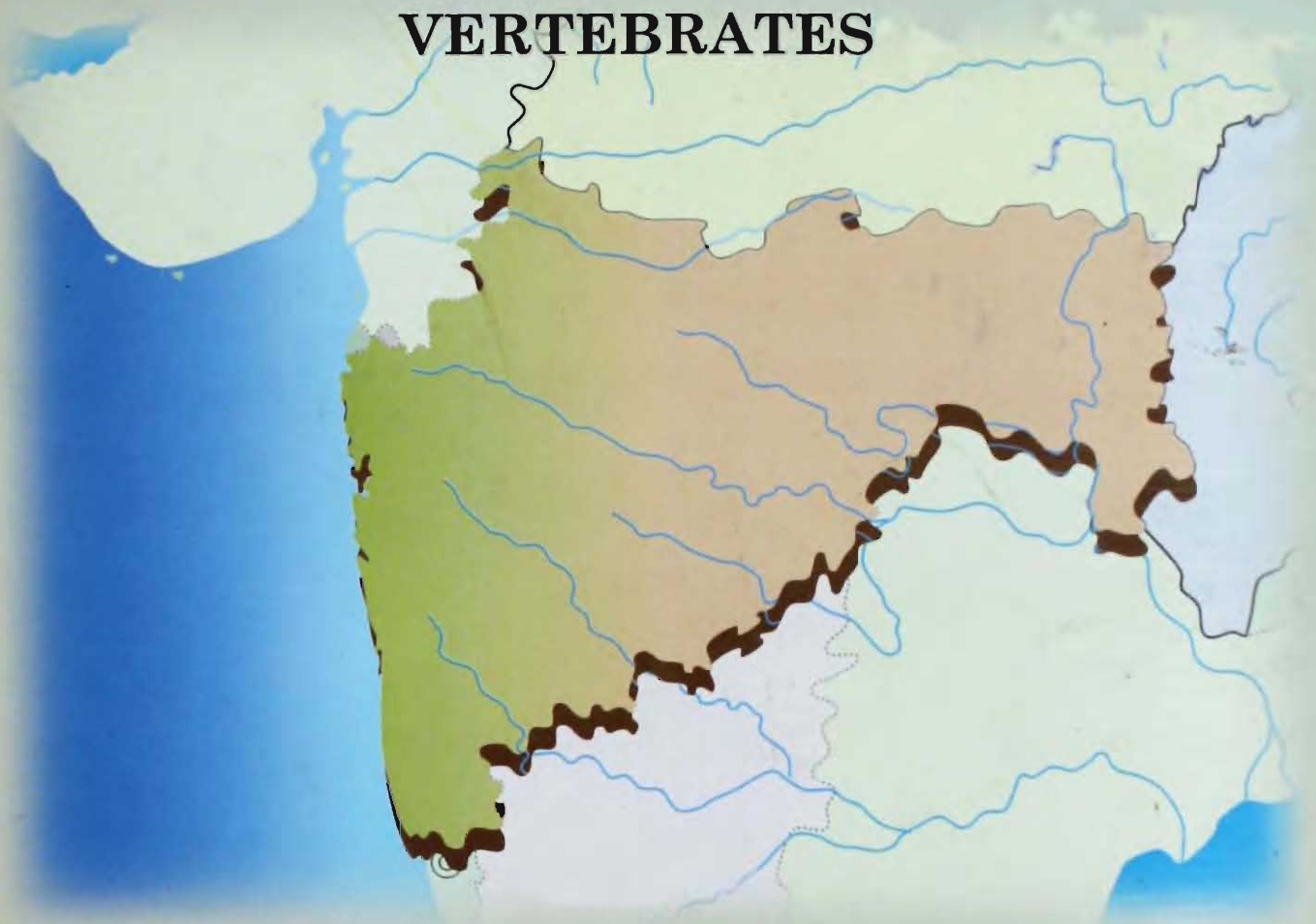


STATE FAUNA SERIES 20

FAUNA OF MAHARASHTRA

PART – 1

VERTEBRATES



ZOOLOGICAL SURVEY OF INDIA



State Fauna Series, 20

FAUNA OF MAHARASHTRA

(PART-1)

VERTEBRATES

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FAUNA OF MAHARASHTRA

No. 20 (Part-1)	2012	1-480

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AN OVERVIEW

ANIL MAHABAL and R.M. SHARMA

PHYSICAL GEOGRAPHY

Area and Borders

The state of Maharashtra lies between 15°32' to 22°02' N latitude and 72°36' to 80°54' E longitude and is the third largest state of the country with an area of 3,07,714 sq km constituting 9.36% of India's total geographic area. The state is bounded by states of Gujarat and union territory of Dadra and Nagar Haveli on northwest, Madhya Pradesh on north, Chhattisgarh on northeast, Andhra Pradesh in the east, Karnataka and Goa on the south, and Arabian Sea on the west (Map-1). As per the 2011 census records the population of state is 11,23,72,972 with a density of 365 persons per sq km. In this state 45.23% of people are living in Urban areas whereas 54.77% are living in rural areas.

Divisions

Administratively, the state is being divided into 6 regions, 35 districts (Map-1), 357 talukas, 336 cities and towns, and 40,412 inhabited villages. The capital of the state is Mumbai. The six administrative regions of state are Kokan, Western Maharashtra (traditionally Ghat matha, Maval and Desh), Marathwada, Uttar Maharashtra (earlier Khandesh), Amravati and Nagpur (earlier Vidharbh). Again these regions are sub-divided further on the basis of physical, eco-cultural traits or combination of these.

Geology and Minerals

The important geological feature of the State is the basaltic plateau of the Deccan trap. The basalt is a basic igneous rock resulting from

solidification of basic magma, which came up through fissures. The basalts are composed of variety of minerals, particularly, Plagioclase, Pyroxemes, Iron Oxides and some other constituents. Structurally, the state is a part of the peninsular shield mainly covered with lava rocks which dates back to 30 million years. The hill ranges of Western Ghats were formed due to the volcanic eruption which resulted in stratified horizontal layers. The Archaens, the Dharwars, the Cuddappah and the Vindhyan rocks are mostly found in eastern parts of Maharashtra, particularly in Chandrapur, Nagpur and Bhandara districts. The Kaladyis with their sandstones and quartzite are exposed in Kokan, particularly in Ratnagiri district. The minerals found in the State are coal, iron ore, limestone, dolomite, bauxite, manganese, chromites, clay, copper, silica, sand, limenite, etc.

River Basins

The State is drained by two of its major river basins, Godavari and Krishna, which ultimately meet the Bay of Bengal. The west flowing, Tapi river and its tributaries like Panjhra, Purna, Girna drain into the Arabian sea. The river Narmada flows on the northern border of Nandurbar district and meets the Arabian sea on the west. Similarly, Kokan streams such as, Vaitarna, Tansa, Damanganga, Ulhas, Savitri, Vashisthi, Shastri, Kundalika, etc. emerge from the Western Ghats and join the Arabian sea.

The Krishna river basin is formed by the rivers and their tributaries originating from Western Ghats, namely, Sina, Kukdi, Indrayani, Pavana, Mula-Mutha, Bhima, Ghod, Nira, Man, Bori, etc. join to form Bhima river in Western Maharashtra,

which in turn meet the Krishna river in the State of Karnataka whereas Krishna, Koyna, Warna, Pachganga, Yerla rivers originating also from Western Ghats, meet Krishna river in the State of Maharashtra.

The Godavari river basin is formed by the rivers and their tributaries such as, Pravara, Godavari (originates from Western Ghats), Sindphana, Manjara, Manar (from Balaghat Range), Purana, Bhagwati, Dudhana (from Ajanta Range) of the Uttar Maharashtra and the Marathwada regions as well as the rivers like Painganga, Wardha, Pench, Wainganga, Indravati, Pranhita from the Amravati and Nagpur regions in turns meets Godavari river partly in the State of Maharashtra, partly in the State of Andhra Pradesh and partly on these State boundries.

Climate

Three prominent seasons viz. the monsoon, the winter and the summer can be observed in the state. The monsoon lasts from mid-June to the end of September; winter from October to January and summer from February to mid-June. The average annual rainfall in Kokan coastal area ranges from 2000 to 2500 mm and in Western Ghats and hilly areas from 2000 to 5500 mm or above. Many of the districts of Uttar and Western Maharashtra regions lies in the rain shadow of the Western Ghats and have a mean annual rainfall between 600 and 1200 mm. In Marathwada region, the rainfall is less than 500 mm. The Amravati and Nagpur regions receive two monsoons such as, regular rainy season due to southwest monsoon and winter monsoon received from Bay of Bengal in eastern side. The average rainfall in these regions ranges between 500 and 1000 mm. The mean temperature of the area ranges from is 16°C to 37°C depending upon seasons. The summer is hot in Marathwada, Amravati and Nagpur regions as compared to Kokan and Western Maharashtra regions. In winter northern part of the State is much colder than the southern part.

Forests

In Maharashtra, 20.8% area is comprised of forest land whereas 58% area is under agricultural

use and the remaining 21.2% is under non-agricultural and non-forest area. The actual forest cover is 15.4% of state area of which about 10% is dense forest cover and the remaining 5.4% is open tree cover. Only 0.04% of the state area has mangrove forest and about 2% area has scrub forest. Only 4% of the State area is considered as pastures and other grazing lands. The unclassified tree crops and groves on non-forest land cover is 2.7% whereas the fallow land cover is about 3.4% of the State area (Pande, 2005). Extensive tracts of thick forests are still present in the Amravati and Nagpur regions and some patches in the Northern Western Ghats.

Forest Types

Based on the climatic and geographic factors particularly rainfall, temperature and altitude, Indian region has been classified into four major vegetation zones, namely, Tropical, Sub-tropical, Temperate and Sub-Alpine as well as Alpine Forests. Sixteen important forest types are identified in India (Champion and Seth 1968). Of these, the State possesses 6 forest types and 39 forest subtypes. Forest Research Institute (1999) report also indicates six forest types in Maharashtra (code is given in parenthesis).

1) Tropical semi-evergreen forests (code 2) : These types of forest are seen on high Sahydran Plateaus like Mahabaleshwar, Matheran, Bhimashankar, Amboli Ghat, etc. particularly in heavy rainfall areas. The principal tree species inhabiting these forests are Jamun (*Syzygium cumini*), Pisa (*Actinodaphne hookeri*), Anjani (*Memecylon umbellatum*, Hirda (*Terminalia chebula*) and Lanki (*Olea diocia*).

2) Tropical moist-deciduous forests (code 3) : These are found in Chandrapur, Gadchiroli, Bhandara, Gondia and Amaravati districts in Nagpur and Amravati regions of the Maharashtra State and also on the slopes of the Western Ghats spreading from Nandurbar, Dhule, Nashik, Thane to Kolhapur districts. These types of forests accounts for 17% of the total forest area of the State. Principal tree types are Teak (*Tectona*

grandis), Ain (*Terminalia tomentosa*) and Haldu (*Adina cordifolia*).

3) Littoral and swamp forests (code 4) : Littoral forests mostly include mangrove vegetation forming discontinuous narrow belts along the west coast and creeks. The main tree species are *Avicennia* and *Rhizophora*. These trees are used for fuel and are also useful in preventing coastal erosion. Swampy vegetation occurs along the coastal area of Kokan and in hill valley areas.

4) Tropical dry-deciduous forests (code 5) : These forests occur in relatively low rainfall areas having rainfall between 1000-1250 mm. These forests occupy 62% of the total forest area of the State. Parts of Nagpur, Amravati and Uttar Maharashtra Regions and the eastern slopes of Western Ghats possess the tropical dry deciduous forests. Teak (*Tectona grandis*), Tiwas (*Ougeinia dalbergioides*), Khair (*Acacia catechu*), Shivan (*Gmelina arborea*), Dhavda (*Anogoissus latifolia*) are the principal tree species in this type of forests.

5) Tropical thorn forests (code 6) : These forests are found in fragments and discontinuous small pockets in the Deccan Plateau where rainfall is less than 500 mm. They are particularly seen in Uttar and Western Maharashtra regions. The main tree species are Babul (*Acacia arabica*), Ber (*Zizyphus jujuba*) and Palas (*Butea monosperma*).

6) Sub-tropical broadleaved hill forests (code 8) : In this forest type one forest sub-type in Western Sub-tropical hill forest is present along the elevated ravines and crest line of Western Ghats area particularly in area of Mahabaleshwar. These forests are found between 1000 m and 1700 m altitude. These forests are essentially without conifers.

Further in 2003, one additional Forest Subtype –West coast tropical evergreen forest (under the Forest Type, Wet evergreen forest, code 1) was reported from Maharashtra particularly listed from Radhanagari Wildlife Sanctuary. Another Forest Subtype, very moist teak forest has also been reported from Sanjay Gandhi National Park and from both Phansad and Tansa Wildlife Sanctuaries of the State (Pande, 2005). This makes a total of

7 Forest Types and 41 Forest Subtypes from Maharashtra.

BIOGEOGRAPHY

The world is divided into six zoogeographical regions, namely, Nearctic, Neotropical, Australian, Ethiopian, Palearctic and Oriental. The Indian sub-continent alongwith South China, South East Asia, North West Indonesia and associated islands fall into the Oriental Region. Rodgers and Panwar (1988) classified India's land area further into 10 Biogeographic Zones such as, 1. Trans Himalaya, 2. Himalaya, 3. Indian Desert, 4. The Semi-arid zone, 5. Western Ghats, 6. Deccan Plateau (Penninsula), 7. Gangetic Plain, 8. Coasts, 9. Islands and 10. North-East India. These zones are further sub-divided into 26 Biotic Provinces. This classification was done for systematic conservation planning of biodiversity. Of these, 3 biogeographic zones with 6 distinct biotic provinces (along with code) have been identified in the State of Maharashtra (Table-1). The Table 1 contains total area under each province with their percentage of state area along with number of Protected Areas (National Parks and Wildlife Sanctuaries) within such provinces. The following are the details of each zone and province.

1) 5 Western Ghats Zone

The Western Ghats is one of the major Biogeographic Zone in India. It stretches from 22° N to 8° N latitude for nearly 1600 km covering an area of 1,60,000 sq km running parallel to the West coast of peninsular part of India through the States of Gujarat, Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala. It has its evolutionary continuity for more than 85 million years and has complex topography, range of microclimate and soil conditions resulting in a mosaic plant community and unique animal associations (Lakshminarayana *et al.*, 2001). In total 37,554 sq km area of this zone comes under Maharashtra, which accounts to 12.2% of total area of the State. This zone is further divided into two Biotic provinces such as, Malabar Plains Province and Western Ghats Mountains Province (Table-1).

i) **5A Malabar Plains Province** : This area lies mainly between the Arabian coast and the Western Ghats Mountains Province. It is a narrow strip of coastal plains, about 27 to 48 km broad, stretching all along the State from north to south covering a distance of about 720 km. This part is also called as 'Kokan'. The six coastal districts such as, Thane, Mumbai city, Mumbai suburban, Raigad, Ratnagiri and Sindhudurg are falling under this province. Altitude of this province ranges from mean sea level to 300 m. The Forest types and Subtypes occurring in this province are mainly southern tropical semi-evergreen, mixed to moist-deciduous, moist teak and mangrove scrub forests. Only one National Park *i.e.* Sanjay Gandhi National Park and three Wildlife Sanctuaries are falling under this province (Table-1 & 2).

ii) **5B Western Ghats Mountains Province** : This province in Maharashtra commences from Nandurbar district of Uttar Maharashtra and Dang district of Gujarat in north and runs up to Terekhol creek of Goa in south. This part of Western Ghats of Maharashtra is also called as 'Sahyadri' and is high rising border of Deccan Plateau. This is the most conspicuous physiographic feature of Peninsular India. The north-south run of this province is about 800 km and is parallel to the west coast. Western Ghats Mountains Province is spread over partly in the Nandurbar, Dhule,

Nashik, Thane, Pune, Ahmadnagar, Satara, Sangli and Kolhapur districts. Altitude of the Western Ghats ranges from 600 m to 1200 m or above. The average altitude of the crest and conical hill tops of this Western Ghats is about 1400 m with some mountain peaks like Matheran (802 m), Bhimashankar (1000 m), Panchgani (1310 m), Harishchandragad (1402 m), Mahabaleshwar (1410 m) whereas the Kalsubai (1646 m) is the highest peak in the State of Maharashtra.

The average annual rainfall in this Western Ghats Mountains Province varies from 1000 mm to 5500 mm or above. The good amount of rainfall, high altitude and better soil types supports good substantial forested areas. The Forest types and Subtypes occurring in this province are sub tropical evergreen forest, west coast semi-evergreen and mixed moist-deciduous forests on higher elevations whereas on the slopes supports dry and mixed-deciduous hill forest with some Shola vegetation and on lower elevations some scrub jungles with moist teak. One National Park (Chandoli National Park) and five Wildlife Sanctuaries are falling under this province (Table-1 & 2).

2) 6 Deccan Plateau

The Deccan Plateau Biogeographic Zone of Peninsular India is most extensive zone covering

Table 1. Biogeographic Zones and Biotic Provinces of Maharashtra*

Sl. No.	Biogeographic Zone alongwith code	Biotic Provinces alongwith code	Province Area in sq km with % of State area	Total No. of NP/WLS
1	5 Western Ghats	i) 5A Malabar Plains ii) 5B Western Ghats Mountains	23,626 (7.7) 13,928 (4.5)	1 NP & 3 WLS 1 NP & 5 WLS
2	6 Deccan Plateau	i) 6A Central Highlands ii) 6D Central Plateau iii) 6E Southern Plateau	12,679 (4.1) 2,46,148 (80.0) 7,866 (2.6)	1 NP & 6 WLS 3 NP & 20 WLS Nil
3	8 Coasts	i) 8A West Coast	3,467 (1.1)	1 WLS
Total Area of the State			3,07,714	
Total Protected Areas (PA's)				41 = 6 NP & 35 WLS

NP-National Park; WLS-Wildlife Sanctuary

Source : Compiled and adopted from Pande (2005)

14,21,000 sq km or 43% of total land mass of the country. Of which, Maharashtra accounts to 2,66,693 sq km area or 86.7% of the State area. This zone is further divided into three Biotic Provinces such as, Central Highlands Province, Central Plateau Province and Southern Plateau Province (Table 1).

(i) **6A Central Highlands Province** : This area is particularly the Satpuda-Maikal Range (between Narmada and Tapi River) on the southern border of the State of Madhya Pradesh and northern boundary of Nandurbar, Dhule, Jalgaon, Akola and Amravati districts of Maharashtra. The Buldhana-Gavilgad Range also occurs in this province. Altitude in this province ranges between 300 m and 600 m, whereas in some areas of Satapuda and Gavilgad ranges, it varies between 600 m and 1100 m. Southern tropical dry-deciduous with dry teak are the Forest Subtypes occurring in the forested areas of this province. One National Park (Gugamal National Park) and six Wildlife Sanctuaries fall within this province (Table-1 & 2).

(ii) **6D Central Plateau Province** : This province comprises 80% of the State area (Table-1) and covers five administrative regions such as Uttar Maharashtra, Marathwada, Amravati region, Nagpur region and parts of the districts from Western Maharashtra (Map-1).

There are many ranges and hills occurring in this province beside several river basins. After the first Satpuda-Maikal Range of Central Highlands Province, occur the second set of hill ranges, Satamala Range and Ajanta Range and the third set of hill ranges, Harishchandra Range and Balaghat Range towards south and south east. In between the first and second set of hill ranges, major river Tapi and number of its tributaries form Tapi river basin occur whereas in between second and third sets of hill ranges, major river Godavari and number of its tributaries form the Godavari river basin are found. Towards further south, the last range in this province is Mahadev Range; this range separates Bhima river with number of its tributaries on its northern part and Krishna river

basin on its southern part. There are also Hingoli Hills, Mudkhed Hills, and Garamsur Hills occurring in this Central Plateau Province. As this province exhibits alternate arrangement of hills and plateaus, altitude varies from 300 m to 900 m or above. Southern tropical dry and mixed-deciduous forest along with dry teak, secondary scrub, and southern thorn forests are found in this province. Three National Parks (Pench, Nawegaon and Tadoba National Parks) and 20 Wildlife Sanctuaries fall within this province (Table-1 & 2).

(iii) **6E Southern Plateau Province** : This covers a small area of Deccan Plateau. It is adjoining the Western Ghats on west side and Central Plateau on eastern side covering most of the Kolhapur district and parts of Sangli and Satara districts of the State (Map-1 & 2). The southern tropical dry and mixed moist-deciduous forests occur in this province. There are no National Parks and Wildlife Sanctuaries in this province (Table-1).

3) 8 Coastal Zone

India has a coast line of about 7500 km stretching over nine states and two archipelagos on eastern and western sides (Alfred *et al.* 2001). The complex coastal ecosystem comprises of gulfs, estuaries, lagoons, backwaters, salt marshes, mangroves, mud flats, rocky and sandy shores.

i) **8A West Coast Province** : Coastal Maharashtra, having a length of 720 km and an area of about 3,467 sq km, is hardly 1.1% of the State area (Table-1). The State has Exclusive Economic Zone (EEZ) of 200 nautical miles from the coast line to adjacent territorial waters. There are six coastal districts, namely, Sindhudurg, Ratnagiri, Raigad, Mumbai, Mumbai suburban and Thane. The Forest types and Subtypes occurring in this province are Littoral forest including the mangrove vegetation, swampy vegetation and coastal scrub forest. The only marine protected area of the state Malvan Sagri (Marine) Wildlife Sanctuary of about 29 sq km area falls in this province (Table-2).

Table 2. National Parks and Wildlife Sanctuaries (Protected Areas) of Maharashtra* (as per the Biogeographic Zones and Boitic Provinces)

Sl. No. 1	Name of Protected Areas 2	District 3	Total Area (Sq km) 4	Year of Notification 5	Biotic Province 6	Forest Type 7
	Western Ghat Zone (Code 5)					
1	Phansad WLS	Raigad	69.79	1986	5A Malabar plain	Southern moist, semi-evergreen & very moist teak
2	Karnala Fort Bird Sanctuary	Raigad	16.84	1968	5A Malabar plains region – spurs of Western Ghats (Sea level 470 msl)	Southern moist mixed deciduous forest to semi-evergreen forest
3	Sanjay Gandhi NP	Mumbai & Thane	86.96	1950/1983	5A Malabar plains region – spurs of Northern Western Ghats (Sea level to 462 msl)	Southern mixed to moist deciduous, semi-evergreen, mangrove scrub forest and very moist teak
4	Tungareshwar WLS	Thane	85.7	2003	5A – Malabar plain	Deciduous & evergreen forest
5	Kalsubai Harishchandragarh WLS	Ahmednagar	361.71	1986	5B Western Ghats Mountain region (333-1646 msl)	West coast southern mixed moist deciduous forest to semi-evergreen & evergreen forest
6	Tansa WLS	Thane	304.81	1970	5B Western Ghats Mountain region (52-859 msl)	Southern mixed moist deciduous forest to semi-evergreen forest & very moist teak
7	Bhimashankar WLS	Pune & Thane	130.78	1985	5B Western Ghats Mountain region (180-1208 msl)	Semi-evergreen forest & moist to evergreen forest
8	Koyna WLS	Satara	423.55	1985	5B Western Ghats Mountain region (609-1260 msl)	Southern semi-evergreen, mixed semi-moist deciduous, dry & mixed deciduous hill forest
9	Chandoli NP	Junction of Sangli, Satara, Kolhapur & Ratnagiri	308.97	1985	5B Western Ghats Mountain region (589-1044 msl)	Sub tropical hill forest; semi-evergreen & southern moist mixed-deciduous forest
10	Radhanagari WLS	Kolhapur	351.16	1958/1985	5B Western Ghats Mountain region (530-1033 msl)	West coast semi-evergreen, moist mixed & tropical deciduous forest

Table 2. *Contd.*

Sl. No. 1	Name of Protected Areas 2	District 3	Total Area (Sq km) 4	Year of Notification 5	Biotic Province 6	Forest Type 7
	Deccan Plateau Zone (code 6)					
11	Aner Dam WLS	Dhule	82.94	1986	6A Central Highlands, end of Satpura range (200-500 msl)	Dry Teak Forest
12	Yaval WLS	Jalgaon	177.52	1969	6A Central Highlands, end of Satpura range (340-1074 msl)	Southern tropical dry deciduous forest
13	Ambabarva WLS	Buldhana	127.11	1997	6A Central Highland; Satpura-Maikal range. Hilly terrain	Southern mixed deciduous forest & dry Teak
14	Narnala WLS	Akola	12.35	1997	6A Central Highland; Satpura-Maikal range	Southern mixed deciduous forest & dry Teak
15	Gugamal NP	Amravati	361.28	1987	6A Central Highland; Satpura-Maikal range (550-1177 msl)	Southern mixed deciduous forest & dry Teak
16	Melghat Sanctuary	Amravati	788.75	1985	6A Central Highland; Satpura-Maikal range (370-1177 msl)	Southern mixed deciduous forest & dry Teak
17	Wan WLS	Amravati	211	1997	6A Central Highland; Satpura-Maikal range	Southern mixed deciduous forest & dry Teak
18	Pench NP	Nagpur	255.12	1975	6 D Central Plateau (360-583 msl)	Southern dry mixed deciduous, dry deciduous scrub & dry Teak
19	Bor Sanctuary	Wardha & Nagpur	61.1	1970	6 D Central Plateau (436-567 msl)	Southern tropical dry teak forest
20	Nawegaon NP	Gondia	133.88	1975	6 D Central Plateau Nishani Hill ranges (280-702 msl)	Southern dry mixed deciduous, tropical secondary scrub.
21	Nagzira WLS	Gondia	152.52	1970	6 D Central Plateau Maikala Hill ranges (280-514 msl)	Southern mixed deciduous forest
22	Tadoba NP	Chandrapur	116.55	1955	6 D Central Plateau Maikala Hill ranges (220-364 msl)	Southern dry mixed deciduous, dry Teak

Table 2. Contd.

Sl. No. 1	Name of Protected Areas 2	District 3	Total Area (Sq km) 4	Year of Notification 5	Biotic Province 6	Forest Type 7
23	Andhari WLS	Chandrapur	509.27	1986	6 D Central Plateau Maikala Hill ranges (200-370 msl)	Southern dry mixed deciduous, dry Teak
24	Bhamragarh WLS	Gadchiroli	104.39	1997	6 D Central Plateau Maikala Hill ranges (200-370 msl)	Southern moist mixed deciduous semi-evergreen forest and bamboo
25	Chaprara WLS	Gadchiroli	134.78	1986	6 D Central Plateau Maikala Hill ranges (135-180 msl)	Southern moist mixed deciduous and dry Teak
26	Karanja Sohal Blackbuck Sanctuary	Akola	18.32	2000	6 D Central Plateau	Wooded areas of Class A & C
27	Katrapurna WLS	Akola & Washim	73.69	1988	6 D Central Plateau (357-457 msl)	Southern dry mixed deciduous forest
28	Tipeshwar WLS	Yeotmal	148.65	1997	6 D Central Plateau	Southern tropical dry deciduous forest.
29	Painganga WLS	Yeotmal & Nanded	324.63	1971 & 2004	6 D Central Plateau (300-522 msl)	Southern tropical dry mixed deciduous forest
30	Dnyanganga WLS	Buldhana	205.23	1997	6 D Central Plateau (360-600 msl)	Southern tropical dry deciduous & scrub forest
31	Lonar WLS	Buldhana	3.83	2000	6 D Central Plateau (186-220 msl)	Southern dry mixed deciduous, dry deciduous scrub forest
32	Gautala Autramgarh Sanctuary	Jalgaon	260.61	1986	6D Central Plateau (400-900 msl)	Southern tropical dry deciduous
33	Naigaon Mayur WLS	Beed	29.89	1994	6D Central Plateau, (640-720 msl)	Southern dry mixed deciduous forest
34	Yedshi Ramlinghat WLS	Osmanabad	22.38	1997	6D Central Plateau, (182 msl)	Southern mixed deciduous forest
35	Nandur Madhmeshwar WLS	Nasik	100.12	1986	6 D Central Plateau Flat region (640-815 msl)	Moist deciduous on banks

Table 2. *Contd.*

Sl. No. 1	Name of Protected Areas 2	District 3	Total Area (Sq km) 4	Year of Notification 5	Biotic Province 6	Forest Type 7
36	Jaikwadi Bird Sanctuary	Aurangabad & Ahmednagar	341.05	1986	6D Central Plateau (Flat region)	
37	Deulgaon-Rehkuri Blackbuck Sanctuary	Ahmednagar	2.17	1980	6D Central Plateau (127-200 msl)	Southern thorn & dry deciduous forest
38	Great Indian Bustard (Maldhok) WLS	Solapur & Ahmednagar	8496.44	1979	6D Central Plateau (450-692 msl)	Southern thorn forest
39	Mayureshwar WLS	Pune	5.15	1997	6D Central Plateau	Southern mixed deciduous forest
40	Sagareshwar WLS	Sangli	10.88	1985	6D Central Plateau (700 msl)	Southern dry mixed deciduous & thorn forest
	Coast Zone (code 8)					
41	Malvan Sagri (Marine) WLS	Sindhudrug	29.12	1987	8A West Coast	

	Number	Total Area
1. National Parks (NP)	6	01,262.76 km ²
2. Wildlife Sanctuaries (WLS)	35	14,178.23 km ²
Total Protected Areas (PA's)	41	15,440.99 km²

% of PA's — 5.02% (of state area)

*Source : Compiled and adopted from Pande (2005) and various pamphlets and maps showing NP & WLS, published by Forest Department of Maharashtra State.

BIOLOGICAL DIVERSITY

The wide variety in physical features and climatic factors in the State of Maharashtra have resulted in diversity of ecological habitats like forests, mountain, semi-arid, wetlands, coastal and marine ecosystems, which harbour and sustain rich floral and faunal diversity.

Flora

There are many publications on flora from hill stations, forts, colleges and Universities, cities, towns and districts of Maharashtra State since 1900. Jagtap (1998) has mentioned about 8952 species of plants including algae and fungi occurring in Northern Western Ghats of Maharashtra. Ingahalikar (2001) has given some information and photographs of 500 species of Flowering plants of Sahyadri. Pande (2005) has given a list of 2123 species of various flowering plants, algae, grasses, herbs, shrubs, climbers, orchids, etc. occurring in National Parks and Wildlife Sanctuaries of Maharashtra indicating that the natural vegetation of the State is heterogenous in composition. There are also publications of Flora of Maharashtra particularly by Mahabale (1987), Almeida (1996-2003), Director, BSI (1996-2001), in which details of various floral species have been enlisted.

Fauna

Various faunal groups from State of Maharashtra or as a part of Deccan Plateau have been published from time to time during 1890 to 1960's. District gazetteers of Maharashtra State described some details about fauna of respective district. Eventually, in 1974, a consolidated Fauna Gazetteer of Maharashtra was published (Kunte, 1974), in which detailed list of all the vertebrate, some invertebrates and insects groups has been incorporated. There are many publications on individual faunal groups in various scientific journals. There are also many checklists available on different animal groups from different habitats like mountains, rivers, lakes, urban areas like University campus, towns, cities and districts of Maharashtra, but in scattered form.

Gole (1998) and Jagtap (1998) have described and enlisted various faunal taxa from Sahyadri or Northern Western Ghats of Maharashtra. Gole (2000-2001) made an attempt to publish a biodiversity profile of an Urban Area like Pune city and incorporated systematic list of different groups of animal and plant species. Pande (2005) has enlisted about 1331 species under 18 faunal groups associated with National Parks and Wildlife Sanctuaries from Maharashtra State.

For further details of topography, climate, soil, vegetation, biogeography, biodiversity, endemic and endangered flora and fauna, ecology of various ecosystems refer to Champion and Seth (1968), Mani (1974), Rodgers and Panwar (1988), Jagtap (1998) Mahajan (1998), Gole (1998 and 2000-2001), Alfred *et al.* (2001), Ingahalikar (2001), Pande *et al.* (2003), Islam and Rahmani (2004), Pande (2005), etc.

Protected Areas

National Parks and Wildlife Sanctuaries

There are 6 National Parks and 35 Wildlife Sanctuaries under various biogeographic zones and biotic provinces from the State of Maharashtra (Table-1 & 2) and (Map-2). The Table-2 contains the district's total area, year of notification, forest type of each Protected Area from the state. A total of 15,440.99 sq km area is covered under these Protected Areas, which is 5.02% of the State area.

Tiger Reserves

The Scheme of Project Tiger has been launched in 1973 by Government of India and at present there are 28 Tiger Reserves in India. More area was added to the Melghat Sanctuary and Pench National Park whereas Tadoba National Park and Andhari Wildlife Sanctuary was combined to establish the following 3 Tiger Reserves in the State :

- 1) Melghat Tiger Reserve (Amravati District) –1597 sq km
- 2) Pench Tiger Reserve (Nagpur District)–255 sq km

3) Tadoba-Andhari Tiger Reserve (Chandrapur District)–626 sq km

4) Sahyadri Tiger Reserve (Kolhapur and Sangli districts)–741.22 sq km

Tiger census data of 2008 resulted in 238 tigers from these Tiger Reserves.

Coral Reefs

The coral reefs form most dynamic ecosystem providing shelter and nourishment to variety of marine flora and fauna. Coral reefs are said to be the richest habitats in species diversity on this planet. There are some patches of coral reefs on the west coast of India. One such known patch of coral reefs occurs at Malvan in Sindhudurg district of Maharashtra.

Mangroves

Mangroves are salt tolerant ecosystems, occurring in the tropical and sub-tropical regions of India. They are located in deltas of various rivers, in group of islands and on coastal areas. Small patches of mangrove forests are found on the west coast of Maharashtra and they have occupied about 330 sq km area. They are noted in estuarine parts of all the coastal districts of the State.

Sacred Groves

Sacred groves are one of the traditional ways of natural conservation of biodiversity. They are the biological treasures. They represent various vegetation types and these forests are in their climax conditions leading to a unique Biological Heritage. There are 386 sacred groves in various districts of Maharashtra under different agencies, such as Forest Department, Revenue Department, Temple Trust and in villages under private property.

Wetlands

The wetlands are the transitional zones between terrestrial and aquatic systems where water table is usually at or near the surface or the land is covered by shallow water. The wetland includes inland fresh water river basins, reservoirs, tanks

and ponds, coastal and swampy estuarine and marine habitats. There are 25 National and International significant wetlands in India, of which Ujani Wetland (Solapur and Pune Districts) in the State is an important national wetland. In general, a variety of wetlands including natural and man-made occupy 3007 sq km area in Maharashtra, which is 0.98% of State area.

Hot Spots

There are 34 mega centers of biodiversity 'Hot Spots' identified in the world of which four are present in India. The northern part of the Western Ghats in Maharashtra (i.e. Western Ghats Mountains Province) is also a part of Mega diversity 'Hot Spot' This northern part of Western Ghats possesses 127 rare and endemic plants including herbs, shrubs, climbers and Trees (Mahajan, 1998). It also possesses endemic animals such as, Lepidoptera (Butterflies, 17 sp.), Odonata (Dragon flies, 3 sp.), Scorpions (3 sp.), Pisces (26 sp.), Amphibia (5 sp.), Reptilia (5 sp.), Aves (29 sp.) and Mammals (2 sp.).

In accordance with the present status of survey and data in the country on key areas for plant and animal genetic resources, 26 geographically isolated areas 'Endemic Centers of plants' are established all over India for endemic species (MoEF, 1999). Of these the following three Endemic Centres of plants or Hot Spots are present in Maharashtra.

i) Marathwada Hills

ii) Mahabaleshwar–Khandala ranges of Western Ghats and

iii) Ratnagiri and Raigad ranges.

About other Reserves and Projects

It is noteworthy to mention here that there are 5 World Heritage sites and 15 Biosphere Reserves in India (MoEF Annual Report 2007-08); but none of them is located in the State of Maharashtra. Similarly, there are specific animal species targeted projects like, Project Tiger, 1973; Crocodile Breeding Project, 1975; and Project Elephant 1991. under these projects there are no notified locations

in Maharashtra, except Project Tiger, 1973 (MoEF, Annual Report 2007-08).

Important Bird Areas (IBA's)

Besides the Protected Areas like National Parks, Wildlife Sanctuaries, Tiger Reserves, Sacred Groves, etc., a total of 20 sites have been identified as Important Bird Areas (IBA's) in Maharashtra (Table-3). Of these sites, 7 are Wildlife Sanctuaries, 4 are National Parks and remaining 9 are non-protected areas. For details of each IBA's refer Islam and Rahmani (2004).

Threats to Biodiversity

Most of the ecosystems are under severe pressure, not only in the State of Maharashtra but all over the country. The Forests and Western Ghats Mountain ecosystems are under threats mainly due to deforestation, expansion of

agriculture, industries, human settlements, mining, multipurpose projects, construction of roads and bridges, shifting cultivation, conversion into monoculture, overgrazing, invasive plant and animal species, illicit felling, forest fires, illegal hunting for animal trade, pollution of various kinds and explosion of human and cattle population.

The ecosystems like Wetlands, Coral Reefs and Mangroves are also under pressure due to natural calamities particularly cyclone, soil erosion, soil sedimentation or weed infestation and droughts. Hence, these natural and man-made threats affect the ecological diversity, biological diversity and in turn the genetic diversity.

Conservation of Biodiversity

For protection and the conservation of biodiversity, many steps have already been taken

Table 3. Important Bird Areas of Maharashtra State*

Codes	IBA site names
01	Bhimashankar Wildlife Sanctuary
02	Burnt Island (Bandra) Vengurla Rocks
03	Gangapur Dam And Grasslands
04	INS-Shivaji and Lonavala
05	Jaikwadi Wildlife Sanctuary
06	Jawaharlal Nehru Bustard Sanctuary
07	Koyna Wildlife Sanctuary
08	Mahul-Sewree Creek
09	Melghat Wildlife Sanctuary and Gugmal National Park
10	Nagzira Wildlife Sanctuary
11	Nandur Madhmeshwar Wildlife Sanctuary
12	Nawegaon National Park
13	Ozar and Adjoining Grassland
14	Radhanagari Wildlife Sanctuary
15	Sanjay Gandhi National Park
16	Tadoba National Park and Andhari Tiger Reserve
17	Taloda Reserve Forest
18	Tansa Wildlife Sanctuary
19	Thane Creek
20	Toranmal Reserve Forest

Note : Serial number indicate the site code (IN-MH-).

*Source : Compiled from Islam and Rahmani (2004).

up at national level. Some of these actions are establishment of National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger Reserves, Wetlands, Endemic Centers of plants; setting up of Important Bird Area Programs; launching of Forest Management Plans, Regeneration and Afforestation Programmes, Eco-development Programmes, National Conservation Strategy on Biodiversity and studies on biotic status.

Besides these, there are more than 30 Important Central Acts having relevance to conservation of biological and ecological diversity (MoEF, 1999), some of these are mentioned here under.

- Wildlife (Protection) Act, 1972 (as amended up to 2003)
- Forest (Conservation) Act, 1980
- Environment (Protection) Act, 1986
- Biological Diversity Act, 2002
- Biological Diversity Law, 2004

The various Central Acts are supported by a number of State laws and states concerning forest and other natural resources.

For preservation of biodiversity, some international agreements are also in force. India is a party to about 12 multilateral environmental treaties. For example, India is a signatory to Convention on International Trade in Wild Species of Endangered Flora and Fauna 1973 (CITES) and Convention on Biological Diversity, 1992. In turn, all these acts help in conservation of biodiversity at the State, National and International levels.

Faunistic Surveys and Results

Zoological Survey of India, Western Regional Centre, Pune has taken up projects to study the fauna of various conservation areas, wetlands and districts under its jurisdiction of Goa and Maharashtra States. The faunal resources of such areas have been published from time to time by the Director, ZSI, Kolkata as follows.

- Fauna of Ujani Wetland (2002)
- Fauna of Sanjay Gandhi National Park (Maharashtra) (2002 and 2006)

- Fauna of Pench National Park (Maharashtra) (2004)
- Fauna of Melghat Tiger Reserve (Maharashtra) (2005)
- Fauna of Nathsagar Wetland (2005)
- Fauna of Tadoba-Andhari Tiger Reserve (Maharashtra) (2006)
- State Fauna of Goa (2008)
- Fauna of Lonar Wildlife Sanctuary (Maharashtra) (2008)
- Fauna of Bhimashankar Wildlife Sanctuary (Maharashtra) (2009)

The faunal inventories of various groups included in the documents are based on the collections present in the holdings of the Centre and Headquarters, Kolkata. In addition to this, the earlier published literature pertaining to respective group was taken into account. The study depicts altogether **5640** species spread over **62** different faunal groups including vertebrates and invertebrates (Table 4).

Further, it cannot be claimed that this is the final account of total biodiversity of the Maharashtra State since many ubiquitous and familiar invertebrate elements like earthworms, leeches, spiders, moths, etc. are not included.

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Table 4. Faunal Diversity of Maharashtra State at a glance.

Sl. No.	Name of the Group	Orders	Families	Genera	Species
VERTEBRATA					
1	Mammalia	13	35	79	129
2	Aves	20	86	271	556
3	Reptilia	3	22	65	117
4	Amphibia	2	9	22	53
5	Freshwater Fishes	8	28	89	215
6	Marine & Estuarine Fishes	27	131	319	653
INVERTEBRATA					
1	Parasitic Protozoa	4	52	86	474
2	Free Living Protozoa	11	23	32	52
3	Freshwater Sponges	1	1	7	17
4	Nematoda	5	27	45	90
5	Land & Freshwater Mollusca	7	30	65	160
6	Marine Gastropoda	10	87	221	415
7	Marine Bivalves	13	40	86	162
8	Freshwater Ostracoda	1	4	15	38
9	Cladocera	1	6	30	60
10	Freshwater Prawns	1	2	2	11
11	Freshwater Crabs	1	1	9	13
12	Isopoda	1	11	15	23
13	Barnacles	1	8	11	17
14	Marine Crabs	2	27	62	91
15	Marine Prawns	1	1	11	26
16	Odonata	1	10	57	101
17	Orthoptera	1	8	98	143
18	Dermaptera	1	5	10	13
19	Embioptera	1	1	1	4
20	Mantodea	1	8	31	56
21	Blattodea	1	4	10	12
22	Hemiptera : Aphididae	1	1	26	44
23	Hemiptera : Membracidae	1	1	9	18
24	Hemiptera : Aquatic & Semi-aquatic	1	13	32	70
25	Hemiptera : Pentatomidae	1	1	42	58
26	Hemiptera : Reduviidae	1	1	21	33
27	Scale Insects	1	9	37	48
28	Neuroptera	1	10	30	60
29	Coleoptera : Scarabaeidae	1	1	32	89
30	Coleoptera : Bruchidae	1	1	5	9
31	Coleoptera : Aquatic	1	4	27	57
32	Coleoptera : Cerambycidae	1	1	50	59
33	Coleoptera : Coccinellidae	1	1	15	20
34	Coleoptera : Cicindelidae	1	1	3	10
35	Coleoptera : Elateridae	1	1	28	36
36	Coleoptera : Chrysomelidae	1	1	39	68

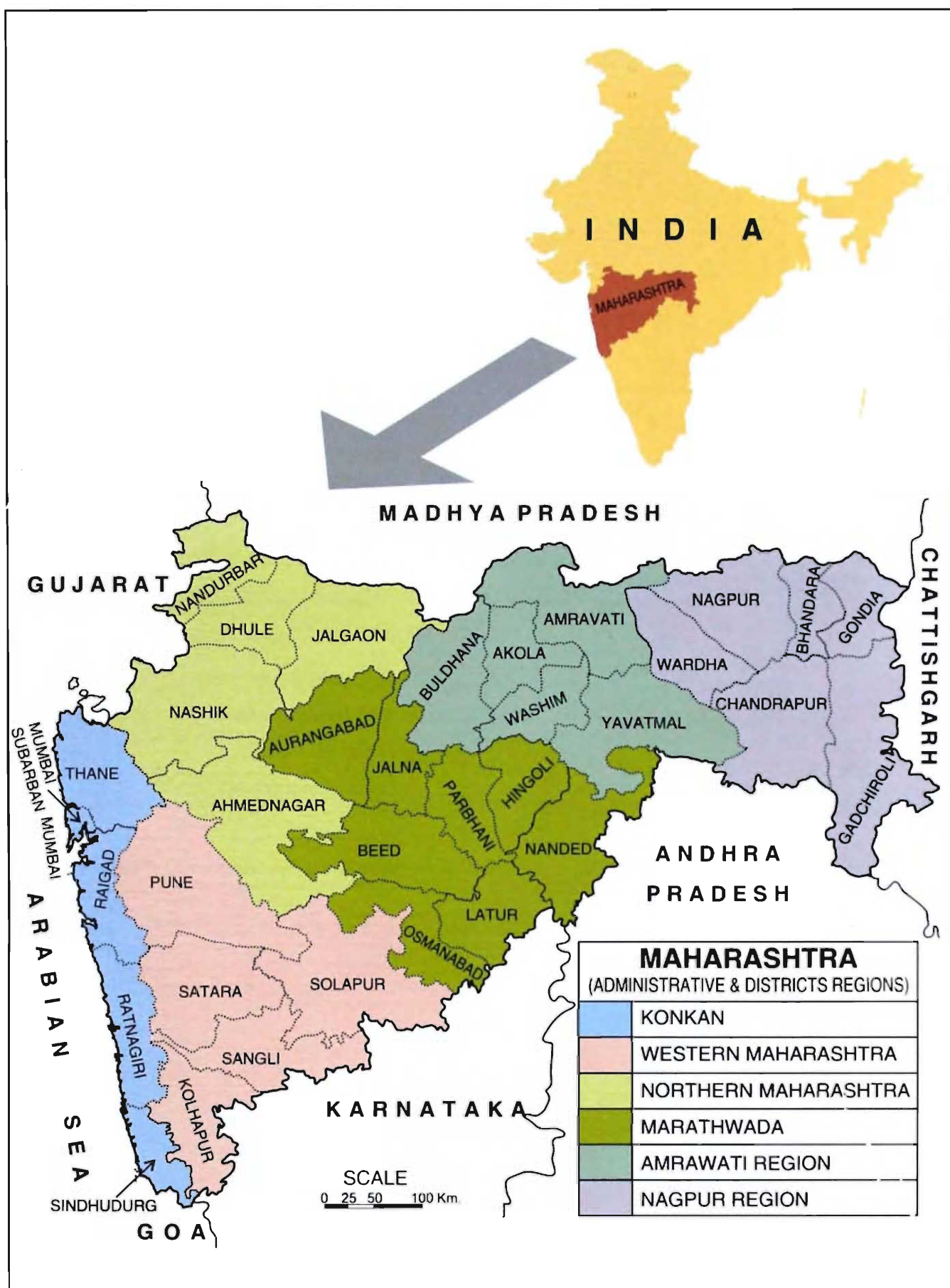
Table 4. Contd.

Sl. No.	Name of the Group	Orders	Families	Genera	Species
37	Coleoptera : Cassidinae	1	1	12	40
38	Coleoptera : Curculionidae	1	1	15	32
39	Mecoptera	1	1	1	2
40	Diptera	1	35	157	278
41	Diptera : Cecidomyiidae	1	1	45	90
42	Diptera : Tabanidae	1	1	4	18
43	Lepidoptera (Butterflies)	1	5	125	213
44	Trichoptera	1	9	17	39
45	Hymenoptera : Formicidae	1	1	33	100
46	Hymenoptera : Encyrtidae : Encyrtinae	1	1	21	31
47	Hymenoptera : Encyrtidae : Teracneminae	1	1	14	27
48	Hymenoptera : Scoliidae	1	1	6	10
49	Hymenoptera : Ichneumonidae	1	1	55	181
50	Ephemeroptera	1	10	15	19
51	Chilopoda	1	1	7	42
52	Arachnida : Acarina	3	8	15	34
53	Arachnida : Astigmata	1	3	19	20
54	Arachnida : Trombiculidae	1	1	17	50
55	Scorpionida	1	4	10	34
	Total	175	800	2733	5640

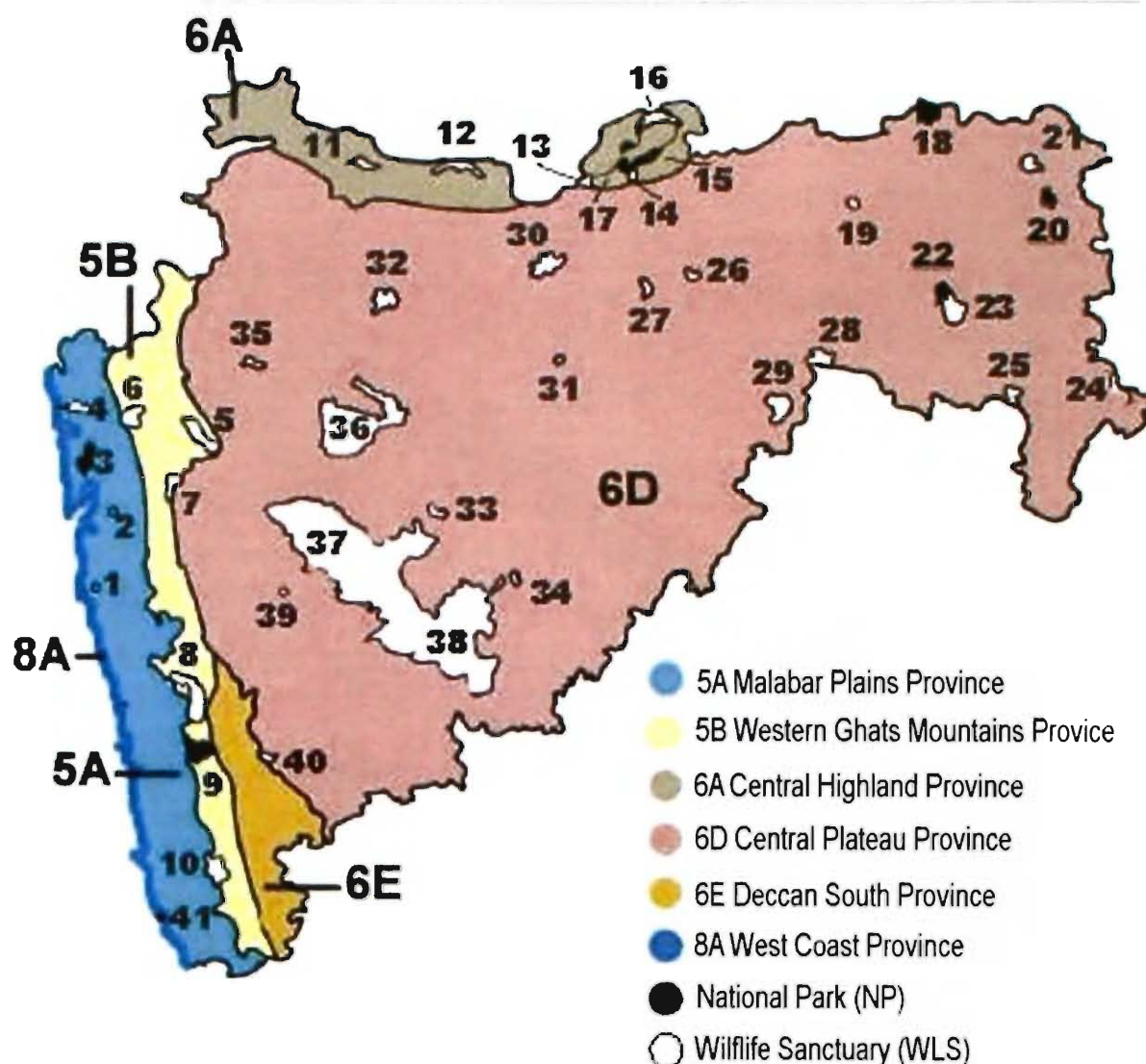
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Map 1. Administrative Districts and Regions of Maharashtra State



5A. MALABAR PLAIN : 1. Phansad WLS; 2. Karnala Fort Bird Sanctuary; 3. Sanjay Gandhi NP; 4. Tungreshwar WLS;

5B. WESTERN GHATS MOUNTAINS : 5. Kalsubai Harishchandragarh WLS; 6. Tansa WLS; 7. Bhimashankar WLS; 8. Koyna WLS; 9. Chandoli NP; 10. Radhanagari WLS;

6A. CENTRAL HIGHLAND : 11. Aner Dam WLS; 12. Yaval WLS; 13. Ambabarva WLS; 14. Narnala WLS; 15. Gugamal NP; 16. Melghat Sanctuary; 17. Wan WLS;

6D. CENTRAL PLATEAU : 18. Pench NP; 19. Bor Sanctuary; 20. Nawegaon NP; 21. Nagzira WLS; 22. Tadoba NP; 23. Andhari WLS; 24. Bhamragarh WLS; 25. Chaprala WLS; 26. Karanja Sohal Blackbuck Sanctuary; 27. Katrapurna WLS; 28. Tipeshwar WLS; 29. Painganga WLS; 30. Dnyanganga WLS; 31. Lonar WLS; 32. Gautala Autramgarh Sanctuary; 33. Naigaon Mayur WLS; 34. Yedshi Ramlinghat WLS; 35. Nandur Madhmeshwar WLS; 36. Jaikwadi Bird Sanctuary; 37. Deulgaon-Rehkuri Blackbuck Sanctuary; 38. Great Indian Bustard (Maldhok) WLS; 39. Mayureshwar WLS; 40. Sagarshwar WLS;

6E. DECCAN SOUTH : Nil

8A. WEST COAST ZONE : 41 Malvan Sagri (Marine) WLS.

Map 2. National Parks and Wildlife Sanctuaries under various Biotic Provinces of Maharashtra State.

Maharashtra State at a glance

Total Area	: 3,07,714 sq km
Latitude	: 15° 32' to 22° 02' N
Longitude	: 72° 36' to 80° 54' E
Districts	: 35
Taluka	: 357
Urban Area	: 6,227.91 sq km (2% of State Area)
Rural Area	: 3,01,486.09 sq km (98 % of State Area)
Geology & Minerals	: Predominantly lavas in Deccan trap and Laterite, Alluvium, Granite in Eastern & SW parts.
Major River basin	: Bhima, Ghod, Nira, Mula-Mutha, Koyna, Panchganga and no. of other tributaries of Krishna river basin; Manjra, Pravara, Dudhana, Purana, Wardha, Wainganga Painganga, Indravati and no. of other tributaries of Godavari River basin; and Panjhra, Girna, Purna and no. of other tributaries of Tapi river basin.
Temperature range	: 2.6°C to 46.2°C
Annual Rainfall range	: 350 mm to 5500 mm
Agricultural Area	: 1,78,760 sq km (58% of State Area)
Non-Agricultural Area (Outside Forests)	: 65,111 sq km (21.2% of State Area)
Forest Land	: 63,843 sq km (20.8% of State Area)
Actual Forest cover	: 47,482 sq km (15.4% of State Area) in 2001
Forest Types & Sub-types	: 6 (Tropical semi-evergreen, moist-deciduous, littoral and swamp, dry-deciduous, thorn, and sub-tropical broad leaved hill forests) and 39 Forest sub-types.
Biogeographic Zones & Biotic Provinces	: 3 Zones (Western Ghats, Deccan Plateau and Coasts and 6 Biotic Provinces
Protected Areas (National Parks & Wildlife Sanctuaries)	: 6 National Parks (Gugamal, Pench, Nawegaon, Tadoba, Chandoli and Sanjay Gandhi National Park and 35 Wildlife Sanctuaries
Total Area under Protected Areas	: 15,440.99 sq km (5.02 % of State Area)
Tiger Reserve	: 4 (Melghat, Pench and Tadoba-Andhari and Sahyadri Tiger Reserves)
Biosphere Reserve	: Nil
Mangrove Forest	: 330 sq km
Wetland Coverage	: 3007 sq km
Scrub cover	: 7380 sq km
Coastline	: 720 km
Important Bird Areas	: 20 sites identified
Hot Spots	: Northern Western Ghats Mountains (part of Western Ghats)
Total Population	: 11,23,72,972 (in 2011)
Density of Population	: 365 / sq km (in 2011)
Total Livestock Population	: 3,96,38,000

Source : Compiled and adopted from MoEF (1999), Pande (2005) and MoEF Annual Report 2007-08.

