Conservation Area Series, 35

Fauna of Corbett Tiger Reserve (Uttarakhand)

ZOOLOGICAL SURVEY OF INDIA

Conservation Area Series, 35

Fauna of
Corbett Tiger Reserve
(Uttarakhand)

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PREFACE

The Protected Areas play a vital role in conservation and management of biodiversity. The newly formed state of Uttarakhand has six National Parks, six Sanctuaries, two Conservation Reserves and one Biosphere Reserve with excellent diversity of flora and fauna. Corbett Tiger Reserve (CTR) is India's first and one of the finest National Parks, spreading along Ramganga River, in the foothills of the Himalayas. Because of its varied topography comprising hilly and riverine areas, temporary marshy depressions to plateaus, and diverse habitats- ranging from grasslands or Chaurs to perennial water bodies, to pure strands of Sal tress and mixed forests, the Corbett Tiger Reserve provides an unforgettable experience to a nature lover. It is a natural haven for the flora and fauna of the plains, the submountainous regions and the high altitudes.

It is famous for its wild population of Tigers, Leopards and Elephants. Some of the smaller residents of the Reserve are Himalayan Palm Civet, Indian Gray Mongoose, Blacknaped Hare and Porcupine. Along the Ramganga River shores one can spot the long-snouted Ghariyal, Crocodile (Mugger) and Common Otter. Also seen on the rocky hillsides is Goral or Goat Antelopes while the Langurs and Rhesus Monkeys are well distributed throughout, warning with alarm calls from treetop perches on the sight of a Tiger or Leopard. The rare cats found here are the Leopard and Fishing Cats. The Sloth Bear is also found in the lower regions of the park while the Himalayan Black Bear is generally seen in the higher ridges. The Jackal is a frequent sight. The Ramganga River with a number of streams (Sots) provides an ideal habitat for fish fauna to flourish

The Project Tiger was launched in India, in 1972, in the Corbett National to save the Indian Tiger Population. During the All India Tiger Census-2007, the Wildlife Institute of India has confirmed the rising density of tigers in CTR *vis- a -vis* the antelope population.

The floral diversity of CTR is mind bogging as the total Park is confined to Bhabar Tract of Shiwalik formations. There are 617 species of the flora under 410 genera and 111 families of Angiosperm. The lower areas are dominated by Sal tree stands and diverse mixed forests, which provide fodder and foliage for the elephants while the sharp spurs in the terrain make it an ideal habitat for the shy species like tiger.

The Zoological Survey of India had inventoried the faunal diversity of the area during 1976-1979 and has again recently repeated the studies during the years 2002-2005. This, together with the other available literature, documents 1013 species of fauna belonging to 15 animal groups.

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We shall be failing in our duties if we do not acknowledge the authorities of the Uttarakhand Forest Department, especially Principal Chief Conservator of Forests, Chief Wildlife Warden, Director and Deputy Director, Corbett Tiger Reserve and their supporting staff for providing logistic support, armed guards and guides, as also accommodation in the Forest Rest Houses etc., to our scientists and their teams during the field surveys.

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We would not let the opportunity go without having acknowledged the help of our various colleagues in the technical and administrative sections at Northern Regional Station, Dehra Dun. The scientists of the station deserve special thanks for minutely studying the faunal samples collected and submitting their reports within the allotted time frame.

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INTRODUCTION

Rightly described as the land of the roars, trumpets and songs, Corbett Tiger Reserve (CTR) represents a scene of remarkable beauty that had the distinction of being chosen as the venue for the inauguration of Project Tiger in India. The rich biodiversity of the Reserve is partly attributed to a variety of habitats found here. Both Himalayan and peninsular flora and fauna are found in the reserve on account of its location in the foothills. The grasslands locally known as Chaurs are limited. The largest grassland is the Dhikala Chaur. Some of the best grasslands including the famous Buxar Chaur and the Beri Chaurs got submerged under the Ramganga reservoir in 1974. The areas made available as a result of the relocation of the villages, Dhara, Jhirna and Kothirao, in 1994 have been developed into grasslands through habitat management. The Ramganga reservoir, which came into being in 1974, stretches over an area of around 82 sq. km, one half of which is in Corbett National Park and the other half in Sonanadi Wildlife Sanctuary.

CONSERVATION HISTORY

Located in the famous Patli Dun Valley at the base of Himalayas and a popular hunting ground of British, an area of 201 sq.mile was designated and dedicated to Sir Malcolm Hailey, the then Governor of erstwhile United Province, as the 'Hailey National Park' on 8thAugust, 1936. During post independence in 1954 its name was changed to 'Ramganga National Park' and again in 1957 after the death of the legendry hunter, the author, photographer and the naturalist – Jim Corbett, who spent most of his years in this area and contributed in setting up of the Park with an area of 520 km^2, the area was rechristened as 'Corbett National Park.'

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The Corbett National Park has the distinction of being declared as the first National Park in India, as also the ever first Tiger Reserve in India.

After amalgamation of two adjacent and contiguous protected areas, namely, Sonanadi Wildlife Sanctuary (301.18 km^2) and the Corbett National Park (520.82 km^2), along with an additional 495.30 km^2 of reserve forests, the entire protected area, has been renamed as 'Corbett Tiger Reserve' (1317.30 km^2) in the year 1991.

Administratively, the CTR area comprises 912.62 .km^2 of the Pauri, 355.75 km^2 of the Nainital and 19.95 km^2 of Almora Districts of Uttarakhand State. Altitude of the Reserve ranges from 400m to the peak of Kanda at 1210 m above msl.

On 1stApril 1973, the Government of India launched an ambitious conservation programme, the Project Tiger in Corbett National Park, led by Guy Mountfort of World Wide Fund for Nature (WWF). Initially, nine tiger reserves, with an area of 16,339 km^2 were constituted. Over three decades, the total number of such reserves has increased to 29 with an area of 38,620 km^2.

The project was aimed mainly to :

- Secure the preservation of highly endangered species of tigers, the *Panthera tigris* and to use our national animal as a symbol of precious heritage.
- Prevent man-animal conflict through payment of compensation for the loss of live stock, human lives, and properties.
- Develop infra-structural facilities.
- Carryout research and ecological rehabilitation of degraded areas; and
- Protect the area of biological importance through tiger reserves.

The launch of the project heralded the onset of scientific wildlife management in India. Classified under IUCN Class–II of the Protected Area Category (Khati 2001), the Corbett Tiger Reserve today holds one of the largest populations of free-living tigers in the world. The reserve is thus one of the last remaining strongholds, which holds a potentially viable population of this majestic and critically endangered Felid.

PHYSIOGRAPHY

Geographically, the CTR lies at 29^{0}13'-29^{0}35'N Latitude and 78^{0}33'-79^0 46'E Longitude in the foothills of Himalayas, in the districts of Nainital, Pauri and Almora. The terrain of the Reserve comprised hilly and riverine areas with plateaus and temporary marshlands. The lower lands of the forests are formed of Sal trees. Flat valleys and hilly ridges with rolling grasslands give an excellent view of the wildlife in the reserve.

The main rivers flowing through the CTR are Ramganga, Sonanadi and Mandal Palain. The River Ramganga enters the Park from the northeast near Gairal Forest Rest House, runs a southwesterly course up to Sarapduli FRH and bends to flow in northwest direction till it crosses Dhikala FRH and changes course to south west again to emerge out of park to Kalagarh. The riverbed is generally sandy, pebbly, rocky and narrow with high banks till about Khinanauli. It starts widening east of Khinanauli, on the west of which is the only large Savannah Grasslands (Chaur) at Dhikala. There are a number of thickly forested ridges in the Park, the prominent being the central ridge running from Dhikala to Amdanda. The southern portion of this ridge comprises the "core zone" and the northern - the "buffer zone"

CLIMATE AND SOIL

The climate is subtropical with annual rainfall varying from 1400 mm in outer hills to 2800mm in upper hills, with 1500-1600 mm in Ram Ganga alone. Since the area is located in the forested foothills of outer Himalaya, it remains adequately humid throughout the year. From November to February the nights can be very cold with much frost and dew, and in low-lying localities such as Patli Dun dense fog lingers. From March till the onset of monsoon, frost and fog are absent but dew is deposited in April. Geologically, since its location is in the Shiwalik range, the soil consists of

1. Recent deposits.
2. Shiwalik series, quartzite, sandstone and
3. Older Himalayan rocks.

The various formations responsible for relative differences in soil composition, depth, topography and drainage in various parts of the Park also influence the diversity of the fauna and flora.

VEGETATION

The vegetation comprise of forest, grasslands and riparian types, which mainly include northern Moist Deciduous Forest (Moist Shiwalik Sal, Moist Bhabar Dun Sal, Western Gangetic moist mixed deciduous forest and Alluvial Savannah woodland), Northern Tropical Dry Deciduous Forest (dry Shiwalik, Northern dry mix deciduous and Khair Sissoo Forest) and Himalayan Subtropical Pine Forest (Low Shiwalik Chir Pine Forest).

Floral diversity of CTR is mind bogging as the major portion of the reserve is confined to Bhabar Tract of Shiwalik formation. There are 617 species of the flora under 410 genera and 111 families of Angiosperms (Monocot-132, Dicots-462), 1 Gymnosperms and 22 Fern and fern allies.

There are more than 110 tree species in the forest. Notably 73% is constituted by Sal (*Shorea robusta*) forests. A frequent associate of Sal is Haldu (*Adina cardifolia*). On the higher ridges Balki (*Anoquiessus latifolia*) is predominant, and the other associates are Khetwa (*Piliostigma malabaricum*), Gurial (*Bauhinia rausinosa*), Dhauri (*Legesteomia parvifliora*), Amaltas (*Cassia fistula*), Bhilawa (*Semecarpus anacardium*), Amla (*Phyllanthus emblica*), Papri, Kumbhi, Mahua (*Madhuca indica*), Rohini (*Mallotus phillipensis*) and Jamun (*Eugenia jambolana*). Chir (*Pinus roxburgii*) the only conifer is confined to some of the highest ridges around Sultan. The river valley, high banks and islands are dominated by *Delbergia sissoo*.

Among the shrubs (51 spp), *Clerodendron* spp, *Helicterios issorea* are predominant, while climbers like *Miletta auriculata*, *Porana paniculata*, *Vallaris solanacea*, *Phamera vahlii* are commonly found.

Invasive weeds like *Lantana camara* is profusely growing, thus inhibiting the regeneration of Sal and other herbaceous plants. The other weeds include *Cannabis sativa* in the grassland (Khati 2001).

The faunal and floral elements of the Himalayan, Bhabar, Terai and Peninsular India meet and intermingle here that has led to an amazing diversity in the habitat types and species.

The CTR comes under the Biotic Province 07A (Gangetic plain-Upper Gangetic Plains). The scenic forests of CTR fringe the Ramganga and its several tributaries.

To detect changes in the state of forest cover of Rajaji-Corbett, the area was mapped basing studies on Survey of India Topo Sheets (1967), Satellite Imageries (1986 and 1998) and using GIS and remote sensing techniques. A dismal degradation (just 6%) of forest area was found between these three periods, 2% of which was due to the creation of reservoir across Ramganga River (Khanna, 2001; Khanna, Ravichandran and Kushwaha, 2001).

FAUNAL DIVERSITY

There are innumerable notes, observations, anecdotal articles pertaining to the wildlife and nature, published on the CTR by various amateur journalists, free lancers, tourists, etc., in daily and weekly newspapers, popular and wildlife magazines and some systematic information pertaining to the various aspects of the faunal elements of the Reserve, though the information on the invertebrate fauna is very limited. However, the prominent ones are those of Lamba (undated-1980?, 1987); Lamba and Bhatnagar (1977-79), Khati (2001, 2004) for the lists of mammals, birds and reptiles; Husain (1976, 1979, 1980) for Pisces; Singh and Prasad (1977) for Odonata, Ephemeroptera and Hemiptera; Singh and Bhargava (1979) Orthoptera and Coleoptera; Singh and Singh (1978) Dermaptera; Verma (1979) for Isoptera and Scolopendrid Centipedes (Khanna, 1994) and general faunal inventory provided by Khanna and Kumar (2005 & 2006).

To update the inventory of the faunal elements of CTR, the Zoological Survey of India recently undertook four surveys during the years 2002-05.

Altogether a sum total of 1013 species of the fauna, hitherto not documented, is reported in the present document from the Corbett Tiger Reserve, which includes besides the common and scientific names of the species, their first and original reference or first synonym, material examined, known distribution, in India and / or elsewhere, new records or extension of range of distribution of the species and their conservation status. The systematic accounts of 49 species of mammals, 685 species of birds, 39 reptilian species, 10 amphibians and 36 species of Pisces amongst vertebrates and 10 species of Nematodes, 11 species of Centipedes, 21 species of termites, 19 bugs, 37 dragon and damselflies, 34 hoppers and crickets, six mayflies and ten beetles and 36 species of butterflies from CTR (Table 1.1) amongst invertebrates (Table 1.1) have been documented.

The document also includes the new and first distributional records for seven species of fishes, four species of frogs, 10 species of nematodes and 7 species of butterflies from CTR. There is no addition to the already known centipede fauna, termites, bugs, mayflies, and beetles from CTR.

Table 1.1 : Current Status of Faunal Diversity of Corbett Tiger Reserve

Sl. No.	Class	Number of			
		Order	Family	Genera	Species
1.	Mammalia	9	21	43	49
2.	Aves	18	75	294	685
3.	Reptilia	3	13	31	39
4.	Amphibia	1	3	9	10
5.	Pisces	3	8	22	36
6.	Nematoda	7	8	10	10
7.	Chilopoda (Scolopendromorpha)	1	1	4	11
8.	Isoptera (Termites)	1	3	8	21
9.	Hemiptera (Bugs)	1	6	16	19
10.	Odonata (Dragon & Damsel flies)	1	8	25	37

Sl. No.	Class	Number of			
		Order	**Family**	**Genera**	**Species**
11.	Orthoptera	1	4	32	34
12.	Ephemeroptera (May flies)	1	4	4	6
13.	Dermaptera (Ear wigs)	1	3	5	10
14.	Coleoptera (Beetles)	1	1	10	10
15.	Lepidoptera (Butterflies)	1	8	25	36
	Total	50	166	**538**	**1013**

THREATENED FAUNA

Based on IUCN Red list (2004), a total of 648 species of the Indian fauna has been documented as Threatened, of which 248 are globally threatened (Critical 44, 109 Endangered and 195 Vulnerable) (Kumar and Khanna, 2006). Of these, 40 species (4 Critical, 10 endangered and 26 Vulnerable) are reported to occur in CTR as well and tabulated below in table 1.2.

Table 1.2 Current Conservation Statuses of Threatened Fauna of CTR :

Sl. No.	Scientific name	Common name	Status
Mammals			
1.	*Panthera tigris*	Tiger	Endangered
2.	*Elephas maximus*	Elephant	Vulnerable
Birds			
3.	*Gyps bengalensis*	Indian White-backed Vulture	Critical
4.	*Gyps indicus*	Long-billed Vulture	Critical
5.	*Gyps tenuirostris*	Slender-billed Vulture	Critical
6.	*Vanellus gregarious*	Sociable Lapwing	Critical
7.	*Leptoptilos dubius*	Greater Adjutant-Stork	Endangered
8.	*Falco cherrug*	Saker	Endangered
9.	*Houbaropsis bengalensis*	Bengal Florican	Endangered

Sl. No.	Scientific name	Common name	Status
10.	*Pelecanus philippensis*	Spot-billed Pelican	Vulnerable
11.	*Leptoptilos javanicus*	Lesser Adjutant-Stork	Vulnerable
12.	*Marmaronetta angustirostris*	Marbled Teal	Vulnerable
13.	*Haliaeetus leucoryphus*	Pallas's Fish-Eagle	Vulnerable
14.	*Aquila clanga*	Greater Spotted Eagle	Vulnerable
15	*Aquila heliaca*	Eastern Imperial Eagle	Vulnerable
16	*Grus antigone*	Sarus Crane	Vulnerable
17	*Gallinago nemoricola*	Wood Snipe	Vulnerable
18	*Rynchops albicollis*	Indian Skimmer	Vulnerable
19.	*Aceros nipalensis*	Rufous-necked Hornbill	Vulnerable
20.	*Saxicola insignis*	Hodgson's Bushchat	Vulnerable
21.	*Prinia cinereocapilla*	Hodgson's Prinia	Vulnerable
22.	*Chaetornis striatus*	Bristled Grass-Warbler	Vulnerable
23.	*Ploceus megarhynchus*	Finn's Weaver	Vulnerable
Reptiles			
24.	*Gavialis gangeticus*	Ghariyal	Vulnerable
25.	*Crocodylus palustris*	Lesson Crocodile	Vulnerable
26.	*Melanochelys tricarinata*	Three Keeled Turtle	Vulnerable
Frogs and Toads			
27.	*Paa minica*		Vulnerable
Fishes			
28.	*Raiamas bola*	Indian Trout	Endangered
29.	*Tor chelynoides*	Black Mahseer	Endangered
30.	*Tor putitora*	Yellow-finned Mahseer	Endangered
31.	*Tor tor*	Red-finned Mahseer	Endangered
32.	*Botia lohachata*	Botia	Endangered
33.	*Nemachilus montanus*	Mountain Loach	Endangered
34.	*Barilius vagra*	Hill Trout	Vulnerable

Sl. No.	Scientific name	Common name	Status
35.	*Labeo dero*	Hilly Labeo	Vulnerable
36.	*Puntius chola*	Bitter Carp	Vulnerable
37.	*Puntius conchonius*	Red Barb	Vulnerable
38.	*Garra gotyla gotyla*	Stone fish	Vulnerable
39.	*Mystus vittatus*	Fiddler fish	Vulnerable
40.	*Bagarius bagarius*	-	Vulnerable

POPULATION TRENDS

For the management of the wildlife inhabiting the Reserve, knowledge on the population dynamics of the specialized fauna is essential. The wildlife managers undertake periodical census of these species. The available year wise census data of the specialized fauna for the period from 1993 to 1997 has been tabulated below :

I. Specialized fauna

Table 1.3 : Census data for the specialized fauna of CTR

Wild Species	1993	1994	1995	1996	1997
Tiger	123	128	134	—	138
Panther	100	102	110	—	109
Elephant	417	—	502	—	746
Cheetal	36525	—	31919	—	—
Sambar	5576	—	5695	—	5757
Barking Deer	2262	—	2271	—	2229
Hog Deer	292	—	294	—	477
Bear	54	—	58	—	40
Wild Boar	7670	—	7711	—	7906
Gharial	224	—	123	—	283
Mugger	118	—	119	—	301
Goral	424	—	433	—	451
Monkey	12663	—	12574	—	12764
Langur	14091	—	14187	—	14300
Blue Bull	—	—	313	—	466

The estimated population of large mammals in the year 2003 was 143 tigers, 103 leopards, 627 elephants, 31304 chitals, 4239 Sambars, 497 hog deers, 1557 muntjacs, 75 sloth bears, 6151 wild boars and 377 Gorals. Apart from tigers the wildlife includes leopard, elephant, sloth bear, jungle cat, fishing cat, sambar, chital, mongoose, Himalayan Black Bear, Himalayan Palm Civet, Common Otter, Black Napped hare, Porcupine, fish eating Gharial, Mugger Crocodiles, Langur and Rhesus Monkeys.

Nearly a population of 600 animals of Asian Elephants (*Elephas maximus)* have a home in CTR and can be seen wandering leisurely. The CTR along with Rajaji National Park represents the Northwestern limits of Tiger and elephant distribution in the Indian sub-continent (Khanna, 2001).

Several endangered species such as Muggers, Gharial, Leopard Cat, Goral and Mahseer etc., have a significant presence in the Reserve. CTR is a heaven for tigers as well as its prey, which includes four kinds of deers, *viz.*, Sambar, Spotted deer, Hog deer and Barking deer, with Wild Boar. Sloth bear, Jackal, Yellow Throated Marten and Smooth Indian Otter are also found in the CTR.

Leopards are found mostly in the hilly areas of the Park. Some nocturnal cats found here are Leopard cat, Jungle Cat and Fishing Cat. Sloth Bear is found in the lower regions of the park while the Himalayan black bear is seen in higher hills only. Also seen on the rocky hillsides is Goral or Goat antelopes. Monkeys are well distributed throughout the Park and warning the whole jungle with alarming calls from tree top perches, when they see either Tiger or Leopard

The area is home to more than 600 species of resident and migratory birds. Amazingly, the rich avian diversity represents 6% of the world's avifauna and 55.2% of the Indian Avifauna. 49 species of the diurnal raptors found here are characteristic elements of avifauna. The avifaunal diversity is at its peak during winters.

II. Tiger Census Data

The available statistic indicates an increase in the tiger population. The Tiger Project has been monitoring the tiger population in Tiger Reserves in India since its inception periodically. The data generated for three decades from 1972 to 2002 depicts a phenomenal rise from 268 to 1578, countrywide, and from 44 to 137 in CTR alone (Table -1.4). The latest number being 143 in 2003 and 141 in 2005 (WII, l.c.).

The habitat association of the tiger in the CTR is indicated (Kushwaha *et al.*, article in the present document) to be concordant to barking deer, chital and hog deer from the analysis, whereas the DFA (Discriminant Function Analysis) indicates that the tiger actively avoids landscapes preferred by Nilgai. The coefficients on the logistic regression model show that <10 and 40 to 70 per cent canopy densities are preferred over the other two categories. This might be a reflection of the tiger's habitat usage while hunting and resting respectively. Variable interactions throw some important light on the effects of

canopy density on the tiger's response to distance from rivers and settlements. It is seen that the relationship reverses in the case of distance to settlements as compared to the case of rivers where it is more or less ambivalent. The tiger is seen to prefer higher canopy densities when in proximity to a settlement, whereas canopy density does not seem to make a significant difference when distance to water sources is concerned. The results of the study are corroborative of the habitat associations of the studied species through the field observations of both researchers and field personnel.

Table -1.4 : Population of Tigers in the Tiger Reserve (As reported by States).

S. No.	Name of Reserve	Year of creation	Total area in sq. km	1972	1979	1984	1989	1993	1995	1997	2001-2002
1.	Bandipur (Karnataka)	1973-74	866	10	39	53	50	66	74	75	82
2.	Corbett (Uttarakhand)	1973-74	1317	44	84	90	91	123	128	138	137
3.	Kanha (Madhya Pradesh)	1973-74	1945	43	71	109	97	100	97	114	127
4.	Manas (Assam)	1973-74	2840	31	69	123	92	81	94	125	65
5.	Melghat (Maharashtra)	1973-74	1677	27	63	80	77	72	71	73	73
6.	Palamau (Jharkhand)	1973-74	1026	22	37	62	55	44	47	44	32
7.	Ranthambore (Rajasthan)	1973-74	1334	14	25	38	44	36	38	32	35
8.	Simlipal (Orissa)	1973-74	2750	17	65	71	93	95	97	98	99
9.	Sunderbans (West Bengal)	1978-79	2585	60	205	264	269	251	242	263	245
10.	Periyar (Kerala)	1978-79	777		34	44	45	30	39	40	36
11.	Sariska (Rajasthan)	1982-83	866		19	26	19	24	25	24	22
12.	Buxa (West Bengal)	1982-83	759			15	33	29	31	32	31
13.	Indravati (Chhattisgarh)	1982-83	2799			38	28	18	15	15	29
14.	Nagarjuna Sagar (Andhra Pradesh)	1982-83	3568			65	94	44	34	39	67
15.	Namdhapa (Arunachal Pradesh)	1982-83	1985			43	47	47	52	57	61

S. No.	Name of Reserve	Year of creation	Total area in sq. mile	1972	1979	1984	1989	1993	1995	1997	2001-2002
16.	Dudhwa (UP)	1987-88	811	-	-	-	90	94	98	104	76
17.	Kalakad-Mundanthurai (Tamilnadu)	1988-89	800	-	-	-	22	17	16	28	27
18.	Valmiki (Bihar)	1989-90	840	-	-	-	81	49	nr	53	53
19.	Pench (Madhya Pradesh)	1992-93	758	-	-	-	-	39	27	29	40
20.	Tadoba-Andhari (Maharashtra)	1993-94	620	-	-	-	-	34	36	42	38
21.	Bandhavgarh (Madhya Pradesh)	1993-94	1162	-	-	-	-	41	46	46	-
22.	Panna (Madhya Pradesh)	1994-95	542	-	-	-	-	25	22	22	31
23.	Dampa (Mizoram)	1994-95	500	-	-	-	-	7	4	5	4
24.	Pench (Maharashtra)	1998-99	257	-	-	-	-	-	10	-	14
25.	Bhadra (Karnataka)	1998-99	492	-	-	-	-	-	-	-	35
26.	Pakhui-Nameri (Arunachal Pradesh Assam)	1999-2K	862	-	-	-	-	-	-	-	26 Nameri
27.	Bori-Satpura-Pachmari (Madhya Pradesh)	1999-2K	1486	-	-	-	-	30	-	-	35
28.	Kaziranga(Assam)	2006	859	-	-	-	-	-	-	-	-
		Total	**32134**	**268**	**711**	**1121**	**1327**	**1366**	**1333**	**1498**	**1578**

Source : Project Tiger, MoEF and Wildlife Institute of India, Dehradun

Poaching of fauna and flora

Poaching in CTR is rampant. There is some record of the poaching of fauna and flora, as provided by the Project Tiger (Table 1.5).

Table 1.5 : Incidence of Poaching and fishing etc.

Year	Timber	Poaching	Fishing
1993-94	115	05	05
1994-95	138	08	07
1995-96	181	08	23
1996-97	153	21	11
1997-98	162	12	16

Source : Project Tiger Reports

Human population

There is no village inside the Tiger Reserve. However, there are 92 villages at a distance of 2-3 km. from the boundary of Tiger Reserve. The human population of these villages is around 65,982.

Livestock population

Livestock population of 92 villages around the reserve is 44,416.

Highways

No highway passes through the Reserve. There is a State highway (Moradabad-Tehri S.H.No.4) lying on the Eastern boundary of Corbett Tiger Reserve from Jamunagwar to Marchula for about 35 km.

Encroachment

There is total encroachment of 13.62 ha by 74 families.

Weeds

The spread of invasive weeds such as *Lantana camara*, *Parthenium hysterophorus* and *Cassia* species is posing a major threat to the habitat. Vast stretches of the Reserve are choked with *Lantana* growth. *Parthenium* is invading fresh areas aggressively.

Dam

The construction of the multipurpose dam at Kalagarh across the Ramganga River in 1974 led to the submergence of 80 sq. km. of prime low lying riverine and grassland/ Chaur area, which abounded in ungulates and predators including tigers. Over the years, the reservoir has led to an increase in the number of aquatic fauna including muggers. The reservoir now provides additional habitat for winter migrant birds.

Man-Animal Conflict

Cattle lifting by tiger and leopard take place. There have been cases of poisoning of cattle kill carcasses by villagers.

Man-Forest Conflict

People in the villages around the reserve exploit natural sources by way of cutting trees and grasses.

SUMMARY

Of the 29 existing Tiger Reserves in India created under the famous Tiger Project, the Corbett Tiger Reserve is one of the first to come up in the year 1973, aimed mainly to secure the conservation of the highly endangered species. All through the three decades of the Tiger Project the population of tiger has appreciably increased from 44 in the year 1972 to 143 in 2004 in the Corbett Tiger Reserve.

Earlier known as Corbett National Park, the area always had the privilege of protection cover from the times of Britishers. It has also had the impact of onslaught on its biodiversity by the disturbances caused by the construction of Ramganga multi-purpose Hydel project-stage-I, in mid-70s to early 80s and as also of the poaching and illegal felling of trees.

The Zoological Survey of India has undertaken surveys in the CTR during 2002 to 2005 and it has come out with very interesting data. Altogether a total of 1013 species, hitherto not documented, are reported in the present document, from the Corbett Tiger Reserve, which includes besides the common and scientific names of the species, their first and original reference or first synonym, material examined, known distribution in India and/or elsewhere, new records or extension of range of distribution of the species and the conservation status. The systematic accounts of 49 species of mammals, 685 species of birds, 39 reptilian species, 10 amphibians and 36 species of Pisces have been documented, besides 10 species of Nematodes, 11 species of centipedes, 21 species of termites, 19 bugs, 37 dragon and damselflies, 34 crickets and gryllids, six mayflies, 10 earwigs, ten species of beetles and 36 species of butterflies.

The document also includes the new and first distributional records for seven species of fishes, four species of frogs, 10 species of nematodes and 7 species of butterflies from CTR.

The present document also deals with information on the Park, river system, topography, physiography, climate and soil, vegetation and faunal diversity including the population status of tiger, elephant, leopard, chital, sambar, hog deer, barking deer, sloth bear, wild boar, goral etc., vis-à-vis their habitat suitability in relation to their predator the Tiger. The conservation status of the species of Mammals, Birds and Reptiles, categorized as threatened by IUCN (2002) and CAMP (1997) have been provided. The efforts have also been made to include a complete available bibliography on Corbett Tiger Reserve.

The CTR is a potential area, supporting a profound and rich biodiversity from genetic level to ecosystem level, conservation of which is very important for sustenance of the flora, fauna and the human beings, today and in the future times to come.

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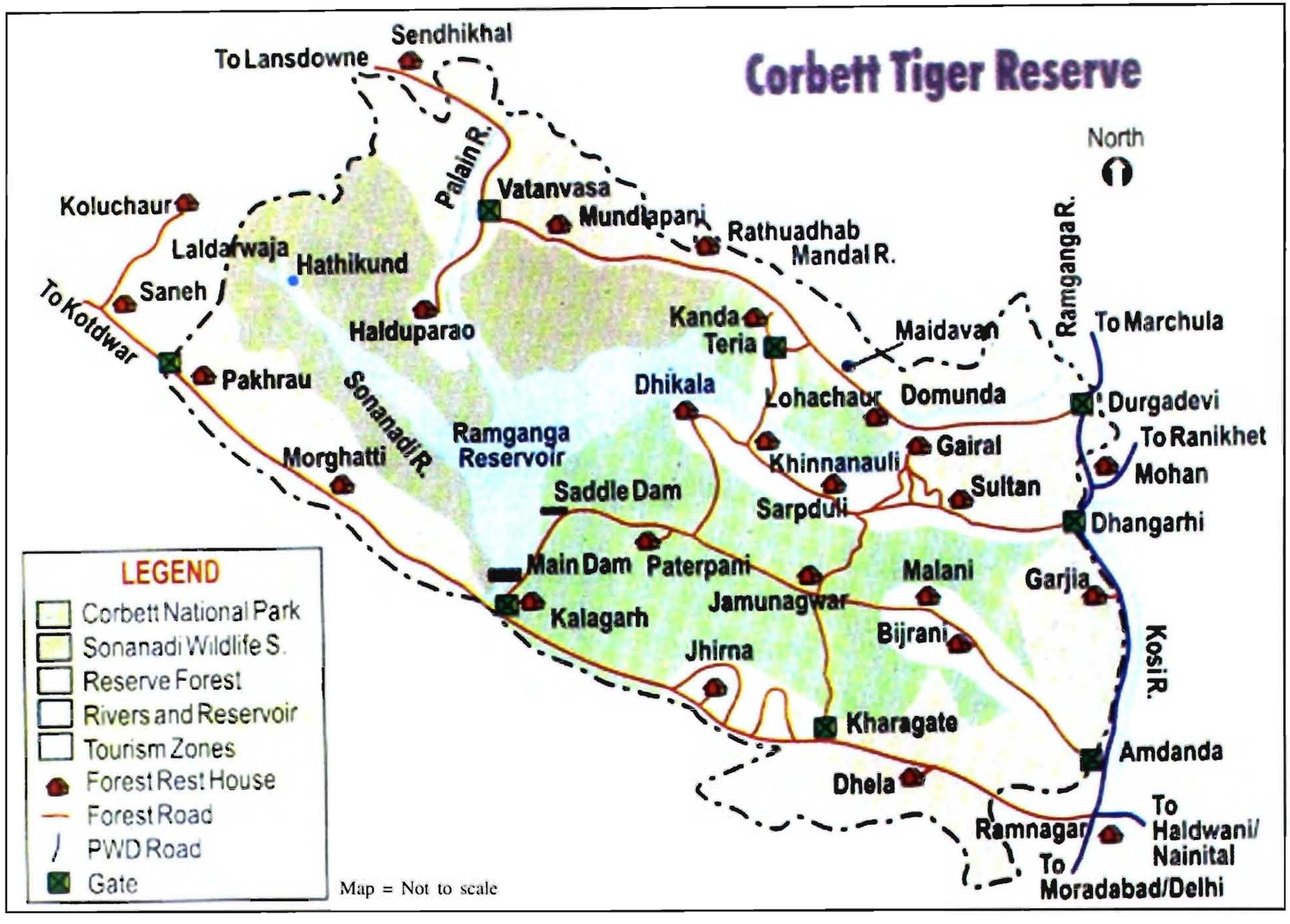


Map of Corbett Tiger Reserve, Uttarakhand.

Tiger

Tuskar

Elephant

Goral

Sambar

Barking Deer

Wild Boar

Spotted Deer

Neelgai

Black Napped Hare

Common Otter

Bay Backed Shrink

Black rumpde flameback

Changeable Hawk Eagle

King and Griffon Vultures on a tiger kill

Shrike

Common Myna

Grey Tree Pie

Grey Bush Chat

Plumbius Redstart

Lineated Barbet

Water Lapwing

Streaked Woodpecker

Wallcreeper

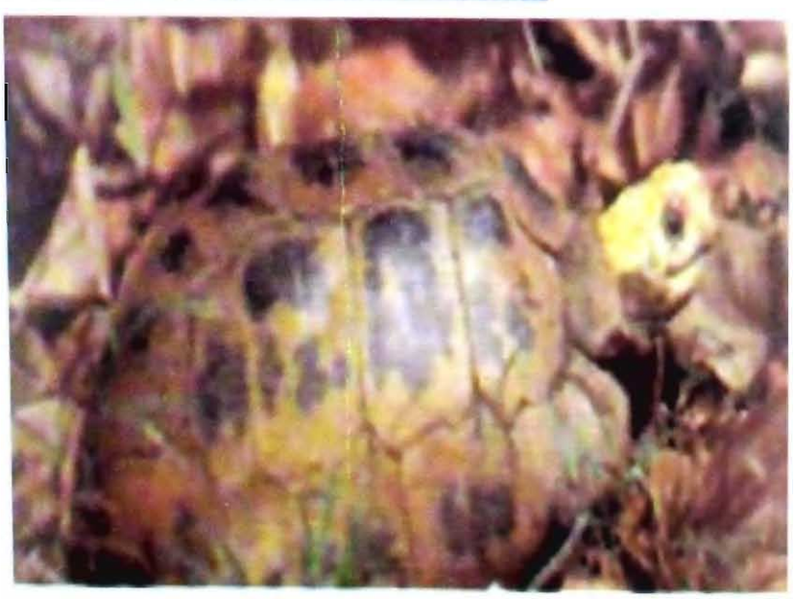
Small Minivet

Banded

Yellow Tortoise

Crocodile

Python molurus



Tortoise

Common Indian Toad

Indus Valley Toad

Himalayan Toad

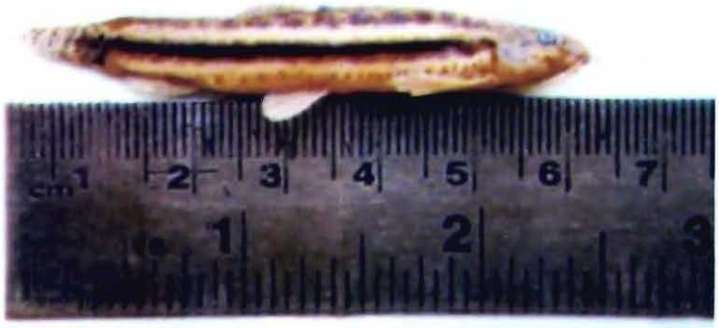
Marbled Baloon Frog

Flying Barb

Two-spot Barb

Yellow-finned Masheer

Stonefish



Guntea Loach

Indian Torrrent Catfish

Fiddler Fish

Tri-Track Spiny-eel

Common Mormon

Common Mime

Spot Swordtail

Lime Butterfly

Plain Tiger

Blue Tiger

Pioneer

Mottled Emigrant

Common Gull

Bath White

Peacock Pansy

Common Pierrot

Cormocephalus dentipes

Scolopendra morsitans

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HABITAT PREFERENCE ASSESSMENT OF THE TIGER AND ITS PREY UNGULATES IN THE CORBETT TIGER RESERVE

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INTRODUCTION

The earth's remaining wild tiger populations continue to shrink and fragment under ever-increasing anthropogenic pressures. In India, tigers are presently confined to a small fraction of their potential habitat *i.e.* less than 5 per cent of the 1.5 M km^2 of forest habitat available (Karanth, 2001). Present distribution of tigers extends from a population near the Pacific coast of Russia to southern India and peninsular Malaysia and Sumatra. The IUCN identifies tigers in all the range countries as endangered. In Asia, the tiger (*Panthera tigris* Linn.) was once widely distributed across the riverain grasslands and forests. As human populations converted the rich alluvial plains to agricultural lands, tigers gradually became confined to the forests of the region. There were an estimated 40,000 tigers on the Indian subcontinent in the early 1900s (Gee, 1964). After World War-II, clearing of forests accelerated depletion and fragmentation of forests and grasslands. As a result the tiger populations now exist only in small, isolated wildlife sanctuaries, national parks or tiger reserves. Throughout the species range, the population sizes are estimated to vary from 25 to 250 animals (Karanth, 1991). At this range of population sizes, stochastic, genetic, demographic and ecological events can have a profound impact on population dynamics (Shaffer, 1981; Frankel and Soule, 1981). David Smith *et al.* (1998) argued that national tiger censuses do not provide information on meta-population structure, which is defined by the spatial pattern, size and connectedness of populations (Levins, 1969) and determined by the geography of the habitat, the size of habitat units and the extent to which cover types act as dispersal barriers or facilitators. Smith *et al.* (1987) and Ahearn *et al.* (1990) have suggested that the first step in developing a comprehensive tiger management plan is to define each tiger population in relation to habitat quality.

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Tigers need extensive areas to hunt and breed, and therefore, protecting the prey populations and their habitats is imperative for its survival. The tigers are large-bodied, obligate carnivores and they readily come into conflict with humans by killing livestock, other domestic animals and occasionally humans. They are sensitive to depletion of their prey, which in turn often compete with the livestock and other domestic animals for fodder. Tiger as top predator plays a vital role in the regulation and perpetuation of ecosystem processes (Sunquist *et al.*, 1999). Among the numerous forces threatening the tiger's survival include poaching, prey depletion and habitat fragmentation due to land clearing, livestock grazing, forest fire, weed infestation, fuel wood, timber and fodder extraction and intrusive infrastructure (Seidensticker *et al.*, 1999), Of these, the poaching and prey depletion are considered to be the most imminent threats (Karanth and Stith, 1999). Sunquist (1981) suggested that one tiger in wild requires approximately 50 prey animals annually to survive and interspersion of humans in and around the tiger habitats leads inevitably to conflicts over resource use (Schultz and Skonhoft, 1996).

India had 55 per cent (3500 tigers) of the tiger population of the world (6370) (Jackson, 1993). Current projected number of tigers in India is 2500, meaning a decline in the tiger population in the country. Tigers in India inhabit dry deciduous, moist deciduous, semi-evergreen, wet evergreen, riverain, swamp and mangrove forest formations showing remarkable adaptation to the variations in physical and climatic habitat factors. It achieves its highest density in the Terai and other moist tropical forest habitats (Sunquist, 1981; Karanth and Nichols, 1998). It is in these habitats that tiger has been studied most (Schaller, 1967; Sunquist, 1981; Smith, 1984; Tamang, 1982; Karanth and Sunquist, 2000). Dry tropical forests that make the largest tiger habitat in India have been studied relatively infrequently (Chundawat *et al.*, 1999). It is in these ecosystems that tiger is finding it hardest to survive (Chundawat, 2001). The high potential of Remote Sensing (RS) and Geographic Information System (GIS) in wildlife habitat evaluation, conservation and management has been amply demonstrated in past (Lyon, 1983; Goldblatt, 1993; Kushwaha *et al.*, 2000 & 2004; Kushwaha and Roy, 2002; Alfred *et al.*, 2001)

The selection of the methodology for the tiger habitat assessment stems from the understanding that tiger being a higher order consumer does not limit its distribution solely to the vegetation or other physical habitat types. It is well known by now that the fitness of tiger population depends on the availability of its prey (Sunquist and Sunquist, 1989). Karanth and Sunquist (1995) and Karanth and Nichols (1998) suggested that densities of tigers are governed primarily by the abundance of prey species. In fact, the evolution and radiation of the *Panthera* stock is closely tied to that of the cervids and bovids (Sunquist *et al.*, 1999). Within this framework of understanding, the inclusion of the prey availability parameters assumes high importance compared to the physical environment such as cover, slope, elevation etc. as included in classical habitat evaluation procedures (HEPs). Considering that the availability of habitat is critical for sustenance of the tiger as well as prey populations, it is mooted that habitat associations of the flagship species and the associated prey base be investigated.

Habitat management efforts in all the protected areas in India are usually concentrated around managing the habitats by way of reforestation, fire management and creation of refuge and resources such as waterholes or salt licks. The spatially explicit baseline information guiding such efforts is often lacking. Habitat restoration and resource augmentation should be ideally taken up as an integrated exercise serving the needs of the tiger as well as the ungulate assemblage in any protected area. Habitat management for the tiger has recently been taken up at a war footing by the Project Tiger authorities. In this study, the primary field survey data, satellite imagery and GIS have been used to statistically analyze the habitat preference of the tiger and its associated prey base in the Corbett Tiger Reserve.

STUDY AREA

The Corbett Tiger Reserve (CTR) falls in the nascent state of Uttarakhand, carved out of state of Uttar Pradesh in 2000. The CTR with core and buffer areas of 505.36 km^2 and 782.26 km^2 (total 1287.64 km^2) respectively, lies between 29°25'-29°40' N and 78°50'-79°50'E (Fig. 1). The CTR has the unique distinction in the country for being the first protected area of the country. It also holds the unique distinction of being the venue for the launch of Project Tiger in 1973 in India. The Ramganga reservoir inside the CTR, which came into being in 1974, stretches over an area of around 82 km^2 with one half each in Corbett National Park and Sonanadi Wildlife Sanctuary respectively. The river Ramganga is the lifeline of the CTR. Its principal tributaries are the Mandal, Palain and Sonanadi. Numerous mountain streams, locally called sots, flow in to these tributaries. The upstream end of the reservoir, which dries up during winter, develops in to grasslands annually. It provides valuable browse to herbivores during lean season. The nullahs and ravines are thickly covered with evergreen shrubs with pockets of evergreen glades along them, which provide undisturbed cover and water for the tiger. The CTR also makes part of the catchment of the river Kosi, which flows along the eastern boundary of the Reserve (Anon., 2001).

FLORA AND FAUNA

The Reserve has rich biodiversity. Both Himalayan and peninsular floral and faunal elements are found. Champion and Seth (1968) have classified the forest vegetation of the CTR in to the following types:

A. Northern Moist Deciduous Forests	**Sub-Group 3C**
Moist Shiwalik Sal Forest	3C/C2a
Moist Bhabar Dun Sal Forest	3C/C2b (i)
Western Gangetic Moist Mixed Deciduous Forests	3C/C3a
Alluvial Savannah woodland	3/1S1

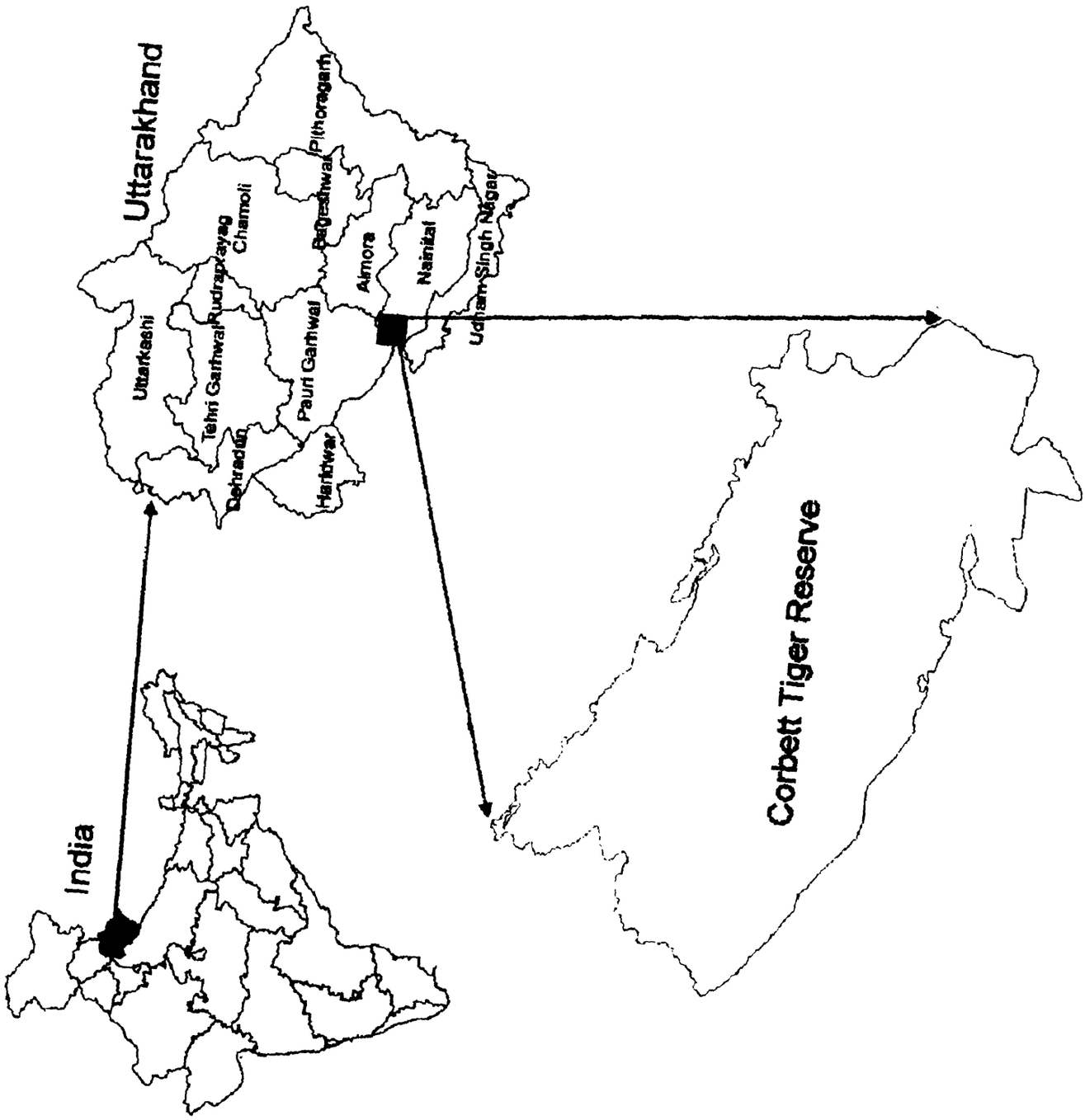

Fig. 1 : Location of Corbett Tiger Reserve in India.

