin very long.

Key to the Genera

Two pairs of barbels, one of maxillary small in a groove; one of mandibular, either of the pair may become vestigial or absent

..... *Silonia*

Four pairs of barbels 2

Cleft of mouth oblique extending up to middle of the orbit *Eutropiichthys*

Cleft of mouth not oblique, extending up to anterior margin of the orbit or even shorter 3

Teeth on palate in bands not separated in middle. Posterior nostrils wide *Clupisoma*

Teeth on palate in two separate patches, which may be connected by a linear series. Posterior nostrils narrow, dorsal fin present *Ailiae*

Genus *Ailia* Gray

1831. *Ailia* Gray, III. *Indian Zool.*, 1 : 85 (type-species : *Ailia bengalensis* Gray).

1871. *Ailiichthys* Day, *Proc. Zool. Soc. Lond.*, : 712 (typespecies : *A. punctata* Day).

1981. *Ailia*, Jayaram, *Handbk. Freshw. Fish. India* : 212, (genus characters and distribution).

Body elongated and compressed. Snout overhanging. Mouth terminal. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular, all almost equal length and longer than head. Rayed dorsal fin absent. Adipose dorsal fin small. Pectoral fins with 13 to 16 rays and a spine, smooth or serrated. Pelvic fins with 6 rays, may be vestigial or absent. Anal fin with 58 to 90 rays, not united with caudal fin. Caudal fin forked. Lateral line complete.

86. *Ailia Colla* (Ham.-Buch.)

1822. *Malapterus Colla* Hamilton-Buchanan. *Fish. Ganges*. : 158, (type-locality : Freshwater rivers of Bengal).

1877. *Ailia Colla*, Day, *Fish. India* : 488, pl. 114, fig. 4; 1889, Day, *Fauna Br. India. Fish.* 1 : 134.

1981. *Ailia Colla*, Jayaram, *Freshw : Fish. India* : 213 (distribution and key to species).

Local name : Kadali.

English name : Ailia.

Materials examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : India, NE India and in Northern India.

Genus *Clupisoma* Swainson

1839. *Clupisoma* Swainson. *Nat. Fish. Animal.* 2 : 306 (type-species : *Silurus garua* Hamilton Buchanan).

1981. *Clupisoma*, Jayaram. *Handbk. Freshw. Fish. India* : 219 (genus characters and distribution).

Body elongated, compressed almost herring-shaped; whole of abdominal margin with the portion between pelvic fins and anal opening keeled. Cleft of mouth extending to anterior border of orbit. Teeth on palate in bands, not separated in middle. Barbels 4 pairs, one pair each of maxillary, nasal and two of mandibular. Rayed dorsal fin with 7 rays and a spine. A small adipose dorsal fin may be present or absent. Pectoral fins with 11 to 12 rays and a spine serrated or smooth. Pelvic fins with 6 rays, Anal fin with 29 to 44 rays. Caudal fin deeply forked. Lateral line complete.

Key to the species

1. Abdominal margin rounded. Maxillary barbels not extending beyond base of pectoral fin. Pectoral fins reaching pelvic fins. Anal fin with 41 to 43 rays *C. montana*
2. Abdominal margin keeled between pelvic fins and vent. Maxillary barbels extending beyond base of pectoral fins, up to base of pelvic fins. Pectoral fins not reaching pelvic fins. Anal fin with 29 to 36 rays *C. garua*

87. *Clupisoma garua* (Ham.-Buch.)

1822. *Silurus gama* Hamilton Buchanan, *Fish. Ganges.* : 156. Pl. 21. fig. 50 (type-locality : Freshwater rivers or Gangetic provinces).

1877. *Pseudeutropius garua*. Day. *Fish. India*, : 474. pl. 109. fig. 6; 1889, Day, *Fauna Br. India, Fish.* 1 : 141.

1981. *Clupisoma garua*, Jayaram, *Handbk. Freshw. Fish. India.* : 219, 222. fig. 111 (distribution and key to species).

Local name : Gooura.

English name : Gaura.

Materials examined : Uttarkhand : Chilla Barrage, Haridwar, 2exs. 12-3-2002, Coll. J.P. Sati & Party; Ramganga Barrage, nr. Dhakla, CTR, Nanital, 1ex. 3-4-2003, Coll. Vinod Khanna & Party.

Distribution : Throughout India except, South of Mahanadi.

Elsewhere : Pakistan. Nepal and Bangladesh.

Remarks : It is considered good eating fish.

88. *Clupisoma montana* Hora

1937. *Clupisoma montana* Hora, *J. Bombay nat. Hist. Soc.*, 39(4) : 67 (type-locality : Teesta river below Darjeeling).

1981. *Clupisoma montana*, Jayaram. *Handb. Freshw. Fish. India.* : 220, fig. 113C (distribution and key to species).

Local name : Goura.

English name : Garua.

Materials examined : Uttarkhand : Amlawa River, Dehradun, 13-1-2001, 2exs.; Aglar river, Bander kot, Tehri Garhwal, 3exs. 7-6-2002, Coll. D.P. Uniyal & Party.

Distribution : West Bangal (Darjeeling); Bihar; Tripura, Uttar Pradesh and Uttarkhand.

Genus *Eutropiichthys* Bleeker

1862. *Eutropiichthys* Bleeker. *Vasl. Akad. Amsterdam.* J 4 : 398 (type-species : *Pimelodus vacha* Hamilton Buchanan).

1981. *Eutropiichthys*, Jayaram. *Handbk. Freshw. Fish. India.* : 222 (genus characters and distribution).

Body elongated, compressed, almost Indian trout shaped. Mouth subterminal, ascending wide, extending up to middle of orbit. Barbels 4 pairs, one pair each of maxillary, nasal and two of Teeth on palate in a band wider than premaxillary band. Nasal barbels reach posterior border of head or slightly beyond.

89. *Eutropiichthys vacha* (Ham.-Buch.)

1822. *Pimelodus vacha* Hamilton Buchanan. *Fish. Ganges.* : 196. pl. 19. fig.4 (type-locality : larger freshwater rivers of the Gangetic provinces).

1877. *Eutropiichthys vacha*, Day, Fish. India, : 490. pl. 114. fig. 6: 1889. Day. *Fauna Br. India, Fish.* 1 : 128.

1981. *Eutropiichthys vacha*, Jayaram. *Handbk. Freshw. Fish. India* : 224 (distribution and key to species).

Local name : Bacha.

English name : Vacha.

Materials examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : Throughout India.

Elsewhere : Nepal, Pakistan, Bangladesh, Myanmar and Thailand.

Remarks : It is a smooth skinned good eating fish. It is a voracious eater feeding on small fishes and aquatic insects.

Genus *Silonia* Swainson

1839. *Silonia* Swainson. *Nat. Hist. Fish. Animal.*, 2 : 305 (type-species : *Pimelodus silondia* Hamilton Buchanan).

1840. *Siludia* Valenciennes, *Hist. nat. poiss.*, 15 : 49 (type-species : *Pimelodus silondia* Hamilton Buchanan).

1952. *Silnia*, Silas. *Proc. nat. Inst. Sci. India* 18(5) : 433 (*Silonopangasias* Hora synonymised).

1981. *Silnia*, Jayaram. *Handbk. Freshw. Fish. India*, 224 (distribution and key to species).

Body elongated, compressed with abdomen rounded. Mouth anterior, wide, obliquely directed upwards. Teeth large, caniniform on jaws, villiform on palate; jaw teeth project outside mouth. Barbels 2 pairs, one of maxillary and one of mandibular; either of the pair may become vestigial or absent. Rayed dorsal fin with 7 rays and a spine. Adipose dorsal fin short. Pectoral fins with II to 13 rays and a serrated spine. Pelvic fins with 6 rays. Anal fin with 40 to 48 rays. Caudal fin deeply forked. Lateral line complete.

90. *Silonia silondia* (Ham.-Buch.)

1822. *Pimelodus silondia* Hamilton Buchanan, *Fish Ganges*, : 160. pl. 7, fig. 50 (type-locality : Gangetic provinces).

1877. *Silonia silondia* Day, *Fish. India* : 488, pl. 114, fig. 3 : 1889. Day, *Fauna Br. India, Fish.* 1 : 145, fig. 62.

1981. *Silonia silondia*. Jayaram, *Handbk. Freshw. Fish. India*, : 225 (distribution and key to species).

Local name : Shilong, Silon.

English name : Nil.

Material Examined : Uttarkhand : Ramganga river, nr. Pater pani, Nanital, 2exs. 12-2-2004, Coll. Vinod Khanna & Party.

Distribution : Throughout India.

Elsewhere : Bangladesh, Nepal and Pakistan.

Remarks : This fish considered good eating as it prefers well oxygenated streams and clear deep waters. It is riverine fish but may occur in tanks and reservoirs as well. It is a gregarious fish moving in shoals.

Family SISORIDAE Sucker catfishes

Body short or elongated, with head and anterior part of body depressed and tail compressed or entire body compressed. An adhesive apparatus on thorax may be present or absent. Nostril is close together, slit-like, separated by nasal barbels. Barbels 4 pairs, generally well developed. In some genera thick, fleshy with broad bases. Rayed dorsal fin base short. With or without a spine. Adipose dorsal fin present and generally large. Paired fins inserted horizontally, may or may not be plaited. Pectoral fins with or without a spine, denticulated either on inner or outer margin, or on both. Anal fin short, not confluent with caudal fin. Caudal fin emarginate, deeply forked, truncate or rounded. Lateral line complete. Generally small forms occurring in mountain rapids.

Key to the Genera

1. An adhesive apparatus on ventral surface of body present, distinct and well developed ...
..... ***Glypto thorax***
An adhesive apparatus on ventral surface of body absent, if present faintly developed and indistinct 2
2. Serrations along outer margin of pectoral spine divergent or a combination of retrose and antrore teeth ***Erethistoides***
Serrations along outer margin of pectoral spine either absent or when present weak in one direction only 3
3. Caudal fin rays prolonged. Body with bony plates ***Bagarius***

Caudal fin rays not prolonged. Body smooth, without bony plates 4

4. Maxillary barbels with stiff base, lying in a groove anteriorly 5

Maxillary barbels without any stiff base and groove anteriorly 6

5. Mandibular pair of barbels inserted on a transverse line at different levels. Gill membranes free from isthmus or only slightly adherent to it. Ventral surface of head flat and broad *Nangra*

Mandibular pair of barbels inserted on a transverse line at the same level. Gill membranes broadly united with isthmus. Ventral surface of head compressed and narrow *Gagata*

6. Barbels annulatecl. Body plain Hara Barbels not annulated. Body with tubercles along sides of body *Laguvia*

Genus *Bagarius* Bleeker

1853. *Bagarius* Bleeker. *Verh. Bat. Gen.* 25 : 121 (type-species : *Pimelodus bagarius* Hamilton Buchanan).

1981. *Bagarius*. Jayaram. *Handbk. Freshw. Fish India*. 237-238 (genus character and distribution).

Body elongated, flattened up to pelvic fins. Head depressed its upper surface osseous, naked and rugose. Mouth ventral, wide and crescentic. 4 pairs of barbels, maxillary barbels with broad bases. Rayed dorsal fin with 6 rays and a smooth spine with an elongated soft termination of varying length. Pectoral fins with 13 rays and a spine serrated along inner edge and also with a soft prolongation. Pelvic fins with 6 rays. Anal fin with 12 to 15 rays. Caudal fin deeply forked, upper lobe longer and both lobes produced into soft filamentous prolongations.

Key to the species

1. Pelvic fin inserted anterior to last dorsal fin ray; adipose fin origin slightly to markedly posterior to anal fin origin; pectoral finray 9 to 12; gillracker 6 to 9 on first arch *B. bagarius*
2. Pelvic fin inserted posterior to base of last dorsal fin ray; adipose fin origin anterior to, on, or but slightly posterior to origin of anal

fin origin; pectoral finray 8 to 11 on first arch *B. yarrelli*

91. *Bagarius yarrelli* Sykes

1841. *Bagarius yarrelli* Sykes, *Trans. Zool. Soc. Lond.*, 2 : 370, fig. 65 (1) (type-locality : Mula Mutha river at Poona); Day (partim), 1877, *Fishes of India* : 495, pl. 115 fig. 3; Day (partim), 1889, *Fauna Br. India*, *Fishes*, 1 : 194, fig. 71; Roberts, 1983, *Copeia*, (2) : 438, fig. 2b, 3.

Local name : Gooah.

Material Examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : Through out India.

Elsewhere : Pakistan, Bangladesh, Myanmar, Thailand.

Remarks : This species is known as angler delight due to its fighting spirit.

92. *Bagarius bagarius* (Hamilton-Buchanan)

1822. *Pimelodus bagarius* Hamilton, *Fishes of Ganges* : 186, 378 (type-locality : Ganga river and its tributaries).

Local name : Gooah.

English name : Fight fish.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand, Corbett Tiger Reserve, Pater Pani Sot, 6 km on Saildi Dam Road from Kalagarh, Sexs., 29.vi.2002, Reg. No. 4485, Coll. J.P. Sati & Party; Champion, Ram Ganga, 2exs., 7.iv.2003, Reg. No. 4658, Coll. V. Khanna & Party; Ram Ganga river, nr. Gharial, 4exs, 24.ii.2005, Reg. No. 5156, Coll. A.N. Rizvi & Party.

Distribution : India : Ganga river system.

Elsewhere : Sri Lanka and Myanmar.

Remarks : This species is known as angler delight due to its fighting spirit.

Genus *Euchiloglanis* Regan

Body elongated, flattened ventrally up to base of pelvic fins. Head small and depressed; snout broadly rounded. Eyes small, subcutaneous, not visible from underside of head. Nostrils close to each other, separated by a flap-bearing nasal

barbels. Skin soft, minutely papillated on ventral surface. Airbladder small, wenclosed in bone.

93. *Euchiloglanis hodgarti* (Hora)

1877. *Exostoma blythii* Day (partim), Fishes of India : 501; Day (partim), 1889, Fauna of Br. India, Fishes, 1 : 109.

1952. *Euchiloglanis hodgarti* : Hora and Silas, *Rec. Indian Mus*, 49(1) : 17.

Material Examined : Uttarkhand : Pater pani, CTR, Nanital, 2exs. 12-2-2002, Coll. Vinod Khanna & Party; Kali river, Balwakot, Pithorgarh, 1ex. Coll. Arun Kumar & Party.

Distribution : North Bengal (Darjeeling), Assam, Kali river (Uttarkhand).

Elsewhere : Bangladesh.

Remark : It carry no economic importance.