Plate I



Evergreen Forest in Northern Western Ghats



Plus Valley in Tamhini Ghat, Pune district



Grassland Ecosystem in Deccan Plateau



Tropical Dry Thorn Forest of semi-arid Zone



Waterfall on Godavari river near Nasik



Exposed rocky beach at Kashid, Raigad district

Plate II



Semnopithecus entellus (Dufresne, 1797)



Macaca mulatta (Zimmermann, 1780)



Bos gaurus (Smith, 1827)



Rousettus l. leschenaultia (Desmarest, 1820)



Ratufa indica elphinstoni (Sykes, 1831)
(Photo Vivek Kale)



Funambulus pennanti (Wroughton, 1905)
(Photo Dr. S.S. Jadhav)

Plate III



Sarkidiornis melanotos (Pennant, 1769)
(Photo Dr. Satish Pande)



Mycteria leucocephala (Pennant, 1769)
(Photo Dr. Satish Pande)



Gyps bengalensis (Gmelin, 1788)
(Photo Dr. Satish Pande)



Tadorna ferruginea (Pallas, 1764)
(Photo Dr. Satish Pande)



Burhinus oedicephalus (Linnaeus, 1758)



Ocyrceros birostris (Scopoli, 1786) (Photo M.J. Jadhav)

Plate IV



Chamaeleo zeylanicus Laurenti, 1768
(Photo M.J. Jadhav)



Daboia russelli (Shaw and Nodder, 1796)
(Photo M.J. Jadhav)



Kaloula taprobanica Parker, 1934
(Photo Rohan Pandit)



Ramanella montana (Jerdon, 1854)
(Photo Anirudha Choji)



Etroplus suratensis (Bloch, 1785)

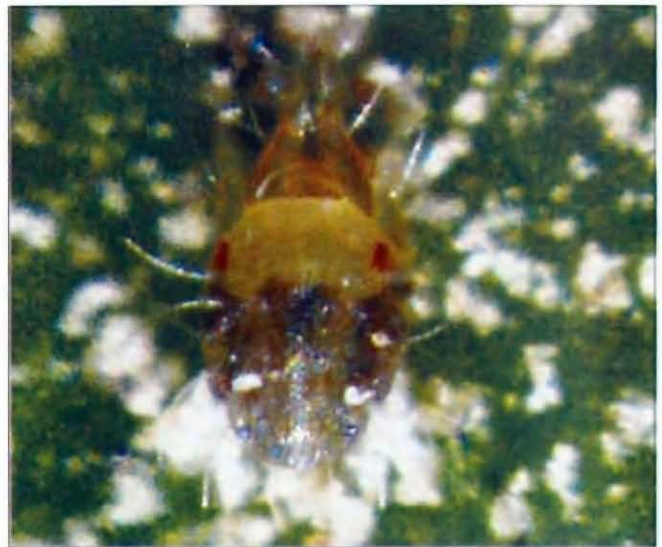


Puntius sahyadriensis Silas, 1951

Plate V



Scolopendra hardwickei Newport, 1844



Mango mite (*Oligonychus mangiferus*)
(Photo Dr. AN. Sirsikar)



Barytelphusa jacquemontii (Rathbun, 1905)



Nephila pilipes (Fabr., 1793)



Poecilotheria regalis (Pocock, 1899)



Heterometrus phipsoni Pocock, 1893

Plate VI



Trithemis aurora (Burmeister, 1839)



Vestalis gracilis gracilis (Rambur, 1842)



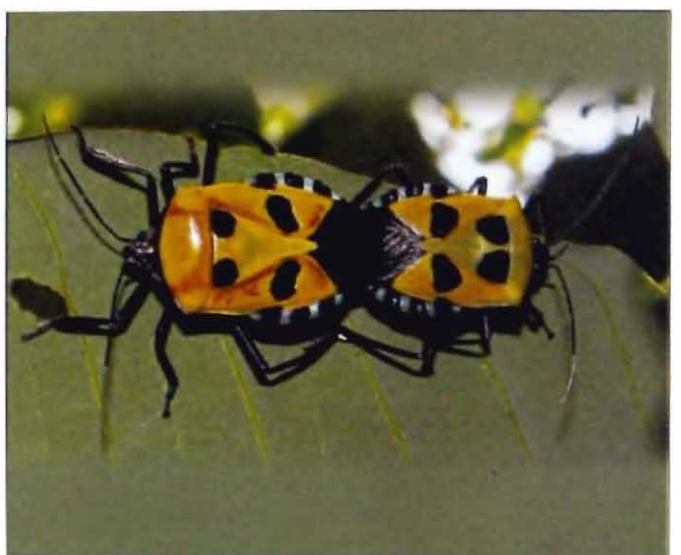
Creobroter apicalis Saussure, 1869



Cyrtacanthacris tatarica (Linnaeus, 1758)



Eocantecona furcellata (Wolff, 1811)



Catantopus incarnatus (Drury, 1773)

Plate VII



Aspidomorpha miliaris (Fabricius, 1775)



Callosobruchus maculatus, Fabricius, 1775
(Photo Dr. R. Bano)



Heliocopriss bucephalus (Fabricius, 1775)



Catharsius sagax Quenstedt, 1806



Stibara nigricornis (Fabricius, 1781)
(Photo Dr. H.V. Ghatе)



Batocera rufomaculata (DeGeer, 1795)
(Photo Dr. H.V. Ghatе)

Plate VIII



Phalanta phalanta (Drury, 1770)



Junoniya orithya (Linnaeus, 1758)



Kallima philarchus (Westwood, 1848)



Tirumala limniace Cramer, 1775



Attacus atlas Linnaeus, 1758



Phimenes flavopictum (Blanchard, 1845)

MAMMALIA

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INTRODUCTION

The State of Maharashtra spread over an area of 3,07,690 sq. km., forms about 10% area of Indian Union. It lies between 15°5' to 22°0' N latitude and 72°6' to 81°0' E longitude and contains 35 districts. It has been divided into five Bio-geographic provinces, namely Coastal plains, Western Ghats, Central Highlands, Deccan Plateau and South Deccan with diverse six major forest types, Tropical semi evergreen, Sub-tropical evergreen forests, Tropical moist deciduous, Tropical dry deciduous, Tropical thorn and Littoral forests. Maharashtra State is rich in the terms of biological diversity due its unique Bio-geographical location, varied ecological and geological diversities and climatic conditions.

Previous studies have shown that this region is qualitatively rich in the faunal components. Earlier scientists and naturalists have recorded mammal species in their isolated reports based on the intensive surveys carried out in this region over a period of time (Thomas, 1897, 1915, 1923, Wroughton, 1899, 1905, 1907, 1908, 1912a,b, 1916a,b, 1918a,b, 1919abc, 1920), Wroughton and Ryley, 1913 Wroughton and Davidson, 1919, 1920; Hinton, 1918, 1919, Lindsay, 1929, Prater, 1980, Bates and Harrison, 1997, Brosset, 1961, 1962a, b, c. and 1963, Tiwari *et al.* 1971, Deoras *et al.*, 1974, Deoras and Gokhale, 1958, Deoras and Bhatt, 1981, Deoras and Pradhan (1976a,b, 1977), Pradhan (1975, 1978a,b,c; 1979; 1980a,b;

1982a,b; 1985, 1988a,b; 1994), Pradhan and Mithel, 1981, Pradhan and Hemkar, 1986, Pradhan and Bhagwat, 1990a,b and Pradhan *et al.*, 1989a,b; 1991, 1993, 2005, and many others).

Inventories of mammals from conservation areas of the Maharashtra State have been published by Zoological Survey of India under fauna of conservation area series : Sanjay Gandhi National Park, Borivli, Mumbai (Yazdani *et al.*, 1992 and Pradhan, 2002); Tansa wildlife Sanctuary, Dist. Thane (Singh and Pradhan, 1992); Pench National Park, Dist. Nagpur (Pradhan, 2004); Melghat Tiger Reserve, Dist. Amaravati (Pradhan and Ramakrishna, 2004; Pradhan, 2005); Tadoba-Andhari Tiger Reserve, Dist. Chandrapur (Pradhan, 2006), Lonar Crater Wildlife Sanctuary, Dist. Buldhana (Pradhan and Talmale, 2008) and Bhimashankar Wildlife Sanctuary, Dist. Pune (Pradhan and Talmale, 2009b). However, there is no consolidated systematic account on the mammalian fauna available from the entire state as a whole. Therefore an attempt has been made, here, to present updated information on the mammal species and subspecies from the entire State of Maharashtra.

Present chapter is based on the collections made by various ZSI survey parties, on the sighting observations and also on the records available from the literature (Ellerman and Morrison-Scott, 1951; Ellerman, 1961; Tiwari *et al.*, 1971; Prater, 1980; Corbet and Hill, 1992;

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Roberts, 1997; Wilson and Reeder, 2005; CAMP Reports 1998, 2002, 2003 and 2005; Alfred *et. al.* 2002, 2006a,b; Pradhan, 2008 and many more, a mention of which has been made in the appropriate places in the species-wise account). The chapter gives a systematic account of 129 mammalian species/subspecies including 9 marine mammal species with the added information on their past and recent records along with the comments on their current conservation status. Attempts have also been made to give keys wherever possible. There are number of changes in the taxonomic placements as indicated in Wilson and Reeder (2005), Nameer (2008), Pradhan and Talmale (2009a) which have been accepted by most of the workers. Hence, the systematic order reported by these authors has been followed here.

SYSTEMATIC LIST

[@ indicates endemic species, while * indicates species actually collected and/or sighted by various survey parties]

Class MAMMALIA

Infraclass EUTHERIA

Order PROBOSCIDEA

Family ELEPHANTIDAE

Genus *Elephas* Linnaeus, 1758

- *1. Indian Elephant *Elephas maximus indicus* Cuvier, 1798

Order SIRENIA

Family DUGONGIDAE

Genus *Dugong* Lacepede, 1799

- *2. Dugong *Dugong dugon* (Mueller, 1776)

Order SCANDENTIA

Family TUPAIIDAE

Genus *Anathana* Lyon, 1913

- *@3. Madras Tree Shrew : *Anathana ellioti ellioti* (Waterhouse, 1850)

Order PRIMATES

Family LORISIDAE

- @4. Malabar Slender Loris *Loris lydekkerianus malabaricus* Wroughton, 1917

Family CERCOPITHECIDAE

Subfamily CERCOPITHECINAE

Genus *Macaca* Lacepede, 1799

- *5. Rhesus Macaque *Macaca mulatta* (Zimmermann, 1780)
 *@6. Bonnet Monkey *Macaca radiata* (Geoffroy, 1812)

Subfamily COLOBINAE

- *7. Bengal Langur *Semnopithecus entellus entellus* (Dufresne, 1797)
 *@8. Malabar Langur *Semnopithecus entellus hypoleucos* Blyth, 1841
 *@9. Plains Langur *Semnopithecus entellus achates* (Pocock, 1928)
 *@10. Deccan Langur *Semnopithecus entellus anchises* Blyth, 1844

Order RODENTIA

Suborder SCIUROMORPHA

Family SCIURIDAE

Subfamily CALLOSCIURINAE

Genus *Funambulus* Lesson, 1835

Subgenus *Funambulus*

- *@11. Three-striped Palm Squirrel *Funambulus (Funambulus) palmarum bellarius* Wroughton, 1916
 *@12. Three-striped Palm Squirrel *Funambulus (Funambulus) palmarum robertsoni* Wroughton, 1916
 *@13. Three-striped Jungle Squirrel *Funambulus (Funambulus) tristriatus tristriatus* (Waterhouse, 1837)
 Subgenus *Prasadschirus* (Moore and Tate, 1965)
 *@14. Five-striped Northern Palm Squirrel *Funambulus (Prasadschirus) pennantii pennantii* Wroughton, 1905

Subfamily RATUFINAE

Genus *Ratufa* Gray, 1867

- *@15. Indian Giant Squirrel *Ratufa indica indica* (Erxleben, 1777)

- *@16. Indian Giant Squirrel *Ratufa indica centralis* Ryley, 1913

Subfamily SCIURINAE

Tribe Pteromyini

Genus *Petaurista* Link, 1795

- *17. Common Giant Flying Squirrel *Petaurista philippensis philippensis* (Elliot, 1839)

Suborder MYOMORPHA

Superfamily MUROIDEA

Family MURIDAE

Subfamily GERBILLINAE

Genus *Tatera* Lataste, 1882

- *18. Indian Gerbil or Antelope Rat *Tatera indica* (Hardwicke, 1807)

Subfamily MURINAE

Genus *Vandeleuria* Gray, 1842

- *19. Long-tailed Tree Mouse *Vandeleuria oleracea oleracea* (Bennet, 1832)

Genus *Rattus* Fischer, 1803

- *20. House Rat or Roof Rat *Rattus rattus rufescence* (Gray, 1837)

- *@21. White Bellied Rat *Rattus rattus narbadae* Hinton, 1918

- *@22. White Bellied Rat *Rattus rattus wroughtoni* Hinton, 1919

- *23. European Black Rat *Rattus rattus rattus* (Linnaeus, 1758)

- *24. Norway Rat *Rattus norvegicus* (Berkenhout, 1769)

- *@25. Sahyadris Forest Rat *Rattus satarae* Hinton, 1918

Genus *Madromys* Sody, 1941

- *26. Blanford Rat *Madromys blanfordi* (Thomas, 1881)

Genus *Millardia* Thomas, 1911

- *27. Soft-furred Metad *Millardia meltada meltada* (Gray, 1837)

- *@28. Sinhagarh Rat, Large Metad *Millardia kondana* Mishra and Dhanda, 1975

Genus *Mus* Linnaeus, 1758

Subgenus *Mus* Linnaeus, 1758

- *29. Common House Mouse *Mus (Mus) musculus castaneus* Waterhouse, 1843

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

- *@31. Ryley's Spiny Mouse : *Mus (Mus) cookii nagarum* (Thomas, 1921)

Subgenus *Pyromys* Thomas, 1911

- *32. Wroughton's Small Spiny Mouse *Mus (Pyromys) phillipsi* Wroughton, 1912

- *@33. Indian Brown Spiny Mouse *Mus (Pyromys) platythrix* Bennet, 1832

- *@34. Elliot's Spiny Mouse *Mus (Pyromys) saxicola saxicola* Elliot, 1839

Genus *Golunda* Gray, 1837

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

Genus *Bandicota* Gray, 1873

- *36. Lesser Bandicoot Rat *Bandicota bengalensis bengalensis* (Gray and Hardwicke, 1833)

- *37. Large Bandicoot Rat *Bandicota indica indica* (Bechstein, 1800)

- *@38. Large Bandicoot Rat *Bandicota indica malabarica* (Shaw, 1801)

- *39. Large Bandicoot Rat *Bandicota maxima* Pradhan *et al.*, 1993

Suborder HYSTRICOMORPHA

Infraorder HYSTRICOGNATHI

Family HYSTRICIDAE

Genus *Hystrix* Linnaeus, 1758

Subgenus *Hystrix*

- *40. Indian Crested Porcupine : *Hystrix (Hystrix) indica* Kerr, 1792

Order LAGOMORPHA

Family LEPORIDAE

Genus *Lepus* Linnaeus, 1758

Subgenus *Indolagus* (Gureev, 1964)

- *41. Indian Hare *Lepus (Indolagus) nigricolis nigricolis* Cuvier, 1823

Order ERINACEOMORPHA

Family ERINACEIDAE

Subfamily ERINACEINAE

Genus *Hemiechinus* Fitzinger, 1866

- *42. Indian Long-eared Hedgehog *Hemiechinus collaris* (Gray, 1830)

Genus *Paraechinus* Trouessart, 1879

- *43. Indian Hedgehog *Paraechinus micropus* (Blyth, 1846)

Order SORICOMORPHA

Family SORICIDAE

Subfamily CROCIDURINAE

Genus *Suncus* Ehrenberg, 1832

- *44. Common House Shrew *Suncus murinus* (Linnaeus, 1766)
 *45. Anderson's Shrew *Suncus stoliczkanus* (Anderson, 1877)
 *46. Savi's Pigmy Shrew *Suncus etruscus* (Savi, 1822)

Genus *Crocidura* Wagler, 1832

- *47. Horsfield's Shrew *Crocidura horsfieldi* (Tomes, 1856)

Order CHIROPTERA

Suborder MEGACHIROPTERA

Family PTEROPODIDAE

Genus *Pteropus* Brisson, 1762

- *48. Indian Flying Fox : *Pteropus giganteus giganteus* (Brunnich, 1782)

Genus *Rousettus* Gray, 1821

- *49. Indian Fulvus Fruit Bat : *Rousettus leschenaulti leschenaulti* (Desmarest, 1820)

Genus *Cynopterus* Cuvier, 1824

- *50. Lesser Short-nosed Fruit Bat *Cynopterus brachyotis ceylonensis* Gray, 1870

- *51. Greater Short-nosed Fruit *Cynopterus sphinx sphinx* (Vahl, 1797)

Suborder MICROCHIROPTERA

Family RHINOLOPHIDAE

Genus *Rhinolophus* Lacepede, 1799

- *52. Bedomme's Horseshoe Bat *Rhinolophus beddomei* Andersen, 1905

- *53. Blyth's Horseshoe Bat *Rhinolophus lepidus lepidus* Blyth, 1844

- *54. Rufous Horseshoe Bat *Rhinolophus rouxii rouxii* Temminck, 1834

Family HIPPOSIDERIDAE

Genus *Hipposideros* Gray, 1831

- *55. Anderson's Leaf-nosed Bat *Hipposideros pomona gentilis* (Andersen, 1918)

- *56. Dusky Leaf-nosed Bat *Hipposideros ater ater* Templeton, 1848

- *57. Fulvus Leaf-nosed Bat *Hipposideros fulvus fulvus* Gray, 1838

- *58. Cantor's Leaf-nosed Bat *Hipposideros galeritus brachyotis* (Dobson, 1874)

- *59. Schneider's Leaf-nosed Bat *Hipposideros speoris speoris* (Schneider, 1800)

- *60. Indian Leaf-nosed Bat *Hipposideros lankadiva* Kelaart, 1850

Family Megadermatidae

Genus *Megaderma* E. Geoffroy, 1810Subgenus *Megaderma* E. Geoffroy, 1810

- *61. Lesser False Vampire Bat *Megaderma (Megaderma) spasma horsfieldii* Blyth, 1863

Subgenus *Lyroderma* Peters, 1872

- *62. Greater False Vampire Bat *Megaderma (Lyroderma) lyra lyra* Geoffroy, 1810

Family RHINOPOMATIDAE

Genus *Rhinopoma* Bonaparte, 1838

- *63. Greater Mouse-tailed Bat *Rhinopoma microphyllum kinneari* (Wroughton, 1912)

- *64. Lesser Mouse-tailed Bat *Rhinopoma hardwickii hardwickii* Gray, 1831

Family EMBALLONURIDAE

Subfamily TAPHOZOINAE

Genus *Taphozous* Geoffroy, 1818Subgenus *Taphozous* Geoffroy, 1818

- *65. Black-bearded Tomb Bat *Taphozous (Taphozous) melanopogon melanopogon* Temminck, 1841

- *66. Long winged Tomb Bat: *Taphozous* (*Taphozous*) *longimanus longimanus* Hardwicke, 1825
Subgenus *Liponycteris* Thomas, 1922
- *67. Naked-rumped Tomb Bat *Taphozous* (*Liponycteris*) *nudiventris kachhensis* (Dobson, 1872)
Genus *Saccolaimus* Temminck, 1838
- *68. Naked-rumped pouched Bat *Saccolaimus saccolaimus crassus* (Blyth, 1844)
Family MOLOSSIDAE
Subfamily MOLOSSINAE
Genus *Tadarida* Rafinesque, 1814
- *69. Egyptian Free-tailed bat : *Tadarida aegyptiaca thomasi* Wroughton, 1919
Genus *Chaerephon* Dobson, 1874
- *70. Wrinkle-lipped Free-tailed Bat : *Chaerephon plicatus plicatus* (Buchanan, 1800)
Family VESPERTILIONIDAE
Subfamily VESPERTILIONINAE
Tribe EPTESICINI
Genus *Hesperoptenus* Peters, 1868
Subgenus *Milithronycteris* Hill, 1976
- *71. Tickell's Bat *Hesperoptenus* (*Milithronycteris*) *tickelli* (Blyth, 1851)
Tribe Nycticeiini
Genus *Scotophilus* Leach, 1821
- *72. Lesser Asiatic yellow house bat *Scotophilus kuhlii kuhlii* Leach, 1821
- *73. Greater Asiatic yellow house bat *Scotophilus heathii heathii* (Horsfield, 1831)
Tribe Pipistrellini
Genus *Pipistrellus* Kaup, 1829
Subgenus *Pipistrellus* Kaup, 1829
- *74. Common Pipistrelle *Pipistrellus* (*Pipistrellus*) *pipistrellus* (Schreber, 1774)
- *75. Kelaart's Pipistrelle *Pipistrellus* (*Pipistrellus*) *ceylonicus indicus* (Dobson, 1878)
- *76. Babu's Pipistrelle *Pipistrellus* (*Pipistrellus*) *javanicus babu* Thomas, 1915
- *77. Indian Pipistrelle *Pipistrellus* (*Pipistrellus*) *coromandra coromandra* (Gray, 1838)
- *78. Least Pipistrelle *Pipistrellus* (*Pipistrellus*) *tenuis mimus* (Wroughton, 1899)
- *79. Kuhl's Pipistrelle *Pipistrellus* (*Pipistrellus*) *kuhlii* (Kuhl, 1817)
Genus *Scotozous* Dobson, 1875
- *80. Dormer's Bat *Scotozous dormeri* (Dobson, 1875)
Tribe Vespertilionini
Genus *Falsistrellus* Troughton, 1943
- *81. Chocolate Pipistrelle *Falsistrellus affinis* (Dobson, 1871)
Genus *Hypsugo* Kolenati, 1856
- *82. Savi's Pipistrelle : *Hypsugo savii austenianus* Dobson, 1871
Subfamily MYOTINAE
Genus *Myotis* Kaup, 1829
83. Hodgson's Bat *Myotis formosus formosus* (Hodgson, 1835)
- *@84. Burmese Whiskered Bat *Myotis montivagus peytoni* (Wroughton and Ryley, 1913)
- *@85. Horsfield's Myotis *Myotis horsfieldii peshwa* (Thomas, 1915)
Subfamily MINIOPTERINAE
Genus *Miniopterus* Bonaparte, 1837
- *86. Schreiber's Long-fingered Bat *Miniopterus schreibersi fuliginosus* (Hodgson, 1835)
Subfamily KERIVOULINAE
Genus *Kerivoula* Gray, 1842
- *87. Painted Bat *Kerivoula picta picta* (Pallas, 1767)
Order PHOLIDOTA
Family MANIDAE
Genus *Manis* Linnaeus, 1758
- *88. Indian Pangolin *Manis crassicaudata* Gray, 1827

Order CARNIVORA

Suborder FELIFORMIA

Family FELIDAE

Subfamily FELINAE

Genus *Felis* Linnaeus, 1758

- *89. Indian Desert Cat *Felis silvestris ornata* Gray

- *90. Jungle Cat *Felis chaus kelaarti* Pocock, 1939

Genus *Caracal* Gray, 1843

- *91. Caracal *Caracal caracal schmitzi* Matschie, 1912

Genus *Prionailurus* Severtzov, 1858

- *92. Leopard Cat *Prionailurus bengalensis bengalensis* (Kerr, 1792)

- *93. Rusty-spotted Cat *Prionailurus rubiginosus rubiginosus* (Geoffroy, 1831)

- *94. Fishing Cat *Prionailurus viverrinus* (Bennett, 1833)

Subfamily PANTHERINAE

Genus *Panthera* Oken, 1816

- *95. Leopard/Panther *Panthera pardus fusca* (Meyer, 1794)

- *96. Royal Bengal Tiger/Tiger *Panthera tigris tigris* (Linnaeus, 1758)

Family VIVERRIDAE

Subfamily PARADOXURINAE

Genus *Paradoxurus* Cuvier, 1821

- *97. Common Palm Civet/Toddy Cat *Paradoxurus hermaphroditus hermaphroditus* (Pallas, 1777)

Subfamily VIVERRINAE

Genus *Viverricula* Hodgson, 1838

- *98. Small Indian Civet *Viverricula indica indica* (Desmarest, 1804)

Family HERPESTIDAE

Subfamily HERPESTINAE

Genus *Herpestes* Illiger, 1811

- *99. Indian Gray Mongoose *Herpestes edwardsii edwardsii* (Geoffroy, 1818)

100. Indian Ruddy Mongoose *Herpestes smithii smithii* Gray, 1837

Family HYAENIDAE

Genus *Hyaena* Brunnich, 1771

- *101. Striped Hyena *Hyaena hyaena* (Linnaeus)

Suborder CANIFORMIA

Family CANIDAE

Genus *Canis* Linnaeus, 1758

- *102. Asiatic Jackal *Canis aureus* Linnaeus, 1758

- *103. Indian Wolf *Canis lupus pallipes* Sykes, 1827

Genus *Cuon* Hodgson, 1838

- *104. Indian Wild Dog *Cuon alpinus* (Pallas, 1811)

Genus *Vulpes* Frisch, 1775

- *105. Indian Fox *Vulpes bengalensis* (Shaw, 1800)

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

Family URSIDAE

Genus *Melursus* Meyer, 1793

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

Family MUSTELIDAE

Subfamily LUTRINAE

Genus *Lutra* Brunnich, 1771

108. Common Otter *Lutra lutra* (Linnaeus, 1758)

Genus *Lutrogale* Gray, 1865

- *109. Smooth-coated Indian Otter *Lutrogale perspicillata* (Geoffroy, 1826)

Subfamily MUSTELINAE

Genus *Mellivora* Storr, 1780

- *110. Ratel/Honey Badger *Mellivora capensis* (Schreber, 1776)

Order ARTIODACTYLA

Family SUIDAE

Genus *Sus* Linnaeus, 1758

- *111. Wild Boar *Sus scrofa cristatus* Wagner, 1839

Family TRAGULIDAE

Genus *Moschiola* Hodgson, 1843

- *112. Indian Chevrotain/Mouse Deer *Moschiola meminna* (Erxleben, 1777)

Family CERVIDAE

Subfamily CERVINAE

Genus *Axis* Smith, 1827

- *113. Spotted Deer *Axis axis axis* (Erxleben, 1777)

Genus *Rusa* Smith, 1827

- *114. Sambar *Rusa unicolor* (Kerr, 1792)

Genus *Muntiacus* Rafinesque, 1815

- *115. Indian Muntjak/Barking Deer *Muntiacus muntjak aureus* (C.H. Smith, 1872)

Family BOVIDAE

Subfamily ANTILOPINAE

Genus *Antilope* Pallas, 1821

- *116. Black Buck/Indian Antelope *Antilope cervicapra* (Linnaeus, 1758)

Genus *Gazella* Blainville, 1816

- *117. Indian Gazella/Chinkara *Gazella bennettii* (Sykes, 1831)

Subfamily BOVINAE

Genus *Bos* Linnaeus, 1758

- *118. Indian Gaur *Bos gaurus* Smith, 1827

Genus *Boselaphus* Blainville, 1816

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

Genus *Bubalus* Smith, 1827

120. Water Buffalo / Indian Buffalo *Bubalus bubalis* (Linnaeus, 1758)

Genus *Tetracerus* Leach, 1825

- *121. Four-horned Antelope *Tetracerus quadricornis* (Blainville, 1816)

Order CETACEA

Suborder MYSTICETI

Family BALAENOPTERIDAE

Genus *Balaenoptera* Lacepede, 1804

122. Blue Whale *Balaenoptera musculus* (Linnaeus, 1758)

123. Common Rorqual, Fin Whale *Balaenoptera physalus* (Linnaeus, 1758)

Suborder ODONTOCETI

Family DELPHINIDAE

Genus *Delphinus* Linnaeus, 1758

- *124. Common Dolphin *Delphinus delphis* Linnaeus, 1758

Genus *Pseudorca* Reinhardt, 1862

125. False Killer Whale *Pseudorca crassidens* (Owen, 1846)

Genus *Sousa* Gray, 1866

126. Indo-pacific Hump-backed Dolphin *Sousa chinensis* (Osbeck, 1765)

Genus *Stenella* Gray, 1866

127. Gray's Dolphin / Spinner Dolphin *Stenella longirostris* (Gray, 1828)

Family PHOCOENIDAE

Genus *Neophocaena* Palmer

128. Black Finless Porpoise : *Neophocaena phocaenoides* (Cuvier, 1829)

Family PHYSETERIDAE

Genus *Physeter* Linnaeus, 1758

129. Sperm Whale *Physeter macrocephalus* Linnaeus, 1758

SYSTEMATIC ACCOUNT

Order PROBOSCIDEA

Order Proboscidea is represented by the animals with massively built body possessing long flexible proboscis. Males generally possess large tusks i.e. enlarged incisors. Molars large and transversely ridged.

The order contains a single family Elephantidae.

Family ELEPHANTIDAE

In India Family Elephantidae is represented by a single subspecies, *Elephas maximus indicus* Cuvier under a species *Elephas maximus* of Genus *Elephas*.

- *1. *Elephas maximus indicus* Cuvier

1797. *Elephas indicus* Cuvier, *Tabl. Elem. Hist. Nat.*, : 148 (India).

2006. *Elephas maximus indicus* Cuvier : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 396-399.

Common Name : Indian Elephant

Diagnostic Characters : Elephant possesses massively built body with a long flexible proboscis. Proboscis ends in a single lip. Males generally possess large tusks i.e. enlarged incisors. Molars large and transversely ridged. Height at shoulder reaches upto 335 cm. Body blackish grey throughout. Four nails on each hindfoot. Ears large but not enormous like African elephant.

Locality : Sindhudurg Dist. on Maharashtra-Goa-Karnataka State borders.

Material Examined/Sightings : Recent sighting records of elephant herds migrated from nearby Goa and Karnataka forests reported by Forests Dept. Authorities in Sindhudurg Dist. on Maharashtra-Goa-Karnataka State borders.

Habitat : Terrestrial, preferring to live in tropical dry and moist deciduous forests including savannah grasslands. Can undertake long distance migration in search of food, shelter and water. Possesses excellent sense of smell and memory. Extremely adaptable. Very social and lives in herds of varying sizes;

External Distribution : Southern Western Ghats, Eastern Ghats, parts of Central, northern, eastern and north-eastern India.

Status : The species has been reported from number of fragmented localities, IUCN Criteria proposed as per CAMP Report (1998) : Vulnerable (National) and Data Deficient (Global), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule I Part I, CITES : Appendix I, Red Data Book (1994): Vulnerable.

Source : Corbet and Hill (1992), Alfred *et. al.* (2002, 2006b), Wilson and Reeder (2005).

Remarks : Elephants are involved in large scale illegal trade at domestic as well as international level, mostly for ivory and other body parts (Pradhan, 1997). The populations are under threat due to illicit wildlife trade, fragmentation of populations, loss of natural habitat, corridors etc.

These result in elephant encroachments in cultivation, house hold properties and elephant-human conflicts (Agrawal, *et. al.*, 1992).

Order SIRENIA

Order Sirenian is known by the massive spindle-shaped marine animals with no external trace of dorsal fin or hind limbs, tail-tip expanded and horizontally flattened and cheek teeth flat-crowned. Head rounded and truncated. Order SIRENIA is represented by a single family *Dugongidae* in Maharashtra State.

Family DUGONGIDAE

Family DUGONGIDAE is represented by a single species, *Dugong dugon* under the Genus *Dugong* in Maharashtra State.

Genus *Dugong*

*2. *Dugong dugon* (Mueller)

1776. *Trichechus dugon* Mueller, *Linne's Vollstandiges Natursyst. Suppl.*, : 21.

2006. *Dugong dugon* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 393-395

Common Name : Dugong or sea cow.

Diagnostic Characters : Body is streamlined with belly more or less flat while the back and sides are rounded. Neck absent, head massive somewhat truncate anteriorly. Fleshy pad-like upper lip, projecting over the lower lip and provided with fine stiff bristles around the muzzle; Nostrils situated on top of the head, eyes small and deeply sunk. Clawed, flipper-like forelimbs, hind limbs absent. Incisors in adult males tusk like. Nostrils are situated on top of the head.

Locality : Southern Konkan coast of Maharashtra State.

Material Examined/Sightings : Sightings along Sindhudurg district coast reported by ZSI survey parties from MBS, ZSI, Chennai (Dr. Venkatraman, Per. Comm.). Also reported from Southern Konkan coast of Maharashtra State (Agrawal and Alfred, 1999; Sathasivam, 2004).

Habitat : *Dugong* is restricted to coastal, shallow and marine habitat feeding mainly upon sea-grasses of the families *Potamogetonaceae* and *Hydrocharitaceae*. Sea cows are totally aquatic herbivores.

External Distribution : Coastal waters of Asia, Africa and Australia.

Status : Many sightings have been reported from number of localities along Indian Coastline, IUCN Criteria proposed as per CAMP Report (1998) : Critically Endangered (National), Data Deficient (Global), Indian Wildlife (Protection) Act (1972 as amended upto 2006) Schedule : Schedule I Part I, Red Data Book (1994) (National): Vulnerable, CITES : Appendix : I.

Source : Corbet and Hill (1992), Agrawal and Alfred (1999), Sathasivam (2004) and Alfred *et al.* (2006ab).

Remarks : Sea cow populations along Indian coastline are reported to be under threat due to decline in area of occupancy, extent of occurrence and also due to hunting for its flesh, hide, fat, bones and tusks.

Order SCANDENTIA

Animals with long snout like a shrew without whiskers, long bushy distichous tail like a squirrel and appearance like a small mongoose when running. Functional digits on fore and hind limbs 5/5 in number. $I^2 = I^1$ and C_1 = adjacent teeth in size.

The order contains a single family.

Family TUPAIIDAE

Family Tupaiidae is represented by only one genus *Anathana* with a single species *A. ellioti* from Maharashtra State.

Genus *Anathana*

Out of the three subspecies of *A. ellioti*, only one occurs in Maharashtra State.

*@3. *Anathana ellioti ellioti* (Waterhouse)

1850. *Tupaia ellioti* Waterhouse. *Proceedings zool. soc. Lond.*, : 106-108.

1992. *Anathana ellioti ellioti* : Corbet and Hill, *The Mammals of the Indomalayan region*, : 38.

Common Name : English: Madras Tree-shrew, Marathi: Zadchichundri

Diagnostic Characters : Appearance like a stripeless squirrel with a bushy tail. Dorsal colour pale rufous or reddish brown. Sometimes middle of back, rump, upper surface of tail tinged with rusty red. Chin, throat, breast and underparts yellowish white continuing in a narrow line along the underside of the tail.

Locality : Maharashtra State : Amaravati Dist. : Melghat Tiger Reserve (Pradhan, 2005); Chandrapur Dist. : Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Gadchiroli Dist. : Alapalli range (Wroughton and Ryley, 1913); Gondia Dist. : Nawegaon National Park (Alfred *et al.*, 2006b); Mumbai Dist. : Mumbai (Wroughton, 1918b); Nagpur Dist. : Pench National Park (Pradhan, 2004); Pune Dist. : Khandala (as *wroughtoni*; Suter, 1922, Chakraborty, 2005), Bhimashankar (Pradhan & Talmale, 2009); Raigad Dist. : Matheran (as *wroughtoni*, Wroughton, 1918b, Chakraborty, 2005); Thane Dist. : Kherdi (Talmale, 2007).

Material Examined/Sightings : Chandrapur Dist. : 1♀, Tadoba-Andhari Tiger Reserve, June, 1996, Coll. Yogesh Dubey, (ZSI.WRC. M/612, Donated specimen).

Habitat : Lives in a scrubby jungle and dry, moist deciduous forests. Terrestrial, arboreal diurnal and omnivorous in habit feeding on both fruits and invertebrates;

External Distribution : Peninsular India.

Status : Subspecies endemic to India; IUCN criteria proposed as per CAMP Report, 2005 : Near Threatened (National); CITES : Appendix II (Family Tupaiidae).

Source : Ellerman and Morrison Scott (1951,1966), Prater (1980) and Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Alfred *et al.* (2002) and Talmale (2007).

Order PRIMATES

Order Primates is represented by four arboreal species in Maharashtra State. It is characterized by presence of rather primitive limbs with plantigrade (Five) digits with nails, reduced nasal region and small facial region with large forward-facing eyes. Hands and feet prehensile. Thumbs of hind feet opposable. Clavicles well developed. Brain large and complex.

Two families in Maharashtra State represent order Primates.

Key to the families of the Order Primates

Claws on 2nd (C2) and/or 3rd (C3) digits of hind feet, otherwise all digits with nails, lower incisors and canine narrow, Tail absent
LORISIDAE

- No claws at all on any digits, all digits with nails, lower incisors and canine normal, Tail present CERCOPITHECIDAE

Family LORISIDAE

Single species with only one subspecies under a single genus *Loris* in Maharashtra State represent the primate family *Lorisidae*.

@4. *Loris lydekkerianus malabaricus* Wroughton

1917. *Loris malabaricus* Wroughton, *J. Bombay nat. Hist. Soc.*, **25** : 45

2003. *Loris lydekkerianus malabaricus*: Molur *et al.*, Status of South Asian Primates : C.A.M.P. Workshop Report, 2003. *Zoo Outreach Organisation CBSG-South Asia, Coimbatore, India* : 70-75.

Common name : English : Gray Slender Loris; Malabar Slender Loris, Marathi: Lajwanti.

Diagnostic Characters : Slender Loris is a small and slender bodied primate of the size of a small kitten. It has an elongated snout, long and slender limbs, large, round ears and closely set eyes encircled with brown rim. It has a well-developed index finger. Claws on second and third digits of the hind feet present. External tail absent. Body well furred dark gray to reddish brown in

colour with silver tinge on the back. Underparts white or buff.

Locality : Reported from the thick forest tracks in Kolhapur Dist. by forest authorities (October, 2008) in Western Ghats of Maharashtra State.

Habitat : Slender Loris lives alone or with mate in the moist deciduous, teak plantations and semi-evergreen forests.

External Distribution : Parts of Karnataka, Kerala and Tamil Nadu in South India.

Status : Subspecies endemic to India;

Conservation Status : IUCN Criteria proposed as per the CAMP Report (2003) : Near Threatened, Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: I Part: I, *CITES* : Appendix : II.

Source : Corbet and Hill (1992), Molur *et al.* (2003) and Wilson and Reeder (2005).

Remarks : The species is involved in domestic as well as international illegal wildlife trade for Medicinal and experimental purposes (Pradhan, 1997).

Family CERCOPITHECIDAE

Two subfamilies in Maharashtra State represent the primate family Cercopithecidae.

Key to the subfamilies of Family CERCOPITHECIDAE

- Cheek-pouches present, tail in general smaller than head and body, stomach simple, neonatal coat brown in colour CERCOPITHECINAE
- Cheek- pouches absent, tail distinctly longer than head and body, stomach complex, neonatal coat clearly black, gray or golden in colour COLOBINAE

Subfamily CERCOPITHECINAE

Subfamily *Cercopithecinae* is represented by a single genus, namely *Macaca*, in India, while in Maharashtra State *Macaca* is represented by two species viz. *Macaca radiata* and *Macaca mulata*.

Genus *Macaca*Key to the species of the genus *Macaca*

- Tail long, about 95-140% of the Head and Body length *Macaca radiata*
- Tail short, about 30-75% of the Head and Body length *Macaca mulatta*

***5. *Macaca mulatta* (Zimmermann)**

1780. *Cercopithecus mulata* Zimmerman, *Geogr. Gesch. Mensch.*, 2 : 195.

2005. *Macaca mulatta* : Goves In Wilson & Reeder, *Mammal Species of the World* : 163.

Common Name : Rhesus macaque.

Diagnostic Characters : Rhesus macaque is a medium sized monkey with rather short tail (30-75% of the head and body length). Crown hairs grow backwards from brows, without a part, whorl or cap. Bare face light pink, while upper back olive in colour. Loins, rump and base of the tail are orange red in colour which is a characteristic feature of Rhesus macaque and distinguishes it from any other Indian Monkey.

Locality : Reported from Amaravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Nagpur Dist. : Pench National Park; Mumbai Suburban Dist. : Sanjay Gandhi National Park, (Introduced); Thane Dist. : Tansa Wildlife Sanctuary, (Introduced); in Maharashtra State (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan, 2004,2005,2006).

Habitat : The species is semi-arboreal preferring to live in forested, mangrove swampy, as well as semi-desert, urban/ semi-urban areas.

External Distribution : Whole of North and Northeast India to south up to 15°46' N Latitude near Bay of Bengal.

Status : Common and widespread in North India (Roonwal and Mohnot, 1977; Prater, 1980), IUCN Criteria proposed as per the CAMP Report (2003) : Least Concern, Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : II Part I, CITES : Appendix II.

Source : Ellerman and Morrison-Scott (1951,

1966), Parter (1980), Fooden *et al.* (1981), Corbet and Hill (1992), Molur *et al.* (2003) and Wilson and Reeder (2005).

Remarks : The species is involved in domestic as well as international trade.

***@6. *Macaca radiata* (Geoffroy)**

1812. *Cercocebus radiatus* Geoffroy, E. *Tableau des quadrumanes Annales Mus. Hist. nat. Paris*, 15 : 157-198.

2005. *Macaca radiata*: Goves In Wilson & Reeder, *Mammal Species of the World* : 164.

Common Name : Bonnet macaque

Diagnostic Characters : The macaques with cheek pouches present, tail normal and without tuft and comparatively longer (95 to 140% head and body) than other macaque species in north India, scalp hairs radial in direction.

Locality : Reported from Mumbai Suburban Dist. : Sanjay Gandhi National Park; Pune Dist. : Bhimashankar Wildlife Sanctuary; Thane Dist. : Tansa Wildlife Sanctuary; in Western Maharashtra (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan and Talmale, 2009b).

Habitat : The species is semi-arboreal living in forested, urban, semi-urban, rural etc. areas of south India.

External Distribution : Southern peninsular India upto 21° N.

Status : The species endemic to Southern India, IUCN Criteria proposed as per the CAMP Report (2003) : Least Concern, Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : II Part I, CITES : Appendix II.

Source : Ellerman and Morrison-Scott (1951, 1966), Parter (1980), Fooden *et al.* (1981), Corbet and Hill (1992), Molur *et al.* (2003) and Wilson and Reeder (2005).

Remarks : The species is involved in domestic as well as international trade.

Subfamily COLOBINE

Subfamily *Colobinae* is represented by only one genus in Maharashtra State.

Genus *Semnopithecus*

Brandon-Jones (2004) recognized seven subspecies of the species *Semnopithecus entellus* with detailed distribution of each subspecies from India. However, Groves In Wilson and Reeder, 2005 validate all the subspecies to species level with synonymised two subspecies viz. *S. e. achates* (Pocock, 1928) and *S. e. anchises* (Blyth, 1844) into *Semnopithecus dussumieri* (I. Geoffroy, 1843).

Till date the taxonomy of *Semnopithecus* is unclear, therefore present paper follows the view of Brandon-Jones (2004). Four subspecies have been reported from Maharashtra.

Key to the subspecies of the species *Semnopithecus entellus*

1. Hand predominantly darker than forearm 2
- Hand predominantly same colour as forearm
S. e. anchises
2. Limbs and back predominantly pale brownish-orange *S. e. entellus*
- Limbs and back predominantly brownish-grey
S. e. achates
- Forearm markedly darker than brownish-grey back (shank and thigh paler)
..... *S. e. hypoleucos*

Species *Semnopithecus entellus* (Dufresne)

*7. *Semnopithecus entellus entellus* (Dufresne)

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

2004. *Semnopithecus entellus entellus* : Brandon-Jones, *Zoos' Print Journal*, 19(8) : 1570-1571.

Common Name : Bengal Langur.

Diagnostic Characters : A large langur, black faced, crestless, black-pawed, pale orange, suffused with greyish-brown on the back, limbs and forward-looped tail. Hand predominantly darker than forearm.

Locality : Reported from northeastern part of

Maharashtra includes Chandrapur Dist. : Chandrapur, Tadoba-Andhari Tiger Reserve; Gadchiroli Dist. : Alapalli (Brandon-Jones, 2004, Pradhan, 2006); Habitat : More arboreal in habit than macaques.

External Distribution : Southern West Bengal, southern Bihar, southern Chhatisgarh, Jharkhand, and Orissa in eastern India, with a probably introduced population in western Bangladesh.

Status : IUCN criteria proposed as per CAMP Report (2003) : Least Concern, Indian wildlife (Protection) Act (1972, as amended upto 2006): Schedule II Part I; CITES : Appendix I.

Source : Parter (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Molur *et al.*, (2003), Brandon-Jones (2004), Wilson and Reeder (2005) and Nameer (2008).

Remarks : Brandon-Jones (2004) reported that this subspecies intergrades to the west with *S. e. achates* and to the south-west with *S. e. anchises*. It most resembles *S. e. anchises*. The species is involved in domestic as well as international trade. The species is also known to be worshipped by Hindus.

*@8. *Semnopithecus entellus hypoleucos* Blyth

1841. *Semnopithecus hypoleucos* Blyth *J. Asiat. Soc. Bengal*, 10 : 839.

2004. *Semnopithecus entellus hypoleucos* : Brandon-Jones, *Zoos' Print Journal*, 19(8) : 1562-1566.

Common Name : Malabar Langur.

Diagnostic Characters : A large langur, black faced, black-pawed, yellowish-white subspecies with dark grey probably backward looped tail, suffused with brownish-grey on the back and limbs.

Locality : Reported possibly from south-western Maharashtra includes Pune, Sinharagarh, Helwak, Mahabaleshwar, Wai, Ratnagiri, Sawantwadi (Brandon-Jones, 2004); Habitat : More arboreal in habit than macaques.

External Distribution : Southwestern Karnataka, northern Kerala in Southern India.

Status : Endemic subspecies of India. IUCN criteria proposed as per CAMP Report (2003) : Least Concern, Indian wildlife (Protection) Act (1972, as amended upto 2006): Schedule II Part I; CITES : Appendix I.

Source : Parter (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Molur *et al.* (2003), Brandon-Jones (2004), Wilson and Reeder (2005) and Nameer (2008).

Remarks : Brandon-Jones (2004) reported that only its darker arm distinguishes it from *S. e. achates* with which it intergrades to the north and east. It probably intergrades to the south with *S. priam* thesities and possibly to the southeast with *S. p. priam*. The species is involved in domestic as well as international trade. The species is also known to be worshipped by Hindus.

***@9. *Semnopithecus entellus achates* (Pocock)**

1928. *Semnopithecus entellus achates* Pocock, *J. Bombay nat. Hist. Soc.*, **32** : 488.

2004. *Semnopithecus entellus achates* : Brandon-Jones, *Zoos' Print Journal*, **19**(8): 1566-1569.

Common Name : Plains Langur.

Diagnostic Characters : *Semnopithecus entellus achates* is a crestless, yellowish-white subspecies, suffused with brownish-grey on the back, tail and limbs. Only its paler arm distinguishes it from *S. e. hypoleucos* with which it intergrades to the south-west. It intergrades to the south-east with *S. p. priam*, and to the east in turn with both *S. e. entellus* and *S. e. anchises*.

Locality : Reported from western Maharashtra (Konkan, Pune), and eastern Maharashtra in Central India (Amravati Dist. : Melghat Tiger Reserve, Nagpur Dist. : Ramtek, Pench National Park) (Brandon-Jones, 2004; Pradhan, 2004, 2005); Habitat : More arboreal in habit than macaques.

External Distribution : Andhra Pradesh, Chhatisgarh, Gujarat, Karnataka, Madhya Pradesh, Rajasthan, Uttar Pradesh (Brandon-Jones, 2004).

Status : Subspecies endemic to India. IUCN criteria proposed as per CAMP Report (2003) : Least Concern, Indian wildlife (Protection) Act (1972, as amended upto 2006) : Schedule II Part I; CITES : Appendix I.

Source : Parter (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Molur *et al.*, (2003), Brandon-Jones (2004), Wilson and Reeder (2005) and Nameer (2008).

Remarks : Brandon-Jones (2004) reported that *S. entellus achates* holds its tail backwards in western Andhra Pradesh, southern Karnataka and western Maharashtra, and forwards in the rest of its range in northern Chhatisgarh, Gujarat, Madhya Pradesh, southeastern Rajasthan and probably Uttar Pradesh in central India. Groves In Wilson and Reeder (2005) synonymised this subspecies under *Semnopithecus dussumieri* I. Geoffroy. However, Branden-Jones (2004) reported detailed distribution of *S. e. achates* from Maharashtra and following the same view in the present paper. The species is involved in domestic as well as international trade. The species is also known to be worshipped by Hindus.

***@10 *Semnopithecus entellus anchises* Blyth**

1844. *Presbytis anchises* Blyth, *J. Asiat. Soc. Bengal*, **13** : 470.

2004. *Semnopithecus entellus anchises* : Brandon-Jones, *Zoos' Print Journal*, **19**(8) : 1572-1574.

Common Name : Deccan Langur.

Diagnostic Characters : *Semnopithecus entellus anchises* is a crestless, pale-pawed, bright orange subspecies with barely any brown suffusion. Hand predominantly same colour as forearm.

Locality : Reported from eastern Maharashtra (Buldana Dist. : Lonar; Yavatmal Dist. : Arni; Probably Pune Dist. : Bhimashankar Wildlife Sanctuary) (Brandon-Jones, 2004; Pradhan and Talmale, 2008, 2009b); Habitat : More arboreal in habit than macaques.

External Distribution : Northern Andhra Pradesh, north-eastern Karnataka, Chhatisgarh (Brandon-Jones, 2004).

Status : Subspecies endemic to India. IUCN criteria proposed as per CAMP Report (2003) : Least Concern, Indian wildlife (Protection) Act (1972, as amended upto 2006): Schedule II Part I; CITES : Appendix I.

Source : Parter (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Molur *et al.*, (2003), Brandon-Jones (2004), Wilson and Reeder (2005) and Nameer (2008).

Remarks : Brandon-Jones (2004) reported that *S. e. anchises* recognizable subspecies intermediate between *S. p. priam*, *S. e. entellus* and *S. e. achates*. Groves (2001) considered it a junior synonym of *S. dussumieri* but assigned most of its distribution to *S. e. entellus*. However, Brandon-Jones (2004) reported detailed distribution of *S. e. achates* from Maharashtra and following the same view in the present paper. The species is involved in domestic as well as international trade. The species is also known to be worshipped by Hindus.

Order RODENTIA

Order *Rodentia* is characterized by presence of a pair of ever growing chisel-shaped incisors in each jaw and a distinct diastema (Open space) between incisors and cheekteeth (Molars).

Order *Rodentia* is represented by three suborders in Maharashtra State.

Key to the suborders of RODENTIA

1. Fur modified into quills or long stiff hairs ..
.....HYSTRICOMORPHA
- Fur normal and not modified into quills or long stiff hairs 2
2. Cheekteeth 3/3 MYOMORPHA
- Cheek teeth, except in Genus *Ratufa*, 5/4 in number SCIUROMORPHA

Suborder SCIUROMORPHA

Suborder *Sciuromorpha* is represented by a single family Sciuridae, in Maharashtra State.

Family SCIURIDAE

Family *Sciuridae* is represented by three subfamilies in Maharashtra State. All types of squirrels belong to the Family Sciuridae.

Key to the Subfamilies of SCIURIDAE

1. Flying membrane present on both side of the body SCIURINAE
- Flying membrane totally absent 2
2. Small-sized squirrel, head and body length always below 280mm; dorsal surface of the body with stripes CALLOSCIURINAE
- Large-sized squirrel, head and body length over 280mm; dorsum without any stripe on the body RATUFINAE

Subfamily CALLOSCIURINAE

Subfamily Callosciurinae is represented by single Genus, *Funambulus*, in Maharashtra State.

Genus *Funambulus*

Genus *Funambulus* is represented by two subgenera in Maharashtra State.

Key to the subgenera of the genus *Funambulus*

1. Dorsal pelage with five longitudinal light stripes *Prasadschiurus*
- Dorsal pelage with three longitudinal light stripes *Funambulus*

Subgenus *Funambulus*

Subgenus *Funambulus* is represented by two species in Maharashtra State.

Key to the species of the subgenus *Funambulus*

- Occipitonasal length usually exceeding 40 mm; length of palate (front of incisors to back of palate) usually exceeding half of the occipitonasal length
..... *Funambulus (F.) tristriatus*

- Occipitonasal length usually less than 40 mm; length of palate usually less than half of occipitonasal length

..... *Funambulus (F.) palmarum*

Species *Funambulus (Funambulus) palmarum*
(Linnaeus)

Two subspecies of the species *Funambulus (F.) palmarum* have been reported from Maharashtra State.

**Key to the subspecies of the species
*Funambulus (F.) palmarum***

- Size larger, Head and Body length more than 145 mm; Toothrow, in average, more than 7mm (Range 7.1-7.9). Southern Maharashtra
- *Funambulus (F.) palmarum bellaricus*
- Size smaller, Head and Body relatively less than 145 mm; Toothrow, in average, less than 7mm (Range 6.5-7.3) in length. North & East Maharashtra
- *Funambulus (F.) palmarum robertsoni*

***@11. *Funambulus (Funambulus) palmarum bellaricus* Wroughton**

1916. *Funambulus palmarum bellaricus* Wroughton, *J. Bombay nat. Hist. Soc.*, **24**(4) : 647.

2002. *Funambulus palmarum bellaricus* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 175-176.

Common Name : Indian Palm Squirrel.

Diagnostic Characters : Head and Body length in the range of 145-170 mm. Tail length range 100-130 mm. In average it is less than Head and Body length. Hind foot in the range between 38.1-38.3mm. Dorsal median stripe narrower than the laterals. Longitudinal dorsal stripes creamy white in colour. Forehead brown grizzling prominently. Anterior portion of dorsal saddle generally with blackish brown tinge which extends up to the root of the tail. Tail black and white, orange rufous line running down the center. Occipitonasal length in the range of 37.3-40.4 mm (Ellerman, 1961). Nasal and frontals less than 30% of occipitonasal length. Upper incisors narrow, reddish or yellow

and plain. Five upper cheekteeth (2 premolars and 3 molars). 1 premolar and 3 molars in lower jaw. Upper toothrow in the range of 7.1-7.9 mm (Ellerman, 1961; Agrawal and Chakraborty, 1979a,b).

Locality : Reported from Kolhapur Dist. : Ajra (Talmale and Pradhan, 2004); Pune Dist. : Pune (Aswathanarayana, 1987).

Material Examined/Sightings : Kolhapur Dist. : 1♂, 1♀, Ramtirth mandir and around, Ajra, 12.vi.1978, Coll. M.S. Pradhan (ZSI.WRC. M/ 112, 113, Skin & damaged skull).

Habitat : Diurnal and arboreal in habit, occurs in southern part of Maharashtra State in deciduous rain forest area.

External Distribution : Karnataka (Agrawal and Chakraborty, 1979a,b).

Status : Indian Endemic subspecies. IUCN Criteria proposed as per the CAMP Report (2005): Least Concern (For *Funambulus palmarum*).

Source : Ellerman (1961), Corbet and Hill (1992), Wilson and Reeder (2005), Alfred *et. al.* (2002), Talmale (2007) and Pradhan and Talmale (2009a).

***@12. *Funambulus (Funambulus) palmarum robertsoni* Wroughton**

1916. *Funambulus robertsoni* Wroughton, *J. Bombay nat. Hist. Soc.*, **24**(4) : 647.

2002. *Funambulus palmarum robertsoni*: Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.* 199 : 175-176.

Common Name : Indian Palm Squirrel.

Diagnostic Characters : Head and Body length in the range of 136.0-150.0 mm. Tail equal or slightly less than Head and Body length. Three dorsal stripes buffy white. Saddle brown with a slight yellow tinge; Underparts usually white or whitish or buff coloured; Underparts of the tail has a red or reddish line running down the center for a greater extent. Mammae two pairs. Occipitonasal length in an average 38.57 mm (Range 37.7 -39.4 mm); Five upper cheekteeth (2 premolars and 3 molars); Upper toothrow in an

average 6.95 mm (Range 6.5-7.3 mm). 1 premolar and 3 molars in lower jaw.

Locality : Reported from Amaravati Dist. : Melghat Tiger Reserve (Pradhan, 2005); Buldhana Dist. : Lonar Wildlife Sanctuary (Pradhan and Talmale, 2008); Chandrapur Dist. : Tadoba and Kolsa in Tadoba Andhari Tiger Reserve (Pradhan, 2006); Nagpur Dist. : Pench National Park (Pradhan, 2004).

Material Examined/Sightings : Buldhana Dist. : 1 ♀, Around Rest House, Lonar WLS, 21.xi.2003, Coll. P. M. Sureshan (ZSI.WRC., M/713).

Habitat : Arboreal and Diurnal preferring to live in forests; They come quite frequently on ground; in habit of constructing nests in the holes (Pradhan, 2005).

External Distribution : Madhya Pradesh and Chhattisgarh (Harshey and Chandra, 2001).

Status : Indian Endemic subspecies, IUCN Criteria proposed as per the CAMP Report (2005): Least Concern (For *Funambulus palmarum*).

Source : Ellerman (1961), Corbet and Hill (1992), Wilson and Reeder (2005), Alfred *et. al.* (2002), Talmale (2007) and Pradhan and Talmale (2009a).

Species *Funambulus (Funambulus) tristriatus*

Jungle striped squirrel *Funambulus tristriatus* is represented by only nominate subspecies in Maharashtra State.

*@13. *Funambulus (Funambulus) tristriatus tristriatus* (Waterhouse)

1837. *Funambulus tristriatus* Waterhouse, *Mag. Nat. Hist. (Charlesworth's)*, 1 : 499.

2002. *Funambulus tristriatus tristriatus* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No. 199* : 177.

Common Name : Jungle striped squirrel;

Diagnostic Characters : Head and Body length average 162.4 mm (Range 138.0 – 185.0 mm). Tail shorter than Head and Body length; Tail length in the range between 118.0-157.0 mm. Hind

foot average 37.21 mm (Range 32.0 –40.4 mm). The longitudinal three pale buff to brownish stripes between the intermediate dark brown to black bands on the dorsal surface with underparts usually white or whitish or buff coloured. Saddle black. Underside of the tail and inguinal region with a long deep reddish central portion throughout most of its length, Dorsally the tail hairs black with white tips. Mammae two pairs. Occipitonasal length in an average 40.73 mm (Range 39.5-42.5 mm). Upper incisors red, narrow and plain. Five upper cheekteeth (2 premolars and 3 molars). Upper toothrow ranges between 7.2-8.0 mm. 1 premolar and 3 molars in lower jaw.

Locality : Reported from Kolhapur Dist. : Radhanagari Wildlife Sanctuary (Talmale and Pradhan, 2004); Mumbai Dist. : Ghatkopar (Agrawal and Chakraborty, 1979b); Mumbai Suburban Dist. : Sanjay Gandhi National Park (Yazdani *et al.*, 1992); Nandurbar Dist. : Amlibari, Tal. Akkalkua, Kondanbari, near Visarwadi (Talmale, 2007); Nashik Dist. : Nashik (Pradhan, 1993); Pune Dist. : Khandala (type loc. of 'thomasi'; Moore and Tate, 1965), Karla, Bhimashankar (Talmale, 2007; Pradhan and Talmale, 2009b), Ratnagiri Dist. : Shirgaon, Khed (Wroughton, 1916a, Agrawal and Chakraborty, 1979b); Satara Dist. : Helwak (type loc. of 'numarius', Wroughton, 1916b), Ghatmatha (Wroughton, 1916a); Sangli Dist. : Chandoli National Park (Talmale and Pradhan, 2004); Thane Dist. : Thane (Moore and Tate, 1965), Jawhar in Tansa Wildlife Sanctuary (Singh and Pradhan, 1992), Dehri, Murbad (Talmale, 2007).