B. Northern Tropical Dry Deciduous Forests	**Sub-Group 5B**
Dry Shiwalik Sal	5B/C1a
Northern Dry Mixed Deciduous Forest	5B/C2
Khair-Sissoo Forest	5/1S2
C. Himalayan Subtropical Pine Forests	**Sub-Group 9**
Lower Shiwalik Chir Pine Forest	9/C1a

Sal forest dominates the landscape. Except for very small area, most of the forests experience no human intervention. Majority of the forest cover is dense with intermittent grasslands (locally known as 'chaur'). About 110 tree species are found in the CTR, the major being sal (*Shorea robusta* Gaertn.f.), rohini (*Mallotus philippensis* (Lam.) Muell. Arg.), sain (*Terminalia tomentosa* (Roxb. ex DC.) Wight & Arn.), bakli (*Anogeissus latifolia* (Roxb. ex DC.) Wall. ex Guill & Perr.), haldu (*Adina cordifolia* Hook.f. ex Brandis), dhauri (*Lagerstroemia parviflora* Roxb.), khair (*Acacia catechu* (L.f.) Willd.),

Table 1: Wild animal population in CTR.

Wild Animal	Zoological Name	1993	1995	1997	% change 1993-95	% change 1995-97	% change 1993-97
Tiger	*Panthera tigris* Linn.	123	134	138	8.21	2.90	12.20
Panther	*Panthera pardus* Linn.	100	110	109	9.09	-0.92	9.00
Elephant	*Elephas maximus* Linn.	417	502	746	16.93	32.71	78.90
Chital	*Axis axis* Erxl.	31625	31919	32059	0.92	0.44	1.37
Sambar	*Cervus unicolor* Kerr.	5576	5695	5727	2.09	0.56	2.71
Barking deer	*Muntiacus muntjak* Bodd.	2262	2271	2229	0.40	-1.88	-1.46
Hog deer	*Axis porcinus* Zimm.	292	294	477	0.68	38.36	63.36
Bear	*Melursus ursinus* Shaw	54	58	40	6.90	-45.00	-25.93
Wild boar	*Sus scrofa* Shaw	7670	7711	7906	0.53	2.47	3.08
Ghariyal	*Gavialis gangeticus* (Gmelin)	224	123	283	-82.11	56.54	26.34
Mugger	*Crocodylus palustris* Lesson	118	119	301	0.84	60.47	155.08
Goral	*Nemorrhaedus goral* Hardwi.	424	433	451	2.08	3.99	6.37
Monkey	*Macaca mulatta* Trug	12663	12574	12764	-0.71	1.49	0.80
Langur	*Semnopithecus entellus* Hodg.	14091	14187	14300	0.68	0.79	1.48
Nilgai	*Boselaphus tragocamelus* Pallas	-	313	466	-	32.83	-

sissoo (*Dalbergia sissoo* Roxb. ex DC.), bel (*Aegle marmelos* (Linn.) Correa), semal (*Bombax ceiba* Linn.), dhak (*Butea monosperma* (Lam.) Taub.), ber (*Ziziphus nummularia* Wight & Arn.) and bamboo (*Dendrocalamus strictus* (Roxb.) Nees).

The CTR is also endowed with a rich faunal assemblage with about 49 mammal, 685 bird and 39 reptile species. The major faunal species are: tiger (*Panthera tigris* Linn.), leopard (*P. pardus* Linn.), elephant (*Elephas maximus* Linn.), chital (*Axis axis* Erxl), hog deer (*A. porcinus* Zimm.), sambar (*Cervus unicolor* Kerr.), barking deer (*Muntiacus muntjak* Boddaert), wild boar (*Sus scrofa* Shaw), langur (*Semnopithecus entellus* Hodg.) and rhesus monkey (*Macaca mulatta* Trug), Indian marsh crocodile (*Crocodilus palustris* Lesson), gharial (*Gavialis gangeticus* (Gmelin)), Indian peafowl (*Pavo cristatus* Linn.), common hill partridge (*Arborophilia torqueola* Val.), kalij (*Lophura leucomelanos* (Latham), common krait (*Bungarus caeruleus* (Schn.)), cobra (*Naja naja* (Linn.)), russell's viper (*Vipera ruselli* (Shaw)), python (*Python molurus* (Linn.)), monitor lizard (*Varanus benghalensis* (Linn.)), mahseer (*Tor putitora* (Hamilton)), seven species of vultures, five species of laughing thrushes, eight species of drongos and three species of cormorants. Table-1 depicts the wild animal populations as per census carried out by the CTR Directorate, Ramnagar, Uttarakhand.

MATERIALS AND METHODS

Materials

The Indian Remote Sensing Satellite, IRS LISS-III standard false color imagery acquired on 5th March 2001 (Fig. 2), toposheets and the management maps were used for this study. The instrument used included field camera, binocular, ranger's compass and a Garmin12 GPS. The pre-field preparations included satellite image rectification, enhancement, interpretation and base map generation. The field survey included verification of image interpretation for correction, if any and recording of presence and absence of the animals of interest using GPS. The post-field work included database generation, geostatistical analysis and interpretation of the results. Each phase contributed its output to the successive phase as input and the methodology demonstrated the synergistic use of spatial, non-spatial and collateral data to arrive at the better understanding of the habitat preferences of the major ungulate fauna and the tiger.

FIELD SURVEY

A 15-day field survey was conducted in October and November 2003 to collect data on the habitat usage by all ungulate species and the tiger in the CTR. A total of 431 random plots were laid across the sanctuary following stratified random sampling design. A 50 m-radius circle around each point was searched intensively for signs of habitat use by various

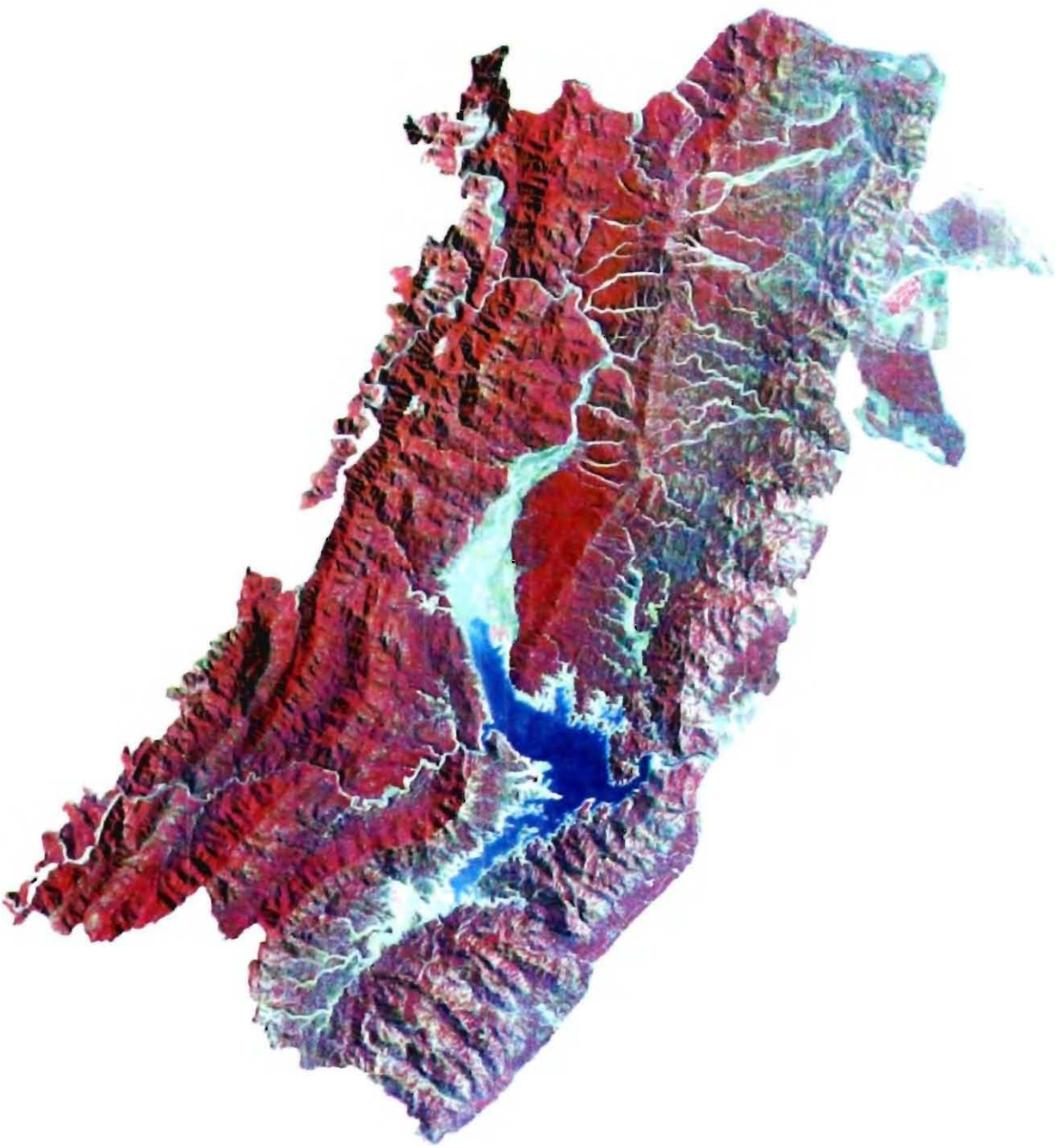

Fig. 2 : False colour satellite imagery of CTR.

ungulates and the tiger. Data were only considered when species signs such as dung, pellet, pugmarks or footprints could be identified with full confidence by experienced trackers, else they were rejected. The data was organized as a database of presences/ absences for each species and the UTM coordinates for that plot. Each plot was sampled only once.

DATABASE GENERATION

Digital interpretation of satellite imagery yielded vegetation type (Fig. 3) and canopy density information (Fig. 4). Topographic maps (on 1:50,000 scale) were used to derive spatial raster data on elevation (Fig. 5), slope, aspect, roads, drainage/water bodies and the settlements. Locations of animal detection during field survey and the location details of the animals available in the management plan or with CTR authorities were then intersected with all the input layers.

GEOSTATISTICAL ANALYSIS

For the case of the prey species, the herbivores, the spatial distribution can be assumed to be dictated by the availability and spatial configuration of cover and forage parameters such as forest vegetation type, canopy density and physical escape/movement favouring parameters such as slope, elevation etc. Sympatric division of the given habitat in the case of ungulates can thus be modeled around such parameters. The minimization of resource utilization conflict is understood to be implicit in such models. These are understood as spatial probabilities derived from the presence-absence counts from field data as in the case of logistic regression. Parameters of species interaction are thus not included. As with the above, to include the concordance of habitat characteristics of the prey-base with the tiger in this study, the habitat suitability index for each of the prey species was taken as a covariate for the habitat suitability for the tiger.

The variables - forest type, forest canopy density, slope, aspect and elevation and distances from roads, settlements and drainage were used as covariates for the logistic regression analysis. Values for forest type, forest canopy density and aspect were recoded and specified as categorical. Cases of animal sightings were considered Boolean (presence/absence) and binomial multiple logistic regressions were run for each ungulate species. A backward elimination procedure constrained by a minimum of 0.01 per cent serial reduction in the log-likelihood ratios followed by the evaluation of the adjusted Akaike Information Criterion (AIC) was used to select the most parsimonious model, variables from which were used for the final model for all the prey species and the tiger. All models were evaluated by the area under the curve (AUC) of the receiver operating characteristic (ROC) plot.

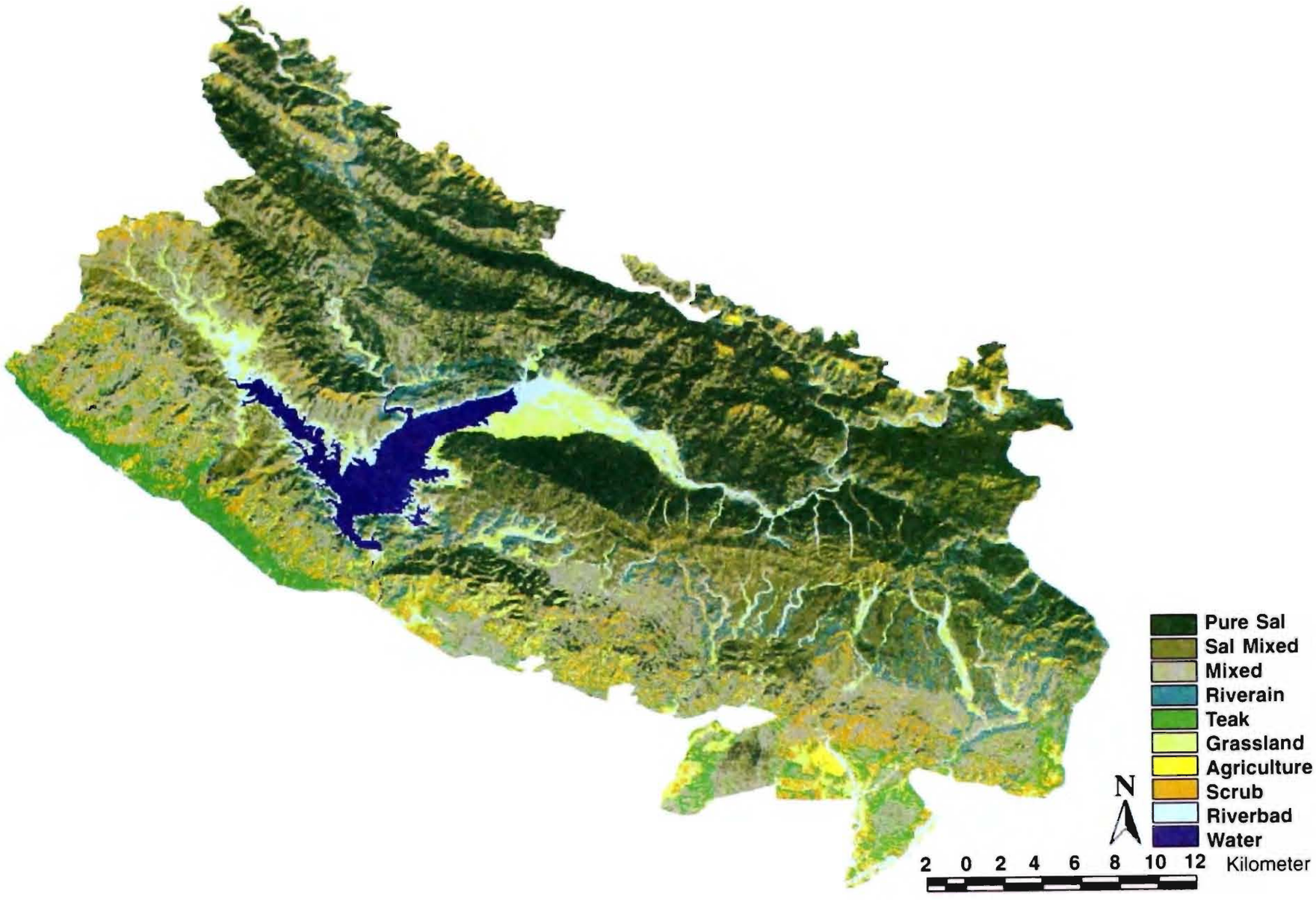

Fig. 3 : Forest/vegetation types in CTR.

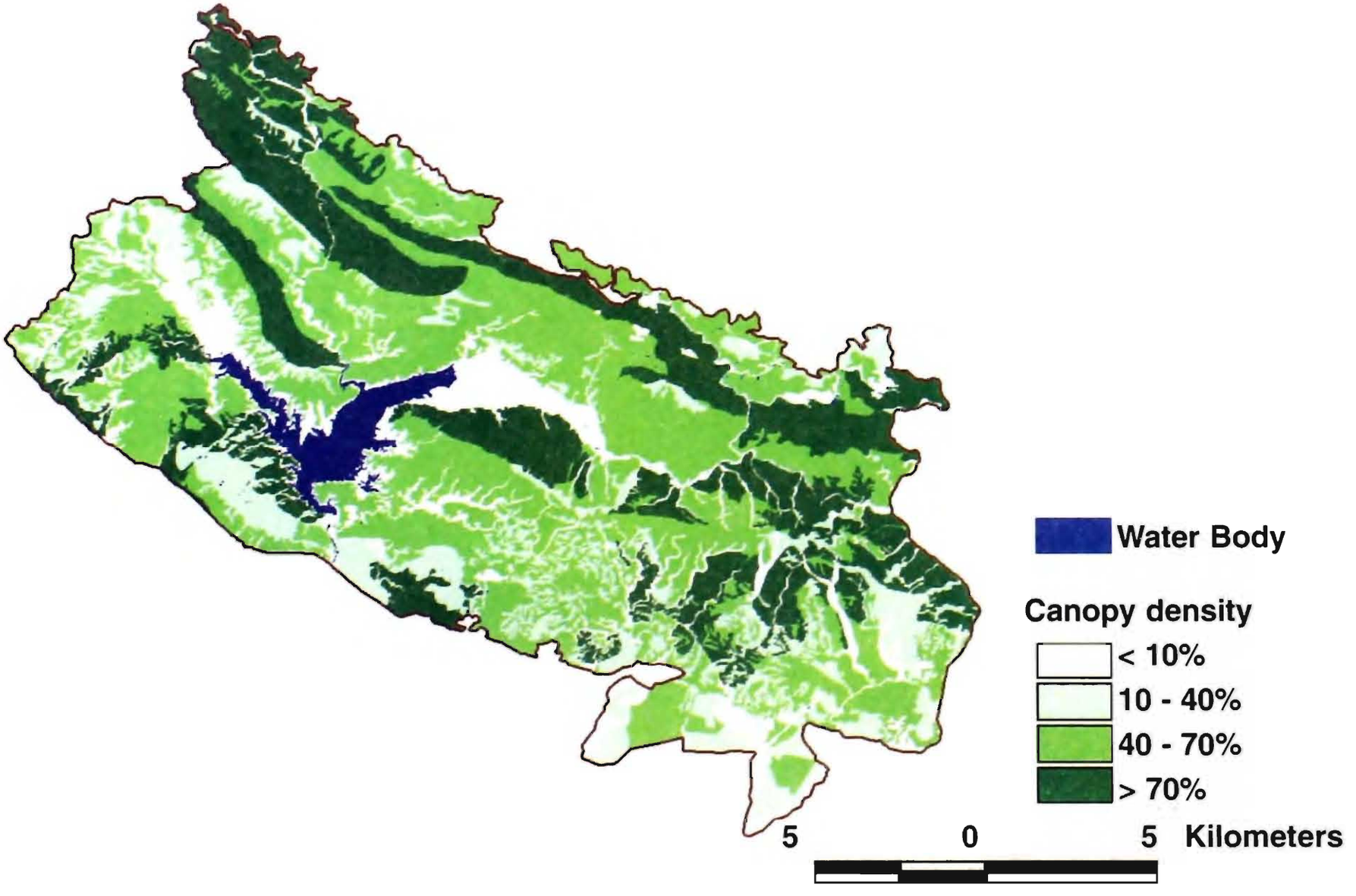

Fig. 4 : Forest canopy density in CTR.

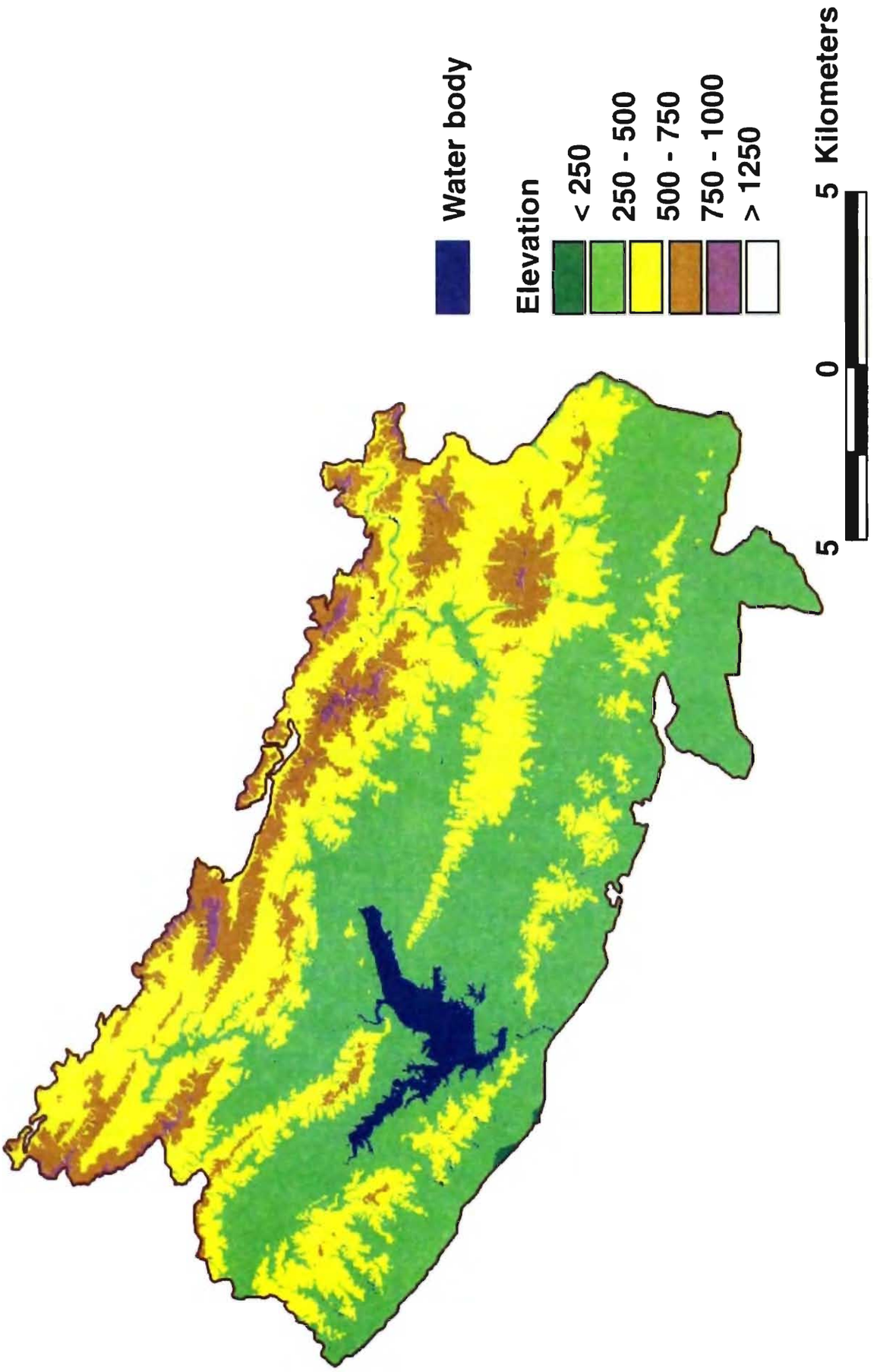

Fig. 5 : Digital terrain map of CTR.

The models derived for the prey species were then used to derive probabilities of habitat use at all locations and included as covariates in the habitat suitability model for the tiger along with cover and topographic variables. The coefficients obtained in each of the regressions were then used for subsequent mapping at the spatial level. In addition to the prey detection probabilities, interaction terms describing the interaction of canopy density with all other continuous variables were included for the final model of the tiger. Additionally, all considered variables were used without interaction terms for a Discriminant Function Analysis (DFA) to ascertain the absolute strengths of all variables that accounted for tiger detections.

RESULTS

Table-2 gives the details of the different habitat types found in the study area. Pure Sal, Sal mixed and mixed forests make up for a major portion (68.88%) of the habitat types found in the CTR, while among the non-forest categories water/reservoir and the associated riverbed account for 5.32 per cent of the study area. About 13.71 per cent of the study area was mapped as open forest while a large portion displays high to very high canopy density (40-70% canopy density = 62.20% and >70% canopy density = 26.76% of the CTR).

Table 2 : Habitat types derived from satellite imagery.

Forest Type	**Area (ha)**	**Area (%)**
Pure Sal	34478.01	26.78
Sal Mixed	25850.45	20.08
Teak	6882.31	5.34
Mixed	28365.00	22.03
Riverain	5782.30	4.49
Grassland	8513.74	6.61
Scrub	10873.56	8.44
Agriculture	1145.62	0.89
Water	3693.12	2.87
Riverbed	3179.52	2.47
Total	**128763.63**	**100.00**

Table-3 gives the results of the satellite-derived forest canopy density stratification of the study area.

Table 3 : Forest canopy density derived from satellite imagery.

Canopy Density (%)	Area (ha)	Area (%)
0-10	17655.23	13.71
10-40	22315.30	17.33
40-70	54338.52	42.20
> 70	34454.58	26.76
Total	**128763.63**	**100.00**

Table 4 shows the goodness-of-fit statistics of all models fitted for the studied species. All models had a greater than 70 per cent sensitivity and performed well on both commission and omission error avoidance. The covariate aspect of the slope had minor or no significant effect on most of the species. Models derived for wild boar, nilgai and chital showed loadings significant enough for the variable to be included in the analysis. The

Table 4 : Goodness-of-fit[2] statistics and classification accuracy of habitat models.

Goodness-of-fit	Wild Boar	Sambar	Nilgai	Hog Deer	Chital	Barking Deer	Tiger
-2 log likelihood	23.447	224.379	16.686	23.568	27.381	44.719	56.659
Goodness-of-fit[1]	30.493	196.290	16.937	19.985	35.636	43.318	204.462
Cox & Snell R^2	0.157	0.377	0.447	0.288	0.644	0.235	0.224
Nagelkerke R^2	0.707	0.507	0.933	0.842	0.948	0.662	0.615
Chi-square	49.834	119.680	165.149	101.031	270.533	70.332	72.161
Df	19	5	22	14	23	25	15
P	0.00010	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
Classification accuracy							
Cases analyzed	292	254	279	298	263	264	286
Correct detection (%)	97.53	77.55	99.20	98.22	98.46	95.56	94.40
Correct omission (%)	87.50	71.70	92.86	81.25	95.52	86.67	82.35
Overall accuracy (%)	97.25	75.10	98.57	97.31	97.71	95.06	93.68

[2] Hosmer-Lemeshow's goodness-of-fit index

effect was, however, nullified by ambivalent magnitudes and directions of the coefficients. It can be concluded that aspect of the hill slopes does not play a very significant part in the choice of habitats in the CTR. The variable canopy density, however, did play a major part in defining the selected habitats by various species. As seen in Table-5, canopy closure/density had significant effects on all models except in the case of wild boar. It was, however, interesting to analyze the strengths and directions of the coefficients *vis-à-vis* the magnitude and direction of the respective constant terms. The habitat suitability analysis highlights the role of the sal forest in the ecology of the CTR. The habitat types represented by pure sal, mixed sal and mixed forest types form an average of 73.31 per cent suitable habitats for all the animals.

Table 5 : Regression coefficients of ungulate habitat suitability models

Variable Aspect	**Wild Boar**	**Sambar**	**Nilgai**	**Hog Deer**	**Chital**	**Barking Deer**
I_ASP (1)	-0.2518		93.9800		-53.0491	
I_ASP (2)	-13.2785		107.6348		-2.3320	
I_ASP (3)	-12.9862		103.7415		-14.4538	
I_ASP (4)	-12.7262		105.0172		-52.6944	
I_ASP (5)	-13.1334		105.7010		-14.7865	
I_ASP (6)	-0.4067		99.6144		4.1089	
I_ASP (7)	-12.5195		113.5112		5.8525	
I_ASP (8)	-2.7224		81.6988		-20.1309	
Canopy Density (%)						
<10		0.0000	0.0000	0.0000	0.0000	0.0000
10-40		4.2285	-21.5162	4.3338	119.9073	-11.6374
40-70		3.454	-13.2652	6.1106	34.9434	-2.9150
>70		2.0223	83.3143	-5.7551	12.6164	-1.4636
Dist. from rivers	0.0023		-0.0087	0.0041		-0.0224
Dist. from roads		0.005			0.0613	0.0173
Dist. from settlements	-0.0017	0.0006	0.0522	0.0027	0.0072	
Slope					-0.1175	

Table 5 : *Contd.*

Variable Aspect	Wild Boar	Sambar	Nilgai	Hog Deer	Chital	Barking Deer
Habitat Type						
Pure Sal	0.0000		0.0000	0.0000	0.0000	
Sal mixed	-11.9615		-58.7973	11.3361	11.2911	
Teak	-0.4382		-287.3130	5.0942	0.3535	
Mixed	-13.2309		-7.5325	0.6562	-4.1140	
Riverain	0.5585		-415.6290	-10.1301	4.7080	
Grassland	-10.8038		57.0436	10.9187	55.5303	
Scrub	-0.6464		-292.3680	4.2947	-16.2218	
Agriculture	-11.6230		-181.9140	-0.2879	-64.5362	
Water	-8.8271		-81.4143	9.7203	-45.8323	
Riverbed	-2.7071		-315.1220	-9.9938	-123.1420	
Constant	0.1526	-5.8031	-198.2480	-28.5633	-63.1335	-2.8592

It was observed that sambar, hog deer, nilgai, barking deer and chital all carried a high significance for the canopy density in the choice of habitats. Both nilgai and wild boar gave inverse relations with probability of use and distance to settlements apparently indicating their possible encroachment and colonization of agricultural fields abutting the CTR. It was also observed that the choice of habitat matched considerably within the group of barking deer, chital, sambar and hog deer (Table-6). Nilgai showed a high positive correlation in the proportion of habitat selected except for its opposite association with wild boar habitat, which incidentally seems to have the very narrow spectrum of habitat usage in the CTR (Table-7).

For deriving the habitat suitability for the tiger, the probabilities of the ungulates were taken as additional covariates to include the parameter habitat concordance with the prey base. Additionally, interaction terms such as canopy cover and disturbance factors such distance from settlements and roads etc. were considered to analyze the effects of a combination of landscape factors in the determination of the tiger's habitat preference. The coefficients derived from the logistic regression model with the introduced interaction terms for the tiger are shown in Table-8.

For the Tiger, in addition to the logistic regression, a DFA was carried out conjunctively on the RS/GIS derived information and field data to elicit the finer points of habitat usage by the tiger (Table-9). The DFA resulted in the correct classification of 83.80

Table 6 : Area (ha) suitable for ungulate species in CTR.

Habitat Type	Barking deer	Chital	Hog Deer	Wild Boar	Nilgai	Sambar	Tiger
Agriculture	97.73	625.98	193.03	49.26	353.90	695.82	396.49
Grassland	1033.85	5822.93	3923.01	15.46	4433.97	7170.57	4109.65
Mixed	3590.08	17636.93	10626.18	205.00	16430.74	20842.99	15782.72
Pure Sal	2921.80	14078.72	801.06	4934.79	2164.03	17417.67	11188.09
Riverbed	575.63	1442.81	460.49	19.32	741.76	2774.42	2377.12
Riverain	1142.98	2989.24	614.33	238.75	1435.34	3814.48	2663.04
Sal mixed	3917.06	13089.81	4682.50	1247.61	8735.32	18575.07	13703.49
Scrub	945.61	4651.57	2290.04	63.55	2779.58	8059.92	3822.77
Teak	287.48	2040.95	852.01	16.25	2291.42	3069.60	3164.54
Total Area	128763.63	128763.63	128763.63	128763.63	128763.63	128763.63	128763.63
Suitable Area	14512.22	62378.95	24442.66	6789.99	39366.06	82420.53	**57207.91**
% to total Area	11.27	48.44	18.98	5.27	30.57	64.01	**44.43**

Table 7 : Proportions (%) of various habitat types suitable for studied species in CTR.

Habitat Type	Barking deer	Chital	Hog Deer	Wild Boar	Nilgai	Sambar	Tiger
Agriculture	0.67	1.00	0.79	0.73	0.90	0.84	0.69
Grassland	7.12	9.33	16.05	0.23	11.26	8.70	7.18
Mixed	24.74	28.27	43.47	3.02	41.74	25.29	27.59
Pure Sal	20.13	22.57	3.28	72.68	5.50	21.13	19.56
Riverbed	3.97	2.31	1.88	0.28	1.88	3.37	4.16
Riverain	7.88	4.79	2.51	3.52	3.65	4.63	4.66
Sal mixed	26.99	20.98	19.16	18.37	22.19	22.54	23.95
Scrub	6.52	7.46	9.37	0.94	7.06	9.78	6.68
Teak	1.98	3.27	3.49	0.24	5.82	3.72	5.53
% to total suitable	100.00	100.00	100.00	100.00	100.00	100.00	100.00

per cent of cases and showed a canonical correlation of 0.405 (P-0.0001, Chi sq.-51.576, Df-14). Further, the suitability maps were histogram sliced at probability cut-off levels of the logistic regression (usually 0.5) levels and cross-tabulated with all continuous variables to evaluate the absolute range and statistical distribution of the variable under study. Table-10 shows the coefficients of the DFA structure matrix arranged in decreasing order of magnitude.

Table 8 : Regression coefficients of the tiger model.

Variable	Coefficient	Variable	Coefficient
Canopy density (%)		***Interactions***	
<10	12.9349	Canopy density interaction with distance from river	
10-40	-0.2887	<10	-0.0018
40-70	11.9059	10-40	-0.0003
>70	0.0000	40-70	-0.0123
Elevation	-0.0099	>70	0.0000
Dist. From roads	0.0084	Canopy density interaction with distance from settlement	
Slope	-0.0358	<10	4.79E-06
Ungulate probabilities		10-40	-0.0002
Barking Deer	-10.0496	40-70	0.0010
Chital	-3.5901	>70	0.0000
Hog Deer	0.8266	Constant	-9.7027

Table 9 : DFA structure matrix

Variable	Function	Variable	Function
Elevation	0.413	Barking deer probability	-0.025
Canopy density	0.193	Hog deer probability	-0.048
Slope	0.147	Distance from road	-0.323
Wild boar probability	0.140	Sambar probability	-0.334
Distance from river	0.112	Distance to settlement	-0.454
Chital probability	0.019	Nilgai probability	-0.560

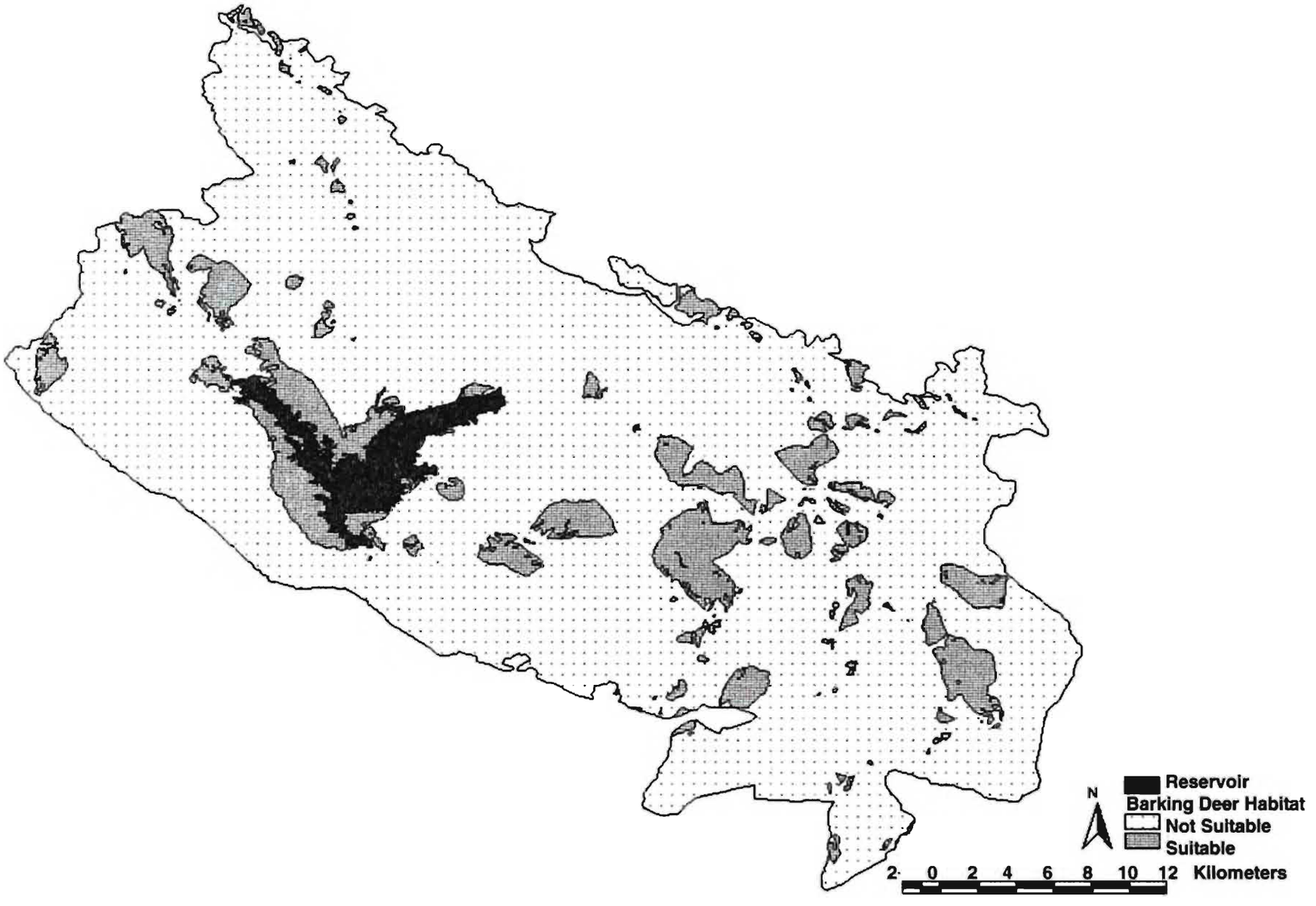

Fig. 6 : Habitat suitablity for barking deer (*Muntiacus muntiak*) in CTR.

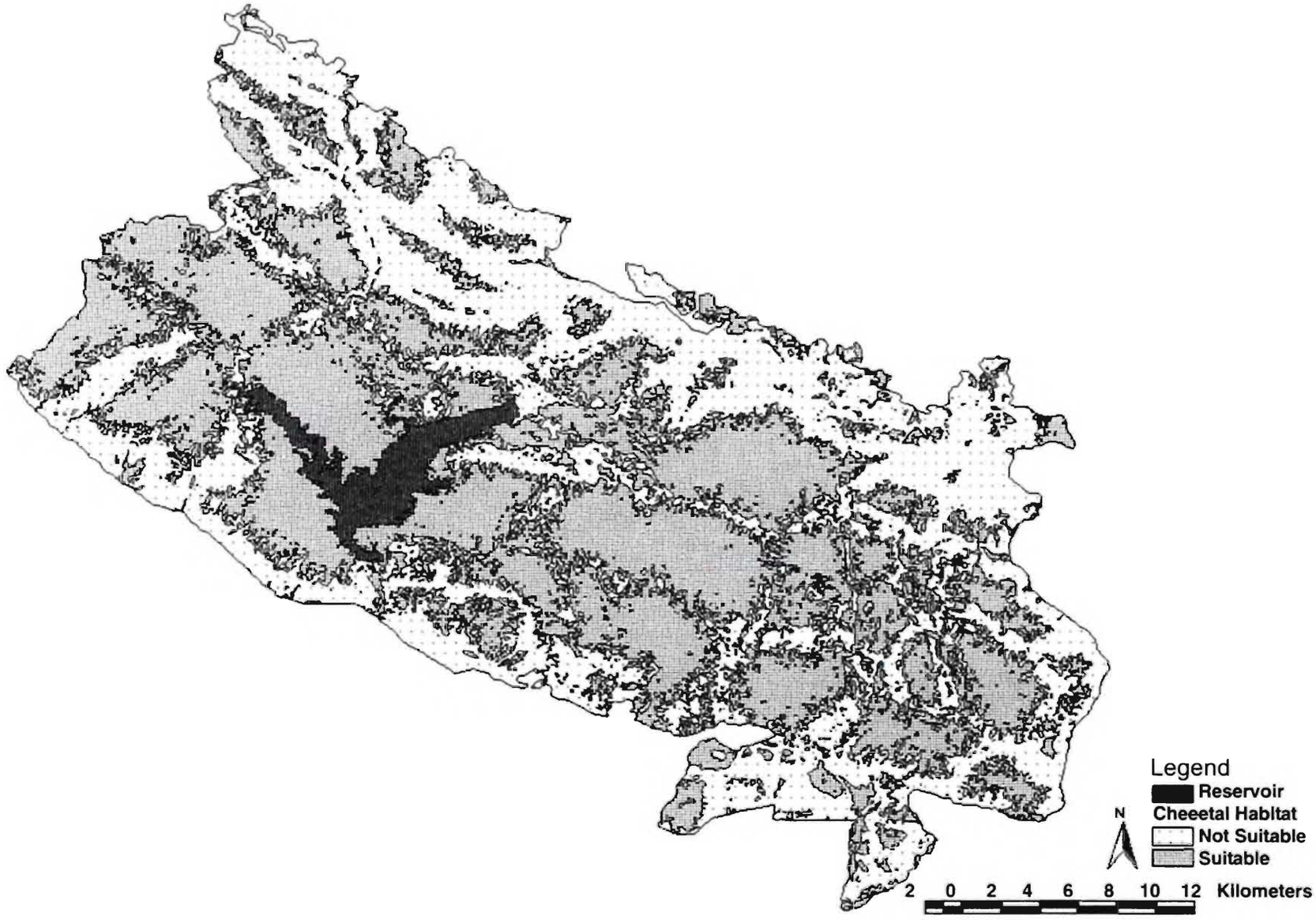

Fig. 7 : Habitat suitablity for cheetal (*Axis axis*) in CTR.

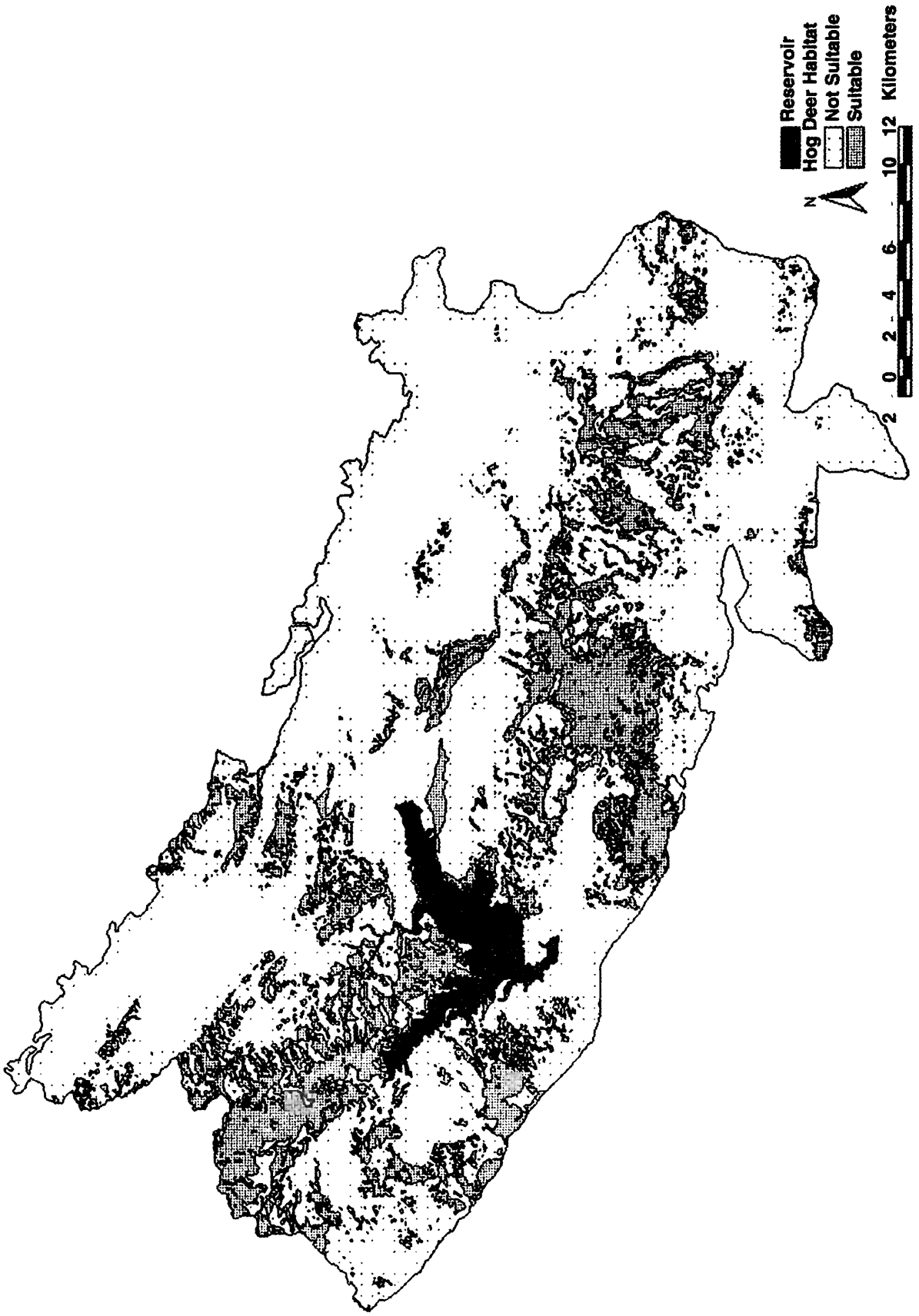

Fig. 8 : Habitat suitablity for hog deer (*Axis porcinus*) in CTR.