Genus *Gagata* Bleeker

1858. *Gagata* Bleeker. *Ichthyol. Ind. Prodr.*, 1 : 204 (type-species : *Gagata typus* Bleeker = *Pimelodus gagata* Hamilton Buchanan).

1981. *Gagata*. Jayaram. *Handbk. Freshw. Fish. India*. 238-239 (genus characters and distribution).

Body short and compressed. Head compressed and narrow. Gill membranes broadly united with isthmus. Barbels 4 pairs, mandibular barbels inserted on a transverse line at the same level. Rayed dorsal fin with not more than 6 rays and a spine. Pectoral fins with 7 to 9 rays and a serrated spine. Pelvic fins with 6 rays. Anal fin with 11 to 16 rays. Caudal fin deeply forked. Lateral line complete, may be with pores in anterior half.

94. *Gagata cenia* (Ham.-Buch.)

1822. *Pimelodus cellia* Hamilton Buchanan. *Fish. Ganges*, 174. pl. 131. fig. 67 (Type-locality : Northern Bcngal).

1877. *Gagata cenia*. Day. *Fish. India*. 492, pl. 115, figs. 4 and 5 : 1889. Day. *Fauna Br. India. Fish.* 1 : 208209. fig. 75.

1981. *Gagata cenia*. Jayaram. *Handbk. Freshw. Fish. India*. 239, fig. 129 (distribution and key to species).

Local name : Jungla.

English name : Gagata, Dwarf blotched catfish.

Materials examined : Uttarkhand : Pater pani, CTR, Nanital, 4exs. 12-2-2002, Coll. Vinod Khanna & Party.

Distribution : India : Assam, Tripura, (South & West Tripura district), West Bengal, Bihar Orissa, Punjab, Delhi, Uttar Pradesh, Uttarkhand.

Elsewhere : Bangladesh. Pakistan. Nepal and Myanmar.

Remarks : This species have no commercially importance.

Genus *Glypthorax* Blyth

1860. *Glypthorax* Blyth *J. Asiat. Soc. Beng*, 29 : 154 (type-species : *Glyptothorax trilineatus* Blyth).

1981. *Glypthorax*, Jayaram. *Handbk. Freshw. Fish. India*. : 252-253 (genus characters and distribution).

Body elongated with smooth or rough with granules or tubercles. Abdomen slightly flat or rounded. Mouth inferior transverse and narrow. Ventral surface of body provided with an adhesive apparatus with or without a central pit or depression on thorax. Barbels 4 pairs one pair each of maxillary, nasal and two of mandibular; maxillary pair with broad bases. Rayed dorsal fin with 5 to 7 rays and a spine. Adipose dorsal fin short and high. Pectoral fins with 6 to 11 rays and a spine strong broad serrated with antrose teeth along inner edge. Pelvic fins with 6 rays. Anal fin with 7 to 14 rays. Caudal fin deeply forked. Lateral line complete.

Key to the species

1. Thoracic adhesive apparatus with a distinct central pit *G. cavia*
Thoracic adhesive apparatus without a central pit 2
2. Body rough with granulations or tubercles ..
..... *G. telchitta*
Body smooth with granulations 3
3. Occipital process apposed to basal bone of dorsal fin *G. pectinopterus*
Occipital process not apposed to basal bone of dorsal fin 4
4. Body plain, devoid of coloured bands
..... *G. saisii*
Body plain, devoid of with less coloured bands 5
5. Adhesive thoracic apparatus broader than long
..... *G. alaknandi*

Adhesive thoracic apparatus broader than short 6

6. Body depth about 5 times in standard length; maxillary barbels extended posteriorly much beyond base of pectoral fin; least depth of caudal peduncle 1.25 to 1.7 times in its length *G. garhwali*

Body depth about 2 times in standard length; maxillary barbels extended posteriorly much beyond base of pectoral fin; least depth of caudal peduncle 2 to 3 times in its length 7

7. Body depth about 6 to 7 times in standard length; maxillary barbels extended posteriorly much beyond base of pectoral fin; least depth of caudal peduncle 2.7 times in its length *G. cavia*

Body depth about 7 times in standard length; maxillary barbels extended posteriorly much beyond base of pectoral fin; least depth of caudal peduncle 4 times in its length 8

8. Thoracic adhesive apparatus longer than broad; dorsal spines smooth *G. conirostris*

Thoracic adhesive apparatus shorter than broad; dorsal spines smooth 9

9. Dorsal fin with 6 branched rays; anal fin with 9 branched rays; dorsal spine serrated on its posterior edge *G. dakapathari*

Occipital process separated from basal bone of dorsal fin *G. telchitta*

95. *Glypthorax cavia* (Ham.-Buch.)

1822. *Pimelodus cavia* Hamilton Buchanan. *Fish. Ganges* : 188 (type-locality : northern rivers or Bengal).

1877. *Euglyptosternum lineatum*. Day *Fish. India* : 500. pl. 116. fig. 7 : 1889. Day. *Fauna Br. India. Fish. India*, 1 : 202-203. fig. 73.

1981. *Glypthorax cavia*, Jayaram. *Handbk. Freshw. Fish. India* : 253, 259 (distribution and key to species).

Local name :

English name : Nil.

Material examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : North Bengal. Assam and Uttarakhand.

Elsewhere : Bangladesh, Nepal, Myanmar and Pakistan.

96. *Glypthorax conirostris* (Steindachner)

1867. *Glypthorax conirostris* Steindachner. *S.B.K. Acad. Wiss. Wien*. 55(1) : 532. pl. 5. fig. 2 (type locality : Simla).

1877. *Glypthorax conirostris* Day, *Fish. India* : 497. pl. 116. fig. 5 : 1889 Day. *Fauna Br. India. Fish*. 1 : 198.

1981. *Glypthorax conirostris conirostris*, Jayaram. *Handbk. Freshw. Fish. India* : 253, 260 (distribution and key to species).

Local name : Nil.

English name : Nil.

Material examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : NE India and The Yamuna near Simla, the Mahananda river Siliguri, North Bengal.

Elsewhere : China.

97. *Glypthorax dakapathari* Tilak & Husain

1976. *Glyptothorax dakapathari* Tilak & Husain, *Ann. Zool.*, 33(14) : 229, figs. 1-6 (type-locality : Yamuna river nr. Dakpathar, Dehradun dist., Uttar Pradesh).

Local name : Soke Machali.

English name : Stone sucker.

Status : Endangered.

Material Examined : Uttarakhand : Asan river, Kunga grant, Dehradun, 2 exs., 12-3-2001, Coll. D.P. Uniyal & Party.

Distribution : Yamuna river nr. Dakpathar; Asan river, Kunga grant, Dehradun dist., Uttarakhand.

Remark : This species carry no economic importance.

98. *Glypthorax garhwali* Tilak

1969. *Glyptothorax garhwali* Tilak, *J. Inland Fish. Soc. India*. 1 : 37, figs. 1-7 (type-locality : Alakananda river nr. Srinagar, Garhwal dist., Uttar Pradesh).

Status : Endangered.

Local name : Patthar chatti.

English name : Stone sucker.

Material Examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : Alakananda river nr. Srinagar, Garhwal dsit., Uttar Pradesh.

Remark : This species carry no economic importance.

99. *Glyphorax horai* Shaw & Shebberae

1842. *Glyphorax horai* Shaw & Shebberae Calcutta. *J. nat. Hist.*, 2 : 587 (type-locality : Shimala).

Status : Low Risk near threatened (LRnt).

Local name : Patthar chat.

English name : Sucker Catfish.

Material Examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : All along the Himalaya.

Remark : This species carry no economic importance.

100. *Glyphorax pectinopterus* (McClelland)

1842. *Glyphorax pectinopterus* (McClelland), Calcutta. *J. nat. Hist.*, 2 : 587 (type-locality : Shimala).

Status : Low Risk near threatened (LRnt).

Local name : Patthar chat.

English name : Sucker Catfish.

Material examined : India : Uttarakhand, 1ex., Mohand Rao, Mohand, Dist. Hardwar, 30.iv.1965, Coll. T. D. Soota; 1ex., Mohand Rao nr. Lalpul, Mohand, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota. 1ex. Mohand Rao nr Lalpul Mohand Dist. Hardwar, 16.vii.1965, Coll. T. D. Soota; 1ex., Mohand Rao nr. Mohand, Dist. Hardwar, 24.ix.1965, Coll., T. D. Soota; 1ex., Mohand Rao nr. Mohand, Dist. Hardwar, 8.ii.1966, Coll. T. D. Soota; 2exs., Mohand Rao, nr. Lalpul, Mohand, Dist. Hardwar, 14.iv.1966, Coll. T. D. Soota; 1ex., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 6exs., Song river, Satyanarain, Dist. Dehradun, 15.ix.1972, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak i 2exs. (92-102 mm), Mohand Rao, Mohand, Dist. Hardwar,

30.x.1986, Coll. Raj Tilak; 21exs., Song river nr. Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 39exs., (max. 104 mm), Song river nr. Kansrao FRH, Dist. Dehradun, 22.i.1987, Coll. R. N. Chopra; 1ex., Suswa river nr. FRH, Phandowala, Dist. Dehradun, 14.v.1987, Coll Raj Tilak; 8exs., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve; Lal Dhang, Jhirna, 4exs., 28.vi.2002, Reg. No. 4465, Coll. J.P. Sati & party; Pater Pani Sot, 6exs., 21.i.2004, Reg. No. 4735, Coll. V. Khanna & Party, Dehradun, Mohand Rao, 11ex., 30.vi.2000, Coll. J.P. Sati & party; Karva pani, Asharori, 11exs., 3.xi.2000, Coll. A. Husian & party; Lalo nala, Sodinagar vill. Shakumbhri road, 1ex., 22.ix.2000, Coll. A. Husian & party; Mohand Rao, 3exs., 3.xi.2000; 13ex., 14.ix.2001, Coll. A. Husian & party, Asan river, Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 32exs., 18.vii.2000; 2exs., 13.x.2000; 1ex., 13.vii.2001; 24exs., 11.x.2001, Coll. N.K. Sinha & party; stream nr. Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; Badowal, Asan River, 18ex., 12.ix.2001, Coll. A. Husian & party; Bhure Shah, 1ex., 20.vii.2001, Coll. P.C. Tak & party; Mohand Rao, 1ex., 14.ix.2001, Coll. A. Husian & party; Karva pani, 1 x., 6.vii.2001, Coll. Arun Kumar & party; Timli forest, 1ex., 23.v.2001, Coll. Vinod Khanna & party; Karva pani, Asharori, 1ex., 1.vii.2000, Coll. J.P. Sati & party; Mohand, A nala near Daat Mandir, 1ex., 24.viii.2001, Coll. A. Husian & party.

Distribution : India (Punjab, Himachal Pradesh, Uttar Pradesh, Bihar, Uttarakhand).

Elsewhere : Pakistan and Nepal.

Remark : This species exhibit sexual dimorphism. It is a bottom living fish of torrents and sticks to the stones with the help of suckers on its thorax.

101. *Glyphorax saisii* (Jenkins)

1910. *Glyptosternum saisii* Jenkins, *ERec. Indian Mus.*, 5(2) : 128, fig. 1, pl. 6 (type locality : Sita nullah, Paresnath hills, : Bihar).

Local name : Pathar-chatti.

Material examined : 1ex., Mohand Rao nr. Mohand, Dist. Hardwar (vide Tilak & Husain, 1978).

Distribution : India (Uttar Pradesh, Bihar, Maharashtra).

Remarks : Tilak and Husain (1978) have redescribed this species and extended the range of its distribution to western part of Uttar Pradesh. It lives in slow moving hill streams and attaches itself to stones or rocks with the help of its thoracic sucker.

102. *Glypthorax telchitta* (Ham.-Buch.)

1822. *Pimelodus telchitta* Hamilton Buchanan. *Fish. Ganges*. : 185 (type-locality : Freshwater rivers of Bengal and Bihar).

1877. *Glyptosternum telchitta*, Day. *Fish. India*. : 498, pl. 116. fig. 2 : 1889, Day. *Fauna Br. India, Fish.* 1 : 199.

1981. *Glyptothorax telchitta telchitta*. Jayaram. *Handbk. Freshw. Fish. India*. : 254 (distribution and key to species).

Local name : Patthat chatti.

English name : Stone sucker.

Material examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : India : Vindhya range of mountains. Uttar Pradesh, Bihar, North Bengal and Uttarakhand.

Elsewhere : Nepal, Bangladesh and Pakistan.

Remark : This species carry no economic importance.

103. *Glypthorax alakandi* Tilak

1969. *Glyptothorax brevipinnis alakandi* Tilak, *J. Inland Fish. Soc. India*, 1 : 42, figs. 8-12 type-locality : Alakananda river nr. Srinagar, Pauri Garhwal dist., Uttar Pradesh).

Local name : Pathari chatti.

English name : Stone sucker.

Material Examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Status : Endangered.

Distribution : Alakananda river nr. Srinagar, Pauri Garhwal dist., Uttarkhand.

Remark : This species carry no economic importance.

Genus *Laguvia* Hora

1921. *Laguvia* Hora, *Rec. Indian Mus.*, 22 : 739 (type-species : *Pimelodus asperus* McClelland).

1981. *Laguvia*, Jayaram. *Handbk. Freshw Fish. India*, 249-250 (genus characters and distribution).

Body short and elongated. Ventral surface of body corrugated or with joint V-shaped groove forming an inconspicuous adhesive apparatus, but not so well developed or prominent as in *Glypthorax*. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular; maxillary barbels with broad bases. Barbels may be annulated. Rayed dorsal fin with 5 to 6 rays and a spine. Adipose dorsal fin short. Pectoral fins with 6 to 8 rays and a spine serrated along inner edge with antrorse teeth. Pelvic fins with 6 rays. Anal fin with 9 to 10 rays. Caudal fin truncate or slightly emarginate, its free portion of posterior border semilunar. Lateral line complete.

104. *Laguvia ribeiroi kapuri* Tilak & Husain

1921. *Laguvia ribeiroi kapuri* Hora. *Rec. Indian Mus.*, 2 : 741. pl. 29. fig : 3) (type-locality : Khoila river, a tributary of the Tista at Jalpaiguri in the Darjeeling district. North Bengal).

1954. *Glypthorax ribeiroi* Menon, *Rec. Indian Mus.*, 52 : 40 (Khoila R. Mosal R., Kamala R. Kosi R. Nepal. Duars and Terai; Rihand R.).

1981. *Laguvia ribeiroi ribeiroi*, Jayaram. *Handbk. Freshw. Fish. India*. : 250 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : Uttarkhand : Ramganga reservoir, nr. Dhikala, CTR, Nanital, 1ex 12-2-2002., Coll. Vinod Khanna & Party.