Material Examined/Sightings : Nandurbar Dist. : 1 ♀, Amlibari Tal. Akkalkua, 24.xi.1985, Coll. M.S. Pradhan (ZSI.WRC., M/462), 1 ♀ Kondaibari Ghat near Visarwadi, 19.xi.1985, Coll. M.S. Pradhan, (ZSI.WRC., M/453); Pune Dist. : 1 ♂, 1 ♀, Karla village and around, 08.vi.1984, Coll. M.S. Pradhan, (ZSI.WRC., M/520, 521); 1 ♀, Karla, Pune-Bombay Road, 11.v.1988, Coll. M.S. Pradhan (ZSI.WRC., M/510); 1 ♀ Hanuman Temple, Bhimashankar, 30.v.1979, Coll. A.S. Mahabal, (ZSI.WRC., M/146); Thane Dist. : 1 ♀, Dehari, Murbad, 17.iii.1984, Coll. M.S. Pradhan, (ZSI.WRC. M/391).

Habitat : Arboreal and diurnal preferring to live in semi-dense forests close to human habitations. Though mostly arboreal, they come quite often on the ground. They are in habit of constructing nests in tree holes. They are basically shy in nature.

External Distribution : Kerala, Karnataka, Goa in Western Ghats (Alfred *et al.*, 2002); Status: Indian Endemic species; IUCN Criteria proposed as per the CAMP Report (2005): Near Threatened (For *Funambulus tristriatus*).

Source : Ellerman (1961), Prater (1980), Corbet and Hill (1992), Wilson and Reeder (2005), Alfred *et al.* (2002), Menon (2003) and Talmale (2007) and Pradhan and Talmale (2009a).

Remarks : Wroughton (1916b) described *Funambulus tristriatus numarius* from Helwak, Satara Dist. as a local race and smaller in size than *F. tristriatus*. Later Wroughton and Davidson (1919) described *Funambulus thomasi* from Khandala, Pune Dist. However, both the taxa were synonymised in *F. t. tristriatus* by Ellerman (1961) due to overlapping of characters within these races. Agrawal and Chakraborty (1979a) also supported Ellerman's view. Same view has been followed here.

Subgenus *Prasadsciurus*

Species *Funambulus (Prasadsciurus) pennantii* Wroughton

Only nominate subspecies of the species *Funambulus pennantii* has been reported from Maharashtra.

*@14. *Funambulus (Prasadsciurus) pennantii pennantii* Wroughton

1905. *Funambulus pennanti* Wroughton, *J. Bombay N. H. Soc.*, **16** : 411.

2004. *Funambulus pennantii pennantii*: Srinivasulu, Chakraborty and Pradhan, *Zoos' Print Journal*, **19**(2) : 1354.

Common Name : Indian five striped Northern Palm Squirrel.

Diagnostic Characters : Indian five striped

squirrel has been, by far, placed in the largest mammalian order *Rodentia*, which includes all types of squirrels, marmots, rats, mice, porcupines and their close relatives. Head and Body length never over 200 mm, molars four in number and tail always long and bushy (Range 130-180 mm). Infraorbital foramen scarcely open for muscle transmission. The back has five bold light coloured stripes on the dorsal surface with underparts usually white or whitish or buff coloured. There are three median pale stripes and one pale stripe on the flanks on each side. Underside of the tail without red or reddish line running down the centre. Dorsum brownish or greyish. The stripes are long and mid-dorsal stripe light but prominent. Baculum simple and not bifurcated. Two pairs of mammary teats present.

Locality : Reported from Ahmednagar Dist. : Sangamner (Talmale, 2007); Amaravati Dist. : Melghat Tiger Reserve (Pradhan, 2005); Akola Dist. : Akola (Moore and Tate, 1965); Bhandara Dist. : Samewada vill., Tal. Lakhani (Talmale, 2007); Buldhana Dist. : Nalganga (Talmale, 2007); Chandrapur Dist. : Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Dhule Dist. : Ghodisgaon (Wroughton, 1912a); Jalgaon Dist. : Parola, Pachora, Shendurni, Bodwad (Ellerman, 1961), Moharla, Maloa (Malod), Yawal Taluka, Bhusawal, Chalisgaon, Bhaunti, Edlabad (Now Muktainagar) (Ghose *et al.*, 2004); Jalna Dist. : Ambad (Talmale, 2007); Mumbai Dist. : Mumbai (Moore and Tate, 1965); Mumbai Suburban Dist. : Sanjay Gandhi National Park, (Yazdani *et al.*, 1992); Nagpur Dist. : Khindsi near Ramtek, Wahitola, Mansar mines (as *F. pennanti chhattisgarhi* Ghose *et al.*, 2004), Pench National Park (Pradhan, 2004); Nashik Dist. : Nashik (Ellerman, 1961); Undual river on Aswali- Darna Road (Talmale, 2007); Pune Dist. : Pune, Baramati, Janoliwadi, Dive Ghat, East of Nasarapur, Dehugaon, Theur, Ranjangaon (Moore and Tate, 1965; Talmale, 2007); Satara Dist. : Karad, Madha (Medha) (Ellerman, 1961); Sindhudurg Dist. : Deogad Fort (Mahabal *et al.*, 2005).

Material Examined/Sightings : Ahmednagar Dist. : 2♂♂, Sangamner, 12.xi.1982, Coll. S.N. Ghare, (ZSI.WRC., M/454, Donated); 1♀ Sangamner, 13.xi.1982, Coll. S.N. Ghare, (ZSI.WRC., M/445, Donated); Bhandara Dist. : 1♂, Samewada vill., Tal. Lakhani, 19.xi.2004, Coll. S.S. Talmale, (ZSI.WRC., M/ 756), 1♂, Samewada vill., Tal. Lakhani, 31.xii.2005, Coll. Pawan Bawankule, (ZSI.WRC., M/757, Donated); Buldhana Dist. : 1 young, RH, Nalganga, 15.xi.2005, Coll. S.G.Patil, (ZSI.WRC., M/758); Jalna Dist. : 2♂♂, 1♀, Ambad, 21.x.1989, Coll. P.S. Sardeshpande, (ZSI.WRC., M/494, Donated); Nashik Dist. : 1♂, Undual river on Aswali-Darna Road, 15.ii.1991, Coll. M.S. Pradhan, (ZSI.WRC., M/509); Pune Dist. : 1♂, 1♀, Mukundnagar Pune, 06.xi.1975, Coll. B.K. Tikader, (ZSI.WRC., M/ 85,86), 1♂, Mukundnagar Pune, 08.xi.1975, Coll. B.K. Tikader, (ZSI.WRC., M/87), 2♀♀, E.S.I.S., Aundh Camp, Pune, 18.xi.1980, Coll. M.S. Pradhan, (ZSI.WRC., 444), 1♀, East of Nasarapur on Pune-Satara Road, 08.iv.1883, Coll. M. S. Pradhan, (ZSI.WRC., M/ 516), 1♂, Dehu Road, 09.v.1983, Coll. M.S. Pradhan, (ZSI.WRC., M/ 517), 1♂, Jhanoliwadi, Dive Ghat, 16.v.1983, Coll. M.S. Pradhan, (ZSI.WRC., M/ 518), 1♀ Dehugaon, Indrayani River, 19.v.1983, Coll. M.S. Pradhan, (ZSI.WRC., M/ 519, 1♂, Baramati, 23.i.1990, Coll. A.N. Shengade, (ZSI.WRC., M/ 539, Donated), 1♂, Theur vill., 02.xi.1995, Coll. S. V. Mulay, (ZSI.WRC., M/723), 1♂, Mundhava vill, Pune, 23.viii.1996, Coll. R.S. Bhosle, (ZSI.WRC., M/604), 1♂, Ranjangaon, on Pune-Ahmednagar Road, Dec. 2003, Coll. M. Gaikwad, (ZSI.WRC., M/676, Donated).

Habitat : Arboreal and diurnal preferring to live close to the human habitations. Five striped squirrel is more commensal species than the three striped species. Five striped squirrel is more common in North India (Its southern limit being Dharwar in Karnataka). Though arboreal, they come more frequently on the ground. They are in habit of constructing nests in tree holes.

External Distribution : Gujarat, Madhya Pradesh for the subspecies (Ghose *et al.*, 2004) and possibly in southern India (Srinivasulu *et al.*, 2004).

Status : IUCN Criteria proposed as per the CAMP Report (2005): Least concern (For *Funambulus pennanti*, National), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : IV.

Source : Ellerman (1961), Prater (1980), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Alfred *et. al.* (2002), Menon (2003) and Talmale (2007).

Remarks : Ghose *et al.* (2004) divided Maharashtra five-striped squirrel population in two subspecies : *Funambulus pennantii chhattisgarhi* (Tail shorter than Head and Body length) from East Maharashtra, (Border line being from Nagpur, Gondia and Chandrapur districts, south to Godavari river) and *Funambulus pennantii pennantii* (Tail longer than Head and Body length) (Rest of the Maharashtra towards West). Due to overlapping of measurements and colour variations observed in the specimens from Maharashtra population, Talmale (2007) treated all Maharashtra population as *Funambulus pennantii pennantii* only.

Subfamily RATUFINAE

Genus *Ratufa*

Only one species of the genus *Ratufa* occurs in Maharashtra State.

Species *Ratufa indica*

Indian Gaint squirrel, *Ratufa indica*, is represented in Maharashtra State by two subspecies.

Key to the subspecies of *Ratufa indica*

- The dorsal surface of the body red, the red not mixed with black *Ratufa indica indica*
- The dorsal surface of the body (shoulder and rump) has some clear black patches or portions mixed with the red .. *Ratufa indica centralis*

*@15. *Ratufa indica indica* (Erxleben)

1777. *Sciurus indicus* Erxleben, Syst. Regn. Anim. 1 : 420.

2002. *Ratufa indica indica* Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No. 199* : 179.

Common Name : Indian Giant Squirrel.

Diagnostic Characters : Body size large over 280 mm in head and body length (Max. 470 mm), molars four in number and tail usually long and bushy (Around 600 mm). Infraorbital foramen scarcely open for muscle transmission. Dorsum deep red, while venter light buff or yellowish in colour. Tail dark proximally. However, almost half the distal part of the tail paler in colour. Ears red with small tuft of hairs. Forelegs blackish red in colour.

Locality : Reported from Pune : Bhimashankar, Khandala; Ratnagiri Dist. : Danoli (ZSI. WRC. Coll.); Satara Dist. : Ghatmatha, Helwak Western Ghats in Maharashtra State (Ellerman, 1961; Moore and Tate, 1965; Agrawal and Chakraborty, 1979b).

Material Examined/Sightings : Pune Dist. : 2 skins, 2.v.1965 & 4.v.1965, Bhimashankar, Coll. B.S. Lamba (ZSI.WRC., M/59 & 60), Ratnagiri Dist. : 1 skin & skull, March, 1965, Danoli, Coll. B.K. Tikader (ZSI.WRC., M/58); 1 skin & skull, March, 1965, Danoli, Coll. B.S. Lamba, (ZSI.WRC., M/61); Habitat : Giant squirrels live only in thick forests of different types and, hence, is considered as indicator species. It is an arboreal and diurnal species. They keep to the canopies and seldom come on the ground. They move from tree top to tree top taking amazing leaps with limbs outspread, covering as much as twenty feet in a single flight. They are in habit of constructing number of nests on the tree tops. They are shy and wary animals and not so easy to locate. Despite its brilliant colouring they are sooner heard than seen.

External Distribution : Thick forested areas of northern Western Ghats. Status : Indian Endemic species; IUCN Criteria proposed as per the CAMP Report (2005) : Vulnerable; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule II Part II, CITES Appendix : II.

Source : Ellerman (1961), Prater (1980), Corbet

and Hill (1992), Wilson and Reeder (1993, 2005), Alfred *et al.* (2002) and Menon (2003).

Remarks : Hoffman *et al.* in Wilson and Reeder (1993) has placed Genus *Ratufa* in the Subfamily *Scuirinae*. However it has been kept under *Ratufinae* here following the comments given in Corbet and Hill (1992) and Wilson and Reeder (2005). Indian giant squirrel is hunted for its meat for food and skin and body parts for various purposes including making trophies (Pradhan, 1997). Threats to the survival of the species are also due to habitat destructions, habitat isolation restricting to few individuals near sacred springs and riverine forests, human interference and domestic as well as international commercial illegal trade.

***@16. *Ratufa indica centralis* Ryley**

1913. *Ratufa indica centralis* Ryley, *J. Bombay nat. Hist. Soc.*, 22(3) : 436.

2005. *Ratufa indica centralis* : Pradhan, *Mammalia In : Fauna of Melghat Tiger Reserve, Conservation Area Series*, 24 : 81-82 (Publ., Director, Zool. Surv. India, Kolkata).

Common Name : Indian Giant Squirrel.

Diagnostic Characters : Body size large over 280 mm in head and body length (Max. 470 mm), molars four in number and tail usually long and bushy (Around 600 mm). Infraorbital foramen scarcely open for muscle transmission. Dorsum deep red with some clear black patches on shoulder and rump, while venter light buff or yellowish in colour. Tail dark with pale tip. Ears red with small tuft of hairs. Forelegs blackish red in colour.

Locality : Reported from Amaravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve (Pradhan, 2005, 2006) in Maharashtra State.

Material Examined/Sightings : Pradhan has reported to have sighted a live specimen in Chandrapur region (Pradhan, 1997).

Habitat : Giant squirrels live only in thick forests of different types and, hence, is considered as indicator species. It is an arboreal and diurnal species. They keep to the canopies and seldom

come on the ground. They move from tree top to tree top taking amazing leaps with limbs outspread, covering as much as twenty feet in a single flight. They are in habit of constructing number of nests on the tree tops. They are shy and wary animals and not so easy to locate. Despite its brilliant colouring they are sooner heard than seen.

External Distribution : Thick forested areas of Central India.

Status : Indian Endemic species; IUCN Criteria proposed as per the CAMP Report (2005): Vulnerable; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule II Part II, CITES Appendix: II.

Source : Ellerman (1961), Prater (1980), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Alfred *et. al.* (2002) and Menon (2003).

Remarks : Indian giant squirrel is hunted for its meat for food and skin and body parts for various purposes including making trophies. Threats to the survival of the species are also due to habitat destructions, habitat isolation restricting to few individuals near sacred springs and riverine forests, human interference and domestic as well as international commercial illegal trade (Pradhan, 1997).

Subfamily SCIURINAE

Tribe Pteromyini

Tribe Pteromyini under subfamily Sciurinae (Flying squirrels) is represented by only one genus, species and subspecies in Maharashtra State.

Genus *Petaurista*

*17. *Petaurista philippensis philippensis* (Elliot)

1839. *Pteromys philippensis* Elliot, *Madras J. Litt. Sci.*, 10 : 217.

2005. *Petaurista philippensis philippensis*: Pradhan, *Mammalia In Fauna of Melghat Tiger Reserve, Conservation Area Series No. 24* : 85-86. Publ.: Zool. Surv. India, Kolkata.

Common Name : Common Giant Flying Squirrel.

Diagnostic Characters : Flying squirrel is

distinctive in possessing gliding membrane on each flank from wrist to ankle. Head and Body length of adult specimen in the range between 350-470 mm, tail always longer than Head & Body (Range 400-530mm) and bushy, Hind feet moderately long (72-82 mm) and molars four in number. Infraorbital foramen scarcely open for muscle transmission. Dorsally the giant flying squirrel, as a rule, is dark brownish grey or tending to be more grey but without any reddish tinge and with underparts usually whitish grey or buff coloured. Greater part of the tail black. Two pairs of mammary teats present.

Locality : Reported from Amaravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve (Pradhan, 2005, 2006) in Maharashtra State.

Material Examined/Sightings : Sighted at Semadoh, Dhakna, Kolkaz, Chikhaldara and Kuvapati areas in Melghat Tiger Reserve and also in Tadoba-Andhari Tiger Reserve.

Habitat : Totally arboreal and nocturnal in habit preferring to live in tropical and temperate forests on plains to those on high altitudes. Contrary to the common name, the flying squirrel does not fly but glides from treetop to treetop in the air. When the animal leaps into the air the outspread limbs expands the gliding membrane between the limbs to the fullest extent. Supported by the membrane the squirrel glides smoothly and swiftly downwards. Flying squirrel can easily be tamed but they are delicate animals and do not live long in confinements.

External Distribution : Peninsular India south of Himalaya.

Status : Uncommon in the region; IUCN Criteria proposed as per the CAMP Report (2005): Near Threatened(India) and Endangered (Sri Lanka), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : II Part II.

Source : Ellerman (1961), Prater (1980), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Alfred *et al.* (2002) and Menon (2003).

Remarks : *Petaurista philippensis* was earlier

considered to be a subspecies of *Petaurista petaurista*. However *Petaurista philippensis* has been considered as a valid species by Corbet and Hill (1992) and upheld by Hoffman *et al* in Wilson and Reeder (1993). The flying squirrel is hunted for its meat for food. Threats to the survival of the species are also due to habitat destructions, fragmentation, human interference and domestic trade.

Suborder MYOMORPHA

Superfamily MUROIDEA

Superfamily Muroidea is represented by only one family in Maharashtra State.

Family MURIDAE

Family Muridae is represented by only two subfamilies out of five Indian subfamilies in Maharashtra State. All types of rats, bandicoots, mice and gerbils belong to the Family Muridae.

Key to the Subfamilies of MURIDAE

- Upper incisors grooved; molar cusps arranged in two longitudinal rows; Bulla inflated; Tail long with terminal hair tuft GERBILLINAE
- Upper incisors not grooved; molar cusps arranged in three longitudinal rows; Bulla not inflated; Tail long and normal without any terminal hair tuft MURINAE

Subfamily GERBILLINAE

Subfamily Gerbillinae (Gerbil Rats) is represented by a single species under Genus *Tatera* in Maharashtra State.

Genus *Tatera*

*18. *Tatera indica* (Hardwicke)

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

2005. *Tatera indica*: Musser and Carleton In Wilson and Reeder, *Mammal Species of the World*, 3rd ed. Vol. II : 1242-1243.

Common Name : Indian Gerbil/Antelope Rat.

Diagnostic Characters : Indian Gerbil Rat has been included in the mammalian order *Rodentia*, the gnawing mammals, which is by far the largest mammalian order. Rats, mice, bandicoots, gerbils and their close relatives have been grouped under Family Muridae. However, Indian murid genera *Gerbillus* and *Tatera* have been included in the subfamily: *Gerbillinae*. Further, *Tatera* is known to occur throughout India, while *Gerbillus* is restricted to Rajasthan and Gujrat States only. Genus *Tatera* is characterised by possession of clawed hallux, opisthodont yellow and distinctly grooved upper incisors, long anterior palatal foramina, more than 15.0 mm, extending between the tooth row and molars three in number. Tail longer than Head and Body length and ends in terminal tuft of hairs. Large and soft-furred antelope rat species with Head and Body more than 120 mm (range between 145-203 mm.) The terminally tufted haired Tail (157-218 mm) always more than Head and Body length. Hindfoot long and in the range between 40-47 mm. Soles naked upto heel. Nasals unusually long and more than 40% of the occipitonasal length. Upper molar tooth row characteristic with biserially arranged longitudinal cusps. Upper incisors distinctly grooved and usually yellow in colour. Dorsum sandy brown to reddish brown, while underparts white in colour. Tail dark above and below and pale on the sides. Hindfeet white in colour. 4 pairs of mammary glands present.

Locality : Reported from Ahmednagar Dist. : Ahmednagar (Wroughton, 1919c); Amravati Dist. : Melghat Tiger Reserve (Pradhan, 2005); Chandrapur Dist. : Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Dhule Dist.: Dhule (Pradhan, 1989); Jalgaon Dist. : Jalgaon, Parola, Bhadgaum, Shendurni, Jamner, Bhodwad, Edlabad (now Muktainagar) (Wroughton, 1912a), Pachora (Ellerman, 1961), Bhusawal (Agrawal, 2000); Nandurbar Dist. : Toranmal Reserve Forest (Jathar *et al.* 2005); Pune Dist. : Pune (Wroughton and Davidson, 1920), Saswad (Pande *et al.*, 2004); Bhimashankar (Pradhan and Talmale, 2009b); Raigad Dist. : Kolaba (as *cuvieri*, Agrawal, 2000); Ratnagiri Dist. : Shirgaon (Wroughton, 1916a).

Ratnagiri (as *cuvieri*, Agrawal, 2000); Satara Dist. : Helwak, Ghatmatha (Wroughton, 1916a), Satara (as *cuvieri*, Agrawal, 2000); Sindhudurg Dist. : Malwan, Vengurla, Sukalwadi (Ellerman, 1961); Thane Dist. : Thane (Pradhan, 1980c), Tansa Wildlife Sanctuary (Singh and Pradhan, 1992), Shirol near Murbad and Mokhada (Talmale, 2007) from Maharashtra State.

Material Examined/Sightings : Pune Dist. : 1 ♂, Bhimashankar, 29.v.1979, Coll. A.S. Mahabal, (ZSI.WRC., M/124); Thane Dist. : 2 ♀ ♀, Forest south of Suryamal, Mokhada, 12.iii.1984, Coll. M.S. Pradhan, (ZSI.WRC., M/393,394), 3 ♂ ♂, Shirol, Mhasvad Dam Road, Murbad, 12.iii.1984, Coll. M.S. Pradhan, (ZSI.WRC., M/396,397,398).

Habitat : Terrestrial, fossorial and nocturnal rodent species found throughout India. The species is basically a field rat and generally lives in cultivated plains, gardens, orchards pastureland, crop fields, waste lands and forests. Amongst the Indian gerbils, this species appears to be the most adapted ecologically. It makes complex burrows with number of openings covering large areas for the purpose of living, hoarding the food stuff, reproduction and family care. A single burrow system may have separate living chamber, storing chamber, chamber for female and young one etc.

External Distribution : Throughout the lowlands of India and Nepal, east to the Ganges delta, West through Pakistan and South Afghanistan, Iran and Iraq to Syria and south to Sri Lanka (Corbet and Hill, 1992).

Status : Common; IUCN Criteria proposed as per the CAMP Report (2005): Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermis).

Source : Ellerman (1961), Prater (1980), Bates (1988), Corbet and Hill (1992), Agrawal (2000), Alfred *et al.* (2002), Wilson and Reeder (2005) and Talmale (2007).

Remarks : On the basis of length of hindfoot Agrawal (2000) recognized two subspecies *Tatera indica indica* (Southern limit Maharashtra and

Madhya Pradesh) and *T. indica cuvieri* (South India and Sri Lanka). Musser and Carleton in Wilson and Reeder (2005) synonymised all the subspecies under species *Tatera indica*. Same view has been followed here. *Tatera indica* is considered to be an agricultural pest or, rather, 'enemy' pest of highest order, since it causes damage on large scale not only to the stored foodgrains in the field but also to the standing crops. The species is a prolific breeder. The species is also known to be a natural vector for number of diseases including the dreaded disease like plague.

Subfamily MURINAE

Subfamily Murinae is represented by seven genera in Maharashtra State.

Key to genera of subfamily MURINAE

1. Hallux opposable; hallux and fifth toe having a flat nail **Vandeleuria**
 - Hallux not opposable; hallux and fifth toe possess claws 2
2. Upper incisors grooved on front surface, molars heavily cuspidate **Golunda**
 - Upper incisors normal and not grooved on front surface; molars not heavily cuspidate 3
3. Condylbasal length exceeds or equal to the occipitonasal length; upper incisors proodont **Bandicota**
 - Condylbasal length always less than occipitonasal length; upper incisors opisthodont or orthodont 4
4. First upper molar more than half the length of upper molar row, and its antero-internal cusp distorted inwards to reach the level of second lamina; third molar extremely reduced **Mus**
 - First upper molar less than half the length of upper molar row, and its antero-internal cusp normal and not distorted inwards to reach the second lamina; third molar normal and not so reduced 5

5. Palate and anterior palatal foramina long, more than one half and one-fifth of occipitonasal length respectively *Millardia*
- Never combining the characters of long palate and long anterior palatal foramina 6
6. Palate short, less than one-half of occipitonasal length and anterior palatal foramina long, more than one-fifth of the occipitonasal length extending between maxillary toothrow
..... *Madromys*
- Palate long, more than one-half of occipitonasal length; anterior palatal foramina short, less than one-fifth of the occipitonasal length and not extending between maxillary toothrows *Rattus*

Genus *Vandeleuria*

Only one species and subspecies of the genus *Vandeleuria* has been reported from Maharashtra State.

*19. *Vandeleuria oleracea oleracea* (Bennett)

1832. *Mus oleraceus* Bennett, *Proc. Zool. Soc. Lond.*, 1832 : 121.

2000. *Vandeleuria oleracea oleracea* : Agrawal, *Rec. Zool. Surv. India, Occ. Paper. No.*, 180 : 63-65.

Common Name : Indian Long-tailed Tree Mouse; Indomalayan Vandeleuria.

Diagnostic Characters : Small arboreal mouse possessing Head and Body length in the range of 42.0-95.0 mm. Tail long, poorly haired unicoloured and dark. Tail length ranges between 70-121 mm, about 140% of Head and Body length. Hind foot pale, averages 17 mm in length. Dorsum of various shades of dull brown with basal dark grey fur, while underparts preferably white in colour. Skull with relatively constricted frontals, least interorbital width less than 4mm. Occipitonasal length in the range of 18.2-23.9 mm. Supraorbital ridges normally absent, or very weak. Palate short, less than half the length of the occipitonasal length. Anterior palatal foramina quite long (11.5-16.5% of the occipitonasal length. Upper incisors narrow, yellow and plain. Molar

toothrow less than 4mm, ranges between 3.0-3.6 mm; m^1 and m^2 retain the postero-internal cusp (t_7), nine cusps in m^1 , eight in m^2 ; m^1 distinctly 4-rooted; m^3 reduced, but apparently trilaminar originally. Lower molars biserially cuspidate.

Locality : Reported from Ahmednagar Dist. : Ahmednagar (Ellerman, 1961); Amaravati Dist. : Melghat Tiger Reserve (Pradhan, 2005); Mumbai Dist. : Mumbai (Ellerman, 1961); Mumbai Suburban Dist. : Sanjay Gandhi National Park (Yazdani *et al.*, 1992); Nandurbar Dist. : Toranmal Reserve Forest, Tal. Shahada (Jathar *et al.*, 2005); Nashik Dist. : Nashik (Pradhan, 1993), Nandalidak Ghat, Borgaon-Surgana road (Talmale, 2007); Pune Dist. : Pune (Agrawal, 2000), Khanota near Ujani wetland (Pradhan, 1994); Raigad Dist. : Kolaba (Ellerman, 1961); Satara Dist. : Panchgani (Agrawal and Chakraborty, 1980); Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992).

Material Examined/Sightings : Amaravati Dist. : 1♂, Vill. Chunkhadi in MTR, 21.xii.1992, Coll. P.P. Kulkarni, (ZSI. WRC. M/582); Nashik Dist. : 1♂, Nandalidak Ghat, Borgaon-Surgana road, 28.ii.1985, Coll. D.B. Bastawade, (ZSI.WRC. M/367); Pune Dist. : 1♂, Fields near Khanota, Ujani wetland area, 23.ix.1990, Coll. M.S. Pradhan, (ZSI.WRC. M/ 505).

Habitat : Terrestrial, arboreal and nocturnal in habit. Trees and shrubs in forest are its natural haunt. Females build globular large nests just a few feet above the ground in the tree hollows, bamboo thickets and thatched roofs of village houses, Baya nests or even in the empty junction boxes fixed on the electric poles. The species is a basically an outdoor species.

External Distribution : Andhra Pradesh, Gujarat, Karnatka, Madhya Pradesh, Rajasthan, Tamil Nadu (Agrawal, 2000).

Status : Not very common in the region; IUCN Criteria proposed as per the CAMP Report (2005): Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermins).

Source : Ellerman (1961), Prater (1980), Corbet and Hill (1992), Agrawal (2000) and Alfred *et al.* (2002), Wilson and Reeder (2005) and Talmale (2007).

Remarks : None.

Genus *Rattus*

Three species of the genus *Rattus* occur in Maharashtra State.

Key to the species of the genus *Rattus*

1. Large size (200-250 mm), occipitonasal on an average between 35-55 mm. in length, Tail shortened about 80-90% of head and body, tail obscurely bicolored ... *Rattus norvegicus*
- Medium size (140-200 mm), occipitonasal on an average between 37-47 mm in length, tail unicoloured and long more than 120% of head and body length 2
2. Tail length more than 150% of the Head and Body length *Rattus satarae*
- Tail length less than 150% of the Head and Body length *Rattus rattus*

Species *Rattus rattus*

Four subspecies of the species *Rattus rattus* have been reported from Maharashtra State.

Key to the subspecies of the species *Rattus rattus*

1. Black bellied melaniastic form
..... *Rattus rattus rattus*
- Non black bellied; non-melanistic form 2
2. Grey bellied *Rattus rattus rufescens*
- White bellied 3
3. Tail below 130% of Head and Body length; Arboreal life; Distribution in Western Ghats
..... *Rattus rattus wroughtoni*
- Tail above 130% of Head and Body length; Terrestrial life; Distribution in Central India
..... *Rattus rattus narbadae*

*20 *Rattus rattus rufescens* (Gray)

1837. *Mus. rufescens* Gray. *Ann. Mag. nat. Hist.*, 1 : 35.

1992. *Rattus rattus rufescens* : Corbet and Hill, *The Mammals of the Indomalayan region*, : 339-340.

Common Name : House Rat, Roof Rat.

Diagnostic Characters : A medium sized house rat with long tail, dorsum rufous brown and venter slaty grey or in various shades of grey but never white in colour, tail uniformly dark in colour. It is characterised by possession of clawed hallux and long tail (more than 120% of the Head and Body length). Head and Body length in the range between 140-200 mm. *Rattus* species also possess elongated anterior palatal foramina (more than 7.0 mm in length) & extending between maxillary tooth row. Upper molar tooth row normal and more than 5.0 mm (5.5-6.6 mm), palate long and more than one-half of the occipitonasal. Molars three in number. Tail is always longer than Head and Body length. Hindfeet moderate and in the range between 26-36 mm. Occipitonasal length in the range of 36-46.5 mm. Upper incisors narrow, yellow and plain. Dorsum dark and rufous brown, while underparts dull in colour. Fur with some broad and flat spines in the dorsal pelage. Hindfeet usually dark in colour. Five pairs of mammary glands present.

Locality : The subspecies is known to occur in all the regions of Maharashtra State.

Material Examined/Sightings : Specimens studied available in ZSI, WRC collection from Amaravati, Bhandara, Buldhana, Chandrapur, Dhule, Jalgaon, Jalna, Kolhapur, Mumbai, Mumbai Suburban, Nandurbar, Nashik, Parbhani, Pune, Raigad, Sangli, Satara, Solapur, Thane Districts.

Habitat : Terrestrial, and a most common commensal form, found in houses, godowns, shops, residential complexes, also in scrubby and secondary forests.

External Distribution : Throughout India.

Status : Common. Many populations have been reported from number of localities, IUCN Category proposed as per CAMP Report (2005).

Least concern (For *Rattus rattus*), Indian Wildlife (Protection) Act (1972) (As amended upto 2006) Schedule : Schedule V (Vermin);

Source : Ellerman (1961), Agrawal (2000), Corbet and Hill (1992) and Wilson and Reeder (1993, 2005) and Talmale (2007).

Remark : A pest species of highest order causing extensive damages to the household as well as public properties. The species is also a carrier of vectors for number of diseases. Taxonomically Tiwari *et al.* (1971), proposed to allot this population a specific status on the basis of morphological studies.

***@21 *Rattus rattus narbadae* Hinton**

1918. *Rattus rattus narbadae* Hinton, *J. Bombay nat. Hist. Soc.*, **26**(1) : 77.

1992. *Rattus rattus narbadae*: Corbet and Hill, *The Mammals of the Indomalayan region*, : 337.

Common Name : White Bellied House Rat.

Diagnostic Characters : White bellied house rat having a long unicoloured and dark tail, always longer than Head and Body length, mostly exceeding 130% of the Head and Body. Head and Body length in the range of 155–160 mm with an average of 157.5 mm. Tail length average of 210 mm (Range 196–225 mm). Dorsum dark and rufous brown while underparts white in colour, fur with some broad and flat spines in the dorsal pelage. Hindfeet average of 30 mm (Range 29–31 mm). 5 pairs of mammae present. Occipitonasal length ranges between 37.5–39.8 mm. Palate long and more than one-half of the occipitonasal length. Anterior palatal foramina averages 7.25 mm in length and extends between maxillary toothrow. Bulla long more than 15% of the occipitonasal length. Daistema long and in the range of 10.2–11.1 mm. Upper incisors ophistodont, narrow, yellow and plain. Maxillary toothrow ranges between 6.1–6.3 mm, and also averages 16.04 % of the occipitonasal length; Molars triserially cuspidate; m^1 5 rooted and having 8 cusps ($t7$ absent), m^2 with 6 cusps ($t2, t3, t7$ absent); m^3 like m^2 but smaller; Lower molars m_1 having three laminae, and m_2 and m_3 two each; 1st and 2nd

lamina of m_3 bicuspidate, last lamina single cusped; Posterior cingulum present behind first and second molars.

Locality : Reported from Chandrapur Dist. : Chandrapur, Chichpalli (Ellerman, 1961), Tadoba-Andhari Tiger Reserve (Pradhan, 2006);

Material Examined/Sightings : Chandrapur Dist. : 1♂, Rest House, Tadoba, Tadoba-Andhari Tiger Reserve, 30.iii.1996, Coll. P. P. Kulkarni, (ZSI.WRC. M/606).

Habitat : Terrestrial and nocturnal in habit. Generally seen close to the human habitations and found in houses, huts, and residential complexes (Pradhan, 2005b).

External Distribution : Andhra Pradesh (Chakraborty *et al.*, 2004), Madhya Pradesh (Khajuria and Ghosal, 1981), Gujarat (Chakraborty and Agrawal, 2000).

Status : Indian Endemic subspecies. Common. Many populations have been reported from number of localities, IUCN Category proposed as per CAMP Report (2005). Least concern (For *Rattus rattus*), Indian Wildlife (Protection) Act (1972) (As amended upto 2006) Schedule : Schedule V (Vermin).

Source : Ellerman (1961), Agrawal (2000), Corbet and Hill (1992), Wilson and Reeder (1993, 2005) and Talmale (2007).

Remark : A pest species causing extensive damages to the household as well as public properties. The species is also a carrier of vectors for number of diseases.

***@22. *Rattus rattus wroughtoni* Hinton**

1919. *Rattus rattus wroughtoni* Hinton, *J. Bombay N.H. Soc.*, **26** : 384.

1992. *Rattus rattus wroughtoni* : Corbet and Hill, *The Mammals of the Indomalayan region*, : 337.

Common Name : White-bellied House Rat.

Diagnostic Characters : White-bellied House Rat with Head and Body length in the range between 144–210 mm. Tail is always longer than Head and Body length (below 130% of the Head

and Body length). Hindfeet moderate and in the range between 30-33 mm. Occipitonasal length in the range of 36.9-41.3 mm. Upper incisors narrow, yellow and plain. Upper molar tooth row normal and more than 5.5 mm (5.6-6.6mm), Dorsum dark and rufous brown, while underpart white in colour sometimes mixed with sulphur yellow colour. Tail unicoloured and dark. Five pairs of mammary glands present.

Locality : Reported from Mumbai Dist. : Mumbai (Pradhan, 1985), City ward, Parel (Talmale, 2007); Mumbai Suburban Dist. : Goregaon, Malad, Andheri, Ghatkopar, Kurla (Talmale, 2007).

Material Examined/Sightings : Mumbai Dist. : 1♂, Nana Chowk, Urban Mumbai, 21.xi.1979, (ZSI.WRC. M/161), 1♀ Parel, 29.x.1980, (ZSI.WRC. M/187), 2♂♂, 1♀ City Ward, Mumbai, 22.ix.1983, (ZSI.WRC. M/279,282), 1♀, Mumbai, 23.ix.1983, (ZSI.WRC. M/286), 2♂♂, Parel, 19.xi.1984, (ZSI.WRC. M/377,378 skull only) All collected by M. S. Pradhan; Mumbai Suburban Dist. : 1♂, Ghatkopar, 30.xi.1982, (ZSI.WRC. M/246, skull only); 1♂, 1♀, Andheri, 24.v.1983, (ZSI.WRC. M/261,262); 1♂, Ghatkopar, 24.ix.1983, (ZSI.WRC. M/288), 1♂, Goregaon, 24.ix.1983, (ZSI.WRC. M/294, skull only), 1 Unsexed, Kurla, 24.ix.1983, (ZSI.WRC. M/295, skull only), 1♀, Goregaon, 27.ix.1983, (ZSI.WRC. M/314, skull only), 1♂, Andheri, 17.xi.1984, (ZSI.WRC. M/379, skull only) All specimens collected by M. S. Pradhan.

Habitat : Mostly arboreal. Very rarely comes on the ground. Generally seen in coconut and other plantations. Terrestrial and nocturnal in habit.

External Distribution : Coastal areas of Western Ghats in India.

Status : Subspecies endemic to India; IUCN Criteria proposed as per the CAMP Report (2005): Least concern (For *Rattus rattus*), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermins).

Source : Ellerman and Morrison-Scott (1951, 1966), Ellerman (1961), Raman and Sharma

(1977), Corbet and Hill (1992), Wilson and Reeder (1993, 2005) and Talmale (2007).

Remarks : The subspecies is a prolific breeder. Musser and Carleton in Wilson and Reeder (1993) opine that the subspecies should be attributed to *Rattus tanezumi* (Temminck) based on chromosomal and certain biochemical parameters. However, It has been observed that even these parameters are unstable. The chromosomal number is also variable in *Rattus rattus* subspecies (Raman and Sharma, 1977). Hence, *status quo* has been proposed by Corbet and Hill (1992) and Musser and Carleton in Wilson and Reeder (2005). Similar view has been accepted here. A pest species causing extensive damages to the coconut plantations in the Western Ghats.

*23 *Rattus rattus rattus* (Linnaeus)

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

1986. *Rattus rattus rattus* : Pradhan and Hemkar, *J. Bombay nat. Hist. Soc.*, 83(2) : 422-423.

Common Name : Black rat, European Black Rat.

Diagnostic Characters : Jet black coloured, silky and soft furred rat with Head and Body length ranges between 140-145 mm (Average 143.33 mm). Tail unicoloured and dark measuring in the range of 145 -172 mm (Average 157.33 mm), longer than Head and Body length. Hindfoot averages 29.15mm (Range 24.1- 33.7 mm). Occipitonasal length of the skull ranges between 27.7-40.3 mm. Maxillary toothrow about 6.2-6.6 mm; m¹ having 8 cusps (t7 absent), m² with 6 cusps (t2,t3,t7 absent), m³ like m² but small. Posterior cingulum present behind first and second lower molars.

Locality : Reported from Port cities, Mumbai Dist. : Greater Bombay (Pradhan and Hemkar, 1986), Parel (Talmale, 2007); Mumbai Suburban Dist. : Andheri (Talmale, 2007) from Maharashtra State.

Material Examined/Sightings : Mumbai Dist. : 1♀, 2♂♂, Parel, 15.xi.1984, (ZSI.WRC. M/346,347,348), 1♀, Parel, 16.xi.1984, (ZSI.WRC.

M/349), 1♂, 2♀♀, Parel, 17.xi.1984, (ZSI.WRC. M/351, (354,355, skull only), 1♂, Parel, 21.xi.1984, (ZSI.WRC. M/352), 1♂, 1♀, Parel, 23.xi.1984, (ZSI.WRC. M/356, 357, skull only) All specimens collected by M.S. Pradhan; Mumbai Suburban Dist. : 1♂, Andheri, 21.xi.1984, Coll. M.S. Pradhan, (ZSI.WRC. M/353).

Habitat : Commensal; European subspecies found in port cities due to accidental transportation by human agencies.

External Distribution : Throughout India.

Status : Introduced species due to transportation by human agencies Many populations have been reported from number of localities in Mumbai, IUCN Category proposed as per CAMP Report (2005). Least concern (For *Rattus rattus*), Indian Wildlife (Protection) Act (1972) (As amended upto 2006) Schedule : Schedule V (Vermin).

Source : Ellerman (1961), Agrawal (2000), Corbet and Hill (1992), Wilson and Reeder (1993, 2005) and Talmale (2007).

Remark : *Rattus rattus rattus* (Linnaeus) is an introduced subspecies. It has gained a footing in the new home and is trying to establish itself in Mumbai City (Pradhan and Hemkar, 1986).

*24. *Rattus norvegicus* (Berkenhout)

1769. *Mus. norvegicus* Berkenhout, *Outlines N.H. Gt. Britain and Ireland*, 1 : 5.

2000. *Rattus norvegicus*: Agrawal, *Rec. Zool. Surv. India, Occ. Paper. No.*, 180 : 81.

Common Name : Norvey Rat, Drain Rat, Brown Rat.

Diagnostic Characters : Brown rat is a larger and more robust-looking rat than the black rat or common house rat. It can be recognised by shorter tail, shorter than head and body length, dorsum brown or light brown, while venter slaty grey in colour, tail obscurely bicolored. Skull large, occipitonasal length 45-55 mm; Supraorbital ridges powerful, extending backwards fairly straight up to occiput. Palate long, more than one-half of occipitonasal length, extending posteriorly far behind third upper molars. Basically *R. norvegicus*

is an introduced species through transportation by human agencies and has initially established itself in the sea port cities of Asia.

Locality : Mumbai Dist. : Mumbai, Dadar (Joshee and Kamath, 1963), Colaba, Bombay Port Trust, Navy Nagar, Carnac Bunder, Crawford market, Residential areas near Shivdi Railway station, Lalbag, Residential area, Elphinston road, Chembur, Parel (Talmale, 2007); Mumbai Suburban Dist. : Bhandup (Joshee and Kamath, 1963), Borivali (Yazdani *et al.*, 1992), Goregaon, Malad (Pradhan, 1978b), Andheri, Kurla, Bandra (Talmale, 2007).

Material Examined/Sightings : Mumbai Dist. : 1♂, 2♀♀, Colaba, 20.xi.1979, (ZSI. WRC, M/175, 176), 1♀, Bombay Port Trust, Mumbai, 27.x.1980, (ZSI.WRC. M/195, skull only); 2♂♂, 2♀♀, Navy Nagar, 28.x.1980, (ZSI.WRC. M/184, skull only); 1♂, 2♀♀, Carnac Bunder, 29.x.1980, (ZSI.WRC. M/190, skull only), 2♂♂, Crawford market, Mumbai, 30.x.1980, (ZSI. WRC. M/185), 1♀, Residential areas near Shivdi Railway station, 29.vii.1982, (ZSI.WRC. M/199, skull only), 1♂, 1♀, Residential area, Lalbag, 29.vii.1982, (ZSI. WRC. M/200, 202); 1♀ Residential area, Elphinston road, 29.vii.1982, (ZSI. WRC. M/201, Skull only), 1♂, Chembur, 23.xi.1982, (ZSI.WRC. M/238), 2♂♂, Colaba, 25.xi.1982, (ZSI.WRC. M/220, 221), 1♂, 2♀♀ City ward, Mumbai, 23.ix.1983, (ZSI.WRC. M/283, 284, 285); 1♀, Parel, 19.xi.1984, (ZSI.WRC. M/382) All specimens collected by M. S. Pradhan; Mumbai Suburban Dist. : 1♂, 1♀ Andheri, 31.x.1980, (ZSI.WRC. M/191), 1♂, Kurla, 23.xi.1982, (ZSI.WRC. M/237, skull only), 1♀ Bandra, 27.v.1983, ZSI.WRC. M/276, skull only), 1♂, 1♀, Kurla, 26.ix.1983, (ZSI.WRC. M/296, 297, skull only), 1♂, 2♀♀, Goregaon ('P' Ward), 27.ix.1983, (ZSI. WRC. M/311, 312, 313, skull only), 1♂, 1♀, Boriwali, 19.xi.1984, (ZSI. WRC. M/380, 381, skull only) All specimens collected by M.S. Pradhan.

Habitat : Terrestrial and fossorial, an introduced species from temperate lands, has now established itself in number of sea-port cities of Asia. In India it is a commensal rodent species

competing with common house rat (*R. r. rufescens*) and field rat (*B. bengalensis*) particularly in metropolis. In metropolitan cities like Mumbai, Kolkata and Chennai this rat has been collected from drains and sewers (Hence the name Drain Rat).

External Distribution : Port cities and interior towns accessible by surface navigations in India.

Status : Common. Many populations have been reported from number of navigable localities, IUCN Criteria proposed as per CAMP Report (2005) : Not Evaluated; Indian Wildlife (Protection) Act (1972) (as amended upto 2006) Schedule : Schedule V (Vermin).

Source : Ellerman and Morrison-Scott (1951, 1966), Ellerman (1961), Prater (1980), Corbet and Hill (1992), Wilson and Reeder (1993, 2005) and Talmale (2007).

Remarks : A pest species of higher order causing extensive damage to the household as well as public properties. The species is also a carrier of vectors for number of diseases.

***@25. *Rattus satarae* Hinton**

1918. *Rattus rattus satarae* Hinton, *J. Bombay nat. Hist. Soc.*, 26(1) : 87.

2005. *Rattus satarae* : Musser and Carleton In : Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. II : 1487-1488.

Common Name : Sahyadris Forest Rat.

Diagnostic Characters : White-bellied forest Rat with Head and Body length in the range between 116-200 mm. Tail unicoloured, dark and always longer than Head and Body length (exceeding 150% of the Head and Body length). Dorsum golden brown with black hairs intermixed, while underparts white in colour, fur moderately thick. Hindfeet usually dark in the range between 31-35 mm. 5 pairs of mammae present. Occipitonasal length in the range of 42.4-43 mm. Upper incisors narrow, yellow and plain. Upper molar tooth row normal and more than 6.5 mm (6.5-6.9 mm). Five pairs of mammary glands present.

Locality : Pune Dist. : Bhimashankar Wildlife Sanctuary (Pradhan & Talmale, 2009b); Satara Dist. : Ghatmatha (Type locality), Helwak (Ellerman, 1961); Konkan (Ellerman, 1961). Northern part of Western Ghats at and near the type locality and Western Ghats in Maharashtra State.

Material Examined/Sightings : Specimens were studied available in National Institute of Virology, Pune collection from Rajpur-Bhimashankar, Pune district.

Habitat : Tropical evergreen rain forest. Altitudinal range, 1500-2150m.

External Distribution : Nilgiri Hills (Tamil Nadu State) in the south, which approximates the extent of tropical evergreen rain forest along the SW mountainous margin of SW Peninsular India (Musser and Carleton in Wilson and Reeder, 2005).

Status : Indian Endemic species; IUCN Criteria proposed as per the CAMP Report (2005): Not Evaluated, Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermins).

Source : Ellerman and Morrison-Scott (1951, 1966), Ellerman (1961), Corbet and Hill (1992), Wilson and Reeder (1993, 2005) and Talmale (2005).

Remarks : Musser and Carleton in Wilson and Reeder (2005) commented that the distribution of this species is presently reduced to small, isolated patches through conversion to agriculture and plantations; The thick forest patches between Satara region (Maharashtra) and Nilgiri Hills (Tamil Nadu) probably may contain *R. satarae*.

Genus *Madromys*

Only one species of the Genus *Madromys* occurs in Maharashtra State.

***26. *Madromys blanfordi* (Thomas)**

1881. *Mus blanfordi* Thomas, *Ann. Mag. nat. Hist.*, (5)7 : 24.

2005. *Madromys blanfordi* : Musser and Carleton In Wilson and Reeder, *Mammal Species of the World*, 3rd ed. Vol. II. : 1353-1354.

Common Name : Blanford's Madromys; Blanford's Rat.

Diagnostic Characters : Blanford's rat has been included in the mammalian order *Rodentia*, the gnawing mammals, since it possesses a pair of chisel-shaped ever growing incisors in each jaw, a distinct diastema between incisors and cheek teeth (Molars) and the clawed digits. It possess bicoloured tail (wholly dark proximally and wholly white distally) longer than Head and Body length. A comparatively large sized species with Head and Body length in the range of 150-195 mm. Tail length in the range of 185-208mm. Hindfeet large and in the range between 32-37 mm. Fur always soft and smooth. Dorsum in various shades of brown with reddish tinge, while underparts white in colour. Hindfeet whitish or paler. Occipitonasal length in the range of 40.7-43.9 mm. Skull with well-developed supraorbital ridges and long palate, more than one-half of occipitonasal length. Anterior palatal foramina quite long (more than one-fifth of or more than 22% of the occipitonasal length). Nasals long and tend to be narrower behind. Upper molar row in the range 6-7mm. Upper incisors narrow, yellow and plain. M¹ having 8 cusps, M² with 7 cusps (t3 very small) and M³ with 6 cusps and small. Postero-internal cusps of the first and second upper molar retained throughout the life. Diastema long. Three pairs of mammary glands present.

Locality : Reported from Amaravati Dist. : Semadoh, Pili-Sipna valley, Kolkaz in Melghat Tiger Reserve (Wroughton, 1912b), Aurangabad Dist. : Aurangabad cave (Brosset, 1961); Chandrapur Dist. : Jamunwadi in Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Mumbai Dist. : Mumbai (Wroughton, 1919c); Mumbai Suburban Dist. : Kanheri caves in Sanjay Gandhi National Park (Brosset, 1961); Nagpur Dist. : Koltimara in Pench National Park (Pradhan, 2004), Nagpur (Agrawal, 2000), Khindsi (Talmale, 2007); Pune Dist. : Khandala (Agrawal, 2000), Bedsar caves (Brosset, 1961), Taleghar, Bhimashankar,

Sinhagad (Talmale, 2007); Raigad Dist. : Sai (Wroughton, 1919c), Matheran (Wroughton, 1919c), Raiwad (Talmale, 2007); Satara Dist. : Ghatmatha (Ellerman, 1961), Satara (Agrawal, 2000); Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992) from Maharashtra State;

Material Examined/Sightings : Chandrapur Dist. : 1 ♂, Jamunwadi, TATR, 16.viii.1995, Coll. S.G. Patil, (ZSI.WRC. M/611); Nagpur Dist. : 1 ♂, Koltimara RH., Pench National Park, 09.xii.1998, Coll. R.M. Sharma, (ZSI.WRC. M/615).

Habitat : Terrestrial, fossorial and nocturnal in habit preferring to live in all types of forests including dry deciduous forest, jungle etc. They live among rocks and boulders and even in the burrows made in soft soils. They live in pairs or in small colonies. The species is essentially an outdoor species.

External Distribution : Throughout Peninsular India and Sri Lanka (Agrawal, 2000).

Status : Not uncommon in the region; IUCN Criteria proposed as per the CAMP Report (2005): Least Concern (For *Cremnomys blanfordi*), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermins).

Source : Ellerman (1961), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal (2000), Alfred *et al.* (2002) and Talmale (2007).

Remarks : *Madromys blanfordi* was originally placed under genus *Mus*, subsequently in *Rattus*, *Cremnomys* and finally in the genus *Madromys* (Corbet and Hill, 1992, Agrawal, 2000; Wilson and Reeder, 2005). These rats can also live in open scrub jungles and/or on bare hillsides. In forest it can change its habit from fossorial to arboreal. It makes untidy and large nests in a hole, crevices or in trees.

Genus *Millardia*

In India, genus *Millardia* is represented by three species, of which only two have been reported from Maharashtra State.

Key to the species of the genus *Millardia*

- Head and body length more than 150 mm; plantar pads six in number.....
..... *Millardia kondana*
- Head and body length less than 150 mm; plantar pads less than six in number.....
..... *Millardia meltada*

Species *Millardia meltada* (Gray)

Only nominate subspecies of the species *Millardia meltada* has been reported from Maharashtra State.

*27. *Millardia meltada meltada* (Gray)

1837. *Golunda meltada* Gray, *Mag. Nat. Hist.*, 1 : 586.

2000. *Millardia meltada meltada* : Agrawal, *Rec. Zool. Surv. India, Occ. Paper. No.*, 180 : 110-112.

Common Name : Soft-furred Metad.

Diagnostic Characters : Indian soft furred-metad has been included in the mammalian order *Rodentia*, the gnawing mammals, since it possesses a pair of chisel-shaped ever growing incisors in each jaw, a distinct diastema between incisors and cheek teeth (Molars) and the clawed digits. Genus *Millardia* is characterised by possession of tail shorter than Head and Body length, ears rounded and shorter than hindfeet length. Five planter pads on each foot. A rather small and a beautiful soft furred field mouse possessing Head and Body length in the range of 97-156 mm, molars three in number and the tail poorly haired but clearly bicoloured. Tail length in the range of 92-145mm. Hindfeet in the range between 21-29 mm. Occipitonasal length in the range of 30.5-36.3 mm. Skull with well-developed supraorbital ridges and long palate, more than one-half of occipitonasal length. Anterior palatal foramina quite long (more than one-fifth of or more than 22% of the occipitonasal length). Nasals long and tend to be narrower behind. Upper molar row always more than 4 mm and less than 6.5 mm (5.0-6.2 mm). Upper incisors narrow, yellow and plain. M¹ having 8 cusps, M² with 7 cusps (t3 very small) and M³ with 6 cusps and small. Postero-internal cusps of the first and second upper molar retained

throughout the life. Dorsum in various shades of brown with reddish tinge, while underparts perfectly white in colour. Hindfeet whitish or paler. Four pairs of mammary glands present.

Locality : Reported from Ahmednagar Dist. : Ahmednagar (Wroughton, 1919c); Amaravati Dist. : Melghat Tiger Reserve (Pradhan, 2005); Chandrapur Dist. : Chandrapur (Wroughton and Ryley, 1913); Dhule Dist. : Ghodisgaon (Wroughton, 1912a); Jalgaon Dist. : Bodwad (Wroughton, 1912a); Nashik Dist. : Nashik (Pradhan, 1993), Devre vill, Harsul; Nirgudmal, Musalpada vill, Vani; 2 km. N of Nivani vill. on Kalvan-Devala Road, Vani (Talmale, 2007); Pune Dist. : Pune (Agrawal, 2000), Khadakwasla (Talmale, 2007); Raigad Dist. : Kolaba (Wroughton, 1907); Ratnagiri Dist. : Ratnagiri (Wroughton, 1919c); Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992) in Maharashtra state.

Material Examined/Sightings : Nashik Dist. : 1 ♀, Kashiganga river on Devre vill, Harsul, 12.xi.1987, Coll. M.S. Pradhan, (ZSI.WRC. M/461), 3 young ones, 18.11.1987, Nirgudmal, Musalpada vill and around, Vani, 18.xi.1987, Coll. M.S. Pradhan, (ZSI.WRC. M/465), 1 young one, 2 km. N of Nivani vill. on Kalvan-Devala Road, Vani, 20.xi.1987, Coll. M.S. Pradhan, (ZSI. WRC. M/464).

Habitat : Terrestrial, fossorial and nocturnal in habit preferring to live near cultivations. However they may also be found in the heavy shrubs surrounded by forest, or living among rocks and in the tumbled down walls of the deserted houses. They live in pairs or in small colonies. The species is essentially an outdoor species.

External Distribution : Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Orissa, Tamil Nadu in peninsular India.

Elsewhere : Sri Lanka (Agrawal, 2000).

Status : Not uncommon in the region; IUCN Criteria proposed as per the CAMP Report (2005): Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule : V (Vermins).

Source : Ellerman (1961), Prater (1980), Corbet and Hill (1992), Wilson and Reeder (2005), Agrawal (2000) and Alfred *et al.* (2002).

Remarks : Earlier Ellerman (1961) considered *Millardia* as a subgenus of *Rattus*. However latter revisionary taxonomic studies confirmed its generic status. Corbet and Hill (1992) and Alfred *et al.* (2002) accepted same view. The species is a prolific breeder and considered to be an agricultural pest species since it causes damage to the standing crops.

@28. *Millardia kondana Mishra and Dhanda

1975. *Millardia kondana* Mishra and Dhanda, *J. Mammal.*, **56**(1) : 76.

2005. *Millardia kondana* : Musser and Carleton *In* : Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. II : 1386.

Common Name : Sinhagarh Rat, Large Metad.

Diagnostic Characters : This species is distinctly distinguishable from the other three species of the genus *Millardia* by its large cranial and external measurements and also by its possession of six plantar pads. Tail shorter than Head and Body length. Ears shorter than hindfeet. Dorsum dark brown above, grayish white below. Tail poorly haired, slightly bicolour, dark above and grayish below. Mammae 4 pairs. Head and Body length in an average of 174.85 mm (Range 155.0-195.0 mm). Hind feet in the range of 31.0-34.0 mm. Skull large, with occipitonasal length (*onl*) more than 39 mm (Range 39.3-41.7 mm). Anterior palatal foramina long, extending posteriorly between maxillary toothrows. Palate long more than half of *onl*; Bulla relatively smaller, less than 15% of *onl*; Diastema longer, more than 28% of *onl* than in *meltada*. Upper incisors opisthodont, creamish yellow in colour; m^1 5 rooted; First upper molar (m^1) with eight cusps, m^2 7 cusps (t_3 very small) and m^3 6 cusps (t_2, t_3, t_7 absent); First lower molar with eight cusps, external cusps of anterior and posterior laminae greatly reduced; m_2 with seven cusps, antero-external cusps very small; m_3 not reduced, with 6 cusps; Remnants of third outer row of cusps present.