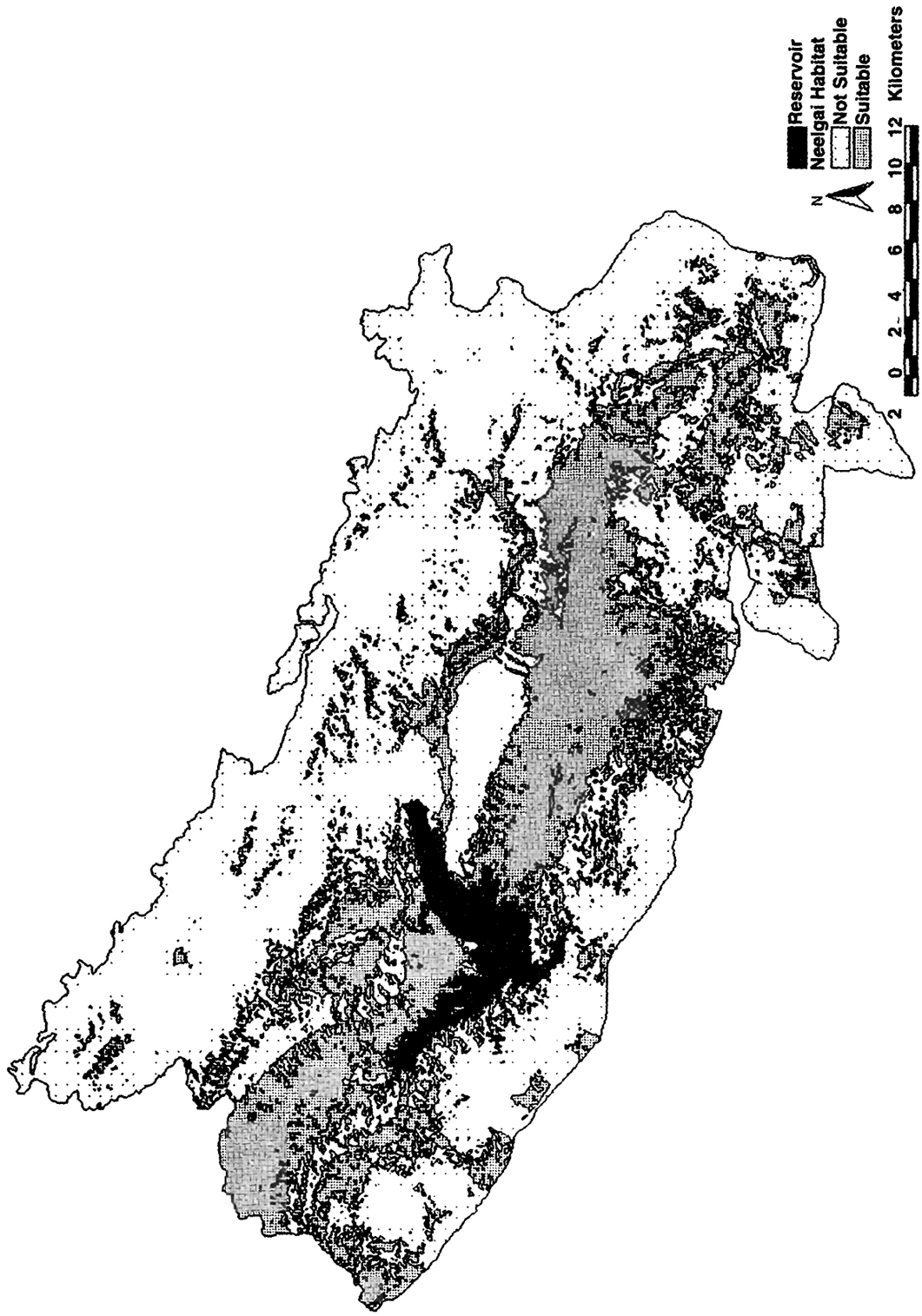

Fig. 9 : Habitat suitablity for nilgai (*Boselaphus tragocamellus*) in CTR.

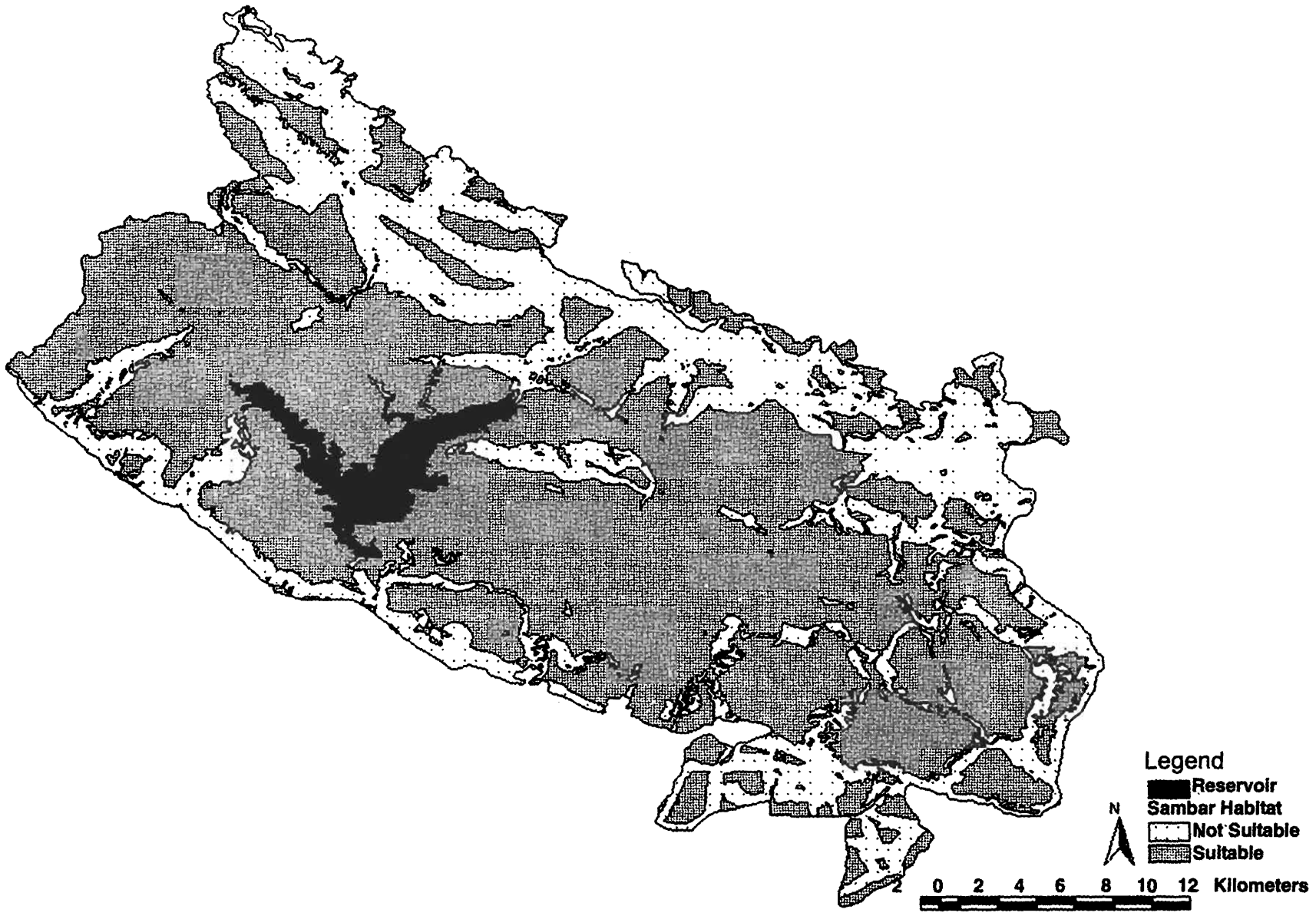

Fig. 10 : Habitat suitablity for sambar (*Cervus unicolor*) in CTR.

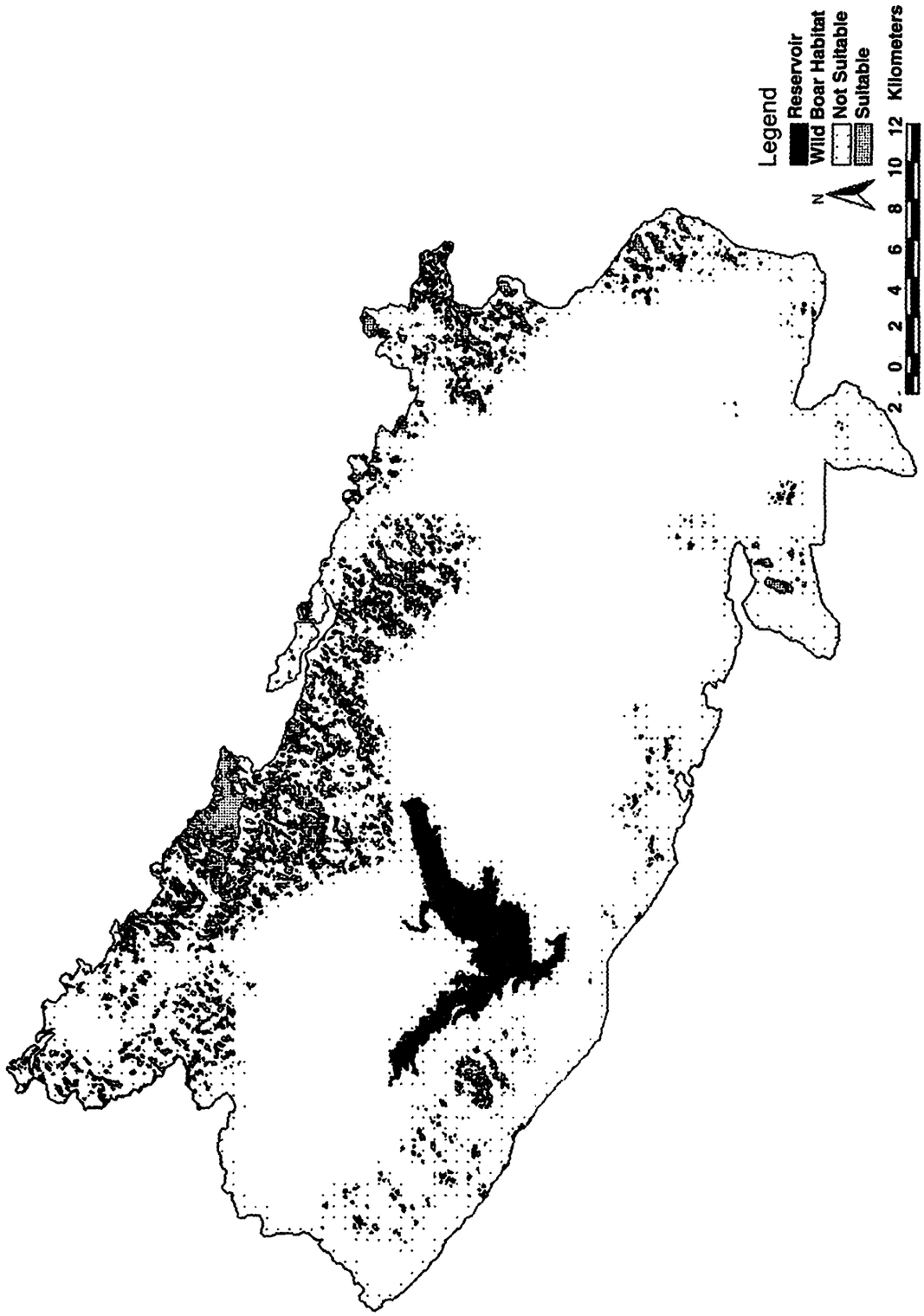

Fig. 11 : Habitat suitablity for wild boar (*Sus scrofa*) in CTR.

Table 10 : Statistics of continuous variables for suitable habitat of tiger.

Variable	Mean	Median	Std. Dev.	Skewness	Kurtosis	Min.	Max.
Elevation	0466.73	0440.00	0144.01	0.85	0.63	225.00	1261.00
Distance from river	1542.17	1177.00	1370.69	1.29	1.55	0.00	7327.00
Distance from road	0963.87	0704.00	0867.27	1.53	2.45	0.00	5000.00
Distance from settlement	4669.93	4534.00	2486.81	0.22	-0.94	0.00	10835.00

The statistical distribution of the variable 'elevation' in the tiger's suitable habitat shows its restriction to elevations between 225 (the level of the reservoir) to 1261m averaging around 467m (SD-144m). A low skewness value (0.85) shows a near-normal distribution and suggests the tiger's equal usage, both above and below the mean, of the vertical range of its habitat. The importance of the variable 'elevation' is also evident from the large magnitude of the DFA structure coefficient and the selection of the variable in the logistic regression. Figures 6 to 11 depict habitat suitability for chital, Sambar, barking deer, hog deer, Nilgai and wild boar. Fig. 12 shows the habitat suitability for tiger in CTR. The 'variable distance to road' follows a distribution similar to that of the watercourses indicative of the tiger's habit to follow forest trails on its beat. The distribution is highly skewed (1.53) and shows high clustering around the mean value of 964 m (kurtosis-2.45) indicating a high probability of encountering a tiger along the road (follows similarly for water courses, kurtosis-1.55). The variable distance from settlement follows a distribution suggestive of its position in the DFA structure matrix. It can be seen clearly that the tiger consistently (skewness-0.22, kurtosis-0.94) avoids human settlements to maximum extent possible (mean-4670 m, SD-2487 m).

DISCUSSION

The habitat association of the tiger in the CTR is indicated to be concordant to barking deer, chital and hog deer from the analysis, whereas the DFA indicates that the tiger actively avoids landscapes preferred by Nilgai. The coefficients on the logistic regression model show that <10 and 40 to 70 per cent canopy densities are preferred over the other two categories. This might be a reflection of the tiger's habitat usage while hunting and resting respectively. Variable interactions throw some important light on the effects of canopy density on the tiger's response to distance from rivers and settlements. It is seen that the relationship reverses in the case of distance to settlements as compared to the case of rivers where it is more or less ambivalent. The tiger is seen to prefer higher canopy densities when in proximity to a settlement, whereas canopy density does not seem to make a significant difference when distance to water sources is concerned.

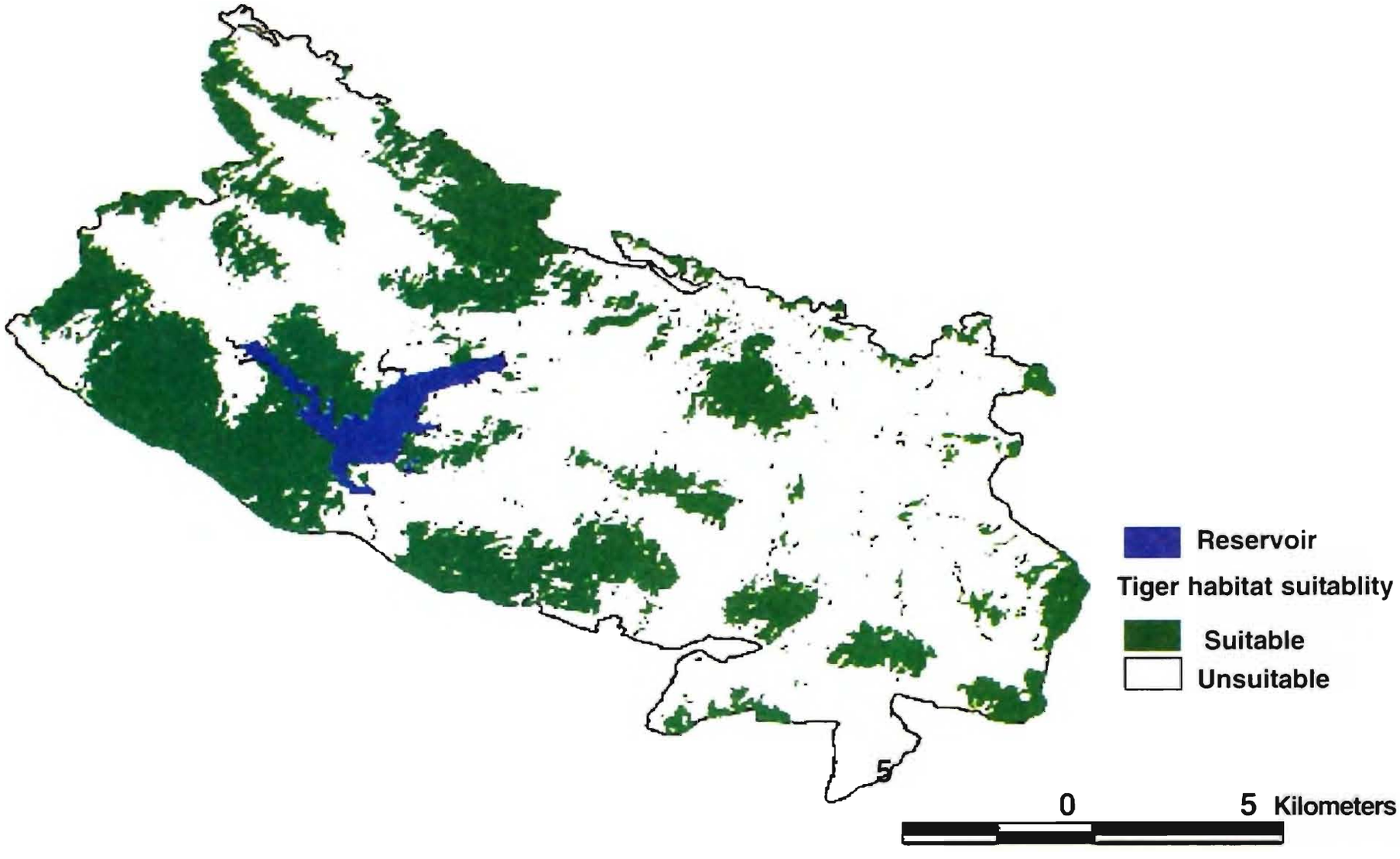

Fig. 12 : Habitat suitablity for tiger (*Panthera tigris*) in CTR.

The results of the study are corroborative of the habitat associations of the studied species through the field observations of both researchers and field personnel. Although the analysis cannot be considered robust in light of contemporary advanced analysis methods (MacKenzie *et al.*, 2005); it can be expected that such rapid surveys can lend to guiding effective research design for detailed surveys and monitoring programs. It is recommended that detailed studies be framed as follow-up surveys on the basis of such rapid assessments for all PAs where information on habitat associations of focal species is lacking. These methods when updated from more intensive surveys can lend to the better implementation of habitat management projects and for advancing our understanding of the habitat ecology of focal and flagship species in all ecosystems in India.

SUMMARY

The present paper reports the findings of a study carried out in the Corbett Tiger Reserve, to investigate the determinants of habitat use by the flagship feline of the Reserve, the tiger (*Panthera tigris* Linn.) by including the parameters of prey availability in addition to vegetation, physiographic and disturbance parameters of habitat as followed in classical wildlife habitat evaluation models. An attempt was made to analyse the habitat preference of various prey species linked to the habitat use by the tiger, aiming at a better understanding of the habitat niche overlap between the flagship species and other sympatric prey ungulates. This information may have important ramifications in terms of managing the habitat for the tiger as well as its associated prey base.

The binomial logistic regression approach for probabilistic habitat usage mapping was followed in this study. Locations of prey species detections collected during the field survey were analyzed in conjunction with remote sensing (RS) and geographic information system (GIS) derived variables *viz.*, forest/vegetation type and canopy density, elevation, slope, aspect and distance to water, road and settlement to arrive at the habitat suitability models. Cases of all animal detections were taken as indicators of species-specific habitat preferences and were coded as Boolean to facilitate the binomial multiple logistic regression. The probabilities obtained for all possible prey species were then used as independents in conjunction with other habitat parameters to predict the habitat preference of the tiger.

The study indicated ca. 57,208 ha (44.43%) area as being suitable for the tiger. It also revealed the barking deer (*Muntiacus muntjak* Boddaert), chital (*Axis axis* Erxl.) and hog deer (*Axis porcinus* Zimm.) as being the preferred prey species. As no geostatistical study using similar approach has been carried out in the region, it is anticipated that the study would be instrumental in initiating discussions on the inclusion of prey species as weighted probabilistic variables for predator species habitat preference assessment.

This study was undertaken to generate the much needed baseline information on habitat preferences of the tiger and the associated prey species. It is, however, pointed out

that this being a pilot study; repeat visits to plots were not made precluding the application of analyses such as patch occupancy modeling. The detection probabilities for all species were, therefore, not estimated and this could have resulted in overly conservative estimates of habitat occupancy for all species. It is also important to indicate that the prey species appearing in the final habitat suitability model for the tiger do not necessarily indicate the preference of that species as prey by the tiger; they are only indicative of habitat preference. This could, however, be further worked out by having additional information on the absolute or relative densities of the prey. The outputs can thus, be progressively updated and fed into the management plans.

Key words : Habitat, predator, prey, remote sensing, GIS, wildlife.

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INTRODUCTION

One of the 29 Tiger Reserves in the country, the Corbett Tiger Reserve is well known for its rich wildlife wealth. Though a large number of mammalian species occur in the Reserve, the proper documentation and listing was not available till Lamba (1977) published a list of 49 species and subspecies. Later, based on a three years' (1976-1979) field studies entitled, "Impact Assessment of Bio-Ecological Changes in the Faunal Patterns (Selected Groups) brought about by the partial submersion of Corbett National Park, as a result of Ramganga Multipurpose Hydel Project Dam (1stStage 1976-1979)", Lamba (undated) reported 50 species and sub species of mammals from the reserve while Khati (2004) has provided a list of 54 species including subspecies.

Simultaneously, a few comprehensive studies on some species of mammals were also carried out in the Park. For example, De and Spillett (1966) conducted a short-term study on the Chital or Spotted Deer population in Corbett National Park. Later, Tak and Lamba (1981, 1984) carried out studies on ecology and behavior of the Spotted Deer and Hog Deer respectively.

Subsequently, Zoological Survey of India undertook four field surveys in the reserve in the years 2002- 2005, during which 26 species were observed and recorded. The compilation of these observational records together with earlier published records reveal the occurrence of 49 species of mammals belonging to 43 genera, 21 families and nine orders in the Reserve.

In the present communication a systematic account of 49 species of mammals have been provided, which include their first reference, type locality, distribution, status and remarks after Pocock (1939, 1941), Ellerman and Morrison (1951), Ellerman (1961), Prater (1971), Wilson and Reeder (1993), Alfred, Sinha and Chakraborty (2002), Menon (2003), Alfred, Das and Sanyal (2006).

Of the 49 species, two species are globally threatened (Tiger En; Elephant VU), 40 are Data Deficient (DD), while information on seven species is not available. Eight species

are listed under Schedule I, nine under Schedule II; five each under III & IV and eight under schedule V of the Indian Wildlife (Protection), Act 1972 (IWPA). Further, 10 species are listed in Appendix I, four in Appendix II, and five in Appendix III of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES, 1991) (Alfred, Sinha and Chakraborty (2002), Alfred, Ramakrishna and Pradhan (2006) and Kumar and Khanna (2006).

SYSTEMATIC ACCOUNT

1. Order INSECTIVORA

1. Family ERINACEIDAE

1. ***Hemiechinus collaris*** (Gray, 1830) - **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.

Distribution : India : North Western India.

Elsewhere : Afghanistan, Pakistan.

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

Remarks : Rare and occasionally seen (Lamba, undated).

2. Family SORICIDAE

2. ***Suncus etruscus*** (Savi, 1822) **Pygmy White-toothed Shrew**

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

Type locality : Pisa, Italy.

Distribution : India : Throughout.

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

Status : CAMP : LRlc (Nationally and Globally).

Remarks : On two occasions seen, in the camping sites.

3. ***Suncus murinus*** (Linnaeus, 1766) **House Shrew**

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

Type locality : Java, Indonesia.

Distribution : India : Throughout.

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

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

Remarks : Seldom seen near the camping sites.

2 Order CHIROPTERA

3. Family PTEROPODIDAE

4. ***Cynopterus sphinx*** (Vahl, 1797) - **Short-nosed Fruit Bat**

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

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

Distribution : India : Throughout.

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

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

Remarks : On few occasions seen at dusk and dawn during the recent surveys.

5. ***Pteropus giganteus*** (Brunnich, 1782) **Indian Flying Fox**

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

Type locality : West Bengal, India.

Distribution : India : Uttarakhand, Rajasthan, Gujarat, Punjab, Peninsular India, Sikkim, Assam, Manipur, Andaman Islands.

Elsewhere : Maldive Islands, Sri Lanka, Pakistan, Myanmar, China, Bhutan Duars, Nepal.

Status : CAMP : LRlc; CITES : Appendix II.

Remarks : Commonly seen at dusk and dawn.

4. Family RHINOLOPHIDAE

6. ***Hipposideros armiger*** (Hodgson, 1835) **Himalayan Leaf-nosed Bat**

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

Type locality : Nepal

Distribution : India : Uttarakhand, Himalayas.

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

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

Remarks : Not easily seen being nocturnal in habit.

7. ***Hipposideros cineraceus*** Blyth, 1853 - **Least Leaf-nosed Bat**

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

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

Distribution : India : Uttarakhand, Simla. *Elsewhere* : Pakistan, Myanmar, Indonesia, Indo-China, Malaysia, Rhio Archipelago, Borneo, Anamba Islands, Philippines.

Status : CAMP : DD (Nationally and Globally).

Remarks : Not easily seen being nocturnal in habit.

5. Family VESPERTILIONIDAE

8. ***Myotis formosus*** (Hodgson, 1835) - **Hodgson's Bat**

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

Type locality : Nepal.

Distribution : India : Uttarakhand, Punjab, Sikkim, West Bengal, Assam.

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

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

Remarks : Not easily seen being nocturnal in habit.

9. ***Pipistrellus mimus*** Wroughton, 1899 **Indian Pygmy Pipistrelle**

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

Type locality : Maheskatri, Dangs, Surat distinct, Gujarat, India.

Distribution : India : Uttarakhand, Peninsula, Kathiawar, Palanpur, Gujarat, Punjab, Sikkim, Guwahati (Assam). *Elsewhere* : Sri Lanka, Bhutan, Myanmar, Indo-China.

Status : CAMP : NE.

Remarks : Commonly seen at dusk and dawn.

10. ***Plecotus auritus*** (Linnaeus, 1758) **Brown Long-eared Bat, Common Long-eared Bat, Long-eared Bat**

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

Type locality : Sweden.

Distribution : India : Uttarakhand, Leh, Ladakh, Kashmir, Punjab.

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

Status : CAMP : DD (Nationally and Globally).

Remarks : Not easily seen being nocturnal in habit.

11. ***Scotophilus heathi*** (Horsfield, 1831) **Asiatic Greater Yellow House Bat, Greater Yellow Bat**

1831. *Nycticebus heathi* Horsfield, *Proc. zool. Soc.* London : 113.

Type locality : Chennai, India.

Distribution : India : Uttarakhand, Rajasthan, Cutchch, Palanpur (Gujarat), Maharashtra, Madhya Pradesh, Pondicherry (Coromondal coast), Kashmir, Bengal.

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

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

Remarks : Not easily seen being nocturnal in habit.

12. ***Murina grisea*** Peters, 1872 **Peter's Tube-nosed Bat**

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

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

Distribution : India : Garhwal and Kumaon (Uttarakhand), North Western Himalaya.

Status : CAMP : VU.

Remarks : Being nocturnal in habit not easily seen.

3. Order PRIMATES

6. Family CERCOPITHECIDAE

13. ***Macaca mulatta*** (Zimmermann, 1780) - **Rhesus Macaque**

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

Type locality : Nepal and India Terai.

Distribution : India : North and east India above Tapti and Godawari.

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

Status : IWPA : Schedule II; CAMP : LRlc (Nationally); DD (Globally); CITES : Appendix II.

Remarks : Commonly seen at the periphery of the Reserve and occasionally in the Reserve in the Corbett area.

14. ***Semnopithecus entellus*** (Dufresne, 1797) - **Hanuman Langur**

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

Type locality : Bengal, India.

Distribution : India : Practically throughout India. *Elsewhere* : Pakistan, Sri Lanka, Nepal, Tibet.

Status : IWPA : Schedule II; CAMP : LRlc (Nationally); DD (Globally); CITES : Appendix I.

Remarks : Commonly seen at the hilly terrain of the reserve and at the periphery of the reserve.

4. Order CARNIVORA

7. Family CANIDAE

15. ***Canis aureus*** Linnaeus, 1758 **The Asiatic Jackal**

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

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

Distribution : India : Almost throughout.

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

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

Remarks : Commonly seen near the camps and usually heard calling in the evening throughout the Reserve.

16. ***Vulpes vulpes*** (Linnaeus, 1758) - **Common Red Fox, Red Fox**

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

Type locality : Europe (Uppsala) Sweden.

Distribution : India : Uttarakhand, Rajasthan, Gujarat, Punjab, Kashmir, Sikkim, Ladakh.

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

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

Remarks : Once seen at dusk.

8. Family FELIDAE

17. ***Felis chaus*** Schreber, 1777 - **Jungle Cat**

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

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

Distribution : *India* : Uttarakhand, South of Krishna river in South India, Gujarat, Jammu and Kashmir, Madhya Pradesh, Rajasthan, Sikkim, Uttar Pradesh, 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, Zimbabwe.

23. ***Martes flavigula*** (Boddaert, 1785) - **Yellow-throated Martin**

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

Type locality : Nepal.

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

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

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

Remarks : Commonly seen throughout the Reserve.

11. Family URSIDAE

24. ***Melursus ursinus*** (Shaw, 1791) - **Sloth Bear**

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

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

Distribution : India : Throughout. *Elsewhere* : Sri Lanka.

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

Remarks : Uncommon and could not be observed.

25. ***Ursus thibetanus*** (Baron) Cuvier, 1823 - **Asiatic Black Bear**

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

Type locality : Sylhet area of Bangladesh and India).

Distribution : India : Uttarakhand, Jammu and Kashmir, Himachal Pradesh, Darjeeling in West Bengal.

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

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

Remarks : Uncommon and could not be observed.

12. Family VIVERRIDAE

26. ***Paguma larvata*** (Hamilton-Smith, 1827) **Masked Palm Civet**

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

Type locality : Unknown.

Distribution : India : Uttarakhand, Andaman Islands, Kashmir, and Northeastern Himalayas.

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

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

Remarks : Uncommon and could not be observed.

27. ***Paradoxurus hermaphroditus*** (Pallas, 1777) **Common Palm Civet, Toddy Cat**

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

Type locality : Uncertain.

Distribution : India : Northern and eastern Indian above Narmada river, Orissa.

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

Status : IWPA : Schedule II, Part II; CAMP : LRlc (Nationally), DD (Globally).

Remarks : Common and seen frequently.

28. ***Viverricula indica*** (Desmarest, 1777) **Small Indian Civet, Rasse**

1817. *Viverra indica,* Desmarest, *Tabl. Meth. Hist. Nat., In Nouv. Dict. Hist. Nat.,* **24** : 9, 17.

Type locality : India.

Distribution : India : Throughout.

Elsewhere : China, Formosa, Sri Lanka, Bhutan, Myanmar, Malaysia, Indonesia, Pakistan, Mongolia, Bhutan, Bangladesh, Cambodia, Hong Kong, Laos, Taiwan, Thailand, Vietnam, Scattered distribution on many south east Asian islands due to introduction.

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

Remarks : Common and seen frequently.

Status : IWPA : Schedule III; CAMP : LRlc (Nationally), DD (Globally).

Remarks : Very common and observed throughout the reserve.

35. ***Muntiacus muntjak*** (Zimmermann, 1780) **Indian Muntjak, Barking Deer**

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

Type locality : Java, Indonesia.

Distribution : India : Uttarakhand, Bengal, Deccan plateau, Western Ghats.

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

Status : IWPA : Schedule III; CAMP : LRlc (Nationally), DD (Globally).

Remarks : Very common and observed throughout the reserve in good numbers.

16. Family BOVIDAE

36. ***Naemorhedus goral*** (Hardwicke, 1825) - **Goral**

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

Type locality : Nepal Himalayas.

Distribution : India : Uttarakhand, Himachal Pradesh, Jammu & Kashmir, Assam, Sikkim.

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

Status : CITES - Appendix-I.

Remarks : Common and observed only on few occasionally.

37. ***Boselaphus tragocamelus*** (Pallas, 1766) - **Blue Bull, Nilgai**

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

Type locality : Plains of Peninsular India.

Distribution : India : From base of Himalayas Uttarakhand to Maharashtra and Karnataka.

Elsewhere : Bangladesh, Pakistan and Nepal.

Status : IWPA : Schedule III; CAMP : LRlc (Nationally), DD (Globally).

Remarks : Uncommon and observed near Dhela adjoining the agricultural fields.

7. Order PHOLIDOTA

17. Family MANIDAE

38. ***Manis crassicaudata*** Gray, 1827 **Indian Pangolin**

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

Type locality : India.

Distribution : India : Uttarakhand, Indian Peninsula, Tamil Nadu, Karnataka, Gujarat, Uttar Pradesh, West Bengal, Orissa.

Elsewhere : Sri Lanka, Pakistan China.

Status : IWPA : Schedule I, Part I; CITES-Appendix II; RDB : VU; CAMP : LRnt (Nationally), DD (Globally).

Remarks : Uncommon.

8. Order RODENTIA

18. Family SCIURIDAE

39. ***Funambulus pennantii*** Wroughton, 1905 - **Northern Palm Squirrel**

1905. *Funambulus pennantii,* Wroughton, *J. Bombay Nat. Hist. Soc.,* **16**(3) : 411.

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

Distribution : India : Uttarakhand, Punjab, Rajasthan, Palanpur, Dharwar, Kutchch, Kathiawar, Gujarat, Madhya Pradesh, Maharashtra.

Elsewhere : Pakistan.

Status : IWPA : Schedule IV; CAMP : LRlc (Nationally), DD (Globally).

Remarks : Very common and observed throughout the Reserve.

40. ***Petaurista petaurista*** (Pallas, 1766) **Red Giant Flying Squirrel/Common Giant Flying Squirrel**

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

Type locality : Preanger, Regencies, Java, Indonesia.

Distribution : India : Uttarakhand, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Mishmi Hills (Assam), Maharashtra, Nagaland, Punjab, Tamil Nadu.

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

Remarks : Uncommon and observed gliding at dusk.

19. Family MURIDAE

41. ***Tatera indica*** (Hardwicke, 1807) **Indian Gerbil, Antelope Rat**

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

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

Distribution : India : Uttarakhand, Bihar, Cutchch Gujarat, Haryana, Madhya Pradesh, Maharashtra, Karnataka, Punjab, Tamil Nadu, Kerala and Andhra Pradesh.

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

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

Remarks : Common and observed in southern part of the reserve.

42. ***Bandicota indica*** (Bechstein, 1800) - **Greater Bandicoot Rat; Large Bandicoot Rat**

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

Type locality : Pondicherry, India.

Distribution : India : Uttarakhand,Gujarat, Rajasthan, Uttar Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu, Karnataka, Kerala, Bihar, Orissa, North-eastern parts of India.

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

Status : IWPA : Schedule V; CAMP : LRnt (Nationally), DD (Globally).

Remarks : Common and seen near camping sites.

43. ***Golunda ellioti*** Gray, 1837 - **Indian Bush Rat**

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

Type locality : Dharwar, Gujarat, India.

Distribution : India : Uttarakhand, Assam, Bihar, Gujarat, Haryana, Karnataka, Tamil Nadu Maharashtra, Madhya Pradesh, Punjab, Rajasthan and Uttar Pradesh.

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

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

Remarks : Uncommonly seen around human habitation.

44. ***Mus booduga*** (Gray, 1837) **Little Indian Field Mouse**

1837. *Leggada booduga* Gray, *Mag. Nat. Hist.* [Charles worth's] **1** : 573.

Type locality : South Maharashtra, India.

Distribution : Uttarakhand, Bihar, Gujarat, Jammu & Kashmir, Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Punjab, Uttar Pradesh, West Bengal.

Elsewhere : Sri Lanka, Nepal and Myanmar.

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

Remarks : Common and seen near human habitation of the reserve.

45. ***Mus musculus*** Linnaeus, 1758 **House Mouse**

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

Type locality : Uppsala, Sweden.

Distribution : India : Throughout.

Elsewhere : Cosmopolitan

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

Remarks : Very common often seen near camp sites of the Reserve.

46. ***Nesokia indica*** (Gray and Hardwicke, 1832) **Short-tailed Bandicoot Rat, Short-tailed Mile Rat**

1832. *Arvivola indica,* Gray and Hardwicke, *Illust. Indian Zool.,* **1** : pl. 11.

Type locality : India.

Distribution : India : Uttarakhand, Punjab, Rajasthan, Uttar Pradesh, Delhi.

Elsewhere : Afghanistan, Bangladesh, Egypt Iran, Iraq and Pakistan.

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

Remarks : Common and seen near camping sites in the reserve.

47. ***Rattus rattus*** (Linnaeus, 1758) -Roof Rat, Black Rat, House Rat

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

Type locality : Uppsala, Uppsala Country, Sweden.

Distribution : India.

Elsewhere. Throughout Indo-Malayan Region.

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

Remarks : Very common and seen near camping sites in the reserve.

20. Family HYSTRICIDAE

48. ***Hystrix indica*** Kerr, 1792 - **Indian Crested Porcupine, Short-tailed Porcupine**

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

Type locality : India.

Distribution : India : Throughout.

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

Status : IWPA : Schedule IV; CAMP : LRlc (Nationally); DD (Globally).

Remarks : Common and seen near Sarapduli FRH twice.

9. Order LAGOMORPHA

21. Family LEPORIDAE

49. ***Lepus nigricollis*** F. Cuvier, 1823 - **Indian Hare, Black-naped Hare**

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

Type locality : Malabar, Tamil Nadu, India.

Distribution : India : Throughout. *Elsewhere* : Pakistan, Sri Lanka, Nepal, Bhutan, Bangladesh and Java.

Status : IWPA : Schedule IV; CAMP : LRlc (Nationally); DD (Globally).

Remarks : Common and seen throughout the Reserve.

SUMMARY

In the present communication a systematic account of 49 species of mammals with their first reference, type locality, distribution, status and remarks have been provided, of which two species are globally threatened, 40 are Data Deficient (DD) while information for seven species is not available.

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AVES

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INTRODUCTION

A reconnoiter of the existing zoological literature on the Corbett National Park (CNP) and the Corbett Tiger Reserve (CTR) reveals that there are more than one hundred ornithological references dealing with various aspect of the birds of the area. Of these, the comprehensive studies are the Avifauna of Corbett National Park (Lamba and Bhatnagar 1977-1979 and Lamba, undated), migratory birds and their feeding behaviors (Kumar and Lamba, 1985) and some aspects of the raptors or the diurnal birds of prey (Naoroji, 1995; 1998 and 1999a). There are numerous anecdotal studies, to quote a few like Madge (1984), Anonymous (1990, 1997 & 1998), Barua (2000), Ghosh (1999), Naoroji (1994a, & b, 1997a & b; 1999 b & c), Maheswaran (1996), Rai (1979), Robson (1999), Wolstencroft (1985), Yahya (1990 & 1998).

Lamba and Bhatnagar (1977-79) published a list of 525 species and subspecies from the National Park. Later, based on a three-year study carried out under the 'Man & Biosphere' project from 1976-79, Lamba (undated) prepared an expanded and amended list of 575 species and subspecies. Khati (2004) provided a list of 517 species. A plate-wise bird list is also posted on the web (www.campforktailcreek.com) listing 574 species. In addition, a couple of stray records have also been included (Table).

METHODOLOGY

In the recent past, the Zoological Survey of India, Dehra Dun conducted four surveys (10 days each) from 2002 to 2005 during which a total of 209 species of birds were sighted and recorded from the reserve. The birds were observed with the aid of a 10x50 prismatic field binocular and identified with the help of various field guides (Ali & Ripley 1983a & b, Grimmett *et al.* 1999, Krys 2000, Alfred *et al.*, 2001). By collating the currently gathered field data and the available published information, an attempt has been made to prepare an avian diversity update for the Reserve. The nomenclature followed is after Manakadan & Pittie (2001) with slight modifications (Ali & Replay, 1983b). In light

of recent literature, special emphasis has been made on the current conservation status of these birds, in general, and of the threatened birds in particular.

OBSERVATIONS AND RESULTS

The present checklist incorporates a total of 685 species from the Corbett Tiger Reserve, that comprises 55.2% of the Indian bird diversity (i.e. 1240 species) belonging to 294 genera, 75 families and 18 orders (Table).

Of the 685 species, 40 are listed under various Threatened categories assigned by the BirdLife International (2004): Four species Critical (CR), Three Endangered (EN), 14 Vulnerable (VU) and 19 Near Threatened (NT).

Critical (CR)

1. Indian White-backed Vulture
2. Long-billed Vulture
3. Slender-billed Vulture
4. Sociable Lapwing

Endangered (EN)

5. Greater Adjutant-Stork
6. Saker
7. Bengal Florican

Vulnerable (VU)

8. Spot-billed Pelican
9. Lesser Adjutant-Stork
10. Marbled Teal
11. Pallas's Fish-Eagle
12. Greater Spotted Eagle
13. Eastern Imperial Eagle
14. Sarus Crane
15. Wood Snipe
16. Indian Skimmer
17. Rufous-necked Hornbill
18. Hodgson's Bushchat
19. Hodgson's Prinia
20. Bristled Grass-Warbler
21. Finn's Weaver

Near Threatened (NT)

22. Darter
23. Painted Stork
24. Black-necked Stork
25. Oriental White Ibis
26. Lesser Flamingo
27. Ferruginous Pochard
28. White-tailed Sea Eagle
29. Lesser Grey-headed Fish-Eagle
30. Greater Grey-headed Fish-Eagle
31. Cinereous Vulture
32. Red-headed Vulture
33. Pallid Harrier
34. Laggar
35. Satyr Tragopan
36. Black-bellied Tern
37. Great Pied Hornbill
38. Yellow-rumped Honeyguide
39. Long-billed Bush-Warbler
40. Tytler's Leaf-Warbler

Out of the 685 species, 52 are listed under the Schedule I of the Indian Wildlife (Protection) Act, 1972, 568 under Schedule IV, One both under Schedules I & IV, and One under Schedule V, while information on the remaining 63 species is not available (BNHS, 2002) (Table).

Only five Restricted Range Species (RRS- Species that have a total world range of less than 50,000 square kilometers) have been reported from the Reserve. Four species, *viz.*, Brook's Leaf-Warbler, Tytler's Leaf-Warbler, White-throated Tit and Spectacled Finch are categorized as RRS (4) and one species, viz., Black-browed Leaf-Warbler as RRS (5).

A total of 192 species are listed as the Biome Restricted Species (BRS- "biome" is a major regional ecological community characterized by distinctive animal and plant species). Of these, 25 species are from the Eurasian High Montane (Alpine and Tibetan) Biome (05); 73 from the Sino-Himalayan Temperate Forest- Biome (07); 38 from the Sino-Himalayan Subtropical Forest- Biome (08); five from the Indo-Chinese Tropical Moist Forest- Biome (09); two from Indian Peninsula Tropical Moist Forest- Biome (10), 42, from the Indo-Malayan Tropical Dry Zone- Biome (11), six from Indo-Gangetic Plains-Biome (12), and one from Saharo-Sindian Desert- Biome (13) (Jhunjhunwala *et al.* 2001) (Table).

SUMMARY

The present checklist incorporates a total of 685 species from the Corbett Tiger Reserve which belong to 294 genera and 75 families of which four species are Critical (CR), three Endangered (EN), 14 Vulnerable (VU) and 19 Near Threatened (NT).