Distribution : India : NE India : Hoshangabad district. Madhya Pradesh, Uttar Pradesh, Rihand river. Bihar, West Bengal and Uttarkhand.

Elsewhere : Nepal and Bangladesh.

Remark : This species carry no economic importance.

105. *Pseudechensis sclcatus* (McClelland)

1842. *Glyptostyrion sulcatus* McClelland, Calcutta, *J. nat. Hist.*, 2 : 587, pl. 6, fig (type-locality : Khasi Hills, Meghalayas).

1877. *Pseudechensis sclcatus* : Day, *Fishes of India* : 500, pl. 116, fig. 1 : Day, 1889, *Fauna Br. India, Fishes*, 1 : 107; Mishra, 1976, *Fauna of India, Pisces* (2nd ed), 3 : 310, pl. 15, fig. 6; Tilak and Husain, 1973, *Rec. zool. Surv. India*, 67 : 400 (Doon Valley).

Local name : Chipla.

English name : Fixing cat fish.

Material Examined : Uttarkhand : Amlawa river, Alu mandi, 4exs., 12-1-1998; Sahiya Town, Amlawa river, 14-5-2001; Confluence of Tons and Yamuna river, Kalsi, 5exs. 11-8-1999; a stream nr. Kalina, Chakrata 2exs. 17-8-2001; a stream ca 10 km from Seligothan, 4exs. 1-3-2001; Coll. D.P. Uniyal & party; Paterpani, CTR, 5-2-2002; Ramganga reservoir, CTR, 4exs. Nanital, Coll. Vinod Khanna & party; Confluence of eastern & western Nayar river, Marora, 6exs. 4-5-2002; Viyashgath, Nayar river, 1ex. 4-2-2001; Jwalpa devi, Eastern Nayar river, 6exs., 17-3-2003, Pauri Garhwal; EIA, Dhauliganga nr. Madhkot, 4exs., 17-6-2002; Kali river, Balwakot 6exs., 13-6-2002, Pithorgah, Coll. Arun Kumar & party; Aglar river, Bander kot 16exs., 28-6-2004, Tehri Garhwal, Coll. D.P. Uniyal.

Distribution : North Bengal, Meghalaya, Uttarkhand.

Elsewhere : Nepal and Bangladesh.

Remarks : This fish carry not much economic importance.

Family CLARIIDAE
Air breathing Catfishes

Body elongated and compressed. Gill openings wide. Nostrils widely separated, anterior tubular, situated near tip of snout, posterior slit-like and with nasal barbels. Barbels 4 pairs well developed. Dorsal fin very long, separated or continuous with caudal fin. Adipose dorsal fin absent. Paired fin inserted horizontally. Pectoral fins with a strong spine may be serrated. Anal fin long, not continuous with caudal fin. Caudal fin rounded. Lateral line complete.

Genus *Clarias* Scopoli

1777. *Clarias Scoroli*. *Introduction as historiam Naturalam* : 445 (type-species : *Clarius orontis* Gunter).

1981. *Clarius*. Jayaram. *Handbk. Freshw Fish. India*, : 269, 270 (genus characters and distribution).

Body elongated compressed with abdomen rounded. Head greatly depressed covered with osseous plates dorsally and laterally forming a cask covering a diverticulum of the gill cavity. Barbels 4 pairs, one pair each of maxillary, nasal and two of mandibular. An accessory respiratory dendritic branchial organ attached to second to fourth branchial organ attach to second to fourth branchial arches. Dorsal fin with 62 to 77 rays and without any spine. Pectoral fins with 7 to 11 sort rays and a strong serrated spine. Anal fin with 45 to 63 rays. Caudal fin rounded. Lateral line complete.

106. *Clarias batrachus* (Linna.)

1758. *Silurius batrachus* Linnaeus. *Syst. Nat.*, ed. 10. 1 : 305 (type-locality : Asia, Africa).

1877. *Clarias magur*, Day, *Fish. India*. : 485. pl. 112. figs. 5 and 5A; 1889. Day, *Fauna Br. India, Fish*, 1 : 115, figs. 48. 49.

1981. *Clarius batrachus*. Jayaram. *Handbk. Freshw. Fish. India*. : 270 (ditribution and key to species).

Local name : Maguf.

Material Examined : Uttarkhand : Chilla barrage, Haridwar, 4ex. (purchesd from fisher men), 12-3-2004, Coll. J.P. Sati & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka, Myanmar, Thailand, China, Vietnam, Malacca, Philippines, Java, Bali, Lombok, Sumatra, Singapore and Borneo.

Family HETEROPNEUSTIDAE
Airsac Catfishes

Body elongated and compressed. Gill openings wide. Nostrils widely separated, anterior produced into a short tube, on tip of snout, posterior slitlike behind nasal barbels. Barbels 4 pairs, well developed. Rayed dorsal fin short and no spine. Adipose fin absent or represented by a low ridge. Paired fins horizontally inserted. Pectoral fins with a strong serrated spine. Anal fin long, just reaching or confluent with caudal fin. Caudal fin almost rounded. Lateral line complete. A long air sac, serving as a lung extends posteriorly from gill chamber.

Genus *Heteropneustes* Miiller

1840. *Heteropneustes* Miiller, *Arch. Anat. Physiol.* : 115
(type-species : *Silurus fossilis* Bloch).

1840. *Saccobranchus* Valenciennes, *Hist. Not. Poiss.* 15 :
399 (type-species : *Silurus singio* Hamilton
Buchanan).

1981. *Heteropneustes*. Jayaram. *Handbk. Freshw. Fish.*
India. : 273 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Head greatly depressed, covered with thin skin. Barbels 4 pairs one pair each of maxillary nasal and two of mandibular. Rayed dorsal fin with 6 to 8 rays and without any spine, inserted above tip of pectoral fins. Adipose fin absent or represented by a low ridge. Pectoral fins with 7 to 8 soft rays and a strong serrated spine. Pelvic fins with 6 rays. Anal fin with 60 to 79 rays, almost reaching caudal fin. Caudal fin almost rounded. Lateral line complete.

107. *Heteropneustes fossilis* (Bloch)

1794. *Silurus fossilis* Bloch, *Natugesch. Ausl. Fische*, 8 : 46,
pl. 370, fig. 2 (type-locality : Tranquebar, Tamil
Nadu).

1976. *Heteropneustes fossilis* : Mishra, *Fauna of India*,
Pisces (2 ed), 3 : 135, fig. 24.

Local name : Singhi, Billi macchi.

English name : Scorpion Fish.

Status : Vulnerable (VU).

Material examined : India : Uttarakhand,
Dehradun : 1ex. (138 mm), Song river, Kansrao,
Dist. Dehradun, 20.v.1976, Coll. Arun Kumar.,
Karva pani, Asharori, 3exs, 8.vi.2001, Coll. J.P.
Sati & party; 1ex., 28.vi.2001, Coll. A. Husian &
party.

Distribution : India (Punjab, Bihar, Uttar
Pradesh, Uttarakhand, W.Bengal, Orissa, Madhya
Pradesh).

Elsewhere : Pakistan, Nepal, Sri Lanka,
Bangladesh and Thailand.

Remarks : This fish is much dreaded, because
on capture, they may inflict wounds by their bony
pectoral spines which are reported to be very
poisonous, causing fever and inflammation or even
occasionally tetanus. The flesh of this fish is

known for its invigorating property. It prefers
muddy habitat.

Order Salmoniformes

Body subcylindrical, with cycloid scales; head
naked. Maxilla included in gape of mouth; teeth
on maxillae; mesocoracoid and orbitosphenoid
present; suprapreopercular present. Gill-
membranes extending far forward, free from
isthmus. Dorsal fin inserted about opposite to
pelvic fins; an adipose dorsal fin present.
Branchiostegal rays 7 to 20. Almost all
salmoniforms spawn in freshwater.

Family SALMONIDAE Salmonids; Trouts

Body streamlined, with fine scales but the head
is naked. Mouth wide; maxilla with teeth,
extending up to anterior edge of orbit. No barbels.
Eyes large, dorsolateral in position. Opercular
bones well-developed. Gill-membranes extending
far forward, free from isthmus. Dorsal fin short,
with fewer than 16 rays; a small adipose fin
present. Pelvic axillary scale present.
Pseudobranchiae present. Pyloric caeca 11 to 210.
Branchiostegal rays 7 to 20. Airbladder simple.
Basically, fishes of the family Salmonidae are
anadromous. The members of this family are
primarily denizens of the Arctic and Northern
Seas. The various species of Salmonidae comprise
two distinct natural groups occurring in the North
Atlantic and North Pacific. The North Atlantic
group includes species belonging to the genus
Salmo (which also includes the trouts) while the
North Pacific group includes species of the genus
Oncorhynchus (also popularly called salmon).
Modern ichthyology has recognised a third group,
the charrs, exemplified by *Salvelinus*, which are
secondarily adapted to lacustrine existence. Nearly
all members of the family are mainly restricted to
the coastal waters of the continents and islands of
the Northern Seas. Only a few have spread
naturally beyond this range as in Atlas Mountains
of Northern Africa. But man-made introductions
and transplantations have spread several species of
salmons and trouts to areas far beyond their natural
distributional range where they are said to be
firmly established. Trout and salmon eggs in the
"eyed" stage can be shipped without difficulty.
Hence these fishes have been widely distributed

all over the world and, therefore, the present distribution of any given species may bear little relationship to its original range.

Genus *Salmo* Linnaeus

1758. *Salmo* Linnaeus, Systema Naturae, 1, ed. 10 : 308 (type-species : *Salmo salar* Linnaeus); Behnke, 1979, Monograph of the native trouts of the genus *Salmo* of western North America : 1-215 (Review).

Body elongate. Head moderate-size. Mouth large, its cleft extending to front edge of eye; teeth conical and well-developed on jaws, palate and tongue; teeth on prevomer on both its head and shaft, in a double zig-zig series. Dorsal fin inserted above pelvic fins, with 12 to 14 rays; adipose fin small. Anal fin short, with 8 to 12 rays. Caudal fin forked. Scales small and cycloid; lateral line straight, with 115 to 160 scales. Young marked with cross-bands. Freshwater and anadromous; North Atlantic basin, European Arctic and North Pacific basin. The salmonid fishes, in general, exhibit a large amount of variation in shape and colouration in different habitats. The nuptial colouration of the male is much brighter than that of the female. The particular water has a marked influence on the colour of these fishes; those inhabiting high altitude rivers and lakes bear intensely coloured spots, whereas others living in large lakes with pebbly bottom at lower latitude have a mixture of dark spots and x-shaped marks. The species of this genus interbreed among themselves and thus produce a variety of interspecific hybrids. About 10 species; four introduced in the Indian region.

Key to the species

1. Body with no spots below lateral line; colour steel blue; lateral line scales 127 to 160; a brilliant reddish band along side of body
..... *S. gairdnerii gairdnerii*
2. Body with spots below lateral line; colour greenish or brownish; lateral line scales 115 to 130 *S. gairdnerii irideus*
3. Body brownish; adults with reddish spots on sides of body, each surrounded by a light-coloured area *S. trutta fario*

108. *Salmo gairdnerii gairdnerii* Richardsons

1836. *Salmo gairdnerii* Richardson, Fauna boreali Amer., Fish, (3) : 221 (type-locality : Columbia river at Port Vancouver).

1982. *Salmo gairdnerii gairdnerii* : Tilak and Sharma, Game Fishes of India and Angling : 150, fig. 56b.

English name : Rainbow Trout.

Material Examined : Uttarkhand : Tons river (Confluence of Rupine and Supin river), Natwar, Uttarkashi, 2exs. 12-7-1996, Coll. A. Husain & party.

Distribution : Introduced in Various part of India (mainly high altitude).

Eslewere : Northern America, Mexico, Pakistan, and Srilanka.

Remark : This is an exotic fish introduced in India in 1869 from U.K., New Zealand and Srilanka for the commercial purpose.

109. *Salmo gairdnerii irideus* Gibbons

English name : Trout.

Material Examined : Uttarkhand : Tons river (Confluence of Rupine and Supin river), Natwar, Uttarkashi, 1ex. 12-7-1996, Coll. A. Husain & party.

Distribution : Introduced in various part of India (mainly high altitude).

Eslewere : Northern America, Mexico, Pakistan, and Srilanka.

Remark : This is an exotic fish introduced in India in 1869 from U.K., New Zealand and Srilanka for the commercial purpose.

110. *Salmo trutta fario* Linn

1758. *Salmo fario* Linnaeus, Systema Naturae, 1, ed. 10 : 309 (type-locality : Rivers of Switzerland).

1982. *Salmo trutta fario* : Tilak and Sharma, Game fishes of India and Angling : 149, figs. 55, 56a.

English name : Brown Trout.

Material Examined : Uttarkhand : Tons river (Confluence of Rupine and Supin river), Natwar, Uttarkashi, 4exs. 12-7-1996, Coll. A. Husain & party.

Distribution : Introduced in various part of India (mainly high altitude).

Eslewere : Northern America, Mexico, Pakistan, and Srilanka.

Remark : This is an exotic fish introduced in India in 1869 from U.K., New Zealand and Srilanka for the commercial purpose.

Order CYPRINODONTIFORMES

Body short, compressed or elongated with scales. Head with scales. Upper jaw protractile in many species. Fin spines present or absent. A single spineless dorsal fin. Pelvic fins abdominal, subabdominal or thoracic. Lateral line absent. Swimbladder physoclistic. Teeth present in both jaws, also in superior and inferior pharyngeal bones.

Key to the Families

1. Jaws produced into a long and pointed beaklike structure. Lateral line present on free portion of tail with or without a keel
..... BELONIDAE
2. Jaws not produced into a beak-like structure. Lateral line absent
..... CYPRINODONTIDAE
3. Pelvic fin bases inserted close together
..... APLOCHEILIDAE
4. Caudal peduncle longer than heads; males with elongated anterior anal finrays, with internal fertilization, bear young alive
..... POECILIIDAE

Family BELONIDAE Garfishes, Neddlefishes

Body elongated, rather slender with both upper and lower jaws extended into a long beak-like structure. Teeth on jaws and palate without teeth in Indian species. Head and body with small cyclo 9 scales. Dorsal and anal fins posterior in position. No spines ill fills. Dorsal fin generally with 10 to 26 rays and anal fin with 14 to 23 rays. Lateral line low down.

111. *Xenentodon cancilia* (Ham.-Buch.)

1822. *Esox cancila* Hamilton-Buchanan, *Fish. Ganges* : 213, 380, pl. 27. fig. 70 (type-locality : Ponds and smaller rivers of Gangetic provinces).