Locality : Reported from Pune Dist. : Known only from type locality, Sinhagarh (Mishra and Dhanda, 1975, Agrawal, 2000).

Material Examined/Sightings : Pune Dist. : 1 ♂, Sinhagarh, 8.vii.1978, Coll. D.B. Bastawade, (ZSI. WRC. M/156); Habitat: Nocturnal; Inhabits burrows on the top of plateau (alt. 1270 m), with bushes and a few trees (Mishra and Dhanda, 1975).

External Distribution : None.

Status : Indian Endemic species. Not uncommon in the region; IUCN Criteria proposed as per the CAMP Report (2005): Critically Endangered; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule : V (Vermins).

Source : Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal (2000) and Alfred *et al.* (2002).

Remarks : Nil.

Genus *Mus*

Subgenus *Mus*

Genus *Mus* is represented in Maharashtra State by six species.

Key to the species of the Genus *Mus*

1. Tail unicoloured, and longer than head and body length; diastema, in skull, equal or less than one-fourth of occipitonasal length
..... *Mus musculus*
- Tail bicoloured, dark above and paler below, equal to or shorter than head and body length; Diastema, in skull, generally more than one-fourth of occipitonasal length 2
2. Fur generally spiny; supraorbital ridges, in skull, well-developed 3
- Fur soft; supraorbital ridges either absent or scarcely developed 5
3. Smaller form, occipitonasal length 20-23 mm; maxillary toothrows less than 4mm in length
..... *Mus phillipsi*

- Larger form, occipitonasal length 23-30 mm; maxillary toothrows more than 4 mm in length 4
- 4. An anterior accessory cusp present on first lamina of first upper molar; chromosome number $2n = 22$ or 26 *Mus saxicola*
- No anterior accessory cusp present on first lamina of first upper molar; chromosome number $2n = 30$ *Mus platythrix*
- 5. Smaller mice, hindfeet 14-16 mm; occipitonasal length less than 20 mm *Mus booduga*
- Larger mice, hindfeet 16-21 mm; occipitonasal length greater than 20 mm *Mus cookii*

Species *Mus musculus*

Common house mouse, *Mus musculus*, is represented in Maharashtra State by only one subspecies.

*29. *Mus musculus castaneus* Waterhouse

1843. *Mus castaneus* Waterhouse, *Ann. Mag. nat. Hist.*, 12 : 134.

2005. *Mus musculus castaneus* : Musser and Carleton. In : Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. II : 1399.

Common Name : House Mouse.

Diagnostic Characters : House mouse has been included in the mammalian order Rodentia, or the gnawing mammals, which is by far the largest mammalian order. Mice, rats, bandicoots and their close relatives have been grouped under Family Muridae. A small house mouse with Head and Body length in the range of 55-80 mm, molars three in number and tail always long and short haired (Range 68-88 mm). It may be mostly longer than Head and Body. Infraorbital foramen large and open for muscle transmission. Upper molar row less than 4 mm but highly specialised. First upper molar over half the length of the entire molar tooth-row, while third molar extremely reduced. Anterointernal cusp of the first molar heavily distorted on the inner side. Palatal foramina long extending posteriorly between the toothrow

and more than 20% of the occipitonasal length. Anterior of zygomatic plate strongly convex. Dorsum generally dark brown, while venter always dark grey or ochraceous brown, but never white, and hindfoot brown in colour. Tail uniform in colour. Five pairs of mammary glands present.

Locality : Reported from Ahmednagar Dist. : Ahmednagar (Wroughton, 1920); Amaravati Dist. : Chikhaldara, Dhakna, Semadoh in Melghat Tiger Reserve (Pradhan, 2005); Bhandara Dist. : Bhandara, Lakhani (Talmale, 2007); Buldhana Dist. : Warvand (Talmale, 2007); Chandrapur Dist. : Chandrapur (Molur *et al.*, 2005), Tadoba-Andhri Tiger Reserve (Pradhan, 2006); Dhule Dist. : Dhule (Pradhan, 1989); Jalgaon Dist. : Parola (Wroughton, 1912a); Kolhapur Dist. : Radhanagari Wildlife Sanctuary (Talmale and Pradhan, 2004); Mumbai Dist. : Mumbai (Marshall, 1977), Parel, Kamathipura (Talmale, 2007); Mumbai Suburban Dist. : Goregaon (as *Mus musculus tytleri*), Malad (as *M. musculus urbanus*, Deoras and Bhatt, 1981); Sanjay Gandhi National Park, Borivali (Yazdani *et al.*, 1992), Andheri, Bandra (Talmale, 2007); Nagpur Dist. : Pipriya in Pench National Park (Pradhan, 2004); Nandurbar Dist. : Toranmal Reserve Forest (Jathar *et al.*, 2005); Nashik Dist. : Nashik (Pradhan, 1993); Pune Dist. : Pune (Marshall, 1977), Dehu Road (Talmale, 2007); Sangli Dist. : Vita (Talmale, 2007); Satara Dist. : Helwak (as *Mus manei*, Wroughton, 1916a), Satara (as *Mus dubius*, Wroughton, 1920); Thane Dist. : Thane (as *Mus dubius*, Wroughton, 1920), Tansa Wildlife Sanctuary (Singh and Pradhan, 1992), Kasa, Devtalipada, Jawhar, (Talmale, 2007); found throughout the state (Ellerman, 1961; Agrawal, 2000).

Material Examined/Sightings : Bhandara Dist. : 1♂, 1♀, Grossary shop, Mendha, Bhandara, 12.xi.2004, (ZSI.WRC. M/701,702), 1♂, Residential area, Lakhani, 17.xi.2004, (ZSI. WRC. M/703), 1♂, Bhandara, 23.xi.2004, (ZSI.WRC. M/704) All collected by S.S. Talmale; Buldhana Dist. : 1♀, Around Forest RH, Warvand, 12.xi.2005, Coll. S.G. Patil, (ZSI. WRC. M/727); Mumbai Dist. : 1 unsexed, Bombay Port Trust, 27.x.1980,

(ZSI.WRC. M/196), 1♂, 2♀♀, Parel, 27.x.1980, (ZSI.WRC. M/499), 1♂, 4♀♀, Kamathipura, Mumbai, 26.ix.1983, (ZSI.WRC. M/299,300, 302,303, 304); 1♂, 5♀♀, Kamathipura, Mumbai, 27.ix.1983, (ZSI.WRC. M/305,306,307,308, 309,310); Mumbai Suburban Dist.: 1♂, 1♀, Andheri West, 25.v.1983, (ZSI.WRC. M/267, 274 skull only), 1♂, Bandra, 27.v.1983, (ZSI.WRC. M/278, skull only), 1♂, Bombay, 22.ix.1983, (ZSI.WRC. M/280), 1♂, Goregaon, 26.ix.1983, (ZSI.WRC. M/298) All collected by M.S. Pradhan; Pune Dist. : 2♂♂, 3♀♀, Bhavani Peth, Pune, 02.iii.1977, Coll. M.S. Pradhan, (ZSI.WRC. M/63), 1♂, 1♀, Model colony, Pune, 26.ix.1978, Coll. R.H. Kamble, (ZSI.WRC. M/118,119); 1♂, Dehu Road, 13.i.2006, Coll. N.P.I. Das, (ZSI.WRC. M/700); Sangli Dist.: 1♀ Vita, 15.ix.1979, Coll. A.S. Mahabal, (ZSI.WRC. M/160); Thane Dist.: 1♀, RH, Kasa, 06.iii.1984, Coll. M.S. Pradhan, (ZSI.WRC. M/388), 1♀ Devtalipada, Jawhar, 19.x.1986, Coll. M.S. Pradhan, (ZSI. WRC. M/500).

Habitat : Terrestrial, fossorial and found in all habitats since it is a commensal species. A common house mouse causing extensive damage to the properties. The species is considered to be the indoor species and rarely seen outdoor.

External Distribution : Throughout India.

Status : Commensal rodent species. Common in residential premises; IUCN Criteria proposed as per the CAMP Report (2005) : Least concern (For *Mus musculus*), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermis).

Source : Marshall (1977), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal (2000), Alfred *et. al.* (2002) and Talmale (2007).

Remarks : The species is a prolific breeder and considered to be a pest species since it causes damage to the foodgrains stored in godowns. It is also responsible to cause extensive damage to the public as well as private properties and articles of merchandise due to its habit of gnawing by its evergrowing chisel-shaped incisors.

*30. *Mus booduga* (Gray)

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

2009. *Mus booduga* : Pradhan and Talmale, List of valid Rodent taxa (Class : Mammalia, Order : Rodentia) from Indian Subcontinent including Myanmar. *Rec. zool. Surv. India, Occ. Paper No.*, 297 : 148.

Common Name : Little Indian Field Mouse.

Diagnostic Characters : *Mus b. booduga* has been included in the mammalian order *Rodentia*, the gnawing mammals, which is by far the largest mammalian order. Mice, rats, bandicoots and their close relatives are grouped under Family *Muridae*. A commonly seen small field mouse possessing Head and Body length in the range of 50-88 mm, molars three in number and tail short haired and bicoloured (Pale below). Tail length in the range of 50-72 mm. It may or may not be equal to Head and Body length. Hindfoot smaller and in the range between 13-17 mm. Infraorbital foramen large and open for muscle transmission. Upper molar row less than 4 mm but highly specialised. First upper molar bears anterior accessory cusp extending over half the length of molar tooth-row, while third molar extremely reduced. Anterointernal cusp of the first molar heavily distorted on the inner side. Anterior palatal foramina long extending posteriorly between the toothrow and more than 20% of the occipitonasal length. Upper incisors opisthodont. Fur smooth. Dorsum varies from light to dark reddish or rusty brown and underparts perfectly white, whitish, grey or, sometimes even dull grey in colour. But apparently both, white and grey bellied forms, occur together in many localities and it is very difficult to divide this species into subspecies on the basis of the colour of the underparts (Agrawal, 2000). Hindfoot whitish or paler. Five pairs of mammary glands present.

Locality : Reported from Ahmednagar Dist. : Ahmednagar (Wroughton, 1912a); Amaravati Dist. : Pili Sipna valley, Kolkaz (Wroughton, 1912b), Chaurakund, Raipur, Paturda, Dhakna in Melghat Tiger Reserve (Pradhan, 2005), Belkund (Talmale, 2007), Chunkhadi, in Melghat Tiger Reserve (Talmale, 2007); Buldhana Dist. : Lonar Wildlife

Sanctuary, Lonar (Pradhan and Talmale, 2008), Paldhag, Dnyanganga Wildlife Sanctuary (Talmale, 2007); Chandrapur Dist. : Chandrapur, Chichpalli (Wroughton and Ryley, 1913), Jamunwadi in Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Dhule Dist. : Ghodisgaon (Wroughton, 1912a), Dhule (Pradhan, 1989), Karwand Dam, Tal. Shirpur (Talmale, 2007); Jalgaon Dist. : Shendurni, Bodwad (Wroughton, 1912a), Pal, Parola, Don vill., Chalisgaon (Talmale, 2007); Kolhapur Dist. : Kurundwad, Kumbhoj, Tal. Hatkangle (Talmale and Pradhan, 2004); Mumbai Suburban Dist. : Sanjay Gandhi National Park, Borivali. (Yazdani *et al.*, 1992); Nagpur Dist. : Saddle dam and Ranidoh in Pench National Park (Pradhan, 2004); Nandurbar Dist. : Toranmal Reserve Forest (Jathar *et al.*, 2005), Kamodkokshya, Tal. Navapur, Kothar vill., Akkalkua, (Talmale, 2007); Nashik Dist. : Nashik (Pradhan, 1993), Hatlondi, Boripada, Kadavai Pada vill., Devre, Harsul, Chirai vill. on Borgaon-Surgana road (Talmale, 2007); Osmanabad Dist. : Near Sina river, Parenda (Talmale, 2007); Pune Dist. : Pune, Khandala (Ellerman, 1961), Theur, Sinhagarh, Dehu Road (Talmale, 2007); Ratnagiri Dist. : Shirgaon, Khed, Ratnagiri (Ellerman, 1961); Satara Dist. : Helwak, Satara (Ellerman, 1961), Medtedi, near Mahabaleshwar, Palani ghat, Mhaswad (Talmale, 2007); Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992) in Maharashtra State.

Material Examined/Sightings : Amaravati Dist. : 1 unsexed, Dolar river, Dhakna in MTR, 18.ii.1992, Coll. M.S. Pradhan, (ZSI.WRC. M/ 535), 1 unsexed, Paturnda vill., Dhakna range in Melghat Tiger Reserve, 05.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/591), 1 ♂, Agricultural fields in vill. Raipur in Melghat Tiger Reserve, 20.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/ 576), 5 ♂ ♂, Chunkhadi vill. in Melghat Tiger Reserve, 21.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/583), 1 ♂, 1 ♀, Belkund in Melghat Tiger Reserve, 28.viii.2002, Coll. S. Thakur, (ZSI.WRC. M/627, Donated specimens); Buldhana Dist. : 1 ♂, Lonar crater proper N. of Lonar Rest house, Lonar, 19.ii.2003, Coll. D.B. Bastawade, (ZSI.WRC. M/ 715), 1 ♀, Paldhag Dam on Vishwaganga river

(Understones), 19.xi.2005, Coll. S.G. Patil, (ZSI.WRC. M/ 728), 2 ♂ ♂, Periphery of Dnyanganga Wildlife Sanctuary, Varvand, 21.xi.2005, Coll. S.G. Patil, (ZSI.WRC. M/729); Chandrapur Dist. : 1 unsexed, Jamunwadi, in TATR, 02.iii.1995, Coll. R.H. Kamble, (ZSI.WRC. M/610); Dhule Dist. : 1 ♂, Karwand Dam, 22km NW of Shirpur on Bombay-Agra Road, Tal. Shirpur, 01.ii.1986, Coll. R.M. Sharma and D.B. Bastawade, (ZSI.WRC. M/425); Jalgaon Dist. : 1 ♂, Pal, Sukhi river, 31.i.1979, Coll. R.H. Kamble, (ZSI.WRC. M/134), 1 ♂, Pimperkhed maruti, Parola, 02.xii.1984, Coll. R.H. Kamble, (ZSI.WRC. M/479), 1 ♂, Tank near Don vill., Chalisgaon, 11.xii.1984, Coll. R.H. Kamble, (ZSI.WRC. M/480); Kolhapur Dist. : 1 ♀, Madhali Saral Talaw, Kurundwad, 06.vi.1978, Coll. M.S. Pradhan, (ZSI.WRC. M/116), 1 ♀, Shirol near Kumbhoj, Tal. Hatkangle, 01.x.1986, Coll. D.B. Bastawade, (ZSI.WRC. M/442); Nagpur Dist. : 1 ♂, Compartment No. 547, Ranidoh in Pench National Park, 01.x.1994, Coll. M.S. Pradhan, (ZSI.WRC. M/621), 1 ♂, Saddle Dam in Pench National Park, 22.ii.1999, Coll. M.S. Pradhan, (ZSI.WRC. M/ 620); Nandurbar Dist. : 1 ♂, 1 ♀, Visarwadi, Kamodkokshya, Tal. Navapur, 19.i.1986, Coll. R.M. Sharma and D.B. Bastawade, (ZSI.WRC. M/424), 1 ♂, Kothar vill. on Talode-Dhadgaon road, Akkalkua, 31.vii.1986, Coll. A.S. Mahabal, (ZSI.WRC. M/426); Nashik Dist. : 1 ♂, 3 ♀ ♀, Hatlondi, near Harsul, 06.ii.1984, Coll. D.B. Bastawade, (ZSI.WRC. M/497), 1 ♀ Chinchkundi nallah, Boripada vill. near Harsul, 11.xi.1987, Coll. M.S. Pradhan, (ZSI.WRC. M/ 470), 1 ♂, Kashiganga river near Devre, Harsul, 12.xi.1987, Coll. M.S. Pradhan, (ZSI.WRC. M/ 457), 1 ♀, Kadavai Pada vill. Harsul, 14.xi.1987, Coll. M.S. Pradhan, (ZSI.WRC. M/458), 1 ♂, Chirai Ghat, Chirai vill. on Borgaon-Surgana road, 18.xi.1987, Coll. M.S. Pradhan, (ZSI.WRC. M/ 471); Osmanabad Dist. : 1 ♂, Near Sina river, Parenda, 29.vii.1988, Coll. D.B. Bastawade, (ZSI.WRC. M/498); Pune Dist.: 1 ♂, Chatushring Hill, Pune, 03.ix.1961, Coll. B.K. Tikader, (ZSI.WRC. M/628), 1 ♂, Theur, 10.viii.1967, Coll. D.N. Tiwari, (ZSI.WRC. M/149); 1 ♂, Model colony, Pune, 15.ii.1978, Coll. M.S. Malhotra,

(ZSI.WRC. M/ 101), 1 ♀, Nimbadkarwadi, Pune, 08.xi.1978, Coll. B.K. Tikader, (ZSI.WRC. M/ 117), 1 ♂, Sinhagarh, 25.ii.1981, Coll. M.S. Pradhan, (ZSI.WRC. M/406), 1 ♂, Sinhagarh, 08.ii.1985, Coll. M.S. Pradhan, (ZSI.WRC. M/ 405), 1 ♀, Dehu Road, 03.i.2006, Coll. N.P.I. Das, (ZSI.WRC. M/699); Satara Dist. : 1 ♀, Medtedi, near Mahabaleshwar, 29.v.1976, Coll. B.K. Tikader, (ZSI.WRC. M/133), 1 ♂, Palani ghat, Mhaswad, 20.vi.1988, Coll. P.P. Kulkarni, (ZSI.WRC. M/488).

Habitat : Terrestrial, fossorial and nocturnal in habit and generally found in agricultural crop field areas. Inhabits burrows in the field or on the edges of the cultivations. A common field mouse causing extensive damage to the crops. The species is an outdoor species.

External Distribution : Throughout India.

Status : common in the fields; IUCN Criteria proposed as per the CAMP Report (2005) : Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule : V (Vermis); Ellerman (1961), Marshall (1977), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal (2000), Alfred *et al.* (2002) and Talmale (2007).

Remarks : Marshall (1977), Corbet and Hill (1992) and Agrawal *et al.* (1992) separated *Mus booduga*, *Mus terricolor* and *Mus dunni* on the basis of variations in the underparts colour and also in the chromosomal studies conducted by Sen & Sharma (1983). However recently Agrawal (2000) has pointed out number of anomalies in the taxonomy of *booduga* complex. He rightly concluded that till the confusions were removed, *Mus dunni*, *Mus terricolor* and *Mus booduga* should be treated as synonyms of *Mus booduga* as was done earlier by Ellerman (1961) due to lack of proper demarcation between the populations under study. The species is a prolific breeder and considered to be a pest species since it causes damage to the crops. It is also responsible to cause extensive damage to the public as well as private properties due to its habit of gnawing by its evergrowing chisel-shaped incisors.

Species *Mus cookii*

Mus cookii, is represented in Maharashtra State by only one subspecies.

*@31. *Mus cookii nagarum* (Thomas)

1921. *Leggada nagarum* Thomas, *J. Bombay nat. Hist. Soc.*, **27** : 597.

2000. *Mus cookii nagarum* : Agrawal, V.C., *Rec. Zool. Surv. India, Occ. Paper. No.*, **180** : 131.

Common Name : Ryley's Spiny Mouse.

Diagnostic Characters : Medium sized short-furred spiny mouse, dorsum dark brown and grey undersurface. Head and Body length in the range of 64-86 mm. Tail bicoloured, dark above and pale below and longer than Head and Body length. Hindfeet whitish. Occipitonasal length of the skull less than 23.0 mm. Diastema more than one-fourth of occipitonasal length. Anterior palatal foramina long, more than one-fifth but less than 23% of occipitonasal length. Upper incisors opisthodont or orthodont. Maxillary tooththrow about 3.5 mm, m¹ with 8 cusps, m² with 6 cusps and m³ small.

Locality : Reported from Pune Dist. : Pune (Marshall, 1977, Agrawal, 2000), Mulshi (National Institute of Virology, Pune collection) Maharashtra State.

Material Examined/Sightings : 1 ♂, Mulshi, Pune, 31.v.1971, Coll. S.M. Kulkarni and A.C. Mishra, (NIV, SM 3173).

Habitat : Inhabits grassy areas in conifer and broad leaf forests, in mountain region; also found near cultivated fields (Corbet and Hill, 1992, Agrawal, 2000).

External Distribution : Arunachal Pradesh, Assam, Meghalaya, Manipur, Nagaland West Bengal, Karnataka, Kerala and Tamil Nadu in India (Agrawal, 2000).

Status : Indian Endemic subspecies; IUCN Criteria proposed as per the CAMP Report (2005): Least concern (For *Mus cookii*), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermis); Ellerman (1961), Marshall (1977), Corbet and Hill (1992),

Wilson and Reeder (1993, 2005), Agrawal (2000), Alfred *et al.* (2002) and Talmale (2007).

Remarks : Ellerman-Morrison-Scott (1951), Ellerman (1961) listed *Leggada nagarum* Thomas and *Leggada palnica* Thomas, as subspecies of *Mus cervicolor* Hodgson. They treated *Mus cookii* Ryley, 1914 as the subspecies of *Mus famulus* Bonhote, 1898. Later, Marshall (1977) shifted them under *Mus cookii* Ryley. However, due to overlapping of key characters Agrawal (2000) recognized only two subspecies namely *Mus cookii cookii* and *Mus cookii nagarum*.

Subgenus *Pyromys*

*32. *Mus (Pyromys) phillipsi* Wroughton

1912. *Mus phillipsi* Wroughton, *J. Bombay nat. Hist. Soc.*, 21 : 772.

2005. *Mus phillipsi* : Musser and Carleton *In*: Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. II : 1406.

Common Name : Wroughton's Small Spiny Mouse.

Diagnostic Characters : A small spiny furred field mouse with Head and Body length in the range of 62.0-80.0 mm. Tail bicoloured, dark above and pale below. Tail shorter than Head and Body length, about 80% of Head and Body length. Hind feet, in the range between 14.0-18.0 mm and white in colour. Dorsal colour brown to buff and white below. Mammae 5 pairs. Occipitonasal length in the range of 21.2-23.2 mm. Skull with well developed supraorbital ridges. Anterior palatal foramina extending posteriorly between maxillary toothrow. Upper incisors opisthodont, Maxillary toothrow less than 4 mm, averages 3 mm in length. First upper molar without an anterior accessory cusp; Anterointernal cusp (t1) distorted inwards to be in line with second; m¹ with 8 cusps, m² with 6 cusps and m³ very small.

Locality : Reported from Amaravati Dist. : Chikalpati, Dhakna Range in Melghat Tiger Reserve (Pradhan, 2005), Chandrapur Dist. : Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Nandurbar Dist. : Toranmal Reserve Forest (Jathar *et al.*, 2005) in Maharashtra State.

Material Examined/Sightings : Amaravati Dist. : 1♂, Chikalpati, Dhakna range, Melghat Tiger Reserve, 23.viii.1993, Coll. P.P. Kulkarni, (ZSI.WRC. M/601); Chandrapur Dist. : 1♂, Rest house Tadoba, Tadoba-Andhari Reserve, 23.iii.1999, Coll. Shantanu Goyal, (ZSI.WRC. M/625, Donated specimen).

Habitat : Terrestrial, fossorial and nocturnal in habit and generally found in rocky habitat.

External Distribution : Rajasthan, Gujarat, Karnataka, Madhya Pradesh, Andhra Pradesh and Tamil Nadu in India and also reported from Nepal (Agrawal, 2000).

Status : IUCN Criteria proposed as per the CAMP Report (2005): Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermins); Ellerman (1961), Marshall (1977), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal (2000), Alfred *et al.* (2002) and Talmale (2007).

Remarks : Ellerman and Morrison-Scott (1951) and Ellerman (1961) treated this taxa as a subspecies of *Mus cervicolor*. However, Marshall (1977) restored it to the specific level on the basis of spiny fur, white venter and well developed supraorbital ridges on the skull.

*@33. *Mus (Pyromys) platythrix* Bennett

1832. *Mus platythrix* Bennett, *Proc. Zool. Soc. Lond.*, : 121.

2000. *Mus platythrix* : Musser and Carleton, *In* : Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. II : 1406.

Common Name : Brown Spiny Mouse.

Diagnostic Characters : Medium-sized mouse with Head and Body length averages 95mm in the range of 77-123 mm. Tail bicoloured, dark above and pale below, shorter, about 80% of the Head and Body length. Dorsal body colour dusky to dark brown and white to grayish white venter; Hindfeet with or without slaty spot or dark stripe on it. Fur spiny. Mammae 5 pairs (3+2). Occipitonasal length of the skull in the range of 23.5-27.6 mm. Supraorbital ridges prominent; Anterior palatal foramina short less than 21% of

occipitonasal length, extending posteriorly upto anterior root of first upper molar. Palate more than one-half of occipitonasal length. Interpterygoid space wider than in *Mus saxicola*. Upper incisors opisthodont or orthodont with or without a notch, Maxillary tooththrow more than 4 mm, in the range between 4.0-4.7 mm; m^1 with 8 cusps ($t7$ absent), m^2 with 6 cusps and m^3 small; First upper molar without an anterior accessory cusp.

Locality : Reported from Ahmednagar Dist. : Ahmednagar (Ellerman, 1961); Amaravati Dist. : Chikhaldara (Wroughton, 1912b, Ellerman, 1961); Dhule Dist. : Dhule (Pradhan, 1989); Jalgaon Dist. : Edlabad (Wroughton, 1912a); Nandurbar Dist. : Toranmal Reserve Forest (Jathar *et al.*, 2005), Dhadgaon (Talmale, 2007); Pune Dist. : Pune, Khandala (Ellerman, 1961), Pokhari, Bhimashankar, Sinhadga (Talmale, 2007); Raigad Dist. : Matheran (Ellerman, 1961), Karjat (Talmale, 2007); Ratnagiri Dist. : Shirgaon, Khed, Ratnagiri (Wroughton, 1916a, Ellerman, 1961); Satara Dist. : Ghatmatha, Satara (Wroughton, 1916a, Ellerman, 1961); Thane Dist. : Thane (Pradhan, 1980c), Tansa Wildlife Sanctuary (Singh and Pradhan, 1992), Suryamal (Talmale, 2007) in Maharashtra State.

Material Examined/Sightings : Nandurbar Dist. : 1 ♂, 30 kms. SE of Dhadgaon on Shahada Road, in Tapi and Narmada valleys, 26.i.1986, Coll. R.M. Sharma and D.B. Bastawade, (ZSI.WRC. M/428); Raigad Dist. : 1 ♂, Agriculture Research Center, Karjat, 04.x.1981, Coll. M.S. Pradhan, (ZSI.WRC. M/334); Thane Dist. : 2 ♂♂, Forest south of Suryamal, 12.iii.1984, Coll. M.S. Pradhan, (ZSI.WRC. M/387).

Habitat : Found mainly in uncultivated hilly country (Corbet and Hill, 1992).

External Distribution : Rajasthan, Madhya Pradesh, Karnataka, West Bengal, Andhra Pradesh, Tamil Nadu in India (Agrawal, 2000).

Status : Indian Endemic species. IUCN Criteria proposed as per the CAMP Report (2005): Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V

(Vermis); Ellerman (1961), Marshall (1977), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal (2000), Alfred *et al.* (2002) and Talmale (2007).

Remarks : Nil.

Species *Mus saxicola*

Mus saxicola, is represented in Maharashtra State by only nominate subspecies.

*@34. *Mus (Pyromys) saxicola saxicola* Elliot

1839. *Mus saxicola* Elliot, *Madras J. Litt. Sci.*, 10 : 215.

2002. *Mus saxicola saxicola* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 212.

Common Name : Elliot's Spiny Mouse.

Diagnostic Characters : Dorsum pale brown to golden brown; Fur spiny; Head and Body length ranges between 71-112 mm. Tail bicoloured, dark above and pale below and shorter than Head and Body length. Hindfoot white, its length ranges between 16-19 mm. Mammae six pairs, sometimes five pairs (Agrawal, 2000). Occipitonasal length of the skull in the range of 22.6-28.0 mm. Supraorbital ridges prominent. Anterior palatal foramina long, more than 22% of Occipitonasal length, extending posteriorly upto second lamina of first upper molar. Palate more than one-half of occipitonasal length. Interpterygoid space narrower than in *Mus platythrix*. Upper incisors opisthodont or orthodont without a notch Maxillary tooththrow more than 4 mm, in the range between 4.0-4.85 mm; m^1 with 8 cusps ($t7$ absent), m^2 with 6 cusps and m^3 small. An accessory cusp present on the anterior root of first upper molar.

Locality : Reported from Kolhapur Dist. : Radhanagari Wildlife Sanctuary (Talmale and Pradhan, 2004); Nandurbar Dist. : Toranmal Reserve Forest (Jathar *et al.*, 2005); Nashik Dist. : Nashik (Pradhan, 1993), Hirochapada 15kms. North of Ozar, Vani, Hivravpada, Kashiganga river near Devre (Deur) vill., Harsul, Damanganga river, Peth-Naka (Talmale, 2007); Pune Dist. : Pune, (Agrawal, 2000), Khandala (Agrawal, 2000),

Bhimashankar (Pradhan and Talmale, 2009); Raigad Dist. : Wavarle Morbe Dam, Karjat (Talmale, 2007); Ratnagiri Dist. : Ratnagiri (Agrawal, 2000), Shirgaon (Talmale, 2007); Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992) in Maharashtra State.

Material Examined/Sightings : Nashik Dist. : 1 ♂, 1 ♀ Hirochapada 15 kms. N. of Ozar, 12.ii.1984, Coll. D. B. Bastawade, (ZSI.WRC. M/468); 1 ♂, 40 kms. East of Vani on Vani-Nashik road, 18.ii.1985, Coll. D.B. Bastawade, (ZSI.WRC. M/469), 1 ♂, Hivrapada, 42 kms. West of Vani on Nashik-Vaghai Road, 21.ii.1985, Coll. D.B. Bastawade, (ZSI.WRC. M/467), 1 ♂ (young), 1 ♀, Kashiganga river near Devre (Deur) vill., Harsul, 13.xi.1987, Coll. M.S. Pradhan, (ZSI.WRC. M/466), 1 ♂, Damanganga river, Peth-Naka, 14.ii.1989, Coll. P.P. Kulkarni, (ZSI.WRC. M/558), Pune Dist. : 1 ♀ Bhimashankar, 03.vi.1986, (ZSI.WRC. M/430), 1 ♂, Bhimashankar, 04.vi.1986, (ZSI.WRC. M/429); 1 ♂, 1 ♀, Bhimashankar, 03.vi.1990, (ZSI.WRC. M/514,515) All collected by M.S. Pradhan; Raigad Dist. : 1 ♀, RH at Wavarle Morbe Dam, Karjat, 01.ii.1994, Coll. M.S. Pradhan, (ZSI.WRC. M/574).

Habitat : Lives in sandy, rocky or gravelly habitat (Agrawal, 2000).

External Distribution : Andhra Pradesh, Karnataka, Tamil Nadu in India (Agrawal, 2000).

Status : Indian Endemic subspecies; IUCN Criteria proposed as per the CAMP Report (2005): Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule : V (Vermins); Ellerman (1961), Marshall (1977), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal (2000), Alfred *et al.* (2002) and Talmale (2007).

Remarks : Nil.

Genus *Golunda*

Genus *Golunda* is reported to be represented by a single species in Maharashtra State.

Species *Golunda ellioti* Gray

Only nominate subspecies of the species *Golunda ellioti* has been reported from Maharashtra State.

*35. *Golunda ellioti ellioti* Gray

1837. *Golunda ellioti* Gray, Charlesworth's Mag. nat. Hist., 1 : 586.

2009. *Golunda ellioti ellioti* : Pradhan and Talmale, List of valid Rodent taxa (Class : Mammalia, Order : Rodentia) from Indian Subcontinent including Myanmar. Rec. zool. Surv. India, Occ. Paper No., 297 : 127.

Common Name : Indian Bush Rat.

Diagnostic Characters : Medium sized rat (Head and Body length 100 mm) with rather hairy tail, upper incisors grooved in front, heavily cuspidated upper molar teeth, tall and discrete cusps retain its original shape even after considerable wear and tear; dorsal coat is yellowish brown, while the ventral side is lighter in colour. Genus *Golunda* is characterised by possession of highly unusual dentition, bicoloured tail shorter than Head and Body length and outer digit of hindfoot and 5th finger shortened. A medium-sized bush rat with Head and Body length in the range of 102-170 mm, molars three in number and a distinctly bicoloured tail with short, thick and coarse hairs. The tail is characteristically dark brown to black above, while pale below. Tail length in the range of 86-131 mm. Hindfeet medium and in the range between 21-28 mm. Occipitonasal length in the range of 28-35.4 mm. Skull with well-developed supraorbital ridges and long palate, more than one-half of occipitonasal length. Anterior palatal foramina long but less than one-fifth of or less than 22% of the occipitonasal length. Molars heavily cuspidate. Upper molar row always more than 4 mm but less than 7.0 mm (5.8-6.8 mm). Cusps of upper molars abnormally enlarged (grape shaped), particularly in the middle and inner rows; third upper molar large, lacks the outer row of the cusps and with wear tends to look like the largest tooth in the row. M¹ having 8 cusps, M² with 7 cusps (t2 & t7 absent) and M³ with 4 functional cusps. Lower molars (Maxillary

teeth) biserially cuspidate. Antero-internal cusps in M^1 not distorted inwards. Fur always thick, long and soft, sometimes with growing age tends to become spiny. Dorsum varying in the range between greyish brown to blackish, while underparts in the range between white to bluish grey in colour. Hindfeet whitish or paler. Four pairs of mammae present.

Locality : Reported from Amaravati Dist. : Chikhaldara (Ellerman, 1961); Chandrapur Dist. : Chandrapur (Ellerman, 1961); Dhule Dist. : Dhule (Pradhan, 1989), Ghodisgaon (Ellerman, 1961), Laling hill range, Arvi (Talmale, 2007); Jalgaon Dist. : Jamner, Bodwad, Shendurni (Wroughton, 1912a, Ellerman, 1961), Erandol (Talmale, 2007); Mumbai Dist. : Mumbai (Wroughton, 1920); Mumbai Suburban Dist. : Andheri, Salsette Island (type loc. *bombax*, Thomas, 1923); Nashik Dist. : Nashik (Pradhan, 1993), Kadvaipada vill. Near Harsul and Nirgude mal near Musalpada vill. on Borgaon-Surgana road (Talmale, 2007); Pune Dist. : Pune (Agrawal, 2000), Saswad (Pande *et al.*, 2004); Ratnagiri Dist. : Ratnagiri (Agrawal, 2000); Satara Dist. : Helwak (Ellerman, 1961), Satara (Agrawal, 2000); Thane Dist. : Kasa (Pradhan, 1988b), Tansa WLS (Singh and Pradhan, 1992), Devtalipada near Jawhar (Talmale, 2007) in Maharashtra State.

Material Examined/Sightings : Dhule Dist. : 1 ♂, Laling Hill range, Arvi, 03.xii.1985, Coll. M.S. Pradhan, (ZSI.WRC. M/421); Nashik Dist. : 1 ♀, Kadvaipada vill., Harsul, 14.xi.1987, (ZSI.WRC. M/459), 1 ♀, Nirgude mal near Musalpada vill. On Borgaon-Surgana road, 18.xi.1987, (ZSI.WRC. M/511) All collected by M.S. Pradhan; Thane Dist. : 1 ♂, 1 ♀ FDCM nursery, Kasa, 09.iii.1984, (ZSI.WRC. M/344,345), 1 ♂, Devtalipada near Jawhar, 19.x.1986, (ZSI.WRC. M/422) All collected by M.S. Pradhan.

Habitat : Terrestrial. It is essentially a rat of jungle and forest, but may venture in adjoining cultivated fields, a favourable habitat for this rat is bush and scrub jungle, many prefer to live in woven nests built in bushes. It builds a densely woven nest of stalks, grass and fibres in bushes.

It's a small moving creature. They live in pairs or in small colonies. The species is essentially an outdoor species.

External Distribution : Throughout India

Status : Many populations have been recorded from number of localities, IUCN Criteria proposed as per CAMP Report (2005) : Least concern; Indian Wildlife (Protection) Act (1972)(as amended upto 2006) Schedule : Schedule V.

Source : Ellerman and Morrison-Scott (1951, 1966), Prater (1980), Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal, (2000) and Talmale (2007).

Remarks : The species is a prolific breeder and considered to be an agricultural pest species since it causes damage to the plantations. Earlier it was causing extensive damage to the coffee plantation in Sri Lanka.

Genus *Bandicota*

Genus *Bandicota* is recognised by its condylobasal length exceeding or equals to occipitonasal length, upper incisors proodont and tail short and scaly. Genus *Bandicota* is represented by three species in Maharashtra State.

Key to the species of Genus *Bandicota*

1. Occipitonasal length, in Indian species, less than 45 mm; zygomatic width more than 57% and bullae more than 20% of occipitonasal length, nasals less than one third of occipitonasal length *Bandicota bengalensis*
- Occipitonasal length clearly more than 45 mm; zygomatic width less than 57%, bullae less than 20% and nasals more than one third of occipito-nasals length..... 2
2. Occipitonasal length always less than condylosal length; occiput region flat and ridges prominent; sculpture pattern of dorsal guard hairs at base mosaic at lower magnification *Bandicota indica*
- Occipitonasal length equal to or more than

condylobasal length; occiput region inflated and ridges less prominent; sculpture pattern of dorsal guard hairs at base chevron at lower magnification *Bandicota maxima*

Species *Bandicota bengalensis* (Gray and Hardwicke)

Nominate subspecies of the species *Bandicota bengalensis* has been reported from Maharashtra.

***36. *Bandicota bengalensis bengalensis* (Gray and Hardwicke)**

1833. *Arvicola bengalensis* Gray and Hardwicke, *Illustr. Indian Zool.*, 2 : pl. 21.

2002. *Bandicota bengalensis bengalensis* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No. 199* : 198-199.

Common Name : Lesser Bandicoot Rat

Diagnostic Characters : The bandicoots are mole rat superficially looks like the European brown rat, *Rattus norvegicus*, in external appearance. It is a medium sized robustly built rat with a semi-naked scaly tail which is slightly shorter than head and body. The body fur is rather coarse and harsh. The head is triangular with rounded ears, short and broad muzzle. These rats have a habit of erecting its pile of long hairs and grunting when excited. Head and Body length in the range between 140-220 mm. Tail (99.0-202.0 mm) always shorter than Head and Body. Occipitonasal length which is clearly less than condylobasal length never exceeds 48 mm; zygomatic width is always more than 57% of the occipitonasal length. Occipitonasal length in the range between 34-48 mm. Nasals short and less than one third of the occipitonasal length. Palate long and more than 60% of the occipitonasal length. Upper molar tooth row normal and more than 5.0 mm (5.9-8.0mm). Molars with 9 cusps (t7 present). Hindfeet moderate and in the range between 26-36 mm. Upper incisors broad and orange to lemon yellow in colour. Dorsum greyish brown to blackish occasionally with reddish tinge, while underparts light to dark grey in colour. Fur with some broad and flat spines mixed with some short and harsh hairs in the dorsal pelage. Tail

unicoloured and dark. 6 to 9 pairs of mammary glands present (Total number variable).

Locality : Reported from Ahmednagar Dist. : Ahmednagar (as *G. kok*, Wroughton, 1919c), Rahuri (Talmale, 2007); Amaravati Dist. : Semadoh, Pilli, Raipur in Melghat Tiger Reserve (Pradhan, 2005b); Bhandara Dist. : Lakhani (Talmale, 2007); Chandrapur Dist. : Chandrapur (Nimbkar and Deoras, 1966); Dhule Dist. : Ghodasgaon (as *B. b. kok*, Ellerman, 1961), Dhule (Pradhan, 1989), Boradi, Shirpur Tal. (Talmale, 2007); Jalgaon Dist. : Parola (Ellerman, 1961); Jalna Dist. : Ambad (Talmale, 2007); Kolhapur Dist. : Pundre, Ghatprabha river, Kurtanali vill. Tal. Chandgad, (Talmale and Pradhan, 2004); Gadchiroli Dist. : Sironcha (Nimbkar and Deoras, 1966); Mumbai Dist. : Mumbai (as *B. b. kok (lordi)*, Ellerman, 1961), Dadar, Mahim, Dharavi, Kamathipura, Nagpada, Tardeo (Deoras and Pradhan, 1977), Parel (Talmale, 2007); Mumbai Suburban Dist. : Goregaon, Malad, Bhandup (Deoras and Pradhan, 1977), Andheri, Borivali, Ghatkopar, Kurla, Chembur (Talmale, 2007); Nagpur Dist. : Deolapar vill. (Nimbkar and Deoras, 1966); Nashik Dist. : Nashik (Pradhan, 1993), Devre vill. On Harsul-Girhagne road (Talmale, 2007); Parabhani Dist. : Parbhani (Talmale, 2007); Pune Dist. : Pune (Agrawal, 2000), Javalanjuna, Jejuri (Talmale, 2007); Raigad Dist. : Kolaba (type loc. *G. lordi*, Wroughton, 1908, 1919c), Ratnagiri Dist. : Shirgaon, Khed (Ellerman, 1961), Ratnagiri (Agrawal, 2000); Satara Dist. : Helwak, Medha (Wroughton, 1916a; Ellerman, 1961); Thane Dist. : Thane (Pradhan, 1985), Tansa Wildlife Sanctuary (Singh and Pradhan, 1992), Chiche's Mal. near Khodala on Khodala-Mokhada Road (Talmale, 2007) in Maharashtra State.

Material Examined/Sightings : Ahmednagar Dist. : 1♂, Agricultural University Campus, Rahuri, 05.v.1989, Coll. Dr. Chandele, (ZSI.WRC. M/504, Donated); Amaravati Dist.: 1♂, Agricultural fields 3 kms. South of Semadoh, in Melghat Tiger Reserve, 14.xii.1992, Coll. P.P. Kulkarni; (ZSI.WRC. M/592), 1♂, 2♀♀, Pili village, near Kolkaz in Melghat Tiger Reserve, 17.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/

573), 1♂, Agricultural fields near vill. Raipur, in Melghat Tiger Reserve, 20.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/575); Bhandara Dist. : 2♀♀, Paddy fields, Lakhani, 18.xi.2004, Coll. S.S. Talmale, (ZSI.WRC. M/716,717); Dhule Dist. : 2♂♂, Fields near new Boradi, Shirpur Tal., 30.xi.1985, Coll. M.S. Pradhan, (ZSI.WRC. M/416,417); Jalna Dist. : 2♂♂, Residential areas, Ambad, 21.x.1989, Coll. P.S. Sardeshpande, (ZSI.WRC. M/492); Kolhapur Dist. : RH, Pundre, 20.ii.1989, Coll. M.S. Pradhan, (ZSI.WRC. M/486), 1♂, Ghatprabha river, Kurtanali vill. Tal. Chandgad, 20.ii.1989, Coll. M.S. Pradhan, (ZSI.WRC. M/487); Mumbai Dist. : 1♀, Colaba Urban, Mumbai, 20.xi.1979, (ZSI.WRC. M/177, skull only), 1♂, 1♀, Fort, Mumbai, 26.x.1980, (ZSI.WRC. M/183, skull only), 1♀, Bombay Port Trust, Mumbai, 27.x.1980, (ZSI.WRC. M/194), 2♂♂, 1♀, Ballard Pier, Mumbai City, 29.x.1980, (ZSI. WRC. M/189, skull only), 1♂, 2♀♀, Crowford Market, Mumbai, 30.x.1980, (ZSI. WRC. M/186, skull only), 2♀♀, Parel, 29.vii.1982, (ZSI. WRC. M/203,204), 1♂, Parel, 19.xi.1984, (ZSI. WRC. M/373, skull only), 1♂, Parel, 23.xi.1984, (ZSI.WRC. M/361, skull only), 1♂, 1♀, Parel, 24.xi.1984, (ZSI. WRC. M/228,229, skull only) All specimens collected by M. S. Pradhan, Mumbai Suburban Dist. : 1♂, 1♀, Ghatkopar, 22.xi.1979, (ZSI. WRC. M/182, skull only), 2♂♂, 1♀ Narayannagar, Ghatkopar, 31.vii.1982, (ZSI.WRC. M/198,206,205 skull only), 1♀, Chembur, 21.xi.1982, (ZSI.WRC. M/223, skull only), 1♀, Kurla, 23.xi.1982, (ZSI. WRC. M/222), 2♂♂, 2♀♀ Andheri West, 24.xi.1982, (ZSI.WRC. M/224,225,226,227, skull only), 1♂, Goregaon West, 27.xi.1982, (ZSI.WRC. M/230, skull only), 1♂, 2♀♀, Ghatkopar, 30.xi.1982, (ZSI.WRC. M/231,232, 233, skull only), 1♂, 1♀, Ghatkopar, 26.ix.1983, (ZSI.WRC. M/292,293), 1♂, 1♀, Andheri, 17.xi.1984, (ZSI.WRC. M/368,369, skull only), 2♂♂, Borivali, 19.xi.1984, (ZSI.WRC. M/370,371, skull only), 1♂, 3♀♀ Ghatkopar, 20.xi.1984, (ZSI.WRC. M/372,374,375,376, skull only), 1♂, 1♀, Borivali East, 27.x.1986, (ZSI.WRC. M/455) All specimens collected by M.S. Pradhan; Nashik Dist. : 1♀, Krishnaganga river near Devre

vill. On Harsul-Girhagne road, 13.xi.1987, Coll. M.S. Pradhan, (ZSI.WRC. M/512, skull damaged); Parbhani Dist. : 1♂, 1♀, Foodgrain godowns, Parabhani, 21.xi.1989, Coll. P.S. Sardeshpande, (ZSI.WRC. M/493, young ones, Donated); Pune Dist. : 1♂, 1♀, Raviwarpeth, Pune, 08.v.1979, Coll. PMC, (ZSI. WRC. M/123, ♀ skull only), 1♀ Nanapeth, Pune, 06.x.1979, Coll. M.S. Pradhan, (ZSI.WRC. M/181, skull only), 1♀, Javalanjuna, Jejuri, 24.vi.1984, Coll. M.S. Pradhan, (ZSI.WRC. M/403); Thane Dist. : 1♀, Chiche's Mal, Khodala, 14.iii.1984, Coll. M.S. Pradhan, (ZSI.WRC. M/386).

Habitat : Terrestrial, fossorial and nocturnal rodent species found throughout India. The species is basically a field rat and generally lives in cultivated plains, gardens, pasture land, crop fields, waste lands, forests. However, sometimes in cities like Mumbai, Kolkata and Chennai, it enters houses also. Its presence is always made known by a pile of fresh soil resembling mole hill, hence its name 'Mole Rat'. It has a habit of erecting pile of hairs and grunting when excited. It makes complex burrows with number of openings covering large areas.

External Distribution : Throughout India.

Status : Common but pest species; IUCN Criteria proposed as per the CAMP Report (2005): Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : V (Vermins).

Source : Ellerman and Morrison- Scott (1951, 1966), Ellerman (1961), Corbet and Hill (1992), Pradhan *et al.* (1993), Agrawal (2000) and Talmale (2007).

Remarks : *B. bengalensis* is considered to be an agricultural pest No. 1, since it causes damage on large scale not only to the foodgrains stored in godowns but also to the standing crops. Its habit of making complex burrow systems for not only living but also for hoarding the food stuff make it a nuisance for the human life. It is responsible to cause extensive damage to the public as well as private properties and articles of merchandise due to these habits. The species is a prolific

breeder. The species is also known to be a vector for number of diseases, including rat bite fever, plague, leptospirosis etc.

Species *Bandicota indica*

Bandicota indica is represented by two subspecies in Maharashtra State.

Key to the subspecies of *Bandicota indica*

- Occipitonasal length in adult specimens more than 56 mm, Nasals and diastema exceeds 40% and 33% of occipitonasal length respectively, size medium to large
..... *Bandicota indica malabarica*
- Occipitonasal length in adult specimens more than 56 mm, Nasals and diastema less than 40% and 33% of occipitonasal length respectively, size small to medium
..... *Bandicota indica indica*

*37. *Bandicota indica indica* (Bechstein)

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

2002. *Bandicota indica indica* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 199.

Common Name : Larger Bandicoot Rat.

Diagnostic Characters : Medium to large sized robust bandicoot rat with head and body length ranging between 200 mm and 300 mm and hind feet in the range between 45-57 mm. Tail (245-315 mm) may be equal to or more than Head and Body length. Occipitonasal length in the range between 48-56 mm; while zygomatic width in the range between 26-31 mm. Occipitonasal length always less than condylobasal length in the species. It possesses more or less squarish head, round ear and longish muzzle. Nasals short and less than one third of the occipitonasal length. Palate long but less than 60% of the occipitonasal length. Upper molar tooth row normal and more than 7.0 mm (7.8-11.4 mm). Molars with 9 cusps (t7 present). Upper incisors thick and powerful and usually brown or yellow but rarely white in colour. Dorsum blackish brown to black

occasionally intermixed with whitish hairs, while underparts light to dark grey in colour. Some colour variant forms with white patch on thoracic and/or inguinal regions and part of the tail wholly white at the terminal end have been reported from Indian localities. Fur with some broad, long and flat spines mixed with some short and harsh hairs in the dorsal pelage. Many long hairs may be present on the back. Tail unicoloured and dark. Hindfoot dark in colour. 6 pairs of mammary glands present. Sculpture pattern of dorsal guard hairs at base mosaic at lower magnification.

Locality : Reported from Amaravati Dist. : Melghat Tiger Reserve (Pradhan, 2005); Bhandara Dist. : Lakhani (Talmale, 2007); Chandrapur Dist. : Chichpalli, Chandrapur (Ellerman, 1961), Moharli in Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Nagpur Dist. : Pipariya vill. In Pench National Park (Pradhan, 2004); Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992) in Maharashtra State.

Material Examined/Sightings : Bhandara Dist. : 1 ♀, Residential area, Lakhani, 25.vi.2006, Coll. Pavan Bawankule, (ZSI.WRC. M/724); Habitat: Terrestrial and fossorial, known to invade cultivated fields, swampy areas and also forest fringes, godowns, open and closed drainage systems in urban areas.

External Distribution : Throughout the peninsular India.

Status : Pest species. Many populations have been reported from number of localities; IUCN Criteria proposed as per the CAMP Report (2005): Least concern (For *Bandicota indica*); Indian Wildlife (Protection) Act (1972 as amended upto 2006) Schedule : Schedule : V (Vermin).

Source : Ellerman and Morrison-Scott (1951, 1966), Ellerman (1961), Agrawal (1973), Pradhan (1979, 1982b), Corbet and Hill (1992), Pradhan *et al.* (1993) and Talmale (2007).

Remarks : The species is considered to be an agricultural pest causing extensive damage to the standing crops, foodgrain godowns, public, and private properties etc. The species is a prolific

breeder and is also known to be a vector for number of diseases.

***@38. *Bandicota indica malabarica* (Shaw)**

1801. *Mus malabarica* Shaw, *Genl. Zool.*, 2 : 54.

2009. *Bandicota indica malabarica* : Pradhan and Talmale, List of valid Rodent taxa (Class : Mammalia, Order : Rodentia) from Indian Subcontinent including Myanmar. *Rec. zool. Surv. India, Occ. Paper No.*, 297 : 139.

Common Name : Large bandicoot rat.

Diagnostic Characters : Large sized bandicoot rat with head and body ranging between 250 mm to 310 mm in adult specimens, hindfeet in the range of 53 mm. to 61 mm; Occipitonasal length in the range of 56 to 61 mm; dorsal colour varying in the shades of blackish to slaty grey, fur coarse with bristles on hind quarter long Tail unicoloured and dark. Hindfoot dark in colour. 6 pairs of mammae present. Sculpture pattern of dorsal guard hairs at base mozaic at lower magnification.

Locality : Reported from Western Ghats in West Maharashtra State. Kolhapur Dist. : Kolhapur (Tiwari *et al.*, 1971); Mumbai Suburban Dist. : Andheri, Salsette island (Ellerman, 1961), Goregaon, Malad (Pradhan, 1978b), Sanjay Gandhi National Park, Borivali (Yazdani *et al.*, 1992), Bandra, Bhandup, Chembur, Ghatkopar, Mulund (Pradhan *et al.*, 1993); Nandurbar Dist. : Khandbara Town (Talmale, 2007); Pune Dist. : Pune (Pradhan *et al.*, 1993); Raigad Dist. : Panwel town (Talmale, 2007); Ratnagiri Dist. : Khed (Tiwari *et al.*, 1971); Satara Dist. : Helwak, Ghatmatha (Wroughton, 1916a); Thane Dist. : Jawhar (Talmale, 2007).

Material Examined/Sightings : Mumbai Suburban Dist. : 2♂♂, Chembur, 21.xi.1979, (ZSI.WRC. M/151), 1♀, Ghatkopar, 22.xi.1979, (ZSI.WRC. M/178, skull only), 1♀, Chembur, 30.x.1980, (ZSI.WRC. M/192), 1♂, 1♀, Andheri, 31.x.1980, (ZSI.WRC. M/193), 3 unsexed, Ghatkopar, 23.xi.1980, (ZSI.WRC. M/180, skull only), 1♂, 1♀, Bhandup, 29.xi.1982, (ZSI.WRC. M/234,235, skull only), 1♀, Andheri, 29.xi.1982, (ZSI.WRC. M/236, skull only), 1♂, Andheri, 24.v.1983, (ZSI.WRC. M/263), 1♀, Andheri,

25.v.1983, (ZSI.WRC. M/265, skull only), 1♂, 1♀, Bandra, 27.v.1983, (ZSI.WRC. M/243, 277, skull only), 1♀, Mulund, 16.xi.1984, (ZSI.WRC. M/350), 1♂, Malad, 17.xi.1984, (ZSI.WRC. M/358, skull only), 1♀, Borivali, 19.xi.1984, (ZSI.WRC. M/359, skull only), 1♂, 1♀, Goregaon, 21.xi.1984, (ZSI.WRC. M/363, 364, skull only), 1♂, 3♀♀, Ghatkopar, 23.xi.1984, (ZSI.WRC. M/360, 362, 365, 366, skull only) All specimens collected by M.S. Pradhan; Mumbai Dist. : 1♂, Nanachawk, Bombay, 22.xi.1979, Coll. M.S. Pradhan, (ZSI.WRC. M/152); Nandurbar Dist. : 1♀, Khandbara Town, 20.xi.1985, Coll. M.S. Pradhan, (ZSI.WRC. M/415); Pune Dist. : 1♀, Bhawani Peth, Pune, 28.i.1977, (ZSI.WRC. M/62), 2♂♂, Food grain godowns, Nanapeth, Pune, 15.iv.1977, (ZSI.WRC. M/76), 1♀, Budhwar Peth, Pune, 20.vii.1977, (ZSI.WRC. M/99), 1♀, Food godown, Ganjpeth, Pune, 21.vii.1977, (ZSI.WRC. M/95), 1♀, Food godown, Ganjpeth, Pune, 26.vii.1977, (ZSI. WRC. M/96), 1♀, Mandai, Pune, 21.ii.1978, (ZSI.WRC. M/100) All specimens collected by M.S. Pradhan, 1♀, Pashan, Pune, 16.x.1979, Coll. P.R. Salunke, (ZSI.WRC. M/166), 1♂, Model colony, Pune, 21.vi.1980, Coll. M.S. Pradhan, (ZSI.WRC. M/167), 2♀♀, Pune city, 03.x.1983, Coll. M.S. Pradhan, (ZSI.WRC. M/249,250, skull only); Raigad Dist. : 1♀, Panwel town, 27.ix.1981, Coll. M.S. Pradhan, (ZSI.WRC. M/322); Thane Dist. : 1♀, RH, Jawhar, 20.x.1986, Coll. M.S. Pradhan, (ZSI.WRC. M/443).

Habitat : Terrestrial, fossorial, known to invade cultivated fields, gardens, forest fringes, swampy areas etc; However, specimens were collected from areas close to human habitations also.

External Distribution : Western Ghats

Status : Indian Endemic subspecies; IUCN Criteria proposed as per the CAMP Report (2005): Least concern (For *Bandicota indica*); Indian Wildlife (Protection) Act (1972 as amended upto 2006) Schedule : Schedule : V (Vermin).

Source : Ellerman Morrison-Scott (1951, 1966), Ellerman (1961), Tiwari *et al.* (1971), Agrawal (1973, 2000) Pradhan (1979, 1982b), Pradhan *et al.* (1993, 2005) and Talmale (2007).

Remarks : Though Agrawal (1973, 2000), Corbet and Hill (1992) and Alfred *et al.* (2002), synonymised *malabarica* population in *B. indica indica*, in light of detailed morphological and biochemical studies carried out by Pradhan (1979, 1982b), Pradhan *et al.*, (1989b, 1993 and 2005) *B. indica malabarica* has been retained here as a separate subspecies. The subspecies is reported to be causing extensive damages to public and private properties. It is also known to be a vector for some diseases.

39. *Bandicota maxima* Pradhan *et al.

1993. *Bandicota maxima* Pradhan, Mondal, Bhagwat and Agrawal, *Rec. Zool. Surv. India*, **93**(1-2) : 175-200.
2009. *Bandicota maxima*: Pradhan and Talmale, List of valid Rodent taxa (Class : Mammalia, Order : Rodentia) from Indian Subcontinent including Myanmar. *Rec. zool. Surv. India, Occ. Paper No.*, **297** : 141.

Common Name : Large Bandicoot Rat.