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SYSTEMATIC ACCOUNT

Table : Checklist of the birds of Corbett Tiger Reserve

Sl. No.	Common Names	Systematic list	ZSI faunistic surveys (2002-05)	www.campforktailcreek.com	Lamba and Bhatnagar (1977-79)	Lamba (undated)	Khati (2004)	BirdLife International (2004)	BNHS (2002)	Jhunjhunwala *et al.* (2001)
1	2	3	4	5	6	7	8	9	10	11
		1. Order PODICIPDTIFORMES								
	1. Grebes	**Podicipedidae**								
1.	Little Grebe (5)	*Tachybaptus ruficollis* (Pallas, 1764)		+	+	+	+		IV	
2.	Great Crested Grebe (3)	*Podiceps cristatus* (Linnaeus, 1758)		+	+	+	+		IV	
3.	Horned Grebe (N)	*Podiceps auritus* (Linnaeus, 1758)		E					IV	
		2. Order PELECANIFORMES								
	2. Pelicans	**Pelecanidae**								
4.	Great White Pelican (20)	*Pelecanus onocrotalus* Linnaeus, 1758		+	+	+	+		IV	
5.	Spot-billed Pelican (21)	*Pelecanus philippensis* Gmelin, 1789		+	+	+	+	VU	IV	

1	2	3	4	5	6	7	8	9	10	11
	3. Cormorants/Shags	**Phalacrocoracidae**								
6.	Little Cormorant (28)	*Phalacrocorax niger* (Vieillot, 1817)	+	+	+	+	+		IV	
7.	Indian Shag (27)	*Phalacrocorax fuscicollis* Stephens, 1826	+	+	+	+	+		IV	
8.	Great Cormorant (26)	*Phalacrocorax carbo* (Linnaeus, 1758)	+	+	+	+	+		IV	
	4. Darters	**Anhingidae**								
9.	Darter (29)	*Anhinga melanogaster* Pennant, 1769		+	+	+	+	NT	IV	
		3. Order CICONIIFORMES								
	5. Herons, Egrets & Bitterns	**Ardeidae**								
10.	Little Egret (49)	*Egretta garzetta* (Linnaeus, 1766)	+	+	+	+	+		IV	
11.	Western Reef-Egret (50)	*Egretta gularis* (Bosc, 1792)		E					IV	
12.	Grey Heron (35-36)	*Ardea cinerea* Linnaeus, 1758	+	+	+	+	+		IV	
13.	Purple Heron (37-37a)	*Ardea purpurea* Linnaeus, 1766	+	+	+	+	+		IV	
14.	Large Egret (45-46)	*Casmerodius albus* (Linnaeus, 1758)	+	+	+	+	+		IV	
15.	Median Egret (47, 48)	*Mesophoyx intermedia* (Wagler, 1829)	+	+	+	+	+		IV	
16.	Cattle Egret (44)	*Bubulcus ibis* (Linnaeus, 1758)	+	+	+	+	+		IV	
17.	Indian Pond-Heron (42-42a)	*Ardeola grayii* (Sykes, 1832)	+	+	+	+	+		IV	
18.	Little Green Heron (38-41)	*Butorides striatus* (Linnaeus, 1758)	+	+			+		IV	
19.	Black-crowned Night-Heron (52)	*Nycticorax nycticorax* (Linnaeus, 1758)		+	+	+	+		IV	
20.	Little Bittern (55)	*Ixobrychus minutus* (Linnaeus, 1766)		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
21.	Yellow Bittern (57)	*Ixobrychus sinensis* (Gmelin, 1789)	+	+	+	+	+		IV	
22.	Chestnut Bittern (56)	*Ixobrychus cinnamomeus* (Gmelin, 1789)		+	+	+			IV	
23.	Black Bittern (58)	*Dupetor flavicollis* (Latham, 1790)		E					IV	
	6. Storks	**Ciconiidae**								
24.	Painted Stork (60)	*Mycteria leucocephala* (Pennant, 1769)		+	+	+	+	NT	IV	
25.	Asian Openbill-Stork (61)	*Anastomus oscitans* (Boddaert, 1783)		+	+	+	+		IV	
26.	Black Stork (65)	*Ciconia nigra* (Linnaeus, 1758)		+	+	+	+		IV	
27.	White-necked Stork (62)	*Ciconia episcopus* (Boddaert, 1783)	+	+	+	+	+		IV	
28.	European White Stork (63)	*Ciconia ciconia* (Linnaeus, 1758)		+	+	+	+		I,IV	
29.	Black-necked Stork (66)	*Ephippiorhynchus asiaticus* (Latham, 1790)		+	+	+	+	NT	IV	
30.	Lesser Adjutant-Stork (68)	*Leptoptilos javanicus* (Horsfield, 1821)		+	+	+	+	VU	IV	
31.	Greater Adjutant-Stork (67)	*Leptoptilos dubius* (Gmelin, 1789)			+	+		EN	IV	
	7. Ibises & Spoonbills	**Threskiornithidae**								
32.	Glossy Ibis (71)	*Plegadis falcinellus* (Linnaeus, 1766)		+	+	+	+		IV	
33.	Oriental White Ibis (69)	*Threskiornis melanocephalus* (Latham, 1790)	+	+	+	+	+	NT	IV	
34.	Black Ibis (70)	*Pseudibis papillosa* (Temminck, 1824)	+	+	+	+	+		IV	BRS (11)
35.	Eurasian Spoonbill (72)	*Platalea leucorodia* Linnaeus, 1758		+			+		I	
	8. Flamingos	**Phoenicopteridae**								
36.	Greater Flamingo (73)	*Phoenicopterus ruber* Linnaeus, 1758		+	+	+			IV	

1	2	3	4	5	6	7	8	9	10	11
37.	Lesser Flamingo (74)	*Phoenicopterus minor* (Geoffroy, 1798)			+	+		NT	IV	
		4. Order ANSERIFORMES								
	9. Swans, Geese & Ducks	**Anatidae**								
38.	Large Whistling-Duck (89)	*Dendrocygna bicolor* (Vieillot, 1816)		+	+	+			I	
39.	Lesser Whistling-Duck (88)	*Dendrocygna javanica* (Horsfield, 1821)		+	+	+	+		IV	
40.	Greater White-fronted Goose (79)	*Anser albifrons* (Scopoli, 1769)			+	+			IV	
41.	Lesser White-fronted Goose (80)	*Anser erythropus* (Linnaeus, 1758)			+	+			IV	
42.	Greylag Goose (81)	*Anser anser* (Linnaeus, 1758)		+	+	+	+		IV	
43.	Bar-headed Goose (82)	*Anser indicus* (Latham, 1790)		+	+	+	+		IV	
44.	Brahminy Shelduck (90)	*Tadorna ferruginea* (Pallas, 1764)		+	+	+	+		IV	
45.	Common Shelduck (91)	*Tadorna tadorna* (Linnaeus, 1758)		+	+	+	+		IV	
46.	Comb Duck (115)	*Sarkidiornis melanotos* (Pennant, 1769)		+			+		IV	
47.	Cotton Teal (114)	*Nettapus coromandelianus* (Gmelin, 1789)			+	+	+		IV	
48.	Gadwall (101)	*Anas strepera* Linnaeus, 1758		+	+	+	+		IV	
49.	Falcated Duck (102)	*Anas falcata* Georgi, 1775		+					IV	
50.	Eurasian Wigeon (103)	*Anas penelope* Linnaeus, 1758		+	+	+	+		IV	
51.	Mallard (100)	*Anas platyrhynchos* Linnaeus, 1758		+	+	+	+		IV	
52.	Spot-billed Duck (97-99)	*Anas poecilorhyncha* J.R. Forester, 1781		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
53.	Northern Shoveller (105)	*Anas clypeata* Linnaeus, 1758		+	+	+	+		IV	
54.	Northern Pintail (93)	*Anas acuta* Linnaeus, 1758		+	+	+	+		IV	
55.	Garganey (104)	*Anas querquedula* Linnaeus, 1758		+	+	+	+		IV	
56.	Common Teal (94)	*Anas crecca* Linnaeus, 1758		+	+	+	+		IV	
57.	Marbled Teal (92)	*Marmaronetta angustirostris* (Ménétriès, 1832)			+	+		VU	IV	
58.	Red-crested Pochard (107)	*Rhodonessa rufina* (Pallas, 1773)		+	+	+	+		IV	
59.	Common Pochard (108)	*Aythya ferina* (Linnaeus, 1758)		+	+	+	+		IV	
60.	Ferruginous Pochard (109)	*Aythya nyroca* (Guldenstadt, 1770)		+	+	+	+	NT	IV	
61.	Tufted Pochard (111)	*Aythya fuligula* (Linnaeus, 1758)		+	+	+	+		IV	
62.	Greater Scaup (112)	*Aythya marila* (Linnaeus, 1761)				+			IV	
63.	Smew (119)	*Mergellus albellus* Linnaeus, 1758		E					IV	
64.	Common Merganser (120-121)	*Mergus merganser* Linnaeus, 1758		+			+		IV	
	10. Hawks, Eagles, Buzzards, Old World Vultures, Kites, Harriers	**5. Order FALCONIFORMES Accipitridae**								
65.	Black Baza (127-128a)	*Aviceda leuphotes* (Dumont, 1820)		E					I	
66.	Oriental Honey-Buzzard (129-130)	*Pernis ptilorhynchus* (Temminck, 1821)		+	+	+	+		I	
67.	Black-shouldered Kite (124)	*Elanus caeruleus* (Desfontaines, 1789)	+	+	+	+	+		I	
68.	Black Kite (132-134)	*Milvus migrans* (Boddaert, 1783)	+	+	+	+	+		I	
69.	Brahminy Kite (135)	*Haliastur indus* (Boddaert, 1783)	+	+	+	+	+		I	

1	2	3	4	5	6	7	8	9	10	11
70.	Pallas's Fish-Eagle (174)	*Haliaeetus leucoryphus* (Pallas, 1771)	+	+	+	+	+	VU	I	
71.	White-tailed Sea-Eagle (172a)	*Haliaeetus albicilla* Linnaeus, 1758		+			+	NT	I	
72.	Lesser Grey-headed Fish-Eagle (177)	*Ichthyophaga humilis* (S. Muller & Schlegel, 1841)	+	+	+	+	+	NT	I	
73.	Greater Grey-headed Fish-Eagle (175-176)	*Ichthyophaga ichthyaetus* (Horsfield, 1821)	+	+			+	NT	I	
74.	Bearded Vulture (188)	*Gypaetus barbatus* (Linnaeus, 1758)		+	+	+	+		I	
75.	Egyptian Vulture (186-187)	*Neophron percnopterus* (Linnaeus, 1758)	+	+	+	+	+		IV	
76.	Indian White-backed Vulture (185)	*Gyps bengalensis* (Gmelin, 1788)	+	+	+	+	+	CR	IV	BRS (11)
77.	Long-billed Vulture (182)	*Gyps indicus* (Scopoli, 1786)	+	+	+			CR	IV	BRS (11)
78.	Slender-billed Vulture (184)	*Gyps tenuirostris* (G.R. Gray, 1844)				+	+	CR	IV	
79.	Himalayan Griffon (181)	*Gyps himalayensis* Hume, 1869	+	+	+	+	+		IV	BRS (05)
80.	Eurasian Griffon (180, 183)	*Gyps fulvus* (Hablizl, 1783)		+	+	+	+		IV	
81.	Cinereous Vulture (179)	*Aegypius monachus* (Linnaeus, 1766)	+	+		+	+	NT	IV	
82.	Red-headed Vulture (178)	*Sarcogyps calvus* (Scopoli, 1786)	+	+	+	+	+	NT	IV	BRS (11)
83.	Short-toed Snake-Eagle (195)	*Circaetus gallicus* (Gmelin, 1788)	+	+	+	+	+		?	
84.	Crested Serpent-Eagle (196-200)	*Spilornis cheela* (Latham, 1790	+	+	+	+	+		I	

1	2	3	4	5	6	7	8	9	10	11
85.	Western Marsh-Harrier (193)	*Circus aeruginosus* (Linnaeus, 1758)	+	+	+	+	+		I	
86.	*Eastern Marsh-Harrier (194)	*Circus spilonotus* Kaup, 1847							I	
87.	Hen Harrier (189)	*Circus cyaneus* (Linnaeus, 1766)		+	+	+	+		I	
88.	Pallid Harrier (190)	*Circus macrourus* (S.G. Gmelin, 1770)		+	+	+	+	NT	I	
89.	Pied Harrier (192)	*Circus melanoleucos* (Pennant, 1769)		E					I	
90.	Montagu's Harrier (191)	*Circus pygargus* (Linnaeus, 1758)			+	+	+		I	
91.	Crested Goshawk (144-146)	*Accipiter trivirgatus* (Temminck, 1824)		+	+	+	+		I	
92.	Shikra (137-140)	*Accipiter badius* (Gmelin, 1788)	+	+	+	+	+		I	
93.	Besra Sparrowhawk (149-151)	*Accipiter virgatus* (Temminck, 1822)		+	+	+			I	
94.	Eurasian Sparrowhawk (147-148)	*Accipiter nisus* (Linnaeus, 1758)	+	+	+	+	+		I	
95.	Northern Goshawk (136)	*Accipiter gentilis* (Linnaeus, 1758)		+	+	+	+		I	
96.	White-eyed Buzzard (157)	*Butastur teesa* (Franklin, 1832)		+	+	+	+		I	BRS (11)
97.	Common Buzzard (155-156)	*Buteo buteo* Linnaeus, 1758		+			+		I	
98.	Long-legged Buzzard (153)	*Buteo rufinus* (Cretzschmar, 1827)		+	+	+	+		I	
99.	Upland Buzzard (154)	*Buteo hemilasius* Temminck & Schlegel, 1845		+					I	
100.	Black Eagle (172)	*Ictinaetus malayensis* (Temminck, 1822)	+	+	+	+	+		I	
101.	Lesser Spotted Eagle (171)	*Aquila pomarina* Brehm, 1831		+	+	+	+		I	
102.	Greater Spotted Eagle (170)	*Aquila clanga* Pallas, 1811		+	+	+	+	VU	I	

*Naoroji (1994)

1	2	3	4	5	6	7	8	9	10	11
103.	Tawny Eagle (168)	*Aquila rapax* (Temminck, 1828)	+	+			+		I	
104.	Steppe Eagle (169)	*Aquila nipalensis* Hodgson, 1833	+	+	+	+	+		I	
105.	Eastern Imperial Eagle (167)	*Aquila heliaca* Savigny, 1809		+	+	+	+	VU	I	
106.	Golden Eagle (166)	*Aquila chrysaetos* (Linnaeus, 1758)		+			+		I	
107.	Bonelli's Eagle (163)	*Hieraaetus fasciatus* (Vieillot, 1822)	+	+	+	+	+		I	
108.	Booted Eagle (164)	*Hieraaetus pennatus* (Gmelin, 1788)		+	+	+	+		I	
109.	Rufous-bellied Eagle (165)	*Hieraaetus kienerii* (E. Geoffroy, 1835)	+	+			+		I	
110.	Changeable Hawk-Eagle (160-162)	*Spizaetus cirrhatus* (Gmelin, 1788)	+	+	+	+	+		I	
111.	Mountain Hawk-Eagle (158-159)	*Spizaetus nipalensis* (Hodgson, 1836)		+	+	+	+		I	
	11. Osprey	**Pandionidae**								
112.	Osprey (203)	*Pandion haliaetus* (Linnaeus, 1758)	+	+	+	+	+		I	
	12. Falcons	**Falconidae**								
113.	Collared Falconet (204)	*Microhierax caerulescens* (Linnaeus, 1758)		+	+	+	+		IV	
114.	Common Kestrel (222-224)	*Falco tinnunculus* Linnaeus, 1758	+	+	+	+	+		IV	BRS (11)
115.	Red-headed Falcon (219)	*Falco chicquera* Daudin, 1800		+	+	+	+		I	
116.	Amur Falcon (220)	*Falco amurensis* Radde, 1863		+		+	+		IV	
117.	Sooty Falcon (216)	*Falco concolor* Temminck, 1825		+					?	
118.	Merlin (217-218)	*Falco columbarius* Linnaeus, 1758		+					IV	

1	2	3	4	5	6	7	8	9	10	11
119.	Eurasian Hobby (212-213)	*Falco subbuteo* Linnaeus, 1758		+	+	+	+		IV	
120.	Oriental Hobby (214-215)	*Falco severus* Horsfield, 1821		+	+	+	+		IV	
121.	Laggar (208)	*Falco jugger* J.E. Gray, 1834		+	+	+	+	NT	I	
122.	Saker (206-207)	*Falco cherrug* J.E. Gray, 1834		+				EN	I	
123.	Peregrine Falcon (209-211)	*Falco peregrinus* Tunstall, 1771		+	+	+	+		I	
		6. Order GALLIFORMES								
	13. Pheasants, Partridges, Quails	**Phasianidae**								
124.	Chukor (234-236)	*Alectoris chukar* (J.E. Gray, 1830)	+	E					IV	
125.	Black Francolin (237-239)	*Francolinus francolinus* (Linnaeus, 1766)	+	+	+	+	+		IV	
126.	Grey Francolin (244-246)	*Francolinus pondicerianus* (Gmelin, 1789)	+		+	+	+		IV	
127.	Common Quail (250)	*Coturnix coturnix* (Linnaeus, 1758)	+	+	+	+	+		IV	
128.	Rain Quail (252)	*Coturnix coromandelica* (Gmelin, 1789)		+	+	+			IV	BRS (11)
129.	Jungle Bush-Quail (255-258)	*Perdicula asiatica* (Latham, 1790)	+	+	+	+	+		IV	BRS (11)
130.	Common Hill-Partridge (266-269)	*Arborophila torqueola* (Valenciennes, 1826)		+	+	+			IV	BRS (07)
131.	Rufous-throated Hill-Partridge (270-271)	*Arborophila rufogularis* (Blyth, 1849)				E			IV	BRS (08)

1	2	3	4	5	6	7	8	9	10	11
132.	Red Spurfowl (275-277)	*Galloperdix spadicea* (Gmelin, 1789)			+	+	+		?	
133.	Satyr Tragopan (286)	*Tragopan satyra* (Linnaeus, 1758)			E			NT	I	BRS (07)
134.	Koklass Pheasant (303-306)	*Pucrasia macrolopha* (Lesson, 1829)			E				IV	BRS (07)
135.	Red Junglefowl (299-300)	*Gallus gallus* (Linnaeus, 1758)	+	+	+	+	+		IV	
136.	Kaleej Pheasant (293-298)	*Lophura leucomelanos* (Latham, 1790)	+	+	+	+	+		IV	
137.	Indian Peafowl (311)	*Pavo cristatus* Linnaeus, 1758	+	+	+	+	+		I	BRS (11)
	14. Buttonquails/Bustardquails	**Turnicidae**								
138.	Small Buttonquail (313)	*Turnix sylvatica* (Desfontaines, 1789)		+	+	+	+		IV	
139.	Yellow-legged Buttonquail (314-315)	*Turnix tanki* Blyth, 1843			+	+			IV	
140.	Common Buttonquail (316-319)	*Turnix suscitator* (Gmelin, 1789)		+	+	+	+		IV	
		7. Order GRUIFORMES								
	15. Cranes	**Gruidae**								
141.	Sarus Crane (323-324)	*Grus antigone* (Linnaeus, 1758)		+	+	+	+	VU	IV	
142.	Demoiselle Crane (326)	*Grus virgo* (Linnaeus, 1758)	+	+	+	+	+		IV	
143.	Common Crane (320)	*Grus grus* (Linnaeus, 1758)	+	+	+	+	+		IV	
	16. Rails, Crakes, Moorhens, Coots	**Rallidae**								
144.	Slaty-legged Crake (332)	*Rallina eurizonoides* (Lafresnaye, 1845)			+	+			IV	

1	2	3	4	5	6	7	8	9	10	11
145.	Blue-breasted Rail (329-330)	*Gallirallus striatus* Linnaeus, 1766			+	+			IV	
146.	Water Rail (327-328)	*Rallus aquaticus* Linnaeus, 1758		E					IV	
147.	Brown Crake (342)	*Amaurornis akool* (Sykes, 1832)		+		+	+		IV	
148.	White-breasted Waterhen (343-345)	*Amaurornis phoenicurus* (Pennant, 1769)	+	+	+	+	+		IV	
149.	Baillon's Crake (337)	*Porzana pusilla* (Pallas, 1776)			+	+			IV	
150.	Spotted Crake (338)	*Porzana porzana* (Linnaeus, 1766)			+	+			IV	
151.	Ruddy-breasted Crake (339-340)	*Porzana fusca* (Linnaeus, 1766)		+	+	+	+		IV	
152.	Watercock (346)	*Gallicrex cinerea* (Gmelin, 1789)			+	+			IV	
153.	Purple Moorhen (348-349)	*Porphyrio porphyrio* (Linnaeus, 1758)		+	+	+	+		IV	
154.	Common Moorhen (347-347a)	*Gallinula chloropus* (Linnaeus, 1758)		+	+	+	+		IV	
155.	Common Coot (350)	*Fulica atra* Linnaeus, 1758		+	+	+	+		IV	
	17. Bustards	**Otididae**								
156.	Bengal Florican (356)	*Houbaropsis bengalensis* (Gmelin, 1789)			E			EN	I	BRS (12)
		8. Order CHARADRIIFORMES								
	18. Jacanas	**Jacanidae**								
157.	Pheasant-tailed Jacana (358)	*Hydrophasianus chirurgus* (Scopoli, 1786)		+	+	+	+		IV	
158.	Bronze-winged Jacana (359)	*Metopidius indicus* (Latham, 1790)		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
	19. Painted-Snipes	**Rostratulidae**								
159.	Greater Painted-Snipe (429)	*Rostratula benghalensis* (Linnaeus, 1758)			+	+	+		?	
	20. Oystercatcher	**Haematopodidae**								
160.	Eurasian Oystercatcher (360-361)	*Haematopus ostralegus* Linnaeus, 1758		E					IV	
	21. Plovers, Dotterels, Lapwings	**Charadriidae**								
161.	Long-billed Ringed Plover (383)	*Charadrius placidus* J.E. Gray, 1863					+		IV	
162.	Little Ringed Plover (379-380)	*Charadrius dubius* Scopoli, 1786		+	+	+	+		IV	
163.	Kentish Plover (381-382)	*Charadrius alexandrinus* Linnaeus, 1758		+	+	+	+		IV	
164.	Lesser Sand Plover (384-384a)	*Charadrius mongolus* Pallas, 1776		+			+		IV	
165.	Greater Sand Plover (374)	*Charadrius leschenaultii* Lesson, 1826		+			+		IV	
166.	Northern Lapwing (364)	*Vanellus vanellus* (Linnaeus, 1758)		+	+	+	+		IV	
167.	Yellow-wattled Lapwing (370)	*Vanellus malabaricus* (Boddaert, 1783)	+	+	+	+			IV	BRS (11)
168.	River Lapwing (369)	*Vanellus duvaucelii* (Lesson, 1826)	+	+	+	+	+		IV	
169.	Red-wattled Lapwing (366-368)	*Vanellus indicus* (Boddaert, 1783)	+	+	+	+	+		IV	
170.	Sociable Lapwing (363)	*Vanellus gregarius* (Pallas, 1771)		+	+	+	+	CR	IV	
171.	White-tailed Lapwing (362)	*Vanellus leucurus* (Lichtenstein, 1823)		E					IV	
	22. Sandpipers, Stints, Snipes, & Godwits	**Scolopacidae**								
172.	Eurasian Woodcock (411)	*Scolopax rusticola* Linnaeus, 1758		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
										BRS
173.	Wood Snipe (405)	*Gallinago nemoricola* Hodgson, 1836		+			+	VU	IV	(05)
174.	Pintail Snipe (406)	*Gallinago stenura* (Bonaparte, 1830)		+	+	+	+		IV	
175.	Great Snipe (408)	*Gallinago media* (Latham, 1787)					E		IV	
176.	Common Snipe (409)	*Gallinago gallinago* (Linnaeus, 1758)		+	+	+	+		IV	
177.	Jack Snipe (410)	*Lymnocryptes minimus* (Brünnich, 1764)		+	+	+			IV	
178.	Black-tailed Godwit (389-390)	*Limosa limosa* (Linnaeus, 1758)		+	+	+	+		IV	
179.	Eurasian Curlew (387-388)	*Numenius arquata* (Linnaeus, 1758)		+	+	+	+		IV	
180.	Spotted Redshank (392)	*Tringa erythropus* (Pallas, 1764)					E		IV	
181.	Common Redshank (393, 394)	*Tringa totanus* (Linnaeus, 1758)		+	+	+	+		IV	
182.	Marsh Sandpiper (395)	*Tringa stagnatilis* (Bechstein, 1803)		+			+		IV	
183.	Common Greenshank (396)	*Tringa nebularia* (Gunner, 1767)		+	+	+	+		IV	
184.	Green Sandpiper (397)	*Tringa ochropus* Linnaeus, 1758		+	+	+	+		IV	
185.	Wood Sandpiper (398)	*Tringa glareola* Linnaeus, 1758		+	+	+	+		IV	
186.	Common Sandpiper (401)	*Actitis hypoleucos* Linnaeus, 1758		+	+	+	+		IV	
187.	Little Stint (416)	*Calidris minuta* (Leisler, 1812)		+	+	+	+		IV	
188.	Temminck's Stint (417)	*Calidris temminckii* (Leisler, 1812)		+	+	+	+		IV	
189.	Long-toed Stint (418)	*Calidris subminuta* (Middendorff, 1853)		E					IV	
190.	Dunlin (420, 421)	*Calidris alpina* (Linnaeus, 1758)		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
191.	Curlew Sandpiper (422)	*Calidris ferruginea* (Pontoppidan, 1813)			+	+			IV	
192.	Ruff (426)	*Philomachus pugnax* (Linnaeus, 1758)					E		IV	
	23. Ibisbill, Avocets & Stilts	**Recurvirostridae**								
193.	Ibisbill (433)	*Ibidorhyncha struthersii* Vigors, 1832	+	+	+	+	+		IV	BRS (05)
194.	Black-winged Stilt (430-431)	*Himantopus himantopus* (Linnaeus, 1758)	+	+	+	+	+		IV	
195.	Pied Avocet (432)	*Recurvirostra avosetta* Linnaeus, 1758		+	+	+			IV	
	24. Stone-Curlew & Stone-Plovers/Thick-knees	**Burhinidae**								
196.	Stone-Curlew (435-436)	*Burhinus oedicnemus* (Linnaeus, 1758)		+	+	+	+		IV	
197.	Great Stone-Plover (437)	*Esacus recurvirostris* (Cuvier, 1829)		+	+	+	+		IV	
	25. Coursers & Pratincoles	**Glareolidae**								
198.	Small Pratincole (444)	*Glareola lactea* Temminck, 1820		+	+	+			?	
	26. Gulls, Terns & Noddies	**Laridae**								
199.	Yellow-legged Gull (451)	*Larus cachinnans* Pallas, 1811		E					IV	
200.	Pallas's Gull (453)	*Larus ichthyaetus* Pallas, 1773		+		+	+		IV	
201.	Brown-headed Gull (454)	*Larus brunnicephalus* Jerdon, 1840		+		+	+		IV	BRS (05)
202.	Black-headed Gull (455)	*Larus ridibundus* Linnaeus, 1766		+			+		IV	

1	2	3	4	5	6	7	8	9	10	11
203.	Gull-billed Tern (460-461)	*Gelochelidon nilotica* (Gmelin, 1789)		+	+		+		IV	
204.	River Tern (463)	*Sterna aurantia* J.E. Gray, 1831	+	+	+	+	+		IV	
205.	Common Tern (464-465)	*Sterna hirundo* Linnaeus, 1758					+		IV	
206.	Black-bellied Tern (470)	*Sterna acuticauda* J.E. Gray, 1831		+	+	+	+	NT	IV	
207.	Whiskered Tern (458)	*Chlidonias hybridus* (Pallas, 1811)		+	+	+	+		IV	
	27. Skimmers	**Rynchopidae**								
208.	Indian Skimmer (484)	*Rynchops albicollis* Swainson, 1838		E				VU	?	
	28. Sandgrouse	**Pteroclididae**								
209.	White-bellied Sandgrouse (486)	*Pterocles alchata* (Linnaeus, 1766)		E					IV	
		9. Order COLUMBIFORMES								
	29. Pigeons & Doves	**Columbidae**								
210.	Blue Rock Pigeon (516-517)	*Columba livia* Gmelin, 1789	+	+	+	+	+		?	
211.	Hill Pigeon (515)	*Columba rupestris* Pallas, 1811		+			+		IV	
212.	Speckled Wood-Pigeon (520)	*Columba hodgsonii* Vigors, 1832		E					IV	BRS (07)
213.	European Turtle-Dove (529)	*Streptopelia turtur* (Linnaeus, 1758)					E		IV	
214.	Oriental Turtle-Dove (530-533)	*Streptopelia orientalis* (Latham, 1790)	+	+	+	+	+		IV	
215.	Little Brown Dove (541)	*Streptopelia senegalensis* (Linnaeus, 1766)		+	+	+	+		IV	
216.	Spotted Dove (537-540)	*Streptopelia chinensis* (Scopoli, 1786)	+	+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
217.	Red Collared-Dove (535-536)	*Streptopelia tranquebarica* (Hermann, 1804)	+	+	+	+	+		IV	
218.	Eurasian Collared-Dove (534)	*Streptopelia decaocto* (Frivaldszky, 1838)	+	+	+	+	+		IV	
219.	Barred Cuckoo-Dove (526)	*Macropygia unchall* (Wagler, 1827)			+	+			IV	
220.	Emerald Dove (542-544a)	*Chalcophaps indica* (Linnaeus, 1758)	+	+	+	+	+		IV	
221.	Orange-breasted Green-Pigeon (501-502)	*Treron bicincta* (Jerdon, 1840)		+	+	+	+		IV	
222.	Yellow-legged Green-Pigeon (503-505)	*Treron phoenicoptera* (Latham, 1790)	+	+	+	+	+		IV	BRS (11)
223.	Pin-tailed Green-Pigeon (493)	*Treron apicauda* Blyth, 1846		+	+	+	+		IV	
224.	Wedge-tailed Green-Pigeon (494)	*Treron sphenura* (Vigors, 1832)		+	+	+	+		IV	
		10. Order PSITTACIFORMES								
	30. Parakeets	**Psittacidae**								
225.	Alexandrine Parakeet (545-548)	*Psittacula eupatria* (Linnaeus, 1766)		+	+	+	+		IV	
226.	Rose-ringed Parakeet (549-550)	*Psittacula krameri* (Scopoli, 1769)	+	+	+	+	+		IV	
227.	Slaty-headed Parakeet (562)	*Psittacula himalayana* (Lesson, 1832)	+	+	+	+	+		IV	BRS (08)
228.	Plum-headed Parakeet (557-558)	*Psittacula cyanocephala* (Linnaeus, 1766)	+	+	+	+	+		IV	BRS (11)
229.	Red-breasted Parakeet (551-552)	*Psittacula alexandri* (Linnaeus, 1758)	+	+	+	+	+		IV	

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	31. Cuckoos, Malkohas & Coucals	**11. Order CUCULIFORMES** **Cuculidae**								
230.	Pied Crested Cuckoo (570-571)	*Clamator jacobinus* (Boddaert, 1783)	+	+	+	+	+		IV	
231.	Red-winged Crested Cuckoo (569)	*Clamator coromandus* (Linnaeus, 1766)		+	+	+	+		IV	
232.	Large Hawk-Cuckoo (572)	*Hierococcyx sparverioides* (Vigors, 1832)		+	+	+	+		IV	
233.	Brainfever Bird (573-574)	*Hierococcyx varius* (Vahl, 1797)	+	+	+	+	+		IV	
234.	Indian Cuckoo (576)	*Cuculus micropterus* Gould, 1838	+	+	+	+	+		IV	
235.	Common Cuckoo (577-579)	*Cuculus canorus* Linnaeus, 1758	+	+	+	+	+		IV	
236.	Oriental Cuckoo (580-580a)	*Cuculus saturatus* Blyth, 1843			+	+			IV	
237.	Lesser Cuckoo (581)	*Cuculus poliocephalus* Latham, 1790			+	+			IV	
238.	Banded Bay Cuckoo (582-583)	*Cacomantis sonneratii* (Latham, 1790)		+	+	+	+		IV	
239.	Indian Plaintive Cuckoo (584)	*Cacomantis passerinus* (Vahl, 1797)		+	+	+			IV	
240.	Rufous-bellied Plaintive Cuckoo (585)	*Cacomantis merulinus* (Scopoli, 1786)		E					IV	
241.	Asian Emerald Cuckoo (586)	*Chrysococcyx maculatus* (Gmelin, 1788)			+	+			IV	BRS (08)
242.	Drongo Cuckoo (588-589)	*Surniculus lugubris* (Horsfield, 1821)		+	+	+	+		IV	
243.	Asian Koel (590-592)	*Eudynamys scolopacea* (Linnaeus, 1758)	+	+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
244.	Large Green-billed Malkoha (593-594)	*Phaenicophaeus tristis* (Lesson, 1830)		+	+	+	+		IV	
245.	Sirkeer Malkoha (596-598)	*Phaenicophaeus leschenaultii* (Lesson, 1830)	+	+	+	+	+		IV	BRS (11)
246.	Greater Coucal (600-602)	*Centropus sinensis* (Stephens, 1815)	+	+	+	+	+		IV	
247.	Lesser Coucal (605)	*Centropus bengalensis* (Gmelin, 1788)		+	+	+	+		IV	
		12. Order STRIGIFORMES								
	32. Barn Owls	**Tytonidae**								
248.	Barn Owl (606-607)	*Tyto alba* (Scopoli, 1769)	+	+	+	+	+		IV	
249.	Grass Owl (608)	*Tyto capensis* (A. Smith 1834)		+	+	+	+		IV	
	33. Owls	**Strigidae**								
250.	Spotted Scops-Owl (611-612)	*Otus spilocephalus* (Blyth, 1846)		+	+	+			IV	
251.	Oriental Scops-Owl (616-618b)	*Otus sunia* (Hodgson, 1836)		+	+	+			IV	
252.	Collared Scops-Owl (619-624)	*Otus bakkamoena* Pennant, 1769		+	+	+	+		IV	
253.	Eurasian Eagle-Owl (625-627)	*Bubo bubo* (Linnaeus, 1758)		+	+	+	+		IV	
254.	Forest Eagle-Owl (628-629)	*Bubo nipalensis* Hodgson, 1836		+	+	+	+		IV	
255.	Dusky Eagle-Owl (630)	*Bubo coromandus* (Latham, 1790)		+	+	+	+		IV	BRS (11)
256.	Brown Fish-Owl (631-632)	*Ketupa zeylonensis* (Gmelin, 1788)		+		+	+		IV	
257.	Tawny Fish-Owl (633)	*Ketupa flavipes* (Hodgson, 1836)		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
258.	Brown Wood-Owl (658-660)	*Strix leptogrammica* Temminck, 1831		+	+	+			IV	
259.	Tawny Wood-Owl (661-662)	*Strix aluco* Linnaeus, 1758			+	+			IV	
260.	Collared Owlet (635)	*Glaucidium brodiei* (Burton, 1836)		+	+	+	+		IV	
261.	Asian Barred Owlet (639-641)	*Glaucidium cuculoides* (Vigors, 1831)		+	+	+	+		IV	
262.	Jungle Owlet (636-637)	*Glaucidium radiatum* (Tickell, 1833)	+	+	+	+	+		IV	
263.	Spotted Owlet (650-652)	*Athene brama* (Temminck, 1821)	+	+	+	+	+		IV	
264.	Brown Hawk-Owl (642-645)	*Ninox scutulata* (Raffles, 1822)		+	+	+	+		IV	
265.	Long-eared Owl (663)	*Asio otus* (Linnaeus, 1758)		+			+		IV	
266.	Short-eared Owl (664)	*Asio flammeus* (Pontoppidan, 1763)		+	+	+	+		IV	
		13. Order CAPRIMULGIFORMES								
	34. Nightjars	**Caprimulgidae**								
267.	Indian Jungle Nightjar (670-672a)	*Caprimulgus indicus* Latham, 1790	+	+	+	+	+		IV	
268.	Large-tailed Nightjar (675, 678-679)	*Caprimulgus macrurus* Horsfield, 1821	+	+	+	+	+		IV	
269.	Common Indian Nightjar (680-681)	*Caprimulgus asiaticus* Latham, 1790	+	+	+	+	+		IV	BRS (11)
270.	Franklin's Nightjar (682)	*Caprimulgus affinis* Horsfield, 1821		+	+	+	+		IV	
		14. Order APODIFORMES								
	35. Swifts	**Apodidae**								
271.	Himalayan Swiftlet (683-684)	*Collocalia brevirostris* (Horsfield, 1840)		+	+	+	+		?	

1	2	3	4	5	6	7	8	9	10	11
272.	White-rumped Needletail-Swift (692)	*Zoonavena sylvatica* (Tickell, 1846)		+	+	+	+		?	
273.	White-throated Needletail-Swift (688)	*Hirundapus caudacutus* (Latham, 1802)		E					?	
274.	Silver-backed Needletail-Swift (689-690)	*Hirundapus cochinchinensis* (Oustalet, 1878)		E					?	
275.	Asian Palm-Swift (707-708)	*Cypsiurus balasiensis* (J.E. Gray, 1829)	+	+	+	+	+		?	
276.	Alpine Swift (693-695)	*Tachymarptis melba* (Linnaeus, 1758)		+	+	+	+		?	
277.	Common Swift (696)	*Apus apus* (Linnaeus, 1758)		+			+		?	
278.	Pacific Swift (699-700)	*Apus pacificus* (Latham, 1801)	+	+		+	+		?	
279.	House Swift (702-706)	*Apus affinis* (J.E. Gray, 1830)	+	+	+	+	+		?	
	36. Tree-Swifts	**Hemiprocnidae**								
280.	Crested Tree-Swift (709)	*Hemiprocne coronata* (Tickell, 1833)		+	+	+	+		?	
		15. Order TROGONIFORMES								
	37. Trogons	**Trogonidae**								
281.	Red-headed Trogon (713-715)	*Harpactes erythrocephalus* (Gould, 1834)			+	+			IV	
		16. Order CORACIIFORMIES								
	38. Kingfishers	**Alcedinidae**								
282.	Small Blue Kingfisher (722-724)	*Alcedo atthis* (Linnaeus, 1758)	+	+	+	+	+		IV	
283.	Stork-billed Kingfisher (730-732)	*Halcyon capensis* (Linnaeus, 1766)	+	+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
284.	White-breasted Kingfisher (735-738)	*Halcyon smyrnensis* (Linnaeus, 1758)	+	+	+	+	+		IV	
285.	Black-capped Kingfisher (739)	*Halcyon pileata* (Boddaert, 1783)		E					IV	
286.	Greater Pied Kingfisher (717-718)	*Megaceryle lugubris* (Temminck, 1834)	+	+	+	+	+		IV	
287.	Lesser Pied Kingfisher (719-720)	*Ceryle rudis* (Linnaeus, 1758)	+	+	+	+	+		IV	
	39. Bee-eaters	**Meropidae**								
288.	Blue-bearded Bee-eater (753)	*Nyctyornis athertoni* (Jardine & Selby, 1828)		+	+	+	+		?	
289.	Small Bee-eater ((749-752)	*Merops orientalis* Latham, 1801	+	+	+	+	+		?	
290.	Blue-tailed Bee-eater (748)	*Merops philippinus* Linnaeus, 1766	+	+	+	+	+		?	
291.	Chestnut-headed Bee-eater (744-745)	*Merops leschenaulti* Vieillot, 1817	+	+	+	+	+		?	
	40. Rollers	**Coraciidae**								
292.	*European Roller (754)	*Coracias garrulus* Linnaeus, 1758							IV	
293.	Indian Roller (755-757)	*Coracias benghalensis* (Linnaeus, 1758)	+	+	+	+	+		IV	
294.	Oriental Broad-billed Roller (758-762)	*Eurystomus orientalis* (Linnaeus, 1766)		+	+	+	+		IV	
	41. Hoopoes	**Upupidae**								
295.	Common Hoopoe (763-766)	*Upupa epops* Linnaeus, 1758	+	+	+	+	+		?	
	42. Hornbills	**Bucerotidae**								
296.	Indian Grey Hornbill (767)	*Ocyceros birostris* (Scopoli, 1786)	+	+	+	+	+		I	BRS (11)

*Baura (2000)

1	2	3	4	5	6	7	8	9	10	11
297.	Oriental Pied Hornbill (774)	*Anthracoceros albirostris* (Shaw, 1808)	+	+	+	+	+		I	
298.	Great Pied Hornbill (776)	*Buceros bicornis* Linnaeus, 1758	+	+	+	+	+	NT	I	
299.	Rufous-necked Hornbill (771)	*Aceros nipalensis* (Hodgson, 1829)			+	+		VU	I	BRS (08)
		17. Order PICIFORMES								
	43. Barbets	**Capitonidae**								
300.	Great Barbet (777-779)	*Megalaima virens* (Boddaert, 1783)	+	+	+	+	+		IV	
301.	Brown-headed Barbet (780-782)	*Megalaima zeylanica* (Gmelin, 1788)	+	+	+	+	+		IV	BRS (11)
302.	Lineated Barbet (783-784)	*Megalaima lineata* (Vieillot, 1816)	+	+	+	+	+		IV	BRS (11)
303.	White-cheeked Barbet (785)	*Megalaima viridis* (Boddaert, 1783)		+					IV	BRS (10)
304.	Blue-throated Barbet (788)	*Megalaima asiatica* (Latham, 1790)		+	+	+	+		IV	BRS (08)
305.	Coppersmith Barbet (792)	*Megalaima haemacephala* (P.L.S. Müller, 1776)	+	+	+	+	+		IV	
	44. Honeyguides	**Indicatoridae**								
306.	Yellow-rumped Honeyguide (793-795)	*Indicator xanthonotus* Blyth, 1842			+	+	+	NT	?	BRS (07)
	45. Woodpeckers	**Picidae**								
307.	Eurasian Wryneck (796)	*Jynx torquilla* Linnaeus, 1758		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
308.	Speckled Piculet (798-799)	*Picumnus innominatus* Burton, 1836		+	+	+	+		IV	
309.	Rufous Piculet (800-801)	*Sasia ochracea* Hodgson, 1836			+	+			IV	
310.	Brown-capped Pygmy Woodpecker (851-854)	*Dendrocopos nanus* (Vigors, 1832)	+	+	+	+	+		IV	
311.	Grey-capped Pygmy Woodpecker (848-850)	*Dendrocopos canicapillus* (Blyth, 1845)	+	+	+	+	+		IV	
312.	Brown-fronted Pied Woodpecker (842-843)	*Dendrocopos auriceps* (Vigors, 1831)		+	+	+	+		IV	
313.	Fulvous-breasted Pied Woodpecker (845-846)	*Dendrocopos macei* (Vieillot, 1818)	+	+	+	+	+		IV	
314.	Yellow-fronted Pied Woodpecker (847)	*Dendrocopos mahrattensis* (Latham, 1801)	+	+	+	+	+		IV	BRS (11)
315.	Rufous-bellied Pied Woodpecker (832-833)	*Dendrocopos hyperythrus* (Vigors, 1831)	+		+	+			IV	
316.	Himalayan Pied Woodpecker (836-837)	*Dendrocopos himalayensis* (Jardine & Selby, 1831)		+	+	+			IV	BRS (07)
317.	Rufous Woodpecker (802-804)	*Celeus brachyurus* (Vieillot, 1818)	+	+	+	+	+		IV	
318.	Small Yellow-naped Woodpecker (814-817)	*Picus chlorolophus* Vieillot, 1818	+	+		+	+		IV	
319.	Large Yellow-naped Woodpecker (812-813)	*Picus flavinucha* Gould, 1834	+	+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
320.	Little Scaly-bellied Green Woodpecker (808)	*Picus xanthopygaeus* (J.E. Gray & G.R. Gray, 1846)		+	+	+	+		IV	
321.	Large Scaly-bellied Green Woodpecker (806-807)	*Picus squamatus* Vigors, 1831		+	+	+	+		IV	
322.	Black-naped Green Woodpecker (809-811)	*Picus canus* Gmelin, 1788	+	+	+	+	+		IV	
323.	Himalayan Golden-backed Woodpecker (824)	*Dinopium shorii* (Vigors, 1832)	+	+	+	+	+		IV	BRS (09)
324.	Lesser Golden-backed Woodpecker (818-823)	*Dinopium benghalense* (Linnaeus, 1758)	+	+	+	+			IV	BRS (11)
325.	Greater Golden-backed Woodpecker (860-863)	*Chrysocolaptes lucidus* (Scopoli, 1786)		+	+	+	+		IV	
326.	Black-shouldered Woodpecker (858-859)	*Chrysocolaptes festivus* (Boddaert, 1783)		+					IV	BRS (11)
327.	Great Slaty Woodpecker (828-829)	*Mulleripicus pulverulentus* (Temminck, 1826)	+	+	+	+	+		IV	
		18. Order PASSERIFORMES								
	46. Broadbills	**Eurylaimidae**								
328.	Long-tailed Broadbill (865)	*Psarisomus dalhousiae* (Jameson, 1835)		+	+	+	+		?	
	47. Pittas	**Pittidae**								
329.	Hooded Pitta (869-870)	*Pitta sordida* (P.L.S. Muller, 1776)			+	+			IV	

1	2	3	4	5	6	7	8	9	10	11
330.	Indian Pitta (867)	*Pitta brachyura* (Linnaeus, 1766)	+	+	+	+	+		IV	
	48. Larks	**Alaudidae**								
331.	Singing Bush-Lark (872)	*Mirafra cantillans* Blyth, 1845	+	+	+	+			IV	
332.	Red-winged Bush-Lark (875-877)	*Mirafra erythroptera* Blyth, 1845		+			+		IV	BRS (11)
333.	Bengal Bush-Lark (873)	*Mirafra assamica* Horsfield, 1840	+	+			+		IV	BRS (11)
334.	Ashy-crowned Sparrow-Lark (878)	*Eremopterix grisea* (Scopoli, 1786)		+	+	+	+		IV	BRS (11)
335.	Greater Short-toed Lark (885-886)	*Calandrella brachydactyla* (Leisler, 1814)		+	+	+			IV	
336.	Hume's Short-toed Lark (887-888)	*Calandrella acutirostris* Hume, 1872			+	+			IV	BRS (05)
337.	Indian Short-toed Lark (889-891)	*Calandrella raytal* (Blyth, 1845)		+			+		IV	BRS (11)
338.	Common Crested Lark (898-900)	*Galerida cristata* (Linnaeus, 1758)	+	+	+	+	+		IV	
339.	Eurasian Skylark (903-903a)	*Alauda arvensis* Linnaeus, 1758		+			+		IV	
340.	Eastern Skylark (904-909)	*Alauda gulgula* Franklin, 1831	+	+	+	+	+		IV	
	49. Swallows & Martins	**Hirundinidae**								
341.	Sand Martin (911)	*Riparia riparia* (Linnaeus, 1758)		+	+				?	
342.	Pale Martin (910)	*Riparia diluta* (Sharpe & Wyatt, 1893)				+			?	