Local name : Sua, Chamti Machhi.

English name : Needle Fish, Freshwater Grafish.

Status : Low Risk near threatened (LRnt).

Material examined : India : Uttarakhand : 1 ex., Song river nr. Railway Bridge, Kansrao, Dist. Dehradun, 26.ii.1965, Coll. T.D. Soota; 1 ex., Suswa river, Clement Town, Dist. Dehradun, 23.vii. 1965, Coll. T.D. Soota; 2 exs., Song river, Pritinagar nr. Gaurighat. Dist. Dehradun, 12.iv.1966, Coll. T.D. Soota; 2 exs., Song river, Satyanarain, Dist. Dehradun. 7.iv.1966, Coll. T.D. Soota; 3 exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak; 1 ex., Song river, Satyanarain, Dist. Dehradun, 22.iv.1980, Coll. Akhlaq Husain; 8 exs., Ganga canal seepage, ca. 7 km east of Chila. Dist. Pauri, 11.ix.1987, Coll. Raj Tilak; 1 ex., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak. Dehradun dist., Mohand Rao, 3 exs., 9.xi.2001, Coll. A. Husian & party; karva pani, Asharori, 3 exs., 22.xi.2001; 1 ex., 27.xi.2001, Coll. J.P. sati & party; Kajnawar nala, Shakumbhri road, 1 ex., 12.4.2002, Coll. S.K. Gupta & party; Punjana nadi, 4 exs., 28.xi.2001, Coll. N.K. Sinha & party; Sankra nala, Badshahi bagh road, 1 ex., 15.xi.2000, Coll. D.P. Uniyal & party.

Distribution : Throughout India.

Elsewhere : Bangladesh, Nepal, Pakistan and Myanmar.

Remarks : It generally, swims in shoals of 5-10 on the surface of water.

Family APLOCHEILIDAE Killifishes

Body moderately elongated and compressed small fishes. Head and body with scales. Barbels absent. Typically members of this family have a flattened head. Mouth opens upward, an adaptation for feeding at the surface. A single soft-rayed spineless dorsal fin inserted in the posterior half of the body. Pelvic fin bases (when fins are present) relatively far apart. Lateral line absent. These killifishes are also known as topminnows and toothed carp. Many species are employed for mosquito control measure.

Genus *Aplocheilus* McClelland

1939. *Aplocheilus* McClelland, *Asiat. Res.*, 19 : 301 (type-species : *Aplocheilus chrysostigmus* McClelland).

1981. *Aplocheilus*. Jayaram. *Handbk. Freshw. Fish. India.* : 294, 295 (genus characters and distribution).

Fishes almost elongated and compressed body with abdomen rounded. Upper surface of head and nape broad and compressed. Mouth terminal, moderately wide, cleft not extending to anterior margin of the orbit. Upper jaw protractile. Barbels absent. Dorsal fin inserted above or behind hind margin of anal fin, with 7 to 11 rays and without any spine. Pelvic fins relatively far apart. Anal fin with 15 to 18 rays. Caudal fin rounded. Scales cycloid, 27 to 34 in lateral series. Lateral line absent.

112. *Aplocheilus panchax* (Ham.-Buch.)

1822. *Esox panchax* Hamilton Buchanan. *Fish. Ganges*, : 211, 380, pl. 3, fig. 69 (type-locality : ditches and ponds of Bengal).

1877. *Hoplocheilus panchax*, Day, *Fish. India*, : 523, pl. 121, fig. 3 : 1889. Day, *Fauna Br. India*. 1 : 417.

1981. *Aplocheilus panchax*, Jayaram, *Handbk. Freshw. Fish, India*, : 295 (distribution and key to species).

Local name : Techokko.

English name : Lesser top minnow.

Materials examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : North of India (lower Indus plains).

Elsewhere : Pakistan, and Bangladesh.

Remark : This is a larviouras fish and is used for biological control of mosquitoes.

Family POECILIIDAE

Liverbearers

Body cylindrical and compressed posteriorly. Upper jaw bordered by premaxilla only, protrusible ; lower jaw fairly prominent. Teeth small on jaws; plate edentulous. Nasal opening paired. Gill-membranes free from each other, also from isthmus. Dorsal fin short, without any spine. First three anal finrays unbranched; anal fin of female usually rounded; anal fin of male modified to serve as external genitalium.

Genus *Gambusia* Poey

1854. *Gambusia* Poey, *Memorias sobre la historia natural de la Isla de Cuba*, 1 : 376, (type-species : *Gambusia*

punctata Poey); Rosen and Bailey 1963; *Bull. Am. Mus. Nat. Hist.*, 126(1) : 90-107 (Revision); Rivas, 1963, *Copeia* : 331-347 (Subgenera and Species groups).

Lower jaw protracting. Dorsal and anal fins short; dorsal fin inserted behind anal origin. Adistal and subdistal zone of melanophores on dorsal and caudal fins. This genus is introduced in through out India for biological control of mosquitoes.

113. *Gambusia affinis holbrooki* Girard

1853. *Heterandria affinis* Baird and Girard, *Proc. Acad. Nat. Sci. Philad.*, 6 : 390 (type-locality : San Antonio river drainage, Texas).

1968. *Gambusia affinis holbrooki* (nec Baird and Girard) Das and Rampal, *Kmr. Sci.*, 5(1/2) : 36.

Local name : Machar machli.

English name : Mosquito fish.

Materials examined : Uttarakhand : Asan river, village. Kunga grant, Dehradun, 2exs., 12-12-2002, Coll. D.P. Uniyal & party; Chila barrage, Haridwar, 1ex. 3-2-2004, Coll. A. Bahuguna & party; Nanak mata reservoir, Udhan Singh Nagar, 2exs., 2-1-2003, Coll. A. Buguna & party.

Distribution : Introduced in various part of India (Exotic fish).

Elsewhere : South-eastern USA.

Remark : Exotic fish, introduced in various part of India for the biological control of mosquitoes.

Order Synbranchiformes

Body eel-like and compressed. Scales absent, if present, with small scales, arranged in a longitudinal rows. Margin of upper jaw formed by the premaxillaries. the maxillaries being internal and parallel to them. Teeth on jaws and palate. Gill membranes united and gill openings in the form of a single transverse opening. Accessory respiratory organs may be present. Vertical fins rudimentary in the form of mere folds of skin. Paired fins absent. Lateral line present.

Family SYNBRANCHIDAE

Body elongated and eel-like. Scales if present, minute. Gill membranes united and attached to isthmus. Gill opening confluent into a single slit,

which is situated on the abdominal surface. Dorsal and anal fins vestigial or reduced to a rayless mere fold of skin. Caudal fin reduced or absent. Pectoral and pelvic fins absent. An accessory respiratory apparatus may be present.

Genus *Monopterus* Lacepede

1800. *Monopterus* Lacepede, *Hist. Nat. Poiss.*, 2 : 138 (type-species : *Muraena alta* Zuiew).

1841. *Amphipnous* Muller, *Abh. Akad. Wiss. Berlin*, : 544 (type-species : *Unibranchipertura cuchia* Hamilton b Buchanan).

1981. *Monopterus*, Jayaram, *Handbk. Freshw. Fish. India*, : 309, (genus characters and distribution).

Body elongated, eel-like and compressed. Abdomen rounded. Gill openings triangular or crescentic without lateral folds and internally attached to isthms. Dorsal and anal fins in the form of mere folds or ridges of skin. Dorsal ridge commences behind vent or anal fin. Jaws and palate with bands of villiform teeth. Caudal fin bluntly rounded. A respiratory air-sac exists on the neck behind the head and communicates with the gill cavity. Scales uniformly distributed. Lateral line well developed.

114. *Monopterus cuchia* (Hamilton Buchanan)

1822. *Unibranchipertura cuchia* Hamilton Buchanan, *Fish. Ganges*, : 16, 363, pl. 16, fig. 4 (type-locality : rivers and ponds of S.E. parts of Bengal).

1878. *Amphipnous cuchia*. Day, *Fish. India*, : 656, pl. 167, fig.; 1889. Day, *Fauna Br. India, Fish*, 1 : 69, fig. 27.

1981. *Monopterus cuchia*, Jayaram, *Handbk. Freshw. Fish. India*, : 310 (distribution and key to species).

Local name : Kuchia.

English name : Freshwater eel, Cuchia.

Materials examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : India : NE India and Northern India.

Elsewhere : Pakistan, Nepal, Myanmar and Bangladesh.

Remarks : This fish is not liked as food fish by the inhabitat of the state.

Order Perciformes

Body with usually ctenoid scales. Fins generally with spines. Dorsal fin two in number, the first one being spiny. Pectoral fins inserted high on the sides. Pelvic fins thoracic or jugular, with one spine and five rays, sometimes fewer. Caudal fin never more than 17 principal rays, often fewer. Head and cheeks with muciferous canals and pores. Lateral line, when present continuous (exception Chanda Hamilton Buchanan). Bones of head generally with numerous pungent spines.

Key to the families

1. Pelvic fins united with a membrane or frenum across their base, forming a sucking disc
..... GOBIIDAE

Pelvic fins may be close but not united as above, may be apart 2

2. An accessory respiratory organ in the form of a cavity above the third or upper portion of the first branchial arch present 3
No such respiratory organ present 5

3. First ray of pelvic fins produced into a long filament. Pelvic fins inserted behind or posterior to pectoral fins 4

First rays of pelvic fins not produced into a long filament. Pelvic fins inserted below base of pectoral fins ANABANTIDAE

4. Anal fin longer than dorsal fin
..... BELONTIDAE

Anal fin shorter than or equal to dorsal fin
..... OSPHRONEMIDAE

5. Anal fin with 2 spines only
..... SCIAENIDAE

Anal fin with 3 to 15 spines 6

6. Spinous and soft part of dorsal fin well separated MUGIIDAE

Spinous and soft part of dorsal fin continuous
..... 7

7. Forwardly directed recumbent spine before dorsal fin present..... CHANDIDAE

No recumbent spine before dorsal fin present
..... 8

8. Maxilla extending anterior margin of orbit
Two nostrils on each side of head

..... NANDIDAE

- Maxilla not extending anterior margin of orbit. Single nostril on each side of head

..... CICHUAE

Family CENTROPOMIDAE

Body short elevated, oblong, compressed and slightly translucent. Scales small, deciduous cycloid on head and body. Lower limb of preopercle with a double serrated margins and opercle with a poorly developed spine. Teeth on jaws and palate, the upper outer row sometimes enlarged and canine-like. Dorsal fin with two continuous, a spinous and a soft part. Anal fin with spines. A forwardly directed recumbent spine ahead of dorsal fin present. Lateral line complete, interrupted or absent.

Genus *Chanda* Hamilton Buchanan

1822. *Chanda* Hamilton Buchanan. *Fish. Gange* : 103, 270
(type-species : *Chunda nalu* Hamilton Buchanan).

1981. *Chanda*. Jayaram. *Handbk. Freshw. Fish. India* : 317.
318 (genus characters and distribution).

Body short, compressed almost diaphanous. Abdomen rounded. Lower limb of preopercle provided with a double serrated edge and operculum without a prominent spine. Two dorsal fins continuous, the first dorsal fin with 7 spines and the second dorsal fin with 1 spine and 9 to 17 rays. A forwardly directed recumbent spine anterior to dorsal fin present. Anal fin with 3 spines and 9 to 17 rays. Caudal fin forked. Lateral line complete, incomplete, interrupted or absent. Scales small, cycloid, frequently deciduous.

Key to the species

1. Lateral line indistinct, discontinuous or absent.
Generally a dark blotch on dorsal fins upper edge present *C. nama*
2. Lateral line distinct. No such colour blotch on dorsal fin, a dark shoulder spot present
..... *C. ranga*

115. *Chanda nama* Ham.-Buch.

1822. *Chanda nama* Hamilton Buchanan, *Fish. Ganges* :
109. (type-locality : ponds throughout Bengal).

1875. *Amhassis baculis*., Day, *Fish. India* : 50, pl. 14, fig. 5; 1889. Day. *Fauna Br. India, Fish*, 1 : 484, fig. 149.

1981. *Chanda nama*, Jayaram. *Handbk. Freshw. Fish India*.
: 317, fig. 178 (distribution and key to species).

Local name : Chanda.

English name : Glassy perchlet.

Materials examined : The specimens were not collected by the present authors, but included the species on the basis of reports from Husain (1995).

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bangladesh and Myanmar.

Remarks : This restricted in very limited districts of the state.

116. *Chanda raga* Ham.-Buch.

1822. *Chanda ranga* Hamilton Buchanan. *Fish. Ganges* :
113. pl. 16. fig. 38 (type-locality : freshwater of all parts of the Gangetic provinces).

1875. *Ambassis ranga*. Day, *Fish. India*. 51. pl. 14. fig. 6;
1889. Day, *Fauna Br. India. Fish*, 1 : 485.

1981. *Chanda raga*. Jayaram. *Handbk. Freshw. Fish. India*,
: 318 (distribution and key to species).

Local name : Chanda.

English name : Indian glass fish.

Materials examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bangladesh, Myanmar, Malaya and Thailand.

Family NANIDAE

Leaf fishes

Body oblong and compressed, with ctenoid scales. Head usually large and covered with scales. Mouth generally large and highly protrusible. Teeth on jaws and palate. Operculum armed with a spine. Dorsal fin continuous with a spinous and a soft portion. Pelvic fins thoracic, without scaly axillary process. Anal fin with 3 spines. Caudal fin rounded. Lateral line interrupted or absent.

Key to the genera

1. Cleft of mouth not extending to anterior margin of the orbit. Lateral line scales 26 to 33 *Badis*

2. Cleft of mouth extending posterior margin of the orbit. Lateral line scales 46 to 57
..... **Nandus**

Genus *Nandus* Valenciennes

1831. *Nandus* Valenciennes. *Hist. nat. Poiss.*, 7 : 481 (type-species : *Nandus Illarilloratus* Cuvier).
1981. *Nandus*, Jayaram. *Handbk. Freshw. Fish. India*, 335-335 (genus characters and distribution).

Body oblong, compressed with abdomen rounded. Mouth terminal, very protractile, maxilla extending to below hind margin of the orbit. Opercle with a spine, preopercle, preorbit, suband inter-opercles serrated or almost entire. Dorsal fin 12 to 14 spines and 11 to 13 rays, spinous portion longer than soft part. Anal fin with 3 spines and 7 to 9 rays. Caudal fin square shaped. Lateral line interrupted at about 36th scale, 46 to 57 scales along lateral series.