Diagnostic Characters : A very large sized bandicoot rat, with triangular head, rounded snout, tail shorter than head and body, body covered with coarse fur, dorsum varies from dark slaty grey to light brown in colour, skull more or less similar to that of *B. indica* except that *B. maxima* possess swollen occiput, occipitonasal length equal to or more than condylobasal length. Basal hair impression pattern of *Bandicota maxima* exhibits distinct chevron patterns as against irregularly woven mosaic hair sculpture pattern of *B. indica* under lower magnification.

Locality : Reported from Kolhapur Dist. : Shangad = Chandgad (Molur *et al.*, 2005); Mumbai Dist. : Mumbai (Molur *et al.*, 2005); Nandurbar Dist. : Nandurbar (Molur *et al.*, 2005); Pune Dist. : Pune city (Pradhan *et al.*, 1993); Khandala, New Sangvi, Pimpri-Chinchwad area (Talmale, 2007) of Maharashtra State.

Material Examined/Sightings : Pune Dist.: Holotype : 1 ♀ from Nanapeth, Pune, Maharashtra (ZSI.WRC. M/98) and Paratype : 1 ♀ from Raviwarpeth, Pune, Maharashtra (ZSI.WRC. M/125); ♂, PWD RH compound, Khandala, 14.i.1994, Coll. M.S. Pradhan, (ZSI.WRC. M/674),

1 ♂, Residential area, New Sangavi, Pimpri-Chinchwad, 26.vii.2004, Coll. S.S. Talmale, (ZSI.WRC. M/675).

Habitat : Terrestrial, fossorial and nocturnal living close to human settlements and leading epizootic life.

External Distribution : Peninsular India.

Status : Populations have been recorded from different localities in Western Ghats, Goa, Pondicherry, Kolkata, U.P. etc., IUCN Criteria proposed as per the CAMP Report (2005) : Least Concern; Indian Wildlife (Protection) Act (1972 as amended upto 2006) Schedule : Schedule : V (Vermin).

Source : Pradhan *et al.*, (1989b, 1993, 2005) and Talmale (2007).

Remarks : The species is considered to be a pest species since it causes damages to the foodgrains and public properties.

Suborder HYSTRICOMORPHA

Infraorder HYSTRICOGNATHI

Suborder Hystricomorpha is represented by a single family, Hystricidae, under Infraorder Hystricognathi in Maharashtra State.

Family HYSTRICIDAE

Family Hystricidae is represented by a single species under Genus *Hystrix* in Maharashtra State.

Genus *Hystrix*

Subgenus *Hystrix*

***40. *Hystrix indica* Kerr**

1792. *Hystrix cristata* var *indica* Kerr, *Anim. Kingd.*, : 213.
2000. *Hystrix indica* : Agrawal, *Rec. zool. Surv. India, Occ. Paper. No.*, **180** : 132-133.

Common Name : Indian crested porcupine.

Diagnostic Characters : Indian crested porcupine has been included in Family *Hystricidae* which is characterised by the fur being modified into true quills or spines, angular process of mandible strongly distorted outwards, infraorbital

foramen large and cheekteeth 4/4 in number and flat crowned. All porcupines are grouped under this family. Genus *Hystrix* is characterised by possession of short tail, less than one-fourth of Head and Body length, possessing hollow quills at its tip. Molars hypsodont and rootless. A prominent crest present on crown and neck. Quills bear more than one brown bands. Head and Body more than 400 mm and in the range between 400-900 mm. Tail length always less than 20% of Head and Body length. Forelimbs and Hindfeet broad and bear 5/5 fingers. Hallux clawed and well-developed. Skull large with occipitonasal length in the range of 139-163 mm. Nasals though long and more than 50% of the occipitonasal length, yet shorter than in allied species *Hystrix cristata*. Palate long. Upper incisors thick and usually yellow in colour. Anterior half of the body including head dark brown, posterior part more white due to exposure of white tip of the quills. Each quill is ornamented with deep brown or black and white bands. The white quills on tail are large and well open. A narrow band of white-tipped spines form a collar. Undersurface of same colour as back. 3 pairs of mammary glands present.

Locality : Reported from Amaravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Kolhapur Dist. : Chandgad; Mumbai Suburban Dist. : Sanjay Gandhi National Park; Nagpur Dist. : Pench National Park; Pune Dist. : Bhimashankar Wildlife Sanctuary; Thane Dist. : Tansa Wildlife Sanctuary in Maharashtra State (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan, 2004, 2005, 2006; Talmale and Pradhan, 2004; Pradhan and Talmale, 2009).

Material Examined/Sightings : Sightings of live specimens reported from Melghat Tiger Reserve; Tadoba-Andhari Tiger Reserve; Satara Dist: Mahabaleshwar; Sanjay Gandhi National Park; Pench National Park; Bhimashankar Wildlife Sanctuary; Tansa Wildlife Sanctuary in Maharashtra State (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan, 2004, 2005, 2006).

Habitat : Terrestrial, fossorial and nocturnal rodent species found throughout India. The species

is an out door species and generally lives in large pits and/or burrows dug in the cultivated plains, gardens, orchards pasture land, crop fields waste lands and forests. This species appears to be the most ecologically adapted species.

External Distribution : Throughout India.

Status : Common; IUCN Criteria proposed as per the CAMP Report (2005): Least concern; Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : IV.

Source : Ellerman (1961), Prater (1980), Corbet and Hill (1992), Agrawal (2000) and Alfred *et al.*, (2002).

Remarks : *Hystrix indica* is considered to be an agricultural pest, since it causes damage on large scale to the standing crops. Its gnawing habit to keep the evergrowing incisors in shape makes it a nuisance for the human life. It has a curious habit of gnawing bones, horns and antlers (Agrawal, 2000). The species is a prolific breeder. Agrawal (2000) concludes that there are no subspecies in *Hystrix indica*.

Order LAGOMORPHA

Order Lagomorpha is characterized by presence of two pairs of upper incisors placed one behind the other in each jaw and a distinct diastema (Open space) between incisors and cheekteeth (Molars) which are adopted for grinding. Three pairs of upper and two pairs of lower premolars. Tail very short.

Order Lagomorpha is represented by a single family Leporidae in Maharashtra State.

Family LEPORIDAE

Family Leporidae is represented by a single species and subspecies under Genus *Lepus* in Maharashtra State.

Genus *Lepus*

Subgenus *Indolagus*

*41. *Lepus (Indolagus) nigricollis nigricollis*
Cuvier

1823b. *Lepus nigricollis* Cuvier, F. *Dictionnaire des sciences naturelles*, Strasbourg & Paris, 26 : 299-316.

2009. *Lepus nigricollis nigricollis*: Pradhan and Talmale, Mammalia In : Fauna of Bhimashankar Wildlife Sanctuary, *Conservation Area Series* 42 : 57 (Published by Director, Zool. Surv. India, Kolkata).

Common Name : Indian Black-naped Hare or Indian Hare.

Diagnostic Characters : Rabbits, hares and pikas have been included in the mammalian order Lagomorpha. Principal distinguishing features of order Lagomorpha are clawed digits, soft and smooth pelage, very short and bushy tail (0-15% of Head and Body length), long diastema in front of cheek-teeth, canines absent, four incisors in the upper jaw and functional digits on fore/hindlimbs 5/4. Rabbits and hares have been grouped under Family Leporidae. Genus *Lepus* is characterised by its hind legs much longer than fore legs, hindfeet more than 60 mm (85-115 mm) and ears elongate and more than 30mm (80-120 mm). Pelage always smooth and soft but never harsh. Ears long, plain and not black-tipped. Head and Body length in the range 330-530 mm. Greatest skull length 80-100 mm. 'Y'-shaped groove on I¹. The blacknaped Hare is distinctive in having a dark greyish black or black patch on the back of its neck from the ears to the shoulder. Tail black above, while white on sides and undersurface.

Locality : Reported from Amaravati Dist. : Melghat Tiger Reserve; Buldhana Dist. : Lonar Wildlife Sanctuary; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Mumbai Suburban Dist. : Sanjay Gandhi National Park; Nagpur Dist. : Pench National Park; Pune Dist. : Bhimashankar Wildlife Sanctuary; Thane Dist. : Tansa Wildlife Sanctuary in Maharashtra State (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan, 2004, 2005, 2006; Pradhan and Talmale, 2008, 2009b).

Material Examined/Sightings : Sighted live individuals number of times during faunistic surveys conducted in various areas at different times.

Habitat : Terrestrial, fossorial and nocturnal species. The species is an out door species and generally lives in all types of habitats except at

very high altitudes. Where the habitat is suitable for living, hares are numerous. This species appears to be the most adapted ecologically.

External Distribution : Throughout India;

Status : Common; IUCN Criteria proposed as per the CAMP Report (2005): Least concern, Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule : IV.

Source : Prater (1980), Corbet and Hill (1992); Alfred *et al.* (2002), Menon (2003) and Nameer (2008).

Remarks : *Lepus nigricollis* is considered to be causing damage to the agricultural fields, orchards etc. The species is a prolific breeder.

Order ERINACEOMORPHA

Family ERINACEIDAE

Head and Body about 100-300 mm. Ear pinnae large. Back and sides covered with spines. Crown of first and second upper molars with a central 5th cusp. Members of this family commonly known as hedgehogs due to their pig-like snout.

Only one subfamily, Erinacinae, has been reported from India.

Subfamily ERINACEINAE

Dorsal pelage spiny. Tail short about 10% of the head and body length. Third lower premolar absent.

Subfamily Erinaceinae has been represented by two genera and species from Maharashtra.

Key to the genera and species of the subfamily ERINACEINAE

- Spines on the forehead divided by a longitudinal naked furrow (Medial naked zone on crown wide), Ears small *Paraechinus micropus*
- No distinct parting of the spines on the forehead (Medial naked zone on crown absent), Ears long *Hemiechinus collaris*

Genus *Hemiechinus* Fitzinger, 1866

Genus *Hemiechinus* is represented by single species, *Hemiechinus collaris* in India.

42. *Hemiechinus collaris* (Gray, 1830)

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

2005. *Hemiechinus collaris* : Hutterer, In: Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. 1 : 215.

Common Name : Indian Long-eared Hedgehog.

Diagnostic Characters : Ears long about 32 mm, subequal to hindfoot and longer than tail. Tail about 25 mm in length. Head and Body length about 140-180 mm. Spines wholly black distally. Fur on underparts and legs dark brown, face whitish; Limbs short with well developed curved claws. Upper second premolar (p²) single rooted.

Locality : Maharashtra State : Pune Dist. : Pune (Perhaps an isolated record or introduced (Corbet and Hill, 1992).

Material Examined/Sightings : None.

Habitat : Found in dry scrubs of arid and semi-arid regions (Alfred *et al.*, 2006a).

External Distribution : Rajasthan (Chakraborty and Agrawal, 2000), Delhi, Gujarat, Himachal Pradesh, Jammu and Kashmir, Uttar Pradesh (Alfred *et al.*, 2002, 2006a).

Elsewhere : Pakistan.

Status : Rare, No authentic collection record from the state. IUCN criteria proposed as per CAMP Report 2005 : Least concern (National); IWPA : Schedule IV.

Source : Ellerman and Morrison-Scott (1951), Corbet and Hill (1992) and Wilson and Reeder (2005), Alfred *et al.* (2002, 2006a).

Remarks : Ellerman and Morrison-Scott (1951) treated *collaris* as a subspecies of *Hemiechinus auritus*. Corbet and Hill (1992), Hutterer in Wilson & Reeder (1993, 2005), Alfred *et al.* (2002) retained it upto specific rank. Same view has been followed here. Since there is a single record of collection of one specimen from Pune Dist.

(Corbet and Hill, 1992), there is a strong need to confirm the occurrence status of the species from this region by undertaking surveys.

Genus *Paraechinus*

Genus *Paraechinus* is represented by two species in India, of which only one have been reported from Maharashtra State.

43. *Paraechinus micropus* (Blyth)

1846. *Erinaceus micropus* Blyth, *J. Asiat. Soc. Bengal*, 15 : 170.

2005. *Paraechinus micropus* : Hutterer In : Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 217.

Common Name : Indian Hedgehog.

Diagnostic Characters : Head and Body length 140-230 mm. Ears small and round, length about 25 mm. Legs bearing shorter claws. Tail length 12 mm; Hind foot 25mm. Tip of spine creamy white. Under part of face and cheek grayish white. Limbs, belly, muzzle and areas around eyes clothed with reddish brown hairs. Spines on the forehead divided by a longitudinal naked furrow.

Locality : Maharashtra State : Nandurbar Dist. : Toranmal Reserve Forest (Molur *et al.*, 2005); Corbet and Hill (1992) record the range of distribution south to at least Bombay and Pune.

Material Examined/Sightings : None.

Habitat : Found in rocky areas and grasslands.

External Distribution : Rajasthan, Gujarat, Punjab and Uttar Pradesh (Alfred *et al.*, 2002, 2006a).

Elsewhere : Pakistan.

Status : Rare, No authentic collection record from the state. IUCN criteria proposed as per CAMP Report 2005 : Least concern (National).

Source : Ellerman and Morrison-Scott (1951), Corbet and Hill (1992) and Hutterer in Wilson and Reeder (2005), Alfred *et al.* (2002, 2006a).

Remarks : Ellerman and Morrison-Scott (1951), Corbet and Hill (1992), Chakraborty and Agrawal

(2000), Hutterer in Wilson and Reeder (2005) considered *micropus* under the genus *Paraechinus*. Same view has been adopted here.

Order SORICOMORPHA

Family SORICIDAE

Back and sides of the body covered with soft hairs. The long pointed snout projecting considerably beyond the lower lip. Skull without post-orbital processes. Zygomatic arches absent. Bullae imperfect. Crown of first and second upper molars without central fifth cusp. Members of this family are generally known as shrews.

Family Soricidae is represented by two subfamilies viz., Crocidurinae and Soricinae in India.

However, only Crocidurinae has been reported from Maharashtra State.

Subfamily CROCIDURINAE

Subfamily Crocidurinae includes white-toothed shrews. Tail with a few scattered, long erect hairs and prominent fringes of white hairs on hind feet absent.

In India, subfamily Crocidurinae is represented by three genera, of which only two have been reported from Maharashtra State.

Key to the genera of the subfamily CROCIDURINAE

- Four upper unicuspid premolars present; Total number of teeth 30 *Suncus*
- Three upper unicuspid premolars present; Total number of teeth 28 *Crocidura*

Genus *SUNCUS*

Head and Body length in the range of 35-150 mm. Tail usually shorter than Head and Body length. 4th upper unicuspid premolar present.

Five species of the genus *Suncus* are reported from India, of these, only three have been reported from Maharashtra State.

Key to the species of the genus *Suncus*

1. Head and body length 35-55; upper tooththrow 5.3-6.4 mm *Suncus etruscus*
- Head and body length more than 60 mm; Upper tooththrow more than 6.5 2
2. Head and body length 60-80; upper tooththrow 8.7-10 mm *Suncus stoliczkanus*
- Head and body length 100-160; upper tooththrow 12.4-16 mm *Suncus murinus*

*44. *Suncus murinus* (Linnaeus)

1766. *Sorex murinus* Linnaeus, *Systema naturae*, 12th ed : 74.

2005. *Suncus murinus* : Hutterer, In : Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 260-261.

Common Name : House shrew.

Diagnostic Characters : Largest of the Indian house shrews; Fur short, less than 5 mm in length. Tail thick at the base with sparsely distributed long hairs.

Locality : Maharashtra State : Bhandara Dist. : Bhandara, Lakhani (Talmale, 2007); Buldhana Dist. : Lonar (Pradhan and Talmale, 2008); Chandrapur Dist. : Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Kolhapur Dist. : Dajipur (Talmale, 2007); Mumbai Dist. : Salsette, Mumbai (Lindsay, 1929); Mumbai Suburban Dist. : Goregaon and Malad (as *Suncus caeruleus*, Pradhan, 1978b), Sanjay Gandhi National Park, Borivali (Yazdani *et al.*, 1992); Nandurbar Dist. : Toranmal Reserve Forest (Jathar *et al.* 2005); Nashik Dist. : Darna, Tal. Nashik (Talmale, 2007); Pune Dist. : Khandala, Pune (as *S. c. blanfordi*, Lindsay, 1929), Dehu Road, Dimbhe, Kamshet, Sinhgad (Talmale, 2007); Raigad Dist. : Alibag, Wawarle, Karjat, Panvel, (Talmale, 2007); Thane Dist. : Suryamal in Tansa Wildlife Sanctuary (Singh and Pradhan, 1992).

Material Examined/Sightings : Bhandara Dist. : 1♂, Residential area, Bhandara, 12.xi.2004, (ZSI.WRC. M/718), 1♂, Residential area, Lakhani, Tal. Lakhani, 15.xi.2004, (ZSI. WRC. M/719),

2 ♀ ♀, Residential area, Lakhani, 16.xi.2004, (ZSI.WRC. M/720,721), 1 ♂, Paddy field house, Lakhani, 18.xi.2004, (ZSI.WRC. M/722) all specimens Coll. by S.S. Talmale, Buldhana Dist. : 1 ♂, Around RH, Lonar Wildlife Sanctuary, Lonar, 21.xi.2003, Coll. P.M. Sureshan, (ZSI.WRC. M/712); Kolhapur Dist. : 1 ♂, RH, Dajipur, 16.ii.1989, Coll. M.S. Pradhan, (ZSI.WRC. M/484); Nashik Dist. : 1 ♂, Darna inspection Bunglow, Tal. Nashik, 16.ii.1985, Coll. D.B. Bastawade, (ZSI.WRC. M/473); Pune Dist. : 1 ♂, Nanapeth, Pune, 28.i.1977, (ZSI. WRC. M/65), 1 ♀, Somwar peth, Pune, 08.ii.1977, (ZSI.WRC. M/64), 1 ♀, Commercial center, Pune city, 11.iii.1977, (ZSI.WRC. M/66), 1 ♀, Near food godown, Ganjipeth, Pune, 26.vii.1977, (ZSI.WRC. M/97), 1 ♂, Sinhgad, 04.ii.1985, (ZSI.WRC. M/343) all specimens collected by M.S. Pradhan, 1 ♂, Kamshet, 18.vi.1991, Coll. K.S. Ohal, (ZSI.WRC. M/629), 2 ♀ ♀, PWD RH, Khandlla, 04.vii.1992, Coll. M.S. Pradhan, (ZSI.WRC. M/537), 1 ♀, 23.i.2004, (ZSI.WRC. M/664), 1 ♂, 27.i.2004, (ZSI.WRC. M/665), 1 ♂, 23.ii.2004, (ZSI.WRC. M/682), 1 ♀, 04.iii.2004, (ZSI.WRC. M/679), 1 ♂, 30.iii. 2004, (ZSI.WRC. M/680), 1 ♂, 28.v.2004, (ZSI.WRC. M/683) all Coll. by P.M. Sureshan from Dehu Road, 1 ♂, ZSI, office campus, Akurdi, 18.viii.2004, Coll. P.P. Kulkarni, (ZSI. WRC. M/663), 1 ♀, Krishna Khore Vikas Mahamandal RH, Dimbhe, 22.ii.2005, Coll. P.P. Kulkarni, (ZSI.WRC. M/678); Raigad Dist. : 2 ♂ ♂, Alibag Town, 24.ix.1981, (ZSI.WRC. M/325,330), 3 ♂ ♂, 3 ♀ ♀, Panvel Town, 27.ix.1981, (ZSI.WRC. M/323-329), 1 ♀, Agriculture Research Center, Karjat, 03.x.1981, (ZSI. WRC. M/331), 1 ♀, RH premices, Wawarle, Karjat, 01.ii.1994, (ZSI. WRC. M/569); Thane Dist. : 2 ♂ ♂, 1 ♀, Suryamal RH, 11.iii.1984, (ZSI. WRC. M/389, 390) all specimens collected by M.S. Pradhan.

Habitat : Terrestrial, fossorial, occasionally seen in all sorts of habitats particularly near human dwellings, gardens, crop fields and in forests.

External Distribution : Throughout India.

Status : Common.

Conservation Status : IUCN criteria proposed

as per CAMP Report 2005 : Least concern (National).

Source : Lindsay (1929), Ellerman and Morrison-Scott (1951,1966), Corbet and Hill (1992), Wilson and Reeder (1993, 2005) and Talmale (2007).

Remarks : Nil.

*45. *Suncus stoliczkanus* (Anderson)

1877. *Crocidura (Pachyura) stoliczkana* Anderson, *J. Asiat. Soc. Bengal*, 46 : 270.

2005. *Suncus stoliczkanus* : Hutterer In: Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 261.

Common Name : Anderson's Shrew.

Diagnostic Characters : Medium sized shrew with Head and Body length averages 57.5 mm (Range 45-70 mm). Tail length shorter than Head and Body length with an average of 48 mm (Range 37-50 mm); Vibrissae on tail present; Tail slender and not swollen at the base like that of *S. murinus*. Hindfoot ranges between 7.5-11.5 mm. Snout short and broad. Eyes small. Fur very soft and silky. Dorsum medium grayish brown, underparts pale grey in colour.

Locality : Maharashtra State : Mumbai Suburban Dist. : Andheri, Salsette (Lindsay, 1929), Sanjay Gandhi National Park, Borivali (Yazdani *et al.*, 1992); Nandurbar Dist. : Toranmal Reseve Forest (Jathar *et al.*, 2005); Pune Dist. : Saswad (Pande *et al.*, 2004); Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992).

Material Examined/Sightings : Specimens from Mumbai Suburban Dist. : Andheri, Salsette, (Mumbai) and Nashik available at Bombay Natural History Society's old collection were studied(Talmale, 2007); Specimens collected from Toranmal in Nandurbar Dist. by Jathar *et al.* (2005) and from Saswad in Pune Dist by Pande *et al.*, (2004) were also studied by Talmale (2007).

Habitat : Nocturnal and semi-fossorial in habit; Lives in gardens near human dwellings and also in grassy and scrubland habitats near forest fringes (Alfred *et al.*, 2006a).

External Distribution : Peninsular India from Chennai (Tamil Nadu) north to Punjab and Rajasthan (Alfred *et al.*, 2002).

Status : Common.

Conservation Status : IUCN criteria proposed as per CAMP Report 2005 : Least concern (National).

Source : Lindsay (1929), Ellerman and Morrison-Scott (1951), Corbet and Hill (1992) and Wilson and Reeder (1993, 2005).

Remarks : Nil.

*46. *Suncus etruscus* (Savi)

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

2005. *Suncus etruscus* : Hutterer, In : Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 258.

Common name : English: Savi's Pygmy Shrew.

Diagnostic Characters : Head and Body length less than 55 mm. Hindfeet in the range between 7.0-9.5 mm. Fur very short, vibrissae on tail present, 18 teeth present in upper jaw, zygomatic arches absent, bullae imperfect, dorsum medium to dark brown in colour.

Locality : Maharashtra State : Amaravati Dist. : Pilli vill. near Kolkaz, Semadoh and Dharni in Melghat Tiger Reserve (Pradhan, 2005); Jalgaon Dist.: Pal (Talmale, 2007); Nandurbar Dist. : Toranmal Reserve Forest (Jathar *et al.*, 2005); Nashik Dist. : Igatpuri (Talmale, 2007); Pune Dist. : Narhe vill., near Pune (Ranade, 1989), Saswad (Pande *et al.*, 2004); Raigad Dist.: Gavidhon wadi, Chavni vill., Tal. Khalapur (Talmale, 2007); Sangli Dist.: Tasgaon (Talmale, 2007); Solapur Dist. : Hipparga (Talmale, 2007).

Material Examined/Sightings : Amaravati Dist. : 1 unsexed, Agricultural fields 3 km south of Semadoh in Melghat Tiger Reserve, 14.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/614), 1 ♀, Pilli vill., near Kolkaz in Melghat Tiger Reserve, 17.xii.1992, Coll. P.P. Kulkarni, (ZSI. WRC. M/603), 1 ♀, Near Kolkaz, Dharni Road in Melghat Tiger Reserve, 14.ix.1996, Coll. D.B. Bastawade,

(ZSI.WRC. M/613); Jalgaon Dist. : 1 ♂, Jaman Nalla, Pal, 02.ii.1979, Coll. R.H. Kamble, (ZSI.WRC. M/138); Nashik Dist. : 1 ♀, Near Igatpuri, 13.ii.1985, Coll. D.B. Bastawade, (ZSI.WRC. M/476); Raigad Dist. : 1 ♂, Gavidhon wadi, Chavni vill., Tal. Khalapur, 29.08.2001, Coll. S. Thakur, (ZSI.WRC. M/630); Sangli Dist. : 1 ♀, Tasgaon, 12.ix.1979, Coll. A.S. Mahabal, (ZSI.WRC. M/159); Solapur Dist. : 1 ♀, Near Hipparga tank, 10 Km. North to Solapur-Tuljapur road, 23.xii.1986, Coll. R.H. Kamble, (ZSI.WRC. M/570).

Distribution : Throughout India.

Habitat : Fossorial in habit preferring to live in multiparous habitats on plains and high altitudes.

Status : Uncommon locally.

Conservation Status : IUCN criteria proposed as per CAMP Report 2005 : Least Concern (National).

Source : Lindsay (1929), Ellerman and Morrison-Scott (1951), Corbet and Hill (1992), Hutterer in Wilson and Reeder (2005) and Talmale (2007).

Remarks : Perhaps the smaller of all the terrestrial mammals in size.

Genus *Crocidura*

Head and Body length in the range of 60-120 mm. Fourth upper unicuspid premolar absent, only three upper unicuspid premolars present.

In India, genus *Crocidura* is represented by nine species, of which only one has been reported from Maharashtra State.

*47. *Crocidura horsfieldii* (Tomes)

1856. *Sorex horsfieldi* Tomes, *Ann. Mag. Nat. Hist.*, ser. 2, 17 : 23.

2005. *Crocidura horsfieldii*: Hutterer, In : Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 234.

Common Name : Horsfield's shrew.

Diagnostic Characters : Head and Body length in the range of 60-75 mm. Tail length shorter

than head and body length, ranges between 40-45 mm in length. Hind foot approximately 12 mm in length. Fourth upper unicuspid premolar absent, only three upper unicuspid premolars present. Dorsal pelage soft and medium brown in colour.

Locality : Maharashtra State : Saswad, Pune Dist. (Talmale & Pradhan, 2009).

Material Examined/Sightings : One skull with mandible from pellet of Indian Great Horn Owl.

Habitat : Nocturnal and semi-fossorial in habit living in the areas close to forest fringes. Lives in montane forests of Southern India also (Menon, 2003).

External Distribution : Fragmented distribution in India; Madhya Pradesh (Khajuria, 1972); Karnataka (Rao and Aswathanarayana, 1978); Jammu & Kashmir (Chakraborty, 1983).

Status : Common, IUCN criteria proposed as per CAMP Report 2005: Vulnerable (National), Least concern (South Asia).

Source : Ellerman and Morrison-Scott (1951), Rao and Aswathnaryana, 1978, Corbet and Hill (1992) and Wilson and Reeder (2005), Alfred *et al.* (2002), Talmale and Pradhan (2009).

Remarks : Nil.

Order CHIROPTERA

Presence of membranous wings between elongated digits 2-5 of forelimb and hind leg help in sustained flight. This order is represented in Maharashtra State by 40 species/subspecies under 20 genera of eight Chiropteran families. Chiroptera is second largest mammalian order next to Rodentia. It is divided into two suborders (1) *Megachiroptera* or fruit eating bats and (2) *Microchiroptera*, the predominantly insect-eating bats. Suborder *Megachiroptera* is represented by a single family *Pteropodidae* (Old World fruit bats) in Maharashtra State.

Key to the suborders of the order Chiroptera

- Ear margins uninterrupted forming a complete

ring, Tragus and Noseleaf absent, 2nd digit usually with a claw, Tail short and Molars simple, flat-crowned or with simple cusps, Fruit eating bats *Megachiroptera*

- Ear margins interrupted and does not form a complete ring, Either Tragus or Noseleaf or both present, 2nd digit without a claw, Tail usually well developed and Molars complex with regular pattern of cusps and ridges forming definite “W” or “N” surface outline, Insect eating bats *Microchiroptera*

Suborder MEGACHIROPTERA

Family PTEROPODIDAE

Four species under three genera of the family *Pteropodidae* have been recorded from the Maharashtra State.

Key to the genera of the family PTEROPODIDAE

1. Upper part of the body of one colour throughout, tail present 2
- Upper part of the body of two colours, tail absent *Pteropus*
2. Five upper and six lower cheek-teeth *Rousettus*
- Four upper and five lower cheek-teeth *Cynopterus*

Genus *Pteropus*

Genus *Pteropus* is represented by a single species/subspecies in Maharashtra State.

*48. *Pteropus giganteus giganteus* (Brunnich)

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

1997. *Pteropus giganteus giganteus* : Bates and Harrison, *Bats of Indian Subcontinent* : 9-13.

Common Name : Indian flying fox.

Diagnostic Characters : Largest sized fruit bat in India; rufous-brown around head and neck; a conspicuous orange or honey-coloured band across upper back; lower back blackish brown; ventral

parts dark chestnut brown; naked skin of wings; uropatagium, ears and muzzle jet black; no external tail.

Locality : Maharashtra State : Ahmednagar Dist. : Ahmednagar, Belapur (McCann, 1934); Amaravati Dist. : Amravati (Bates and Harrison, 1997), Pili Sipna valley, Melghat Tiger Reserve (Pradhan, 2005); Bhandara Dist. : Usgaon vill. (Talmale, 2007); Chandrapur Dist. : Chandrapur (Sinha, 1980); Jalgaon Dist. : Gadkhangaon, Amalner (Talmale, 2007); Mumbai Suburban Dist. : Malad (McCann, 1934), Sanjay Gandhi National Park, Borivali (Yazdani *et al.*, 1992); Nagpur Dist. : Nagpur (Talmale, 2007), Pench National Park (Pradhan, 2004); Nashik Dist. : Deola (Talmale, 2007); Pune Dist. : Pune (Korad & Yardi, 2004a), Karla; Satara Dist. : Patan (Wroughton, 1916a); Thane Dist. : Kalyan, Thane (McCann, 1934).

Material Examined/Sightings : Jalgaon Dist. : 1 ♀, Bank of Chikli river, Gadkhangaon, Amalner, 29.xi.1983, Coll. R.H. Kamble (ZSI.WRC. M/339); Nashik Dist. : 2 ♂♂, Deola, 22.ix.1973, Coll. M. Babu Rao, (ZSI.WRC. M/88, 89); Pune Dist. : 1 ♀, Parvati temple, Pune, 9.vi.1975, Coll. C.B. Prasad, (ZSI.WRC. M/521); 1 unsexed, Shivajinagar, Pune, May 1993, Coll. R.S. Bhosle, (ZSI.WRC. M/581); 1 ♀, Mutha, Pune, 12.vii.2002, Coll. V.S. Korad and K.D. Yardi, (ZSI.WRC. M/641, Donated specimen); 3 ♂♂, Uttamnagar, Pune, 12.vii.2002, Coll. V.S. Korad and K.D. Yardi, (ZSI.WRC. M/642, Donated specimens) and also sighted at many places in forested as well as in the urban areas on big trees.

Habitat : Found in all habitats, leading arboreal life with roosting in hundreds on large fruit bearing trees. Possesses strong memory and fly away from roosting place for large distances in search of food.

External Distribution : Throughout India.

Status : Roosting sites are seen generally in isolated places, IUCN criteria proposed as per CAMP Report (2002) : Least Concern (National); Indian Wildlife (Protection) Act (1972, as amended up to 2006) Schedule: Schedule V (Vermin); CITES : Appendix II.

Source : Ellerman and Morrison-Scott (1951), Brosset (1962a), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Illegal trade of this species in domestic markets has been reported by Pradhan (1997).

Genus *Rousettus*

Rousettus is represented by a single species/subspecies in Maharashtra State.

*49. *Rousettus leschenaulti leschenaulti* (Desmarest)

1820. *Pteropus leschenaulti* (Desmarest) *Encycl. Meth. Mammal.* 1, 1 : 110.

2002. *Rousettus leschenaulti leschenaulti* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 28.

Common Name : Rousettes or Indian fulvus fruit bat.

Diagnostic Characters : A medium sized fruit bat with forearm around 80 mm. It has a long muzzle and large eyes, tail reduced and rod like, dorsal colour light brown with a rufescent tinge, while ventral side is lighter in colour, back of the neck and shoulders sparsely haired.

Locality : Maharashtra State : Amaravati Dist. : Chikhaldara (Brosset, 1962a); Aurangabad Dist. : Aurangabad (Brosset, 1962a), Elora (Bates *et al.*, 1994a); Bhandara Dist. : Mendha vill. Tal. Lakhani (Talmale, 2007); Buldhana Dist. : Lonar Crater and Wildlife Sanctuary (Pradhan and Talmale, 2008); Mumbai Suburban Dist. : Jogeshwari (Brosset, 1962a), Kanheri in Sanjay Gandhi National Park (Brosset, 1962a); Nagpur Dist. : Kandri Mines, Mansar (Bates and Harrison, 1997), Khindsi (Ghosh, 2005); Pune Dist. : Khandala (Brosset, 1962a), Pune (Bates and Harrison, 1997), Sinhgad (Talmale, 2007), Purandar (Talmale, 2007); Raigad Dist. : Elephanta, Alibag (Brosset, 1962a); Ratnagiri Dist. : Ratnagiri (Brosset, 1962a); Satara Dist. : Ghatmatha (Wroughton, 1916a), Mahabaleshwar (Brosset, 1962a), Satara (Agrawal and Sinha, 1973).

Material Examined/Sightings : Bhandara Dist. : 1 ♀, Guava orchard, Mendha vill., Tal. Lakhani, 17.xi.2004, Coll. S.S. Talmale (ZSI. WRC. M/697); Buldhana Dist. : 1 ♀, On the way to Kamalja temple, Waghmandir, Lonar Wildlife Sanctuary, 23.ix.2003, Coll. S.G. Patil (ZSI. WRC.M/708); 1 ♂, On the way to Kamalja temple, Bhormahadev, Lonar Wildlife Sanctuary, 23.ix.2003, Coll. S.G. Patil (ZSI. WRC. M/709); 3 ♂♂, 1 ♀, SW of forest RH near Cretor lake, Lonar WLC, 19.xi.2003, Coll. P. M. Sureshan, (ZSI.WRC. M/710); Mumbai Dist. : 1 ♂, Sanjay Gandhi National Park, Borivali, 1.ix.1987, Coll. D.F. Singh (ZSI.WRC. M/446); Pune Dist. : 1 ♂, Sinhagad Fort, 6.x.1992, Coll. M.S.Pradhan (ZSI.WRC. M/446); 1 ♂, Purandar, 25.v.2002. Coll. K.D. Yardi (ZSI.WRC. M/655, Donated specimen).

Habitat : Terrestrial, arboreal, forming gregarious noisy roosts, preferring to live in caves and man-made constructions. Colonies can be recognized from those of insectivorous bats by the large brilliant eyes.

External Distribution : Peninsular India.

Status : Many roosting sites have been reported from number of localities; IUCN Criteria proposed as per CAMP report (2002): Least Concern (National); Indian Wildlife (Protection) Act (1972) (as amended upto 2006) : Schedule V (Vermin).

Source : Ellerman and Morrison-Scott (1951), Brosset (1962a), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

Genus *Cynopterus*

Two species of the genus *Cynopterus* have been reported from Maharashtra State.

Key to the species of the genus *Cynopterus*

- Ears large with pale white anterior and posterior borders well developed *Cynopterus sphinx*
- Ears smaller with the pale white anterior and posterior borders absent or poorly developed *Cynopterus brachyotis*

*50. *Cynopterus brachyotis ceylonensis* (Gray)

1871. *Cynopterus marginatus* var. *ceylonensis* Gray, *Catalogue of monkeys, lemurs and fruit-eating bats in the collection of the British Museum*, London, British Museum : viii : 122.
2005. *Cynopterus brachyotis ceylonensis*: Simmons, In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 316.

Common Name : Lesser Short-nosed Fruit Bat.

Diagnostic Characters : Medium sized fruit bat with forearm shorter (less than 67 mm) and ears with no white margin, skin of wings and muzzle naked, nostrils divergent, condylobasal length less than 30 mm.

Locality : Reported from Pune Dist. : Khandala; Satara Dist. : Mahabaleshwar (Pradhan and Kulkarni,1997).

Material Examined/Sightings : Satara Dist. : 1 ♂, PWD RH premises, Mahabaleshwar, 16.i.1990, Coll. M.S. Pradhan (ZSI.WRC. M/513).

Habitat : Same as that of *Cynopterus sphinx* (Vahl), both the species reported to have shared a common roost (Pradhan and Kulkarni 1997).

External Distribution : Western Ghats and Sri Lanka.

Status : Pradhan and Kulkarni (1997) reported extension of distributional range of *C. b. ceylonensis* upto Khandala in Pune Dist. in Northern Western Ghats. IUCN Criteria proposed as per the CAMP Report (2002): Least Concern (For *Cynopterus brachyotis*); Indian Wildlife (Protection) Act (1972, as amended up to 2006) Schedule: Schedule V (Vermin).

Source : Ellerman and Morrison-Scott (1951), Das (1986), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005) Pradhan and Kulkarni (1997), Bates and Harrison (1997) and Talmale (2007).

*51. *Cynopterus sphinx sphinx* (Vahl)

1797. *Vespertilio sphinx* (Vahl) *Skr. Nat. Selsk. Copenhagen*, 4(1) : 123.
2002. *Cynopterus sphinx sphinx* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 24.

Common Name : Greater Short-nosed Fruit bat.

Diagnostic Characters : Medium sized fruit bat with white margined ears, forearm around 70 mm. with metacarpals and phalanges whitish, nostrils divergent with deep inter-narial groove, naked skin of wings and muzzle, tail reduced and rod like, condylobasal length more than 30 mm.

Locality : Maharashtra State : Amaravati Dist. : Dhakna, Semadoh in Melghat Tiger Reserve (Pradhan, 2005); Aurangabad Dist. : Ajanta (Bates *et al.*, 1994a); Bhandara Dist. : Lakhani; Buldhana Dist.: Nalganga (Talmale, 2007); Chandrapur Dist. : Tadoba-Aandhari Tiger Reserve (Pradhan, 2006); Mumbai Dist. : Mumbai (Bates & Harrison, 1997); Mumbai Suburban Dist. : Bandra; Sanjay Gandhi National Park, Borivali (Yazdani *et al.*, 1992; Bates and Harrison, 1997); Nagpur Dist. : Nagpur (Bates and Harrison, 1997), Pench National Park (Pradhan, 2004); Nashik Dist. : Nashik (Bates and Harrison, 1997); Pune Dist. : Pune (Korad & Yardi, 2004a), Khandala (Talmale, 2007), Dimbhe (Talmale, 2007);

Material Examined/Sightings : Amaravati Dist. : 2♂♂, Around RH., Dhakna, Melghat Tiger Reserve, 18.ii.1992, Coll. M.S. Pradhan (ZSI.WRC. M/538); 1♂, 3♀♀, Semadoh RH complex, Melghat Tiger Reserve, 14.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/585); 1♂, 1♀, RH complex Semadoh, Melghat Tiger Reserve, 16.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/578); 1♂, RH, Semadoh, Melghat Tiger Reserve, Dist. Amaravati, 18.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/579); Bhandara Dist. : 2♂♂, 10♀♀, Guava orchard, Mendha vill. Tal. Lakhani, 17.xi.2004, Coll. S.S. Talmale, (ZSI. WRC. M/698); 1♂, 2♀♀, Neted near Ashok Layland Club, Lakhani, 21.xi.2004, Coll. S.S. Talmale, (ZSI. WRC. M/694); Buldhana Dist. : 1♂, 1♀, RH., Nalganga, 15.xi.2005, Coll. S.G. Patil, (ZSI. WRC. M/725); Pune Dist. : 1♀, Poona University, Pune 12.vi.1975, Coll. C.B. Prasad (ZSI.WRC. M/45); 1♂, Mukundnagar, Pune, 13.iv.1978, Coll. B.K. Tikader (ZSI.WRC. M/341); 3♀♀, 2♂♂, PWD, RH, Khandala, 01.vii.1992, Coll. M.S. Pradhan, (ZSI.WRC. M/547); 1♂, 1♀

Dimbhe, (neted at ficus tree), 23.ii.2005, Coll. P.P. Kulkarni, (ZSI.WRC. M/677).

Habitat : Terrestrial and arboreal species preferring to live in small colonies on fruit bearing trees close to forests.

External Distribution : Indian sub-continent.

Status : IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern; Indian Wildlife (Protection) Act (1972, as amended up to 2006) Schedule: Schedule V (Vermin).

Source : Ellerman and Morrison-Scott (1951), Brosset (1962a), Corbet and Hill (1992) and Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

Suborder MICROCHIROPTERA

Seven families represent sub-order Microchiroptera in Maharashtra State.

Key to the families of the order Microchiroptera

1. Both noseleaf and tragus present
..... MEGADERMATIDAE
- Either noseleaf or tragus present, but not both 2
2. A noseleaf, but no tragus present 3
- No noseleaf, but tragus present 4
3. Noseleaf with sella and posterior lancet, three lower premolars RHINOLOPHIDAE
- Noseleaf without sella and posterior lancet, two lower premolars HIPPOSIDERIDAE
4. Tail entirely enclosed in interfemoral membrane VESPERTILIONIDAE
- Distal portion of tail free from interfemoral membrane 5
5. Tail emerging from upper surface of interfemoral membrane
..... EMBALLONURIDAE
- Tail emerging from end of interfemoral membrane 6

6. Tail very long and slender
 RHINOPOMATIDAE
- Tail comparatively short and stout
 MOLOSSIDAE

Family RHINOLOPHIDAE

Family Rhinolophidae consists of one modern genus *Rhinolophus* with approximately 60 species throughout the tropics, subtropics and temperate zones of the old world rhinolophid range. These are small to moderate sized bats with forearm ranging in between 30-75 mm and are characterized by a complex nose-leaf. They are insectivorous, catching their prey in flight, and occur in wide variety of habitats from forests to open areas. Some are solitary while others live in moderate groups.

Genus *Rhinolophus*

Genus *Rhinolophus* is represented by three species in Maharashtra State.

Key to the species of Genus *Rhinolophus*

1. Base of sella expanded, making trifolium shaped structure, frontal depression very deep *Rhinolophus beddomei*
- Base of sella not expanded, not making any trifolium shaped structure, frontal depression shallow 2
2. Connecting process triangular and pointed and higher than top of the sella forming deep notch between them, forearm length less than 42 mm. *Rhinolophus lepidus*
- Connecting process not triangular and pointed and is at the level with top of sella forming a shallow notch between them, forearm length in the range between 44-54 mm *Rhinolophus rouxii*

*52. *Rhinolophus beddomei* Andersen

1905. *Rhinolophus beddomei* Andersen, *Ann. Mag. N. H.*, **16** : 253.
2005. *Rhinolophus beddomei* : Simmons, In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. **I** : 351.

Common Name : Bedomme's horseshoe bat.

Diagnostic Characters : Forearm length ranging between 61.0-65.0 mm. Horseshoe broad; Sella trifoliate; Vertical part of the sella making a trifolium shaped structure with the top; Connecting process starting slightly below the tip of the sella, sloping towards the posterior noseleaf and forming a triangular structure in lateral view. The lancet is well developed, subacutely pointed; Fur very long, dense and wooly and usually black with grey tips.

Locality : Reported from Mumbai Dist. : Salsette (Talmale, 2007); Nagpur Dist. : Nagpur (as *Rhinolophus luctus*, Naidu and Murhar, 1979); Pune Dist. : Khandala, Karla, Bhaja, Bedsar (Brosset, 1962b); Junnar, Maval, Mulshi (Korad, 2005); Raigad Dist. : Mahad (Korad, 2005); Satara Dist. : Mahabaleshwar (Korad, 2005); Sindhudurg Dist. : Ramgad (Bates and Harrison, 1997).

Material Examined/Sightings : Satara Dist. : 1 ♀, Mahabaleshwar, Coll. A. Koratkar and M.C. Gaikwad (ZSI.WRC. M/654, Donated specimen).

Habitat : This species is restricted to the forested areas at 600-800m altitude; hanging isolated in a secluded corner of some dungeon, cave or old building, deserted wells etc..

External Distribution : Andhra Pradesh, Kerala and Maharashtra (Bates and Harrison, 1997).

Status : IUCN Criteria proposed as per CAMP Report (2002): Near Threatened (National).

Source : Brosset (1962b), Bates and Harrison (1997), Simmons in Wilson and Reeder (2005) and Talmale (2007).

Remarks : Nil.

*53. *Rhinolophus lepidus lepidus* Blyth

1844. *Rhinolophus lepidus* Blyth, *J. Asiat. Soc. Bengal*, **13** : 486.
2002. *Rhinolophus lepidus lepidus* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, **199** : 39.

Common Name : Blyth's horseshoe bat.

Diagnostic Characters : Smaller horse-shoe bat with forearm less than 42 mm., but with relatively

larger ears and nose-leaf, connecting process higher than top of sella forming a deep notch between them.

Locality : Reported from Kolhapur Dist. : RH Pundre (Talmale, 2007); Mumbai Suburban Dist. : Kanheri caves in SGNP (Brosset, 1962b); Nasik Dist. : Nashik Road (Brosset, 1962b); Pune Dist. : Khandala, Lonavla, Lohogad Fort (Brosset, 1962b); Raigad Dist. : Karnala (Brosset, 1962b), Khopoli (Tiware *et al.*, 1971); Ratnagiri Dist. : Ratnagiri (Brosset, 1962b); Satara Dist. : Helwak (Wroughton, 1916a), Panchgani, Mahabaleshwar (Brosset, 1962b).

Material Examined/Sightings : Kolhapur Dist. : 1 ♀, RH, Pundre, 28.ix.1986, Coll. D.B. Bastawade (ZSI. WRC., M/449); Satara Dist. : 1 ♂, 1 ♀, Panchgani cave, 04.ix.2003, Coll. M.S. Pradhan, (ZSI. WRC., M/662).

Habitat : Large caves in forested areas, rocky outcrops, semi-evergreen forests. It can lead a solitary to colonial life.

External Distribution : Throughout India.

Status : Field survey studies report number of locations in isolated places (CAMP Report, 1998); IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Brosset (1962b), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

***54. *Rhinolophus rouxii rouxii* Temminck**

1834. *Rhinolophus rouxii* Temminck, *Monogr. Mammal*; 2 : 306.

2002. *Rhinolophus rouxii rouxii* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 42.

Common Name : Rufous horseshoe bat.

Diagnostic Characters : Smaller bat with forearm length in the range between 44-54 mm., base of sella straight but not expanded, connecting process is at the level with top of the sella; colour varies from brown to orange– yellow.

Locality : Reported from Mumbai Suburban Dist. : Jogeshwari, Borivali, Kanheri caves and Vihar lake in Sanjay Gandhi National Park (Brosset, 1962b, Yazdani *et al.*, 1992); Pune Dist. : Pune (Bates and Harrison, 1997), Bhaja caves, Khandala, Lohogad Fort; Raigad Dist. : Karnala (Brosset, 1962b), Pebkila near Matheran, Koturde (Talmale, 2007); Ratnagiri Dist. : Devrukh (Talmale, 2007), Sangmeshwar (Muni *et al.*, 1994); Satara Dist. : Mahabaleshwar (Brosset, 1962b, Topal, 1974); Sindhudurg Dist. : Nerur, Sawantwadi, Asgani (Andersen, 1917). Thane Dist. : Vasai Fort (Brosset, 1962b).

Material Examined/Sightings : Pune Dist. : 1 ♂, PWD RH, Khandala, 04.vii.1992, Coll. M.S. Pradhan, (ZSI.WRC. M/553); Raigad Dist. : 1 ♂, 1 ♀, Pebkila, Matheran, 21.x.2002, Coll. V.S. Korad (ZSI.WRC. M/ 748, Donated specimen), 1 ♂, Koturde, 04.xi.2003, Coll. V. S. Korad (ZSI. WRC. M/ 749, Donated specimen); Ratnagiri Dist. : 1 ♂, RH Devrukh, 08.i.1989, Coll. M.S. Pradhan, (ZSI.WRC. M/ 553).

Habitat : Large caves, rocky outcrops in semi-evergreen forests. It can lead a solitary to colonial life.

External Distribution : Throughout India.

Status : IUCN Criteria proposed as per CAMP Report (2002): Near Threatened (National).

Source : Brosset (1962b), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

Family HIPPOSIDERIDAE

The family Hipposideridae in Maharashtra State is represented by the six species under only one genus *Hipposideros*. All hipposiderids possess complex noseleaf with its anterior part does not have a median notch. Some species possess lateral supplementary leaflets. The central portion of the nose-leaf is a cushion-like structure.

This family has been treated as a subfamily of Rhinolophidae by Ellerman and Morrison-Scott

(1951), Koopman in Wilson and Reeder (1993) and Alfred *et al.* (2002). However, Corbet and Hill (1992), Bates and Harrison (1997), Simmons in Wilson and Reeder (2005) and Alfred *et al.* (2006a) have considered it as a distinct family on the basis of different forms of noseleaf. Same view has been followed here.

Genus *Hipposideros*

In India genus *Hipposideros* is represented by thirteen species, of which only six species have been reported from Maharashtra State.

Key to the species of Genus *Hipposideros*

1. No supplementary leaflet present on each side of horseshoe 2
- Supplementary leaflets present on each side of horseshoe 4
2. Internarial septum thickened and/or bulbous; anterior half of zygomata slender
Hipposideros ater
- Internarial septum not inflated; anterior half of zygomata massive 3
3. Anterior lower premolar much reduced; posterior projecting portion of vomer blade like *Hipposideros fulvus*
- Anterior lower premolar not reduced; posterior projecting portion of vomer blunt & thickened *Hipposideros pomona*
4. Four supplementary leaflets on each side; forearm length about 90 mm
..... *Hipposideros lankadiva*
- Supplementary leaflets less than four; forearm length about 50 mm 5
5. Two supplementary leaflets on each side of horseshoe *Hipposideros galeritus*
- Three supplementary leaflets on each side of horseshoe *Hipposideros speoris*

*55. *Hipposideros pomona gentilis* (Andersen)

1918. *Hipposideros gentilis* Andersen, *Ann. Mag. Nat. Hist.*, ser. 9, 2 : 380,381.

2005. *Hipposideros pomona gentilis* : Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 375.

Common Name : Anderson's Leaf-nosed Bat.

Diagnostic Characters : A medium sized leaf nosed bat with forearm length about 41.5 mm. Large ears with pointed tip. Noseleaf similar in structure to *H. ater* and pelage comparable to *H. fulvus*. Dorsal pelage mid to dark brown with pale base; Ventral surface pale throughout. Third metacarpal shorter than fifth. Skull with an condylo-canine length of about 15.4 mm. First upper premolar minute and displaced externally. First lower premolar (pm₂) less reduced, its antero-posterior length and height about two third or more than that of the second premolar (pm₄).

Locality : Reported from Pune Dist. : Mulshi, Maval, Junnar; Raigad Dist. : Mahad (Korad, 2005).

Material Examined/Sightings : Pune Dist. : 1 ♀, Mulshi, 07.vii.2002, Coll. S.S. Manchi and V.S. Korad (ZSI.WRC., M/660, Donated specimen).

Habitat : The bats were found in the natural, narrow and posteriorly slanting caves. In Maharashtra, it has been collected from the heavy rain regions of eastern part of Sahyadri mountains (Korad, 2005).

External Distribution : Assam, Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Uttar Pradesh, West Bengal (Bates and Harrison, 1997, Das, 2003).

Status : IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Bates and Harrison (1997), Simmons in Wilson and Reeder (2005) and Talmale (2007).

Remarks : Nil.

*56. *Hipposideros ater ater* Templeton

1848. *Hipposideros ater* Templeton, *J. Asiat. Soc. Bengal*, 17(1) : 252.

1997. *Hipposideros ater ater* : Bates and Harrison, *Bats of Indian Subcontinent* : 81-84.

Common Name : Dusky Leaf-nosed bat.

Diagnostic Characters : Forearm length about 37 mm. Ears small with well-developed antitragus. Noseleaf consists of a horizontal horseshoe with an intermediate leaf and a simple posterior leaf; Posterior leaf comprises four cells and three septa but without vertical process; Anterior leaf of noseleaf without supplementary lateral leaflets; Intermediate leaf simple in form and has a slightly convex upper border. In the wing, 4th metacarpal exceeds the 5th in length; Third metacarpal short. Fur variable in colour from dull yellow to dark brown to pale grey. Jugal bone of each zygoma with dorsal process.

Locality : Reported from Nanded Dist. : Nanded (Gopalkrishna, 1969), Barad (Gopalkrishna and Madhavan, 1977); Pune Dist. : Maval, Ambegaon and Junner; Raigad Dist. : Karjat, Mahad, Khopoli; Satara Dist. : Mahabaleshwar (Korad, 2005). Marathwada Region: Dongarkhed and Shirol (Gopalkrishna and Madhavan, 1977).

Material Examined/Sightings : Raigad Dist. : 1 ♀, Khopoli, 27.ix.2003, Coll. : M. C. Gaikawad and U. M. Chavan, (ZSI.WRC., M/659, Donated specimen).

Habitat : Found in the deep wells, dark hollows in walls, caves and favours highly humid atmosphere.

External Distribution : Karnataka, Kerala, Orissa, Tamil Nadu and Maharashtra.

Status : IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

***57. *Hipposideros fulvus fulvus* Gray**

1838. *Hipposideros fulvus* Gray, *Mag. Zool. Bot.*, 2 : 492.

2002. *Hipposideros fulvus fulvus* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 47.

Common Name : Fulvus Leaf-nosed bat.

Diagnostic Characters : Ears large, rounded, longer than head, upper part of posterior margin slightly flattened, forearms shorter (less than 45 mm), internarial septum narrow and broadened at the base.

Locality : Reported from Amravati Dist. : Chikhaldara (Brosset, 1962b); Aurangabad Dist. : Aurangabad (Brosset, 1962b); Mumbai Dist. : Mumbai (Brosset, 1962b); Mumbai Suburban Dist. : Bandra (Bates and Harrison, 1997); Vihar lake (Brosset, 1962b); Nagpur Dist. : Nagpur (Bates and Harrison, 1997); Nanded Dist. : Nanded (Bates and Harrison, 1997); Nashik Dist. : Nashik; Pune Dist. : Karla, Lonavla (Brosset, 1962b), Bhaja (Topal, 1974), Maval, Mulshi (Korad, 2005); Raigad Dist. : Elephanta caves (Topal, 1974); Karjat (Korad, 2005); Ratnagiri Dist. : Shirgaon (Wroughton, 1916a), Ratnagiri (Brosset, 1962b); Satara Dist. : Panchgani (Khajuria, 1953), Mahabaleshwar (Brosset, 1962b); Solapur Dist. : Pandharpur (Talmale, 2007).

Material Examined/Sightings : Satara Dist. : 2♂♂, Mahabaleshwar, 10.viii.1967, Coll. : G. Topal, (ZSI.WRC., M/39); Solapur Dist. : 1♂, Pandharpur, 27.xii.2002, Coll. M. Gaikawad & S. Kakade, (ZSI.WRC., M/657).

Habitat : Colonial in habit living in ruins of caves, temples, buildings in and near forested areas.

External Distribution : Throughout India excluding Jammu and Kashmir.

Status : It has been reported from many localities in India, IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Brosset (1962b), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

***58. *Hipposideros galeritus brachyotis* (Dobson)**

1874. *Phyllorhina brachyota* Dobson, *J. Asiat. Soc. Bengal*, 43(2) : 237.

2005. *Hipposideros galeritus brachyotis* : Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 372.

Common Name : Cantor's Leaf-nosed bat.

Diagnostic Characters : Medium-small species with forearm length about 48.0 mm. Noseleaf simple, essentially similar to that of *H. ater*, but broader and differing in the presence of two pairs of well developed supplementary lateral leaflets; Anterior leaf without a median emargination; The internarial septum small, triangular shaped and with a narrow base. Nostrils large and well defined, each has a small lappet on its external border; Intermediate leaf simple with a slightly convex superior border; Posterior leaf has three well developed septa which divide it into four discrete cells. Ears broad at the base, triangular in shape and possess concavity below the narrowly rounded off tips on the posterior border. Pelage colour variable in different shades of brown colour with pale base.

Locality : Reported from Amravati Dist.: Chikhaldara (Brosset, 1962b); Aurangabad Dist. : Ellora (Brosset, 1962b), Ajanta (Bates and Harrison, 1997); Mumbai Dist. : Mumbai (Brosset, 1962b); Mumbai Suburban Dist. : Kanheri (Brosset, 1962b); Pune Dist. : Bedsar Caves (Brosset, 1962b); Raigad Dist. : Shivtharghal near Mahad (Korad, 2005).

Material Examined/Sightings : Raigad Dist. : 1 ♂, Shivthar Ghal, 22.xii.2002, Coll. : M.C. Gaikawad and S.S. Manchi, (ZSI.WRC., M/656, Donated specimen).

Habitat : Isolated populations or small colonies roost in caves, forts, old temples, crack of walls of houses.

External Distribution : Andhra Pradesh (Srinivasulu, 2006), Bihar, Gujarat, Karnataka, Madhya Pradesh (Bates and Harrison, 1997).

Status : IUCN Criteria proposed as per CAMP Report (2002) : Near Threatened (National) (For *H. galeritus*).

Source : Brosset (1962b), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

***59. *Hipposideros speoris speoris* (Schneider)**

1800. *Vespertilio speoris* Schneider, In Schreber, J.C.D. *Die sangethiere in Abbildungen nach der Natur Erlangen* Supplement : pl. 59b.

1997. *Hipposideros speoris speoris* : Bates and Harrison, *Bats of Indian Subcontinent* : 93-96.

Common Name : Schneider's leaf-nosed bat.

Diagnostic Characters : Forearm larger (45-57 mm), rostrum flattened, prominent supraorbital ridge present, ears triangular moderately or acutely pointed.