1	2	3	4	5	6	7	8	9	10	11
343.	Plain Martin (912)	*Riparia paludicola* (Vieillot, 1817)	+	+	+	+	+		?	
344.	Eurasian Crag-Martin (913)	*Hirundo rupestris* Scopoli, 1769		+	+	+	+		?	
345.	Dusky Crag-Martin (914)	*Hirundo concolor* Sykes, 1833		+	+	+	+		?	
346.	Common Swallow (916-918)	*Hirundo rustica* Linnaeus, 1758	+	+	+	+	+		?	
347.	Wire-tailed Swallow (921)	*Hirundo smithii* Leach, 1818	+	+	+	+	+		?	
348.	Red-rumped Swallow (923-928)	*Hirundo daurica* Linnaeus, 1771	+	+	+	+	+		?	
349.	Streak-throated Swallow (922)	*Hirundo fluvicola* Blyth, 1855		+	+	+	+		?	
350.	Northern House-Martin (930)	*Delichon urbica* (Linnaeus, 1758)		+	+		+		?	
351.	Asian House-Martin (931)	*Delichon dasypus* (Bonaparte, 1850)	+	+		+			?	
352.	Nepal House-Martin (932)	*Delichon nipalensis* Horsfield & Moore, 1854		+	+	+	+		?	BRS (07)
	50. Wagtails & Pipits	**Motacillidae**								
353.	Forest Wagtail (1874)	*Dendronanthus indicus* (Gmelin, 1789)		E					IV	
354.	White Wagtail (1885-1890)	*Motacilla alba* Linnaeus, 1758	+	+	+	+	+		IV	
355.	Large Pied Wagtail (1891)	*Motacilla maderaspatensis* Gmelin, 1789	+	+	+	+	+		IV	
356.	Citrine Wagtail (1881-1883)	*Motacilla citreola* Pallas, 1776	+	+	+	+	+		IV	
357.	Yellow Wagtail (1875-1880)	*Motacilla flava* Linnaeus, 1758	+	+	+	+	+		IV	
358.	Grey Wagtail (1884)	*Motacilla cinerea* Tunstall, 1771		+	+	+	+		IV	
359.	Paddyfield Pipit (1858-1860)	*Anthus rufulus* Vieillot, 1818	+	+	+	+	+		IV	
360.	Tawny Pipit (1861-1862)	*Anthus campestris* (Linnaeus, 1758)	+	+			+		IV	

1	2	3	4	5	6	7	8	9	10	11
361.	Blyth's Pipit (1863)	*Anthus godlewskii* (Taczanowski, 1876)					E		IV	
362.	Brown Rock Pipit (1866-1869)	*Anthus similis* Jerdon, 1840		+	+	+	+		IV	
363.	Eurasian Tree Pipit (1854-1855)	*Anthus trivialis* (Linnaeus, 1758)		+			+		IV	
364.	Oriental Tree Pipit (1852-1853)	*Anthus hodgsoni* Richmond, 1907	+	+	+	+	+		IV	
365.	Rosy Pipit (1865)	*Anthus roseatus* Blyth, 1847		+		+	+		IV	BRS (05)
366.	Water Pipit (1871)	*Anthus spinoletta* (Linnaeus, 1758)		+			+		IV	BRS (05)
367.	Upland Pipit (1873)	*Anthus sylvanus* (Blyth, 1845)	+	+	+	+			IV	
	51. Cuckoo-Shrikes, Flycatcher-Shrikes, Trillers, Minivets, Woodshrikes	**Campephagidae**								
368.	Large Cuckoo-Shrike (1072-1075)	*Coracina macei* (Lesson, 1830)	+	+	+	+	+		IV	
369.	Black-winged Cuckoo-Shrike (1077)	*Coracina melaschistos* (Hodgson, 1836)		+	+	+	+		IV	BRS (08)
370.	Black-headed Cuckoo-Shrike (1078-1079)	*Coracina melanoptera* (Rüppell, 1839)		+	+	+	+		IV	BRS (11)
371.	Rosy Minivet (1089)	*Pericrocotus roseus* (Vieillot, 1818)		+	+	+	+		IV	BRS (08)

1	2	3	4	5	6	7	8	9	10	11
372.	Small Minivet (1090-1095)	*Pericrocotus cinnamomeus* (Linnaeus, 1766)	+	+	+	+	+		IV	BRS (11)
373.	Long-tailed Minivet (1085-1087)	*Pericrocotus ethologus* Bangs & Phillips, 1914	+	+	+	+	+		IV	
374.	Short-billed Minivet (1084)	*Pericrocotus brevirostris* (Vigors, 1831)		+			+		IV	BRS (08)
375.	Scarlet Minivet (1080-1083)	*Pericrocotus flammeus* (Forster, 1781)	+	+	+	+	+		IV	
376.	Pied Flycatcher-Shrike (1064-1066)	*Hemipus picatus* (Sykes, 1832)		+	+	+	+		IV	
377.	Large Woodshrike (1067-1068)	*Tephrodornis gularis* (Raffles, 1822)		+			+		IV	
378.	Common Woodshrike (1069-1071)	*Tephrodornis pondicerianus* (Gmelin, 1789)		+	+	+	+		IV	BRS (11)
	52. Bulbuls & Finchbills	**Pycnonotidae**								
379.	Striated Bulbul (1133-1134)	*Pycnonotus striatus* (Blyth, 1842)		E					IV	BRS (08)
380.	Black-crested Bulbul (1115-1117)	*Pycnonotus melanicterus* (Gmelin, 1789)		+	+	+	+		IV	
381.	Red-whiskered Bulbul (1118-1122)	*Pycnonotus jocosus* (Linnaeus, 1758)	+	+	+	+	+		IV	
382.	White-eared Bulbul (1123-1124)	*Pycnonotus leucotis* (Gould, 1836)	+		+	+	+		IV	BRS (13)
383.	Himalayan Bulbul (1125)	*Pycnonotus leucogenys* (Gray, 1835)	+	+		+	+		IV	BRS (08)
384.	Red-vented Bulbul (1126-1132)	*Pycnonotus cafer* (Linnaeus, 1766)	+	+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
385.	Brown-eared Bulbul (1147)	*Hemixos flavala* Blyth, 1845	+	+	+	+	+		IV	
386.	Rufous-bellied Bulbul (1146)	*Hypsipetes mcclellandii* Horsfield, 1840		+	+	+	+		IV	BRS (08)
387.	Black Bulbul (1148-1151)	*Hypsipetes leucocephalus* (P.L.S. Muller, 1776)	+	+	+	+	+		IV	BRS (08)
	53. Ioras, Chloropsis/Leafbird, Fairy-Bluebird	**Irenidae**								
388.	Common Iora (1097-1101)	*Aegithina tiphia* (Linnaeus, 1758)	+	+	+	+	+		IV	
389.	Gold-fronted Chloropsis (1103-1105)	*Chloropsis aurifrons* (Temminck, 1829)	+	+	+	+	+		IV	
390.	Orange-bellied Chloropsis (1106)	*Chloropsis hardwickii* Jardine & Selby, 1830		+	+	+	+		IV	BRS (08)
	54. Shrikes	**Laniidae**								
391.	Red-backed Shrike (941)	*Lanius collurio* Linnaeus, 1758		E					?	
392.	Brown Shrike (949-950a)	*Lanius cristatus* Linnaeus, 1758	+	+			+		?	
393.	Bay-backed Shrike (939-940)	*Lanius vittatus* Valenciennes, 1826	+	+	+	+	+		?	
394.	Rufous-backed Shrike (946-948)	*Lanius schach* Linnaeus, 1758	+	+	+	+	+		?	
395.	Grey-backed Shrike (944-945)	*Lanius tephronotus* (Vigors, 1831)	+	+			+		?	BRS (05)
396.	Great Grey Shrike (936)	*Lanius excubitor* Linnaeus, 1758					E		?	
397.	Southern Grey Shrike (933-935)	*Lanius meridionalis* Temminck, 1820	+	+	+	+			?	

1	2	3	4	5	6	7	8	9	10	11
	55. Dippers	**Cinclidae**								
398.	White-throated Dipper (1772-1774)	*Cinclus cinclus* (Linnaeus, 1758)				E			?	
399.	Brown Dipper (1775-1776)	*Cinclus pallasii* Temminck, 1820		+		+	+		?	
	56. Wrens	**Troglodytidae**								
400.	Winter Wren (1769-1771)	*Troglodytes troglodytes* (Linnaeus, 1758)		+	+	+	+		IV	
	57. Accentors	**Prunellidae**								
401.	Alpine Accentor (1777-1779)	*Prunella collaris* (Scopoli, 1769)		+		+			?	BRS (05)
402.	Altai Accentor (1780)	*Prunella himalayana* (Blyth, 1842)		+		+			?	BRS (05)
403.	Robin Accentor (1781)	*Prunella rubeculoides* (Moore, 1854)				E			?	BRS (05)
404.	Rufous-breasted Accentor (1782-1783)	*Prunella strophiata* (Blyth, 1843)		+		+			?	BRS (07)
405.	Black-throated Accentor (1786-1787)	*Prunella atrogularis* (Brandt, 1844)		+			+		?	BRS (07)
	58. Thrushes, Babblers, Warblers, Flycatchers, etc.	**Muscicapidae**								
	58a. Thrushes, Shortwings, Robins, Forktails, Wheaters	**Turdinae**								
406.	Blue-headed Rock-Thrush (1723)	*Monticola cinclorhynchus* (Vigors, 1832)		+	+	+	+		IV	BRS (08)

1	2	3	4	5	6	7	8	9	10	11
407.	Chestnut-bellied Rock-Thrush (1724)	*Monticola rufiventris* (Jardine & Selby, 1833)	+	+	+	+		IV		
408.	Blue Rock-Thrush (1725-1726)	*Monticola solitarius* (Linnaeus, 1758)		+	+	+	+		IV	
409.	Blue Whistling-Thrush (1729-1730)	*Myiophonus caeruleus* (Scopoli, 1786)	+	+	+	+	+		IV	
410.	Pied Thrush (1731)	*Zoothera wardii* (Blyth, 1842)			+	+			IV	BRS (08)
411.	Orange-headed Thrush (1733-1736)	*Zoothera citrina* (Latham, 1790)		+	+	+	+		IV	
412.	Plain-backed Thrush (1738-1739)	*Zoothera mollissima* (Blyth, 1842)		+		+			IV	BRS (05)
413.	Long-tailed Thrush (1740)	*Zoothera dixoni* (Seebohm, 1881)		+	+	+			IV	BRS (07)
414.	Scaly Thrush (1741-1744)	*Zoothera dauma* (Latham, 1790)		+	+	+	+		IV	
415.	Greater Long-billed Thrush (1745)	*Zoothera monticola* Vigors, 1832		+	+	+	+		IV	BRS (07)
416.	Lesser Long-billed Thrush (1746)	*Zoothera marginata* Blyth, 1847					E		IV	BRS (08)
417.	Tickell's Thrush (1748)	*Turdus unicolor* Tickell, 1833		+		+	+		IV	BRS (08)
418.	White-collared Blackbird (1749)	*Turdus albocinctus* Royle, 1840		+	+	+			IV	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
419.	Grey-winged Blackbird (1750)	*Turdus boulboul* (Latham, 1790)	+	+	+	+	+		IV	BRS (08)
420.	Eurasian Blackbird (1751-1757)	*Turdus merula* Linnaeus, 1758				+	+		IV	
421.	Chestnut Thrush (1758-1759)	*Turdus rubrocanus* Hodgson, 1846			+	+			IV	BRS (07)
422.	Dark-throated Thrush (1763-1764)	*Turdus ruficollis* Pallas, 1776		+	+	+	+		IV	
423.	Mistle Thrush (1768)	*Turdus viscivorus* Linnaeus, 1758		+		+			IV	
424.	Gould's Shortwing (1635)	*Brachypteryx stellata* Gould, 1868				E			IV	BRS (07)
425.	White-browed Shortwing (1640)	*Brachypteryx montana* Horsfield, 1821			+	+			IV	
426.	Siberian Rubythroat (1643)	*Luscinia calliope* (Pallas, 1776)		+			+		IV	
427.	Himalayan Rubythroat (1647-1649)	*Luscinia pectoralis* (Gould, 1837)		+	+	+	+		IV	BRS (07)
428.	Bluethroat (1644-1646a)	*Luscinia svecica* (Linnaeus, 1758)		+		+	+		IV	
429.	Indian Blue Robin (1650, 1651)	*Luscinia brunnea* (Hodgson, 1837)		+	+		+		IV	BRS (07)
430.	Orange-flanked Bush-Robin (1654-1656)	*Tarsiger cyanurus* (Pallas, 1773)		+	+	+	+		IV	
431.	Golden Bush-Robin (1657-1658)	*Tarsiger chrysaeus* (Hodgson, 1845)		+	+	+	+		IV	BRS (07)
432.	White-browed Bush-Robin (1659)	*Tarsiger indicus* (Vieillot, 1817)			+	+	+		IV	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
433.	Oriental Magpie-Robin (1661-1664)	*Copsychus saularis* (Linnaeus, 1758)	+	+	+	+	+		IV	
434.	White-rumped Shama (1665-1668)	*Copsychus malabaricus* (Scopoli, 1786)		+	+	+	+		IV	
435.	Indian Robin (1717-1721)	*Saxicoloides fulicata* (Linnaeus, 1776)	+	+	+	+	+		IV	BRS (11)
436.	Eversmann's Redstart (1669)	*Phoenicurus erythronotus* (Eversmann, 1841)		+	+	+		IV		BRS (07)
437.	Blue-capped Redstart (1670)	*Phoenicurus caeruleocephalus* (Vigors, 1831)	+			+		IV		BRS (07)
438.	Black Redstart (1671-1672)	*Phoenicurus ochruros* (Gmelin, 1774)	+	+	+	+	+		IV	
439.	Hodgson's Redstart (1674)	*Phoenicurus hodgsoni* (Moore, 1854)		+	+	+	+		IV	BRS (05)
440.	White-throated Redstart (1676)	*Phoenicurus schisticeps* (Gray, 1846)		+					IV	BRS (07)
441.	Blue-fronted Redstart (1675)	*Phoenicurus frontalis* (Vigors, 1832)		+	+	+	+		IV	
442.	White-capped Redstart (1716)	*Chaimarrornis leucocephalus* (Vigors, 1831)	+	+	+	+	+		IV	
443.	Plumbeous Redstart (1679)	*Rhyacornis fuliginosus* (Vigors, 1831)	+	+	+	+	+		IV	
444.	White-bellied Redstart (1680)	*Hodgsonius phaenicuroides* (Gray, 1846)		+	+	+	+		IV	BRS (07)
445.	White-tailed Robin (1681)	*Myiomela leucura* (Hodgson, 1845)		+					IV	BRS (08)

1	2	3	4	5	6	7	8	9	10	11
446.	Grandala (1683)	*Grandala coelicolor* Hodgson, 1843				E			IV	BRS (05)
447.	Little Forktail (1684)	*Enicurus scouleri* Vigors, 1832		+	+	+	+		IV	
448.	Black-backed Forktail (1685)	*Enicurus immaculatus* (Hodgson, 1836)		+	+	+	+		IV	BRS (09)
449.	Slaty-backed Forktail (1686)	*Enicurus schistaceus* (Hodgson, 1836)	+	+	+	+	+		IV	BRS (08)
450.	Spotted Forktail (1688-1689)	*Enicurus maculatus* Vigors, 1831	+	+	+	+	+		IV	
451.	Purple Cochoa (1690)	*Cochoa purpurea* Hodgson, 1836		+	+	+	+		IV	BRS (08)
452.	Green Cochoa (1691)	*Cochoa viridis* Hodgson, 1836			+	+			IV	BRS (08)
453.	Hodgson's Bushchat (1694)	*Saxicola insignis* Gray, 1846		E				VU	IV	BRS (05)
454.	Common Stonechat (1695-1698)	*Saxicola torquata* (Linnaeus, 1766)	+	+	+	+	+		IV	
455.	White-tailed Stonechat (1699)	*Saxicola leucura* (Blyth, 1847)		+	+	+			IV	BRS (12)
456.	Pied Bushchat (1700-1703)	*Saxicola caprata* (Linnaeus, 1766)	+	+	+	+	+		IV	
457.	Grey Bushchat (1705)	*Saxicola ferrea* Gray, 1846	+	+	+	+	+		IV	
458.	Variable Wheatear (1712)	*Oenanthe picata* (Blyth, 1847)		E					IV	
459.	Pied Wheatear (1715)	*Oenanthe pleschanka* (Lepechin, 1770)					E		?	

1	2	3	4	5	6	7	8	9	10	11
460.	Desert Wheatear (1709-1710)	*Oenanthe deserti* (Temminck, 1825)		+			+		IV	
461.	Isabelline Wheatear (1706)	*Oenanthe isabellina* (Temminck, 1829)		+	+	+	+		IV	
462.	Indian Chat (1692)	*Cercomela fusca* (Blyth, 1851)	+	+	+	+	+		IV	BRS (11)
	58b. Babblers, Laughing thrushes, Babaxes, Barwings, Yuhinas	**Timaliinae**								
463.	White-throated Laughingthrush (1273-1274)	*Garrulax albogularis* (Gould, 1836)		+		+	+		IV	BRS (07)
464.	White-crested Laughingthrush (1283-1284)	*Garrulax leucolophus* (Hardwicke, 1815)	+	+	+	+	+		IV	
465.	Striated Laughingthrush (1279-1282)	*Garrulax striatus* (Vigors, 1831)		+		+			IV	BRS (07)
466.	Rufous-chinned Laughingthrush (1292-1296)	*Garrulax rufogularis* (Gould, 1835)		+	+	+	+		IV	BRS (08)
467.	Spotted Laughingthrush (1298-1299)	*Garrulax ocellatus* (Vigors, 1831)				E			IV	BRS (07)
468.	Streaked Laughingthrush (1312-1316)	*Garrulax lineatus* (Vigors, 1831)		+	+	+	+		IV	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
469.	Variegated Laughingthrush (1289-1290)	*Garrulax variegatus* (Vigors, 1831)		E					IV	BRS (07)
470.	Red-headed Laughingthrush (1324-1330)	*Garrulax erythrocephalus* (Vigors, 1832)		+	+	+			IV	
471.	Spotted Babbler (1152-1159)	*Pellorneum ruficeps* Swainson, 1832		+	+	+	+		IV	
472.	Rusty-cheeked Scimitar-Babbler (1181-1183)	*Pomatorhinus erythrogenys* Vigors, 1832		+	+	+	+		IV	BRS (08)
473.	Indian Scimitar-Babbler (1172-1177)	*Pomatorhinus horsfieldii* Sykes, 1832					E		IV	BRS (10)
474.	Hodgson's Scimitar-Babbler (1168-1171)	*Pomatorhinus schisticeps* Hodgson, 1836			+	+			?	
475.	Rufous-necked Scimitar-Babbler (1178-1180)	*Pomatorhinus ruficollis* Hodgson, 1836		+	+	+			IV	
476.	Greater Scaly-breasted Wren-Babbler (1197-1198)	*Pnoepyga albiventer* (Hodgson, 1837)		+			+		IV	BRS (07)
477.	Nepal Wren-Babbler (N)	*Pnoepyga immaculata* Martens & Eck, 1991		E					?	
478.	Black-chinned Babbler (1211)	*Stachyris pyrrhops* Blyth, 1844		+			+		IV	BRS (08)
479.	Rufous-bellied Babbler (1219-1223)	*Dumetia hyperythra* (Franklin, 1831)		+	+	+	+		IV	BRS (11)

1	2	3	4	5	6	7	8	9	10	11
480.	Red-capped Babbler (1229)	*Timalia pileata* Horsfield, 1821		+			+		IV	
481.	Yellow-eyed Babbler (1230-1232)	*Chrysomma sinense* (Gmelin, 1789)		+	+	+	+		IV	
482.	Common Babbler (1253-1254)	*Turdoides caudatus* (Dumont, 1823)	+	+	+	+	+		IV	
483.	Striated Babbler (1255-1256)	*Turdoides earlei* (Blyth, 1844)			+	+			IV	BRS (12)
484.	Large Grey Babbler (1258)	*Turdoides malcolmi* (Sykes, 1832)	+	+	+	+	+		IV	BRS (11)
485.	Jungle Babbler (1261-1265)	*Turdoides striatus* (Dumont, 1823)	+	+	+	+	+		IV	BRS (11)
486.	Silver-eared Leiothrix (1333-1334)	*Leiothrix argentauris* (Hodgson, 1838)		+	+	+	+		IV	
487.	Red-billed Leiothrix (1335-1337)	*Leiothrix lutea* (Scopoli, 1786)		+	+	+	+		IV	BRS (08)
488.	Red-winged Shrike Babbler (1341)	*Pteruthius flaviscapis* (Temminck, 1836)		+	+	+			IV	
489.	Green Shrike-Babbler (1342-1344)	*Pteruthius xanthochlorus* Gray, 1846		E					IV	BRS (07)
490.	Blue-winged Minla (1362)	*Minla cyanouroptera* (Hodgson, 1838)		+			+		IV	BRS (08)
491.	Bar-throated Minla (1358-1361)	*Minla strigula* (Hodgson, 1838)		+		+			IV	BRS (07)
492.	Rufous Sibia (1396-1398)	*Heterophasia capistrata* (Vigors, 1831)	+	+	+	+	+		IV	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
493.	Yellow-naped Yuhina (1367-1370)	*Yuhina flavicollis* Hodgson, 1836		+			+		IV	
494.	Stripe-throated Yuhina (1371-1372)	*Yuhina gularis* Hodgson, 1836		E					IV	BRS (07)
495.	Black-chinned Yuhina (1374)	*Yuhina nigrimenta* Hodgson, 1845		+	+	+	+		IV	BRS (08)
496.	White-bellied Yuhina (1375)	*Yuhina zantholeuca* (Hodgson, 1844)		+			+		IV	
	58c. Goldcrest, Prinias, Tesias, Warblers	**Sylviinae**								
497.	Goldcrest (1628-1631)	*Regulus regulus* (Linnaeus, 1758)		+	+	+	+		IV	
498.	Streaked Fantail-Warbler (1498-1500a)	*Cisticola juncidis* (Rafinesque, 1810)		+	+	+	+		IV	
499.	Golden-headed Fantail-Warbler (1496-1497)	*Cisticola exilis* (Vigors & Horsfield, 1827)		+	+	+	+		IV	
500.	Brown Prinia (1526-1528)	*Prinia criniger* Hodgson, 1836		+	+	+	+		IV	BRS (08)
501.	Hodgson's Prinia (1507)	*Prinia cinereocapilla* (Moore, 1854)		+	+	+	+	VU	IV	BRS (09)
502.	Rufous-fronted Prinia (1506)	*Prinia buchanani* Blyth, 1844		+	+	+	+		IV	BRS (11)
503.	Franklin's Prinia (1502-1505)	*Prinia hodgsonii* Blyth, 1844		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
504.	Graceful Prinia (1508-1509)	*Prinia gracilis* (Lichtenstein, 1823)		+	+	+	+		IV	BRS (11)
505.	Jungle Prinia (1519-1523)	*Prinia sylvatica* Jerdon, 1840	+	+	+	+	+		IV	BRS (11)
506.	Yellow-bellied Prinia (1524-1525)	*Prinia flaviventris* (Delessert, 1840)		+			+		IV	BRS (11)
507.	Ashy Prinia (1515-1518)	*Prinia socialis* Sykes, 1832	+	+	+	+	+		IV	BRS (11)
508.	Plain Prinia (1510-1514)	*Prinia inornata* Sykes, 1832	+	+	+	+	+		IV	BRS (07)
509.	Chestnut-headed Tesia (1473)	*Tesia castaneocoronata* (Burton, 1836)		+	+	+	+		IV	BRS (07)
510.	Grey-bellied Tesia (1471)	*Tesia cyaniventer* Hodgson, 1837		+			+		IV	BRS (08)
511.	Blanford's Bush-Warbler (1474-1475)	*Cettia pallidipes* (Blanford, 1872)		+	+	+	+		IV	BRS (07)
512.	Brown-flanked Bush-Warbler (1477-1478)	*Cettia fortipes* (Horsfield, 1845)		+		+	+		IV	BRS (07)
513.	Chestnut-crowned Bush-Warbler (1479-1480)	*Cettia major* (Moore, 1854)		+			+		IV	BRS (07)
514.	Aberrant Bush-Warbler (1481-1483)	*Cettia flavolivacea* (Blyth, 1845)		+	+	+	+		IV	BRS (07)
515.	Grey-sided Bush-Warbler (1485-1487)	*Cettia brunnifrons* (Hodgson, 1845)		+	+	+	+		IV	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
516.	Spotted Bush-Warbler (1489-1490)	*Bradypterus thoracicus* (Blyth, 1845)		+		+			IV	
517.	Long-billed Bush-Warbler (1491)	*Bradypterus major* (Brooks, 1871)		E				NT	IV	BRS (07)
518.	Pale Grasshopper-Warbler (1545)	*Locustella naevia* (Boddaert, 1783)		E					IV	
519.	Moustached Warbler (1495)	*Acrocephalus melanopogon* (Temminck, 1823)	+	+	+	+		IV		
520.	Paddyfield Warbler (1557-1558)	*Acrocephalus agricola* (Jerdon, 1845)			+	+			IV	
521.	Blyth's Reed-Warbler (1556)	*Acrocephalus dumetorum* Blyth, 1849		+			+		IV	
522.	Indian Great Reed-Warbler (1550-1552)	*Acrocephalus stentoreus* (Hemprich & Ehrenberg, 1833)		+	+			IV		
523.	Booted Warbler (1562-1563)	*Hippolais caligata* (Lichtenstein, 1823)		+	+	+			IV	
524.	Common Tailorbird (1535-1539)	*Orthotomus sutorius* (Pennant, 1769)	+	+	+	+	+		IV	
525.	Common Chiffchaff (1574-1575)	*Phylloscopus collybita* (Vieillot, 1817)		+	+	+	+		IV	
526.	Plain Leaf-Warbler (1577)	*Phylloscopus neglectus* Hume, 1870	+	E					IV	
527.	Dusky Warbler (1584-1586)	*Phylloscopus fuscatus* (Blyth, 1842)		+			+		IV	
528.	Smoky Warbler (1582-1583)	*Phylloscopus fuligiventer* (Hodgson, 1845)		+					IV	BRS (05)
529.	Tickell's Warbler (1579)	*Phylloscopus affinis* (Tickell, 1833)	+	+		+	+		IV	BRS (05)
530.	Buff-throated Warbler (1580)	*Phylloscopus subaffinis* Ogilvie-Grant, 1900		E					IV	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
531.	Olivaceous Leaf-Warbler (1581)	*Phylloscopus griseolus* Blyth, 1847					E		IV	BRS (05)
532.	Orange-barred Leaf-Warbler (1587-1589)	*Phylloscopus pulcher* Blyth, 1845		+		+	+		IV	BRS (07)
533.	Grey-faced Leaf-Warbler (1597-1599)	*Phylloscopus maculipennis* (Blyth, 1867)		+	+	+	+		IV	BRS (07)
534.	Lemon-rumped Warbler (1594-1596)	*Phylloscopus chloronotus* (G.R. Gray & J.E. Gray, 1846)	+		+	+		IV		
535.	Brooks's Leaf-Warbler (1593)	*Phylloscopus subviridis* (Brooks, 1872)		E					IV	RRS (4)
536.	Yellow-browed Warbler (1592)	*Phylloscopus inornatus* (Blyth, 1842)					E		IV	
537.	Hume's Warbler (1590-1591)	*Phylloscopus humei* (Brooks, 1878)		+	+	+			IV	
538.	Greenish Leaf-Warbler (1602-1605)	*Phylloscopus trochiloides* (Sundevall, 1837)		+	+	+	+		IV	
539.	Tytler's Leaf-Warbler (1578)	*Phylloscopus tytleri* Brooks, 1872		E				NT	IV	RRS (4)
540.	Western Crowned Warbler (1606)	*Phylloscopus occipitalis* (Blyth, 1845)		+	+	+	+		IV	BRS (07)
541.	Blyth's Leaf-Warbler (1608-1611)	*Phylloscopus reguloides* (Blyth, 1842)		+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
542.	Black-browed Leaf-Warbler (1612)	*Phylloscopus cantator* (Tickell, 1833)					E		IV	RRS (5)
543.	Gold-spectacled Flycatcher-Warbler (1615)	*Seicercus burkii* (Burton, 1836)	+	+	+		+		IV	
544.	Whistler's Flycatcher-Warbler (1614)	*Seicercus whistleri* Ticehurst, 1925				E			?	
545.	Grey-headed Flycatcher-Warbler (1616-1619)	*Seicercus xanthoschistos* (G.R. Gray & J.E. Gray, 1846)	+	+	+	+	+		IV	BRS (08)
546.	Chestnut-crowned Flycatcher-Warbler (1621)	*Seicercus castaniceps* (Blyth, 1845)		E					IV	
547.	Striated Marsh-Warbler (1548)	*Megalurus palustris* Horsfield, 1821		+	+	+	+		IV	
548.	Bristled Grass-Warbler (1547)	*Chaetornis striatus* (Jerdon, 1841)		E				VU	IV	BRS (12)
549.	Greater Whitethroat (1566)	*Sylvia communis* (Latham, 1787)					+		IV	
550.	Common Lesser Whitethroat (1567-1568)	*Sylvia curruca* (Linnaeus, 1758)		+			+		IV	
551.	Orphean Warbler (1565)	*Sylvia hortensis* (Gmelin, 1789)		+			+		IV	
	58d. Flycatchers	**Muscicapinae**								
552.	Sooty Flycatcher (1405-1406)	*Muscicapa sibirica* Gmelin, 1789		+		+	+		IV	
553.	Asian Brown Flycatcher (1407)	*Muscicapa dauurica* Pallas, 1811		+		+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
554.	Rusty-tailed Flycatcher (1409)	*Muscicapa ruficauda* Swainson, 1838	+	+			+		IV	BRS (07)
555.	Slaty-backed Flycatcher (1418)	*Ficedula hodgsonii* (Verreaux, 1871)		E					IV	BRS (07)
556.	Orange-gorgeted Flycatcher (1414)	*Ficedula strophiata* (Hodgson, 1837)		+			+		IV	BRS (07)
557.	Red-throated Flycatcher (1411-1412)	*Ficedula parva* (Bechstein, 1792)		+		+	+		IV	
558.	Rufous-breasted Blue Flycatcher (1417)	*Ficedula hyperythra* (Blyth, 1842)		+	+		+		IV	
559.	Little Pied Flycatcher (1419-1420)	*Ficedula westermanni* (Sharpe, 1888)		+			+		IV	
560.	Ultramarine Flycatcher (1421-1422)	*Ficedula superciliaris* (Jerdon, 1840)		+			+		IV	BRS (07)
561.	Slaty-blue Flycatcher (1423-1425)	*Ficedula tricolor* (Hodgson, 1845)		+	+	+	+		IV	BRS (07)
562.	Verditer Flycatcher (1445)	*Eumyias thalassina* (Swainson, 1838)		+	+	+	+		IV	
563.	Dusky-blue Flycatcher (1444)	*Eumyias sordida* (Walden, 1870)			+	+			IV	
564.	Large Niltava (1428)	*Niltava grandis* (Blyth, 1842)					E		IV	
565.	Small Niltava (1429-1430)	*Niltava macgrigoriae* (Burton, 1836)		+	+	+	+		IV	BRS (08)

1	2	3	4	5	6	7	8	9	10	11
566.	Rufous-bellied Niltava (1431-1432)	*Niltava sundara* (Hodgson, 1837)		+	+	+	+		IV	BRS (07)
567.	Brooks's Flycatcher (1436-1438)	*Cyornis poliogenys* Brooks, 1879		+			+		IV	BRS (09)
568.	Pale Blue-Flycatcher (1439)	*Cyornis unicolor* Blyth, 1843					E		IV	
569.	Blue-throated Flycatcher (1440)	*Cyornis rubeculoides* (Vigors, 1831)					E		IV	
570.	Tickell's Blue-Flycatcher (1442-1443)	*Cyornis tickelliae* Blyth, 1843		+	+	+	+		IV	
571.	Grey-headed Flycatcher (1448-1449)	*Culicicapa ceylonensis* (Swainson, 1820)		+	+	+	+		IV	
	58e. Monarch-Flycatchers & Paradise-Flycatchers	**Monarchinae**								
572.	Asian Paradise-Flycatcher (1460-1464)	*Terpsiphone paradisi* (Linnaeus, 1758)	+	+	+	+	+		IV	
573.	Black-naped Monarch-Flycatcher (1465-1469)	*Hypothymis azurea* (Boddaert, 1783)		+	+	+	+		IV	
	58f. Fantail-Flycatchers	**Rhipidurinae**								
574.	Yellow-bellied Fantail-Flycatcher (1450)	*Rhipidura hypoxantha* Blyth, 1843		+	+	+	+		IV	
575.	White-throated Fantail-Flycatcher (1454-1459)	*Rhipidura albicollis* (Vieillot, 1818)	+	+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
576.	White-browed Fantail-Flycatcher (1451-1453)	*Rhipidura aureola* Lesson, 1830	+	+	+	+	+		IV	BRS (11)
	59. Long-tailed Tits	**Aegithalidae**								
577.	Red-headed Tit (1818-1820)	*Aegithalos concinnus* (Gould, 1855)	+	+	+	+	+		IV	BRS (08)
578.	White-throated Tit (1822)	*Aegithalos niveogularis* (Gould, 1855)			+	+			IV	RRS (4)
	60. Penduline-Tits	**Remizidae**								
579.	Fire-capped Tit (1815-1816)	*Cephalopyrus flammiceps* (Burton, 1836)		+	+	+	+		IV	BRS (07)
	61. Tits	**Paridae**								
580.	Simla Crested Tit (1804)	*Parus rufonuchalis* Blyth, 1849		+		+	+		IV	BRS (07)
581.	Rufous-bellied Crested Tit (1805-1806a)	*Parus rubidiventris* Blyth, 1847			+	+			IV	BRS (07)
582.	Spot-winged Crested Tit (1802)	*Parus melanolophus* Vigors, 1831		+	+	+			IV	BRS (07)
583.	Brown Crested Tit (1807-1808)	*Parus dichrous* Blyth, 1844			+	+			IV	BRS (07)
584.	Great Tit (1790-1797)	*Parus major* Linnaeus, 1758	+	+	+	+	+		IV	

1	2	3	4	5	6	7	8	9	10	11
585.	Green-backed Tit (1799)	*Parus monticolus* Vigors, 1831		+	+	+	+		IV	BRS (07)
586.	Black-lored Yellow Tit (1809-1811)	*Parus xanthogenys* Vigors, 1831		+	+	+	+		IV	
587.	Yellow-browed Tit (1813-1814)	*Sylviparus modestus* Burton, 1836				E			IV	BRS (07)
	62. Nuthatches, Wallcreeper	**Sittidae**								
588.	Chestnut-bellied Nuthatch (1827-1831)	*Sitta castanea* Lesson, 1830	+	+	+	+	+		?	
589.	White-tailed Nuthatch (1834-1835)	*Sitta himalayensis* Jardine & Selby, 1835		+	+	+	+		?	BRS (07)
590.	White-cheeked Nuthatch (1832-1833)	*Sitta leucopsis* Gould, 1850	+		+	+			?	BRS (07)
591.	Velvet-fronted Nuthatch (1838)	*Sitta frontalis* Swainson, 1820	+	+	+	+	+		?	
592.	Wallcreeper (1839)	*Tichodroma muraria* (Linnaeus, 1766)	+	+	+	+	+		?	BRS (05)
	63. Tree-Creepers, Creepers	**Certhiidae**								
593.	Eurasian Tree-Creeper (1842-1844)	*Certhia familiaris* Linnaeus, 1758			+	+			?	
594.	Bar-tailed Tree-Creeper (1845-1848)	*Certhia himalayana* Vigors, 1832		+	+	+	+		?	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
	64. Flowerpeckers	**Dicaeidae**								
595.	Thick-billed Flowerpecker (1892-1894)	*Dicaeum agile* (Tickell, 1833)		+	+	+	+		IV	
596.	Yellow-bellied Flowerpecker (1896)	*Dicaeum melanoxanthum* (Blyth, 1843)			+	+			IV	BRS (07)
597.	Tickell's Flowerpecker (1899-1900)	*Dicaeum erythrorhynchos* (Latham, 1790)		+	+	+	+		IV	
598.	Fire-breasted Flowerpecker (1905)	*Dicaeum ignipectus* (Blyth, 1843)		+	+	+			IV	
	65. Sunbirds & Spiderhunters	**Nectariniidae**								
599.	Purple Sunbird (1916-1918)	*Nectarinia asiatica* (Latham, 1790)	+	+	+	+	+		IV	
600.	Mrs. Gould's Sunbird (1919-1921)	*Aethopyga gouldiae* (Gould, 1831)		+	+	+			IV	
601.	Green-tailed Sunbird (1922-1924)	*Aethopyga nipalensis* (Hodgson, 1836)		+			+		IV	
602.	Black-throated Sunbird (1925-1926)	*Aethopyga saturata* (Hodgson, 1836)		+	+	+			IV	BRS (08)
603.	Crimson Sunbird (1927-1929a)	*Aethopyga siparaja* (Raffles, 1822)		+	+	+	+		IV	
604.	Fire-tailed Sunbird (1930)	*Aethopyga ignicauda* (Hodgson, 1836)		+	+	+			IV	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
	66. White-eyes	**Zosteropidae**								
605.	Oriental White-eye (1933-1936)	*Zosterops palpebrosus* (Temminck, 1824)	+	+	+	+	+		?	
	67. Buntings	**Emberizinae**								
606.	Crested Bunting (2060)	*Melophus lathami* (Gray, 1831)		+		+	+		IV	
607.	Pine Bunting (2042)	*Emberiza leucocephalus* Gmelin, 1771		+	+	+	+		IV	
608.	Rock Bunting (2051-2052)	*Emberiza cia* Linnaeus, 1766		+		+			IV	
609.	White-capped Bunting (2048)	*Emberiza stewarti* (Blyth, 1854)		+	+	+	+		IV	
610.	Striolated Bunting (2057)	*Emberiza striolata* (Lichtenstein, 1823)					E		IV	
611.	Grey-headed Bunting (2055-2055a)	*Emberiza fucata* Pallas, 1776		+		+	+		IV	
612.	Little Bunting (2056)	*Emberiza pusilla* Pallas, 1776					E		IV	
613.	Chestnut Bunting (2045)	*Emberiza rutila* Pallas, 1776					E		IV	
614.	Red-headed Bunting (2044)	*Emberiza bruniceps* Brandt, 1841		E					IV	
615.	Black-faced Bunting (2047)	*Emberiza spodocephala* Pallas, 1776		+			+		IV	
616.	Corn Bunting (2041)	*Miliaria calandra* Linnaeus, 1758		E					IV	
	68. Finches	**Fringillidae**								
617.	Chaffinch (1979)	*Fringilla coelebs* Linnaeus, 1758		+			+		IV	
618.	Fire-fronted Serin (1998)	*Serinus pusillus* (Pallas, 1811)		+		+	+		IV	
619.	Yellow-breasted Greenfinch (1990, 1992)	*Carduelis spinoides* Vigors, 1831		+	+	+	+		IV	(07)

1	2	3	4	5	6	7	8	9	10	11
620.	Eurasian Goldfinch (1987-1989)	*Carduelis carduelis* (Linnaeus, 1758)		+	+	+	+		IV	BRS
621.	Hodgson's Mountain-Finch (1999-2000)	*Leucosticte nemoricola* (Hodgson, 1836)				E			IV	(05) BRS
622.	Black-headed Mountain-Finch (2001-2005)	*Leucosticte brandti* Bonaparte, 1850				E			IV	(05) RRS
623.	Spectacled Finch (1997)	*Callacanthis burtoni* (Gould, 1838)			+	+			IV	(4) BRS
624. (2014-	Dark-breasted Rosefinch 2015)	*Carpodacus nipalensis* (Hodgson, 1836)			+	+			IV	(07)
625.	Common Rosefinch (2010-2013)	*Carpodacus erythrinus* (Pallas, 1770)		+	+	+	+		IV	BRS
626.	Beautiful Rosefinch (2023-2024)	*Carpodacus pulcherrimus* (Moore, 1855)				+			IV	(05) BRS
627.	Pink-browed Rosefinch (2017)	*Carpodacus rodochrous* (Vigors, 1831)		+	+	+			IV	(07) BRS
628.	Spot-winged Rosefinch (2019)	*Carpodacus rodopeplus* (Vigors, 1831)			+	+			IV	(07) BRS
629.	Red-mantled Rosefinch (2018)	*Carpodacus rhodochlamys* (Brandt, 1843)			+	+			IV	(05) BRS
630.	White-browed Rosefinch (2020-2022)	*Carpodacus thura* Bonaparte & Schlegel, 1850		+	+			IV		(07)

1	2	3	4	5	6	7	8	9	10	11
631.	Common Great Rosefinch (2027)	*Carpodacus rubicilla* (Guldenstadt, 1775)				E			IV	BRS (05)
632.	Red-fronted Rosefinch (2029-2031)	*Carpodacus puniceus* (Blyth, 1845)				E			IV	BRS (05)
633.	Red Crossbill (2032)	*Loxia curvirostra* Linnaeus, 1758				E			IV	
634.	Brown Bullfinch (2036-2037)	*Pyrrhula nipalensis* Hodgson, 1836				E			IV	BRS (07)
635.	Red-headed Bullfinch (2039)	*Pyrrhula erythrocephala* Vigors, 1832				E			IV	BRS (07)
636.	Black-and-Yellow Grosbeak (1982)	*Mycerobas icterioides* (Vigors, 1831)			+	+			IV	BRS (07)
637.	Collared Grosbeak (1983)	*Mycerobas affinis* (Blyth, 1855)			+	+			IV	BRS (07)
638.	Spotted-winged Grosbeak (1986)	*Mycerobas melanozanthos* Hodgson, 1836				E			IV	BRS (07)
639.	White-winged Grosbeak (1984-1985)	*Mycerobas carnipes* (Hodgson, 1836)				E			IV	BRS (07)
640.	Gold-naped Black Finch (2035)	*Pyrrhoplectes epauletta* (Hodgson, 1836)				E			IV	BRS (07)

1	2	3	4	5	6	7	8	9	10	11
	69. Munias (Estrildid Finches)	**Estrildidae**								
641.	Red Munia (1964)	*Amandava amandava* (Linnaeus, 1758)		+	+	+	+		IV	
642.	White-throated Munia (1966)	*Lonchura malabarica* (Linnaeus, 1758)		+	+	+	+		IV	
643.	White-rumped Munia (1967-1970)	*Lonchura striata* (Linnaeus, 1766)					E		IV	
644.	Spotted Munia (1974-1975)	*Lonchura punctulata* (Linnaeus, 1758)	+	+	+	+	+		IV	
645.	Black-headed Munia (1976-1978)	*Lonchura malacca* (Linnaeus, 1766)		+	+	+	+		IV	
	70a. Sparrows & Snowfinc.hes	**Passerinae**								
646.	House Sparrow (1938-1939a)	*Passer domesticus* (Linnaeus, 1758)	+	+	+	+	+		IV	
647.	Cinnamon Tree Sparrow (1946-1947)	*Passer rutilans* Temminck, 1835		+	+	+	+		IV	
648.	Eurasian Tree Sparrow (1941-1944)	*Passer montanus* (Linnaeus, 1758)		+					IV	
649.	Yellow-throated Sparrow (1948-1949)	*Petronia xanthocollis* (Burton, 1838)		+	+	+	+		IV	
	70b. Weavers	**Ploceinae**								
650.	Black-breasted Weaver (1961)	*Ploceus benghalensis* (Linnaeus, 1758)		+	+	+	+		IV	BRS (12)
651.	Streaked Weaver (1962-1963)	*Ploceus manyar* (Horsfield, 1821)		+	+	+	+		IV	
652.	Baya Weaver (1957-1959)	*Ploceus philippinus* (Linnaeus, 1766)	+	+	+	+	+		IV	
653.	Finn's Weaver (1960-1960a)	*Ploceus megarhynchus* Hume, 1869		+	+	+		VU	IV	BRS (12)

1	2	3	4	5	6	7	8	9	10	11
	71. Starlings & Mynas	**Sturnidae**								
654.	Spot-winged Starling (984)	*Saroglossa spiloptera* (Vigors, 1831)		+	+	+	+		IV	BRS (08)
655.	Grey-headed Starling (987-989)	*Sturnus malabaricus* (Gmelin, 1789)	+	+	+	+	+		IV	BRS (11)
656.	Brahminy Starling (994)	*Sturnus pagodarum* (Gmelin, 1789)	+	+	+	+	+		IV	BRS (11)
657.	Rosy Starling (996)	*Sturnus roseus* (Linnaeus, 1758)		E					IV	
658.	Common Starling (997-1001)	*Sturnus vulgaris* Linnaeus, 1758		+		+	+		IV	
659.	Asian Pied Starling (1002-1004)	*Sturnus contra* Linnaeus, 1758	+	+	+	+	+		IV	
660.	Common Myna (1006-1007)	*Acridotheres tristis* (Linnaeus, 1766)	+	+	+	+	+		IV	
661.	Bank Myna (1008)	*Acridotheres ginginianus* (Latham, 1790)	+	+	+	+	+		IV	BRS (11)
662.	Jungle Myna (1009-1011)	*Acridotheres fuscus* (Wagler, 1827)	+	+	+	+	+		IV	
663.	Common Hill-Myna (1015, 1017; 1018)	*Gracula religiosa* Linnaeus, 1758		+	+	+	+		IV	
	72. Orioles	**Oriolidae**								
664.	Eurasian Golden Oriole (952-953)	*Oriolus oriolus* (Linnaeus, 1758)	+	+	+	+	+		IV	
665.	Black-headed Oriole (958-960a)	*Oriolus xanthornus* (Linnaeus, 1758)	+	+	+	+	+		IV	
666.	Maroon Oriole (961)	*Oriolus traillii* (Vigors, 1832)	+	+			+		IV	BRS (08)

1	2	3	4	5	6	7	8	9	10	11
	73. Drongos	**Dicruridae**								
667.	Black Drongo (962-964)	*Dicrurus macrocercus* Vieillot, 1817	+	+	+	+	+		IV	
668.	Ashy Drongo (965-966b)	*Dicrurus leucophaeus* Vieillot, 1817	+	+	+	+	+		IV	
669.	White-bellied Drongo (967-969)	*Dicrurus caerulescens* (Linnaeus, 1758)		+	+	+	+		IV	BRS (11)
670.	Crow-billed Drongo (970)	*Dicrurus annectans* (Hodgson, 1836)	+		+	+			IV	BRS (09)
671.	Bronzed Drongo (971)	*Dicrurus aeneus* Vieillot, 1817		+	+	+	+		IV	
672.	Lesser Racket-tailed Drongo (972)	*Dicrurus remifer* (Temminck, 1823)	+	+	+	+	+		IV	
673.	Spangled Drongo (973)	*Dicrurus hottentottus* (Linnaeus, 1766)	+	+	+	+	+		IV	
674.	Greater Racket-tailed Drongo (976-981)	*Dicrurus paradiseus* (Linnaeus, 1766)		+	+	+	+		IV	
	74. Woodswallows/Swallow-Shrikes	**Artamidae**								
675.	Ashy Woodswallow (982)	*Artamus fuscus* Vieillot, 1817		+	+	+	+		?	BRS (11)
	75. Crows, Jays, Treepies, Magpies	**Corvidae**								
676.	Eurasian Jay (1020-1021)	*Garrulus glandarius* (Linnaeus, 1758)		+	+	+	+		IV	
677.	Black-headed Jay (1022)	*Garrulus lanceolatus* Vigors, 1831		+	+	+	+		IV	BRS (08)

1	2	3	4	5	6	7	8	9	10	11
678.	Yellow-billed Blue Magpie (1025-1026)	*Urocissa flavirostris* (Blyth, 1846)			+	+			IV	BRS (07)
679.	Red-billed Blue Magpie (1027-1028)	*Urocissa erythrorhyncha* (Boddaert, 1783)	+	+	+	+	+		IV	
680.	Common Green Magpie (1023)	*Cissa chinensis* (Boddaert, 1783)	+	+	+	+	+		IV	
681.	Indian Treepie (1030a-1034)	*Dendrocitta vagabunda* (Latham, 1790)	+	+	+	+	+		IV	
682.	Grey Treepie (1037-1039)	*Dendrocitta formosae* Swinhoe, 1863	+	+	+	+	+		IV	BRS (08)
683.	Spotted Nutcracker (1042-1044)	*Nucifraga caryocatactes* (Linnaeus, 1758)			+	+			IV	
684.	House Crow (1048-1051)	*Corvus splendens* Vieillot, 1817	+	+	+	+	+		V	
685.	Jungle Crow (1054-1057)	*Corvus macrorhynchos* Wagler, 1827	+	+	+	+	+		IV	
	Total		209	538	493	527	494			
	Exclusive Species (E)			40	3	18	19			
	Stray Records (*)			2	-	-	-			
	Grand Total		209	580	496	545	513			

Abbreviatons used in the table

'+' = Present; E = Exclusive; '*' = Stray Record; CR = Critical; EN = Endangered; VU = Vulnerable; NT = Near Threatened; ? = not known

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REPTILIA

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INTRODUCTION

The reptiles of Corbett Tiger Reserve (CTR) have been listed previously by Walter (1974), Chopra 1979, Sanyal *et al.,* 1979, Singh and Gupta 1979a & b; Bedi, 1985, Singh 1986, Lamba 1987, Khati 2004 and Khanna & Kumar 2005.