117. *Nandius nandius* (Ham.-Buch.)

1822. *Coius nandus* Hamilton Buchanan, *Fish. Ganges*, : 96. pl. 30, fig. 32 (type-locality : ponds of Gangetic provinces).
1875. *Nandus marmoratus*, Day, *Fish. India*, : 129, pl. 32, fig. 1; 1889. Day, *Fauna Br. India, Fish.*, 2 : 82-83. fig. 39.
1981. *Nandius nandius*. Jayaram, *Handbk. Freshw. Fish. India*, : 335. fig. 185 (distribution and key to species).

Local name : Nadosh.

English name : Nandus.

Materials examined : Uttarkhand : 1ex., Ganga canal seepage, ca. 7 km east of Chila, Dist. Pauri, 11.ix.1987, Coll. Raj Tilak; 2exs., Song river, Satyanarian, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak; 4exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Jhima Sot, 2exs., 29.vi.2002, Reg. No. 4478, Coll. J.P. Sati & Party; Garjia & around, 12exs., 5.vi.2003, Reg. No. 4644, Coll. V. Khanna & Party, Mohand Rao, 3exs., 9.xi.2001, Coll. A. Husian & party; karva pani, Asharori, 3exs., 22.xi.2001; 1ex., 27.xi.2001, Coll. J.P. sati & party; Kajnawar nala, Shakumbhri road, 1ex., 12.4.2002, Coll. S.K. Gupta & party; Punjana nadi, 4exs., 28.xi.2001, Coll. N.K. Sinha & party; Sankra nala, Badshahi bagh road, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party, Sankra nala, Badshahi

bagh road, 1ex., 13.x.2000, Coll. N.K. sinha & party; Timli forest, 1ex., 6.vii.2001, Coll. Arun Kumar & party.

Distribution : Throughout India.

Elsewhere : Bangladesh, Nepal, Pakistan, Myanmar, Malaya and Thailand.

Remarks : *N. nandus* is a new record from Dehradun district. It is a piscivorous fish preying upon small carps in paddy fields and ditches.

Genus *Badis* Bleeker

1853. *Badis* Bleeker. *Verh. Bat. Genootsch.*, 25 : 106 (type-species : *Labrus badis* Hamilton Buchanan = *Badis bucharani* Bleeker).
1981. *Badis*. Jayaram. *Handbk. Freshw. Fish. India*, : 334. 335 (genus descriptions and distribution).

Mouth protractile. Opercle with one sharp spine and other bones of head armed. Villiform teeth on jaws, vomer and palatines, absent from the tongue. A single dorsal fin the spinous part of much greater extent than the soft. Anal fin with 3 spines, its rayed portion similar to that of the dorsal fin. Cleft of mouth not extending to front border of the orbit. Lateral line interrupted or absent, with 26 to 33 ctenoid scales when present.

118. *Badia badis* (Hamilton-Buchanan)

1822. *Labrus badis* Hamilton-Buchanan, *Fishes of Ganges* : 70 (type-locality : Ponds and ditches throughout Gangetic provinces).

English name : DWARF Chameleon Fish.

Status : Not Evaluated (NE).

Material examined : India : Uttarakhand : 2exs, Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T.D. Soota; 1ex., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak; 1ex., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 9.i.1987, Coll. Raj. Tilak; 1ex., Song river nr. Railway Station, Kansrao, 14.i.1987, Coll. N.K. Sinha; 2exs., Song river, Kansrao Forest, Dist. Dehradun, 20.i.1987. Coll. J.C. Tripathi; 1ex., Small stream, ca 10 km east of Phandowala FRH, Dist. Dehradun, 15.v.1987, Coll. Raj Tilak; 8exs., Small stream nr. Phandowala, ca 2 km from Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain; 7exs., Small stream nr. Phandowala, ca 4 km from

Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain; 1ex., Ganga canal seepage, ca. 7 km east of Chila, Dist. Pauri, II.ix.1987, Coll. Raj Tilak; 2exs., Song river, Satyanarian, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak; 4exs., Song river, Satyanarain, Dist. Dehradun, 14.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Jhirna Sot, 2exs., 29.vi.2002, Reg. No. 4478, Coll. J.P. Sati & Party; Garjia & around, 12exs., 5.vi.2003, Reg. No. 4644, Coll. V. Khanna & Party, Mohand Rao, 3exs., 9.xi.2001, Coll. A. Husian & party; karva pani, Asharori, 3exs., 22.xi.2001; 1ex., 27.xi.2001, Coll. J.P. sati & party; Kajnawar nala, Shakumbhri road, 1ex., 12.4.2002, Coll. S.K. Gupta & party; Punjana nadi, 4exs., 28.xi.2001, Coll. N.K. Sinha & party; Sankra nala, Badshahi bagh road, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party, Sankra nala, Badshahi bagh road, 1ex., 13.x.2000, Coll. N.K. sinha & party; Timli forest, 1ex., 6.vii.2001, Coll. Arun Kumar & party.

Distribution : Throughout India.

Elsewhere : Bangladesh, Pakistan and Thailand.

Remark : This species is used in aquarium, it inhabits in sluggish water with plenty of vegetation.

Family MUGILIDAE

Body oblong to elongated, silvery fishes. Head and body with scales. Eyes with or without adipose eyelids. Opercles with or without a spine. Gill openings wide. Two dorsal fins short well separated first with 4 spines. Lateral line absent. These fishes are distributed throughout the seas of India some ascending tidal rivers or being found in estuaries. The young specimens usually enter large rivers and are found in watercourses intersecting paddyfields and in inundated localities.

Key to the genera

1. Opercle with a spine. Eyes large, lateral in position. Scales 36 to 39 along lateral series *Sicamugil*
2. Opercle without a spine. Eyes comparatively shorter. bulging, dorso-lateral in position. Scales 48 to 52 along lateral series *Rhinomugil*

Genus *Sicamugil* Fowler

1939. *Sicamugil* Fowler. Notul. Nat. Acad. Philad., 17 : (type-species : *Mugil hamiltonii* Day).

1981. *Sicamugil*, Jayaram, *Handbk. Freshw. Fish. India*. 344 to 345 (genus characters and distribution).

Mouth protrusible. Eyes large, lateral anterior in position. Snout obtuse. Adipose eyelids absent. Distinct teeth all jaws and palate absent. Opercle with a strong spine. A symphyseal knob present on lower jaw. Caudal fin forked. Scales 36 to 39 along lateral series.

120. *Sicamugil cascasia* (Ham.-Buch.)

1822. *Mugil cascasia* Hamilton Buchanan. *Fish. Ganges*. : 217. (type-locality : northern rivers or Bengal).

1876. *Mugil cascasia*. Day. *Fish. India*. : 155. pl. 75. fig. 6 : 1889. Day. *Fauna Br. India. Fish.* 2 : 351.

1981. *Sicamugil cascasia*, Jayram, *Handbk. Freshw. Fish. India*, : 344 to 345, fig.190 (distribution and key to species).

English name : Yellow tail mullet.

Materials examined : 1ex., Ganga canal seepage, ca. 7 km east of Chila, Dist. Pauri, II.ix.1987, Coll. Raj Tilak; 2exs., Song river, Satyanarian, Dist. Dehradun, 13.ix.1987, 1ex., 13.x.2000, Coll. N.K. Sinha & party; Timli forest, 1ex., 6.vii.2001, Coll. Arun Kumar & party.

Distribution : India : NE India Upper reaches or Ganga. Yamuna, Brahmaputra river systems.

Elsewhere : Pakistan, Myanmar, Bangladesh and Sri Lanka.

Genus *Rhinomugil* Gill

1863. *Rhinomugil* Gill. *Proc. Acad. Nat. Sci. Philad.*, 15 : 169 (type-species : *Mugil corsula* Hamilton Buchanan).

1981. *Rhinomugil*, Jayaram. *Handbk Freshw. Fish. India*. : 345 (genus characters and distribution).

Mouth distinctly ventral and protrusible. Eyes bulging dorso-lateral and anterior in position. Snout flat. Short, overhanging. Adipose eyelids absent. Lips thin. Upper lip not forming tip of snout or part of dorsal profile, but distinctly ventral overhung by snout. Symphyseal knob present on lower jaw. Teeth indistinct. Opercle without any spine. Caudal fin emarginate. Scales

48 to 52 along lateral series.

119. *Rhinomugil corsula* (Ham.-Buch.)

1822. *Mugil corsulia* Hamilton Buchanan, *Fish. Ganges*, : 221, pl. 9. fig. 97 (type-locality : rivers or (Gangetic provinces in the southern parts or Bengal).

1876. *Mugil corsulia*. Day, *Fish. India*. : 354. pl. 71, fig. 6 : 1889, *Day. Fauna Br. India. Fish*, 2 : 349.

1981. *Rhinomugil corsula*. Jayaram. *Handbk. Freshw. Fish. India*. : 4-16 (distribution).

Local name : Nadir bata.

English name : Corsula mullet.

Materials examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : Through out India.

Elsewhere : Bangladesh, Nepal and Myanmar.

120. *Sicamugil cascasia* (Ham.-Buch)

1822. *Mugil casasia*, Hamilton-Buchanan, *Fishes of Ganges* : 217, 380 (type-locality : northern rivers of Bengal); Day, 1876, *Fishes of India* : 355, pl. 75, fig. 6 : Day, 1889, *Fauna Br. India, Fishes*, 2 : 351.

English name : Yellotail mullet.

Material Examined : Uttarkhand, Mohan, CTR, 2exs., 2-2-2002, Coll. Vinod Khanna & party; Nanak Mata Reserviour, Udham Singh Nagar, 1ex., 11-1-2004, Coll. A. Bahuguna & party.

Distribution : India : Ganga, Yamuna and Bhramaputra systems.

Elsewhere : Bangladesh.

**Family GIBIINDAE
Gobies**

Body generally elongated. Head generally with mucous canals and open pores. Two dorsal fins united with each other or separated narrowly by a notch or well separated, with 2 to 8 soft flexible spines and or soft rays. First dorsal fin may be absent. The second or soft-rayed dorsal fin and the anal fin mirror each other in size and shape. The bases of their pelvic fins, when well developed, united generally forming an adhesive or sucking disc with which they hold on to the bottom. Anal fin short or long or continuous with caudal fin.

Lateral line absent, exposed pit organs present. Scales cycloid or ctenoid (rarely absent).

Genus *Glossogobius* Gill

1860. *Glossogobius* Gill. *Proc. A cad. nat. Sci. Philad.*, (1859) : 146 (type-species : *Cobius platycephus* Richardson).

1981. *Glossogobus*. Jayaram. *Handbk. Freshw. Fish. India*. : 357 (genus characters and distribution).

Two dorsal fins, separated by a short interspace, first dorsal with 6 flexible spines and second dorsal with I spine and 6 to 10 soft rays, not elongated. Pelvic fins united, forming a sucking disc. Anal fin with I spine and 8 to 9 soft rays. Caudal fin oblong to rounded. Scales ctenoid on body and cycloid on head, 28 to 36 scales along lateral series.

Key to the species

1. Branchiostegal membranes form a free fold across isthmus; body dark with many longitudinal lines, sometimes with saddles; iris without a lappet *G. giuris*
2. Branchiostegal membranes form a free fold across isthmus; body dark with many longitudinal lines, sometimes with saddles; with iris *G. gutum*

121. *Glossogobius gutum* (Ham.-Buch.)

1822. *Cohius gutum* Hamiltinn Buchanan. *Fish. Ganges*. : 51. 365. pl. 33. fig. 15 (type-Incality : ponds and freshwater rivers nf Gangetic provinces).

1876. *Cohius gutum*. Day. *Fish. India*. : 294. pl. 66. fig. 1; 1889. *Day. Fauna Br. India. Fish*. 2 : 266.

1981. *Glossogobius giuris*, Jayaram. *Handbk. Freshw. Fish, India*. : 358 (distribution and key to the species).

Local name : Belay.

English name : Bar-eyed go by.

Material Examined : The specimens were not collected by the present authors, but included the species on the basis of reports from Husain (1995).

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bangladesh, Myanmar, Sri Lanka, East and South coasts of Africa, Mauritius, Malaya, Thailand, China, Japan, Philippines. Melanesia. Polynesia and Australia.

Remarks : It is a very common fish found to live in rivers, tanks, canals, lakes.

122. *Glossogobius giuris* (Ham.-Buch.)

1822. *Cohius giuris* Hamiltnn Buchanan. *Fish. Ganges.* : 51. 366. pl. 33. fig. 15 (type-locality : ponds and freshwater rivers nf Gangetic provinces).

1876. *Cohius giuris*. Day. *Fish. India.* : 294. pl. 67. fig. 1; 1889. Day. *Fauna Br. India. Fish.* 2 : 266.

1981. *Glossogobius giuris*, Jayaram. *Handbk. Freshw. Fish. India.* : 358 (distribution and key to the species).

Local name : Belay or Bhalia.

English name : Bar-eyed.

Material Examined : Uttarkhand : Nanak Mata Reservoir, Udham Singh Nagar, 2ex., 11-1-2004, Coll. A. Bahuguna & party; Stream nr. Chila Barrage, 1ex., 1-6-2004, Coll. J.P. Sati & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bangladesh. Myanmar, Sri Lanka, East and South coasts of Africa. Mauritius, Malaya, Thailand, China, Japan. Philippines. Melanesia. Polynesia and Australia.

Remarks : It is a very common fish found to live in rivers, tanks, canals, lakes.

Family ANABANTIDAE Climbing perches

Body compressed. somewhat elongated. Head and body covered with ctenoid scales. Suprabranchial organ well developed. A long dorsal fin with spinous and sort rays. Anal fin with spines and soft rays. A cavity above the third or the upper portion of the first branchial arch contains an elaborate apparatus consisting of thin laminae of bones which are covered over by a vascular mucous membranes for respiratory purposes. enabling these fishes to respire out the water for a considerable period. Lateral line interrupted.

Genus *Anabas* Cuvier

1817. *Anabas* Cuvier. *Le Regne Animal.*, 2 : 39 (type-species : *Perca scandens* Daldorf).

1981. *Anabas*. Jayaram. *Handbk. Freshw. Fish. India.* 378, (genus characters and distribution).

Body oblong with abdomen rounded. Opercles and preorbital bones serrated. Single dorsal fin.

inserted above pectoral fin base. with 17 to 18 spines and 8 to 10 rays. Anal fin with 8 to 10 spines and 9 to 11 soft rays. Caudal fin rounded. Lateral line interrupted, with 21 to 29 scales.