Locality : Reported from Aurangabad Dist. : Ellora (Bates *et al.*, 1994c) ; Chandrapur Dist.: Chandrapur (Gopalkrishna and Bhatia, 1982); Mumbai Suburban Dist. : Borivali, Kanheri (Brosset, 1962b); Nanded Dist. : Nanded (Gopalkrishna *et al.*, 1991); Pune Dist. : Pune, Khandala (Brosset, 1962b, Korad and Yardi, 2004a), Bhuleshwar, Yavat (Talmale, 2007) ; Raigad Dist. : Elephanta (Topal, 1974); Alibag (Brosset, 1962b) ; Ratnagiri Dist. : Asgani (Bates and Harrison, 1997); Satara Dist. : Near Satara (Hill, 1976).

Material Examined/Sightings : Aurangabad Dist. : 2 ♂♂, Ellora, 06.ix.1964, Coll. R.N. Chopra, (ZSI.WRC., M/44); Nagpur Dist. : 1 ♂, Kandri mines, 05.iv.1985, Coll. Inst. Sci., Nagpur, (ZSI.WRC., M/732, Donated specimen), 1 ♂, Pench river, Pench National Park, 25.iv.1997, Coll. S.G. Patil, (ZSI.WRC., M/619); Pune Dist. : 1 ♀, Bibwewadi, Pune City, 23.xi.1984, Coll. Prof. Nalawade, (ZSI.WRC., M/410, Donated); 1 ♂, PWD RH campus, Khandala, 15.i.1994, Coll. M.S. Pradhan, (ZSI.WRC., M/565), 1 ♂, Bhuleshwar, Yavat, 04.viii.2002, Coll. A. Koratkar and M. Gaikawad, (ZSI.WRC., M/658, Donated specimen); Ratnagiri Dist. : 1 ♂, RH, Devrukh, 15.viii.1987, Coll. R.M. Sharma, (ZSI.WRC., M/447), 1 ♀, RH, Devrukh, 17.viii.1987, Coll. R.M. Sharma, (ZSI.WRC., M/450).

Habitat : Same as *Hipposideros fulvus*.

External Distribution : Throughout the Peninsular India.

Status : The species has been reported from

many localities in Peninsular India and Sri Lanka; IUCN Criteria proposed as per CAMP Report (2002): Least Concern (National).

Source : Brosset (1962b), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Bates and Harrison (1997) referred all specimens from Indian Subcontinent to *Hipposideros speoris speoris*.

***60. *Hipposideros lankadiva* Kelaart**

1850. *Hipposideros lankadiva* Kelaart, J. Sri Lanka Branch. *Asiat. Soc.*, 2(2) : 216.

2005. *Hipposideros lankadiva*: Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 373.

Common name : Indian Leaf-nosed bat.

Diagnostic Characters : Large sized Hipposideran bat with an average forearm length about 90 mm. Noseleaf has four supplementary leaflets. Pelage variable, ranges from pale cream to fulvous brown, orange and bright red; Tends to be darker on the forehead, shoulders and on the rump; venter pale.

Locality : Reported from Chandrapur Dist. : Chandrapur (Sapkal and Bhandarkar, 1984), Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Ratnagiri Dist. : Sangameshwar (Muni *et al.*, 1994).

Material Examine/Sightings : Chandrapur Dist. : 1♂, Deserted forest RH, Kolsa in Tadoba-Andhari Tiger Reserve, 05.iv.1996, Coll. P.P. Kulkarni (ZSI. WRC. M/603); Habitat : Its favoured diurnal roost includes old buildings, caves and tunnels, dilapidated buildings, temples etc.

Distribution Elsewhere : Peninsular and NE India and Sri Lanka (Bates and Harrison, 1997 and CAMP Report, 2002).

Status : Bates and Harrison (1997) have listed number of collection localities in India; IUCN Criteria proposed as per CAMP Report (2002): Least Concern (National).

Source : Brosset (1962b), Corbet and Hill (1992), Simmons in Wilson and Reeder (1993), Bates and Harrison (1997) and Talmale (2007).

Remarks : *Hipposideros lankadiva* is a high flyer and may be seen in the early evening in the company of *Pipistrellus* spp. It is also known to share the roost with *Taphozous melanopogon* and *Megaderma lyra* (Khajuria and Ghosal, 1981).

Family MEGADERMATIDAE

Family Megadermatidae is represented by two species under the only Genus *Megaderma* in Maharashtra State.

Genus *Megaderma*

Genus *Megaderma* is represented by two species/subspecies in Maharashtra State.

Key to the species of the Genus *Megaderma*

- Forearm small (52-63 mm), intermediate nose-leaf broad and posterior termination of the nose-leaf rounded
..... *Megaderma spasma horsfieldii*
- Forearm large (60-71 mm), intermediate nose-leaf narrow and posterior termination of the nose-leaf truncated
..... *Megaderma lyra lyra*

***61. *Megaderma spasma horsfieldii* Blyth**

1863. *Megaderma horsfieldi* Blyth Cat. *Mammal. Mus. Asiat. Soc. Bengal*, p. 23 (India).

2005. *Megaderma spasma horsfieldii* : Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 380.

Common Name : Lesser False Vampire bat.

Diagnostic Characters : A medium sized bat with large ears, nose-leaf and tragus, but without externally visible tail; dorsal colour bluish slaty, ventral parts paler; forearm 52-63 cm; posterior termination of nose-leaf rounded.

Locality : Reported from Amaravati Dist. : Tarubanda in Kolkaz area, Melghat Tiger Reserve (Pradhan, 2005); Chandrapur Dist. : Chandrapur

(Bates and Harrison, 1997); Kolhapur Dist. : Pundre (Talmale, 2007); Mumbai Suburban Dist. : Borivali, Kanheri, Sanjay Gandhi National Park (Brosset, 1962b; Topal, 1974; Yazdani *et al.*, 1992); Pune Dist. : Khandala (Brosset, 1962b). Ratnagiri Dist. : Rajapur, Thane Dist. : Thane (Bates and Harrison, 1997).

Material Examined/Sightings : Amaravati Dist. : 2♂♂, 3♀♀, Tarubanda RH and around Kolkaz, Melghat Tiger Reserve, 14.ii.1992, Coll. M.S. Pradhan; (ZSI.WRC. M/546); Kolhapur Dist.: 1♀, RH Pundre and around, 21.ii.1989, Coll. M.S. Pradhan, (ZSI.WRC. M/502).

Habitat : The species is colonial in habit inhabiting old ruins, houses, temples wells etc.

External Distribution : Throughout India.

Status : The distribution of the species is rather patchy and occurrence rare. IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Brosset (1962b), Cobert and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997), Alfred *et al.* (2002) and Talmale (2007).

Remarks : Nil.

*62. *Megaderma lyra lyra* Geoffroy

1810. *Megaderma lyra* E. Geoffroy. *Ann. Mag. Hist. Nat. Paris*, 15 : 190.

1997. *Megaderma lyra lyra* : Bates and Harrison, *Bats of Indian Subcontinent* : 51-54.

Common Name : Greater false vampire bat.

Diagnostic Characters : Similar to *Megaderma spasma* but larger in size, forearm 60-70 mm, posterior termination of nose-leaf truncated, dorsal colour slaty grey.

Locality : Reported from Aurangabad Dist. : Aurangabad, Ellora, Ajanta (Brosset, 1962b); Bhandara Dist. : Bhandara (Bates and Harrison, 1997), Samewada vill. Tal. Lakhani (Talmale, 2007); Chandrapur Dist. : Bulapur, Chichpalli (Wroughton and Ryley, 1913), Sindewahi (Talmale, 2007), Wamanpalli (Goatly, 1963);

Dhule Dist. : Ghodisgaon (Wroughton, 1912a); Mumbai Dist. : Mumbai (Sinha, 1970); Mumbai Suburban dist. : Borivali, Kanheri, Powai lake (Brosset, 1962b), Sanjay Gandhi National Park (Yazdani *et al.*, 1992); Nagpur Dist. : Nagpur (Sinha, 1980), Pipariya, Ranidoh in Pench National Park (Pradhan, 2004); Nashik Dist. : Nashik (Sinha, 1980); Pune Dist. : Pune (Bates and Harrison, 1997); Ratnagiri Dist. : Khed (Wroughton, 1916a), Ratnagiri (Sinha, 1980); Satara Dist. : Parul vill. near Mahabaleshwar (Talmale, 2007); Sindhudurg Dist. : Vijaydurg (Bates and Harrison, 1997).

Material Examined/Sightings : Bhandara Dist.: 3♂♂, 2♀♀, Deserted house at Samewada vill. Tal. Lakhani, 19.ix.2004, Coll. S.S. Talmale (ZSI.WRC. M/695); Chandrapur Dist. : 2♂♂, Deserted Forest RH Kolsa, Tadoba-Andhari Tiger Reserve, 15.iv.1996, Coll. P.P. Kulkarni, (ZSI.WRC. M/608); 1♀, Sindewahi, 17.x.2005, Coll. N.H. Dhoble (ZSI.WRC. M/730, Donated specimen); Nagpur Dist. : 2♂♂, Ranidoh, Pench National Park, 03.iii.1999, Coll. M.S. Pradhan, (ZSI.WRC. M/617); 2♂♂, 1♀, Piparia and around, PNP, 26.ii.1999, Coll. M.S. Pradhan, (ZSI.WRC. M/616); Satara Dist. : 2♀♀, Cave near Parud vill., Mahabaleshwar, 06.i.1985, Coll. R.H. Kamble (ZSI.WRC. M/342).

Habitat : Similar to that of *Megaderma spasma*.

External Distribution : Throughout India.

Status : Fairly distributed and common bat species. IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Brosset (1962b), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997), Alfred *et al.* (2002) and Talmale (2007).

Remarks : Nil.

Family RHINOPOMATIDAE

Tail long, projecting beyond the edge of interfemoral membrane for more than one half its length, free portion slender, thread like. Ears joined over forehead by membrane, tragus well

developed. Second and third digits of each wing have two distinct bony phalanges.

Family Rhinopomatidae consists of a single genus *Rhinopoma* E. Geoffroy.

Genus *Rhinopoma*

Genus *Rhinopoma* is represented by two species in Maharashtra State.

Key to the species of the genus *Rhinopoma*

- Larger bat, length of forearm more than 64.0 mm; tail usually shorter than forearm; sagittal crest prominent; rostrum with narial swelling not especially pronounced
..... *Rhinopoma microphyllum*
- Smaller bat, length of forearm less than 63.0 mm; tail usually longer than forearm; sagittal crest low; rostrum with prominent globose narial swelling *Rhinopoma hardwickii*

63. *Rhinopoma microphyllum kinneari* (Wroughton)

1912. *Rhinopoma kinneari* Wroughton, *J. Bombay nat. Hist. Soc.*, 21 : 767.

2005. *Rhinopoma microphyllum kinneari*: Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 381.

Common Name : Greater Mouse-tailed Bat.

Diagnostic Characters : Medium sized bat with average forearm length 66.55 mm. Tail length about 49.76 mm, shorter than forearm length. Ears well developed with bluntly sickle-shaped tragus. Pelage short and fine; grey brown on dorsal surface and paler below; lower back and the posterior lower abdomen naked. Skull with an average condylo-canine length of about 17.4 mm. Rostrum relatively small and the nasals not conspicuously inflated. Upper tooth row length (cm³) about 6.7 mm. Upper incisor (i²) minute. Single upper premolar (pm⁴), m¹ and m² about equal in size. Lower incisors tricuspidate, m₃ reduced.

Locality : Reported from Dhule Dist. : Songir, Bhamer; Mumbai Dist. : Mumbai; Nagpur Dist. : Nagpur; Osmanabad Dist. : Osmanabad (Khajuria, 1953; Bates and Harrison, 1997).

Material Examined/Sightings : Specimens available at Institute of Science Museum, Nagpur were studied (Talmale, 2007).

Habitat : Xerophilous species inhabits caves, ruins, mosques, temples, tunnels and old houses (Schlitter and Qumsiyeh, 1996).

External Distribution : Andhra Pradesh, Bihar, Delhi, Gujarat, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh (Bates and Harrison, 1997).

Status : Rare, IUCN criteria proposed as per CAMP Report 2002: Least Concern (National).

Source : Brosset (1962a), Corbet and Hill (1992), Bates and Harrison (1997), Alfred *et. al.* (2002), Simmons in Wilson and Reeder (2005) and Talmale (2007).

Remarks : Nil.

*64. *Rhinopoma hardwickii hardwickii* Gray

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

2005. *Rhinopoma hardwickii hardwickii* : Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 380-381.

Common Name : Lesser Mouse-tailed Bat.

Diagnostic Characters : Medium sized bat with forearm length about 58.34 mm. Tail length in average 63.57 mm, longer than forearm. A small but well defined triangular dermal ridge present on the snout. Pelage uniform light grey brown on the back and slightly pale on the belly, Lower back and belly naked. Upper incisor minute. Single upper premolar (pm⁴) present. Lower incisors tricuspidate. First lower premolar (pm₂) oval shaped.

Locality : Reported from Chandrapur Dist. : Tadoba-Andhari Tiger Reserve (Pradhan, 2006).

Material Examined/Sightings : Chandrapur Dist. : 1♂, Cave, back of guest house, in compartment No. 91, Tadoba-Andhari Tiger Rserve, 06.iv.1996, Coll. P.P. Kulkarni (ZSI.WRC. M/607).

Habitat : Favours dry and semi-desert areas, sub-tropical dry evergreen forests and tropical

thorn forests. Diurnal roost include caves, deserted houses ruins and cracks amongst boulders, temples. Diet includes moths, beetles, neuropterans etc. (Bates and Harrison, 1997).

External Distribution : Throughout India.

Status : Rare, IUCN criteria proposed as per CAMP Report 2002: Least Concern (National);

Source : Brosset (1962a), Corbet and Hill (1992), Bates and Harrison (1997), Alfred *et. al.* (2002), Simmons in Wilson and Reeder (2005), Pradhan (2006) and Talmale (2007).

Remarks : Collection from Tadoba-Andhari Tiger Reserve, Dist. Chandrapur reported by Pradhan (2006) is an authentic collection record from Maharashtra State.

Family EMBALLONURIDAE

Subfamily TAPHOZOINAE

Subfamily Taphozoinae under family Emballonuridae is represented by two genera *Saccolaimus* and *Taphozous*, in Maharashtra State.

Key to the genera of the family EMBALLONURIDAE

- Radio-metacarpal pouch absent, lower lip with a deep median groove, anterior upper premolar large, tympanic bullae complete and postero-ventral face of basisphenoid in contact with tympanic bulla..... *Saccolaimus*
- Radio-metacarpal pouch present, lower lip not or scarcely grooved, anterior upper premolar normal, tympanic bullae not complete and posteroventral face of basisphenoid not in contact with tympanic bulla *Taphozous*

Genus *Taphozous*

In India, Genus *Taphozous* is represented by five species, of which only three have been reported from Maharashtra State.

Key to the species/subspecies of Genus *Taphozous*

1. No gular sac in either sex, most of males have

a black beard
..... *Taphozous melanopogon melanopogon*

- Gular sac present at least in males; No black bearded in either sex 2
- 2. Smaller forearm (forearm less than 65.0 mm).
..... *Taphozous longimanus longimanus*
- Larger forearm (forearm more than 70 mm)
..... *Taphozous nudiventris kachhensis*

*65. *Taphozous melanopogon melanopogon* Temminck

1841. *Taphozous melanopogon* Temminck, *Monographies de mammalogie* tome 2. Leiden & Paris, 392 pp. Pl. xxvi–lxx.

2002. *Taphozous melanopogon melanopogon*: Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper* No., 199 : 33.

Common Name : Black Bearded Tomb Bat.

Diagnostic Characters : Medium sized insect eating brown coloured bat with tail emerging from the upper surface of the inter-femoral membrane. Gular sac rudimentary or absent in males and absent in females. Forearm less than 70 mm, anterior upper margin of zygoma flat and inferior ante-orbital process well developed.

Locality : Reported from Akola Dist. : Narnala (Bates and Harrison, 1997); Amaravati Dist. : Chikhaldara in Melghat Tiger Reserve (Pradhan, 2005); Aurangabad Dist. : Ajanta, Aurangabad (Bates and Harrison, 1997), Ellora, Pittalkora (Brosset, 1962a), Daulatabad (Bates and Harrison, 1997); Mumbai Suburban Dist. : Kanheri caves in Sanjay Gandhi National Park (Brosset, 1962a); Nagpur Dist. : Nagpur (Naidu and Murhar, 1979); Raigad Dist. : Alibag (Brosset, 1962a); Ratnagiri Dist. : Rajapur; Satara Dist. : Helwak (Bates and Harrison, 1997).

Material Examined/Sightings : Amaravati Dist. : 4♂♂, 3♀♀, Gavilgad Fort near Chikhaldara in Melghat Tiger Reserve, 19.xii.1992, Coll. P.P. Kulkarni, (ZSI.WRC. M/ 580).

Habitat : A colonial species inhabiting the caves, old mines, tunnels, temples etc.

External Distribution : Throughout India.

Status : IUCN criteria proposed as per CAMP Report (2002): Least Concern (National).

Source : Brosset (1962a), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005); Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

66. *Taphozous longimanus longimanus
Hardwicke

1825. *Taphozous longimanus* Hardwicke. *Trans Lin. Soc. Lond.*, **14** : 525.

2002. *Taphozous longimanus longimanus* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, **199** : 33.

Common Name : Long-winged tomb bat.

Diagnostic Characters : A brown coloured medium sized insect eating bat with broad tragus. Gular sac well developed in males, while it is represented by a rudimentary fold of naked skin in females. Inner margin of ear smooth, lower lip scarcely grooved.

Locality : Reported from Amaravati Dist. : Amaravati (Bates and Harrison, 1997); Buldhana Dist. : Lonar (Pradhan and Talmale, 2008); Chandrapur Dist. : Chandrapur (Wroughton and Ryley, 1913); Mumbai Dist. : Mumbai; Mumbai Suburban Dist. : Bandra; Nagpur Dist. : Nagpur (Bates and Harrison, 1997); Pune Dist. : Khandala (Brosset, 1962a), Wadgaon (Talmale, 2007); Raigad Dist. : Elephanta Caves (Brosset, 1962a); Raigad Fort area (Korad, 2005); Ratnagiri Dist. : Ratnagiri (Brosset, 1962a), Khed (Wroughton, 1916a); Satara Dist. : Panchgani; Sindhudurg Dist. : Malvan (Bates and Harrison, 1997); Thane Dist. : Arnala (Brosset, 1962a).

Material Examined/Sightings : Buldana Dist. : 1 ♂, Old deserted temple, Lonar lake, 10.xi.1992, Coll. K.J. Kunte, (ZSI.WRC. M/ 711, Donated specimen); Pune Dist. : 1 ♂, Wadgaon, 29.ix.1965, Coll. B.S. Lamba, (ZSI.WRC. M/ 37); Raigad Dist. : 1 ♂, 1 ♀, Raigad Fort area, Year 2004, Coll. V.S. Korad, (ZSI.WRC.M/750, Donated specimen).

Habitat : A colonial species inhabiting old ruins, caves, tree holes etc.

External Distribution : Throughout India.

Status : IUCN criteria proposed as per CAMP Report (2002): Least Concern (National).

Source : Brosset (1962a), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

67. *Taphozous nudiventris kachhensis Dobson

1872. *Taphozous kachhensis* Dobson, *J. Asiat. Soc. Bengal*, **41**(2) : 221.

2005. *Taphozous nudiventris kachhensis* : Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. **I** : 384.

Common Name : Naked-rumped Tomb Bat.

Diagnostic Characters : Medium sized bat with an average forearm length 74 mm. It is characterized by its naked rump. Prominent gular sac present in males, additionally deep circular gland in the upper part of the chest present; In females the gular sac less visible and the gland absent. Ears long and rather narrow, blackish brown in colour and semi translucent. Pelage on dorsal surface dark brown, paler brown on the ventral surface. Radio-metacarpal pouch moderately developed.

Locality : Reported from Aurangabad Dist.: Ajanta (Wroughton, 1912a, Brosset, 1962a), Aurangabad, Ellora (Brosset, 1962a). Latur Dist.: Kharosa caves, Tal. Nilanga (Talmale, 2007).

Material Examined/Sightings : Latur Dist. : 1 ♂, 1 ♀, Kharosa caves, Tal. Nilanga, 26.ix.2006, Coll. D.B. Bastawade, (ZSI.WRC. M/759).

Habitat : Colony generally of a few individuals, prefers arid and semi-arid areas.

External Distribution : Widespread in throughout India.

Status : IUCN criteria proposed as per CAMP Report (2002): Least Concern (National), (For *Taphozous nudiventris*).

Source : Brosset (1962a), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005);

Bates and Harrison (1997), Alfred *et. al.* (2002) and Talmale (2007).

Remarks : Nil.

Genus *Saccolaimus*

Genus *Saccolaimus* is represented by only one species/subspecies in Maharashtra State.

*68. *Saccolaimus saccolaimus crassus* (Blyth)

1844. *Taphozous crassus* Blyth, *J. Asiat. Soc. Bengal*, 13 : 491.

2005. *Saccolaimus saccolaimus crassus*: Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 382.

Common Name : Naked-rumped Pouched Bat or Pouch-bearing Tomb Bat.

Diagnostic Characters : A large brown coloured *Saccolaimus* subspecies with lower lip divided by a deep, narrow groove; legs and feet naked; interfemoral membrane naked except near the point of origin of tail; gular sac present, larger in males; radio metacarpal pouch absent; ear margin smooth; Tympanic bullae complete. Anterior upper premolar large, covering ½ crown area of posterior premolar.

Locality : Reported from Mumbai Dist. : Mumbai (Brosset, 1962a); Sindhudurg Dist. : Malvan (Talmale, 2007).

Material Examined/Sightings : Specimen was studied from Sindhudurg Dist. (Malvan, Konkan) available at BNHS collection (Talmale, 2007).

Habitat : Though not much information is available about its habit and habitat, the species is reported to inhabit the caves, ruins of tunnels, mine, temples etc.

External Distribution : Throughout India; Status: Though not rare, it is rather difficult to collect, IUCN criteria proposed as per CAMP Report 2002: Least Concern (National, for *Taphozous saccolaimus*).

Source : Brosset (1962a), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005),

Bates and Harrison (1997), Alfred *et. al.* (2002) and Talmale (2007).

Remarks : Nil.

Family MOLOSSIDAE

Subfamily MOLOSSINAE

Subfamily Molossinae under family Molossidae is represented by two genera in Maharashtra State.

Key to the genera of the family MOLOSSIDAE

- Inner margin of ears have a common point of origin on the forehead, tragus broadened; anterior palatal emargination large, extending posteriorly beyond incisor roots ... *Tadarida*
- Inner margin of ears have separate points of origin on the forehead which are joined by a narrow band of skin ; tragus small and quadrate; no anterior palatal emargination ...
..... *Chaerephon*

Genus *Tadarida*

Genus *Tadarida* is represented by a single species and subspecies *Tadarida aegyptiaca thomasi* Wroughton from Maharashtra State.

*69. *Tadarida aegyptiaca thomasi* Wroughton

1919. *Tadarida thomasi* Wroughton *J. Bombay nat. Hist. Soc.*, 26 : 732.

2005. *Tadarida aegyptiaca thomasi*: Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 449.

Common name : Egyptian Free-tailed bat.

Diagnostic Characters : This is a small-sized molossid bat with average forearm length of 48.2 mm. (46.0-52.3 mm). Tail stout projecting conspicuously beyond the narrow interfemoral membrane. Muzzle broad and thick. Upper lip is often wrinkled. Ears large, thick rounded and separated on the forehead. Tragus is small, while antitragus is usually large and well developed. Tuft of hairs present on the dorsal side of the feet. Fur is soft, dense and short. The dorsal surface is dark buffy brown to clove brown, while the ventral parts are paler. The skull with an average condylo-

canine length of 17.9 mm (17.1-18.8 mm) is marked by the presence of the unfused premaxillae leaving a larger palatal emargination extending posteriorly beyond incisor roots. Two pairs of lower incisors present.

Locality : Reported from Aurangabad Dist. : Aurangabad (Brosset, 1962c); Pune Dist. : Pune (Korad and Yardi, 2004a), Sinhagad (Talmale, 2007), Khondai, Tal. Mulshi (Korad, 2005).

Material Examined/Sightings : Pune Dist.: 1 ♂, AFMC main building, 12.i.1996, Coll. R. Srivastava, (ZSI.WRC., M/598, Donated specimen), 1 ♀ & 1 skull only, Khondai, Tal. Mulshi, 07.vii.2002, Coll. V.S. Korad, (ZSI. WRC, M/755, Donated specimen).

Habitat : The species has been reported to roost in the crevices/cracks in caves, cliff faces, rocks, boulders, walls and deserted stone buildings etc. A colonial species with size of the colonies varying between single individual to more than thousand individuals (Bates and Harrison (1997).

External Distribution : Throughout India (Corbet and Hill, 1992).

Status : Bates and Harrison (1997) have reported the distribution of the species as world-wide with number of colonies in India. As per these authors the status of the species is common and widespread; IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National, For *Tadarida aegyptiaca*).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : The individuals of this species are strong, swift and high flyers. They fly with their ears facing downwards. They emerge out of their roosts about half an hour after the sunset. They hunt far away from the roosting sites at the height of 31 meters to 77 meters (Bates and Harrison (1997).

Genus *Chaerephon*

Genus *Chaerephon* is represented by only one species in Maharashtra State.

*70. *Chaerephon plicatus plicatus* (Buchanan)

1800. *Vespertilio plicatus* Buchanan, *Trans. Linn. Soc. London*, 5 : 261.

2005. *Chaerephon plicatus plicatus* : Simmons, In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 334.

Common Name : Wrinkle-lipped Free-tailed Bat.

Diagnostic Characters : Smallest species of genus *Chaerephon* with forearm length ranging between 46.5 to 48.5 mm (Korad and Yardi, 2004a). Ears connected by a membrane across the forehead. Pelage soft, dense and very short; Dorsal surface usually dark clove brown, paler on the ventral surface. Skull marked by the fusion of the premaxillae and isolation of the two palatal foramina; Condylar-canine length ranges between 16.0 to 16.5 mm (Korad and Yardi, 2004a); Rostrum narrow and more rounded than that of *T. aegyptiaca*; Distinct supraorbital process present. Upper toothrow length (cm³) ranges from 6.5 to 7.0 mm (Korad and Yardi, 2004a); The first upper premolar (pm²) situated in the toothrow.

Locality : Reported from Pune Dist. : Karla (Bates and Harrison, 1997), Pune (Korad and Yardi, 2004a).

Material Examined/Sightings : Pune Dist. : 1 ♀, Nanawada, Pune city, 04.viii.2002, Coll. V. S. Korad and K.D. Yardi (ZSI.WRC., M/640, Donated specimen).

Habitat : This subspecies has been reported to roost in the caves and deserted stone building during day time; Colony size varies between 200 to 500 individuals; The bats select warmer parts of the habitats for its diurnal roost (Bates and Harrison, 1997).

External Distribution : Andhra Pradesh, Goa, Madhya Pradesh, Meghalaya, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal (Bates and Harrison, 1997; Chakraborty *et al.*, 2004a).

Status : The species has been reported from many localities in India, IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National).

Source : Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997), Alfred *et al.* (2002) and Talmale (2007).

Remarks : This species was included under the genus *Tadarida* Rafinesque and subgenus *Chaerephon* Dobson by Ellerman and Morrison-Scott (1951, 1966), Corbet and Hill (1992), Bates and Harrison (1997), Das (2003) and many others. However, following the revisionary work of Freeman (1981), Koopman (1993), Alfred *et al.* (2002, 2006a) and Simmons in Wilson and Reeder (2005) retained the species under independent Genus *Chaerephon* Dobson.

Family VESPERTILIONIDAE

Vespertilionid bats possess tragus but no nose-leaf, the tail is approximately as long as the forearm and is enclosed entirely in the interfemoral membrane.

Four subfamilies have been recorded from the Maharashtra State.

Key to the subfamilies of the family VESPERTILIONIDAE

1. Ears large and funnel shaped KERIVOULINAE
- Ears normal and not funnel shaped 2
2. Second phalanx of third finger very much elongated, nearly three times as long as First MINIOPTERINAE
- Second phalanx of third finger normal and not elongated 3
3. Cheek-teeth six on each side of upper and lower jaw MYOTINAE
- Cheek-teeth less than six on each side of upper and lower jaw VESPERTILIONINAE

Subfamily VESPERTILIONINAE

Six genera under subfamily Vespertilioninae have been reported from Maharashtra State.

Key to the genera of the subfamily VESPERTILIONINAE

1. Upper premolars 2–2 2
- Upper premolars 1–1 5
2. Second upper incisor (i^3) always present ... 3
- Second upper incisor (i^3) absent or when present, minute *Scotozous*
3. Braincase relatively high, rounded *Pipistrellus*
- Braincase relatively not high and rounded 4
4. Anterior upper premolar (pm^2) much reduced *Hypsugo*
- Anterior upper premolar (pm^2) not reduced, equal to i^3 in crown area *Falsistrellus*
5. Upper incisors 1–1 *Scotophilus*
- Upper incisors 2–2 *Hesperoptenus*

Tribe Eptesicini

Genus *Hesperoptenus*

Subgenus *Milithronycteris*

Subgenus *Milithronycteris* under genus *Hesperoptenus* is represented by a single species, *Hesperoptenus tickelli* (Blyth) in Maharashtra State.

*71. *Hesperoptenus (Milithronycteris) tickelli* (Blyth)

1851a. *Nycticejus tickelli* Blyth, *J. Asiat. Soc. Bengal*, 20 : 157.

2005. *Hesperoptenus tickelli* : Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 457-458.

Common Name : Tickell's Bat.

Diagnostic Characters : A rather large-sized (Forearm about 55.0 mm with a range of 50.0-60.4 mm) vespertilionid bat; colour in the shades varying from light greyish yellow to bright golden brown with rufous tinge, head greyish; ears oval; wing membrane blackish; wings from base of the toes; small pad under thumb; second upper incisor

small and located at the base of first; muzzle broad and blunt, swollen on sides; crescent-shaped tragus is about half the length of pinna.

Locality : Reported from Mumbai Dist. : Mumbai (Brosset, 1962c); Mumbai Suburban Dist. : Andheri, Salsette (Talmale, 2007); Pune Dist. : Pune (Brosset, 1962c), Kamshet (Talmale, 2007); Thane Dist. : Chahade (Bates and Harrison, 1997).

Material Examined/Sightings : Specimens were studied from Mumbai Dist. (Andheri Salsette, Churchgate, Bombay = Mumbai); Pune Dist. (Kamshet, Pune) available at BNHS collection (Talmale, 2007).

Habitat : Essentially a sub-montane species which may migrate to the plains in suitable season; live singly or in small parties concealing very well amongst the foliage, a known high flyer bat species.

External Distribution : Throughout India.

Status : The species has been reported from many localities in India, IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

Tribe Nycticeiini

Genus *Scotophilus*

Genus *Scotophilus* is represented by two species/subspecies in Maharashtra State.

Key to the species and subspecies of the Genus *Scotophilus*

- Size larger, forearm, on average, more than 55.0 mm *Scotophilus heathii heathii*
- Size smaller, forearm, on average, less than 55.0 mm. *Scotophilus kuhlii kuhlii*

*72. *Scotophilus kuhlii kuhlii* Leach

1822. *Scotophilus kuhlii* Leach. Trans. Linn. Soc. Lond., 13 : 723.

2003. *Scotophilus kuhlii kuhlii*: Das, Rec. zool. Surv. India, Occ. Paper No., 217 : 98-99.

Common Name : Lesser Asiatic Yellow House Bat.

Diagnostic Characters : Ears small, rounded at tips, tragus semi-lunar, markedly convex on posterior border, Very much similar to the Asiatic greater yellow house bat but smaller in size with forearm less than 55.0 mm. Tip of tail free, fur short and dense, dorsal colour olive-brown, while ventral colour creamy white with tinge of red.

Locality : Reported from Amaravati Dist. : Sipna river near Semadoh in Melghat Tiger Reserve (Pradhan, 2005); Aurangabad Dist. : Ajanta (Wroughton, 1912a), Aurangabad (as *S. temmincki*, Brosset, 1962c); Chandrapur Dist. : Chandrapur (Bates and Harrison, 1997); Jalgaon Dist. : Bodwad (Wroughton, 1912a); Mumbai Dist. : Mumbai (as *S. temmincki*, Brosset, 1962c); Nagpur Dist. : Nagpur (as *S. wroughtoni*, Khajuria, 1953); Pune Dist. : Pune (Korad and Yardi, 2004a); Satara Dist. : Panchgani (as *S. wroughtoni*, Khajuria, 1953), Satara (Brosset, 1962c); Thane Dist. : Pareli (Thomas, 1897).

Material Examined/Sightings : Amaravati Dist. : 1♂, 2♀♀, Sipna river near Semadoh in Melghat Tiger Reserve, 6.ii.1992, Coll. M.S. Pradhan, (ZSI.WRC, M/ 542); 1♂, Wetale, Tal. Khed, 08.v.2003, Coll. V.S. Korad, (ZSI.WRC, M/754, Donated specimen).

Habitat : Specimens of this species can lead solitary and or colonial life in the crevices of old buildings and ruins. They also prefer arboreal life.

External Distribution : Throughout India.

Status : It has been reported from many localities in India; IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

***73. *Scotophilus heathii heathii* Horsfield**

1831. *Scotophilus heathii* Horesfield, *Proc. Zool. Soc. Lond.*, 113.
2005. *Scotophilus heathii heathii*: Simmons, In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 466.

Common Name : Greater Asiatic Yellow House Bat.

Diagnostic Characters : A robust bat with small transversely ridged ears, rounded at tips, tragus semi-lunar, markedly convex on posterior border, larger in size with forearm more than 55.0 mm. Long tail embodied in interfemoral membrane with terminal end of 2-3 mm free. Pelage on back dark to chestnut brown. Ventral parts lemon-yellow to orange-yellow in colour.

Locality : Reported from Amaravati Dist. : Semadoh in Melghat Tiger Reserve (Pradhan, 2005); Aurangabad Dist. : Ajanta (Brosset, 1962c); Chandrapur Dist. : Chandrapur (Bates and Harrison, 1997), Sindewahi (Talmale, 2007), Kolsa in Tadoba-Andhari Tiger Reserve (Pradhan, 2006); Dhule Dist. : Dhule (Bates and Harrison, 1997); Gadchiroli Dist. : Allapalli (Bates and Harrison, 1997); Mumbai Suburban Dist. : Andheri, Bandra (Bates and Harrison, 1997); Nagpur Dist. : Nagpur (as *S. kuhli*, Khajuria, 1953), Sillari in Pench National Park (Pradhan, 2004); Pune Dist. : Pune (Bates and Harrison, 1997), Nira Narsingpur, Tal. Indapur (Talmale, 2007); Raigad Dist. : Elephanta caves (Topal, 1974), Karjat, Poladpur (Korad, 2005); Satara Dist. : Panchgani (as *S. kuhli*, Khajuria, 1953); Thane Dist. : Thane (Brosset, 1962c);

Material Examined/Sightings : Amaravati Dist. : 1♂, 1♀, Semadoh complex, Melghat Tiger Reserve, 07.iv.1994, Coll. M.S. Pradhan, (ZSI.WRC, M/ 590); Chandrapur Dist. : 2♂♂, Kolsa RH, Tadoba-Andhari Tiger Reserve, 18.iv.2000, Coll. P.P.Kulkarni, (ZSI.WRC, M/ 661); Nagpur Dist. : 2♂♂, 2♀♀, Around Sillari RH, Pench National Park, 25.ii.1999, Coll. M.S. Pradhan, (ZSI.WRC, M/ 618); Pune Dist. : 1♀, Nira Narsingpur, Tal. Indapur, 26.i.2003, Coll. V.S. Korad, ((ZSI.WRC, M/753, Donated specimen).

Habitat : Colonial in habit living in old buildings, ruins and trees.

External Distribution : Widely distributed in India.

Status : The species has been reported from many localities in India; IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

Tribe Pipistrellini

Genus *Pipistrellus*

Subgenus *Pipistrellus*

In India, Subgenus *Pipistrellus* under Genus *Pipistrellus* is represented by eight species, of which only six have been reported from Maharashtra State.

Key to the species of the genus *Pipistrellus*

1. Outer upper incisor i^3 minute, not extending beyond cingulum of inner incisor i^2
..... *Pipistrellus kuhli*
- i^3 extends distinctly beyond cingulum of i^2 2
2. Size large, Forearm length 38.0 mm or more *Pipistrellus ceylonicus*
- Size smaller, Forearm length less than 38.0 mm 3
3. Forearm less than 30.0 mm, an average *Pipistrellus tenuis*
- Forearm more than 30.0 mm, an average 4
4. First upper premolar (pm^2) not much intruded from row (usually in toothrow), upper canine clearly separated from second premolar (pm^4) *Pipistrellus pipistrellus*
- pm^2 intruded from row, upper canine and pm^4 closely approximated or in contact 5

5. Supraorbital region distinctly broadened to produce abruptly incurving lateral margins to the anterior part of the postorbital region; rostrum broad, dorsally flattened; palate strongly domed *Pipistrellus javanicus*
- Supraorbital region not especially broadened; rostrum narrow, not dorsally flattened; palate weakly domed *Pipistrellus coromandra*

74. *Pipistrellus (Pipistrellus) pipistrellus
(Schreber)

1774. *Vespertilio pipistrellus* Schreber, *Die Säugethiere*, 1 : 167.
2005. *Pipistrellus pipistrellus*: Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 477.

Common Name : Common Pipistrelle.

Diagnostic Characters : Small sized pipistrelle with forearm length in the range of 29.0-32.0 mm (Korad and Yardi, 2004b). Tail rather short, shorter than the head and body. Pelage fine, dense and silky. Dorsal fur chestnut brown slightly paler ventrally with dark grey/black hair bases; Membranes uniform dark brown. Skull small; Rostrum relatively long and narrow with a shallow median depression. Braincase inflated but less elevated, robust and bulbous. Palate concave and parallel-sided. Coronoid process of each half mandible scarcely elevated above the tip of the lower canine. First upper incisor (i^2) bicuspidate, Second upper incisor (i^3) equal in crown area to i^2 , its height almost attain the level of the secondary cusp of (i^2); Upper canine and second premolar (pm^4) not in contact. pm^2 similar in crown area to i^2 and not much intruded from toothrow.

Locality : Reported from Pune Dist. : Pune City (Korad and Yardi, 2004b). Pune Dist. : Pune City (Korad and Yardi, 2004b).

Material Examined/Sightings : Pune Dist. : 1 unsexed, Bharati Vidyapeeth, Pune, 21.vi.1999, Coll. V.S. Korad and K.D. Yardi, (ZSI.WRC., M/ 631, Donated specimen).

Habitat : This bat is often seen near human settlements, its diurnal roost includes crevices in

wells, clefts or rocks or dry protected holes (Bates and Harrison, 1997). Korad and Yardi (2004b) reported a colony of about 20 bats of adult and subadults roosting behind the wooden notice board of Bharati Vidyapeeth at Pune, Maharashtra.

External Distribution : Assam and Jammu and Kashmir (Bates and Harrison, 1997).

Status : Rare, Isolated distributional record from Maharashtra; IUCN Criteria proposed as per the CAMP Report (2002): Least Concern (National).

Source : Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997), Korad and Yardi (2004b) and Talmale (2007).

Remarks : Nil.

75. *Pipistrellus (Pipistrellus) ceylonicus indicus (Dobson)

1878. *Vesperugo indicus* Dobson. *Cat. Chiroptera Br. Mus.*, : 222.
2005. *Pipistrellus ceylonicus indicus* : Simmons In Wilson and Reeder, *Mammal Species of the World*, 3rd ed., Vol. I : 473-474.

Common Name : Kelaart's Pipistrelle.

Diagnostic Characters : One of the larger pipistrelle with forearm reaching 40.00 mm, ear short and triangular with outer margin straight, tragus with straight inner end, wings from base of toes, post calcarial lobe semicircular, extreme tip of the tail free from membrane. The subspecies can be easily distinguished externally by the deep brown colour of the body.

Locality : Reported from Ahmednagar Dist. : Kopargaon (Talmale, 2007); Amaravati Dist. : Chikhaldara (Brosset, 1962c); Aurangabad Dist. : Ajanta (Brosset, 1962c), Aurangabad (Bates and Harrison, 1997); Buldhana Dist. : Nalganga (Talmale, 2007); Mumbai Dist. : Mumbai (Brosset, 1962c); Mumbai Suburban Dist. : Kanheri (Brosset, 1962c), Bandra, Andheri (Bates and Harrison, 1997); Nagpur Dist. : Nagpur (Bates and Harrison, 1997); Nanded Dist. : Nanded (Bates and Harrison, 1997); Nasik Dist. : Nasik (Brosset,

1962c); Pune Dist. : Pune (Korad and Yardi, 2004a), Junnar (Brosset, 1962c), Lonawala, Karla (Topal, 1974); Ambegaon, Khed (Korad, 2005), Talegaon-Dabhade (Talmale, 2007); Ratnagiri Dist. : Ratnagiri (Wroughton, 1918a), Lanje (Bates and Harrison, 1997); Satara Dist. : Helwak (Wroughton, 1916a), Satara (Brosset, 1962c), Panchgani (Tiwari *et al.*, 1971); Thane Dist. : Thane (Bates and Harrison, 1997).

Material Examined/Sightings : Ahmednagar Dist. : 1♂ young, Kopargaon, 13.x.1973, Coll. M. Baburao, (ZSI.WRC., M/48), Buldana Dist. : 1♂, Nalganga RH, 15.xi.2005, Coll. S.G. Patil, (ZSI.WRC., M/726); Pune Dist. : 1♀, Parvati temple, Pune, 09.vi.1975, Coll. C.B. Prasad, (ZSI.WRC., M/47), 1♀, Ambegaon, Tal. Khed, Dec. 1984, Coll. S. Nalawade, (ZSI.WRC., M/409, Donated specimen), 1♂, Shivajinagar, Pune city, 11.iii.1988, Coll. M.S. Pradhan, (ZSI.WRC., M/543), 1♀, Mahilashram girls school, Pune, 18.i.2000, Coll. V.S. Korad and K.D. Yardi, (ZSI.WRC., M/637, Donated specimen), 1♂, Talegaon-Dabhade, September 2002, Coll. Sanjay Thakur, (ZSI.WRC., M/672, Donated specimen).

Habitat : Colonial in habit living in crevices in wood, building, old ruins, bridges etc. Ectopic species with colony size ranging from single individual to 200. They do not hang but cling to the surface with the help of feet and wing claws. Most common species.

External Distribution : Widely distributed in India.

Status : It has been reported from many localities in India; IUCN Criteria proposed as per the CAMP Report (2002): Least Concern (National).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

76. *Pipistrellus (Pipistrellus) javanicus babu
Thomas

1915. *Pipistrellus babu* Thomas, *J. Bombay nat. Hist. Soc.*, 24(1) : 30.

2005. *Pipistrellus javanicus babu*: Simmons In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 475.

Common Name : Babu's Pipistrelle.

Diagnostic Characters : Medium sized pipistrelle with forearm ranges between 35.0-37.1 mm in length. Dorsal colour sepia brown, cinnamon brown or olive brown with grayish or paler brown tips; Ventral fur paler with darker hair root black. Ears, wing and interfemoral membranes uniform dark brown and essentially naked. Skull robust with condylo-canine length in the range of 12.4-13.2 mm. Supraorbital region distinctly broadened to produce abruptly incurving lateral margins to the anterior part of the postorbital region. Rostrum broad and dorsally flattened, palate broad and concave. First upper incisor (i^2) with scarcely a trace of the secondary posterior cusp. However, this cusp was prominent in the material examined; The second incisor (i^3) large, about three-fourth the height of the inner one. Upper canine has a distinct posterior secondary cusp.

Locality : Reported from Pune Dist. : Pune City (Korad and Yardi, 2004a); Satara Dist. : Panchgani (Khajuria, 1953).

Material Examined/Sightings : Pune Dist. : 1♂, Ferguson college, Pune, 02.viii.1999, Coll. V.S. Korad and K.D. Yardi (ZSI.WRC., M/635, Donated specimen).

Habitat : In Pune, colony size of about 20 individuals, have been located behind the metallic nameplate college building (Korad and Yardi, 2004a).

External Distribution : Assam, Himachal Pradesh, Madhya Pradesh, Sikkim, Uttaranchal, West Bengal (Alfred *et al.*, 2006a) and also from Meghalaya (Sinha, 1999). Assam, Himachal Pradesh, Madhya Pradesh, Sikkim, Uttaranchal, West Bengal (Alfred *et al.*, 2006a) and also from Meghalaya (Sinha, 1999).

Status : It has been reported from many Indian localities; IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Corbet and Hill (1992), Simmons in Wilson and Reeder (2005) and Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

***77. *Pipistrellus (Pipistrellus) coromandra coromandra* (Gray)**

1838. *Scotophilus coromandra* Gray, *Mag. Zool. Bot.*, 2 : 498.

2002. *Pipistrellus coromandra coromandra*: Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 67.

Common Name : Indian Pipistrelle.

Diagnostic Characters : Small-sized pipistrelle but with forearm around 31 mm, dorsal fur blackish brown, hair tips slightly rufescent, belly paler brown, tragus curved forward and bluntly rounded, small calcarial lobe present.

Locality : Reported from Mumbai Dist. : Mumbai (Brosset, 1962c); Mumbai Suburban Dist. : Bandra (Bates and Harrison, 1997); Pune Dist. : Pune (Korad and Yardi, 2004a), Pimpri-Chinchwad (Talmale, 2007); Ratnagiri Dist. : Ratnagiri (Brosset, 1962c); Sindhudurg Dist. : Phonda (Brosset, 1962c); Thane Dist. : Pareli, (Bates and Harrison, 1997).

Material Examined/Sightings : Pune Dist. : 1 ♂, 1 ♀ Pimpri-Chinchwad, Nov. 1993, Coll. S. Nalawade (ZSI.WRC., M/554), 1 ♂, Mahilashram girls school, Pune, 8.iii.2000, Coll. V.S. Korad and K.D. Yardi, (ZSI.WRC., M/639, Donated specimen).

Habitat : Colonial in habit living in crevices of buildings, ruins and bark of trees.

External Distribution : Widely distributed in Peninsular India.

Status : It has been reported from many Indian localities; IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

***78. *Pipistrellus (Pipistrellus) tenuis mimus* Wroughton**

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

2005. *Pipistrellus tenuis mimus*: Simmons In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 479.

Common Name : Least Pipistrelle.

Diagnostic Characters : Small sized pipistrelle bat with forearm between 25.0 to 32.00 mm; fur dense and short; dorsal coloration bistre brown, ventral parts lighter, ears small and scarcely triangular, tragus short and curved forward, wings from base of toes; Condyllocanine length between 9.3-10.7 mm. and M^3-M^3 4.7-5.4 mm.

Locality : Reported from Amaravati Dist. : Chikaldara (Wroughton, 1912c); Chandrapur Dist.: Chandrapur Chinchpali (Wroughton and Ryley, 1913); Jalgaon Dist. : Bodwad (Wroughton, 1912a); Mumbai Dist. : Mumbai (Brosset, 1962c); Nanded Dist. : Nanded (Gopalkrishna and Sapkal, 1987); Pune Dist. : Pune (Brosset, 1962c, Korad and Yardi, 2004a), Mulshi-jambe farm (Talmale, 2007); Raigad Dist. : Karnala (Brosset, 1962c); Ratnagiri Dist. : Ratnagiri (Khajuria, 1953); Satara Dist. : Wai, Hiware tank (Talmale, 2007).

Material Examined/Sightings : Pune Dist. : 1 ♂, Shivajinagar, Pune, 10.x.1979, Coll. M. Vasanth, (ZSI.WRC., M/301); 1 ♂, Aundh camp, Pune, 13.viii.1984, Coll. A.D. Gambhir, (ZSI.WRC., M/338, Donated specimen), 1 ♀, Loyala school, Pune, 23.iv.1999, Coll. V.S. Korad and K.D. Yardi, (ZSI.WRC., M/632, Donated specimen), 1 ♂, Mulshi-Jambe farm, September, 2001, Coll. Vivek Gour Brome and Sanjay Thakur, (ZSI.WRC., M/671, Donated specimen); Satara Dist. : 2 ♀ ♀, Rest house Wai, 05.iii.1980, Coll. C.A.N. Rao, (ZSI.WRC., M/337), 1 ♂, Hivare tank, 28.xi.1988, Coll. P.P.Kulkarni, (ZSI.WRC., M/501).

Habitat : Both, solitary and colonial in habit preferring to live in crevices of buildings and rocks.

External Distribution : Widely distributed throughout India.

Status : It has been reported from many localities in India, IUCN Criteria proposed as per CAMP Report (2002): Least Concern (National, for *Pipistrellus tenuis*).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : The name *P. t. mimus* has been retained here following remarks of Bates and Harrison (1997) and Simmons in Wilson and Reeder (2005).

***79. *Pipistrellus (Pipistrellus) kuhlii* (Kuhl)**

1817. *Vespertilio kuhlii* Kuhl, *Die Deutschen Fledermause*, Hanau, p. 14.

2005. *Pipistrellus kuhlii* : Simmons In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 476.

Common Name : Kuhl's Pipistrelle.

Diagnostic Characters : Medium sized pipistrelle with forearm length in the range between 34.8-37.7 mm (Korad and Yardi, 2004b). Ears tall, narrowed at the tips and with the anterior border almost straight above the well-marked basal lobe, tragus tall, inwardly curved, tip narrow. Dorsal pelage dark brown, ventral fur paler with grey tips and dark bases. Tail enclosed in interfemoral membrane is relatively long and sub equal in length to the Head and Body. Wings membranes palid and translucent. Distinct white border on the patagium runs between foot and the 5th digit of each wing. Rostrum long and moderately broad. Dorsal profile of the skull almost straight. Lambdoid crest well developed. Condyllo-canine length in the range of 12.0-13.0 mm (Korad and Yardi, 2004b). First upper incisor (i^2) tall, conical and unicuspid; Second upper incisor (i^3) minute and extends barely beyond the cingulum of i^2 , Upper canine robust (Pl.-86 Ph.-105, marked by arrows); First upper premolar (pm^2) minute, about half or less in the crown area of i^2 .

Locality : Reported from Pune Dist. : Pune City (Korad and Yardi, 2004b).

Material Examined/Sightings : Pune Dist. : 1 ♀,

Ferguson college, Pune, 04.ii.2000, Coll. V.S. Korad and K.D. Yardi, (ZSI.WRC., M/638, Donated specimen).

Habitat : Specimens were collected from behind the wooden board and crevices on the ground floor of an old stony building in Pune city; Colony size 4 to 7 individuals (Korad and Yardi, 2004b).

External Distribution : Assam, Meghalaya, West Bengal (Bates and Harrison, 1997). Assam, Meghalaya, West Bengal (Bates and Harrison, 1997).

Status : Rare, Isolated distributional record from Maharashtra State; IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National).

Source : Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Korad and Yardi (2004b).

Remarks : Nil.

Genus *Scotozous*

Genus *Scotozous* is represented by a single species *Scotozous dormeri* from Maharashtra State.

***80. *Scotozous dormeri* (Dobson)**

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

2005. *Scotozous dormeri* : Simmons In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 479.

Common Name : Dormer's Pipistrelle.

Diagnostic Characters : Medium-sized pipistrelle with forearm around 34 mm (32.7-36.3 mm), tail considerably shorter than head and body. Dorsal fur greyish brown with hair tips almost silvery, belly contrastingly paler brown or lemon yellow in live or freshly killed specimens. Second incisor (I^3) absent or very small when present not extending beyond cingulum of first incisor (I^2).

Locality : Reported from Amaravati Dist. : Chikhaldara (Brosset, 1962c); Aurangabad Dist. : Ajanta (Wroughton, 1912a); Chandrapur Dist. : Chandrapur (Bates and Harrison, 1997); Mumbai

Dist. : Mumbai (Brosset, 1962c); Nanded Dist. : Nanded (Bates and Harrison, 1997); Parbhani Dist. : Gangakhed (Talmale, 2007); Pune Dist. : Pune (Korad and Yardi, 2004a); Ratnagiri Dist. : Mandhangadh (Talmale, 2007); Thane Dist. : Pareli, (Wroughton, 1899), Vasai (Bates and Harrison, 1997).

Material Examined/Sightings : Parbhani Dist. : 1 ♀, RH Gangakhed, 25.viii. 1971, Coll. K.R. Rao, (ZSI.WRC., M/451), Pune Dist. : 1 ♀, St. Hilda school, Pune, 04.vi.1999, Coll. V.S. Korad and K.D. Yardi, (ZSI.WRC., M/634, Donated specimen); Ratnagiri Dist. : ♂, RH Mandangadh, 13.viii.1987, Coll. R. M. Sharma, (ZSI.WRC., M/448).

Habitat : A gregarious species. Colonial habit with colony size ranging from 2 to 24. It is generally found in the close vicinity or in the midst of human habitations. Roost sites include holes and crevices of buildings, ruins and bark of large trees.

External Distribution : Widely distributed in Peninsular India.

Status : It has been reported from many Indian localities; IUCN Criteria proposed as per CAMP Report (2002) : Least Concern (National, for *Pipistrellus dormeri*).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Ellerman and Morrison-Scott (1951) have accommodated *dormeri* under subgenus *Scotozous* of the genus *Pipistrellus*. Most of the recent workers followed the same view (Brosset, 1962c, Chakraborty, 1983, Bates and Harrison, 1997 and many others). However, Corbet and Hill (1992), Agrawal *et al* (1992), Simmons in Wilson & Reeder (2005) thought that *dormeri* should have its own genus and kept under genus *Scotozous*. Same view has been followed here.

Tribe Vespertilionini

Genus *Falsistrellus*

Genus *Falsistrellus* is represented in India by single species, *Falsistrellus affinis*.

*81. *Falsistrellus affinis* (Dobson)

1871. *Vesperugo (Pipistrellus) affinis* Dobson, *Proc. Asiat. Soc. Bengal*, : 213.

2005. *Falsistrellus affinis* : Simmons In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 485.

Common Name : Chocolate Pipistrelle/
Chocolate Bat.

Diagnostic Characters : Large sized pipistrelle with forearm length ranging between 38.5-40.0 mm (Korad and Yardi, 2004a). Pelage soft, dense and relatively long. Dorsum dark brown with pale grey tips on some hairs give slightly grizzled appearance, ventral surface slightly paler than the back. Ears, short and broad at the base with rounded tip, tragus long, broad and inwardly curved. Skull with condylo-canine length in the range of 13.5-14.0 mm (Korad and Yardi, 2004a). Second upper incisor (i^3) bicuspid and well developed nearly equal to i^2 in length. First upper premolar (pm^2) equal to i^3 in crown area and slightly displaced internally. Upper canine not in contact with second upper premolar (pm^4). First lower premolar (pm_2) situated in toothrow and about two-thirds the crown area and height of second (pm_4).

Locality : Reported from Nanded Dist. : Nanded (Pathak and Sharma, 1969); Pune Dist. : Pune (Korad and Yardi, 2004a).

Material Examined/Sightings : Pune Dist. : 1 ♀, Wadia college, Pune, 10.iv.2000, Coll. V. S. Korad and K.D. Yardi, ((ZSI.WRC, M/636, Donated specimen).

Habitat : Its diurnal roost includes crevices, roofs or behind the wooden shelter in old stony buildings; Adult male and female living in the same colony (Korad and Yardi, 2004a).

External Distribution : Kerala, Tamil Nadu, Uttaranchal, West Bengal (Das, 2003, Alfred *et al.*, 2006).

Status : It has been reported from many Indian localities; IUCN Criteria proposed as per CAMP Report (2002) : Near Threatened (National).

Source : Corbet and Hill (1992), Bates and

Harrison (1997), Korad and Yardi, (2004a) and Simmons in Wilson and Reeder (2005).

Remarks : Corbet and Hill (1992), Bates and Harrison (1997) placed *affinis* population under the genus *Pipistrellus*. Simmons in Wilson and Reeder (2005) recognized the species under the genus *Falsistrellus*. The same view has been followed here.

Genus *Hypsugo*

In India Genus *Hypsugo* represents two species of which only *Hypsugo savii* occurs in Maharashtra State.

*82. *Hypsugo savii austenianus* Dobson

1871. *Pipistrellus austenianus* Dobson, *Proc. Asiat. Soc. Bengal*, : 213.

2005. *Hypsugo savii austenianus* : Simmons In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 491-492.

Common Name : Savi's Pipistrelle / Godwin-Austen's Bat.

Diagnostic Characters : Medium sized subspecies with silky, soft, uniformly dark brown dorsal fur. Ventral surface paler with dark hair bases. Ear large with broadly rounded tips, tragus broad. The snout, ears and wing membranes uniformly dark brown. Forearm length in the range of 35.8–36.7 mm (Korad and Yardi, 2004b); Tail significantly shorter than the head and body length. Braincase low, flat and elongate. Rostrum long, basal pits shallow or lacking. First upper incisor (i^2) short, broad and bicuspidate. Second incisor (i^3) half or more in height to i^2 , but equal in crown area. First upper premolar (pm^2) little reduced in crown area, about two-third that of i^2 ; Canine and second premolar (pm^4) are in contact. First lower premolar (pm_2) reduced, about half or less the crown area of the second (pm_4) and about two-third of its height.

Locality : Reported from Pune Dist. : Pune city (Korad and Yardi, 2004b).

Material Examined/Sightings : Pune Dist. : 1 ♀, St. Hilda school, Pune, 04.vi.1999, Coll. V.S.

Korad and K.D. Yardi, (ZSI.WRC., M/633, Donated specimen).