The present paper deals with the systematic account of 39 species belonging to 31 genera, 13 families, under three orders from CTR. The account has been prepared on the basis of various sources such as field collections and observations, local enquiries and available literature, etc.

The conservation status of the species dealt along with their status under Indian Wildlife (Protection), Act 1972 have been assigned as per the IUCN Red list 2004 for Indian species seggregated recently by Kumar and Khanna (2006).

SYSTEMATIC ACCOUNT

1. Order SQUAMATA

1. Suborder SAURIA

1. Family GEKKONIDAE

1. ***Hemidactylus brooki*** Gray **Spotted Indian House Gecko**

1845. *Hemidactylus brooki,* Gray, *Cat. Liz. Brit. Mus.,* : 153. (Type Locality : Borneo).

Distribution : India : Widely distributed.

Elsewhere : Sri Lanka, Borneo, Pakistan Myanmar, South China, West Indies, Tropical Asia & Northern Half of Africa.

Status : Very Common.

2. ***Hemidactylus flaviviridis*** Ruppell - **Yellow-bellied House Gecko**

1835. *Hemidactylus flaviviridis*, Ruppell, *Neue Wirb. Faun. Abyss* : **18**, Pl, 6-2. (Type Locality : .Massauna Is. Eritrea).

Distribution : India : Entire India but widely distributed in North India.

Elsewhere : Arabia, Pakistan, Iran and shores of the Red Sea..

Status : Most Common.

3. ***Hemidactylus leschenaulti*** Domeril & Birborn - **Bark Gecko**

1836. *Hemidactylus leschenaulti,* Dum. & Bibr. *Erp. Gen.* **3** : 364 (Type Locality : Sri Lanka).

Distribution : India, Peninsular India; Rajasthan, West Bengal..

Elsewhere : Sri Lanka, Pakistan.

Status : Abundant.

4. ***Cyrtodactylus fasciolatus*** (Blyth) - **Rock Gecko**

1860. *Naultinus fasciolatus,* Blyth, *J. Asiat. Soc.* Beng. **29** : 114 (Type Locality : Subathu, Simla dist.).

Distribution : India : Western Himalayas (Himachal Pradesh & Uttarakhand)

Material examined : Nimboo boaji, Khinanauli, F.C. No. 11,1ex ,22.vi.2002, C.Reg.No 4374, Coll J.P. Sati & party; Dhara Sot near Jhirna , F.C.No 83, 2exs., 2.iii.2005, C.Reg.No. 384, Coll A.N. Rizvi, & party; Jhirna and around, F.C.No. 115, 1 ex, 29.vi.2006, C.Reg.No. 4480, Coll J.P. Sati & Party.

Status : Rare

Remarks : This lizard has been observed on rocks up to 600 meters near Kumaon. Its food comprises a variety of insects.

5. ***Cyrtodactylus lawderanus*** (Stoliczka) - **Bent toed Gecko**

1871. *Gymnodactylus lawderanus,* Stoliczka, *P. Asiat. Soc. Beng.* : 194.

Distribution : India : Western Himalaya (Himachal Pradesh, Uttarakhand and Haryana).

Status : Very common.

Remarks : The species is not so agile, nocturnal, insectivorous and rock dwelling.

2. Family AGAMIDAE

6. ***Calotes versicolor*** Smith - Indian Garden Lizard

1802. *Agama versicolor,* Daudin, *Hist. Nat. Rept.* **3** : 395, pl. 44 (Type Locality : India).

1853. *Calotes versicolor,* Jerdon, *J. Asiat. Soc. Beng.* **22** : 470.

Distribution : India : Entire India.

Material examined : Nakka Tal, near Malani, F.C. No. 45, 2 exs., 19.i.2004, C. Reg. No 4730, Coll. V. Khanna & party

Elsewhere : Sumatra to South China, Sri Lanka, Pakistan and Afghanistan.

Status : Most common throughout its range.

7. ***Laudakia tuberculata*** Hardwicke & Gray - **Common Rock Lizard**

1827. *Agama tuberculata,* Hardwicke and Gray, 2001. *Journ.* **3** : 218 (Type Locality : Bengal).

Distribution : India : Jammu & Kashmir, Himachal Pradesh, Uttarakhand

Elsewhere : Pakistan, Nepal and Afghanistan.

Status : Not Endangered.

8. ***Japalura kumaonensis*** (Annandale) **Kumaon Mountain Lizard**

1907. *Acanthosaura kumaonensis* Annandale, *Rec. Ind. Mus.,* **1** : 152 (Type Locality : Nainital, W. Himalayas).

1935. *Japalura kumaonensis*, Smith, *Fauna Brit. Ind.,* **2** : 171.

Distribution : India : Western Himalayas (Uttarakhand : Almora, Nainital, Kumaon).

Status : In-determinate.

3. Family SCINCIDAE

9. ***Scincella himalayanum*** (Gunther) **Himalayan Skink**

1864. *Eumeces himalayanus,* Gunther, *Rept. Brit. Ind* : **86,** pl. 10- fig. H (Type Locality : W. Himalayas).

Distribution : India : Kashmir, Himachal Pradesh (Simla), Uttarakhand

Material examined : Sultan Forest Rest house, F.C. No. 10, 3 exs.. 17.i.2004, C. Reg. No.4695, Coll V. Khanna & party; Nakka Tal, near Malani, F.C.No. 45, 2 exs., 19. i.2004, C. Reg. No 4730, Coll. V. Khanna & party.

Elsewhere : Pakistan, Nepal, S. Turkistan

Status : Very common in certain areas of its range.

10. ***Riopa punctata*** (Linnaeus) - **Dotted Garden Skink**

1799. *Scincus punctatus,* Gmelin, *Hist. Amphib.,* : 197, (based on Seba's fig. 2, pl. 12- fig. 6).

1935. *Riopa punctata,* Smith, *Fauna Brit. Ind.,* **2** : 318.

Distribution : India : Almost whole of India.

Elsewhere : Sri Lanka and Man-son mountains, Tonking.

Material examined : Kalagarh FRH, F.C. No. 69, 1 ex., 23.i.2004, C.Reg. No. 4754, Coll. V. Khanna & party.

Status : Common in areas of its range

4. Family VARANIDAE

11. ***Varanus bangalensis*** (Daudin) - **Monitor Lizard**

1758. *Lacerta monitor,* Linnaeus, *Syst. Nat. ed.* **10** : 201 (Type Locality : India).

1885.*Varanus bengalensis,* Boulenger, *Cat. Liz. Brit. Mus.,* **2** : 310.

1966.*Varanus bengalensis,* Minton, *Bull. Amer. Mus. nat. Hist.,* **134** : 112.

Distribution : Whole of India.

Elsewhere : Myanmar; Sri Lanka; Pakistan (Wazziristan and most of other parts), Nepal and Uzbekistan.

Status : Endangered. WPA Schedule II

Remarks : They are killed in large numbers for their skin and flesh. The flesh of this lizard is considered a delicacy and consumed by many people, throughout its range. Their eggs are also eaten in large numbers at various places.

2. Suborder SERPENTES

5. Family TYPHLOPIDAE

12. ***Ramphotyphlops braminus*** (Daudin) - **Common Blind Snake, Worm Snake**

1796. Russell, *Ind. Serp.,* **1** : 48, pl. 43. (Vizagapatam).

Distribution : Whole of South Asia. Introduced worldwide.

Material examined : Sarapduli FRH, F.C. No. 29, 1 ex, 18.i.2004, C. Reg. No. 4714, Coll. V. Khanna & party; Nakka Tal, near Malani, F.C. No. 44, 5 exs., 19.i.2004, C. Reg. No.4729, Coll. V. Khanna & party.

Status : Fairly common WPA Schedule III

Remarks : Spends most of its life underground. Often occurs under stone, flowerpots and slightly damp earth. Also found in termite mounds and encountered in bathrooms and houses. Feeds on ants, other small insects and their larvae. It is one of the few parthenogenic snakes known. No males have ever been found. As the females can lay fertile eggs without mating, the species is distributed very widely even to snake less islands like Lakshadweep, New Zealand and Hawaii (Whitaker and Captain 2004).

13 .*Typhlops porrectus* Stoliczka - **Slender Blind Snake**

1871. *Typhlops porrectus,* Stoliczka, *Journ .Asiatic. Soc*, Bengal, **40** : 426, pl. 25-figs. 1-4 (Bengal : types lost).

Distribution : India : Whole of India.

Status : Fairly common.

Remarks : This is nocturnal worm snake leading a subterranean life, hiding from below stones, wooden logs and lives in association with various small insects like earwigs, silverfish and spiders.

6. Family BOIDAE

Subfamily PYTHOINAE

14. *Python molurus molurus* (Linnaeus) - **Indian Rock Python**

1758. *Coluber molurus,* Linn. *Syst. Nat.*, **10th** ed. : 225

1890. *Python molurus,* Boulenger, *Fauna of British India*, : 246

1893. *Python molurus,* Boulenger, *Cat. Sn. Brit. Mus.*, **1** : 87

Distribution : Throughout India (except the Islands) up to 2000 m (6560 ft) above sea level. Common in parts of its range.

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

Status : WPA Schedule I (II)

Remarks : The animal is killed for skin and flesh.

Subfamily BOINAE

15. *Gongylophis conicus* (Schneider) **Common Sand Boa**

1801. *Boa conica,* Schneider, *Hist. Amphib.*, **2** : 268

1893 *Eryx conicus,* Boulenger *Cat.Sn. Brit. Mus.*, **1** : 124

Distribution : Throughout India (excluding the Northeast and the Andaman & Nicobar Islands).

Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka.

Status : Fairly common. WPA Schedule III.

16. ***Eryx johnii johnii*** (Russell) - **Red Sand Boa, John's Sand Boa**

1801 *Boa johnii,* Russell, *Ind. Serp.*, **2**, 18 & 20, pls 16 & 17 (Tranquebar)

1923 *Eryx johni johni,* Ingoldby *J. Bombay n.at. Hist. Soc.*, **29** : 127.

Distribution : India : throughout drier zones of the peninsula and the Northwest.

Elsewhere : Pakistan and Nepal.

Status : It is very common throughout its range. WPA Schedule III.

7. Family COLUBRIDAE

17. ***Trachischium leave*** Perracca - **Olive Oriental Slender Snake**

1904. *Trachischium leave*, Perracca, *Rev. Suisse Zool* Geneva, **12** : 665 (Indes Orientales : Geneva)

Distribution :India :Western Himalaya-Uttarakhand (Pauri, Almora, Mukteshwar and near Nainital). Found between 1650-2700 m (5410-8860 ft).

Elsewhere : Nepal.

Status : A rare snake, known from few examples. WPA Schedule III.

18. ***Lycodon aulicus*** (Linnaeus) - **Common Wolf Snake**

1754. *Coluber aulicus,* Linn, *Mus. Adolph.Frider*, **1** : 29, pl. 12, fig. 2

1864. *Lycodon aulicus,* Gunther, *Rept.Brit.Ind* : 316.

Distribution : India : Throughout India (including Lakshadweep but not the Andaman & Nicobar Islands).

Elsewhere : Pakistan, Nepal, Sri Lanka, Bangladesh and Myanmar.

Status : Fairly common. WPA Schedule III.

19. ***Ptyas mucosus mucosus*** (Linnaeus) **Indian Rat Snake**

1758. *Coluber mucosus*, Linn. *Mus. Ad. Frid.* **1** :37, Pl 23 and *Syst. Nat.*, Ed. **10** : 226

1864. *Ptyas mucosus, Gunther, Rept. Brit. Ind.*, : 249.

Distribution : Throughout South and Southeast Asia from sea level to 4000m (13,120 ft).

Status : WPA : Schedule II.

Remarks : Subjected to the commercial exploitation on account of its large scale killing for skin.

20. ***Argyrogena fasciolatus*** (Shaw) **Banded Racer**

1802. *Coluber fasciolatus,* Shaw, *Gen Zool.*, **3** : 528

Distribution : India : Most of the peninsular plains (from Baroda to Gwalior) to the Himalayas (south of Nepal, Uttarakhand); in the east to West Bengal south to Tirunelveli Common in parts of Maharashtra.

Elsewhere : Pakistan, Bangladesh and northern Sri Lanka.

Status : Uncommon. WPA Schedule III.

Remarks : Non venomous.

21. ***Argyrogena rhodorhachis*** (Jan)

1865. *Zamenis rhodorhachis,* Jan, *De Filippi, Viagg in Persia.* : 356, (Persia).

Distribution : India : throughout most of the peninsular plains (from Baroda to Gwalior) to the Himalayas, in the east to West Bengal south to Tirunelveli (except South East coast). Common in parts of Maharastra.

Elsewhere : Pakistan, Bangladesh and northern Sri Lanka.

Status : Uncommon. WPA Schedule III.

Remarks : Non venomous.

22. ***Argyrogena ventromaculatus*** (Gray & Hardwicke) **Glossy bellied Racer**

1834. *Coluber ventromaculatus,* Gray & Hardwicke, *Ind. Zool*, **2,** pl 80- fig. 1.

Type Locality : London.

Distribution : India : Jammu & Kashmir : Rajasthan (Sikar); Gujarat, Uttarakhand.

Elsewhere : Pakistan, Uzbekistan and Israel.

Status : WPA Schedule III

23. ***Orthriophis hodgsoni*** (Gunther) - **Himalayan Trinket Snake, Olive Brown Racer**

1890. *Coluber hodgsoni,* Boulenger *Fauna Brit. India,* 332

Distribution : India : Jammu & Kashmir (near Kargill, Ladakh, Sri Nagar, and Poonch), Northern Punjab, Himachal Pradesh (Simla, Dhramshala), Uttarakhand, Northern Uttar Pradesh and Bihar, West Bengal (Darjeeling), Sikkim, Meghalaya (Garo hills).

Elsewhere : Nepal, Tibet. Found between 1000-3200 m (3280-10,500 ft).

Status : Rare. WPA Schedule III.

24. ***Coelognathus helena helena*** (Daudin) - **Common Trinket Snake**

1803. *Coluber helena,* Daudin, *Hist. Nat. Rept.,* **6** : 277 (based on Russell's plate)

Distribution : Throughout India, up to Jammu and Kashmir (Poonch) in the North to Manipur and the Naga Hills in the North East.

Elsewhere : Nepal, Bangladesh and Sri Lanka, Pakistan.

Status : Common. WPA : Schedule III

Remarks : During cooler months, it may be seen on leafy trees and bushes. Often seen near or in human habitation.

25. ***Xenochrophis piscator*** (Schneider) - **Checkered Keel Back**

1799. *Hydrus piscator,* Schneider, *Hist. Amph.,* **1** : 247 (East Indies)

Distribution : Throughout India and rest of South Asia except the Andaman & Nicobar Islands.

Material examined :Dhela Chaur, F.C. No. 87, 1 ex, 27.vi.2002, C. Reg. No. 4453, Coll : J.P. Sati & party.

Status : Common. WPA Schedule II.

Remarks : Non-Venomous

26. ***Boiga trigonata*** (Schneider) - **Common Cat Snake, Indian Gamma**

1802 *Coluber trigonatus,* Schneider in *Bechst.transl.Lacep,* **54** : 256, 40-fig.1 (Vizagapatam).

Distribution : Most of South Asia except Andaman & Nicobar Islands.

Status : Common. WPA Schedule III.

27. ***Boiga multifasciata*** (Blyth) - **Many Banded Cat Snake, Himalayan Cat Snake**

1861. *Dipsas multifasciata* Blyth, *Journ.Asiat. Soc.*, Bengal, **29** : 114 (Subathu, Simla).

Distribution : India : Jammu & Kashmir (Udhampur); Uttarakhand (Subathu, Mussoorie, Nainital, Mukteshwar, Pauri, Dehradun district), Himachal pradesh (Subathan) Eastern Himalayas - northwestern West Bengal (Darjeeling district) and Sikkim.

Elsewhere : Nepal.

Status : WPA Schedule III.

Remarks : It has been recorded between 610 m (2000 ft) and 2130 m (6990 ft).

Subfamily HOMALOPSINAE

28. ***Enhydris sieboldii*** (Schlegel) - **Siebold's Smooth-scaled Water Snake, Phoorsa**

1837. *Homalopsis sieboldii*, Schlegel, *Phys. Serp.*, **2** : 349. pl. 13 figs. 4 & 5 (Bengal; Leiden)

Distribution : India : Ganga, Yamuna, Brahmaputra rivers and their tributaries. Recorded from Delhi, Uttar Pradesh (Agra, Faizabad), Uttarakhand (Corbett Tiger Reserve), Madhya Pradesh (Sagar), Bihar (Patna, Purnea, and Champaran), West Bengal (Pusa) and Nagaland (Samaguting).

Elsewhere : Nepal, Bangladesh and Myanmar.

Status : Rare. WPA Schedule III

Remarks : Mildly Venomous

8. Family ELAPIDAE

Subfamily ELAPINAE

29. ***Bungarus fascinates*** (Schneider) **Banded Krait**

1801. *Pseudoboa fasciata,* Schneider, *Hist. Amph.* **2** : 283

Distribution : India : West Bengal, Bihar, Orissa, Assam upwards to Arunachal Pradesh. Also occurs in Maharashtra, parts of Madhya Pradesh, Northern Andhra Pradesh, Uttar Pradesh and Uttarakhand.

Elsewhere : Nepal, Bhutan, Myanmar, Thailand, Malaysia and China.

Common in parts of range. Found up to 1500 m (4920 ft).

Status : Common Snake in throughout its range, WPA Schedule III.

Remarks : Venomous

30. ***Bungarus coeruleus*** (Schneider) - **Common Indian Krait**

1801, *Pseudoboa caerulea,* Schneider, *Hist. Amphib.* **2** :.248

Distribution : Most of mainland India upto 1700m (5580ft), uncommon where the Banded Krait occurs.

Elsewhere : Pakistan, Nepal, Bangladesh and Sri Lanka

Status : Becoming rare on account of habitat loss. WPA Schedule III.

Remarks : Venomous.

31. ***Naja naja*** (Linnaeus) - **Indian Cobra**

1758. *Coluber naja,* Linn. *Syst. Nat.* **10th Ed.** : 221 based on Seba, Thes., **1**, 1734, pl. 44- figs 1 & 2, pls.85- fig 1 & 89, figs 1-4 & 90, figs 1-2 & 97, figs 1-4 (habitat in India)

Distribution : Throughout mainland (excluding the Northeast).

Elsewhere : Pakistan, Sri Lanka, Bangladesh, Nepal and Bhutan. (Found from sea level up to 6560ft).

Status : Common. WPA Schedule II.

Remarks : Venomous

32. ***Ophiophagus hannah*** (Cantor) - **Hamadryad - King Cobra**

1836. *Hamadryas hannah,* Cantor, *Asiat. Research,* **19** : 187, pls. 110-11 (Sunderbans, near Calcutta)

Distribution : India : Western Ghats, Uttarakhand, Uttar Pradesh (Terai), Bihar, Orissa, West Bengal and North East, Andaman Islands.

Elsewhere : Bangladesh, Bhutan, Nepal and Philippines.

Status : Rare. WPA Schedule II.

Remarks : Venomous.

9. Family VIPERIDAE

Subfamily VIPERINAE

33. ***Daboia russelli*** (Shaw) **Russell's viper**

1796. *Ind. Serp., Russell*, **1**, pl. 7 and 2, Pl 32

1797. *Coluber russelli*, Shaw, Atomics, 51, 8, pl.291 (based on Russell's figure)

1874. *Daboia russelli*, Fayrer, Thanatoph. Ind, pl. 11.

1890 .*Vipera russelli*, Boulenger, F.B.I. :420-fig.

Distribution : India : Throughout

Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka and parts of Southeast Asia (Myanmar, Thailand). Found up to 2756m (9040ft) above sea level.

Status : Common. WPA Schedule II.

Remarks : Venomous.

34. ***Echis carinatus*** (Schneider) **Saw scaled Viper, Phoorsa**

1801. *Pseudoboa carinata*, Schneider, *Hist. Amphib.*, **2** : 285 (based on Russell)

1874. *Echis carinata*, Fayrer, *Thanatoph. Ind.* Pl 12.

Distribution : India : throughout mainland (very common in some places) except West Bengal and the Northeast.

Elsewhere : Pakistan, Sri Lanka, reported up to 1500 m (4920 ft).

Status : Common.

Remarks : *Venomous.*

2. Order CHELONIA

10. Family BATAGURIDAE (**Asian Pond Turtle**)

35. ***Melanochelys tricarinata*** (Blyth) - **Three keeled Turtle**

1856. *Geoemyda tricarinata*, Blyth, *J. Asiat, Soc. Bengal*, 24 : 14 (Type Locality Chaibase district, Chota Nagpur)

Distribution : India : Bihar (Chota Nagpur), West Bengal, (Jalpaiguri district) and Assam (Dafla Hills and Bisnath Plain).

Threats. Threats to the species include large-scale exploitation of eggs and adults for food by the local tribals. Habitat destruction is another threat to the survival of this species.

Status : Indeterminate, probably vulnerable. WPA Schedule I; IUCN : VU; CITES – App. I

Remarks : The species inhabits the 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.

36. ***Melanochelys trijuga trijuga*** (Schweigger) - **Indian Snail-Eating Turtle**

1814 *Emys trijuga,* Schweigger, *Prodr. Monog.* Chel. **41** (Type Locality : Java)

Distribution : India : Goa, Karnataka, Kerala, Maharashtra and Tamil Nadu. It inhabits mainly the central portion of Indian peninsua1.

Threats : Threat to the subspecies is due to large scale exploitation of eggs and adults for food by local people. The habitat destruction also has an impact on the decline of this turtle.

Status : Suitable conservation measures have not so far been implemented for the protection of this turtle.

Remarks : This subspecies is mainly aquatic and completely vegetarian in habits. Nothing is known about the breeding habits.

11. Family TRIONYCHIDAE (**Soft Shell Turtles**)

37. ***Lissemys punctata punctata*** (Lacepede) - **North Indian Flap Shelled Turtle**

1788. *Lissemys punctata punctata,* Lacepede, *Rist. Quad Quip.* **1** : 171, pI. 11.

1931. *Lissemys punctata punctata,* Smith, *Fauna Brit. Ind.* 1 : 157

Distribution : India : Ganga river system, Sikkim, Kutch and Andaman Islands

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan (Sind river system) and Srilanka.

Threats : Suspected to be threatened on account of ruthless killing and overexploitation of adults and their eggs for protein-rich food. Habitat destruction is another principal factor of threat to the species. Predators like man, otters, mongooses, jackals and dogs frequently raid the nests of these turtles.

Status : WPA Schedule IV

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. Nothing is known about its breeding habits except that it lays 12 eggs in a single clutch.The construction of hydro- electric dams and barrages has greatly checked the movement of the turtles to its breeding ground.

3. Order CROCODILIA

12. Family GAVIALIDAE

38. ***Gavialis gangeticus*** (Gmelin) - **Ghariyal**

1789. *Gavialis,* Gmelin Oppel, *Ordn. Rept.* **19** (type *Crocodilus gangeticus* Cuvier)

1931. *Gavialis*, Smith, *Fauna Brit. Ind.*, **37**.

Distribution : India : Mainly restricted to the Himalaya-fed river system in the north of the Indian sub-continent, namely Sind, Ganga and Brahmaputra rivers and their tributaries. Gharial is also available in the Mahanadi River.

Elsewhere : Bangladesh, Nepal and Pakistan

Status : At present the population status of Gharial is critically low. Such a serious plight is mainly attributed to habitat modification and disturbance and to killing of animals for skin or in course of fishing operations. A secondary factor is collection of eggs for food by tribals. Both eggs and hatchlings are heavily predated by fish, jackals, and monitor lizards. A significant number of nests are destroyed by flooding. WPA Schedule I (II)

Remarks : Gharial prefers to live in deep fast flowing river with relatively clean water, high banks, deep pools and undisturbed sand banks at the river edge or in the mid river. Gharial basks on sand bank for long periods during winter, when water levels are low Dispersal , especially of juveniles, often occurs during monsoon flooding when Gharials move out of the mainstream into side creeks.Gharial feeds mainly on fish. Occasionally they supplement their fish diet by birds, dogs and other vertebrates.

This is the oldest living crocodilian and its ancestry can be traced back in India up to Pliocene of the Shiwalik Hills and Narbada valley. Its ancestors were the strong rulers of the scene and one of them, *Rhamphosuchus crasidens* was a gigantic crocodilian reaching a length up to 23 meters.

13. Family CROCODYLIDAE

39. ***Crocodylus palustris*** Lesson - **Crocodile**

1834. *Crocodylus palustris,* Lesson, in : Belang, *Vov. Ind. Or. Zool.*

Distribution : Marsh crocodile is available in scattered populations over most of India, except the state of Jammu and Kashmir, Himachal Pradesh and Punjab in the extreme north – west and also in the north–west desert regions. The eastern limit of distribution extends into Arunachal Pradesh. In India *C. palustris* still occurs in small-scattered and isolated populations in many states like Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Madhya Pradesh, Maharashtra, Orissa, Gujarat, Rajasthan, Uttar Pradesh, Bihar, Haryana and West Bengal.

Elsewhere : Bangladesh, Iran, Nepal, Pakistan and Sri Lanka

Status : In India main threats to survival of Mugger are Net (nylon grill) fishing which is usually set out in the evening and taken out 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, killing of crocodiles for medical use of crocodile parts and their eggs by human beings. WPA Schedule I (II), CITES-I..

Remarks : This sluggish crocodile can occur in any kind of freshwater habitat and are occasionally reported in brackish waters.

SUMMARY

39 species belonging to 31 genera, 13 families from three orders have been inventorised; their conservation status as per the IUCN Red list 2004 vis-a-vis their status under Indian Wildlife (Protection) Act 1972 has been discussed.

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AMPHIBIA

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INTRODUCTION

Husain (1995) inventoried 19 species of frogs and toads from Western Himalayas, that includes nine species from Corbett National Park. Chopra (1977) reported seven species of amphibians', *viz., Rana cyanophlyctes* Schneider, *Rana limnocharis* Weigman, *Rana breviceps* Schneider, *Rana crassa* Jerdon, *Microhyla ornata* (Dum. & Bibron), *Bufo andersonii* Boulenger, *Duttaphrynus melanostictus* Schneider, from Corbett National Park, representing three families.

The present study enumerates 10 species, representing 9 genera belonging to three families collected from various ecological niches like water bodies, ditches, pools, bushes and thick forests.

The nomenclature followed here is after Frost (2006).

SYSTEMATIC ACCOUNT

1. Family BUFONIDAE

1. *Duttaphrynus melanostictus* Schneider 1799 **Common Indian toad**

1799. *Bufo melanostictus,* Schneider, *Hist. Amph. J.* Iena : 216

Material examined : Gairal, Sanguri Soat, Aamgarhi Soat, 23.vi.2002, 27.vi.2002, Coll. J.P. Sati.

Diagnosis : There is considerable colour variation, but the species is easily identified by the presence of pronounced paratoid glands (a raised ridge behind the eye) and the lines of warts along the sides and ventrum. Pale yellow to brownish toad; head broader than long with bony cornifed black ridges; snout pointed, shorter than ocular diameter, nostrils at tip of snout; eyes large, interorbital width more than the height of upper eyelid; tympanum

large and circular; paratoid glands long, kidney-shaped; toes nearly two-third webbed; premaxillaries overlapped by nasals; suprascapula equals scapula in width; clavicles rod-like and held almost at an angle of 40 degree.

Distribution : Ranges from Sri Lanka to Southern China, and down through Thailand, West Malaysia and Singapore western Indonesia and the island of Borneo.

Remarks : One of the commonest of true toads in Southeast Asia, it occurs in a variety of habitats in both rural and urban areas. At night it can easily be found on grass lawns, and on paths and roads. Concretized drains are also a favored habitat, and the species can withstand brackish water.

2. ***Duttaphrynus himalayanus*** Gunther - **Himalayan toad**

1864. *Bufo melanostictus* var. *Bufo himalayanus,* Gunther *Rep. Brit. India* : 422

Material examined : Dhela Forests, Sanguri, 23.vi.2002 and 28.vi.2002, Coll. J.P. Sati.

Diagnosis : Dirty white to grayish toad; bony ridges on head prominent but not cornfied, head much wider than long, rounded anteriorly; snout obtusely pointed, nearly one-third in head length, smaller than eye; nostrils in the anterior part of snout; eyes large, interorbital width more than that of height of upper eyelid; tympanum very small paratoid gland twice long than broad; premaxillaries not overlapped by nasals; clavicles held approximately at an angle of 30 degree.

Distribution : Himalayan region of India.

3. ***Bufo stomaticus*** Lutken 1864 - **Indus Valley toad**

1864. *Bufo stomaticus,* Lutken, *Vidensk. Medd. Naturhist. Foren.,* Ser., **2** : 4 : 305.

1871. *Bufo andersonii,* Boulenger, *Ann. Mag. nat. Hist. Ser.,* **12**(5) xii : 163

Material examined : Gairal, Aamgarhi Soat. 23.vi.2002, Sanguri Soat, Thimmer, 27.vi.2002, Coll. J.P. Sati

Diagnosis : Dirty white to grayish toad; a whitish tubercle at the angles on lower and upper jaws; bony ridges on head absent, head slightly wider than long; snout obtusely pointed, nostrils nearer the anterior part of snout; eyes large and prominent, interorbital width narrow; tympanum large and circular; first finger longer than second; hind limbs short, tarsal fold absent, ties two-third webbed; premaxillaries slightly overlapped by nasals; clavicles held almost at an angle of 30 degree each.

Distribution : This species is widely distributed in Pakistan, India, Nepal and Bangladesh.

Remarks : Found in a wide variety of habitats including; open plains, grasslands, scrubland, forest, suitable agricultural land and human habitations. Breeding occurs in permanent and seasonal pools and slow-flowing streams. Adults hide under rocks and in crevices. It is a very adaptable species that may be found in houses.

2. Family MICROHYLIDAE

4. *Microhyla ornata* Dumm. & Bibron, 1821 **Narrow mouthed Toad**

1841. *Engystoma ornatum*, Dummeril & Bibron, *Erpet. Genl.*, **VIII** : 745

Material examined : Dhela Forests, 2 ex., 28.vi.2002, Coll. J.P. Sati.

Diagnosis : Small-sized frogs; pink with specific black streak dorsally; head slightly broader than long; snout rounded and projecting beyond mouth; nostrils almost at the tip of the snout; eyes large, ocular diameter more than length of snout; tympanum indistinct; first finger smallest; subarticular tubercles of fingers prominent; two metacarpal tubercles well developed; inner metatarsal tubercle prominent; precoracoid not distinct, coracoids thin in the middle and broad distally; metasternum short; xiphisternum knob-like.

Distribution : Bangladesh; Bhutan; Cambodia; China; Hong Kong; India; Indonesia; Japan; Lao People's Democratic Republic; Macau; Malaysia; Myanmar; Nepal; Pakistan; Taiwan, Province of China; Thailand; Vietnam, India, Sri Lanka, Northeast Montane Regions, Thai-Lao, Southeast Asian Lowlands, Tenneserim, Sundaland, Sulawesi, Lesser Sunda and Philippines.

5. *Uperodon systoma* (Schneider, 1799) **Marbled balloon frog**

1799. *Rana systoma*, Hist. *Amph.*, **1** : 144

Material examined : Dhikala, 22.vi.2002, Coll. J.P. Sati.

Diagnosis : Smooth, shiny, toad-like form, head slightly broader than long; snout broadly pointed and shorter than ocular diameter; interorbital width twice the height of upper eyelid; a supratemporal fold from eye to shoulder, bifurcating posteriorly; first finger smaller than second, subarticular tubercles of fingers well developed, subarticular tubercle of toes moderately developed; inner and outer metatarsal tubercles well developed and subarticular tubercles of toes moderately developed; inner and outer metatarsal tubercles well developed and blade-like, outer metatarsal tubercle smaller than inner; suprascapula shorter in width than scapula, scapula broad, long at the supra-scapular articulation; clavicles, tomosternum and episternum absent.

Distribution : Southern and Eastern India as far north as the valley of the Ganges and Himachal Pradesh; Sri Lanka; presumably in western Bangladesh; reported from the foot of the Shakarparian Hills, Islamabad, Pakistan; reported for 15 km east of Mahendranagar, Nepal.

3. Family RANIDAE

6. ***Euphlyctis cyanophlyctis*** (Schneider, 1799)- **Indian Skipper Frog**

1799. *Rana cyanophlyctis ,Hist. Amph,* **1** : 137

2005. *Limnonectes cyanophlyctis, Fauna Punjab Shiwalik,* Punjab State Council for Science & Technology : 699.

Material examined : Dhikala, 12 exs., 22.vi.2002, Dhela Forests, 28.vi.2002, Coll. J.P. Sati

Diagnosis : Dark brown to olive green frog; head as long as wide arrow-shaped; snout obtusely pointed, nostrils equidistant from eyes and the anterior part of snout; eyes large, interorbital width smaller than upper eyelid; tympanum circular, two-third in ocular diameter; first finger nearly equals or smaller in length, finger pointed at tips, subarticular tubercles of the fingers weakly developed; hind limbs long; tips of toes blunt, toes completely webbed, inner metatarsal tubercle digitiform.

Distribution : The species is widely distributed from Arabia to South Asia and South-East Asia.

Remarks :The Indian Skipper frog or Skittering frog (*Euphlyctis cyanophlyctis*) is a common frog found in South Asia.They are slimy and are often seen at the edge of waterbodies with their eyes above the water.They noisily move away from the banks of the waterbodies when disturbed giving them their common name. They are rarely seen outside water.

7. ***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 : Dhikala, 12 exs., and Dhela Forests 22. vi. 2002, 28.vi.2002. Coll. J.P. Sati.

Diagnosis : 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 nearer the snout; eyes large, equal to length of snout, interorbital width equals height of upper eyelid; tympanum distinct, nearly half in the ocular diameter; a strong supratemporal fold from eye to tympanum and shoulder; first finger longer than second; subarticular tubercles of the fingers prominent; thee metacarpal tubercles at the base of palm; hind limb short; tibia slightly longer than femur; toes half-webbed..

Distribution : Eastern and western India, eastern Pakistan, Bangladesh, and Nepal, at low to moderate elevations.

8. ***Hoplobatrachus tigerinus*** (Daudin, 1802)- **Indian Bull Frog**

1802. *Rana tigerina, Hist. Rain. Gren Crep.*, 64

2005. *Dicroglossus tigerina, Fauna Punjab Shiwalik, Punjab State Council for Science & Technology,* 699

Material examined : Dhikala, 6 exs., 22.vi.2002, 28.vi.2002, Coll.J.P.Sati.

Diagnosis : Green or brown with yellow or black spots, a yellow vertebral streak from snout to vent; head as long as broad arrow-shaped, one-third in total length; snout long, projecting beyond mouth; nostrils nearer the anterior part of snout than eyes; ocular diameter less than length of snout, inter orbital width narrower than height of upper eyelid; fingers obtuse, subarticular tubercles prominent; tarsal fold distinct, inner metatarsal tubercles well developed; omosternum forked at the base. *Distribution* : This species is found throughout most wetland areas of India, Bangladesh and much of northern Pakistan, and is recorded from the southern parts of Nepal, and from upper and northern central Myanmar. It has also been reported from Afghanistan.

Remarks : A principally lowland species, it is found at elevations between 25 and 800 m ASL, over much of its range, although it may occur up to 2,000 m ASL in Nepal.

9. ***Sphaerotheca breviceps*** (Schneider, 1799) **Burrowing Frog**

1799. *Rana breviceps,* Schneider, *Hist. Amph. Nat.*, : 140

2005. *Tomopterna breviceps,* Schneider, Fauna Punjab Shiwalik, Punjab State Council for Science & Technology, 699

Material Examined : Dhikala, 4 exs., 22.vi.2002 and Dhela Forests 28.vi.2002, J.P. Sati Coll.

Diagnosis : A toad-like form; dark brown to white in color; head slightly broader than long; snout rounded, nostrils equidistant from eyes and anterior part of snout; ocular diameter equals to length of snout, inter orbital width narrower than height of upper eyelid; tympanum circular, more than half the diameter of the eye; a strong supra temporal fold from eye to shoulder; first finger longer than second and equalsthird, subarticular tubercles of fingers prominent; inner metatarsal tubercle bladelike.

Distribution : Bangladesh, India, Myanmar, Pakistan, and Sri Lanka.

Remarks : This burrowing frog inhabits relatively humid parts and is found in abundance along the Himalayan foothills in the northwest. It is essentially nocturnal emerging at dusk from of its burrow, which it excavates, in soft sandy soil with the help of its broad shovel-shaped inner metatarsal tubercle. It is insectivorous, and is often seen devouring centipedes and millipedes, which are common in its habitat.

10. *Nanorana minica* Dubois, 1975 – **Nepal Paa Frog**

1975. *Rana (Paa) minica* Dubois, *Bull. Mus. natn. Hist. nat.,* (3) 324.

Material examined : Dhikala, 2exs. 22.vi.2002, Coll. J.P. Sati

Diagnosis : Toad-like form, light brown to dark brown; head broader than long, nearly one-third in total length; snout pointed, long, projecting, less than ocular diameter, nostrils nearer the eye than anterior part of snout; inter orbital width wider than height of upper eyelid; tympanum indistinct; a supratemporal fold present; fore limbs short, first finger equals to second, subarticular tubercles of fingers well developed, tips of fingers with discs, metacarpal tubercles of palm weakly developed; hind limbs long, tarsal fold well developed, inner metatarsal tubercle small and at the base of first toe.

Distribution : This species is restricted to western Nepal and northern India (Himachal Pradesh and Uttarakhand). It is present between elevations of 1,000 - 2,400m ASL.

SUMMARY

The present study enumerates 10 species of frogs and toads, representing 9 genera belonging to three families from CTR.

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PISCES

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INTRODUCTION

Perusal of literature reveals only a few references on the fish fauna of Corbett Tiger Reserve. The important contributions to the knowledge on its environs have been made by Hamilton (1822), Day (1878), Hora (1937), Menon (1949, 1971), Chaudhri & Khandewal (1960), Tilak (1969), Pant (1970), Badola (1975), Bhatt *et al.* (1984), Bhatt & Pathak (1992), Husain (1995) and Uniyal (2006).

Husain (1976) reported 29 species of Pisces while Tilak & Husain (1980) described a new species *Barilius corbetti* from CTR, which was later, synonymised as *Raiamas bola* (*Barilius bola*) by Gupta (1983). Besides Johnsingh & Negi (1994) on Mahseer fishing in CTR, the other available references on fishes of CTR are by Khati (2001) and Kumar & Khanna (2005).

The present study is based on the material collected from CTR by the survey teams of ZSI during the years from 2002 to 2005. A total of 36 species of belonging to 22 genera, 8 families and 3 orders have been reported, of which seven species ,marked with asterisks (*) are the first record from the CTR.

The species includes the common names, first scientific reference, type locality and status as per CAMP (Conservation Action Management Plan 1998). Classification followed is after Nelson (1984) with slight modifications vide Talwar & Jhingran (1991) and Jayram (1999).

SYSTEMATIC ACCOUNT

1. Order CYPRINIFORMES

1. Family Cyprinidae

1. *Barilius barna* (Hamilton-Buchanan) **Hill Trout**

1822. *Cyprinius (Barilius) barna,* Hamilton-Buchanan, *Fish Ganges* : 268-269, 384. (Type locality : Yamuna and Brahmaputra rivers, extreme branches of Ganges).

Status : Lower Risk - near threatened (LRnt)

Material examined : Dhikala, Leed Khali Chaur, 2 exs., 22.vi.2002, Reg. No. 4379; Mohan, 5 exs., 17.i.2004, Reg. No. 4697; Jhirna FRH, 12 ex., 27.i.2004, Reg. No. 4734; Jhirna FRH & around, 25 exs.. 20.i.2002, Coll. *J.P. Sati* & Party.

Distribution : India : (Assam, Bengal, Bihar, Orissa and Uttarakhand).

Elsewhere : Pakistan.

Remarks : Inhabits clean water; some time used for aquarium purpose. Jaunsari tribes extract the juice of this fish for curing stomachache, Uniyal (2002).

2. ***Barilius bendelisis*** (Hamilton-Buchanan)- **Hill Trout**

1807. *Cyprinius bendelisis,* Hamilton-Buchanan, *J. Mysore*, **3** : 345 (Type Locality : Vedawati system, headwater of Krishna near Hariura, Mysore).

1822. *Cyprinius (Barilius) bendelisis,* Hamilton-Buchanan, Fish Ganges : **20** : 271.

Status : Lower Risk - near threatened (LRnt)

Material examined : Dhikala, Leed Khali, 46 exs., 22.vi.2002, Reg. No. 4379; Sanguri Sot, Gairal FRH, 80 exs., 23.vi.2002, Reg. No. 4399, Dulwa Sot, 6 km from Sultan on way to Dhikala, 7 exs., 25.iv.2002, Reg. No. 4413; Dhara Chaur & Sot 6 kms Jhirna-Kalagarh Road, 10 exs., 27.iv.2002; Reg. No. 4451; Kothirao, Jhirna, Dhela Beat, 27 exs., 27.vi.2002, Jhirna, Reg. No. 4456; Lal Dhang, Jhirna, 52 exs., 28.vi.2002, Reg. No. 4465; Pater Pani Sot, 6 km from Saddle Dam Road from Kalagarh, 10 exs., 29.iv.2002, Reg. No. 4485, *Coll. J.P. Sati & Party*; Bijrani, Garjia Sot, 20 exs., 3.iv.2003, Reg. No. 4612; Mohan Sot, 4 exs., 17.i.2004, Reg. No. 4697; Dhangarhi Gate on way Mohan 20 exs., 17.i.2004, Reg. No. 4700; Jhirna FRH, 9 exs., 20.i.2004, Reg. No. 4734; Dhara Sot, 9 exs., 22.i.2004, Reg. No. 4744; Kalagarh FRH & around, 1 ex., Reg. No. 4753, *Coll. V. Khanna & Party*; Bijrani Sot, 3 exs., 26.ii.2005, Reg. No. 5189; Kharar Sot, 25 exs., 28.ii.2005, Reg. No. 5201; Kothirao Sot, 4 km. from Jhirna FRH, 7exs., 1.iii.2005, Reg. No. 5310; Pater Pani Sot, 35 exs., 2.iii.2005, Reg. No. 5323, Coll. *A.N. Rizvi & Party.*

Distribution : Throughout India except Kerala.

Elsewhere : Nepal, Myanmar and Sri Lanka.

Remarks : It inhabits clean water; some time used for aquarium purpose. Jaunsari tribes extract the juice of this fish for curing stomachache. This fish exhibits sexual dimorphism.

3. ***Barilius vagra*** (Hamilton-Buchanan) - **Hill Trout**

1822. *Cyprinius (Barilius) vagra,* Hamilton- Buchanan, *Fish. Ganges* : 269-270, 385, (Type Locality : Ganga about Patna).

Status : Vulnerable (VU)

Material examined : Lal Dhang, 1 ex., 28.vi.2002, Reg. No. 4465; Pater Pani Sot, 6 km from Saddle Dam Road from Kalagarh, 1 ex., 29.iv.2002, Reg. No. 4485, Coll. *J.P. Sati & Party*; Bijrani, Garjia Sot, 8 exs., 3.iv.2003, Reg. No. 4612; Pater Pani Sot, 3 exs., 6.iv.2003, Bijrani, Garjia Sot, 20 exs., 3.iv.2003, Reg. No. 4648; Jhirna FRH, 17 exs., 20.i.2004, Reg. No. 4734; Pater Pani Sot, 1 ex., 21.i.2004, Reg. No. 4735; Coll. *V. Khanna & Party*; Bijrani Sot, 50 exs., 26.ii.2005, Reg. No. 5189; Kharar Sot, 8 exs., 28.ii.2005, Reg. No. 5201; Kothirao Sot, 4 km. from Jhirna FRH, 7 exs., 1.iii.2005, Reg. No. 5310, Coll. *A. N. Rizvi & 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. It juice is used for curing stomachache by the tribal of Jaunsar.

4. ***Brachydanio rerio*** (Hamilton-Buchanan) **Zebra Danio**

1822. *Cyprinius (Danio) rerio,* Hamilton- Buchanan,. *Fish. Ganges* : 323-324. (Type Locality : Kosi river).

Status : Lower Risk - near threatened (LRnt).

Material examined : Nimboo boaji Water hole, nr. Khinnnauli, 3 exs., 22.iv.2002, Reg. No. 4373; Dulwa Sot, 6 km from Sultan on way to Dhikala, 1 ex., 25.vi.2002, Reg. No. 4413, Coll. *J.P. Sati & Party*; Jhirna FRH & around, 3 exs., 20.i.2004, Reg. No. 4734, Coll. *V. Khanna & Party; Kothirao* Sot, 4 km from Jhirna FRH, 2 exs., 1.iii.2005, Reg. No. 5310, Coll. *A.N. Rizvi & Party.*

Distribution : West Bengal to Krishna river system in the south and Uttarakhand in North; *Elsewhere* : Bangladesh, Nepal and Pakistan. *Remarks* : It is a popular aquarium fish and found in pool of slow moving water.