123. *Anabas testudineus* (Bloach)

1792. *Anthias testudineus* Bloch. *Naturg. Ausland. Fische.* 6 : 121. pl. 322 (type-locality : Japan, East Indies).

1981. *Anaba testudineus*. Jayaram. *Handbk. Freshw. Fish. India.* : 379 (distribution and key to species).

Loud name : Koi.

English name : Climbing perch.

Material examined : The specimens were not collected by the author, but included the species on the basis of report from Husain (1995).

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Myanmar, Sri Lanka, Malaya, Malaya Archipelago, Thailand, Vietnam, China. Philippines, Polynesia and Singapore.

Remarks : This fish is distributed in lower altitude of the state.

Family BELONTIIDAE

Body short, compressed, anteriorly depressed to a slight extent. Head and body covered with ctenoid scales. A suprabranchial cavity present. A single dorsal fin with spines and soft rays. First ray of pelvic fins modified into a filiform ray or with few rays. Pelvic fins inserted behind base of pectoral fins. Anal fin with spines. Lateral line vestigial, rudimentary or absent.

Genus *Colisa* Cuvier

1831. *Colisa* Cuvier. *Hist. Nat. Poiss.* 7 : 359 (type- species : *Colisa vulgaris* Cuvier).

1981. *Coliso*. Jayaram, *Handbk. Freshw. Fish. India.* : 383 (genus characters and distribution).

Body elevated and compressed. Mouth upturned, terminal. cleft small and jaws slightly protractile. A suprabranchial organ present. A single dorsal fin inserted above from near pectoral fin base, with 15 to 18 spines and 7 to 13 rays. Anal fin with 15 to 20 spines and 11 to 19 rays. Pelvic fins in the form of a single elongated, filiform ray. Caudal fin slightly emarginate or

truncate. Lateral line when present interrupted, with 27 to 31 scales.

Key to the species

1. Body with a single black longitudinal band from eye to lower half of tail along either sides *C. lalia*
2. Body with many oblique bands from back to belly *C. fasciata*

124. *Colisa fasciatus* (Schneider)

1801. *Trichogaster fasciatus* Schneider, *Syst. Ichth. Bloch*, : 164, pl. 36 (type – locality : Tranquebar).
1877. *Trichogaster fasciatus*. Day, *Fish. India.*; 374. pl. 78, fig. 6; 1899. Day, *Fauna Br. India, Fish*, 2; 372, fig. 123.
1981. *Coliso fasciatus*. Jayaram, *Handbk. Freshw. Fish. India.*; 383. (distribution and key to species).

Local name : Khalisha.

English name : Banded Colisa.

Materials examined : Uttarkhand : Confluence of Asan and Yamuna river, nr. Asan Barrage, Dehradun, 4exs., 11-2-1999, Coll. D.P. Uniyal & party; Nanak Mata Reservoir, Udham Singh Nagar, 1ex., 11-1-2004, Coll. A. Bahuguna & party; Stream nr. Chila Barrage, 1ex., 1-6-2004, Coll. J.P. Sati & party.

Distribution : Through out India.

Elsewhere : Pakistan, Nepal, Bangladesh, Myanmar.

Remark : This species is used as an aquarium fish and is a new record from Garhwal region.

125. *Colisa lalia* (Ham.-Buch.)

1822. *Trichopodus lalius* Hamilton-Buchanan, *Fishes of Ganges* : 120, (type-locality : Gangetic provinces)
1959. *Colisa lalia* : Sterba, *Freshwater Fishes of the World* : 790.

English name : Dwarf Gourami.

Materials examined : Uttarkhand : Nanak Mata Reservoir, Udham Singh Nagar, 2exs., 11-1-2004, Coll. A. Bahuguna & party; Stream nr. Chila Barrage, 3exs., 1-6-2004, Coll. J.P. Sati & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Bangladesh, Myanmar.

Remark : This species is used as an aquarium fish and is a new record from Garhwal region.

Family OSPHRONEMIDAE Goramies

Body moderately elevated, compressed with abdomen rounded. Head and body with ctenoid scales. Mouth small, oblique, terminal and protractile. A suprabranchial organ present. A single dorsal fin inserted above tip of pectoral fins, with 11 to 14 spines and 11 to 12 rays; spinous portion longer than soft portion. Outer ray of pelvic fin much elongated, extending beyond caudal fin. Anal fin with 9 to 12 spines and 19 to 21 rays. Caudal fin rounded. Lateral line complete and straight, with 30 to 33 scales.

Genus *Osphronemus* Lacepede

1802. *Osphronemus* Lacepede, *Hist. Nat. Poiss.*, 3 : 116 (type-species : *O. gouramy* Lacepede).
1981. *Osphronemus*. Jayaram, *Handbk. Freshw. Fish. India*, : 384, 385 (genus characters and distribution).

Genus characters are similar to those of characters of the family.

126. *Osphronemus goramy* Lacepede (EX)

1802. *Osphronemus goramy* Laccpede, *Hist. Nat. Poiss.*, 3 : 116, pi. 8, fig. 2 (type-locality : Mauritius).
1877. *Osphronemus goramy* : Day, *Fish. India* : 372. pl. 79, fig. 6; 1889. Day, *Fauna Br. India. Fish*. 2 : 369.
1981. *Osphronemus goramy*. Jayaram, *Handbk. Freshw. Fish. India* : 385 (distribution).

Local name : Nil.

English name : Gouramy.

Materials examined : Uttarakhand : Stream nr. Bhatta fall, Mussorie hills, 2exs., 4-2-2001, Coll. J.P. Sati & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Sri Lanka, Mauritius, Seychelles, Malaya, Malaya Archipelago, Thailand, China, Philippines (introduced) and Australia (introduced).

Remarks : It is one of the exotic fishes from Melanesia, introduced into different parts of India.

Order Channiformes

Body elongated with cycloid scales. Head with plate-like scales. Gill openings wide. Suprabranchial accessory respiratory organ well developed, enabling these fishes to respire for a long time out of water. Teeth on jaws and palate. A single long dorsal fin and a similar long anal fin present, without any spine. Pelvic fins thoracic or absent. Lateral line abruptly curved or almost interrupted.

Family CHANNIDAE
Murrels

Body elongated with large cycloid scales. Head with plate-like scales. Cephalic pits present. Teeth on jaws, vomer and palate. Suprabranchial organ for air breathing present. A single long dorsal fin and a similar anal fin present, both fins spineless and free from caudal fin. Dorsal fin with 29 to 55 rays, inserted almost above pectoral fin and anal fin with 21 to 36 rays. Pelvic fins generally present, with 6 rays. Lateral line abruptly curved or almost interrupted with 37 to 110 scales. Caudal fin rounded.

Genus *Channa* Scopoli
Snakeheaded fishes

1777. *Channa Scopoli*, Introd. Hist : 459 (type-species : *Channa orientalis* Bloch and Schneider).

1793. *Ophiocephalus*, Bloch, *Naturl. Ausland. Fische*, 7 : 137 (type-species : *Ophicephalus punctatus* Bloch).

1981. *Channa*, Jayaram. *Handbk. Freshw. Fish. India*, 305. 306 (genus characters and distribution).

Genus characters are similar to those of the family.

Key to the species

1. 4 to 5 rows of scales between the orbit and angle of preopercle. 12 to 13 predorsal scales 2
10 rows of scales between the orbit and angle of preopercle 3
2. Pelvic fins less than half length of pectoral fins. Pectoral fins spotted, *orientalis* Pelvic fins more than half length of pectoral fins. Pectoral fins plain *C. punctatus*
Predorsal scales 18 to 20. Lateral line with peninsula of darker colour extending into yellow *C. striatus*

3. Predorsal scales 15 to 16. No such colour markings on lateral line 4

A black white-edged ocellus on basal portion of caudal fin present *C. marulius*

4. No such ocellus on basal portion of caudal fin *C. gachua*

127. *Channa gachua* Ham.-Buch
Asiatic Snakehead

1822. *Ophiocephalus gaucha* Hamilton-Buchanan, *Fishes of Ganges* : 68 (type-locality : Ponds and ditches of Bengal).

Local name : Sarpi.

English name : Snake headed fish.

Status : Not Evaluated (NE).

Material examined : India : Uttarakhand, 4exs. (70-115 mm), Song river, Kansrao Railway Bridge, Dist. Dehradun, 223.1965, Coll. R.K. Bhatnagar; 9exs. (50-90 mm), Song river, Kansrao, Dist. Dehradun, 5.ii.1965, Coll. R.K. Bhatnagar; 2exs., Ranipur Rao, Ranipur Forest, Dist. Hardwar, 24.ii.1965, Coll. T.D. Soota; 3exs., Song river nr. Railway Bridge, Kansrao, Dist. Dehradun, 26.ii.1965, Coll. T.D. Soota; 3exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 20.v.1965, Coll. T.D. Soota; 1ex., Soar Sahab wali khal, Asarori, Dist. Dehradun, 11.vi.1965, Coll. T.D. Soota; 13exs., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 11.vi.1965, Coll. T. D. Soota; 3exs., Mohand Rao, nr. Lalpul, Mohand, Dist. Hardwar, 11.vi.1965, Coll. T.D. Soota; 8exs., Song river, Satyanarain, Dist. Dehradun, 29.vi.1965, Coll. T.D. Soota; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 30.vi.1965, Coll. T.D. Soota; 22exs., Ranipur Rao, Ranipur, Dist. Hardwar, 14.vii.1965, Coll. T.D. Soota; 5exs., Mohand Rao, nr. Lalpul, Mohand, Dist. Hardwar, 16.vii.1965, Coll. T.D. Soota; 3exs., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T.D. Soota; 1ex., Mohand Rao nr. Mohand, Dist. Hardwar, 18.ix.1965, Coll. R.K. Bhatnagar; 8exs., Mohand Rao nr. Mohand, Dist. Hardwar, 24.ix.1965, Coll. T.D. Soota; 1ex., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 24.ix.1965, Coll. T.D. Soota; 1ex., Gaj Rao, Gaj Forest Block, Dist. Dehradun, 6.xii.1965, Coll. T.D. Soota; 2exs., Mohand Rao, Mohand, Dist. Hardwar, 8.ii.1966, Coll. T.D. Soota; 6exs.,

Gaj Rao, Gaj Forest Block, Dist. Hardwar, 8.ii.1966, Coll. T.D. Soota; 7exs., Bhinj Rao, Andheri Forest Block, Dist. Hardwar, 25.v.1966, Coll. Asket Singh; 3exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 16.ix.1966, Coll. Asket Singh; 8exs., Song river nr. Kansrao Railway Station, Dist. Dehradun, 17.xii.1966, Coll. Asket Singh; 2exs., Motichur Rao, Motichur, Dist. Dehradun, 28.x.1971, Coll. Asket Singh; 1ex. (62 mm), Gaj Rao, Gaj Forest Block, Dist. Hardwar, 15.ii.1972, Coll. R.N. Chopra; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 1ex. (75 mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 24.ii.1973, Coll. Raj Tilak; 2exs. (57-65 mm), Ranipur Rao, Ranipur, Dist. Hardwar, 24.iii.1983, Coll. Raj Tilak; 2exs. (69-84mm), Dholkhand Rao, Dholkhand, Dist. Hardwar, 27.iv.1973, Coll. Raj Tilak; 2exs. (48-84 mm), Mohand Rao, Mohand, Dist. Hardwar, 26.ix.1973, Coll. Raj Tilak; 6exs. (51-82 mm), Betban Rao, Beribara, Dist. Hardwar, 3.xii.1973, Coll. Raj Tilak; 5exs., Song river, Pattapul, Kansrao, Dist. Dehradun, 20.v.1976, Coll. Arun Kumar; 5exs., Song river, Satyanarain, Dist. Dehradun, 26.xii.1979, Coll. Akhlaq Husain; 9exs., Song river, Satyanarain, Dist. Dehradun, 20.ii.1980, Coll. Akhlaq Husain; 2exs., Song river, Satyanarain, Dist. Dehradun, 10.iii.1980, Coll. Akhlaq, Husain; 1ex., Song river, Satyanarain, Dist. Dehradun, 22.iv.1980, Coll. Akhlaq Husain; 5exs., Song river, Satyanarain, Dist. Dehradun, 14.v.1980, Coll. Akhlaq Husain; 1ex., Song river, Satyanarain, Dist. Dehradun, 10.vii.1980, Coll. Akhlaq Husain; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 3.xii.1985, Coll. R.N. Chopra; 1ex., Gaj Rao, Gaj Forest Block, Dist. Hardwar, 12.xii.1986, Coll. Raj Tilak; 7exs., Small stream, ca. 6 km north-west of Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 1ex., Song river nr. Railway Station, Kansrao 14.i.1987, Coll. N.K. Sinha; 4exs., Song river, Kansrao Forest, Dist. Dehradun, 20.i.1987, Coll. J.C. Tripathi; 1ex., Small stream, ca 10 km east of Phandowala FRH, Dist. Dehradun, 15.v.1987, Coll. Raj Tilak; 1ex., Small stream nr. Phandowala, Dist. Dehradun, 20.v.1987, Coll. R.N. Chopra; 2exs., Small stream nr. Phandowala, ca. 2 km from Clement Town, Dist. Dehradun, 21.v.1987, Coll. Akhlaq Husain; 1ex., Small stream nr. Phandowala ca. 4 km from Clement Town, Dist. Dehradun,

21.v.1987, Coll. Akhlaq Husain; 10exs., Ghasi Ram sot nr. Chila FRH Dist. Pauri, 3.vi.1987; Coll. Raj Tilak; 11exs., Ghasi Ram sot nr. Chila FRH, Dist. Pauri, 9.ix.1987, Coll. Raj Tilak; 1ex., Song river, Satyanarain, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak; 1ex., Motichur Rao, Motichur, Dist. Dehradun, 15.ix.1987, Coll. Raj Tilak; 15exs., Ranipur Rao, Ranipur, Dist. Hardwar, 15.ix.1987, Coll. Raj Tilak; 1ex., Small stream nr. Mohand FRH, Dist. Haidwar, 17.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Nimboo boaji water hole, nr. Kinnanoli, 6 km on Dhikala Road, 3exs., 22.vi.2002, Reg. No. 4373, Coll. J.P. Sati & Party; Kotirao Sot, 4 km from Jhirna FRH, 4exs. 1.i.2005, Reg. No. 5310, Coll. A.N. Rizvi & Party, Mohand Rao, 3exs., 3.xi.2000; 13ex., 14.ix.2001, Coll. A. Husian & party, Asan river, Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 32exs., 18.vii.2000; 2exs., 13.x.2000; 1ex., 13.vii.2001; 24exs., 11.x.2001, Coll. N.K. Sinha & party; stream nr. Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; Badowal, Asan River, 18ex., 12.ix.2001, Coll. A. Husian & party; Bhure Shah, 1ex., 20.vii.2001, Coll. P.C. Tak & party; Mohand Rao, 1ex., 14.ix.2001, Coll. A. Husian & party; Karva pani, 1ex., 6.vii.2001, Coll. Arun Kumar & party; Timli forest, 1ex., 23.v.2001, Coll. Vinod Khanna & party.