Habitat : Two isolated males were collected from Pune city hiding behind the nameplate fitted on the stony wall of old building in the premises of Ferguson college (Korad and Yardi, 2004b).

External Distribution : Meghalaya (Bates and Harrison, 1997); Jammu and Kashmir (Chakraborty, 1983); Punjab (Neuhauser, 1970).

Status : Rare, Isolated distributional record from Maharashtra State; IUCN Criteria proposed as per CAMP Report (2002) : Vulnerable (National).

Source : Corbet and Hill (1992), Bates and Harrison (1997), Korad and Yardi, 2004b) and Simmons in Wilson and Reeder (2005).

Remarks : Das *et al.* (1995) treated *austenianus* as a distinct species closely related to *P. savii* and suggested further studies on taxonomic status of this taxon. Alfred *et al.* (2002) did not mention any Indian subspecies of *P. savii*. Simmons in Wilson and Reeder (2005) recognized this taxon under the genus *Hypsugo*.

Subfamily MYOTINAE

Genus *Myotis*

In India, genus *Myotis* under subfamily *Myotinae* is represented by twelve species, of which only three have been reported from Maharashtra State.

Key to the species of the genus *Myotis*

1. Forearm more than 40 mm 2
- Forearm less than 40 mm
..... *Myotis horsfieldi*
2. Dorsal pelage ginger/orange on back
..... *Myotis formosus*
- Dorsal pelage dark brown
..... *Myotis montivagus*

83. *Myotis formosus formosus* (Hodgson, 1835)

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

2002. *Myotis formosus formosus* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 58.

Common Name : Hodgson's Bat.

Diagnostic Characters : Medium sized bat with an average forearm length about 47.4 mm. Dorsal pelage ginger brown mid dorsally and orange-brown on the flanks; Ventral surface deep orange posteriorly and lighter cinnamon brown on the throat. Head hairy except for around the eyes, nostrils and lips. Ears short, naked, orange-coloured with darker margins; tragus long, narrow and obtusely pointed. Wings broad with characteristic colour pattern of orange and black; orange extends in narrow lines alongside each of the metacarpals; black triangular areas present between the third, fourth, and fifth metacarpals and inside the fifth. Interfemoral membrane orange. Wings attached to the base of the phalanx of the outer metatarsal of each foot. Braincase large with rounded lambada. Rostrum robust. Zygomata greatly exceed the braincase in width. Palate long, broad, concave and abruptly narrowed behind last molar. Upper toothrow length (cm³) averages 7.1 mm. Upper canine tall, slightly recurved and with a well developed cingulum. First (pm²) and second premolar (pm³) reduced, (pm³) particularly small, occasionally absent.

Locality : Reported from Nagpur Dist. : Nagpur (D'Abreu, 1925).

Material Examined/Sightings : None.

Habitat : The individuals were hanging head downwards from the stem of a branch, one against the other, their heads only showing their bodies being hidden by leaves (Bates and Harrison, 1997).

External Distribution : Assam, Bihar, Himachal Pradesh, Jammu and Kashmir, Meghalaya, Mizoram, Punjab, Sikkim, Uttarachal and West Bengal (Das, 2003, Alfred *et al.*, 2006a). Assam, Bihar, Himachal Pradesh, Jammu and Kashmir, Meghalaya, Mizoram, Punjab, Sikkim, Uttarachal and West Bengal (Das, 2003, Alfred *et al.*, 2006a).

Status : Rare in Maharashtra, IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National).

Source : Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Alfred *et. al.* (2002).

Remarks : Nil.

*@84. *Myotis montivagus peytoni* (Wroughton & Ryley)

1913. *Myotis peytoni* Wroughton and Ryley, *J. Bombay nat. Hist. Soc.*, 22 : 13.

2005. *Myotis montivagus peytoni*: Simmons In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 511.

Common Name : Burmese Whiskered Myotis.

Diagnostic Characters : A medium sized vespertilionid bat with forearm about 45 mm with a range of 44.7-46.8 mm; Dorsal pelage soft, dark brown with chocolate brown hair tips and blackish roots; Ventrally hair bases dark, tip paler brown to fawn. Ears short and tip bluntly pointed; Anterior surface of the pinna smoothly convex, posterior surface with shallow concavity beneath the tip. Wings attached to the base of the outer phalanx of each foot.

Locality : Reported from Satara Dist. : Mahabaleshwar in Maharashtra State (Korad *et al.*, 2005).

Material Examined/Sightings : Satara Dist. : 1♂, Lingmala, Mahabaleshwar, 27.x.2002, Coll. M.C. Gaikwad, (ZSI.WRC., M/653, Donated specimen).

Habitat : Rocky crevices in forested areas.

External Distribution : Karnataka, Kerala and Andhra Pradesh.

Status : Subspecies endemic to India. The species has been reported from few localities in Peninsular India, IUCN Criteria proposed as per the CAMP Report (2002) : Vulnerable (National) (For *Myotis montivagus*).

Source : Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

*@85. *Myotis horsfieldii peshwa* (Thomas)

1915. *Leuconoe peshwa* Thomas *J. Bombay nat. Hist. Soc.*, 23 : 610.
2005. *Myotis horsfieldii peshwa* : Simmons In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 508.

Common Name : Horsfield's Myotis.

Diagnostic Characters : A small sized vespertilionid bat with average forearm length about 39 mm with a range of 36.5-41.5 mm; Ears naked, dark and with rounded tips, anterior border evenly convex, posterior border concave above and convex below with a well defined notch in the middle. Pelage dark brown almost black on dorsum; Ventrally deep brown with grayish tinge near the base of tail; Interfemoral and wing membrane deep chocolate brown. Wings attached to the outer metatarsal of each foot.

Locality : Reported from Pune Dist. : Pune (type loc. *Leuconoe peshwa* Thomas, 1915), Maval (Korad, 2005); Raigad Dist. : Elephanta island (Brosset, 1962c), Mahad (Korad, 2005); Satara Dist. : Near Satara (Hill, 1976), Mahabaleshwar (Korad, 2005).

Material Examined/Sightings : Pune Dist. : 1 ♂, Lonavla, 26.v.2003, Coll. V.S. Korad, (ZSI.WRC., M/751, Donated specimen), 1 ♂, Saralgaon, Tal. Shirur, 19.xi.2003, Coll. V.S. Korad (ZSI.WRC., M/752, Donated specimen).

Habitat : Forested areas near streams, tunnels, dams and irrigation canals.

External Distribution : Karnataka, Madhya Pradesh, Kerala and Tamil Nadu.

Status : Subspecies endemic to India. It has been reported from many localities in Peninsular India, IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National) (For *Myotis horsfieldii*).

Source : Hill (1976), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997) and Talmale (2007).

Remarks : Nil.

Subfamily MINIOPTERINAE

Subfamily Miniopterinae is represented by only one subspecies of a species under the Genus *Miniopterus* from Maharashtra State.

Genus *Miniopterus**86. *Miniopterus schreibersii fuliginosus* (Hodgson)

1835. *Vespertilio fuligenosa* Hodgson *J. Asiat. Soc. Beng.*, 4 : 700.
2002. *Miniopterus schreibersi fuliginosus* : Alfred, Sinha and Chakraborty, *Rec. zool. Surv. India, Occ. Paper No.*, 199 : 79-80.

Common name : Schreiber's Long-fingered bat.

Diagnostic Characters : This is a medium sized vespertilionid bat of the subcontinent with average forearm length of 47.0 mm (Range : 44.7-49.6 mm). Ears are small, tragus is tall, slender and slightly curved forward at the tip. It is half the height of pinna. The tail, interfemoral membrane and hind limbs are considerably longer. Each wing is characterised by a highly developed second phalanx of the third finger. The third finger (Mean: 38.1 mm, Range: 36.0-40.1 mm) is approximately three times the length of first phalanx. Fur is soft, silky and dark. Dorsal surface is in various shades of brown, while ventral side is slightly paler. Cheeks are naked below the eyes. The body is usually infected with numerous ectoparasites, especially Nycteribiids. The skull with condylo-canine length with an average of 14.1 mm.(13.6-14.8 mm) is marked by the inflation of the braincase anteriorly. The rostrum is low and flattened. The second upper incisor (I³) is flattened. Its cingulum forming a minute postero-external cusp. Upper canine is tall and slender exceeding the second upper premolar in height. The palate is slightly concave.

Locality : Reported from Kolhapur Dist. : New Karanje, Kolhapur (Talmale, 2007); Satara Dist. : Mahabaleshwar (Brosset, 1962c), Panchgani (Brosset, 1962c), Satara (Hill, 1976).

Material Examined/Sightings : Satara Dist. : 1 ♂, 5 ♀ ♀, Mahabaleshwar, 10.viii.1967, Coll. G.

Topal (ZSI.WRC. M/407); 1 ♀, Mahabaleshwar, 28.xi.1984, Coll. Prof. Nalawade (ZSI.WRC. M/408); Kolhapur Dist. : 2 ♂ ♂, 3 ♀ ♀, New Karanje, 23.i.1997, Coll. Miss. S. Bidari (ZSI.WRC. M/696 Donated specimens).

Habitat : The species is known to occur in hilly and forested country. The colonies are large and situated in caves, caverns and crevices in rocks (Brosset, 1962c). Colony includes thousands of individuals. However, there only few large colonies in India. Brosset (1962c) suggested that there are two types of colonies.

External Distribution : Throughout India (Corbet and Hill, 1992).

Status : Bates and Harrison (1997) have reported the species as a common species throughout its extensive range; IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National, For *Miniopterus schreibersii*).

Source : Brosset (1962c), Corbet and Hill (1992), Simmons in Wilson and Reeder (2005); Bates and Harrison (1997), Talmale (2006).

Remarks : The individuals of this species are strong and fast flyers and leave their roosts soon after sunset. They do not stay near the roosts but fly directly away in different directions.

Subfamily KERIVOULINAE

Subfamily Kerivoulinae is represented by only one subspecies of a species under the Genus *Kerivoula* from Maharashtra State.

Genus *Kerivoula*

*87. *Kerivoula picta picta* (Pallas)

1767. *Vespertilio pictus* Pallas, *Spicil. Zool.*, 3 : 7.

1997. *Kerivoula picta picta*: Bates and Harrison, *Bats of Indian Subcontinent* : 212-214.

Common Name : Painted bat.

Diagnostic Characters : A medium sized bat with forearm around 35 mm. possessing characteristic colour patterns. Ears large, bluntly pointed with bright orange in colour, wing membrane orange coloured with prominent black

markings between fingers. Tragus long and slender, interfemoral membrane with prominent fringe on the posterior margin.

Locality : Reported from Mumbai Dist. : Mumbai (Brosset, 1962c); Mumbai Suburban Dist. : Borivali (Brosset, 1962c), Santacruz, Juhu, Goregaon (Talmale, 2007); Pune Dist. : Khandala (Brosset, 1962c); Satara Dist. : Ghatmatha (Wroughton, 1916a), Satara (Brosset, 1962c); Thane Dist. : Dahanu (Talmale, 2007).

Material Examined/Sightings : Specimens collected from Mumbai Dist. (Santacruz, Juhu, Salsette, Mumbai Suburban Dist. (Borivali, Gorai, Goregaon); Thane Dist. (Dahanu) and registered in BNHS collection were studied by Talmale (2007).

Habitat : Though the species leads solitary life, it also sometimes, prefers to stay in small groups. The individuals are generally found among plantations near human habitations.

External Distribution : Throughout India.

Status : The species has been reported from many localities in India, IUCN Criteria proposed as per the CAMP Report (2002) : Least Concern (National).

Source : Corbet and Hill (1992), Simmons in Wilson and Reeder (2005), Bates and Harrison (1997), Alfred *et al.* (2002) and Talmale (2007).

Remarks : Nil.

Order PHOLIDOTA

Order *Pholidota* is represented by the animals with upper part of body covered with large, overlapping scales or scutes. Undersurface clothed with coarse bristle like hairs. Snout long and narrow with long sticky tongue. The order contains a single family.

Family MANIDAE

Genus *Manis*

Family *Manidae* is represented by only one genus *Manis* with a single species *M. crassicaudata* Gray within Maharashtra state.

***88. *Manis crassicaudata* Gray**

1827. *Manis crassicaudata* Gray, in *Griffith's Cuvier Animal. Kingd.*, 5 : 282.

2006. *Manis crassicaudata* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 500-502.

Common name : Indian Pangolin.

Diagnostic Characters : Hump-backed body, tapering tail without glandular naked area at the tip. Muzzle tapering to a narrow, downwardly curving trunk like snout. External pinna like a shallow, crescent-shaped vertical folds. Body covered with 11-13 rows of overlapping light yellowish brown, pointed scales or scutes.

Locality : Reported from Talegaon, Pune Dist., Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur in Eastern part of Maharashtra (Pradhan, 2004,2005,2006); Tansa Wildlife Sanctuary, Dist. Thane (Singh and Pradhan, 1992).

Material Examined/Sightings : Sighting of a live specimen in Talegaon region of Pune Dist. has been reported a couple of years back to Forests Dept. Authorities by Sanjay Thakur (Per. Comm.).

External Distribution : Occurs sporadically throughout the plains and lower slopes of hills from south of Himalayas to Kanyakumari except north eastern region within Indian limits (Alfred *et al.*, 2006b).

Status : Agrawal *et al.* (1992) have reported the status of the species as rare in peninsular India. IUCN criteria proposed as per CAMP Report (2005) : Vulnerable (National and South Asia), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : I Part: I, CITES: Appendix: II, Red Data Book (National, 1994) : Vulnerable.

Source : Corbet and Hill (1992), Chakraborty *et al* (2002), Wilson and Reeder (2005) and Alfred *et al.* (2006b).

Remarks : The species is known to be hunted for illegal domestic trade of body parts for medicinal and other usage (Pradhan, 1997).

Order CARNIVORA

All hairy animals possessing fingers with sharp and flat claws and six small, equal-sized incisors, a pair of large, conical canines, and last upper premolar and first lower molar having sharp-edged lobes for shearing the flesh belong to the order *Carnivora*.

Seven families of Order *Carnivora* occur in Maharashtra State.

Key to the families of Order CARNIVORA

1. Ethmo-turbinals very large, covering greater part of nasal chambers, extending anteriorly to the anterior orifice; auditory bulla composed of two bones; Cowper's gland absent 2
- Ethmo-trubinals excluded from the anterior orifice of nasal chamber by a large maxillo-turbinals, auditory bulla composed of a single bone; Cowper's gland present 5
2. Posterior palatal foramina set far back on the maxillo-palatine suture; teeth highly sectorial and reduced in number; dental formula 3, 1, 3 or 2, 1/3, 1,2, 1; inter-ramal tuft of vibrissae absent FELIDAE

Posterior palatal foramina located in front of the maxillo-palatine suture; teeth not so specialized or reduced in number; dental formula 3,1,4 or 2,1/3, 1,4or 3,2 or 1; inter-ramal tuft of vibrissae present 3

3. Four toes in fore and hind feet, dog-like in structure ears lacking any marginal bursa; auditory bulla without oblique groove; massive jaws and teeth, hind quarters weak. HYAENIDAE
- Four or five toes in fore and hind feet; not dog-like in structure; ears having bursa on the margin; auditory bulla distinctly grooved; jaws and teeth not powerful and hind quarters normal and proportionate 4
4. Ears moderate in size, with well-developed bursa and simple supratragus, but devoid of a valvular flap over it; feet compact with short claws; anus not enclosed in a glandular sac;

no bony tube to auditory orifice
..... VIVERRIDAE

- Ears small and rounded with vestigial bursa, valvular supratragus and a valvular flap over it; feet with free digits and fossorial claws; anus enclosed in a glandular pouch; a well-developed bony tube to the auditory orifice HERPESTIDAE
- 5. Legs long, slender and digitigrade; fourth digit of forefoot raised above the planter pad; hind-foot with only 4 toes; baculum deeply channeled below CANIDAE
- Legs relatively short and thick, plantigrade or semi-plantigrade; first digit of the forefoot present close to second; and not raised above the plantar pad; baculum not deeply channeled below 6
- 6. Large-sized animals with a short tail; pads of digits forming a weak curved line; planter pads very wide; three lower molars on each side URSIDAE
- Small sized animals with a moderately long tail; pads of digits forming a strongly curved line; two lower molars present on each side MUSTELIDAE

Suborder FELIFORMIA

Family FELIDAE

Felids (cats) possess short muzzle ($1/5^{\text{th}}$ of total skull length), tooth row of lower jaw with conspicuous gap behind canines, only 3-4 teeth behind the canines in each jaw, no scent glands above anus.

Family Felidae is represented by two subfamilies, Felinae and Pantherinae in Maharashtra State.

Key to the Subfamilies of Family FELIDAE

- Small cats with head-body length between 40-75 cm; hairs on nape normal and pupil vertical FELINAE
- Large cats with head-body length between 107-200 cm; hairs on nape reversed and pupil round PANTHERINAE

Subfamily FELINAE

Subfamily Felinae is represented by three Genera, *Felis*, *Caracal* and *Prionailurus* in Maharashtra State.

Key to the genera of subfamily FELINAE

1. Ears without white patch on the backside, hairs on throat normal and post orbital bar usually incomplete 2
- Ears with white patch on the backside, hairs on throat reversed and post orbital bar complete *Prionailurus*
2. Tail and legs banded; Tail long above 40% of head and body length (range 40-60%) *Felis*
- Tail and legs not banded; Tail short below 40% of head and body length (ranges 26-38%) *Caracal*

Genus *Felis*

Genus *Felis* is represented by two species/subspecies in Maharashtra State.

Key to the species/subspecies of genus *Felis*

- Small sized; Head and body length ranges between 46-59 cm; Tail long, 50-60% of head and body length; Dorsal pelage with dark spots *Felis silvestris ornata*
- Medium sized; Head and body length ranges between 56-72 cm; Tail short, 40-50% of head and body length; Dorsal pelage without any dark spots *Felis chaus kelaarti*

*89. *Felis silvestris ornata* Gray

1830. *Felis ornata* Gray, *Illustr. Ind. Zool.*, 1 : pl.2.

2005. *Felis silvestris ornata* : Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 536-537.

Common Name : Indian Desert Cat.

Diagnostic Characters : A small-sized cat possessing pale yellowish fur more or less fused with grey and marked with numerous black spots. The terminal half of its tail is ringed with black.

Skull with long and well developed postorbital process.

Locality : Amravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Nagpur Dist. : Pench National Park; Thane Dist. : Tansa Wildlife Sanctuary; Pune Dist. : Shere vill. (ZSI, WRC coll); also in northern Maharashtra State (Alfred *et al.*, 2006b).

Material Examined/Sightings : Two specimens (skin & skull) collected from Pune district available at ZSI, WRC. Pune (ZSI, WRC., M/22, M/23).

Habitat : Largely terrestrial and nocturnal in habit.

External Distribution : North-West India in Rajasthan and Madhya Pradesh (Alfred *et al.*, 2006b).

Status : Rare in Maharashtra, IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-near threatened (National) and Data Deficient (Global); CITES : Appendix II, Indian Wildlife (Protection) Act 1972 (as amended upto 2006) : Schedule : Schedule I Part I.

Source : Prater (1980), Corbet and Hill (1992), Alfred *et al.* (2002, 2006b) and Wilson and Reeder (2005).

Remarks : Desert cat is also hunted for fur and body parts for illegal local and domestic trade (Pradhan, 1997). *Felis libyca* has been merged in *Felis silvestris*.

***90. *Felis chaus kelaarti* Pocock**

1939. *Felis chaus kelaarti* Pocock, *Fauna Brit. India, Mamm.*, I : 300.

2005. *Felis chaus kelaarti* : Wozencraft In In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 535.

Common Name : Jungle Cat.

Diagnostic Characters : A medium-sized cat with long legs and comparatively short tail, head and body length varying between 56-72 cm, belly faintly spotted, tail and legs banded, sometimes winter coat large and luxuriant.

Locality : Throughout Maharashtra State (Alfred *et al.*, 2006b).

Material Examined/Sightings : Specimens (Skin & skull) collected from Pune Dist. : Bhimashankar; Kamshet, Shere, Pimpoli (ZSI, WRC., M/15,16,17,19,20); Satara Dist. : Ambehala (ZSI, WRC., M/18) from Maharashtra State available in ZSI, WRC. Collection.

Habitat : Terrestrial, nocturnal, inhabiting drier and open parts of the country, keeping more to grassland, scrub, dry deciduous and evergreen forests, reedy banks of rivers and marshes.

External Distribution : Within Indian limits, it occurs throughout India excluding cold desert regions (Alfred *et al.*, 2006b).

Status : Most Common, IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-near threatened (National) and Data Deficient (Global); CITES : Appendix II, Indian Wildlife (Protection) Act 1972 (as amended upto 2006) : Schedule : Schedule II Part II.

Source : Agrawal (1972), Prater (1980), Corbet and Hill (1992), Alfred *et al.* (2002) and Wilson and Reeder (2005).

Remarks : The population is under threat due to illicit wildlife trade in domestic as well as International markets (Pradhan, 1997).

Genus *Caracal*

Caracal is a monotypic genus representing one species/subspecies in Maharashtra State.

***91. *Caracal caracal schmitzi* Matschie**

1912. *Felis (Caracal) caracal schmitzi* Matschie, S.B. *Ges. Nat. Fr. Berlin*, 64.

2005. *Caracal caracal schmitzi* : Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 533.

Common Name : Caracal.

Diagnostic Characters : Caracal is definitely larger than the domestic cat. It possesses long limbs and short tail. The caracal has broad head with characteristic triangular black coloured tufted

ears set fairly close together. The tuft of black coloured hairs on the ear is fairly long and erect. The tail and legs are not banded and are of uniform colour.

Locality : Amravati Dist. : Melghat Tiger Reserve; Bhandara Dist: Nawegaon sanctuary and also in northern part of Maharashtra (Alfred *et al.*, 2006b).

Material Examined/Sightings : Forests Dept. Authorities have confirmed the sightings of caracal in Melghat Tiger Reserve and Nawegaon sanctuary in Maharashtra State (Shri. M.S. Gogate, Ch. WL Warden at that time Per. Com. In 1998).

Habitat : Sandy deserts, semi-arid open bushes, scattered forests on grass plains and low scrubby hillocks. It is a terrestrial and semi-arboreal cat with nocturnal behaviour.

External Distribution : Punjab, Rajasthan, Gujrat, eastern Uttar Pradesh and western Maharashtra (Alfred *et al.*, 2006b).

Status : Rare in Maharashtra, IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-near threatened (National) and Data Deficient (Global); CITES : Appendix I, Indian Wildlife (Protection) Act 1972 (as amended upto 2006) : Schedule : Schedule I Part I.

Source : Prater (1980), Corbet and Hill (1992), Alfred *et al.* (2002, 2006b) and Wilson and Reeder (2005).

Remarks : Nil.

Genus *Prionailurus*

Genus *Prionailurus* is represented by three species in Maharashtra State.

Key to the species of genus *Prionailurus*

1. Medium sized cat with Head and Body length above 61cm; Skull length above 123mm with long sagittal crest *Prionailurus viverrinus*
- Small sized cats with Head and Body length below 61cm; skull length below 123 mm with short or absence of sagittal crest 2

2. Pelage spotted all over. Tail spotted only on dorsal side. Back of ears black with a pale or whitish spot in the centre. Upper molar series 4 on each side *Prionailurus bengalensis*

- Pelage spotted all over. However tail unspotted. Back of ears brown with a large pale spot in the centre. Upper molar series 3 on each side *Prionailurus rubiginosus*

*92. *Prionailurus bengalensis bengalensis* (Kerr)

1792. *Felis bengalensis* Kerr, Anim. Kingd., : 151.

2005. *Prionailurus bengalensis bengalensis* : Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 540.

Common Name : Leopard Cat.

Diagnostic Characters : Leopard cat is a relatively small cat with long limbs; Head and Body length 61-66 cm; tail more than half of head and body length (Approx. 60%) and pelage with beautifully ornamented leopard like blackish brown spots. In colour and markings the leopard cat looks like a panther in miniature. The colour of the body is yellowish above and white below. Back of the ears black with round whitish spot in centre. Among other markings, there are four more or less distinct black bands running from the crown over the neck and break up into short bars and elongated spots on the shoulders. There is a pair of horizontal cheek stripes, the lower one joining the black bar across the throat. There are two black bars on the inside of the forearm. The spots on the tail form cross bars towards its end. Hairs on nape normal while reversed on throat. Contracted pupil vertical. Teeth sectorial and reduced in number and are specialized in nature suited to the diet of meat.

Locality : Throughout the forested areas of Maharashtra State in suitable habitats (Alfred *et al.*, 2006b).

Material Examined/Sightings : Sighting record reported from the Tadoba-Andhari Tiger Reserve, Chandrapur Dist. in eastern part of the Maharashtra (Pradhan, 2006).

Habitat : Largely terrestrial, semi-arboreal and nocturnal in habit and, hence, seldom seen; Prefers to live chiefly in thick dry/moist deciduous and evergreen forests, grasslands, scrubs etc. The prey species mostly include small animals and birds.

External Distribution : Practically throughout India excluding hot and cold desert.

Status : IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-Near threatened (National) and Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule I Part I, CITES: Appendix : I; Red Data Book (National, 1994): Vulnerable.

Source : Prater (1980), Corbet and Hill (1992), Alfred *et al.* (2002, 2006b), Wilson and Reeder (2005).

Remarks : Leopard cat is also killed for fur and body parts for local and domestic trade. Some tribal kill them for preparation of trophies. These beautiful cats are also trapped live for commercial trade (Pradhan, 1997).

93. *Prionailurus rubiginosus rubiginosus
(Geoffroy)

1831. *Felis rubiginosa* Geoffroy, *Belanger, Voy. Ind. Orient. Zool.*, 140.

2005. *Prionailurus rubiginosus rubiginosus*: Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 540.

Common Name : Rusty spotted cat.

Diagnostic Characters : Small sized cat with Head & Body varying between 40-50 cm in length, Dorsal pelage rufescent grey patterned with brown bars and spots. Ground colour grey-brown. Ears with white patch on the backside, hairs on throat reversed. Pair of cheek stripe and four dark lines present over the head. Belly and inner side of legs white with large dark spots. Tail unspotted and uniformly coloured.

Locality : Throughout Maharashtra state (Alfred *et al.*, 2006b).

Material Examined/Sightings : Sighting records reported from Pune Dist and Tadoba-Andhari

Tiger Reserve, Chandrapur Dist. in Maharashtra State (Pradhan, 2006, Alfred *et al.* 2006b).

Habitat : Terrestrial and to some extent arboreal, nocturnal, frequenting grassland, scrub, dry and open forests and tolerant to man-modified habitats like plantations.

External Distribution : Peninsular India.

Status : Though very rare, the species has a very wide range of distribution, IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-near threatened (National) and Data Deficient (Global), Indian Wildlife (Protection) Act 1972 (as amended upto 2006) : Schedule I Part I, CITES : Appendix I, Red Data Book (1994) : Insufficiently known.

Source : Prater (1980), Corbet and Hill (1992), Chakraborty and Agrawal (2000), Alfred *et. al.* (2002,2006b), Wilson and Reeder (2005) and Nameer (2008).

Remarks : Nil.

***94. *Prionailurus viverrinus* Bennett**

1833. *Felis viverrinus* Bennett, *Proc. Zool. Soc. Lond.*, 68.

2005. *Prionailurus viverrinus*: Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 544.

Common Name : Fishing Cat.

Diagnostic Characters : Medium sized harsh coated cat with Head & Body varying between 60-75 cm in length; Tail short about one-third the length of Head and Body; Dorsal pelage tawny grey to brownish mouse grey in colour; Body markings consisting of a series of elongate spots, arranged in longitudinal rows; 6-8 black lines running from forehead to neck; A pair of cheek strikes also present; Skull length in the range of 123-151mm. with long sagittal creast; Nasals very narrow behind.

Locality : Reported from coastal as well as central and eastern part of Maharashtra in Central India (Alfred *et al.*, 2006a,b).

Material Examined/Sightings : Sighting records reported from Nathasagar Wetland in Aurangabad

Dist. and Melghat Tiger Reserve, Amaravati Dist. in Maharashtra State (Pradhan, 2005, 2006, Alfred *et al.* 2006b).

Habitat : Usually found near water, prefers reed beds and marshy banks of rivers, lakes and back waters; Nocturnal in habit; preys on fishes, tortoises, monitor lizards and small mammals.

External Distribution : Andhra Pradesh, Assam, Kerala, Orissa, Tamil Nadu, Uttar Pradesh, West Bengal.

Status : Rare, IUCN Criteria proposed as per CAMP Report (1998) : Vulnerable (National) and Data Deficient (Global), Indian Wildlife (Protection) Act 1972 (as amended upto 2006) : Schedule I Part I, CITES : Appendix II, Red Data Book (1994) : Vulnerable.

Source : Prater (1980), Corbet and Hill (1992), Alfred *et al.* (2002, 2006), Wilson and Reeder (2005) and Nameer (2008).

Remarks : Nil.

Subfamily PANTHERINAE

Subfamily *Pantherinae* is represented by a single Genus, *Panthera* in Maharashtra State.

Genus *Panthera*

Two species of Genus *Panthera* are known to occur in Maharashtra State.

Key to the species of genus *Panthera*

- Large sized cats with body length including tail over 260 cm. Colour pattern consisting of vertical black stripes on rich reddish yellow to orange rufous coat.....
..... *Panthera tigris tigris*
- Smaller sized cats with body length including tail Less than 215 cm. Colour pattern consisting of black spots irregularly arranged in rosettes. Tail relatively slim
..... *Panthera pardus fusca*

*95. *Panthera pardus fusca* (Meyer)

1794. *Felis fusca* Meyer, Zool. Ann., 1 : 394.

2005. *Panthera pardus fusca* : Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 547.

Common Name : Panther/Leopard.

Diagnostic Characters : Leopard/panther is a relatively large cat with long limbs; total length including tail 170-215 cm with height at shoulder 60 cm; tail more than half of head and body length (Approx. 60%) and pelage with beautifully ornamented close-set black spots arranged in rosettes on the short haired coat. The ground colour of the body is yellow above and white below with black rosettes all around. Dorsal ground colour may vary from pale yellow to warm grey, rich tawny to rufous fawn. The tail is also covered with spots except at the tip, which is ringed. Hairs on nape and throat reversed. Ears not tufted. Contracted pupils round. Teeth sectorial and reduced in number and are specialized in nature suited to the diet of meat. Claws retractile and especially adapted to strike and hold struggling prey and teeth specially designed to bite into, cut up and tear flesh.

Locality : Occurs throughout Maharashtra State in suitable habitats (Alfred *et al.*, 2006b).

Material Examined/Sightings : Skin and skull collected from Mahabaleshar, Satara Dist. (ZSI, WRS, M/24) and registered in ZSI, WRC collection; Sighting records reported from Amravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Nagpur Dist. : Pench National Park; Mumbai Suburban Dist. : Sanjay Gandhi National Park; Pune Dist.: Chakan, Bhimashankar Wildlife Sanctuary; Raigad Dist. : Phansad Wildlife Sanctuary to ZSI survey parties during surveys (Pradhan 2004, 2005, 2006).

Habitat : Terrestrial, nocturnal, semi-arboreal, inhabiting forests, scrub jungles, open country etc. They are able to thrive almost anywhere. A resident species not restricted to forests and heavy covers like tiger. Being bold in nature this predator species comes more frequently in contact with man than the tiger.

External Distribution : Throughout India

excluding extreme high altitudes, hot and cold deserts.

Status : The species has been reported from number of localities, IUCN Criteria proposed as per CAMP Report (1998) : Vulnerable (National) and Data Deficient (Global), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule I Part I, CITES : Appendix I, Red Data Book (1994): Vulnerable.

Source : Prater (1980), Corbet and Hill (1992), Alfred *et al.* (2002,2006b), Menon (2003) and Wilson and Reeder (2005).

Remarks : The populations are under threat due to illicit wildlife trade of its fur and body parts in domestic as well as international markets (Pradhan, 1997).

***96. *Panthera tigris tigris* (Linn.)**

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

2006. *Panthera tigris tigris* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 327-330.

Common Name : Royal Bengal Tiger/Tiger.

Diagnostic Characters : Tiger is a large cat with graceful built and long limbs; total length including tail 260-290 cm with black ringed tail more than half of head and body length (Approx. 60%); pelage with beautifully ornamented black coloured stripes on the short haired coat. The ground colour of the body varies from reddish yellow to orange rufous above and white below with black prominent stripes all over the body. Hairs on nape and throat reversed. Ears not tufted but are black on the outer side with a prominent white spot in the middle. Contracted pupils round. Teeth sectorial and reduced in number and are specialized in nature suited to the diet of meat. Claws retractile and especially adapted to strike and hold struggling prey and teeth specially designed to bite into, cut up and tear flesh.

Locality : Occurs in Western Ghats, northern and eastern parts of Maharashtra State (Alfred *et al.*, 2006b).

Material Examined/Sightings : Sighting records

reported Amravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Nagpur Dist. : Pench National Park; Thane Dist. : Tansa Wildlife Sanctuary (Pradhan 2004, 2005, 2006).

Habitat : Largely terrestrial and nocturnal in habit and, hence, seldom seen; It can live in a variety of habitats like the hills, plains, thick dry/moist deciduous and evergreen forests, grasslands, scrubs, mangroves swamps etc. Comparatively tiger is a shy animal in behavior. Tiger is a very good swimmer and enormously powerful animal which can easily kill animals larger in size than its own size like bull, cow, bullock etc.

External Distribution : Throughout India except North-Western region.

Status : IUCN Criteria proposed as per the CAMP Report (1998) : Endangered (National) and Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule I Part I, CITES: Appendix : I; Red Data Book (National, 1994): Vulnerable.

Source : Prater (1980), Corbet and Hill (1992), Alfred *et al.* (2002,2006b), Menon (2003) and Wilson and Reeder (2005).

Remarks : Tiger is also killed for illicit trade of fur and body parts in domestic as well as international market for various reasons (Pradhan, 1997).

Family VIVERRIDAE

Viverrids, are medium sized carnivores, many of them are arboreal with rather unspecialized dentition and omnivorous diet. Most species have a prominent perineal scent gland situated in front of the anus.

Family Viverridae is represented by two genera under two subfamilies, Paradoxurinae and Viverrinae in Maharashtra state.

Key to the Subfamilies of Family VIVERRIDAE

- Feet ordinary and digitigrade, carpal pad single, metatarsal pads absent, a definite

pattern of dorsal spots present, tail with dark and pale alternate bands VIVERRINAE

- Feet scansorial and semi-plantigrade, semi arboreal, carpal and metatarsal pads double, a pattern of dorsal stripes and lateral spots present at least in new coat. Tail without any bands and uniformly dark in colour
..... PARADOXURINAE

Subfamily PARADOXURINAE

Subfamily *Paradoxurinae* is represented by a single species under Genus *Paradoxurus* in Maharashtra State.

*97. *Paradoxurus hermaphroditus* *hermaphroditus* (Pallas)

1777. *Viverra hermaphrodita* Pallas, In Schreber, *Die Säugethiere*, 3 : 426.
2006. *Paradoxurus hermaphroditus* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 261-264.

Common Name : Asian Palm Civet, Common Palm civet or Toddy cat.

Diagnostic Characters : A Common Palm civet or Toddy cat is a carnivore with six small, equal-sized incisors and a pair of comparatively large and conical canines. A civet is long in body and short in limbs. Body length ± 60 cm. It has an elongated head and pointed but short and weak muzzle. A black and blackish-brown civet with long coarse hair. Underwool, when present, whitish or buff or sometimes even yellow hidden in heavy winter coat. The new coat shows a definite pattern of dorsal stripes and lateral spots. Pattern of longitudinal stripes on the back and spots on the flanks, shoulders and thighs is present in the new coat. The limbs are always black or dark brown. Facial markings variable, the most common pattern is white patch or spot below the eye. Some times one spot above the eye and one on each side of the nose are also present. Tail uniformly dark in colour and without any alternate dark and pale bands. Cowper's gland absent. Feet compact with short claws unprotected by sheaths of skins. Soles of feet not entirely covered with

hairs. Feet scansorial and semiplantigrade with double carpal and metatarsal pads. Four or five toes in fore and hind feet and not dog-like in structure. The first digit on the fore and hindfoot, set well above the other toes, is functionless. Teeth not specialized like cats or reduced in number. Anus not enclosed in a glandular sac. Scent gland present in both sexes, in males between scrotum and prepuce, while in females it's behind or encircling vulva. The scent glands open in less specialized pouches. Inter-ramal tuft of vibrissae present.

Locality : Reported from Amravati Dist. : Melghat Tiger Reserve; Buldana Dist. : Lonar Wildlife Sanctuary; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Mumbai Suburban Dist. : Sanjay Gandhi National Park; Nagpur Dist. : Pench National Park; Pune Dist.: Bhimashankar Wildlife Sanctuary; Pune city; Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan 2004, 2005, 2006; Pradhan and Talmale, 2008 and 2009).

Material Examined/Sightings : Specimens (Skin & skull) collected from Pune District (ZSI, WRC, M/ 27,28,29,30,31,32) available in ZSI, WRC. Collection.

Habitat : Terrestrial, more arboreal and nocturnal. Prefers to live in all types of forests and also close to human dwellings. They take shelter in holes, treeholes, under rocks, under bushes or in tall grasses etc. They prefer to hunt in night. Though they are arboreal/semi-arboreal, they prey on the ground, preying on rats, squirrels, small birds, lizards, insects, fruits, roots, and other vegetable matters.

External Distribution : Throughout India excluding deserts.

Status : Though the distribution is wide and the populations are many, they are fragmented. Further, though they are fairly common in distribution, now its population is declining due to the destruction of its habitat, hunting for medicine and local illegal trade for body parts (Pradhan, 1997); IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-Least

concern (National) and Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule II Part II, CITES : Appendix III (India).

Source : Prater (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Menon (2003) and Wilson and Reeder (2005).

Remarks : The young ones are born in all seasons and are usually offered shelter in tree holes or under a rock. The civets can easily be tamed. Some are kept under domestication for the regular extraction of the secretion from the scent glands.

Subfamily VIVERRINAE

Subfamily *Viverrinae* is represented by a single Genus in Maharashtra state.

Genus *Viverricula*

A monotypic genus *Viverricula* is represented by a single species/subspecies, *Viverricula indica indica*, in Maharashtra state.

*98. *Viverricula indica indica* (Desmarest)

1817. *Viverra indica* Desmarest, *Nouv. Dict. Hist. Nat.*, Paris, 7 : 170.

2006. *Viverricula indica indica* : Alfred, Ramakrishna, Pradhan, Validation of Threatened Mammals of India. *Zool. Surv. India*, Kolkata : 254-257.

Common Name : Small Indian civet.

Diagnostic Characters : A civet is long in body and short in limbs. Body length $\pm$ 90 cm. It has an elongated head and pointed but short and weak muzzle. A tawny grey or gryish brown animal, lined and streaked on back. Body pattern consists of small spots on the fore quarters, larger spots tending to run into longitudinal lines on the flanks and form six to eight stripes down the back. There are usually some transverse white and black bands on the neck and throat region. Tail with alternate dark and pale bands. Feet compact with short claws unprotected by sheaths of skins. Feet terrestrial and digitigrade with single carpal pad and no metatarsal pads. Four or five toes in fore and hind feet and not dog-like in structure. The

first digit on the fore- and hindfoot, set well above the other toes, is functionless. Scent gland present in both sexes, in males between scrotum and prepuce, while in females it's behind or encircling vulva. Scent glands open into highly specialized pouches. Soles of feet not entirely covered with hairs.

Locality : Throughout Maharashtra State in all suitable habitats.

Material Examined/Sightings : Specimens (Skin & skull) collected from Pune Dist. : Bhimashankar and Kamshet (ZSI, WRC, M/33,34,35) available in ZSI, WRC, collection; Sighting of live specimens reported from Amravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Mumbai Suburban Dist. : Sanjay Gandhi National Park; Nagpur Dist. : Pench National Park; Pune Dist. : Bhimashankar Wildlife Sanctuary; Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan 2004,2005,2006; Pradhan and Talmale, 2009b).

Habitat : Terrestrial, semi-arboreal and nocturnal. Prefers to live in all types of forests and also close to human dwellings. They take shelter in holes, treeholes, under rocks, under bushes or in tall grasses etc. Some may find refuge in drains and outhouses. They prefer to hunt in night. They prey on the ground, preying on rats, squirrels, small birds, lizards, insects, fruits, roots, and other vegetable matters. Given opportunity, they can prey upon poultry as well. They can readily adapt to the changed conditions.

External Distribution : Throughout India in suitable habitat.

Status : Though the distribution is wide and the populations are many, they are fragmented. Once very common in distribution, now its population is declining due to the destruction of its habitat, hunting for medicine and local illegal trade for body parts (Pradhan, 1997); IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-Near threatened (National) Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule II Part II, CITES : Appendix : III (India).

Source : Prater (1980), Corbet and Hill (1992), Wilson and Reeder (2005) and Alfred *et al.* (2006b).

Remarks : The care of the young ones is left entirely to the mother. The civets can easily be tamed. Some are kept under domestication for the regular extraction of the secretion from the scent glands.

Family HERPESTIDAE
Subfamily HERPESTINAE

Family Herpestidae is represented by two species under one Genus, *Herpestes* in Maharashtra State.

Genus *Herpestes*

Key to the species of genus *Herpestes*

- Dorsal pelage with shorter hairs (length 20-30 mm), grey in colour, many banded and coarse in nature, colour of legs same as that of dorsum, tail tip normal and never black, bulla normal and not inflated posterierly
..... *Herpestes edwardsii*
- Dorsal pelage with longer hairs (length 30-40 mm), greyish in colour, legs darker than dorsum, tail tip black, bulla with posterior chambers greatly inflated
..... *Herpestes smithii*

*99. *Herpestes edwardsii edwardsii* (Geoffroy)

1818. *Ichneumon edwardsii* Geoffroy, E., *Description de l'Egypte Description des mammiferes*, 2, Paris : 139.

1992. *Herpestes edwardsii edwardsii* : Corbet and Hill, *The Mammals of the Indomalayan Region*, : 216.

Common Name : Indian Grey Mongoose.

Diagnostic Characters : The grey coloured Indian mongoose possesses long body with short limbs and a bushy tail. The longer contour hairs almost form a cape along the flanks and over hind quarters. The hairs at the base of the tail are fairly long. The fur is rather stiff and coarse, individual hairs being annulated with creamy white and black bands. Long hairs may have as many as eight to ten alternate bands, underfur is wooly

and reddish-buff in colour. Tip of the tail never black in colour.

Locality : Reported from throughout Maharashtra State.

Material Examined/Sightings : Specimens (Skin & skull) collected from Pune and Dhulia Dists. available in ZSI, WRC, collection. Sighting of live specimens reported from various parts of Maharashtra State (Singh and Pradhan, 1992; Pradhan, 2004,2005,2006; Pradhan and Talmale, 2009b).

Habitat : Terrestrial, diurnal/nocturnal, fossorial, living in open scrubs, cultivation, rocky patches, forest edges, near human habitations etc.

External Distribution : Throughout India.

Status : Fairly common, reported from many localities; IUCN Criteria proposed as per the CAMP Report (1998): Lower risk-least concern (National), Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule II Part II; CITES : Appendix III (India).

Source : Prater (1980), Corbet and Hill (1992), Wilson and Reeder (2005).

Remarks : The mongoose can easily be tamed. Threat to its population due to hunting for medicine, trophies and food and also for local illicit trade for body parts for making articles like brushes etc. cannot be ruled out (Pradhan, 1997).

100. *Herpestes smithii smithii* Gray

1837. *Herpestes smithii* Gray J.E., *Magazine nat. Hist.*, 1 : 578.

1992. *Herpestes smithii smithii* : Corbet and Hill, *The Mammals of the Indomalayan Region*, : 216.

Common Name : Ruddy Mongoose.

Diagnostic Characters : Dorsal pelage of ruddy mongoose possesses large hairs, tail tip always black, legs darker than dorsum and bulla with posterior chamber greatly inflated, rest of the characters mostly similar to that of the previous species.

Locality : Reported to occur in forested areas

of Maharashtra State (Singh and Pradhan, 1992; Pradhan, 2004,2005,2006).

Material Examined/Sightings : None.

Habitat : Terrestrial diurnal/nocturnal, fossorial preferring to live in dry and moist forests of Central and Southern India.

External Distribution : Peninsular India and Sri Lanka.

Status : Rarely seen; IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-least concern (National), Data Deficient (Global), CITES : Appendix III (India), Indian Wildlife (Protection) Act (1972) as amended upto 2006) Schedule : Schedule II Part II.

Source : Prater (1980), Corbet and Hill (1992), Wilson and Reeder (2005).

Remarks : Threat to the populations of ruddy mongoose due to hunting for medicine, trophies and food and also for local illegal trade for body parts for making articles like brushes etc. cannot be ruled out (Pradhan, 1997).

Family HYAENIDAE

Medium-sized, dog like carnivore with pointed ears, weak hind quarter, forefeet with four digits and a sac-like scent gland above the anus. Hyaena also possesses very strong jaws.

Family Hyaenidae is represented by a single species under Indian Genus *Hyaena* in Maharashtra state.

Genus *Hyaena*

*101. *Hyaena hyaena* (Linnaeus)

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

2005. *Hyaena hyaena*: Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 572-573.

Common Name : Striped Hyena.

Diagnostic Characters : Hyaena possesses vertical dark stripes on the body and transverse bars on the upper portion of the legs with ground colour of body varying between cream and dirty white. A crest of mane extending from the head

to root of the tail present. Dog like built with massive head and fore-body but with weak hind quarters.

Locality : Reported to occur in suitable habitats of Maharashtra State.

Material Examined/Sightings : Sightings reported from Amravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Mumbai Suburban Dist. : Sanjay Gandhi National Park; Nagpur Dist. : Pench National Park; Pune Dist. : Bhimashankar Wildlife Sanctuary; Thane Dist. : Tansa Wildlife Sanctuary (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan 2004,2005,2006; Pradhan and Talmale, 2009b).

Habitat : Terrestrial, nocturnal, rare in forested areas but found in open countries, scrub lands and semi urban areas, found also in thorny semi arid regions. Prefer to live in low hilly areas and ravines which offer convenient holes and caves for shelter, mainly scavenger in habit but can also hunt preys of its size like sheep, goat, dog etc. Hyaenas are also known to dig open graves in search of food.

External Distribution : Extending south to Nilgiri hills, north to lowland of Kashmir, east to West Bengal and west to Gujarat.

Status : The species has been reported from number of localities in India, IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-near threatened (National) and Data Deficient (Global); Indian Wildlife (Protection) Act 1972 (as amended upto 2006) : Schedule : III.

Source : Prater (1980), Corbet and Hill (1992), Roberts (1997), Menon (2003), Wilson and Reeder (2005) and Alfred *et al.* (2006a,b).

Remarks : The population is under threat due to faiths in wrong beliefs and also due to illicit wildlife trade of its fur in domestic as well as international markets (Pradhan, 1997).

Suborder CANIFORMIA

Family CANIDAE

Family Canidae is represented by four species under three genera in Maharashtra State.

Key to the genera and species of the family CANIDAE

1. A frontal sinus present; post-orbital process smooth and convex above; tail less than half the length of head and body, legs comparatively longer 2
 - Frontal sinus absent; post-orbital process concave above; tail clearly more than half the length of head and body, legs comparatively shorter 4
 2. Seven teeth in lower molar series and dorsal colour a mixture of black and white 3
 - Six teeth in lower molar series and dorsum more reddish in colour *Cuon alpinus*
 3. Smaller in size, Head and body length below 75cm (60-75cm); Greatest skull length ranges 145-165 mm *Canis aureus*
 - Larger in size, Head and body length above 75cm (75-100 cm); Greatest skull length ranges 200-240 mm *Canis lupus*
 4. A grey coloured fox with back of ears sandy brown and tail tip black in colour
..... *Vulpes bengalensis*
- The red fox with pelage colour is much greyish red. Back of ears black, while tail tip white in colour *Vulpes vulpes*

Genus *Canis*

Genus *Canis* is represented by two species in Maharashtra State.

*102. *Canis aureus* Linnaeus

1758. *Canis aureus* Linnaeus, *Systema naturae* vol. I, 10th edition : 40.
2005. *Canis aureus* : Wozencraft In Wilson and Reeder, *Mammal species of the World, 3rd ed.* Vol. I : 574-575.

Common Name : Golden Jackal or Asiatic Jackal.

Diagnostic Characters : Smaller than the wolf and lacks the arching brows and elevated forehead. Head and body length in the range of 60-75 cm;

Its height at shoulder about 35-43 cm. Greatest skull length ranges between 145-165 mm. Upper molars with well defined cingulum; Dorsal colour typically a mixture of black and white, washed with buff about the shoulders, ears and legs, tail straight and not curled like dog.

Locality : Reported from Amaravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Mumbai Suburban Dist. : Sanjay Gandhi National Park; Nagpur Dist. : Pench National Park; Pune Dist. : Bhimashankar Wildlife Sanctuary; Thane Dist. : Tansa Wildlife Sanctuary; in Maharashtra State (Singh and Pradhan, 1992; Yazdani *et al.*, 1992; Pradhan, 2004,2005,2006; Pradhan and Talmale, 2009b).

Material Examined/Sightings : 3 skins with skulls collected from Pune Dist. available at ZSI, WRC, Pune (ZSI,WRS,M/11,12,13).

Habitat : Terrestrial, nocturnal, rare in forested areas but found in open countries, scrub lands and semi urban areas, found also in thorny semi arid regions. Prefer to live in convenient holes and caves for shelter, can hunt preys of its size like sheep, goat, dog etc..

External Distribution : Throughout India.

Status : The species has been reported from number of localities in India; IUCN Criteria proposed as per the CAMP Report (1998): Lower risk-least concern (National), Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) : Schedule II Part II; CITES : Appendix III (India).

Source : Prater (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Menon (2003), Wilson and Reeder (2005).

Remarks : The species is known to be hunted for domestic trade of body parts for medicinal and other usages and also in the international trade of body fur (Pradhan, 1997).

*103. *Canis lupus pallipes* Sykes

1831. *Canis lupus pallipes* Sykes, *Proc. Zool. Soc. Lond.*, : 101.

2006. *Canis lupus pallipes* : Alfred, Ramakrishna, Pradhan, Validation of Threatened Mammals of India. *Zool. Surv. India*, Kolkata : 147-150.

Common Name : Indian wolf.

Diagnostic Characters : Largest member of the dog family with head and body length in the range of 75-100 cm; Its height at shoulder about 40-70cm. Dorsal colour grey interspread with black; Bushy tail with black tip; Ears large and pointed; Long slim legs; Muzzle long and slender; Greatest skull length ranges between 200-240mm. Upper molars without cingulum.

Locality : Drier areas of Maharashtra State.

Material Examined/Sightings : Two skulls with flat skins seized by Forests Dept. Authorities from Baramati region in Pune Dist. were studied for identification; Sighting records reported from Amaravati Dist. : Melghat Tiger Reserve; Chandrapur Dist. : Tadoba-Andhari Tiger Reserve; Nagpur Dist. : Pench National Park in Maharashtra State (Pradhan, 2004, 2005, 2006).

Habitat : Terrestrial, rare in forested areas but found in open countries, scrub lands and semi urban areas, found also in thorny semi arid regions. Prefer to live in low hilly areas and ravines which offer convenient caves for shelter, hunt preys of its size like sheep, goat, dog etc.

External Distribution : Throughout India except extreme south.

Status : IUCN Criteria proposed as per the CAMP Report (1998): Lower risk-Near threatened (National), Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) : Schedule I Part I; CITES : Appendix I.

Source : Prater (1980), Corbet and Hill (1992), Menon (2003), Wilson and Reeder (2005) and Alfred *et al.* (2006b).

Remarks : Ellerman and Morrison-Scot (1951) and Wilson and Reeder (2005) recognized *Canis lupus pallipes* Sykes as a valid subspecies (Type loc. Deccan, India) from India. The species is known to be hunted for misbeliefs and also for domestic trade of body parts for number of usages

and also in the international trade of body fur (Pradhan, 1997).

Genus *Cuon*

Monotypic genus with single species *Cuon alpinus*, is known to occur in Maharashtra State.

*104. *Cuon alpinus* (Pallas)

1811. *Canis alpinus* Pallas, *Zoogr. Ross. Asiat.*, 1 : 34.

2005. *Cuon alpinus*: Wozencraft, W.C. In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. 1 : 578.

Common Name : Indian Wild Dog, Dhole.

Diagnostic Characters : Wild Dog is a typical carnivore belonging to the family *Canidae*. A medium sized canid with Head and Body length $\pm$ 90cm and height at shoulder in the range of 43-55 cm. Appearance almost like a domestic dog except that wild dog possesses a straight tail and its dorsum is reddish in colour. Short in legs and muzzle. Ears rounded and tail tip bushy. First upper molar with a prominent outer cingulum. Six molar teeth. Body size is definitely smaller than wolf and lacks arching brows and elevated forehead.

Locality : Known to occur in northern and eastern parts of Maharashtra State.

Material Examined/Sightings : Sightings of packs of wild dogs reported from Amaravati Dist. : Melghat Tiger Reserve, Chandrapur Dist.: Tadoba-Andhari Tiger Reserve, Nagpur Dist. : Pench National Park, area by ZSI Survey parties during different faunastic surveys have been reported (Pradhan, 2004,2005,2006).

Habitat : Wild dog is basically a terrestrial animal preferring to live in different types of dense forests interspersed with open land, prey species and water (Johnsingh and Yoganand, 2000). They have also been found at an altitude of around 12000 Ft. However larger populations live in the lowlands. Wild dogs are more social animals and they live and hunt in packs. They prey upon animals like chital, sambar, wild boar, gaur, buffalo etc.

External Distribution : Practically whole of India in suitable habitats (Menon, 2003).

Status : CAMP Report (1998) has stated that though number of wild dog populations have been reported from many localities, there is a general decline in its actual population in the country due to threat from declining population of prey species and loss of habitats; IUCN Criteria proposed as per the CAMP Report (1998): Lower risk-near threatened, Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule:II Part:I CITES: Appendix: II.

Source : Prater (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Menon (2003) and Wilson and Reeder (2005).

Remarks : Nil.

Genus *Vulpes*

Two species of the genus *Vulpes* occurs in Maharashtra State.

*105. *Vulpes bengalensis* (Shaw)

1800. *Canis bengalensis* Shaw, *Genl. Zool.*, 1, 2 : 300.

2005. *Vulpes bengalensis* : Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 583.

Common Name : Bengal Fox.

Diagnostic Characters : A grey coloured fox, having slender limbs with head and body length in the range of 40-65 cms; back of ears sandy brown and tail tip black in colour.

Locality : Known to occur in Maharashtra State in suitable habitats.

Material Examined/Sightings : Sightings of Bengal fox reported from Amaravati Dist. : Melghat Tiger Reserve, Chandrapur Dist. : Tadoba-Andhari Tiger Reserve, Mumbai Suburban Dist. : Sanjay Gandhi National Park, Nagpur Dist. : Pench National Park, Pune Dist. : Bhimashankar Wildlife Sanctuary and Thane Dist. : Tansa Wildlife Sanctuary areas by ZSI Survey parties during different faunistic surveys (Yazdani *et al.*, 1992; Singh and Pradhan, 1992; Pradhan, 2004, 2005, 2006; Pradhan and Talmale, 2009b);

1 skin with skull collected from Pune Dist. available at ZSI, Pune (ZSI, WRS, M/14).

Habitat : Terrestrial, sometimes fossorial living in upper country, open fields etc., adjacent to the human habitations.

External Distribution : Practically whole of India, south of Himalayan foothills to Kanyakumari except in the northeastern India.

Status : The species has been reported from number of localities in India, however the populations are fragmented; IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-near threatened (National), Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) : Schedule II Part II, CITES: Appendix III (India); Source : Prater (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Menon (2003), Wilson and Reeder (2005) and Alfred *et al.* (2006b).

Remarks : The species is known to be hunted for illicit domestic trade of body parts for black magic purposes and other usages and also in the illegal international trade of body fur (Pradhan, 1997).

*106. *Vulpes vulpes* (Linnaeus)

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

2002. *Vulpes vulpes*: Alfred *et al.*, *IN Checklist of Mammals of India*, : *Rec. zool. Surv. India* : 199 : p.95 : Publ: ZSI, Kolkata.

Common Name : Common Red Fox, Red Fox.

Diagnostic Characters : The red fox is smaller in size than Jackal and it possesses longer and bushy tail. The pelage colour is much greyer red. The outer limbs and paws extensively white. Tail tip white in colour.

Locality : Known to occur in isolated pockets in Maharashtra State in suitable habitats.

Material Examined/Sightings : 1 skin with skull collected from Ambenally Ghat, Satara Dist on 05.09.1978 available at ZSI, Pune (ZSI, WRS, M/136).

Habitat : It is not a social animal in hunting

habits, Basically it is the inhabitant of arid and semiarid regions (Alfred *et al.*, 2006b).

External Distribution : Gujarat, Himachal Pradesh, Kashmir, Punjab, Rajasthan, Uttar Pradesh and Sikkim in India (Alfred *et al.*, 2002).

Status : Rare in this region, possibly an isolated collection record; IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-near threatened (National), IUCN (As cited in Wilson and Reeder (2005): Lower Risk (lc); Indian Wildlife (Protection) Act (1972, as amended upto 2006) : Schedule II Part II, CITES: Appendix III (India); Source : Prater (1980), Corbet and Hill (1992), Menon (2003), Wilson and Reeder (2005) and Alfred *et al.* (2006b).