5. ***Danio devario*** (Hamilton-Buchanan)

1822. *Cyprinius (Cabdio) devario,* Hamilton-Buchanan, *Fish. Ganges* : 341-342 (Type Locality : Rivers and ponds of Bengal).

Status : Lower Risk - near threatened (LRnt).

Material examined : Dhikala Road, Leed Khali Chaur, 3 exs., 22.vi.2002, Reg. No. 4379; Sanguri Sot, nr. Gairal FRH, 1 ex., 23.vi.2002, Reg. No. 4399, Coll. *J.P. Sati & Party.*

Distribution : India (Northern India).

Elsewhere : Bangladesh, Nepal and Pakistan.

Remarks : It is a popular aquarium fish also used for larvicidal purpose. It inhabits in clear water.

6. ***Esomus danricus*** (Hamilton- Buchanan) - **Flying Barb**

1822. *Cyprinius (Danio) danricus*, Hamilton- Buchanan, Fish. *Ganges* : 325-326. (Type Locality : Ponds & ditches of Bengal).

Status : Lower Risk least concern (LRlc)

Material examined : Dhikala Road, Leed Khali Chaur, 3 exs., 22.vi.2202, Reg. No. 4379; Sanguri Sot, nr. Gairal FRH, 1 ex., 23.vi.2002, Reg. No. 4399, Coll. *J.P. Sati & Party.*

Distribution : Throughout India.

Elsewhere : Bangladesh, Nepal, Myanmar, Sri Lanka and Pakistan.

Remarks : It is a popular aquarium fish also used for larvicidal purpose. It inhabits shallow water with thick vegetation.

7. ***Parluciosoma daniconius*** (Hamilton-Buchanan) - **Striped Rasbora**

1822. *Cyprinius (Danio) daniconius,* Hamilton-Buchanan, *Fish. Ganges* : 327-328. (Type Locality : rivers of southern Bengal)

Status : Lower Risk - near threatened (LRnt).

Material examined : Dhikala Road, Leed Khali Chaur, 3 exs., 22.vi.2202, Reg. No. 4379; Sanguri Sot, nr. Gairal FRH, 1 ex., 23.vi.2002, Reg. No. 4399, Coll. *J.P. Sati & Party*

Distribution : Throughout India.

Elsewhere : Myanmar, Sri Lanka and Pakistan.

Remarks : It is used for biological control of Mosquito larva and inhabits in clear and shallow water.

8. ***Raiamas bola*** (Hamilton- Buchanan) **Indian Trout**

1822. *Cyprinius (Barilius) bola,* Hamilton-Buchanan, *Fish. Ganges* : 274-275. (Type Locality : Brahmaputra).

Status : *Endangered* (EN).

Material examined : Pater Pani Sot, 6. vi. 2003, Reg. No. 4648; Pater Pani Sot, 21. i. 2004, Reg. No. 4735, Coll. *V. Khanna & Party.*

Distribution : Northern India up to Orissa.

Elsewhere : Bangladesh, Myanmar and Nepal.

Remarks : It is famous as anglerfish. Due to excessive catch its abundance is going down.

9. ***Chagunius chagunio*** (Hamilton- Buchanan)

1822. *Cyprinius (Cyprinius) chagunio,* Hamilton-Buchanan, *Fish. Ganges* : 295-297. (Type Locality : Yamuna and in the northern rivers of Bihar and Bengal).

Status : Data Deficient (DD).

Material examined : Kothirao, Jhirna, Dhela beat, 1 ex., 27. vi. 2002, Reg. No. 4456; Lal Dhang, Jhirna, 2 exs., 28.vi.2002, Reg. No. 4465; Jhirna Sot, 3 exs., 29.vi.2002, Reg. No. 4478, Coll. *J.P. Sati & Party.*

Distribution : India (Northern portion along base of Himalayas); *Elsewhere* : Nepal, Bangladesh, Myanmar and Thailand.

Remarks : This species exhibits sexual dimorphism and inhibits in rocky bed of river/ stream

10. ***Labeo dero*** (Hamilton- Buchanan) **Hilly Labeo**

1822. *Cyprinius (Bangana) dero,* Hamilton-Buchanan, *Fish Ganges* : 277. (Type Locality : Brahmaputra).

Status : Vulnerable (VU).

Material examined : Dhumanda Road, 3 km from Gairal 1 ex., 25.vi.2002, Reg. No. 4423, Coll. *J.P. Sati & Party*; Pater Pani Sot, 9 exs., 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.

Remarks : It is commercially an important fish of the region; inhabits the banks of the river/streams. Jaunsar tribes use its fat for healing the wound.

*11. ***Labeo dycocheilus*** (McClelland) **Brahmaputra Labeo**

1839. *Cyprinius (Labeo) dyocheilus,* McClelland, *Asiat. Res.,* **19** (2) : 268-330. (Type Locality : Assam).

Status : Vulnerable (VU).

Material examined : Pater Pani, 1 ex., 6.i v. 2003, Reg. No. 4648, Coll. *V. Khanna & Party;* Pater Pani Sot, 11 exs.. 2. iii. 2005, Reg. No. 5322, Coll. A.*N. Rizvi & Party*.

Distribution : India : Himalaya to Assam and Plains adjoining the Himalayas.

Elsewhere : Pakistan.

Remarks : It is commercially an important fish of the region and inhabits on the bank of river/streams. Jaunsar tribes use its fat for healing the wound. This species reported first time from CTR.

*12.***Puntius chola** Hamilton- Buchanan - **Bitter Carp**

1822. *Cyprinius (Puntius) chola,* Hamilton-Buchanan, *Fish. Ganges* : 321-313. (Type Locality : Northeastern parts of Bengal).

Status : Vulnerable (VU).

Material examined : Dhikala Road, Leed Khali Chaur, 8 exs., 22.vi.2002, Reg. No. 4379, Coll. *J.P. Sati* & party; Bijrani, Garjia Sot, 4 exs., 3.iv.2003, Reg. No. 4612, Jhirna FRH & around, 2 exs., 20.i.2004, Reg. No. 4734, Coll. *V. Khanna* & party, Jhirna FRH & around, 1 ex., 28.ii.2005, Reg. No. 5199, Coll. *A.N. Rizvi* & party.

Distribution : Throughout India; *Elsewhere* : Bangladesh, Pakistan, Nepal, Sri Lanka and Myanmar.

Remarks : This fish used for aquarium purpose. It inhabits in the small and slow moving streams. This species reported (new record) first time from CTR.

13. ***Puntius conchonius*** Hamilton-Buchanan- **Red Barb**

1822. *Cyprinius (Puntius) conchonius,* Hamilton-Buchanan, *Fish. Ganges* : 317-318. (Type Locality : ponds of northeast Bengal and rivers of Kosi and Ami).

Status : Vulnerable (VU).

Material examined : Mohan Sot, 36 exs.. 17.i.2004, Reg. No. 4697, Coll. *V. Khanna* & party; Bijrani Sot, 1 ex., 26.ii.2005, Reg. No. 5189, Coll. *A.N. Rizvi* & party.

Distribution : India (Brahmaputra, Ganga, Mahaui river system of Assam, Bihar, Uttar Pradesh, Uttarakhand, Orissa and W. Bengal).

Elsewhere : Pakistan, Bangladesh and Pakistan.

Remarks : This species exhibits sexual dimorphism and used for aquarium purpose. It inhabits clear streams water usually.

14. ***Puntius sophore*** Hamilton-Buchanan **Soft-fin Barb**

1822. *Cyprinius (Puntius) sophore,* Hamilton-Buchanan, *Fish. Ganges* : 310-311.(Type Locality : ponds, locality not specified).

Status : Low Risk near threatened (LRnt).

Material examined : Dhangarhi gate on way to Mohan, 15 exs., 17.i.2004, Reg. No. 4700, Jhirna FRH & around, 6 exs., 20.i.2004, Reg. No. 4734, Coll. *V. Khanna* & party; Pater Pani Sot, 6 exs., 2.iii.2005, Reg. No. 5322, Coll. *A.N. Rizvi* & party.

Distribution : Throughout, India.

Elsewhere : Myanmar, Bangladesh and China.

Remarks : This species exhibits sexual dimorphism and used for aquarium purpose. It inhabits clear streams water usually.

15. ***Puntius ticto*** Hamilton-Buchanan **Two-spot Barb**

1822. *Cyprinius (Puntius) ticto,* Hamilton-Buchanan, *Fish. Ganges* : 314-315. (Type Locality : south-east parts of Bengal).

Status : Lower Risk - near threatened (LRnt).

Material examined : Jhirna beat No. 3 exs., 26.vi.2002, Coll. *Romesh Sharma* & party; Dhara Chaur, 6kms. on Jhirna-Kalagarh road, 1 ex., 28.vi.2002, Reg. No. 4445; Jhirna Soat, 1 ex., 29.vi.2002, Reg. No. 4474, Coll. *J. P. Sati* & party.

Distribution : Throughout India.

Elsewhere : Nepal, Pakistan, Sri Lanka, Bangladesh and Myanmar.

Remarks : It is a popular aquarium fish and inhabits clear and shallow water of stream.

16. ***Tor chelynoides*** (McClelland) - **Black Mahseer**

1839. *Barbus chelynodies*, McClelland, *Asiat. Res.*, **19** (2) : 340. (Type Locality : Shimla hills).

Status : Endangered (EN).

Material examined : India : Uttarakhand, Corbett Tiger Reserve, Dhara Chaur & Sot, 6 km from Jhirna, 1 ex., 27. vi. 2002, Reg. No. 4451, Coll. *J.P. Sati* & party.

Distribution : India : (along Himalayas).

Elsewhere : Pakistan.

Remarks : It is an important game fish of the region and also known as angler's delights.

17. ***Tor putitora*** (Hamilton-Buchanan)- **Yellow-finned Mahseer**

1822. *Cyprinius (Cyprinius) putitora*, Hamilton-Buchanan, *Fish, Ganges* : 303-305. (Type Locality : eastern parts of Bengal).

Status : Endangered (EN).

Material examined : Dulwa Sot, 6 km from Sultan on way to Dhikala, 3 exs., 25.vi.2002, Dhumanda Road, 3 km from Gairal, 5 exs., 25.vi 2002, Reg. No. 4433, Pater Pani Sot, 6 kms on Saddle dam road from Kalagarh, 4 exs., 29.vi.2002, Reg. No. 4485, Coll. *J.P. Sati & party*; Dhangarhi gate on way to Mohan, 1 ex., 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, 3 exs., 28.ii.2005, Reg. No. 5201; Kothirao Sot, 4 km from Jhirna FRH, 13 exs., 1.ii.2005; Reg. No. 5310, Pater Pani Sot, 6 exs., 2.iii.2005, Reg. No. 5322, Coll. *A.N. Rizvi &Party.*

Distribution : India (along Himalayas.);

Elsewhere : Pakistan; Afghanistan; Nepal and Bangladesh.

Remarks : It is an important game fish of the region and also known as anglers' delights.

18. ***Tor tor*** (Hamilton-Buchanan) - **Red-finned Mahseer**

1822. *Cyprinius (Cyprinius) tor,* Hamilton-Buchanan, *Fish. Ganges* : 305-306. (Type Locality : Mahanadi river).

Status : Endangered (EN).

Material examined : Pater Pani Sot, 6 km on Saddle dam road from Kalagarh, 1 ex., 29. vi. 2002, Reg. No. 4485, Coll. *J.P. Sati & party;* Pater Pani Sot, 1 ex., 6.iv.2003, Reg. No. 4648, Champion Ramganga, 13 exs., 7.iv.2003, Reg. No. 4685, Mohan; 1 ex., 17.i.2004, Reg. No. 4697, Jhirna FRH, 12 exs., 20.i.2004, Reg. No. 4734, Coll. *V. Khanna & 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 anglers' delights. This species can be used for the biological control of aquatic weeds (Tilak & Sharma, 1982).

19. ***Crossocheilus latius*** (Hamilton-Buchanan) -**Gangetic Latia**

1822. *Cyprinius (Garra) latius,* Hamilton-Buchanan, *Fish. Ganges* : 345-346. (Type Locality : Tiesta river)

Status : Data deficient (D.D).

Material examined : Pater Pani Sot, 6 km on Saddle dam road from Kalagarh, 8exs., 29.vi.2002, Reg. No. 4485, Coll. *J.P. Sati & party*; Pater Pani Sot, 1ex., 6.iv.2003, Reg. No. 4648, Coll. *V. Khanna & party*; Ramganga river, nr. Gairal 6 exs., 24.ii.2005, Reg. No. 5156, Coll. *A.N. Rizvi & Party.*

Distribution : India : Brahamaputra, Ganga river system, Deolali, Maharastra).

Elsewhere : Bangladesh, Nepal and Pakistan.

Remarks : It inhabits in between the boulders at the bottom of stream.

20. ***Garra gotyla gotyla*** (Gray) - **Stonefish**

1830-34, *Cyprinius gotyla,* Gray, III. *Indian Zool* (Type Locality : Northern India).

Status : Vulnerable (VU).

Material examined : Dhumanda Road, 3 km from Gairal, 5 exs., 25.vi.2002, Reg. No. 4433, Pater Pani Sot, 6 kms on Saddle dam road from Kalagarh, 4 exs., 29.vi.2002, Reg. No. 4485, Coll. *J.P. Sati & party*; Dhangarhi gate on way to Mohan, 1 ex., 17.i.2004, Reg. No. 4700, Pater Pani Sot, 4 exs., 21.i.2004, Reg. No. 4735, Coll. *V. Khanna & Party*; Jhirna FRH & around, 1 ex., 28.ii.2005, Reg. No. 5199; Kharar Sot, 3 exs., 28.ii.2005, Reg. No. 5201; Kothirao Sot, 4 km from Jhirna FRH, 13 exs.. 1.ii.2005; Reg. No. 5310, Pater Pani Sot, 6 exs., 2.iii.2005, Reg. No.5322, Coll. *A.N. Rizvi & Party.*

Distribution : India (All along the Himalaya); *Elsewhere* : Nepal, Bangladesh, Pakistan and Sri Lanka.

Remarks : It is found in abundance in torrential water, and adhesive pouch help them to bear the fast current of water.

21. ***Gara lamta*** (Hamilton-Buchanan) **Lamta Garra**

1822. *Cyprinius lamta,* Hamilton- Buchanan *Fish. Ganges* : 343-393. (Type Locality : Rapti River, Gorakhpur, U.P.).

Status : Data Deficient (DD).

Material examined : Pater Pani Sot, 6 kms on Saddle dam road from Kalagarh, 2 exs., 29.vi.2002, Reg. No. 4485, Coll. *J.P. Sati & party;* Jhirna FRH & around, 6 exs., 28.ii.2005, Reg. No. 5199, Kothirao Sot, 4 km. from Jhirna FRH, 11 exs., 1.iii.2005, Reg. No. 5310; Pater Pani Sot, 6 exs., 2.iii.2005, Reg. No. 5322, Coll. *A.N. Rizvi & party.*

Distribution : India : Kashmir to Kumaon, Assam, West-Bengal.

Elsewhere : Sri Lanka and Myanmar.

Remarks : It is found in abundance in torrential water and adhesive pouch help them to bear the fast current of water.

2. Family COBITIDAE

*22. ***Botia lohachata*** Chaudhuri – **Y-Loach**

1909. *Botia lohachata,* Chaudhari, *Rec. Indian Mus.*, **3** (4) : 339 (Type Locality : Ropar, Punjab).

Status : Endangered (EN).

Material examined : Dhikala Road, Leed Khali Chaur, 1 ex., 22.vi.2002, 2 exs., Reg. No. 4379; Jhirna Sot, 2 exs., 29.vi.2002, Reg. 4478, Coll. *J.P. Sati* & party.

Distribution : Gandak River, Sarna district, Bihar, Delhi, Punjab, Rajasthan. *Elsewhere* : Bangladesh, Nepal, Pakistan and Sindh.

Remarks : It inhabits in the crevices and difficult to catch. This species has been reported for the first time from CTR.

23. ***Lepidocephalus guntea*** (Hamilton-Buchanan) - **Guntea Loach**

1822. *Cobitis guntea,* Hamilton-Buchanan Fish.*Ganges* : 353-39. (TypeLocality : ponds and freshwater rivers of Bengal.

Status : Not Evaluated (NE).

Material examined : Dhikala Road, Leed Khali Chaur, 3 exs., 22.vi.2002, Reg. No. 4379; Pater Pani Sot, 6 km on Saddle dam road from Kalagarh, 3 exs., 29.vi.2002, Reg. No. 4385, Coll. *J.P. Sati & Party*; Pater Pani Sot, 2 exs., 6.vi.2003, Reg. No. 4648; Jhirna FRH & around, 4 exs., 20.i.2004, Reg. No. 4734, *Coll. V. Khanna & Party*; Bijrani Sot, 3 exs., 26.ii.2005, Reg. No. 5189; Kharar Sot, 25 exs., 28.ii.2005, Reg. No. 5201; Kothirao Sot, 4 km. from Jhirna FRH, 7 exs., 1.iii.2005, Reg. No. 5310; Pater Pani Sot, 35 exs., 2.iii.2005, Reg. No. 5323, Coll. *A.N. Rizvi & Party.*

Distribution : Throughout Northern India.

Elsewhere : Nepal and Bangladesh.

Remarks : This species exhibits sexual dimorphism. It lives near the banks of slow moving streams with muddy bed.

24. ***Nemacheilus beavani*** Gunter - **Common Loach**

1869. *Nemachilus beavani,* Gunter, *Cat. Fish. Brit. Mus.*, **7** : 350. (Type locality : Kosi river).

Status : Not Evaluated (NE).

Material examined : Lal Dhang, Jhirna, 4 exs., 28.vi.2002, Reg. No. 4465, Coll. *J.P. Sati & party*; Pater Pani Sot, 6 exs., 21.i.2004, Reg. No. 4735, Coll. *V. Khanna & party*; Kothirao Sot, 4 km from Jhirna FRH, 4 exs., 1.iii.2005, Reg. No. 5310, Coll. *A.N. Rizvi & party.*

Distribution : Northern India; *Elsewhere* : Nepal.

Remarks : It inhabits slow moving streams, Jaunsari tribes use the juice of this fish for curing fever, Uniyal (2002).

25. ***Nemacheilus botia*** (Hamilton-Buchanan)- **Botia Loach**

1822. *Cobitis botia,* Hamilton- Buchanan, *Fish. Ganges* : 350-351. (Type Locality : river of north-eastern part of Bengal).

Status : Lower Risk - near threatened (LRnt).

Material examined : Dhikala Road, Leed Khali Chaur, 3 exs., 22.vi.2002, Reg. No. 4379; Pater Pani Sot, 6 km on Saddle dam road from Kalagarh, 3 exs., 29.vi.2002, Reg. No. 4385, Coll. *J.P. Sati & Party*; Pater Pani Sot, 2 exs., 6.vi.2003, Reg. No. 4648; Jhirna FRH & around, 4 exs., 20.i.2004, Reg. No. 4734, Coll. *V. Khanna & Party.*

Distribution : India (Assam, Bihar, Uttar Pradesh, Uttarakhand).

Elsewhere : Pakistan, Nepal, Bangladesh, Myanmar and Sri Lanka.

Remarks : It inhabits slow moving streams, Jaunsari tribes use the juice of this fish for curing the fever (Uniyal, 2002).

26. ***Nemacheilus corica*** (Hamilton-Buchanan) - **Corica Loach**

1822. *Cobitis coric,* Hamilton- Buchanan Fish. *Ganges* : 359-395. (Type Locality : river Kosi).

Status : Lower Risk - near threatened (LRnt).

Material examined : Aamgarhi Sot, 4 kms from Sultan on Dhangarhi Road, 2 exs., 25.vi.2002, Reg. No. 4426, Coll. *J.P. Sati* & party.

Distribution : India (along the base of Himalaya).

Elsewhere : Pakistan, Nepal and Bangladesh.

Remarks : It inhabits slow moving streams; Jaunsari tribes use the juice of this fish for curing fever (Uniyal, 2002).

27. ****Nemacheilus montanus*** (McClelland)- **Mountain Loach**

1838. *Schistura montanus,* McClelland, *J.Asiat. Soc. Beng.,* **7** : 947. (Type Locality : Shimla)

Status : Endangered (EN).

Material examined : Dhikala Road, Leed Khali Chaur, 3 exs., 22.vi.2002, Reg. No. 4379; Pater Pani Sot, 6 km on Saddle dam road from Kalagarh, 3 exs., 29.vi.2002, Reg. No. 4385, Coll. *J.P. Sati & Party*; Pater Pani Sot, 2 exs., 6.vi.2003, Reg. No. 4648; Jhirna FRH & around, 4 exs., 20.i.2004, Reg. No. 4734, Coll. *V. Khanna & Party.*

Distribution : India (Bihar, Himachal Pradesh and Uttarakhand);

Elsewhere : Nepal and Bangladesh.

Remarks : It inhabits slow moving streams; Jaunsari tribes use the juice of this fish for curing fever, (Uniyal 2002). This species reported for the first time from CTR.

28. *Nemaceheilus rupecola* (McClelland) - **Hill Loach**

1838. *Schistura rupecula*, McClelland, *J.Asiat. Soc. Beng.*, **7** : 948. (Type Locality : Shimla).

Status : Low Risk-near threatened (LRnt)

Material examined : Dhikala Road, Leed Khali Chaur, 3 exs., 22.vi.2002, Reg. No. 4379; Pater Pani Sot, 6 km on Saddle dam road from Kalagarh, 3 exs., 29.vi.2002, Reg. No. 4385, Coll. *J.P. Sati & Party*; Pater Pani Sot, 2 exs., 6.vi.2003, Reg. No. 4648; Jhirna FRH & around, 4 exs., 20.i.2004, Reg. No. 4734, Coll. *V. Khanna & Party.*

Distribution : India (Jammu & Kashmir, Himachal Pradesh, part of Uttar Pradesh and Uttarakhand); *Elsewhere* : Pakistan.

Remarks : It is found usually in lesser Himalayan zone. Rarely found in low areas. Jaunsari tribes use the juice of this fish for curing the fever, (Uniyal, 2002).

2. Order SILIURIFORMES

3. Family AMBLYCIPITIDAE

29. *Amblyceps mangois* (Hamilton- Buchanan)- **Indian Torrent Catfish**

1822. *Pimelodus mangois*, Hamilton-Buchanan, *Fish. Ganges* : 199-201. (Type Locality : tanks of northern Bihar).

Status : Lower Risk near threatened (LRnt).

Material examined : Dhikala Road, Leed Khali Chaur, 3 exs.. 22.vi.2002, Reg. No. 4379; Pater Pani Sot, 6 km on Saddle dam road from Kalagarh, 3 exs., 29.vi.2002, Reg. No. 4385, Coll. *J.P. Sati & Party*; Pater Pani Sot, 2 exs., 6.vi.2003, Reg. No. 4648; Jhirna FRH & around, 4 exs., 20.i.2004, Reg. No. 4734, Coll. *V. Khanna & Party.*

Distribution : India along the foothills of Himalayas from Kangra valley to Assam).

Elsewhere : Myanmar, Nepal, Pakistan and Thailand.

Remarks : It inhabits cobble-pebble bed of river/stream. It pears the spines and can infect serious injury, its collection need special attention.

4. Family BAGRIDAE

30. ***Mystus vittatus*** (Bloch) - **Fiddler fish**

1797. *Silurus vittatus,* Bloch, *Ichthyol. Hist. nat.,* 11 : 4. (Type Locality : Tranquebar, Tamil Nadu).

Status : Vulnerable (VU).

Material examined : Champion, Ram Ganga, 2 exs., 7.iv.2003, Reg. No. 4658, Coll. *V. Khanna & Party.*

Distribution : Throughout India.

Elsewhere : Pakistan, Bangladesh, Nepal, Srilanka, Thailand and Myanmar.

Remarks : This species exhibits sexual dimorphism. It is usually found in middle stretch of river/ water body.

5. Family SISORIDAE

31. ***Bagarius bagarius*** (Hamilton-Buchanan)

1822. *Pimelodus bagarius,* Hamilton, *Fishes of Ganges* : **186**, 378. (Type Locality : Ganga river and its tributaries).

Status : Vulnerable (VU).

Material examined : Pater Pani Sot, 6 km on Saddle Dam Road from Kalagarh, 5 exs., 29.v i.2002, Reg. No. 4485, Coll. *J.P. Sati & Party*; Champion, Ram Ganga, 2 exs., 7.iv.2003, Reg. No. 4658, Coll. *V. Khanna & Party;* Ram Ganga river, nr. Gairal, 4 exs., 24.ii.2005, Reg. No. 5156, Coll. *A.N. Rizvi & Party.*

Distribution : India : Ganga river system.

Elsewhere : Sri Lanka and Myanmar.

*32. ***Glypthorax pectinopterus*** (McClelland) **Sucker Catfish**

1842. *Glypthorax pectinopterus,* McClelland, *Calcutta. J. nat. Hist.*, **2** : 58. (Type Locality : Shimla)

Status : Lower Risk - near threatened (LRnt).

Material examined : Lal Dhang, Jhirna, 4 exs., 28.vi.2002, Reg. No. 4465, Coll. *J.P. Sati* & party; Pater Pani Sot, 6 exs., 21.i.2004, Reg. No. 4735, Coll. *V. Khanna & Party.*

Distribution : India (Punjab, Himachal Pradesh, Uttar Pradesh, Bihar, Uttarakhand).

Elsewhere : Pakistan and Nepal.

Remarks : This species exhibits sexual dimorphism. It is a bottom living fish of torrents and sticks to the stones with the help of suckers on its thorax. This species is being reported for the first time from CTR.

3. Order PERCIFORMES

6. Family NANDIDAE

*33. ***Badia badis*** (Hamilton-Buchanan) - **Dwarf Chameleon Fish**

1822. *Labrus badis,* Hamilton-Buchanan, Fishes of Ganges : 70-72. (Type Locality : Ponds and ditches throughout Gangetic provinces).

Status : Not Evaluated (NE).

Material examined : Jhirna Sot, 2 exs., 29.vi.2002, Reg. No. 4478, Coll. *J.P. Sati & Party*; Garjia & around, 12 exs., 5.vi.2003, Reg. No. 4644, Coll. *V. Khanna & Party.*

Distribution : Throughout India; *Elsewhere* : Bangladesh, Pakistan and Thailand.

Remarks : This species is used in aquarium It inhabits sluggish water with plenty of vegetation. This species has been reported first time from CTR.

7. Family CHANNIDAE

34. ***Channa orientalis*** Bloch and Schneider - **Asiatic Snakehead**

1822. *Ophiocephilus gachua,* Hamilton-Buchanan, Fishes of Ganges : 68-69. (Type Locality : Ponds and ditches of Bengal)

Status : Not Evaluated (NE).

Material examined : India : Uttarakhand, Corbett Tiger Reserve, Nimboo boaji water hole, nr. Khinnauli, 6 km on Dhikala Road, 3 exs., 22.vi.2002, Reg. No. 4373, Coll. *J.P. Sati & Party*; Kothirao Sot, 4 km from Jhirna FRH, 4 exs., 1.i.2005, Reg. No. 5310, Coll. *A.N. Rizvi & Party.*

Distribution : Throughout India.

Elsewhere : Afghanistan, Bangladesh, Nepal, Pakistan, Sri Lanka, Thailand and Myanmar.

Remarks : It is usually found in muddy areas and bottom feeder in nature.

*35. ***Channa punctatus*** Bloch **Spotted Snakehead**

1794. *Ophiocephilus punctatus,* Bloch, *Naturges, Ausland.Fische.* **8** : 139. (Type Locality : rivers and lakes of Coromandel Coast).

Status : Lower Risk - near threatened (LRnt)

Material examined : Nimboo boaji water hole, nr. Khinnnauli, 6 km on Dhikala Road, 3 exs., 22.vi.2002, Reg. No. 4373, Coll. *J.P. Sati & Party*; Kothirao Sot, 4 km from Jhirna FRH, 4 exs. 1.i.2005, Reg. No. 5310, Coll. *A.N. Rizvi & Party.*

Distribution : Throughout India; *Elsewhere* : Pakistan, Nepal, Afghanistan, Bangladesh, Myanmar, Sri Lanka, Malaysia, and China

Remarks : It is usually found in muddy areas and bottom feeder in nature. This species is being reported first time from CTR.

8. Family MASTACEMBELIDAE

36. ***Mastacembelus armatus*** (Lacepede) **Tri-Track Spiny-eel**

1800. *Macrognathus armatus,* Lacepede, *Hist. Nat. Poiss.,* **2** : 286. (Type Locality : Not known).

Status : Not Evaluated (NE).

Material examined : Dulwa Sot, 6 km from Sultan on way to Dhikala, 2 exs., 25.vi.2002, Reg. No. 4413, Coll. *J.P. Sati & Party*; hampion, Ram Ganga, 1 ex., 7.iv.2003, Reg. No. 4658, Coll. V. Khanna & Party.

Distribution : Throughout India.

Elsewhere : Bangladesh, China, Nepal, Pakistan, Sri Lanka and Myanmar.

Remarks : It inhabits cobble-pebble bed of river/stream. It pierces the spines and can inflict serious injury. Its collection needs special attention.

SUMMARY

36 species of fishes belonging to 22 genera, 8 families and 3 orders have been reported, of which seven species are the first record from the CTR.

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PLANT AND SOIL NEMATODES

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INTRODUCTION

Nematodes are highly diversified lower invertebrates and perhaps most numerous multicellular animals on earth. Mostly free living and occupying a majority of the aquatic and terrestrial habitats, some groups have developed relationships with other animals and plants ranging from commensalisms, phoresis to parasitism. Plant and soil Nematodes are a well-recognized factor in soil productivity in agriculture and forestry.

While there are no studies available on the nematodes from CTR, there exist some reports on plant and soil Nematodes of Uttarakhand from the district of Nainital by Jairajpuri (1970a), Khan & Khan (1972), Husain & Khan (1975), Ahmad & Jairajpuri (1982a), Lal & Khan (1989) and Singh & Khan (1999); and district Pauri by Ahmad & Jairajpuri (1982b, 1987), Jairajpuri & Khan (1981) and Rawat et al (1999).

The present paper reports nematodes extracted from the soil samples collected from Corbett Tiger Reserve during the year 2005, mainly from the Teak plantations and Sal forests. These samples yielded 10 species belonging to 10 genera under 8 families of the 7 orders of the phylum Nematoda. All the 10 species are recorded for the first time from CTR.

SYSTEMATIC ACCOUNT

1. Order TYLENCHIDA

1. Family HOPLOLAIMIDAE

Subfamily HOPLOLAIMINAE

Genus ***Helicotylenchus***

1. ***Helicotylenchus indicus***, Siddiqui, 1963

1963. *Helicotylenchus indicus*, Siddiqui, *Z. Parasitenk.*, **23** : 397-399.

Material examined : Dhangarhi gate, 3 exs, C. Reg. No. IV.243, 26.ii.05, coll. A.N. Rizvi and party.

Distribution : India : Uttarakhand, Uttar Pradesh. Elsewhere : Spain.

Remarks : This species is recorded for the first time from CTR.

2. Order RHABDITIDA

Suborder RHABDITINA

2. Family MESORHABDITIDAE

Subfamily MESORHABDITINAE

2.Genus ***Mesorhabditis***

2. ***Mesorhabditis cranganorensis*** (Khera, 1968) Andrassy, 1983

1968. *Rhabditis (Uniovaria) cranganorensis,* Khera, *J. Zool. Soc. India,* **20** : 38-41

1983. *Mesorhabditis cranganorensis,* Andarssy, *Orstom*, Paris : 1-2.

Material examined : Sultan FRH, 2 exs, C.Reg.No.IV.244, 26.ii.05, coll. A.N. Rizvi and party; near Dhangarhi Gate, 2 exs, C. Reg. No. IV.245, 26.ii.05, coll. A.N. Rizvi and party.

Distribution : India : Kerala, Sikkim, Uttarakhand.

Remarks : This species is recorded for the first time from CTR. Sal is also the new host record.

Suborder CEPHALOBINA

3. Family CEPHALOBIDAE

Subfamily CEPHALOBINAE

3. Genus ***Eucephalobus***

3. ***Eucephalobus oxyuroides*** (de Man, 1876) Steiner, 1936

1876. *Cephalobus oxyuroides,* de Man, *Tijds. Nederland.Dierk.*Vereen., **2** : 78-80

1936. *Eucephalobus oxyuroides,* Steiner, *Proc. Helminth. Soc. Wash.*, **3**(2) : 74-75

Material examined : Sultan FRH, 2 exs, C. Reg. No. IV.246, 26.ii.05, coll. A.N. Rizvi and Party.

Distribution : India : Uttar Pradesh, Uttarakhand, Sikkim.

Elsewhere : USA, Belgium, Germany, Hungary, Poland and Sweden.

Remarks : This species is recorded for the first time from CTR.

Subfamily ACROBELINAE

4. Genus ***Acrobeles***

4. ***Acrobeles timmi*** Chaturvedi & Khera 1979

1979. *Acrobeles timmi,* Chaturvedi & Khera, *Zool. Surv. India. Tech. Monogr,* **2** : 34-36.

Material examined : Sultan FRH, 2 exs. C. Reg. No. IV.247, 26.ii.05, coll. A. N. Rizvi and Party; Dhikala, 3 exs., C. Reg. No. IV.248, 26.ii.05, coll. A.N. Rizvi and Party.

Distribution : India : Uttarakhand, Sikkim.

Remarks : This species is recorded for the first time from CTR and from soil around the Sal.

5. Genus ***Acrobeloides***

5. ***Acrobeloides buetschlii*** (de Man, 1884) Steiner and Buhrer, 1933 Syn :

1884. *Cephalobus buetschlii*, de Man, *der niederlandischen Fauna*, 206.

1933. *Acrobeloides buetschlii,* Steiner & Buhrer, *Plant Dis. Reptr.*, **17** : 172-173.

Material examined : Sultan FRH, 3 exs., C. Reg. No. IV 249, 26.ii.05, coll. A.N. Rizvi and Party; Dhikala, 1 ex., C. Reg. No. IV.250, 23.ii.05, coll. A.N. Rizvi and Party.

Distribution : India : Uttarakhand, Bihar, Sikkim.

Elsewhere : U.S.A.

Remarks : This species is recorded for the first time from CTR. Sal is also a new host record for the species.

3.Order MONHYSTERIDA

4. Family MONHYSTERIDAE

Subfamily MONHYSTERINAE

6. Genus ***Prismatolaimus***

6. ***Prismatolaimus andrassyi*** Khera and Chaturvedi, 1977

1977. *Prismatolaimus andrassyi*, Khera & Chaturvedi, *Rec. zool. Surv. India,* **72** : 137-139.

Material examined : Sultan FRH, 1 ex., C. Reg. No IV.251, 26.ii.05, coll. A.N. Rizvi and Party

Distribution : India : Uttarakhand, West Bengal, Bihar, Uttar Pradesh.

Remarks : This species is recorded for the first time from CTR

4.Order ENOPLIDA

5.Family IRONIDAE

Subfamily IRONINAE

7. Genus ***Ironus***

7. ***Ironus longicaudatus*** de Man, 1884

1884. *Ironus longicaudatus,* de Man, *der niederlandischen Fauna* : 200.

Material examined : Dhikala, 2 exs., C. Reg. No.IV.252, 23.ii.05, coll. A.N. Rizvi and Party; Gairal FRH, 2 exs., C. Reg. No. IV.253, 24.ii.05, coll. A.N. Rizvi and Party; Dhangarhi gate, 1 ex, C. Reg. No. IV.254, 26.ii.05, coll. A.N. Rizvi and Party; Sultan FRH, 1ex., C. Reg. No. IV.255, 26.ii.05, coll. A.N. Rizvi and Party.

Distribution : India : Bihar, West Bengal, Sikkim.

Elsewhere : Germany, Hungary, Poland and Austria.

Remarks : This species is recorded for the first time from CTR and Uttarakhand as well.

5. Order DORYLAIMIDA

Suborder DORYLAIMINA

6.Family LONGIDORIDAE

8. Genus ***Xiphinema***

8. ***Xiphinema americanum*** Cobb, 1913

1913. *Xiphinema americanum* Cobb, *Jour. Wash. Acad. Sci.*, **3** : 432-435

Material examined : Dhangarhi gate,1ex., C. Reg. No. IV.256, 26.ii.05, coll. A.N. Rizvi and Party; Sultan FRH, 2 exs. C. Reg. No. IV.257 26.ii.05, coll. A.N. Rizvi and Party.

Distribution : India : Uttarakhand, Uttar Pradesh, West Bengal.

Elsewhere : Poland, Portuguese, Ireland.

Remarks : This species is recorded for the first time from CTR. Teak and Sal are new host records for *X. americanum.*

6. Order MONONCHIDA

7. Family MONONCHIDAE

Subfamily PRIONCHULINAE

9. Genus ***Clarkus***

9. ***Clarkus papillatus*** (Bastian, 1865)

1865. *Mononchus papillatus,* Bastian, Linn. *Scotland. Trans.*, **25** : 73.

1970. *Clarkus papillatus*, Jairajpuri, *Nematologica,* **16** : 213-218.

Material examined : Dhikala, 2 exs. C. Reg. No. IV. 258, 23.ii.05, coll. A.N. Rizvi and Party; Gairal FRH, 2 exs. C. Reg. No. IV. 259, 24.ii.05, coll. A. N. Rizvi and Party; Sultan FRH, 2 exs. C. Reg. No. IV. 260, 26.ii.05, coll. A.N. Rizvi and Party.

Distribution : India : Uttar Pradesh, Uttarakhand, Kashmir, West Bengal.

Elsewhere : Germany, Hungary, Italy, Poland and Sweden.

Remarks : This species is recorded for the first time from CTR.

7. Order ALAIMIDA

8. Family ALAIMIDAE

10.Genus ***Alaimus***

10. ***Alaimus jaulasali*** Siddiqi & Husain, 1967

1967. *Alaimus jaulasali*, Siddiqi & Husain, *Proc. Helm. Soc. Wash.*, **34** : 159-162.

Material examined : Sultan FRH, 3 exs. C. Reg. No. IV.261, 26.ii.05, coll. A.N. Rizvi and Party.

Distribution : India : Uttarakhand.

Elsewhere : Italy, Czech Republic.

Remarks : This species is recorded for the first time from CTR.

SUMMARY

Ten species belonging to ten genera under eight families and seven orders of the phylum Nematoda have been reported from the soils collected from Sal and Teak forests. All the 10 species are recorded for the first time from CTR.

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Zool. Surv. India
Fauna of Corbett Tiger Reserve, Conservation Area Series, **35** : 189-193, 2008

CHILOPODA SCOLOPENDROMOPRHA

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INTRODUCTION

Centipedes in India are known by 102 species (Khanna, 2001) of which 75 are reported from the Himalayan Ecosystem (Khanna, 2004) while centipede fauna of Uttarakhand is represented by 32 species (Khanna, in Press). The present communication adds nothing new to the already known 11 species recorded earlier by Khanna (1994) and Khanna and Kumar (2005 and 2006) from the Corbett National Park.

SYSTEMATIC ACCOUNT

Order SCOLOPENDROMORPHA

Family SCOLOPENDRIDAE

1. ***Scolopendra morsitans*** Linnaeus, 1758

1758. *Scolopendra morsitans,* Linnaeus, *Syst. Nat.*, Ed. **10** : 638.

1903. *Scolopendra morsitans*, Kraepelin, *Mitt. Mus.*, Hamburg, **20** : 250.

Type Locality : India.

Material examined : Gairal, Domunda Road, 25.vi.2002, 1 ex.; Aamgarhi sot, 25.vi.2002, 31 exs., J.P. Sati Coll.; Malani, Nakkatal, 19.i.2004, 22 exs.,Vinod Khanna Coll.

Distribution : India : Assam, Arunachal Pradesh, Andhra Pradesh, A & N Isl., Bihar, Bengal, Delhi, Gujarat, Himachal Pradesh, Haryana, Jammu and Kashmir, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Meghalaya, Manipur, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Tamilnadu, Tripura, Sikkim, Uttar Pradesh and Uttarakhand.

Remarks : Extremely common and a cosmopolitan species occurring sympatrically with its sibling, the *Scolopendra amazonica* (Bucherl).

2. ***Cormocephalus dentipes*** Pocock, 1891

1891. *Cormocephalus dentipes*, Pocock *Ann. Nat. Hist.*, Ser.6, **7** : 66

1984. *Cormocephalus pseudonudipes*, Jangi and Dass, *J. Scient. Indl. Res,* **43**(2) : 37.

Type Locality : Bengal.

Material examined : Malani, Nakkatal, 19.i.2004, 22 exs., Vinod Khanna Coll.; Jhirna, 20.i.2004, 1 ex., Vinod Khanna Coll.; Gairal and around, 5.iv.2003. 1 ex., Vinod Khanna Coll.; Jhirna, 24.i.2004, 3exs., Vinod Khanna coll.; Sarapduli, 18.i.2004, 5exs., Vinod Khanna Coll.; Dharasot, 22.i.2004, 11 exs., Vinod Khanna Coll.

Distribution : India : A & N Isls., Bihar, Delhi, Himachal Pradesh, Meghalaya, Mizoram, Madhya Pradesh, Orissa, West Bengal, Uttar Pradesh and Uttarakhand.

Remarks : Endemic Indian species, fairly common in Western Himalaya and U.P. Terai.

Subfamily OTOSTIGMINAE

3. ***Otostigmus amballae*** Chamberlin, 1913

1913. *Otostigmus amballae*, Chamberlin, *Ent. News.*, Philad., **24** : 74

1930. *Otostigmus (Otostigmus) amballae,* Attems, *Das Tierr., Scolopendromorpha,* **54**(2) : 153-154.

Type Locality : India : Ambala (Haryana).

Material examined : Malani, Nakkatal, 19.i.2004, 5 exs. Vinod Khanna coll.

Distribution :India : Haryana, Himachal Pradesh, Uttar Pradesh and Uttarakhand.

Elsewhere : Nepal.

Remarks : Species with a restricted range of distribution.

4. ***Otostigmus nudus*** Pocock, 1890

1890. *Otostigmus nudum,* Pocock, *Ann. nat. Hist.,* ser. 6, **5** : 247.

1930. *Otostigmus nudus,* Attems, *Das Tierr., Scolopendromorpha,* **54**(2) : 149

Type Locality : India : Madras (Tamilnadu)

Material examined : Malani, Nakkatal, 19.i.2004, 5 exs., Vinod Khanna coll.

Location of the Types : Natural History Museum, London (No. 90.1.23.21)

Distribution : India : Himachal Pradesh, Meghalaya, Tamilnadu, Uttarakhand and Uttar Pradesh.

Remarks : The species is diagnosed by the absence of the tarsal spurs on the first tarsal segments.

5. ***Rhysida afra cuprea*** Kraepelin, 1903

1903. *Rhysida afra cuprea,* Kraepelin, *Mitt. Mus.,* Hamburg, **20** : 154.

1930. *Rhysida afra cuprea* Attems, *Das Tierr., Scolopendromorpha,* **54**(2) : 197.

Type Locality : Bhutan.

Material examined : Malani, Nakkatal, 19.i.2004, 5 exs.. Vinod Khanna coll. Garjia, 5.iv.2003, 2 exs, Vinod Khanna Coll.

Distribution : India : Assam, Arunachal Pradesh, Delhi, Himachal Pradesh, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan.

Remarks : Easily identifiable species with one to two spines on the anal leg prefemur present distally.

6. ***Rhysida corbetti*** Khanna, 1994

1994. *Rhysida corbetti,* Khanna, *Rec. zool. Surv. India,* **94** (2-4) : 336-338.

Type Locality : Sarapduli (Corbett National Park), Distt. Pauri (Uttarakhand) Location of the Types : NZC, Zoological Survey of India.

Material examined : No material collected in the present lot.

Distribution : India : Uttarakhand.

Remarks : Collected and described earlier by the author from CTR.

7. ***Rhysida monalii*** Khanna and Kumar, 1984

1984. *Rhysida monalii,* Khanna and Kumar, *Uttar Pradesh J. Zool.,* **4**(1) : 93-95.

Type Locality : Pine Forest near Bageshwar, Almora (Uttarakhand).

Location of the Types : NZC, Zoological Survey of India.

Material examined : Nimbubag, Khinanauli, 22.vi.2002, 3 exs.,J.P.Sati Coll.; Gairal, 18.i.2004, 2 exs., Vinod Khanna Coll.; Sultan and around, 17.i.2004, 7 exs., Vinod Khanna Coll.

Distribution : India : Himachal Pradesh, Jammu and Kashmir, Maharashtra, Uttarakhand, and Uttar Pradesh.

8. ***Rhysida lithobioides kumaonensis*** Khanna, 1994

1994. *Rhysida lithobioides kumaonensis,* Khanna, *Rec. zool. Surv.India,* **94**(2-4) : 338-341.

Type Locality : Bijrani, Corbett National Park, Distt. Nainital (Uttarakhand).

Location of the Types : NZC, Zoological Survey of India.

Distribution : Uttarakhand and U.P. Terai, Distt. Lakhimpur Kheri.

Remarks : Collected and described earlier by the author from CTR the present lot does not have any new collection.

9. ***Rhysida nuda nuda*** (Newport) 1845

1845. *Branchiostoma nudum,* Newport, *Trans. Linn. Soc.,* **19** : 412

1930. *Rhysida nuda nuda,* Attems, *Das Tierr., Scolopendromorpha,* **54**(2) : 189-190.

1985. *Rhysida nuda,* Koch, *J. nat. Hist.,* **19** : 207.

Type Locality : Paramatta, New South Wales, Australia

Material examined : No material collected in the present lot.

Distribution :India : Assam, Andhra Pradesh, Haryana, Karnataka, Meghalaya, Maharashtra, Madhya Pradesh, Orissa, Tamilnadu, Tripura and Uttar Pradesh.

Elsewhere : Myanmar, Sri Lanka, Australia, North America (Mexico), Paraguay (Indo-Australian, Neotropical).

10. ***Rhysida nuda immarginata*** (Porath) 1876

1876. *Branchiostoma immarginatum,* Porath, *Bih. Svenska Ak.,* **4** (7) : 24.

1926. *Rhysida nuda immarginata,* Attems, *Das Tierr.,Scolopendromorpha,* **54**(2) : 190.

Type Locality : Manila, Philippines.

Material examined : Sarapduli and around, 18.i.2004, 5 ex., Vinod Khanna Coll.