Distribution : Throughout India.

Elsewhere : Afganistan, Bangladesh, Nepal, Pakistan, Sri Lanka, Thailand and Myanmar.

Remark : It is usually found in muddy areas and bottom feeder in nature.

128. *Channa marilius* Ham.-Buch.

1822. *Opheltilus marilius*, Hamilton-Buchannan, Fish India, : 65, pl. 17, fig. 19 (type-locality : ponds and freshwater river of Bengal).

1981. *Channa marilius*, Jayaram, *Handbk. Freshw. Fish. India* : 306, (distribution and key to the species).

Local name : Gaial.

English name : Giant snake head murrel.

Material examined : 15exs., Ranipur Rao, Ranipur, Dist. Hardwar, 15.ix.1987, Coll. Raj Tilak; 1ex., Small stream nr. Mohand FRH, Dist. Haidwar, 17.ix.1987, Coll. Raj Tilak, Corbett Tiger

Reserve, Nimboo boaji water hole, nr. Kinnanoli, 6 km on Dhikala Road, 3exs., 22.vi.2002, Reg. No. 4373, Coll. J.P. Sati & Party; Kotirao Sot, 4 km from Jhirna FRH, 4exs. 1.i.2005, Reg. No. 5310, Coll. A.N. Rizvi & Party, Mohand Rao, 3exs., 3.xi.2000; 13ex., 14.ix.2001, Coll. A. Husian & party, Asan river, Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 32exs., 18.vii.2000; 2exs., 13.x.2000; 1ex., 13.vii.2001; 24exs., 11.x.2001, Coll. N.K. Sinha & party; stream nr. Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; Badowal, Asan River, 18ex., 12.ix.2001, Coll. A. Husian & party; Bhure Shah, 1ex., 20.vii.2001, Coll. P.C. Tak & party; Mohand Rao, 1ex., 14.ix.2001, Coll. A. Husian & party; Karva pani, 1ex., 6.vii.2001, Coll. Arun Kumar & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Myanmar, Sri Lanka, Thailand and China.

Remarks : This fish is generally found to live in large lakes and rivers and attains a larger size compared to other species under the genus.

129. *Channa punctatus* Bloch

1794. *Ophiocephalus puntatus* Bloch, Naturges, Ausland. Fische., 8 : 139, (type-locality : rivers and lakes of Coromandel coast).

English name : Spotted Snakehead.

Status : Low Risk near threatened (LRnt).

Material examined : India : Uttarakhand, 1ex., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T.D. Soota; 1ex., Song river, Pritinagar nr. Gaurighat, Dist. Dehradun, 12.iv.1966, Coll. T.D. Soota; 2exs., Motichur Rao, Motichur, Dist. Dehradun, 28.xii.1972, Coll. Raj Tilak; 1ex., Song river, Gaurighat nr. Satyanarain, Dist. Dehradun, 19.iv.1973, Coll. Raj Tilak; 1ex., Ghasi Ram Sot nr. Chila FRH, Dist. Pauri, 3.vi.1987, Coll. Raj Tilak; 4exs., Ganga canal seepage, ca. 7 km east of Chila, Dist. Pauri, 11.ix.1987, Coll., Corbett Tiger Reserve, Nimboo boaji water hole, nr. Kinnanoli, 6 km on Dhikala Road, 3exs., 22.vi.2002, Reg. No. 4373, Coll. J.P. Sati & Party; Kotirao Sot, 4 km from Jhirna FRH, 4exs. 1.i.2005, Reg. No. 5310, Coll. A.N. Rizvi & Party, Bado wala, Asan River, 1ex., 27.vi.2000,

Coll. J.P. Sati & party; Mohand Rao, 1ex., 3.xi.2000; 1ex., 20.iv.2001; 1ex., 2.ii.2001, 1ex., 8.viii.2001, Coll. A. Husian & party; 3exs., Karva pani, Asharori, 1ex., 1.vii.2000; 5exs., 8.vi.2001, Coll. J.P. Sati & party; 3exs., 6.vii.2001, Coll. Arun Kumar & party; Sankra nala, Badshahi bagh road, 2exs., 28.vi.2000, Coll. J.P. Sati & party; Timli forest, 1ex., 22.ix.2000, Coll. A. Husian & party; 3exs., 6.vii.2001, Coll. Arun Kumar & party; Tiparpur, Mohand, 1ex., 19.ix.2001, Coll. J.P. Sati & party; A nala near Daat Mandir, Mohand, 2exs., 24.viii.2001, Coll. A. Husian & party; stream nr. Timli, Darrari vill. 1ex., 28.vi.2000, Coll. J.P. Sati & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, Afganstan, Bangladesh, Myanmar, Sri Lanka, Malayasia, and China.

Remark : It is usually found in muddy areas and bottom feeder in nature. : This species exhibits sexual dimorphism (Dehadrai et al., 1973). In males, the urino-genital opening is elongated, while in females it is circular. It prefers stagnant and muddy waters.

130. *Channa straitus* Bloch

1703. *Ophiocephalus striatus* Bloch. Naturg. Ausland. Fische. 2 : 141. pl. 359 (type-locality : Malabar).

1981. *Channa straitus*. Jayaram. Handbk, Fresw. Fish. India. : 307 (distribution and key to species).

Local name : Shol Chena.

English name : Striped snake-head.

Material examined : Uttarkhand : 4 km from Jhirna FRH, 4exs. 1.i.2005, Reg. No. 5310, Coll. A.N. Rizvi & Party, Mohand Rao, 3exs., 3.xi.2000; 13ex., 14.ix.2001, Coll. A. Husian & party, Asan river, Sabhawala, 1ex., 4.v.2001, Coll. Vinod Khanna & party; Sankra nala, Badshahibagh road, 32exs., 18.vii.2000; 2exs., 13.x.2000; 1ex., 13.vii.2001; 24exs., 11.x.2001, Coll. N.K. Sinha & party; stream nr. Timli forest, 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; Badowal, Asan River, 18ex., 12.ix.2001, Coll. A. Husian & party; Bhure Shah, 1ex., 20.vii.2001, Coll. P.C. Tak & party; Mohand Rao, 1ex., 14.ix.2001, Coll. A. Husian & party; Karva pani, 1ex., 6.vii.2001, Coll. Arun Kumar & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Sri Lanka, Myanmar, China, Philippines, Malaya Archipelago and Thailand.

Order Mastacembeliformes

Body elongated, eel-like and compressed, with minute scales. Gill-openings, non-confluent as two lateral slits. Dorsal and anal fins long preceded by 7 to 40 detached depressible dorsal spines and 1 to anal spines. Pelvic fins absent. Caudal fin short either confluent with dorsal and anal fins or narrowly separated.

Family MASTACEMBELIDAE Spiny eels

Body eel-shaped and elongated, with minute scales. Snout elongated and supported by a cartilaginous rod. Dorsal fin with 7 to 40 detached depressible spines and anal fin with 1 to 3 spines. Pelvic fins and pelvic girdle absent. Caudal fin homocercal, short either confluent with dorsal and anal fin or narrowly separated.

Key to the genera

1. Preorbital spine present. Snout conical without any prolongation of the upper jaw and not transversely striated ventrally
..... ***Mastacembelus***
2. Preorbital spine absent. Snout with a concave prolongation of the upper jaw consisting of a paired series of toothed bony plates and transversely striated ventrally
..... ***Macrognathus***

Genus *Macrognathus* Lacepede

1800. *Macrognathus* Lacepede, *Hist. Nat. Polish.*, 2 : 283
(type-species : *Ophidium aculeatum* Bloch).

1981. *Macrognathus*. Jayaram. *Handbk. Freshw. Fish. India*, : 387, (genus characters and distribution).

Body elongated and eel-like. A long fleshy snout, concave below and transversely striated. Preorbital spine absent. Dorsal fin inserted far behind pectoral fin tip, with 14 to 22 detached depressible spines and 42 to 58 soft rays. Anal fin with 3 spines and 42 to 58 soft rays. Dorsal and anal fins not confluent with caudal fin. Scales small and cycloid. Lateral line present.

Family MASTACEMBELIDAE Spiny eels

Body eel-shaped and elongated, with minute scales. Snout elongated and supported by a cartilaginous rod. Dorsal fin with 7 to 40 detached depressible spines and anal fin with 1 to 3 spines. Pelvic fins and pelvic girdle absent. Caudal fin homocercal, short either confluent with dorsal and anal fin or narrowly separated.

Genus *Macrognathus* Lacepede

1800. *Macrognathus* Lacepede, *Hist. Nat. Polish.*, 2 : 283
(type-species : *Ophidium aculeatum* Bloch).

1981. *Macrognathus*. Jayaram. *Handbk. Freshw. Fish. India*, : 387, (genus characters and distribution).

Body elongated and eel-like. A long fleshy snout, concave below and transversely striated. Preorbital spine absent. Dorsal fin inserted far behind pectoral fin tip, with 14 to 22 detached depressible spines and 42 to 58 soft rays. Anal fin with 3 spines and 42 to 58 soft rays. Dorsal and anal fins not confluent with caudal fin. Scales small and cycloid. Lateral line present.

131. *Macrognathus pancalus* Ham.-Buch.

1800. *Macrognathus pancalus* Lacepede, *Hist. Nat. Poiss.*, 2 : 286.

Local name : Baam.

English name : Freshwater eel.

Status : Low Risk near threatened (LRnt).

Material examined : India : Uttarakhand : Dehradun dist., Badowala, Asan River, 1ex., 27.vi.2000, Coll. J.P. Sati & party; stream nr. Timli FRH., 4ex., 15.xi.2000, Coll. D.P. Uniyal & party.

Distribution : Throughout India.

Elsewhere : Pakistan, Nepal, China and Myanmar.

132. *Mastacemblus armatus* (Lacepede)

1800. *Macrognathus armatus* Lacepede, *Hist. Nat. Poiss.*, 2 : 286 (type-locality : Not mentioned).

Local name : Nil.

English name : Tri-Track Spiny-eel.

Status : Not Evaluated (NE).

Material examined : India : Uttarakhand : 1ex., Song river, Satyanarain, Dist. Dehradun, 30.vi.1965, Coll. T.D. Soota; 1ex., Suswa river, Clement Town, Dist. Dehradun, 23.vii.1965, Coll. T.D. Soota; 1ex., Song river, Satyanarain, Dist. Dehradun, 7.iv.1966, Coll. T.D. Soota; 2exs., Motichur Rao nr. Motichur FRH, Dist. Dehradun, 13.iv.1966, Coll. T.D. Soota; 1ex., Song river Satyanarain Dist. Dehradun, 14.ix.1972, Coll. Raj Tilak; 3exs., Song river, Satyanarain, Dist. Dehradun, 23.x.1973, Coll. Raj Tilak; 1ex. (160 mm), Song river, Pattapul, Kansrao, Dist. Dehradun, 20.v.1976, Coll. Arun Kumar; 1ex., Song river, Satyanarain, Dist. Dehradun, 22.iv.1980, Coll. Akhlaq Husain; 1ex., Song river, Satyanarain, Dist. Dehradun, 14.v.1980, Coll. Akhlaq Husain 5exs., Song river or. Kansrao FRH, Dist. Dehradun, 8.i.1987, Coll. Raj Tilak; 5exs. (max. 275 mm), Song river or. Kansrao FRH, Dist. Dehradun, 22.i.1987. Coll. R.N. Chopra; 3exs., Song river, Satyananin, Dist. Dehradun, 13.ix.1987, Coll. Raj Tilak, Corbett Tiger Reserve, Dulwa Sot, 6 km from Sultan on way to Dhikala, 2exs., 25.vi.2002, Reg. No. 4413, Coll. J.P. Sati & Party; Champion, Ram Ganga, 1ex., 7.iv.2003, Reg. No. 4658, Coll. V. Khanna & Party, Bado wala, Asan River, 1ex., 27.vi.2000, Coll. J.P. sati & party, stream nr. Timli FRH., 1ex., 15.xi.2000, Coll. D.P. Uniyal & party; A nala near Daat Mandir, Mohand, 2exs., 24.viii.2001, Coll. A. Husian & party.

Distribution : Throughout India.

Elsewhere : Bangladesh, China, Nepal, Pakistan, Sri Lanka and Myanmar.

Remark : It inhabits in cobble-pebble and bed. It pears the spines and can infect serious injury, its collection need special attention.

SUMMARY

In the present study an attempt has been made to give the consolidate account which includes the inventory, status (as per CAMP assessment), local and English name, ecology and economic importance in the remarks and distribution of fishes in district wise. In the present study the field-surveys made by the different parties in various districts of the state (2001-2005) and also the collection were made from different ecosystem

and PA,S under other projects. Fishes described in present study were identified as a result of collection made by authors under various project of the state and collection received from Universities and research institute and for preparing the inventory the collection housed in Northern Regional Station (NRS, Dehradun) is also consultated, Husain & Tilak (1995), Husain (1976, 1995) etc.

A total of 132 species of pisces belonging to 67 genera 27 families and 8 orders have been reported, out of which two species are the new records for the state i.e. *Glossogobius garius*, reported from Haridwar district, while *Bagrius bagrius*, reported from Dehradun and Hardwar districts, while *Garra lamta* is new record for Dehradun district and *Nandus nandus* and *Colisa facitus* has also been reported for the first time from Garhwal Region (Table 1.). The family wise distribution of fishes revealed that 55 species belongs to family Cyprinidae, 16 species from Cobitidae, 15 species from Sisoridae, 5 species each from Bagridae and Ailindae, 4 species from Channidae, 3 species each from Siluridae and Salmonidae, 2 species each Notopraidae, Centropomidae, Nanidae, Mugilidae, Gobiidae, Belontiidae and Mastacembalidae, 1 species each from Clupeidae, Pisorhynchidae, Balitoridae, Amblycipitidae, Clariidae, Heteropneustidae, Belonidae, Aplocheilidae, Poeciliidae, Synbranchidae, Anabantidae and Osphronemidae. The district wise distribution of fish shows that maximum 101 species reported from Nainital, followed by 81 species from Dehradun, 75 species are present in Hardwar, 73 species in Udham Singh Nagar, 59 species from Pauri Garhwal. The reason for high fish diversity in these districts is low altitude, high temperature and rich drainage, where cold water as well as warm water fish is found. While 37 species reported from Rudrapur, 36 species from Almora, 35 species from Chamoli, 34 species from Bageshwar. While 32 species each inhabits in Pithoragarh and Champawat and 29 species each in Uttarkashi and Tehri Garhwal. The reason for less diversity of fishes in these districts is the high altitude and low water temperature, in this region fishes having high adaptation like suckers/ adhesive pouch can survive, as they have to bear fast water current. While as per the CAMP-1998, 10 species (7.5%)

are in the category of Endangered and need immediate protection and 10 species (7.5%) are exotic species which are introduced in the state mainly for biological control, game and commercial purpose. While 11 species (8.3%) are endemic to the Uttarakhand state, which act as a flag ship species for balancing the aquatic ecosystem.