Distribution : India : Assam, A & N Isl., Delhi, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere : West Africa, Myanmar, Philippines, Venezuela, Guatemala (Oriental and Palaearctic).

11. ***Rhysida stuhlmanni himalayanus*** Khanna, 1994

1994. *Rhysida stuhlmanni himalayanus,* Khanna, *Rec. zool. Surv. India,* **94**(2-4) : 342-344.

Type Locality : Kaladungi-Mangoli Road, Nainital (Uttarakhand)

Material examined : No material collected in the present lot

Distribution : India : Uttarakhand.

SUMMARY

The present paper deals with 11 species of the Scolopendrid centipedes.

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INSECTA (Various Orders)

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Order ISOPTERA (White Ants, Termites) : Verma (1979) has reported 21 species of termites belonging to 8 genera and 3 families. In the present document the list has been reproduced as such.

SYSTEMATIC ACCOUNT

1. Family KALOTERMITIDAE

1. *Neotermes bosei* (Snyder)

2. Family RHINOTERMITIDAE

2. *Heterotermes indicola* (Wasmann)
3. *Coptotermes* heimi (Wasmann)

3. Family TERMITIDAE

4. *Speculitermes cyclops cyclops* Wasmann
5. *Speculitermes triangularis* Roonwal and Sen-Sarma
6. *Microcerotermes championi* Snyder
7. *Microcerotermes beesoni* Snyder
8. *Angulitermes akhoriasiensis* Chatterjee and Thakur
9. *Odontotermes bhagwati* Chatterjee and Thakur
10. *Odontotermes distans* Holm. & Holm.
11. *Odontotermes girisiensis* Roonwal & Chhottani
12. *Odontotermes gurdaspurensis* Holm. & Holm.
13. *Odontotermes horai* Roonwal and Chhottani

14. *Odontotermes lokanandi* Chatterji and Thakur
15. *Odontotermes microdentatus* Roonwal and Sen-Sarma
16. *Odontotermes obessus* (Rambur)
17. *Odontotermes parvidens* (Holm. &Holm.)
18. *Odontotermes redimanni* (Wasman)
19. *Microtermes mycophagus* (Desnaux)
20. *Microtermes obesis* Holm.
21. *Microtermes unicolor* Snyder

REFERENCE

Verma, S.C. 1979. Termites (Insecta : Isoptera) *In* : Fauna of Corbett National Park by Lamba, B.S. and Bhatnagar, R.K. 1979. *Cheetal,* **21** : 45-46.

Order HEMIPTERA (Bugs) : The bugs of the CTR have been inventoried by Prasad (1979). In all 19 species belonging to 16 genera and 6 families have been reported. The list is reproduced as such.

SYSTEMATIC ACCOUNT

1. Family HYDROMETRIDAE

1. *Ptilomera laticaudata* Hardw.

2. Family NEPIDAE

2. *Ranatra filiformes* (Fabr.)
3. *Ranatra elongata* (Fabr.)
4. *Laccotrepes rubber* (Linn.)

3. Family NAUCORIDAE

5. *Heleocoris ovatus* Montadon

4. Family COREIDAE

6. *Anoplocnemis phasiana* Fabr.
7. *Serinetha augus* Fabr.

5. Family REDUVIIDAE

8. *Acanthaphis flavipes* Stal.

9. *Ectrychotes dispar* Reuter

6. Family PENTATOMIDAE

10. *Macroscytus brunneus* Fabr.

11. *Garpocoris pallidus* Dallas

12. *Dalapadai affinis Dallas*

13. *Dalapada versicolor* Herrich-Schaffer

14. *Dolycori indicus* Stal.

15. *Plautia fimbriata* Fabr.

16. *Cydnus indicus* Stal.

17. *Melanites leda* (Linnaeus)

18. *Melanites zitendis* (Herbst)

19. *Elymnias hypermnestra* (Linn.)

REFERENCE

Prasad, M. 1979. Hemiptera in: Fauna of Corbett National Park (Lamba, B.S. and Bhatnagar, R.K. *Cheetal*, Vol. **20** : 46-47.

Order ODONATA (Dragonflies and Damselflies) : Singh and Prasad. (1977, 1979) have inventoried the dragon and damselflies of the CTR. In all, 37 species (14 belonging to the suborder Zygoptera and 23 to suborder Anisoptera) have been reported. These belong to 25 genera and eight families.

Suborder ZYGOPTERA

1. Family PLATYSTICTIDAE

1. *Caconeura autumnalis* Fraser

2. Family PLATYCNEMIDIDAE

2. *Copera marginipes* (Rambur)

3. Family COENAGRIIDAE

3. *Pseudagrion rubriceps* Selys

4. *Ischnura forcipata* Selys

5. *Ischnura delicata* (Hagen)

6. *Rhodischnura nursei (Menon)*

7. *Aciagrion pallidum* Selys

8. *Agriocnemis clauseni* Fraser

9. *Agriocnemis pygmaea* (Rambur)

4. Family. LESTIDAE

10. *Lestes viridula* Rambur

5. Family CHLOROCYPHIDAE

11. *Rhinocypha quadrimaculata* Selys

12. *Rhinocypha bifasciata* Selys

13. *Labellago lineata lineata* (Burmeister)

6. Family AGRIIDAE

14. *Neurobasis chinensis chinensis* (Linn.)

Suborder ANISOPTERA

7. Family GOMPHIDAE

15. *Mesogomphus lineatus* (Selys)

8. Family LIBELLULIDAE

16. *Tetrathemis platyptera* Selys

17. *Cratilla lineata* (Rambur)

18. *Orthtrum taeneolatum* (Schneider)

19. *Orthetrum chrysostigma luzonicum* (Braur)

20. *Orthetrum sabina sabina Drury)*

21. *Orthetrum traingulare triangulare* (Selys)

22. *Orthetrum japonicm internum* MacLachlan

23. *Orthetrum glaucum*(Brauer)

24. *Orthetrum pruinosum neglectum* (Rambur)

25. *Palpopleura s. sexmaculata* (Fabr.)
26. *Acisoma panerpoides panerpoides* Rambur
27. *Diplacoides nebulosa* (Fabr.)
28. *Diplacoides trivialis* (Rambur)
29. *Crocothemis s. servillia* (Drury)
30. *Neurothemis fulvia* (Drury)
31. *Brachythemis contaminata* (Fabr.)
32. *Sympatrum commixtum* (Selys)
33. *Trithemis aurora* (Burm.)
34. *Trithemis festiva* (Rambur)
35. *Trithemis pallidinervis* (Kirby)
36. *Pantala flavescens* (Fabr.)
37. *Tramea virginia* (Rambur)

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Singh, A. and Prasad, M. 1977. Odonata (Insecta) of Corbett National Park (Uttar Pradesh, India). *J. Bombay nat. Hist. Soc.*, **73** : 419-421.

Singh, A. and Prasad, M. 1979. Odonata in: Fauna of Corbett National Park by Lamba, B.S. and Bhatnagar, R.K. 1979. *Cheetal*, **21** : 43-44.

Order : ORTHOPTERA (Hoppers, Crickets and Gryllids): The Orthopterans of the CTR has been inventoried by Singh and Bhargava, (1979). A total of 34 species beonging to 16 genera and four families. The list is reproduced as such.

SYSTEMATIC ACCOUNT

1. Family ACRIDIDAE

1. *Chrotogonus trachypterus trachypterus* (Blanchard)
2. *Aularches milliaris* (Linn.)
3. *Attractomorpha crenulata* (Fabr.)
4. *Oedaleus senegalensis* (Kraus)

5. *Oedaleus abrustus* (Thunberg)
6. *Acrotylus humbertianus* Saussure
7. *Trilophidia annulata* (Thunberg)
8. *Aiolopus affinis* (Bolivar)
9. *Phloeba infumata* Brunner
10. *Acrida exaltata* (Walker)
11. *Ashwathamus cylindricus* Kirby
12. *Pusana rugulosa* (Uvarao)
13. *Sphingonotus longipennis* Saussure
14. *Sikkimiana darjeelingensis* (Bolivar)
15. *Paraconoyma scabra* (Walker)
16. *Oxya hyla* Serville
17. *Oxya velox* (Fab.)
18. *Pacyacris vinosa* (Walker)
19. *Patanga japonica* (Bolivar)
20. *Catantops innotablis* (Walker)
21. *Stenocatantops splendens* (Thunberg)
22. *Chondracris rosea* (De Geer)
23. *Eyprepocnemis alacris* (Servile)
24. *Trylotropidius varicornis* (Walker)
25. *Oxyrrheps obtuse* De Hann
26. *Hieroglyphus concolor* (Walker)
27. *Choroedocus capensis* Thunberg
28. *Spathosternum prasiniferum* (Walker)

2. Family GRYLLOTALPIDAE

29. *Grylotalpa fossor* Scudder

3. Family GRYLLIDAE

30. *Gryllus domesticus* Linn.
31. *Gymongryllus erythrocephalus* (Serville)

32. *Homoegryllus taicoun* Saussure

33. *Pteronemobius fascipes* Walker

3. Family ENEOPTERIDAE

34. *Madasumma ventralis* Walker

REFERENCE

Singh, A. and Bhargava, R.N. 1979. Orthoptera *In* : Fauna of Corbett National Park by Lamba, B.S. and Bhatnagar, R.K. 1979. *Cheetal*, **21** : 44- 45.

Order EPHEMEROPTERA (May Flies) : Six species of mayflies belonging to four genera in four families have been listed by Prasad (1979). The list is reproduced as such.

SYSTEMATIC ACCOUNT

1. Family POLYMITRACIDAE

1. *Polymitarcys indicus* Pictet

2. Family BAETIDAE

2. *Baetis longistylis* Kaul and Dubey

3. *Baetis solitarius* Gillies

4. *Baetis himalayana* Kapur and Kriplani

3. Family ECDYONURIDAE

5. *Epeorus lahaulensis* Kapur and Kriplani

4. Family PALINGENIIDAE

6. *Palingenia orientalis* Chopra

REFERENCE

Prasad, M. 1979. Ephemeroptera *In* : Fauna of Corbett National Park by Lamba and Bhatnagar, 1979, *Cheetal*, **21**(1) : 43.

Order DERMAPTERA (Earwigs) : 10 species belonging to 5 genera and three families have been reported by Singh and Singh (1978).

SYSTEMATIC ACCOUNT

1. Family Carcinophoridae

1. *Euborella annulipes* (Lucas)
2. *Euborella femoralis* (Dohrn)

2. Family LABIIDAE

3. *Homotagus feae* (Bormans)

3. Family LABIDURIDAE

4. *Nala laevidipes* (Dafour)
5. *Nala nipalensis* (Burr)
6. *Labidura bengalensis* (Dohrn)
7. *Labidura riparia* (Pallas)
8. *Forcipula trispinosa* (Dohrn)
9. *Forcipula quadrispinosa* (Dohrn)
10. *Forcipula indica* Brindle

REFERENCE

Singh, R. and Singh, A.1978. Dermaptera of Corbett National Park (Uttar Pradesh., India). *Newsl. zool. Surv.India,* **3**(6) : 424-426.

Order COLEOPTERA (Beetles) : The beetles of the CTR have been inventoried by Bhargava (1979). Ten species under ten genera of the family Staphylinidae have been reported. The list is reproduced as such.

SYSTEMATIC ACCOUNT

Family STAPHYLINIDAE

1. *Megarthus septumpunctatus* Champ.

2. *Phyllodrea (Dropephylla) almorensis* Champ.
3. *Phlonemos (Phlosostiba) pincola* Champ.
4. *Phyllorhinum florivagnum* Champ.
5. *Tregophloeus (Boopinus) indicus* Kr.
6. *Sternus kratzi* Bernh.
7. *Dianous distigma* Champ.
8. *Philonthus aeneipennis* Boh.
9. *Creophilus maxillosus* L.
10. *Bolitobius spinipes* Champ.

REFERENCE

Bhargava, R.N. 1979. Coleoptera (Beetles). *In* : Fauna of Corbett National Park by Lamba, B.S. and Bhatnagar, R.K. 1979, *Cheetal,* **21**(1) : 47.

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INSECTA : LEPIDOPTERA
(RHOPALOCERA)

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The present study is based on the Rhopalocera (Lepidoptera) material collected from the Corbett Tiger Reserve by field task forces of Northern Regional Station of Zoological Survey of India from the year 2002 to 2005. As a result 36 species of butterflies belonging to eight families have been identified. The identification and distribution of the species are based mainly on Arora and Mondal (1977), Evans (1932), Hannyngton (1910-11), Talbot (1939, 1947), Varshney (1977, 1979, 1990, 1993, 1994, 1997) and Wynter-Blyth (1957).

SYSTEMATIC ACCOUNT

1. Family PAPILIONIDAE

1. ***Papilio polytes romulus*** (Cramer) - **Common Mormon**

1775. *Papilio romulus*, Cramer, *Pap. Exot*, **1** : 67.

1939. *Papilio polytes romulus*, Cramer : Talbot *Fauna of British India* (Butterflies) **1** : 178.

Status : Very common.

Material examined : Dhikala, Leed Khali Chaur, 22.vi.2002, 11 exs., Reg. No. 4376; Thandi sarak, 23.vi.2002, 6 exs., Reg. No. 4384; Jhirna, Kothirao, 27.vi.2002, 1 ex., Reg. No. 4454; Dhela, Dhela forest, 28.vi.2002, 1 ex., Reg. No. 4469; Jhirna Soat, 29.vi.2002, 1 ex., Coll. *J.P. Sati* & party; Dhara Soat, 10 kms. from Jhirna, 2.iv.2003, 2 exs., Reg. No. 4601, Coll. *Vinod Khanna* & party; Khinanauli and around, 25.ii.2005, 1 ex., Reg. No. 5170; Jhirna and around, 28.ii.2005, 2 exs., Reg. No. 5193; Jhirna and around, 20.ii.2005, 2 exs., Coll. *A.N. Rizvi* & party.

Distribution : Throughout India.

Elsewhere : Nepal, Myanmar and Sri Lanka.

Remarks : Talbot (1939) and Wynter-Blyth (1957) are of the opinion that the species do not visit wet places on the road. The present study reports collection of material made not only from damp ground near puddles, but also on a ground dampened with urine and faecal matter. Wing Span : Male 75-95 mm; female 88-94 mm.

2. ***Chilasa clytia clytia*** (Linnaeus) -**Common Mime**

1758 *Papilio clytia,* Linnaeus, *Syst. Nat.*, **10th** Ed. 479.

1939. *Chilasa clytia clytia* (Linnaeus), Talbot, *Fauna of British India (Butterflies)* **1** : 116

Status : Not rare but local.

Material examined : Dhikala, Leed Khali, 22.vi.2002, 1 ex., Reg. No. 4376; Jhirna, Lal Dhang, 28.vi.2002, 1 ex., Reg. No. 4462, Coll. *J.P. Sati & party*; Jhirna, Kothirao, 27.vi.2002, 1 ex., Coll. *Romesh Sharma* and party.

Distribution : Sri Lanka northwards to northwest and western Himalayas. Occasionally up to 7,500 feet in the Himalayas, usually 3,000 feet in the Southern India.

Remarks : Wing Span : 95-100 mm.

3. ***Graphium sarpedon luctative*** (Fruhstorfer) **Common Blue Bottle**

1907. *Papilio luctative,* Fruhstorfer, *Ent.Zeit.*, **20** (30) : 183

1983. *Graphium sarpedon,* Hancock, *Smithersia,* **2** : 47.

Status : Common.

Material examined : Dhulwa soat, 6 kms from Sultan on way to Dhikala, 25.vi.2002, 1 ex., Reg. No. 4407, Coll. *J.P. Sati* & party.

Distribution : Kashmir to Sri Lanka. Commonest at low elevations but in South Indian hills and Himalayas it has been recorded up to 9000 feet.

Remarks : The present study reports collection of material made not only from damp ground near puddles, but also on a ground dampened with urine and faecal matter. Wing Span : 80-90 mm.

4. ***Graphium nomius nomius*** Esper - **Spot Swordtail**

1785–98. *Papilio nomius,* Esper, *Die. Aus. Schmitt.*, 210, pl. 52 fig. 3.

1923. *Pathysa nomius nomius,* Evans, *Identification of Indian Butterflies, J. Bombay nat. Hist. Soc.*, **29** : 238, pl. 5, fig. A., 1932a. p. 54.

Status : Common

Material examined : Jhirna beat no. 8, 5.vi.2002; 3 ex., Jhirna, FRH, 6.vi.2002; 4 exs., Jhirna beat no. 3, 26.vi.2002; 1 ex., Dhara soat, 6 kms. on Jhirna–Kalagarh road, 7.vi.2002, 7 exs..; Lal Dhang, 28.vi.2002, 1 ex., Coll. *Romesh Sharma* & party; Dhumanda Road, 3 kms. from Gairal, 25.vi.2002, 3 exs., Reg. No. 4417; Sultan & around, 26.vi.2002, 1 ex., Reg. No. 4436; Dhara Chaur, 6 kms., from Jhirna, 27.vi.2002, 10 exs., Reg. No. 4445; Lal Dhang, 28.vi.2002, 3 exs., Reg. No. 4462; Dhela Forest, 28.vi.2002, 7 exs., Reg. No. 4469, Coll. *J. P. Sati* & party.

Distribution : Peninsular India to South Bihar, Madhya Pradesh to Uttar Pradesh, Himachal Pradesh and eastwards to Sikkim and Assam.

Elsewhere : Myanmar.

Remarks : The species is a very fast flier and characterized by the presence of bands on wings; hind wing with long and narrow tail and collection made not only from damp ground near puddles. Wing Span : 70-76 mm.

5. ***Papilio demoleus demoleus*** Linnaeus- **Lime Butterfly**

1758. *Papilio demoleus,* Linnaeus, *Syst. Nat.,* (10thed.) : 464.

1912. *Papilio demoleus demoleus,* Linnaeus Talbot, *Fauna British India, (Butterflies),* **1** : 189.

Status : Very common.

Material examined : India : Jhirna beat no. 8, 5.vi.2002; 5 ex., Kothirao, 27.vi.2002, 1 ex.; Lal Dhang, 28.vi.2002, 1 ex., Coll. *Romesh Sharma* & party; Dhikala, Leed Khali Chaur, 22.vi.2002, 4 exs., Reg. No. 4376; Thandi sarak, 23.vi.2002, 2 exs., Reg. No. 4384; Dhumanda road, 3 kms., from Gairal, 25.vi.2002, 1 ex., Reg. No. 4417; Dhara Chaur, 6 kms on Jhirna-Kalagarh road, 27.vi.2002, 2 exs., Reg. No. 4445; Dhela Forest, 28.vi.2002, 3 exs., Reg. No. 4469, Coll. *J.P. Sati* & party.

Distribution : Throughout India.

Elsewhere : Sri Lanka, Pakistan, Iran, Bangladesh, Myanmar, Malaysia, Indonesia, South China, Australia and Taiwan.

Remarks : The species is a very fast flier. Wing Span : Male 68-92; Female 78-96 mm.

Family DANAIDAE

6. ***Danaus chrysippus*** (Linnaeus) - **Plain Tiger**

1758. *Papilio chrysippus,* Linnaeus, *Syst. Nat.* (10th ed.) : 471

1947. *Danaus chrysippus chrysippus*, Talbot, *Fauna British India* (Butterflies), **2** : 21.

Status : Very common.

Material examined : India : Jhirna, FRH, 6.vi.2002, 7 exs.; Jhirna beat No. 3, 26.vi.2002, 1 ex.; Coll. *Romesh Sharma* & party; Dhikala, Thandi sarak, 3.vi.2002, 2 exs., Reg. No. 4384, Coll. *J.P. Sati* & party.

Distribution : India : Throughout.

Elsewhere : Nepal; Myanmar; Sri Lanka; Vietnam; Thailand; South China; Pakistan and Afghanistan.

Remarks : The species is very common throughout the CTR, flying slowly and sluggishly, and easy to catch. It is predominantly tawny in colour, and male of the species bears a secondary sexual character in the form of a scent pouch on hind wing. Wing Span : 61-85 mm.

7. ***Danaus genutia genutia*** (Cramer)- **Common Tiger**

1779. *Papilio genutia,* Cramer, *Pap. Exot.*, **3** : 23.

1998.*Danaus genutia genutia*, Mondal & Maulick, *Fauna of Meghalaya, State Fauna Series,* **4**(Part-6) : 236

Status : Very common.

Material examined : Jhirna beat no. 3, 26.vi.2002, 1 ex., Coll. *Romesh Sharma* & party; Sanguri soat near Gairal, 23.vi.2002, 1 ex., Reg. No. 4493; Aam garhi sot, 4 kms from Sultan, 25.vi.2002, 21 exs., Reg. No. 4426; Dhela Forest, 28.vi.2002, 1 ex., Reg. No. 4469; Jhirna Soat, 29.vi.2006, 2 exs., Reg. No. 4474, Coll. *J.P. Sati* & party; Dhikala Ramganga and around, 20.ii.2005, 1 ex., Reg. No. 5140; Dhikala and around 23.ii.2005, 1 ex., Reg. No. 5136, Coll. *A.N. Rizvi* & party.

Distribution : India; Throughout.

Elsewhere : Nepal; Myanmar; Sri Lanka; Vietnam; Thailand; South China; Pakistan and Afghanistan.

Remarks : The species is very common throughout the CTR in the month of May-June and less common in cold weather. Wing Span : 64-86 mm.

8. ***Eupolea core core*** (Cramer) - **Common Indian Crow**

1779. *Papilio core* Cramer, *Pap. Exot.*, **3** : 133

1947. *Eupolea core core*, Talbot, *Fauna British India (Butterflies)* **2** : 66.

Status : Very common

Material examined : Kothirao beat, 2 exs., 7.vi.2002, Coll. *Romesh Sharma* & party; Dhikala, Leed Khali Chaur, 2 exs., 22.vi.2002, Reg. No. 4376; Sanguri Soat near Gairal,

5 exs., 23.vi.2002, Reg. No. 4393; Dhulwa Soat, 6 kms. from Sultan on way to Dhikala, 2 exs., 25.vi.2002, Reg. No. 4407; Dhela forest, 1 ex., 28.vi.2002, Reg. No. 4469, Coll. *J.P. Sati* & party; Sanguri soat, 1 ex., 18.i.2004, Reg. No. 4713, Coll. *Vinod Khanna* & party; Gairal and around, 1 ex., 20.ii.2005, Reg. No. 5159; 1 ex., 24.ii.2005 Reg. No. 5149, Coll. *A.N. Rizvi* & party.

Distribution : India : Throughout.

Elsewhere : Sri Lanka and Myanmar.

Remarks : The species is very common throughout the park. It is very sluggish in flight. The species was found in large numbers, flying lazily over flowering plants. The species can easily be recognized by its dark brown colour, wings marked with anterior marginal series of white spots and a single short narrow sex band on the upperside of the forewing of males. Wing Span : 75-100 mm.

9. ***Tirumala limniace leopardus*** (Butler) - **Blue Tiger**

1866. *Danais limniace* var. *leopardus,* Butler, *Proc. zool. Soc. Lond.*, : 52, fig. 10 (Female).

1984. *Tirumala limniace leopardus*, Ackery & Vane-Wrig, : 198.

Status : Common.

Material examined : Jhirna FRH, 6.vi.2002, 4 exs., Coll. *Romesh Sharma* & party; Sanguri soat near Gairal, 23.vi.2002, 5 exs., Reg. No. 4393; Jhirna, Jhirna soat, 29.vi.2002, 1 ex., Reg. No. 4474, Coll. *J.P. Sati* & party.

Distribution : Baluchistan and Chitral to Kumaon, West Bengal and Sikkim and Peninsular India.

Elsewhere : Sri Lanka and Myanmar, throughout South and East Asia except Sunda Islands.

Remarks : The species are habitually slow and sluggish in their flight but when disturbed, fly off quickly into the cover. Wing Span : 80-95 mm

3. Family PIERIDAE

10. ***Anaphaeis aurota aurota*** (Fabricius) **Pioneer**

1793. *Papilio aurota,* Fabricius, *Ent. Syst.*, **3**(1) : 197.

1932. *Anaphaeis aurota,* Hemming, *Trans. Ent. Soc. Lond.*, **80**(2) : 283.

Status : Common.

Material examined : Jhirna FRH, 6.vi.2002, 3 exs., Coll. *Romesh Sharma* & party; Dhara Chaur, 6 kms. On Jhirna-Kalagarh road, 27.vi.2002, 2 exs., Reg. No. 4445, Coll. *J.P. Sati* & party.

Distribution : India : Throughout.

Elsewhere : Africa and S.Asia

Remarks : The butterfly occurs abundantly during March to May in the Park. Both the sexes are reported to visit flowers but only the males are reported to settle on damp ground. Wing Span : Male 45-50; Female 45-56 mm.

11. ***Eurema hecabae*** (Wallace) - **Common Grass Yellow**

1867. *Terias fimbriata*, Wallace, *Trans. ent. Soc. Lond.*, (3) **4**(3) : 323.

1932. *Eurema hecabe fimbriata*, Corbet and Penlebury, *Bull Raffles Mus. Sing*, **7** : 160, pl. 5.

Status : Very common.

Material examined : Jhirna FRH, 6.vi.2002, 2 exs.; On way Kalagarh to Jhirna, 8.vi.2002, 1 ex., Coll. *Romesh Sharma* & party; Sanguri Soat near Gairal, 23.vi.2002, 1 ex., Reg. No. 4393; Dhumanda road, 3 kms from Gairal, 25.vi.2002, 1 ex., Reg. No. 4417; Sultan & around, 26.vi.2002, 1 ex., Reg. No. 4436; Jhirna, Kothirao, 27.vi.2002, 1 ex., Reg. No. 4454; Lal Dhang, 28.vi.2002, 1 ex., Reg. No. 4462; Dhela, Dhela forest, 28.vi.2002, 2 exs., Reg. No. 4469; Jhirna Soat, 29.vi.2002, 4 exs., Reg. No. 4474, Coll. *J.P. Sati* & party; Jhirna & around, 6.iv.2002, 3 exs., Reg. No. 4650, Coll. *Vinod Khanna* & party.

Distribution : India : Throughout.

Elsewhere : Tropical and sub tropical areas of Africa, Asia and Australia.

Remarks : The species is very common throughout the Corbett Tiger Reserve. It has very strong seasonal variations. Wing Span : 35-45 mm

12. ***Eurema laeta laeta*** (Boisduval) **Spotless Grass Yellow**

1836. *Terias laeta*, Boisduval, *Spec. Gen. Lep.*, **1** : 674.

1990. *Eurema laeta laeta*, Ghosh, Mondal & Chaudhary, *Rec. zool. Surv. India*, **86**(1) : 22.

Status : Very common.

Material examined : Jhirna FRH 6.iv.2003, 3 exs., Reg. No. 4650, Coll. *Vinod Khanna* & party; Jhirna and around, 28.ii.2005, 1 ex., Reg. No. 5163, Coll. *A.N. Rizvi* & party.

Distribution : Throughout peninsular India, ascending to about 8,000 feet in North-West Himalayas.

Elsewhere : Sri Lanka.

Remarks : The species un-common in the Park .Wing Span 30-45 mm

13. ***Pieris brassicae nepalensis*** Doubleday **Large Cabbage White**

1846. *Pieris brassicae* var. *nepalensis,* Doubleday, Gen. *Diur Lep.* **1** : 9

1939. *Pieris brassicae nepalensis*, Doubleday : Talbot, *Fauna of British India (Butterflies),* **1** : 427-428.

Status : Very common.

Material examined : India : Jhirna FRH, 6.iv.2003, 3 exs., Reg. No. 4650, Coll. *Vinod Khanna* & party.

Distribution : India : Himalaya to Assam and Plains adjoining the Himalayas.

Elsewhere : Pakistan. Wing Span : 62-70 mm

14. ***Catopsilia crocale*** (Cramer) **Common Emigrant**

1775. *Papilio crocale,* Cramer, *Pap. Exot.*, **1** : 87, pl. 57, figs. C & D.

1990. *Catopsilia crocale crocale*, Ghosh, Mondal & Chaudhary *Rec. zool. Surv. India*, **86** (1) : 20.

Status : Very common.

Material examined : Dhikala, Thandi sarak, 23.vi.2002, 3 ex., Reg. No. 4384;; Dhumanda road, 3 kms. from Gairal, 25.vi.2002, 1 ex., Reg. No. 4417; Jhirna, Kothirao, 27.vi.2002, 1 ex., Reg. No. 4454; Dhela, Dhela forest, 28.vi.2002, 3ex., Reg. No. 4469, Coll. *J.P. Sati* & party.

Distribution : Throughout India.

Elsewhere : Sri Lanka, Myanmar to Southern Asia.

Wing Span : 40-68 mm.

15. ***Catopsilia pyranthe*** (Linnaeus)- **Mottled Emigrant**

1758. *Papilio pyranthe,* Linnaeus, *Syst. Nat.* (10th ed.) : 469.

Status : Very common.

Material examined : Dhela, Dhela forest, 28.vi.2002, 3exs., Reg. No. 4469; Jhirna, Jhirna soat, 29.vi.2002, 1 ex., Reg. No. 4474, Coll. *J.P. Sati* & party; Kothirao around., 1.iii.2005, 1 ex., Reg. No. 5204, Coll. *A.N. Rizvi* & party.

Distribution : Throughout India.

Elsewhere : Africa, South Asia and Austrailia.

Remarks : Wing Span : 45-60 mm

16. ***Catopsilia pomana*** (Fabricius) **Lemon Emigrant**

1775. *Papilio pomana,* Fabricius, *Syst. Ent.*, : 479.

1939. *Catopsilia pomana*, Talbot, *Fauna of British India (Butterflies)* **1** : 492-493.

Status : Very common.

Material examined : Kothirao beat, 7.vi.2002, 2 exs.; Lal Dhang, 28.vi.2002, 2 exs.; On way from Kalagarh to Jhirna, 8.vi.2002, 2 exs., Coll. *Romesh Sharma* & party; Dhikala, Leed Khali Chaur 22.vi.2002,, 9 exs., Reg. No. 4376; Dhulwa Soat, 6 kms from Sultan on way to Dhikala, 25.vi.2002, 4 exs., Reg. No. 4407; Dhumanda road, 3 kms from Gairal, 25.vi.2002, 1 ex., Reg. No. 4417, party; Lal Dhang, Jhirna road, 28.vi.2002, 2 exs.; Dhela forest, 28.vi.2002, 2 exs., Reg. No. 4469, Coll. *J.P. Sati* & party.

Distribution : India : Throughout.

Elsewhere : Pakistan; South China to Australia and Pacific; Myanmar and Sri Lanka.

Remarks : This species is present in good numbers during monsoon, after November the adults are scarce. Wing Span : 55-75 mm

17. ***Ceporia nerissa*** (Fabricius) Common Gull

1775. *Papilio phryne,* Fabricius, *Syst. Ent.*, : 473, pl. 2, fig. 7

1907. *Ceporia nerissa phryne* Bingham, *Fauna British India, Butterflies,* **2** : 185.

Status : Very common.

Material examined : India : Uttarakhand, Jhirna beat No. 3, 26.vi.2002, 1 ex., Coll. *Romesh Sharma* & party; Dhara Chaur, 6 kms on Jhirna-Kalagarh road, 28.vi.2002, 1 ex., Reg. No. 4445; Jhirna soat, 29.vi.2002, 1 ex., Reg. No. 4474, Coll. *J.P. Sati* & party.

Distribution : India : Peninsular India to Northwest India.

Elsewhere : Entire Oriental Region.

Remarks : The species is found to be quite common in the Park, settling on flowers and damp ground alongwith the congregating group of *Catopsilia* species. Wing Span : Male 37-56 mm; Female 44-50 mm.

18. ***Pieris canidia indica*** Evans **Common Cabbage White**

1926. *Pieris canidia indica,* Evans, *J. Bombay nat. Hist. Soc.*, **31** : 312.

Status : Very common.

Material examined : Dhara Soat 10 kms from Jhirna, 2.iv.2003, 2 exs.. Reg. No. 4601; Garjia & around, 5.iv.2003, 1 ex., Reg. No. 4639; Dhikala & around, 8.iv.2003, 1 ex., Reg. No. 4661, Jhirna & around, 6.iv.2002, 6 exs., Reg. No. 4650, Coll. *Vinod Khanna* & party; Dhikala and around, 22.ii.2005, 1 ex., Reg. No. 5136; Gairal and around, 24.ii.2005, 2 exs., Reg. No. 5149; Khinanauli and around, 25.ii.2005, 2 exs., Reg. No. 5170; Jhirna and around, 28.ii.2005, 2 exs., Reg. No. 5193; Kothirao and around, 1.iii.2005, 1 ex., Reg. No. 5204, Coll. *A.N. Rizivi* & party.

Distribution : India : Himalayas, Nilgiris, Kerala, Karnataka.

Elsewhere : Pakistan, Myanmar and Nepal.

Remarks : The species is very common in the Corbett Tiger Reserve and does not show much of seasonal variations. Wing Span : 45-95 mm.

19. ***Pontia daplidice*** (Rober) - **Bath White**

1907.*Leucochloe daplidice moorei,* Rober, *Seitz. Macrolep. Fauna of Paleaearctica,* **1** : 49.

Status : Common at high altitudes.

Material examined : Jhirna FRH, 6.iv.2003, 1 ex., Reg. No. 4650; Dhikala & around, 8.iv.2003, 15 exs., Reg. No. 4661, Coll. *Vinod Khanna* & party.

Distribution : India : Kashmir to Punjab, Western Himalaya.

Elsewhere : Nepal and Pakistan.

Remarks : Wing Span : 42-48 mm.

4. Family NYMPHALLIDAE

20. ***Précis almana almana*** (Linnaeus) - **Peacock Pansy**

1758. *Papilio almana,* Linnaeus, *Syst. Nat.* (10th ed.) : 472, no. 89.

1932. *Precis almana almana* (Linnaeus), Evans, *Bombay nat. Hist. Soc.*, 176.

Status : Common.

Material examined : Seddle Dam, Paterpani, 24.i.2003, 2 exs., Reg. No. 4756, Coll. *Vinod Khanna* & party.

Distribution : Throughout continental and peninsular India, *Elsewhere* : Sri Lanka and Myanmar.

Remarks : The species is common in the park and found in both the moist as well as dry jungle areas.

Remarks : Wing Span : 45-52 mm

21. ***Précis lemonias*** (Linnaeus) - **Lemon Pansy**

1758. *Papilio lemonias* Linnaeus, *Syst. Nat.*, (10th ed.) : 473, no. 93.

Status : Common.

Material examined : On way from Kalagarh to Jhirna, 8.vi.2002, 1 ex.; Lal Dhang, 1 ex., 28.vi.2002, Coll. *Romesh Sharma* & party; Dhikala, Leed Khali Chaur, 22.vi.2002, 2 exs., Reg. No. 4376; Dhikala, Thandi sarak, 23.vi.2002, 2 exs., Reg. No. 4384; Sanguri soat near Gairal, 23.vi.2002, 2 exs., Reg. No. 4393; Dhulwa soat, 6 kms. from Sultan on way to Dhikala, 25.vi.2002, 2 exs., Reg. No. 4407; Dhumanda road, 3 kms. from Gairal, 25.vi.2002, 10 exs., Reg. No. 4417; Dhela forest, 28.vi.2002, 1 ex., Reg. No. 4469, Coll. *J.P.Sati* & party.

Distribution : India : Kashmir to Kumaon, Assam, West-Bengal.

Elsewhere : Sri Lanka and Myanmar extending upto Malaysia.

Remarks : The species is quite common in CTR The seasonal forms are quite distinct with prominent ocelli on wings in wet season forms and reduced ocelli on wings in Dry season forms..

Remarks : Wing Span : 40-52 mm.

22. ***Precis iphita siccaitica*** (Cramer) **Chocolate Pansy**

1779. *Papilio iphita,* Cramer, *Pap. Exot.* **3** : pl. 209, figs. C, D.

1882. *Precis iphita* De Niceville. *Asiat. Soc. Beng.*, **51**(2-3) : 57.

Status : Common.

Material examined : Dhulwa Soat, 6 kms from Sultan on way to Dhikala, 25.vi.2002, 2 exs., Reg. No. 4407, Coll. *J.P. Sati* & party.

Distribution : India : Kashmir to Kumaon.

Elsewhere : Sri Lanka and Myanmar.

Remarks : The species is very fond of visiting damp places and moist areas and never found in dry and open area. Both sexes are predominantly brown in colour, with obscure brown bands and poorly developed ocelli.

Remarks : Wing Span : 52-75 mm.

23. ***Precis heirta*** (Fabricius) **Yellow Pansy**

1758. *Papilio hierta,* Fabricius, *Ent. Syst.* (Suppl.) : 424, no. 281.

1932. *Precis heirta*, Evans, *Bombay nat. Hist. Soc.*, : 176.

Status : Very common.

Material examined : Jhirna, Kothirao, 27.vi.2002, 1 ex., Reg. No.4454, Coll. *J.P.Sati* & party.

Distribution : India : Throughout. *Elsewhere* : Sri Lanka and Myanmar.

Remarks : The species is quite common in the Park

24. ***Precis orithya*** (Linnaeus) **Blue Pansy**

1764. *Papilio orithya,* Linnaeus, *Mus. Ludov. Ulr.*, 278, no. 96.

1932. *Precis orithya swinhoei*, Evans *Bombay nat. Hist. Soc.*, : 176.

Status : Common.

Material examined : Dhikala and around, 22.ii.2005, 1 ex., Reg. No. 5136, Coll. *A.N. Rizvi* & party.

Distribution : The species ranges from Pakistan eastwards through Himalayas to Sikkim.

Elsewhere : Sri Lanka and Myanmar.

Remarks : The species is common in India during March to October in North-west Himalayas and ascends to about 9,000 feet. Wing Span : 35-45 mm

1. Family : SATYRIDAE

25. ***Melanitis leda ismene*** (Cramer) **Common Evening Brown**

1775. *Papilio ismene,* Cramer, *Pap. Exot.*, **1** : 40, pl. 26, figs. A, B.

1947. *Melanitis leda ismene,* Talbot, *Fauna of Brit. India, Butterflies,* **2** : 366-369.

Status : Very common.

Material examined : Nakka Tal near Malani, 19.i.2004, 1 ex., Reg. No. 4727, Coll. *Vinod Khanna* & party.

Distribution : India : Throughout.

Elsewhere : Sri Lanka; Malaya; Japan; Sumatra; Borneo and Myanmar, South and South east Asia and Australia.

Remarks : The species is best known for seasonal variation. Wing Span : 62-70mm

26. ***Mycalesis perseus blasius*** (Fabricius) - **Common Bushbrown**

1798. *Papilio blasius*, Fabricius, *Ent. Syst.*, (Suppl.) : 426.

1947. *Mycalesis perseus blasius*, Talbot, *Fauna British India, Butterflies*, **2** : 132-133.

Status : Very common.

Material examined : Nakka Tal near Malani, 19.i.2004, 2 ex., Reg. No. 4727, Coll. *Vinod Khanna* & party.

Distribution : India : South India to Bengal, H.P., U.P. and Assam.

Elsewhere : Myanmar and Sri Lanka and South east Asia.

Remarks : Wing Span : 35-50 mm.

27. ***Yphtima ceylonica hubneri*** (Kirby) - **Common Four-Ring**

1871. *Ypthima huebneri*, Kirby, *Syn. Cat. Diurn. Lep.*, : 95

1947. *Yphtima ceylonica hubneri*, Talbot, *The Fauna of British India, (Butterflies)*, **2** : 329-330.

Status : Very common.

Material examined : Kothirao beat No. 8, 7.vi.2002, 1 ex.; On way Kalagarh to Jhirna, 8.vi.2002, 1 ex., Coll. *Romesh Sharma* & party;

Distribution : India : Throughout Peninsular India to Assam, Bengal.

Elsewhere : Myanmar and Sri Lanka.

Remarks : The species is charactersed by the presence of four rings on the underside of hind wing, one in sub-apical and three in tornal area, the latter contiguous to each other. Wing Span : 30-35 mm.

28. ***Ypthima sakra nikaea*** Moore - **Himalayan Five ring**

1874. *Ypthima nikaea,* Moore, *Proc. zool. Soc. Lond.*, : 567.

1932. *Ypthima sakra nikaea*, Evans, *The Identification of Indian Butterflies* : 123.

Status : Common.

Material examined : Kothirao beat No. 8, 7.vi.2002, 1 ex., Coll. *Romesh Sharma* & party.

Distribution : Murree (Pakistan) to Kumaon (India), Assam and Karen hills.

Remarks : Wing Span : 45-55 mm.

29. ***Ypthima baldus baldus*** (Fabricius) **Common Five ring**

1775. *Papilio baldus,* Fabricius, *Syst. Ent.*, **(3) 1** : 829

1947. *Ypthima baldus baldus*, Talbot, *The Fauna of British India" (Butterflies),* **2** : 337-338.

Status : Common.

Material examined : Garjia & around, 5.iv.2003, 1 ex., Reg. No. 4639, Coll. *Vinod Khanna* & party.

Distribution : Throughout India.

Elsewhere : South to SE Asia.

Remarks : The species is common in the

Remarks I : Wing Span : 35-38 mm.

6. Family LYCAENIDAE

30. ***Heliophorus sena*** (Kollar)- **Sorrel Sapphire**

1844. *Polyommatus sena*, Kollar, *In* : Hegel's Kaschmir *und das Reichder Seik,* **4**(2) 415, pl. 5 figs. 3, 4 (male).

Status : Very common.

Material examined : Aamgarhi Soat, 4 kms from Sultan on Dhangarhi Road, 25.vi.2002, 2 exs., Reg. No. 4426, Coll. *J.P. Sati* & party.

Distribution : Very common from Chitral (Pakistan) to Kumaon and ascends to about 9,000 feet in Himalayas.

Remarks : Wing Span : 25-30 mm.

31. ***Castalius rosimon*** (Fabricius) - **Common Pierrot**

1775. *Papilio rosimon,* Fabricius, *Syst. Ent.*, : 523.

1907. *Castalius rosimon,* Bingham, *The Fauna of British India (Butterflies),* **2** : 424.

Status : Common.

Material examined : Jhirna FRH, 6.vi.2002, 2 exs., Coll. *Romesh Sharma* & party; Sultan & around, 26.vi.2002, 1 ex., Sultan & around, 26.vi.2002, 1 ex., Reg. No. 4436; Dhara Chaur, 6 km on Jhirna-Kalagarh road,., 27.vi.2002, 1 ex., Reg. No. 4445; Dhela forest, 28.vi.2002, 2 exs., Reg. No. 4469;Coll. *J.P. Sati* & party.

Distribution : Throughout India including Andaman and Nicobar Islands,

Elsewhere : South and SE Asia

Remarks : The species is very common in the Park. Wing Span : 24-30 mm.

32. *Amblypodia silhetensis* Hewitson **Sylhet Oak blue**

1862. *Amblypodia silhetensis* Hewitson *Cat. Lycaenidae* B.M., P.7 No.31, pl.–4, figs. 27-28.

Status : Rare.

Material examined : Dhikala, Thandi Sarak, 23.vi.2002, 2 exs., Reg. 4384; Dhulwa Soat, 6 kms from Sultan on way to Dhikala, 25.vi.2002, 1 ex., Reg. No. 4407, Coll, *J.P. Sati* & party

Distribution : India : Sikkim and Assam, *Elsewhere* : Myanmar.

Remarks : Wing Span : 50-56 mm.

33. ***Curetis dentate*** Moore **Toothed Sunbeam**

1878. *Curetis dentate,* Moore, *Proc. zool. Soc.*, Lond., 137.

Status : Not rare.

Material examined : Dhela forest, 28.vi.2002, 2 exs., Reg. No. 4469; Coll. *J.P.Sati* & party.

Distribution : India : Himalaya to Kulu to Sikkim, Assam and Arunachal Pradesh; South India. Madhya Pradesh.

Elsewhere : Myanmar and Nepal.

Remarks : The species is not reported to visit flowers. Wing Span : 35 mm.

7. Family HESPERIIDAE

34. ***Borbo bevani*** (Moore)- **Bevan's Swift**

1878. *Hesperia bevani*, Moore, *Proc. Zool. Soc.* London : 688.

1949. *Borbo bevani*, Evans, *Brit. Mus.* (*nat. Hist.*) London : 437.

Status : Common.

Material examined : Dhulwa soat, 6 kms from Sultan on way to Dhikala, 25.vi.2002, 1 ex., Reg. No. 4407, Coll. *J.P.Sati* & party; Garjia & around, 5.iv.2003, 1 ex., Reg. No. 4639, Coll. *Vinod Khanna* & party.

Distribution : India : South India to Madhya Pradesh, Bombay, Lucknow. Kolkata, Pakistan to Assam. *Elsewhere* : Sri Lanka.

Remarks : Wing Span : 32-35 mm.

8. Family ERYCINIDAE

35. ***Libythea leptia*** Moore - **Common Beak**

1857. *Libythea leptia*, Moore, *Cat. Lep.Mus. E.I.C.*, **1** : 240, no. 519.

Status : Common

Material examined : Dhara Soat 10 kms from Jhirna, 2.iv.2003, 2 exs., Reg. No. 4601, Coll. *Vinod Khanna* & party.

Distribution : India : Kashmir to Assam and South India.

Elsewhere : Sri Lanka and Myanmar.

Remarks : Wing Span : 45-50 mm.

36. ***Abisara echerius*** (Stoll) - **Plum Judy**

1865. *Sospita echerius*, Moore, *Proc. zool. Soc.*, Lond., p. 771.

1932. *Abisara echerius*, Evans, The *Identification of Indian Butterflies* : 197.

Status : Common.

Material examined : Dhulwa soat, 6 kms from Sultan on way to Dhikala, 25.vi.2002, 1 ex., Reg. No. 4407, Coll. *J.P. Sati* & party.

Distribution : India : Chamba (Himachal Pradesh) to Assam, Bihar, Bengal, Peninsular India.

Elsewhere : Sri Lanka and Myanmar.

Remarks : Wing Span : 42 mm.

SUMMARY

36 Species of butterflies belonging to eight families have been reported in the present communication. In all, seven species have been reported as first record from CTR.

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Bibliography is a backbone to any topic. The present effort, therefore, is directed at collation of the available references on the fauna, flora, vegetation, forests, management and strategies, reports and studies by Ministry of Environment & Forests and its subordinate agencies, Indian Institute of Public Administration, NGOs etc relating to Corbett Tiger Reserve.

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