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Table.1: District wise fish diversity of Uttarakhand

Fish fauna of Uttarakhand														
	Districts		Garhwal						Kumaon					
	Taxon	Dehradun	Hardwar	Tehri	Pauri	Uttarakashi	Chamoli	Rudrapryag	Nanital	Almora	Pithoragarh	Champawat	Bageshwar	Udham Singh Nagar
		1	2	3	4	5	6	7	8	9	10	11	12	13
	Phylum : CHODRATA Class : ACTINOPTERYGII Order : Osteoglossiformes Family : NOTOPTERIDAE													
1.	<i>Notopterus notopterus</i> (Pallas)	-	+	-	-	-	-	-	+	-	-	-	-	+
2.	<i>N. Chitala</i> (Ham.-Buch)	-	-	-	-	-	-	-	+	-	-	-	-	+
	Order : Clupeiformes Family CLUPEIDAE													
3.	<i>Gudisia chapra</i> (Ham.-Buch)	-	-	-	-	-	-	-	+	-	-	-	-	-
	Order : Cypriniformes Family : CYPRINIDAE													
4.	<i>Chela laubuca</i> Ham.-Buch.	-	-	-	+	-	-	-	+	-	-	-	-	+
5.	<i>Salmostoma bacaila</i> (Ham.-Buch.)	-	-	-	-	-	-	-	+	-	-	-	-	+
6.	<i>S. Phula phulo</i> (Ham.-Buch.)	-	-	-	-	-	-	-	+	-	-	-	-	+
7.	<i>Hypophthalmichthys moltrix</i> (Valenciennes) (EX)	-	+	-	-	-	-	-	+	-	-	-	+	+
8.	<i>Amblypharyngopodon mola</i> (Ham.-Buch)	-		-	-	-	-	-	+		-	-	-	+

Fish fauna of Uttarakhand														
	Districts	Garhwal							Kumaon					
	Taxon	Dehradun	Hardwar	Tehri	Pauri	Uttarakashi	Chamoli	Rudrapryag	Nainital	Almora	Pithoragarh	Champawat	Bageshwar	Udham Singh Nagar
		1	2	3	4	5	6	7	8	9	10	11	12	13
9.	<i>Aspidoparia jaya</i> (Ham.-Buch.)	+	+	-	-	-	-	-	+	-	-	-	-	+
10.	<i>A. morar</i> (Ham.-Buch)	+	+	-	-	-	-	-	+	-	-	-	-	+
11.	<i>B. barila</i> (Ham.-Buch)	-	-	+	+	+	-	-	-	-	-	-	+	-
12.	<i>B. barna</i> (Ham.-Buch)	+	+	+	+	+	+	+	+	+	+	+	+	+
13.	<i>B. bendelisis</i> (Ham.-Buch)	+	+	+	+	+	+	+	+	+	+	+	+	+
14.	<i>B. dimorphicus</i> Tilak & Husain (EN)	+	+	-	+	-	-	-	-	-	-	-	-	-
15.	<i>B. shacra</i> (Ham.-Buch)	-	+	-	+	-	+	-	-	-	-	-	-	-
16.	<i>Barilius vagra</i> (Ham.-Buch)	+	+	+	+	+	+	+	+	+	+	+	+	+
17.	<i>B. pectorilus</i> Tilak & Husain (EN)	+	-	-	-	-	-	-	-	-	-	-	-	-
18.	<i>Raiamas bola</i> (Ham.-Buch) (TH)	+	-	-	+	-	+	+	+	-	+	+	+	-
19.	<i>Brachydanio rerio</i> (Ham.-Buch)	+	+	-	+	-	-	-	+	+	-	+	-	+
20.	<i>Danio devario</i> (Ham.-Buch)	+	+	-	+	-	-	-	+	-	-	-	-	+
21.	<i>Esomus danricus</i> (Ham.-Buch.)	+	+	-	+	-	-	-	+	-	-	+	-	+
22.	<i>Rasbora daniconius</i> (Ham.-Buch.)	+	+	-	+	-	-	-	+	+	-	+	-	+
23.	<i>Carassius carassius</i> (Linnaeus) (EX)	+	+	-	-	+	+	+	+	-	-	-	+	+

Fish fauna of Uttarakhand														
	Taxon	Districts Garhwal							Kumaon					
		Dehradun	Hardwar	Tehri	Pauri	Uttarakashi	Chamoli	Rudrapryag	Nanital	Almora	Pithoragarh	Champawat	Bageshwar	Udham Singh Nagar
		1	2	3	4	5	6	7	8	9	10	11	12	13
24.	<i>Catla catla</i> (Ham-Buch.)	+	+	-	-	-	-	-	+	-	-	-	-	+
25.	<i>Chagunius chagunio</i> (Ham.-Buch)	+	+	-	+	-	-	-	+	-	-	-	-	-
26.	<i>Cirrhinus mrigala</i> (Ham.-Buch)	+	+	-	-	-	-	-	+	+	-	-	-	+
27.	<i>C. reba</i> (Ham.-Buch)	+	+	-	-	-	-	-	+	-	-	-	-	-
28.	<i>Cyprinus carpio</i> Linnaeus (EX)	+	+	-	-	+	+	+	+	+	-	-	+	-
29.	<i>Cyprinus specularis</i> Lacepedes (EX)	+	+	-	-	+	+	+	+	+	-	-	+	-
30.	<i>Labeo boga</i> (Ham.-Buch)	-	+	-	-	-	-	-	-	-	-	+	-	+
31.	<i>Labeo bata</i> (Ham-Buch.)	-	+	-	-	-	-	-	-	+	-	-	-	+
32.	<i>Labeo calbasu</i> (Ham-Buch.)	+	+	+	+	+	-	-	+	-	-	-	-	+
33.	<i>Labeo dero</i> (Ham-Buch.)	+	+	+	+	+	+	+	+	+	+	+	+	+
34.	<i>Labeo dycoheilus</i> (McClelland)	+	+	-	+	-	-	-	+	+	+	+	+	+
35.	<i>Labeo gonius</i> (Ham-Buch.)	-	-	-	-	-	-	-	+	+	-	-	-	-
36.	<i>Labeo rohita</i> (Ham.- Buch.)	+	+	-	-	-	-	-	+	+	+	-	-	+
37.	<i>Osteobrama cotio cotio</i> (Ham.-Buch.)	-	+	-	-	-	-	-	+	-	-	-	-	+
38.	<i>Puhtius carletoni</i> Ham.-Buch.	+	-	-	+	-	-	-	+	-	-	-	-	-
39.	<i>P. chola</i> (Ham.- Buch.)	+	+	-	+	-	-	-	+	-	-	-	-	-
40.	<i>P. conchoni</i> (Ham.-Buch.)	+	+	-	+	-	+	+	+	+	+	+	+	+

Fish fauna of Uttarakhand														
	Districts	Garhwal							Kumaon					
	Taxon	Dehradun	Hardwar	Tehri	Pauri	Uttarakashi	Chamoli	Rudrapryag	Nanital	Almora	Pithoragarh	Champawat	Bageshwar	Udham Singh Nagar
		1	2	3	4	5	6	7	8	9	10	11	12	13
58.	<i>S. richardsonii</i> (Gray)	+	+	+	+	+	+	+	+	+	+	+	+	-
	Family PSILORHYNCHIDAE													
59.	<i>Psilorhynchus balitora</i> (Ham.-Buch.)	-	-	-	-	-	-	-	+	-	-	-	-	-
	Family BALITORIDAE													
60.	<i>Balitora brucei</i> Gray	-	-	-	+	-	-	+	-	+	-	+	-	-
	Family COBITIDAE													
61.	<i>Botia alomrhae</i> Gray (EN)								+	+				
62.	<i>B. dario</i> (Hamilton- Buchanan)			+	+						+		+	
63.	<i>B. lochachata</i> Chaudhari		+											+
64.	<i>B. rostrata</i> Gunter	+		+	+		+							+
65.	<i>Lepidocephalus annandalei</i> Chaudhari	+							+					
66.	<i>L. caudofurcatus</i> Tilak & Husain (EN)	+									-			
67.	<i>L. guntea</i> (Ham.-Buch.)	+	+		+				+					+
68.	<i>Nemachilus beavani</i> Gunter		+	+	+	+	+	+	+	+	+	+	+	+
69.	<i>N. botia</i> (Ham.-Buch.)	+	+	+	+	+	+	+	+	+	+	+	+	+
70.	<i>N. corica</i> (Ham.-Buch.)	+	+		+				+					+
71.	<i>N. doonensis</i> (Tilak & Husain) (TH); (EN)	+			+		+	+	+		+			
72.	<i>N. gangeticus</i> (Menon)(EN)	+			+									
73.	<i>N. montanus</i> (McClelland) (TH); (EN)	+		+	+	+	+	+	+	+	+	+	+	+

Fish fauna of Uttarakhand														
	Districts	Garhwal							Kumaon					
	Taxon	Dehradun	Hardwar	Tehri	Pauri	Uttarakashi	Chamoli	Rudrapryag	Nanital	Almora	Pithoragarh	Champawat	Bageshwar	Udham Singh Nagar
		1	2	3	4	5	6	7	8	9	10	11	12	13
86.	<i>Ailia Colla</i> (Ham.-Buch.)	-	-	-	-	-	-	-	+	-	-	-	-	+
87.	<i>Clupisoma garua</i> (Ham.-Buch.)	-	+	-	-	-	-	-	+	-	-	-	-	-
88.	<i>C. montana</i> Hora	+	-	+	-	-	-	-	-	-	-	-	-	-
89.	<i>Eutropiichthys vacha</i> (Ham.-Buch.)	-	-	-	-	-	-	-	+	-	-	-	-	-
90.	<i>Silonia silondia</i> (Ham.-Buch.)	-	-	-	-	-	-	-	+	-	-	-	-	-
	Family : SISORIDAE													
91.	<i>Bagarius yarrelli</i> Sykes	+	+	-	+	-	-	-	+	-	+	+	+	+
92.	<i>B. bagarius</i> (Ham.-Buch.)	++	++	-	+	-	-	-	-	-	-	-	-	-
93.	<i>Euchiloglanis hodgarti</i> (Hora) (EN)								+	+	+		+	-
94.	<i>Gagta cenia</i> (Ham.-Buch.)							-	+		-			
95.	<i>Glypthorax cavia</i> (Ham.-Buch.)	+		+		+	+	+	+					+
96.	<i>G. conirostris</i> (Steindachner)				+									
97.	<i>G. dakapathari</i> Tilak & Husain (TH); (EN)	+	+		+			-	+			-		-
98.	<i>G. garhwali</i> Tilak (TH); (EN)	+		+	+		+	+						
99.	<i>G. horai</i> Shaw & Shebberae	+	-	-	-	-	-	-	+	-	-	-	-	-
100.	<i>G. pectinopterus</i> (McClelland)	+	+	+	+	+	+	+	+	+	+	+	+	+

Fish fauna of Uttarakhand														
	Districts	Garhwal							Kumaon					
	Taxon	Dehradun	Hardwar	Tehri	Pauri	Uttarakashi	Chamoli	Rudrapryag	Nanital	Almora	Pithoragarh	Champawat	Bageshwar	Udham Singh Nagar
		1	2	3	4	5	6	7	8	9	10	11	12	13
	Family : BELONIDAE													
111.	<i>Xenentodon cancilia</i> (Ham.-Buch.)	+	+	-	-	-	-	-	+	-	-	-	-	+
	Family : APLOCHEILIDAE													
112.	<i>Aplocheilus panchax</i> (Ham.-Buch.)	+	+	-	-	-	-	-	-	-	-	-	-	-
	Family : POECILIIDAE													
113.	<i>Gambusia affinis holbrooki</i> Girard (EX)	+	+	-	-	-	-	-	-	-	-	-	-	+
	Order : Synbranchiformes Family : SYNBRANCHIDAE													
114.	<i>Monopterus cuchia</i> (Ham.-Buch.)	-	-	-	-	-	-	-	+	-	-	-	-	-
	Order : Perciformes													
	Family : CENTROPOMIDAE													
115.	<i>Chanda nama</i> Ham.-Buch.	-	+	-	-	-	-	-	+	-	-	-	-	-
116.	<i>C. raga</i> Ham.-Buch.	-	+	-	-	-	-	-	+	-	-	-	-	-
	Family : NANIDAE													

Fish fauna of Uttarakhand														
	Districts								Kumaon					
	Taxon	Dehradun	Hardwar	Tehri	Pauri	Uttarakashi	Chamoli	Rudrapryag	Nanital	Almora	Pithoragarh	Champawat	Bageshwar	Udham Singh Nagar
		1	2	3	4	5	6	7	8	9	10	11	12	13
127.	<i>Channa gachua</i> Ham.-Buch.	+	+	-	+	-	+	+	+	+	+	+	+	+
128.	<i>C. marilius</i> Ham.-Buch.	-	+	-	-	-	-	-	+	-	-	-	-	-
129.	<i>C. punctatus</i> Bloch	+	+	-	+	-	-	-	+	-	-	-	-	+
130.	<i>C. straitus</i> Bloch	-	+	-	-	-	-	-	+	-	-	-	-	+
	Order : Synbranchiformes Family : MASTACEMBELIDAE													
131.	<i>Macroganathus pancalus</i> Ham.-Buch.	+	+	-	+	-	-	-	+	-	-	-	-	+
132.	<i>Mastacemblus armatus</i> (Laceped)	+	+	+	+	+	+	+	+	+	+	+	+	+
	TOTAL	81	75	29	59	29	35	37	101	36	32	32	34	73

+: PRESENT; -: ABSENT; *: NEW RECORD

TH: THREATENED (Endangered; As per CAMP, Assesment-1998; 10 Species; 7.5%)

EN: ENDEMIC (11 Species; 8.3%)

EX: EXOTIC (10 Species; 7.5%)