Remarks : In Indian region two subspecies of *Vulpes vulpes* are recorded viz., *V. v. montana* (Pearson, 1836) in northern Himalayas from Ladakh and Kashmir to Sikkim and *Vulpes vulpes pusilla* Blyth, 1854 from Thar desert areas of Gujarat, Rajasthan, Punjab and Haryana (Alfred *et al.*, 2006b). Record from Maharashtra State is unusual and possibly of isolated collection record of *V. v. pusilla*.

Family URSIDAE

Animals of this family are larger in size heavily built with short tail, plantigrade feet with planter pads and three lower molars on each side of the jaws.

Genus *Melursus*

Family Ursidae is represented by a single species under one genus *Melursus*, of Subfamily Ursinae, in Maharashtra state.

*107. *Melursus ursinus* (Shaw)

1791. *Bradypus ursinus* Shaw, *Nat. Misc.*, 2(unpaged), pls. 58-59.

2005. *Melursus ursinus* : Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 587.

Common Name : Sloth bear.

Diagnostic Characters : A large-sized bear, 140-170 cms. in head and body length, having

ivory white claws; coat rough and black with or without white crescent on chest.

Locality : Suitable habitats in Western Ghats and Satpura ranges in Maharashtra State.

Material Examined/Sightings : Sightings records reported from Amaravati Dist. : Melghat Tiger Reserve, Chandrapur Dist. : Tadoba-Andhari Tiger Reserve, Nagpur Dist. : Pench National Park, area by ZSI Survey parties during different faunistic surveys (Pradhan, 2004, 2005, 2006).

Habitat : Terrestrial and arboreal preferring to live in forests, grasslands etc.

External Distribution : Throughout India from Himalayan foot hills to southernmost region, except arid region of Rajasthan and Gujarat.

Status : The species has been reported from many localities in India, however, the populations are fragmented; IUCN Criteria proposed as per the CAMP Report (1998) : Vulnerable (National) and Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule I Part I, CITES : Appendix : I.

Source : Prater (1980), Corbet and Hill (1992), Agrawal *et al.* (1992), Menon (2003) and Wilson and Reeder (2005).

Remarks : Corbet and Hill (1992) placed this species under the genus *Ursus*. Ellerman and Morrison-Scot (1951, 1966), Wilson and Reeder (2005), Alfred *et al.* (2006b) and Nameer (2008) considered this species under the genus *Melursus*. Only nominate subspecies viz. *Melursus ursinus ursinus* (Shaw) has been reported from the Indian territory. Illicit wildlife trade of the body parts like gall bladder, claws etc. is a recent and serious threat in addition to the threat due to loss of habitat and fragmentary populations reported by Pradhan (1997).

Family MUSTELIDAE

Small to medium sized carnivores with a moderately long, stout and thick tail Two lower molars present on each side of the jaws. The family, in general, is diversified in appearance

and most of the species have been placed in two subfamilies, *Lutrinae* and *Mustelinae*. Both the subfamilies have been reported from Maharashtra state.

Key to subfamilies of Family MUSTELIDAE

- Tail short, thick and muscular; Webbed feet; Fur short; mostly suitable for aquatic habits LUTRINAE
- Tail long, not thick and muscular; feet not webbed; Fur long; mostly suitable for terrestrial habits..... MUSTELINAE

Subfamily LUTRINAE

Subfamily LUTRINAE (Otters) is represented by two genera and species from Maharashtra State.

Key to genera and species of subfamily LUTRINAE

- Dusky brown dorsum with much paler venter; Tail without lateral keels..... *Lutra lutra*
- Blackish to rufous chocolate brown dorsum with slightly paler venter; Tail with lateral keels *Lutrogale perspicillata*

Genus LUTRA

108. *Lutra lutra* (Linnaeus, 1758)

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

2006. *Lutra lutra* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*. : 202-205.

Common Name : Common Otter.

Diagnostic Characters : The common otter with head and body length ranges between 540-800 mm. Claws projecting well beyond digits. The feet are fully webbed. It has a very dense fur of dark olive brown colour while venter much paler. Tail is very thick muscular and flattened dorsoventrally into a paddle shape at its distal end. The lips and throat show yellow, white and grey spots. Greatest length of the skull in the range of 100-130 mm.

Locality : Reported from Itiadoh lake in

Navegaon National park, Gondia district in Maharashtra State (Chitampalli, 1979).

Material Examined/Sightings : None.

Habitat : Common otters live in a wide variety of aquatic habitats including high and low land lakes, rivers, streams, man-made water bodies, marshes and coastal areas. Their movements on the ground are clumsy. However they are excellent divers and swimmers. They take shelter on land in the burrows. Their nursery or halt is always near the banks. Sometimes burrow opening is below water level. They may also excavate roots of the tree near banks. They undertake long distance migration during unfavourable seasons.

External Distribution : Isolated and patchy distribution of the species in India. In southern India they have been reported from higher altitudes.

Status : IUCN (1998) (Proposed) : Not Evaluated; IUCN (2002) (Proposed): Vulnerable based on Version 2.3 (IUCN, 2003); CITES APPENDIX: I; Indian Wildlife (Protection) Act (1972) (As amended upto 2006): Schedule II; Part II.

Source : Corbet and Hill (1992), Menon (2003), Wilson and Reeder (2005) and Alfred *et al.* (2006b).

Remarks : Southern population of common otter has been recognized as *Lutra lutra nair* Cuvier. The species is involved in local, domestic and international trade. Hunted for use of body parts in traditional medicinal treatments (Alfred *et al.*, 2006b).

Genus *Lutrogale*

*109. *Lutrogale perspicillata* (Geoffroy)

1826. *Lutra perspicillata* I. Geoffroy, *Dict. class Hist. Nat.*, 7 : 519.

2005. *Lutrogale perspicillata* : Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 605.

Common Name : Smooth coated Indian otter.

Diagnostic Characters : Sides of frontal bones

behind post-orbital processes more or less parallel upto constriction in front of brain case, fur short and depressed, hind foot short, feet fully webbed, throat creamy in colour.

Locality : Known to occur in suitable habitats in Maharashtra State.

Material Examined/Sightings : Sighting records reported from Amaravati Dist. : Melghat Tiger Reserve, Aurangabad Dist. : Nathsagar Wetland, Chandrapur Dist. : Tadoba-Andhari Tiger Reserve, Nagpur Dist. : Pench National Park, Pune Dist. : Ujani Wetland Maharashtra state (Pradhan, 2002,2004,2005,2006).

Habitat : Aquatic, preferring to live in and near reservoirs, large rivers, tanks at lower altitudes.

External Distribution : Throughout peninsular India; including Eastern and North-Eastern regions.

Status : The species has been reported from number of localities in peninsular, eastern and north eastern India (Agrawal *et al.* 1992), however populations are fragmented; IUCN Criteria proposed as per the CAMP Report (1998) : Not Evaluated (National), Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule II Part II, CITES : Appendix : II.

Source : Prater (1980), Agrawal *et al.* (1992), Corbet and Hill (1992) and Wilson and Reeder (2005).

Remarks : Not much information on its latest distribution, locations, populations etc. is available.

Subfamily MUSTELINAE

Subfamily MUSTELINAE (Martens) is represented by a single species of Genus *Mellivora* from Maharashtra State.

*110. *Mellivora capensis* (Schreber)

1776. *Viverra capensis* Schreber, *Saugeth* pl. 125.

2005. *Mellivora capensis* : Wozencraft In Wilson and Reeder, *Mammal species of the World*, 3rd ed. Vol. I : 612.

Common Name : Ratel or Honey Badger.

Diagnostic Characters : Heavy build body with head and body length 64-84 cm.; Legs and tail relatively short; Dorsal parts from the top of the head to the base of the tail varying from grey to pale yellow or whitish, venter and legs black.

Locality : Eastern Maharashtra State;

Material Examined/Sightings : Sighting records reported from Amaravati Dist. : Melghat Tiger Reserve, Chandrapur Dist. : Tadoba-Andhari Tiger Reserve, Nagpur Dist. : Pench National Park Maharashtra state (Pradhan, 2004, 2005, 2006).

Habitat : Terrestrial, fossorial and nocturnal preferring to live in desert as well in dry and moist deciduous forests, but avoiding regions of heavy rainfalls. Big claws are used essentially for digging in the ground. Though ratels are omnivorous, they are essentially flesh eaters.

External Distribution : Almost throughout India except North-east India, Jammu and Kashmir and Western Ghats.

Status : IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-Near threatened (Nationally), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule I Part I.

Source : Corbet and Hill (1992), Wilson and Reeder (2005) and Alfred *et al.* (2006b).

Remarks : Ellerman and Morrison-Scot (1951, 1966) kept *Mellivora capensis* under the subfamily Mellivorinae. Corbet and Hill (1992) and Wilson and Reeder (2005) recognized this species under the subfamily Mustelinae of the family Mustelidae. Weasels, Badgers and Otters differ so much from each other in appearance that it is difficult to believe that there is any relationship between them. However certain similarities in skull and molar structures show resemblance and common affinity between them.

Order ARTIODACTYLA

Even-toed ungulates, axis of the foot between third and fourth toes; toes enclosed in horny hooves of roughly same size giving appearance

of single hoof. Four families in Maharashtra State represent order Artiodactyla.

Key to the families of the Order ARTIODACTYLA

1. Animals devoid of horns and antlers; Snout with naked nasal disc; stomach with two chambers..... SUIDAE
- Animals with or without horns or antlers. Present at least in males; Snout normal and without any nasal disc; stomach with 3-4 chamber 2
2. Horns or antlers absent. Metacarpals of 2nd and 5th digits complete; pre-orbital glands absent, I₁ not angular and wider than I₂ C₁, modified into tusks, stomach with three chambers..... TRAGULIDAE
- Horns or antlers present. Metacarpals of 2nd and 5th digits rudimentary; pre-orbital gland may or may not be present, I₁ angular and much wider than I₂, C₁ may or may not be modified into tusks, stomach with four chambers.....3
3. Permanent horns, at least in males, present; C₁ absent; post-orbital gland may or may not be present BOVIDAE
- Deciduous antlers present in males; C₁ present in normal shape; post orbital gland present .
..... CERVIDAE

Family SUIDAE

Family SUIDAE is represented by a single species, *Sus scrofa*, under a single genus, *Sus*, in Maharashtra State.

*111. *Sus scrofa cristatus* Wagner

1839. *Sus cristatus* Wagner, *Munch. Gelehr. Anz.*, 9 : 435.
2005. *Sus scrofa cristatus*: Grubb, P., Artiodactyla In : *Mammal species of the World* 3rd Ed. (Ed. Wilson & Reeder) Vol. I : 642.

Common Name : Wild Boar.

Diagnostic Characters : Greatly elongated muzzle terminating in a flattened naked nasal disc

adapted for rooting up subterranean parts of plants, upper incisors present, stomach with two chambers only, crest of black bristles present from nape to the back.

Locality : Common throughout Maharashtra State.

Material Examined/Sightings : Sightings reported from most of the protected areas of Maharashtra State such as Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur (Pradhan, 2004, 2005, 2006); Tansa Wildlife Sanctuary (Singh and Pradhan, 1992); Sanjay Gandhi National Park, Borivali, Dist. Mumbai Suburban (Yazdani *et al.*, 1992); Bhimashankar Wildlife Sanctuary, Dist. Pune (Pradhan and Talmale, 2009b); also sighted at Chandoli National Park, Dist. Sangli during faunistic survey.

Habitat : Terrestrial. Wild boar lives in grassy or scanty bushy jungle, forest, most commonly seen in high crops also.

External Distribution : Throughout India.

Status : Reported from many localities, human-wild boar conflict occurs due to crop damages, IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-least concern (National), Data Deficient (Global); Indian Wildlife (Protection) Act 1972 (as amended upto 2006), Schedule : Schedule III.

Source : Corbet and Hill (1992), Menon (2003) and Wilson and Reeder (2005).

Remarks : Wild Boar causes extensive damage to the standing crops.

Family TRAGULIDAE

The cloven hoofed deers are smallest of the ungulates possessing, like musk deer, enlarged upper canines in males. Mouse deers are included in this family because they do not possess upper incisors, deciduous antlers or horns and preorbital glands. But they do possess three chambered stomach. Family Tragulidae is represented by a single species under the genus *Moschiola* viz. *Moschiola meminna* Erxleben in Maharashtra State.

***112. *Moschiola meminna* (Erxleben)**

1777. *Moschus meminna* Erxleben, *Syst. Regn. Anim. Mamm.*, : 322.

2006. *Moschiola meminna* : Alfred, Ramakrishna and Pradhan, Validation of Threatened Mammals of India, : 420-422.

Common Name : Indian chevrotain or Mouse Deer.

Diagnostic Characters : Same as mentioned for the family, these deers have four well developed toes on each foot. A tiny little deer with high hindquarters. Its coat is olive-brown minutely speckled with yellow. The flanks are marked with characteristic rows of buff or white spots, which elongate and pass into longitudinal bands. Ventral side is always white.

Locality : Occur in suitable habitats in forested areas of Maharashtra State.

Material Examined/Sightings : Sightings reported from Bhandara Dist. (D'Abreu, 1927); Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur (Pradhan, 2004, 2005, 2006); Tansa Wildlife Sanctuary (Singh and Pradhan, 1992); Sanjay Gandhi National Park, Borivali, Dist. Mumbai Suburban (Yazdani *et al.*, 1992); Bhimashankar Wildlife Sanctuary, Dist. Pune (Pradhan and Talmale, 2009b).

Material examined/sighted : Two skins & skulls (ZSI, WRC, M/ 19,20) collected from Malavli Fort and Kamshet (Pune District) available in ZSI, WRC, collection.

Habitat : Terrestrial, small sized shy creature preferring to live in thick forest.

External Distribution : Peninsular India.

Status : Reported from many localities in Peninsular India, IUCN Criteria as per the CAMP Report (1998) : Lower risk-near threatened (National), Data Deficient (Global), Indian Wildlife (Protection) Act (1972) as amended upto 2006), Schedule : Schedule I Part I.

Source : Corbet and Hill (1992); Alfred *et al.*

(2002, 2006b), Menon (2003); Wilson and Reeder (2005).

Remarks : Nil.

Family CERVIDAE**Subfamily CERVINAE**

Medium sized deers possessing deciduous antlers in males, post-orbital gland and four chambered stomach. No incisors in upper jaw. Three genera of Subfamily Cervinae under a family Cervidae occur in Maharashtra State.

Key to the genera of the subfamily CERVIDAE

1. Upper canines tusk-like, in males; antlers simple and short, consisting of a short brow-tine and an unbranched beam *Muntiacus*
- Upper canines when present, not tusk-like; antlers long and branched 2
2. Body distinctly spotted; brow-tine set at right angles to the beam of antlers *Axis*
- Body unspotted; brow-tine forms an acute angle with the beam of antlers *Rusa*

Genus *Axis*

Species *Axis axis* (Erxleben) represents Genus *Axis* in Maharashtra State.

***113. *Axis axis axis* (Erxleben)**

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

2009. *Axis axis axis* : Pradhan and Talmale, *Fauna of Bhimashankar Wildlife Sanctuary, Conservation Area Series No., 42* : 45-46 (Publ. By Director, Zool. Surv. India, Kolkata)

Common Name : Chital, Spotted Deer.

Diagnostic Characteristic : Coat bright rufous-fawn, profusely spotted with white, at all ages and seasons, antlers with three tines, a long brow-tine set nearly at right angles to the beam; latter divides into two branches.

Locality : Occur in suitable habitats in forested areas of entire Maharashtra State.

Material Examined/Sightings : Sightings reported from Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur (Pradhan, 2004, 2005, 2006); Tansa Wildlife Sanctuary (Singh and Pradhan, 1992); Sanjay Gandhi National Park, Borivali, Dist. Mumbai Suburban (Yazdani *et al.*, 1992); Bhimashankar Wildlife Sanctuary, Dist. Pune, by different ZSI survey parties (Pradhan and Talmale, 2009b).

Habitat : Terrestrial, diurnal, prefers to stay in grassy forest glades and shaded streams, generally seen in herds of 10-30 with one or two stags.

External Distribution : Throughout India

Status : Abundant populations reported from suitable habitats in number of localities, IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-least concern (National), Data Deficient (Global); Indian Wildlife (Protection) Act, 1972 (as amended upto 2006) : Schedule IV.

Source : Agrawal *et al.* (1992), Corbett and Hill (1992); Alfred *et al.* (2002), Menon (2003) and Wilson and Reeder (2005).

Remarks : Wilson and Reeder (1993, 2005) have included Genus *Axis* and *Cervus* in subfamily Cervinae under family Cervidae on the basis of the revisionary studies carried out by Whitehead (1972) and Groves and Grubb (1987). Spotted deers are involved in large scale illicit trade, hunting and poaching at domestic as well as international level mostly for skin and other body parts and also for antlers for making trophies (Pradhan, 1997).

Genus *Rusa*

Only one species of Genus *Rusa* occurs in Maharashtra State.

*114. *Rusa unicolor* Kerr

1792. *Cervus axis unicolor* Kerr, *Anim. Kingd.*, : 300.

2005. *Rusa unicolor* : Grubb, *Artiodactyla In : Mammal species of the World 3rd Ed.* (Ed. Wilson & Reeder) Vol. I : 670-671.

Common Name : Sambar.

Diagnostic Characters : One of the large sized Indian deer species, height at shoulder about 159 cm., coat coarse and shaggy, mane present in stags, covering neck and throat. Each antlers with 3 tines, brow antler forming an acute angle with the beam, colour brown dorsally with yellowish or grayish tinge, ventral side paler.

Locality : Occur in suitable habitats in forested areas of Maharashtra State.

Material Examined/Sightings : Sightings reported from Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur (Pradhan, 2004, 2005, 2006); Tansa Wildlife Sanctuary (Singh and Pradhan, 1992); Sanjay Gandhi National Park, Borivali, Dist. Mumbai Suburban (Yazdani *et al.*, 1992); Bhimashankar Wildlife Sanctuary, Dist. Pune, by different ZSI suvey parties (Pradhan and Talmale, 2009).

Habitat : Terrestrial, preferring to live in thickly wooded forests, diurnal in habit.

External Distribution : Throughout India in suitable forested habitats.

Status : Many populations have been reported from number of localities, IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-least concern (National) and Data Deficient (Global); Indian Wildlife (Protection) Act, 1972 (as amended upto 2006) Schedule: Schedule : III.

Source : Corbet and Hill (1992), Alfred *et al.* (2002), Menon (2003) and Wilson and Reeder (2005).

Remarks : Ellerman and Morrison-Scott (1951), Corbet and Hill (1992) placed this species under the genus *Cervus*. However, Grubb in Wilson and Reeder (2005) retained generic name, *Rusa*. Same view has been followed in the present paper. Sambars are involved in large scale illicit trade, hunting and poaching at domestic as well as international level mostly for skin and other body parts and also for antlers for making trophies (Pradhan, 1997).

Genus *Muntiacus*

Genus *Muntiacus* is represented in Maharashtra State by a single species/subspecies, *Muntiacus muntjack*.

*115. *Muntiacus muntjack aureus* C.H. Smith

1826. *Cervus aureus* C.H. Smith, *Griffith's Cuvier Anim. Kingd.*, 4. : pl. Opposite p. 148.

2005. *Muntiacus muntjak aureus* : Grubb In Wilson & Reeder, *Mammal Species of the World* 3rd Ed. Vol. I : 667.

Common Name : Indian muntjak, Barking deer, Rib-faced deer.

Diagnostic Characters : Upper canines tusk like in males, antlers short and unspotted coat slightly darker in colour. Dorsum reddish chestnut, while venter whitish in colour. Heavy bodied deer with short dainty legs. Body fur soft and glossy. Male with a pair of short antlers arising from two skin covered bony pedicles which extend down on either side of the face as bony ridges.

Locality : Occur in suitable habitats in forested areas of Maharashtra State.

Material Examined/Sightings : Sightings reported from Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur (Pradhan, 2004,2005,2006); Tansa Wildlife Sanctuary (Singh and Pradhan, 1992); Sanjay Gandhi National Park, Borivali, Dist. Mumbai Suburban (Yazdani *et al.*, 1992); Bhimashankar Wildlife Sanctuary, Dist. Pune by different ZSI survey parties (Pradhan and Talmale, 2009b).

Habitat : Terrestrial, any thickly wooded forest including moist mixed deciduous type. Diurnal in habit.

External Distribution : Almost throughout the country excluding Jammu and Kashmir.

Status : Fragmented populations reported from suitable habitats in number of localities; IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-least concern (National), Data Deficient (Global); Indian Wildlife (Protection) Act, 1972 (as amended upto 2006) : Schedule III.

Source : Prater (1980), Corbet and Hill (1992), Alfred *et al.* (2002), Menon (2003) and Wilson and Reeder (2005).

Remarks : Wilson and Reeder (1993) had reported number of subfamilies under the Family Cervidae on the basis of the revisionary work carried out by Whitehead (1972) and Groves and Grubb (1987), and Genus *Muntiacus* was kept in subfamily Muntiacinae. However, Grubb in Wilson and Reeder (2005) in the revised edition retained this genus under the subfamily Cervinae. Barking deers are also involved in illicit trade, hunting and poaching at domestic level mostly for skin and other body parts such as meat and also for antlers for making trophies (Pradhan, 1997).

Family BOVIDAE

The bovid species possess permanent horns; usually in both sexes, consisting of bone cores with sheaths of horn, no incisors or canines in upper jaw, stomach with four chambers. Family Bovidae is represented by two subfamilies, Antilopinae and Bovinae in Maharashtra State.

Key to the subfamilies of family BOVIDAE

- Permanent horns with annular rings spirally twisted *Antilopinae*
- Permanent horns may be curved or straight but never twisted *Bovinae*

Subfamily ANTILOPINAE

Subfamily ANTILOPINAE is represented by two species under two separate genera in Maharashtra State.

Key to genera and species of the subfamily ANTILOPINAE

- Shoulder height of male about 74-83 cm; Horns in males, when fully grown, fairly long. Horns circular, in cross section *Antelope cervicapra*
- Shoulder height of male about 52-65 cm; Horns in males, when fully grown, fairly short;

Horns flat in cross section
 *Gazella bennettii*

Genus *Antelope*

*116. *Antelope cervicapra* (Linnaeus)

1758. *Capra cervicapra* Linnaeus, Syst. Nat. 10th ed., I : 69.

2005. *Antelope cervicapra* : Grubb In Wilson & Reeder, *Mammal Species of the World 3rd Ed.* Vol. I : 678.

Common Name : Blackbuck or Indian Antelope.

Diagnostic Characters : Adult males blackish brown dorsally, with white on throat and the ventrum. Males with long spiraled horns; Females yellowish fawn above, white below and white stripes on both the sides. Females without horns; Head and Body length about 120-130cm; Height at shoulder 74-83cm. Tail short in the range of 16-18 cm.

Locality : Occur in suitable habitats in Maharashtra State.

Material Examined/Sightings : Sightings reported from Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur (Pradhan, 2004,2005,2006); Lonar Wildlife Sanctuary, Dist. Buldhana; Areas surrounding Ujani wetland near Baramati region in Pune Dist.; (Pradhan and Talmale, 2008).

Habitat : Largely terrestrial, gregarious and social animal preferring to live in open plains covered with scrub or cultivations. They may enter open forests, which contain vast expanses of grass. It is a diurnal and silent animal found in a herd of 20-30 individuals.

External Distribution : Throughout the drier parts of peninsular India except in North-East India.

Status : IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-Least concern (Nationally), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule: Schedule I Part I, CITES Appendix: III (Nepal).

Source : Corbet and Hill (1992), Alfred *et. al.*

(2002, 2006b), Menon (2003) and Wilson and Reeder (2005).

Remarks : Blackbuck is hunted for its meat for food, skin and body parts for various purposes including making trophies (Pradhan, 1997). Threats to the survival of the species are also due to habitat destructions, human interference and domestic commercial trade.

*117. *Gazella bennettii* (Sykes)

1831. *Antelope bennettii* Sykes, Proc. Zool. Soc., 1830-31 : 104.

2006. *Gazella bennettii* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 440-443.

Common Name : Indian Gazelle or Chinkara.

Diagnostic Characters : Slender bodied antelope with horns in males relatively longer than in females; The horns are sinuous and closely ringed; Head and body length about 100 cm; Height at shoulder ranges between 52-65 cm.; Dorsum sandy brown to light chestnut with white under parts. Tail medium in length and covered with a dorsal crest of black hairs.

Locality : Occur in suitable habitats in Maharashtra State.

Material Examined/Sightings : Sighting records reported from Eastern, Northern and Southern part of Maharashtra (D'Abreu, 1927; Pradhan, 2004, 2005). Also sighted at Mayureshwar Wildlife Sanctuary, Dist. Pune in semiarid region of Western Part of Maharashtra (Per. Obs.).

Habitat : Inhabits plains and low hills preferring to live in thinly covered dry forested and rocky scrub covered areas.

External Distribution : North-western and Central India, including the Thar desert in Rajasthan and Gujarat extending southwards to a little south of the Krishna river (Alfred *et al.*, 2006b).

Status : IUCN Criteria proposed as per the CAMP Report (1998): Lower risk-Least concern (National) and Data Deficient (Global); Indian Red Data Book (1994) : Vulnerable; Indian Wildlife

(Protection) Act (1972, as amended upto 2006)
Schedule: Schedule I Part I, CITES Appendix:
Not listed.

Source : Corbet and Hill (1992), Alfred *et. al.* (2002, 2006b), Menon (2003), Wilson and Reeder (2005).

Remarks : Chinkara is hunted for its meat for food and skin and body parts for various purposes including making trophies (Pradhan, 1997). Threats to the survival of the species are also due to habitat destructions, human interference and domestic commercial trade.

Subfamily BOVINAE

Only four genera under Subfamily *Bovinae* have been recorded from the Maharashtra state.

Key to the genera of Subfamily BOVINAE

1. Two pairs of short horns in males. Small-sized antelope with height at shoulder under 65 cm *Tetracerus*
Only one pair of strong horns in males or in both sexes. Large-sized with height above 100 cm. 2
3. Tail with terminal tuft; Females with horns; Dorsal crest on neck absent 4
– Tail without terminal tuft; Females without horns; Dorsal crest on neck present *Boselaphus*
4. Horns are circular or oval in cross section.. *Bos*
– Horns are triangular in cross section..... *Bubalus*

Genus *Bos*

Only one species under genus *Bos* has been reported from Maharashtra State.

*118. *Bos gaurus* Smith

1827. *Bos gaurus* H. Smith, *Griffith's Cuvier Anim. Kingd.*, 4 : pl. Opposite p. 399.

2006. *Bos gaurus* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 456-459.

Common Name : Indian Gaur.

Diagnostic Characters : Gaur is a robust animal with height at shoulders in males in the range of 175-200 cm and possessing a pair of permanent horns in both the sexes. Gaur horn bases are wide apart and cross section of the horn is always round or oval. The horn consists of unbranched bone core with a sheath. Gaur possesses huge head, deep massive body and sturdy limbs. Ears large and broad. A prominent muscular dorsal ridge present on the shoulders which slopes down to the middle of the back where it ends in an abrupt dip. Being a member of the bovid family upper incisors absent, and diastema between incisors and cheek-teeth long. Tail with terminal tuft of hairs. The general body colour coffee or reddish brown or jet black in old bulls and ashy forehead with yellowish or whitish stockings. Calves always lighter in colour, while adult female blackish brown in colour. Stomach complex and divided into four chambers. In hot weather much of the hair is shed.

Locality : Occur in suitable habitats in Maharashtra State.

Material Examined/Sightings : Sighting records reported Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur in Eastern part of Maharashtra (Pradhan, 2004,2005,2006); ZSI survey parties also reported sightings from Radhanagari Wildlife Sanctuary, Dist. Kolhapur and Chandoli National Park, Dist. Sangli in Western Ghats of Maharashtra State.

Habitat : A typical thickly wooded hills are the favorite haunts of Gaur in India. Largely terrestrial preferring to live in all types of forests and jungles. They can go even beyond the altitude of 6000 Ft. They are fairly diurnal in habit. They are seen generally in herds. They keep to more or less thick jungle and come out to graze in open or outskirts of the forest. Gaur is shy and timid animal by nature.

External Distribution : North-east India, duars of West Bengal, Bihar, Orissa and Peninsular India.

Status : Fragmented populations have been reported from isolated localities; IUCN Criteria proposed as per the CAMP Report (1998) : Vulnerable (National) and Data Deficient (Global), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule I Part I, Red Data Book, National (1994): Vulnerable, CITES Appendix: I.

Source : Corbet and Hill (1992), Alfred *et al.* (2006b), Menon (2003) and Wilson and Reeder (2005).

Remarks : Peter Grubb in Wilson and Reeder (1993) has included *Bos gaurus* in *Bos frontalis*. However, *Bos gaurus* has been retained here based on the comments given in Corbet and Hill (1992). Alfred *et al.* (2006a,b) and Wilson and Reeder (2005) have also followed the same views. Gaur is hunted for its meat for food and body parts for various purposes including making trophies. Threats to the survival of the species are also due to habitat destructions, human interference and domestic as well as international illicit trade. (Pradhan, 1997).

Genus *Boselaphus*

*119. *Boselaphus tragocamelus* (Pallas)

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

2005. *Boselaphus tragocamelus* : Peter Grubb In Wilson & Reeder, *Mammal Species of the World 3rd Ed.* Vol. I : 693.

Common Name : Blue Bull, Nilgai.

Diagnostic Characters : Horse-like in build, higher shoulder sloping downwards to a low rump; Body colour in males iron-grey and in females sandy brown; A distinctive tuft of stiff black hairs present on the throat of males; Height at shoulder 130-150 cm.

Locality : Occur in suitable habitats in Maharashtra State.

Material Examined/Sightings : Sighting records reported from Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur in Eastern part of Maharashtra (Pradhan,

2004,2005,2006); Tansa Wildlife Sanctuary, Dist. Thane (Singh and Pradhan, 1992); Sanjay Gandhi National Park, Borivali, Dist. Mumbai Suburban (Yazdani *et al.*, 1992).

Habitat : Largely terrestrial animal preferring to live in dry deciduous and thorn forest. However, they avoid dense forests and move around in hills sparsely dotted with trees, or on undulating or level plains covered with grass and patches of scrub. They freely enter in crop fields and are source of damage to the standing crops. Though Blue Bulls are social in habit, they do not regularly congregate in large herds. Nilgai can survive without water for long periods.

External Distribution : Throughout India in suitable habitats.

Conservation Status : IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-Least concern (National), Indian Wildlife (Protection) Act (1972, as amended upto 2006) Schedule : Schedule III.

Source : Corbet and Hill (1992), Menon (2003), Wilson and Reeder (2005) and Nameer (2008).

Remarks : Nilgai is hunted for its meat for food and body parts for various purposes including making trophies. Threats to the survival of the species are also due to habitat destructions, human interference and domestic as well as international commercial illicit trade (Pradhan, 1997).

Genus *Bubalus*

Only one species under genus *Bubalus* has been reported from Maharashtra State.

120. *Bubalus bubalis* (Linnaeus)

1758. *Bos bubalis* Linnaeus, *Syst. Nat.* 10th ed., 1 : 72.

2005. *Bubalus bubalis*: Peter Grubb In Wilson & Reeder, *Mammal Species of the World 3rd Ed.* Vol. I : 694.

Common Name : Wild Water Buffalo.

Diagnostic Characters : It is of the size of domestic buffalo, but more robust and heavier. It bears large sized wide spreading flat-fronted horns. The horns are triangular in cross section,

transversely ridged and exceeding 92 cm in length. The coat is dark slaty with black short hairs. Tail long with tufted end that almost reaches the hocks. Legs dirty white just above the hocks and knees. Ears small, while hooves large and splayed.

Locality : Suitable habitats in eastern Maharashtra State-M.P. border.

Material Examined/Sightings : Past sighting records reported from Tadgaon and Bhamragarh of Allapalli division in Gadchiroli district (earstwhile part of Chandrapur District) which is adjoining to Bastar district of Chhattisgarh (Daniel and Grubh, 1966). However recent studies show absence of wild buffalo in this region of Maharashtra State (Divekar *et al.*, 1983).

Habitat : Low swampy ground, riverine tall grass jungle and mixed forest. Habitat structure is decreasing with general decline in habitat (Alfred *et al.*, 2006b).

External Distribution : Found in grass jungles of Arunachal Pradesh, Meghalaya, Orissa, Madhya Pradesh, Chhattisgarh (Alfred *et al.*, 2006b).

Conservation Status : IUCN Criteria proposed as per the CAMP Report (1998) : Endangered (National), Indian Wildlife (Protection) Act (1972, as amended upto 2006) : Schedule I Part I.

Source : Daniel and Grubh (1966); Divekar *et al.* (1983); Corbet and Hill (1992), Menon (2003), Wilson and Reeder (2005).

Remarks : Most of the wild buffalo habitat in its distributional range has been brought under Protected Areas. However care is needed to save wild populations from dreaded diseases like inderpest, foot and mouth diseases etc. due to its mixing with domesticated populations (Alfred *et al.*, 2006b).

Genus *Tetracerus*

Only one species under genus *Tetracerus* has been reported from Maharashtra State.

*121. *Tetracerus quadricornis* (Blainville)

1816. *Cerophorus (Cervicapra) quadricornis* Blainville, *Bull. Soc. philom.* Paris, : 75 & 78.

2006. *Tetracerus quadricornis* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 450-452.

Common Name : Four-horned antelope, Chousingha.

Diagnostic Characters : Presence of four horns (second pair on the forehead is comparatively much smaller), absence of rings on the horns, which are keeled in front, and presence of a pair of well-developed glands between the false hooves of the hind legs in both the sexes are the characteristic features of the species. Coat colour dull red-brown dorsally and white ventrally with dark stripe down the front of each leg.

Locality : Occur in suitable forested habitats in Maharashtra State.

Material Examined/Sightings : Sighting records reported from Melghat Tiger Reserve, Dist. Amravati; Pench National Park, Dist. Nagpur; Tadoba-Andhari Tiger Reserve, Dist. Chandrapur in Eastern part of Maharashtra (Pradhan, 2004,2005,2006); Tansa Wildlife Sanctuary, Dist. Thane (Singh and Pradhan, 1992); Sanjay Gandhi National Park, Borivali, Dist. Mumbai Suburban (Yazdani *et al.*, 1992); Bhimashankar Wildlife Sanctuary, Dist. Pune (Pradhan and Talmale, 2009b).

Habitat : Terrestrial, well wooded and watered undulating terrain with dry deciduous forests, also found in transition zone between scrub and the forests, diurnal in habit.

External Distribution : Peninsular India excluding southwestern and northeastern regions.

Status : Fragmented populations reported from isolated localities; IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-near threatened (National) and Data Deficient (Global); Indian Wildlife (Protection) Act 1972 (as amended upto 2006) : Schedule : Schedule I Part I; Red Data Book (1994) (National) : Vulnerable; Red Data Book (1996) (International) : Vulnerable.

Source : Corbet and Hill (1992), Alfred *et al.* (2002, 2006b), Menon (2003) and Wilson and Reeder (2005).

Remarks : Corbet and Hill placed this species under family Bovidae without distinction of any subfamily. However Ellerman and Morrison-Scot (1951), and Wilson and Reeder (1993 and 2005) have recognized subfamily Bovinae. Same view has been followed in the present paper.

Order CETACEA

The species under order CETACEA are highly specialized and wholly adapted to an aquatic life with reproduction and feeding taking place in water. The animals of this order have developed smooth, spindle shaped and hairless bodies with fore limbs flattened into paddle shaped flippers. Hind limbs are absent, while tail tip expanded into lateral, horizontal flukes. Teeth absent or when present simple or conical.

Order *Cetacea* is represented by two suborders in Maharashtra State.

Key to the two suborders of CETACEA

- Teeth present and horny ‘baleen’ plates absent ODONTOCETI
- Teeth absent while horny ‘baleen’ plates present MYSTICETI

Suborder MYSTICETI

Only one family has been reported from Maharashtra State.

Family BALAENOPTERIDAE

Family BALAENOPTERIDAE is represented by two species under Genus *Balaenoptera* in Maharashtra State.

Genus *Balaenoptera*

Key to the two species of Genus *Balaenoptera* reported from Maharashtra State

- Largest marine mammal along Indian coast, length about 24-28 metres and even more; Body streamlined, larger normal, and without any “V” shaped pointed head with no central ridge on dorsal side, Females larger than

males; Body bluish grey in colour, often mottled with yellowish grey. Characteristic white patch on right side of the lower jaw absent giving jaws uniform in appearance...

..... *Balaenoptera musculus*

Second large-sized whale species with maximum length recorded up to 24 metres. Head “V” shaped and pointed with a prominent central ridge over it. Body dark grey to blackish above with no mottling, white underneath. There is a large white patch on right side of lower jaw giving a characteristic asymmetrical appearance

..... *Balaenoptera physalus*

122. *Balaenoptera musculus* (Linnaeus)

1758. *Balaena musculus* Linnaeus, *Syst. Nat.* 10th ed., 1 : 76.

2006. *Balaenoptera musculus* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 372-374.

Common Name : Blue Whale or Lesser Rorqual.

Diagnostic Characters : Largest living mammal, length about 24-28 metres; Lower jaw smaller than upper jaw. Body streamlined, larger head, flippers are long and tapering; Females are slightly larger than males; Body bluish grey in colour, often mottled with yellowish grey.

Locality : Along west coast of Maharashtra State

Material Examined/Sightings : Sighting records reported in the past from Vijaydurg (in 1912), Dhabool (in 1913), Ratnagiri district and Umargam, 160kms from Mumbai (in 1951) in Maharashtra State (De Silva, 1987; Sathasivam, 2004).

Habitat : Blue whale prefers to live in cold water and open sea. It is involved in seasonal inter-continental migration. Lives singly or in pairs, seldom seen in large schools. Feeds mainly on euphausiids (Krills), amphipods, copepods and cephalopods.

External Distribution : Worldwide. From polar to tropical waters. Living in polar waters during summer, migrating towards equator in winter. One population has spread and separated from the one in Southern hemisphere and lives in North Indian Ocean waters at all the times of the year. This population has been named as Pygmy Blue Whales. They have been reported from Mangalore, Cochin, Tuticorin, Calicut, Surat, Okha and number of other places along the Indian coast. Records based mostly on carcasses washed towards shore.

Conservation Status : IUCN Criteria proposed as per the CAMP Report (1998) : Critically Endangered (National) and Data Deficient (Global), Indian Wildlife (Protection) Act (1972) (As amended upto 2006): Schedule II; Part I, CITES Appendix : I.

Source : Corbet and Hill (1992), Wilson and Reeder (1993, 2005), Agrawal and Alfred (1999), Sathasivam (2004) and Alfred *et al.* (2006a, b).

Remarks : Nil.

123. *Balaenoptera physalus* (Linnaeus)

1758. *Balaena physalus* Linnaeus, *Syst. Nat.* 10th ed., 1 : 75.

2006. *Balaenoptera physalus* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 375-377.

Common Name : Fin Whale.

Diagnostic Characters : Fin Whale is a second large-sized whale species next to Blue Whale in Indian waters. Fin whale possesses "V" shaped pointed head with a prominent central ridge over it. 56-100 ventral furrows extending upto naval present. Back ridged from dorsal fin to tail fluke. Dorsal fin small but distinct. Baleen plates 230-370 in number on each side with size of 42 × 24 cm. Plates are striped with alternate yellow and blue bands. Body dark grey to blackish above with no mottling, white underneath. There is a large white patch on right side of lower jaw giving a characteristic asymmetrical appearance in coloration. Maximum length recorded upto 24 meters.

Locality : Along west coast of Maharashtra State.

Material Examined/Sightings : Sighting records reported in past (in 1965) (stranding and or washed ashore) on Mumbai coast in Maharashtra State (Sathasivam, 2004).

Habitat : Oceanic and pelagic inhabitant. Also involved in seasonal long distant migrations. Lives in a group of 3-10 or even 20 individuals. Feeds mainly on krills, squids and copepods. Its main predator is killer whale.

External Distribution : Circumtropical (Indian Ocean and Pacific Ocean).

Status : IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-near threatened (National) and Data Deficient (Global), Indian Wildlife (Protection) Act (1972) (as amended upto 2006) Schedule II Part I, CITES : Appendix I.

Source : Corbet and Hill (1992), Agrawal and Alfred (1999), Sathasivam (2004) and Alfred *et al.* (2006a, b).

Remark : Survival of the species in the region is threatened due to heavy hunting for international commercial trade, pollution, accidental death due to trapping in gill nets, collisions with motor boats, fishing vessels etc.

Suborder ODONTOCETI

Out of seven known families described under this suborder, only three families have been reported from Maharashtra State.

Key to the three families of Odontoceti

1. Maximum length in the region 20 metres; Lower jaw shorter than upper one PHYSETERIDAE
- Maximum length in the region below 20 meters; Lower jaw not shorter than upper one 2
2. Maximum length in the region 10 metres, dorsal fin usually high and pointed and teeth large or moderate and conical DELPHINIDAE

- Maximum length in the region 1.8 metres, dorsal fin totally absent, teeth flat crowned PHOCOENIDAE

Family DELPHINIDAE

Family DELPHINIDAE is represented by four genera in Maharashtra State.

Key to the Genera of DELPHINIDAE

1. Large sized delphinids with maximum length above 5.4 meters *Pseudorca*
 - Small sized delphinids with maximum length below 5.4 meters 2
2. Broad hump below dorsal fin present *Sousa*
 - Broad hump below dorsal fin absent 3
3. No stripe between eyes and flippers and eyes and anus; palate with deep groove on each side; 40-50 teeth present on each side of the jaw *Delphinus*
 - A stripe present from eyes to flippers or from eyes to anus; palate devoid of any groove on each side; 35-65 teeth present on each side of the jaw *Stenella*

Genus *Delphinus*

Only one species of Genus *Delphinus* occurs in Maharashtra State.

*124. *Delphinus delphis* Linn.

1758. *Delphinus delphis* Linnaeus, C. *Systema naturae* 10th Ed., 1: 77.
2006. *Delphinus delphis*: Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 342-344.

Common Name : Common Dolphin or Short-beaked Saddleback Dolphin.

Diagnostic Characters : The snout is prolonged into a long narrow beak separated by a groove from the forehead. Both jaws contain conical teeth exceeding 35 in numbers in each row. Body slender, blowhole single, dorsal and pectoral fins falcate. Dorsum black or dark grey and under parts

whitish, while sides with bands of fulvous or ochreous in colour.

Locality : Along west coast of Maharashtra State.

Material Examined/Sightings : Sighting records reported from Murud, Janjira coast, Dist. Raigad (Sathasivam (2004); Along coastal region of Maharashtra State (Alfred *et al.* (2006b).

Habitat : Dolphins are aquatic in nature and seen in schools in coastal waters, one of the fastest marine animal attaining the speed upto 30 knots.

External Distribution : Circumtropical, Indian, Pacific and Atlantic Oceans.

Status : Many sightings have been reported from number of localities along Indian coastline, IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-Near threatened (National), Data Deficient (Global), Indian Wildlife (Protection) Act (1972 as amended upto 2006), Schedule : Schedule II, Part I, CITES : Appendix II.

Source : Corbet and Hill (1992), Agrawal and Alfred (1999), Sathasivam (2004) and Alfred *et al.* (2006a,b).

Remarks : Dolphin is known from very ancient times and has figured in myths and legends of early Mediterranean civilization. Now it is being kept in dolphinariums all over the world.

Genus *Pseudorca*

125. *Pseudorca crassidens* (Owen)

1846. *Phocaena crassidens* Owen, *Hist. Brit. Foss. Mamm. Birds*, p. 516, fig., 213.
2006. *Pseudorca crassidens*: Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 390-392.

Common Name : False Killer Whale.

Diagnostic Characters : Smaller than the Killer Whale with total length about 6 meters; Long slender body, smaller but bulbous head, distinct backwardly curved dorsal fin and tapering flippers; Body uniformly dark in colour, white on ventral side.

Locality : Along west coast of Maharashtra State.

Material Examined/Sightings : Sighting records recorded from Gulf of Cambay, Maharashtra (Sathasivam, 2004; Alfred *et al.*, 2006b).

Habitat : False killer whale is mainly a deep water oceanic form preferring to feed primarily on cephalopods and large fishes. They play, ride on the waves and leap above the surface. Oceanic deep water forms, but they may approach coast line near deep waters.

External Distribution : World wide, in tropical and temperate oceans including Indian Ocean, Arabian Sea and Bay of Bengal. Recorded from East, West Coast and around Andaman and Nicobar Islands.

Status : IUCN Criteria proposed as per CAMP Report (1998) : Lower risk-Near threatened (National) Indian Wildlife (Protection) Act (1972 as amended upto 2006), Schedule : Schedule II, Part I, CITES : Appendix II.

Source : Corbet and Hill (1992), Agrawal and Alfred (1999), Sathasivam (2004) and Alfred *et al.* (2006a,b).

Remarks : Nil.

Genus *Sousa*

Genus *Sousa* is represented by a single species, *Sousa chinensis*, in Maharashtra State.

126. *Sousa chinensis* (Osbeck)

1765. *Delphinus chinensis* Osbeck, P. *Reise nach Ostindien und china*. Rostock xxiv : pp. 552, 13 pls.
2006. *Sousa chinensis*: Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 354-356.

Common Name : Indo-Pacific hump-back Dolphin.

Diagnostic Characters : Medium sized dolphin with maximum length reaching upto 3 meters, the beak is slender and sharply defined from forehead, characteristic broad hump below dorsal fin present, teeth in each row less than 35 in number.

Locality : Along west coast of Maharashtra State.

Material Examined/Sightings : Sighting records of stranding reports of Indo-Pacific Humpback Dolphin specimens along coastal areas like Alibag, Raigad district; Dahanu, Thane District of Maharashtra State (Sathasivam, 2004).

Habitat : Aquatic, marine, coastal, estuaries, confluence of rivers with seas etc. They have also been reported from the lower reaches upto 250 kms of the Chinese rivers.

External Distribution : Indo-Pacific region.

Status : Many sightings have been reported from number of localities along Indian coastline; IUCN Criteria proposed as per CAMP Report (1998) : Endangered (National), Data Deficient (Global); Indian Wildlife (Protection) Act (1972 as amended upto 2006), Schedule : Schedule : II Part I; CITES : Appendix : I.

Source : Corbet and Hill (1992), Roberts (1997), Agrawal & Alfred (1999) and Sathasivam (2004).

Remarks : The species is reported to be declining in population, occurrence, area of occupancy and quality of habitat. Survival threat to the population is due to number of accidental death in fishing nets while catching fishes.

Genus *Stenella*

Genus *Stenella* is represented by a single species, *Stenella longirostris*, in Maharashtra State.

127. *Stenella longirostris* (Gray)

1828. *Delphinus longirostris* Gray, *Specil. Zool.*, 1, 1.
2006. *Stenella longirostris*: Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 351-353.

Common Name : Spinner dolphin.

Diagnostic Characters : Medium sized streamlined bodied dolphin with maximum length reaching upto 2.5 metres, the beak is slender, long and sharply defined from forehead, teeth in each row in the range of 45-65 in number. Body colour pattern variable. However, it is, in general, grey

above white below with paler sides. A grey stripe runs from eye to flipper or from eye to anus. Adults without spots on the back. Subtriangular dorsal fin located in the middle of the back. Tip blunt and backwardly directed. Tail fluke with strongly keeled base and notched in the middle.

Locality : Along west coast of Maharashtra State.

Material Examined/Sightings : Sighting records reported from Bombay High near ONGC offshore base and also from Murud-Janjira, Raigad Dist. in Maharashtra State (Sathasivam, 2004).

Habitat : Oceanic pelagic forms of circumtropical waters. The spinner dolphins are seen in large schools (200 to 1000) in offshore and deep waters. Feeds mainly on fishes and squids.

External Distribution : Indo-Pacific region.

Status : Many sightings have been reported from number of localities along Indian coastline; IUCN Criteria proposed as per CAMP Report (1998) : Lower risk–Near threatened (National), Data Deficient (Global); Indian Wildlife (Protection) Act (1972, as amended upto 2006), Schedule : Schedule : II Part I; CITES : Appendix : II.

Source : Corbet and Hill (1992), Roberts (1997), Agrawal & Alfred (1999), Sathasivam (2004) and Alfred *et al.* (2006a,b).

Remarks : Survival threat to the population is due to human interference, trade pollution, number of accidental deaths in fishing nets while catching fishes and excessive tourism in dolphin habitats.

Family PHOCOENIDAE

Family PHOCOENIDAE is represented by a single species under the Genus *Neophocaena* in Maharashtra State.

Genus *Neophocaena*

128. *Neophocaena phocaenoides* (Cuvier)

1828. *Delphinus phocaenoides* Cuvier, G., *Règne Anim., Nouv. Ed.*, 1 : 291.

2006. *Neophocaena phocaenoides* : Alfred, Ramakrishna and Pradhan, *Validation of Threatened Mammals of India*, : 360-362.

Common Name : Black finless porpoise.

Diagnostic Characters : Absence of dorsal fin is the characteristic feature, length not more than 2 metres, teeth flat crowned and not more than 15-20 in each row. Little finless porpoise is one of the smallest cetaceans. Head blunt rounded without any beak. Eyes rather well developed. Blowhole crescentic in shape. Flippers small and elliptical. There are small, hard and horny tubercles in the mid region of the back extending upto caudal peduncle. Tail compressed horizontally with a notch in the middle. Body colour dark slaty grey with purplish white patches on throat and lips.

Locality : Along west coast of Maharashtra State.

Material Examined/Sightings : A specimen (a skull and foetus) collected from the mouth of Bombay Harbor preserved in the British Museum (Natural History) (Sathasivam, 2004).

Habitat : The finless porpoise is aquatic preferably marine as well as estuarine, both, in habit. Prefers to live in coastal, river mouth, and estuarine waters. It has been reported to reach lower reaches upto 65 kms from the mouth of Indus river in Pakistan and over 1000 kms. from the mouth of Yangtze river in China.

External Distribution : Circumtropical (Indian Ocean and Pacific Ocean).

Status : Reported to have been occasionally caught in gill nets from number of localities along the Indian coast line, IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-near threatened (National) and Data Deficient (Global), Indian Wildlife (Protection) Act (1972) (as amended upto 2006) Schedule I Part I, CITES : Appendix I; Red Data Book (National)(1994) : Insufficiently known.

Source : Corbet and Hill (1992), Agrawal and Alfred (1999), Sathasivam (2004) and Alfred *et al.* (2006 a,b).

Remark : Survival of the species in the region is threatened due to pollution, accidental death due to trapping in gill nets, collisions with motor boats, fishing vessels etc.

Family PHYSETERIDAE

Family PHYSETERIDAE is represented by a single species under the Genus *Physeter* in Maharashtra State.

Genus *Physeter*

129. *Physeter macrocephalus* Linnaeus

1758. *Physeter macrocephalus* Linnaeus, *Syst. Nat.* 10th ed., 1 : 76.

2006. *Physeter macrocephalus* : Alfred *et al.*, *Validation of Threatened Mammals of India*, : 387-389

Common Name : Sperm Whale.

Diagnostic Characters : Large sized, with length in the range of 8-18 m.; Head enormous, squarish, about one-third size of the body containing a large organ filled with spermaceti; Body colour grey to dark bluish grey; Upper jaw toothless; Lower jaw narrow and under slung studded with 18-27 large thick and conical teeth on each side; No dorsal fin but row of humps present on posterior half of the back up to the tail.

Locality : Along west coast of Maharashtra State.

Material Examined/Sightings : Reported from West coast area (Karwar in Karnataka and Jakhah coast in Gujarat) adjacent to Maharashtra State (Agrawal and Alfred, 1999; Sathasivam, 2004).

Habitat : Deep water oceanic forms. Usually not found in areas with depth less than 180 m. They can dive as deep as 2800 meters and be under water for more than an hour. Further they can remain on surface and below nearly 50 times for an hour before next deep dive. Sperm Whale may be found solitary or in groups.

External Distribution : World wide. Sperm Whale females and young males are confined between 45°N and 45°S latitudes, while mature males travel upto Arctic and Antarctic oceans. Reported from east and west coasts of India (Alfred *et al.* (2006a,b).

Conservation Status : IUCN Criteria proposed as per the CAMP Report (1998) : Lower risk-near threatened (National) Indian Wildlife (Protection) Act (1972)(as amended upto 2006) Schedule II Part I, CITES : Appendix I.

Source : Corbet and Hill (1992), Agrawal and Alfred (1999), Sathasivam (2004), Alfred *et al.* (2006a,b).

Remarks : Nil.

RESULTS AND DISCUSSION

Systematic list of mammalian species given above reports occurrence of 129 mammal species/subspecies in Maharashtra State. Out of these, 113 species (87%) were actually collected and/or sighted by ZSI survey parties which visited Maharashtra State during various faunistic surveys conducted in conservation areas and some districts of the state in the past, while 16 species (13%) were included in the list on the basis of the literature consulted (Fig. 1).

If the species/subspecies are sorted out in various categories given in Table 1, it will be seen that 129 species/subspecies of 79 genera belonging to 35 families grouped in thirteen mammalian orders have been reported from this region. The table further shows a broad spectral diversity at all the levels at every stage. It has been expressed very well particularly in orders like *Chiroptera*, *Carnivora*, *Artiodactyla* and *Rodentia*. Even marine mammal order, *Cetacea*, has shown remarkable representation in this region.

Fig. 2 shows order-wise representation of mammalian species. Class *Mammalia* is represented by thirteen orders with predominance of *Chiroptera*, *Rodentia*, *Carnivora*, *Artiodactyla* and *Cetacea* (Fig. 2 & 3). It will be seen that more than 70% mammalian species belong to the orders *Chiroptera*, *Carnivora* and *Rodentia*. Incidentally Chiropteran and rodent representation is very well in the region (Total 40 and 30 spp. respectively).

Some of the most interesting species reported from the state are :

Indian Elephant (*Elephas maximus indicus* Cuvier); Horsfield Shrew (*Crocidura horsfieldii* (Tomes)); Painted Bat (*Kerivoula picta picta* (Pallas)); Malabar Slender Loris (*Loris*

lydekkerianus malabaricus Wroughton); Leopard/Panther (*Panthera pardus fusca* (Meyer)); Royal Bengal Tiger (*Panthera tigris tigris* (Linn.)); Common Dolphin (*Delphinus delphis* Linnaeus); Spinner Dolphin (*Stenella longirostris* (Gray)); Sperm Whale (*Physeter*

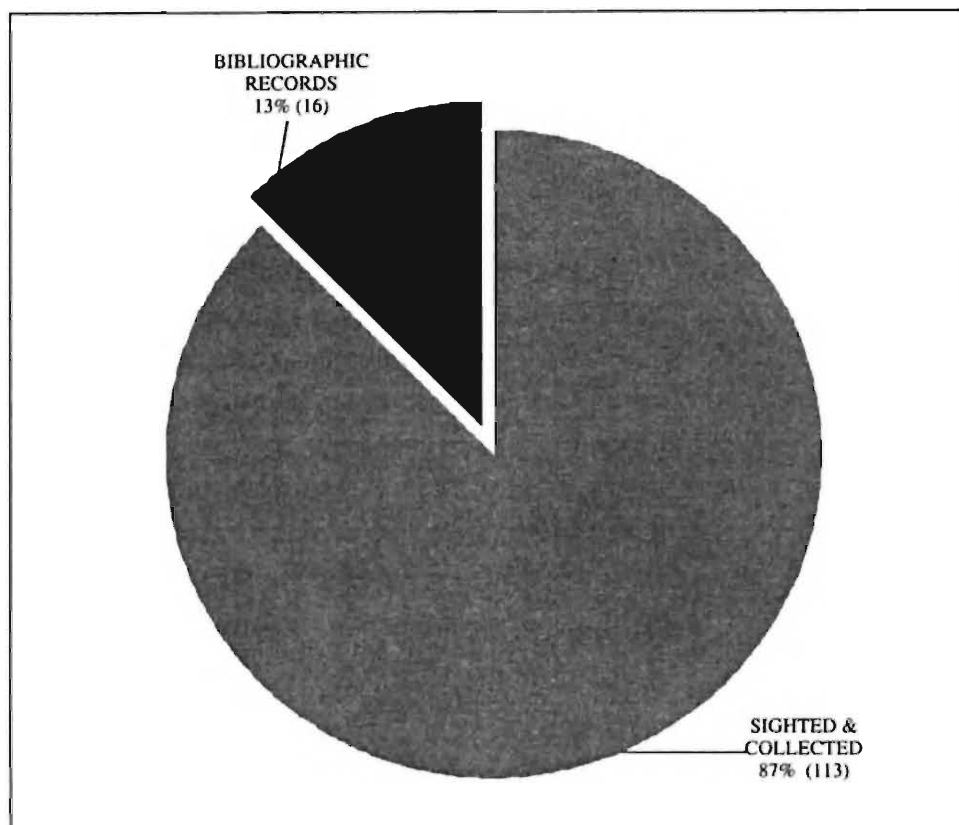


Fig. 1. Mammal species/subspecies collected, sighted & recorded from Maharashtra state.

macrocephalus Linnaeus); Dugong (*Dugong dugon* (Mueller)); Indian Mouse Deer or Chevrotain (*Moschiola meminna* (Erxleben); Indian Gaur (*Bos gaurus* Smith); Indian Giant squirrel (*Ratufa indica indica* (Erxleben) and *Ratufa indica centralis* Ryley) etc.

When the endemic status of the mammalian species/subspecies reported from Maharashtra State was studied (Fig. 4), it was noticed that there are 22 endemic species/subspecies (17% of total 129 mammalian species) belonging to orders Scandentia (1), Primates (5), Rodentia (14) and Chiroptera (2). Though mammalian species diversity is rich, the endemism in this region is quite noticeable. Interestingly, however, most of the endemic rodent subspecies are endemic to Western Ghats only.

Order SCANDENTIA

1. *Anathana ellioti ellioti* (Waterhouse, 1850)

Order PRIMATES

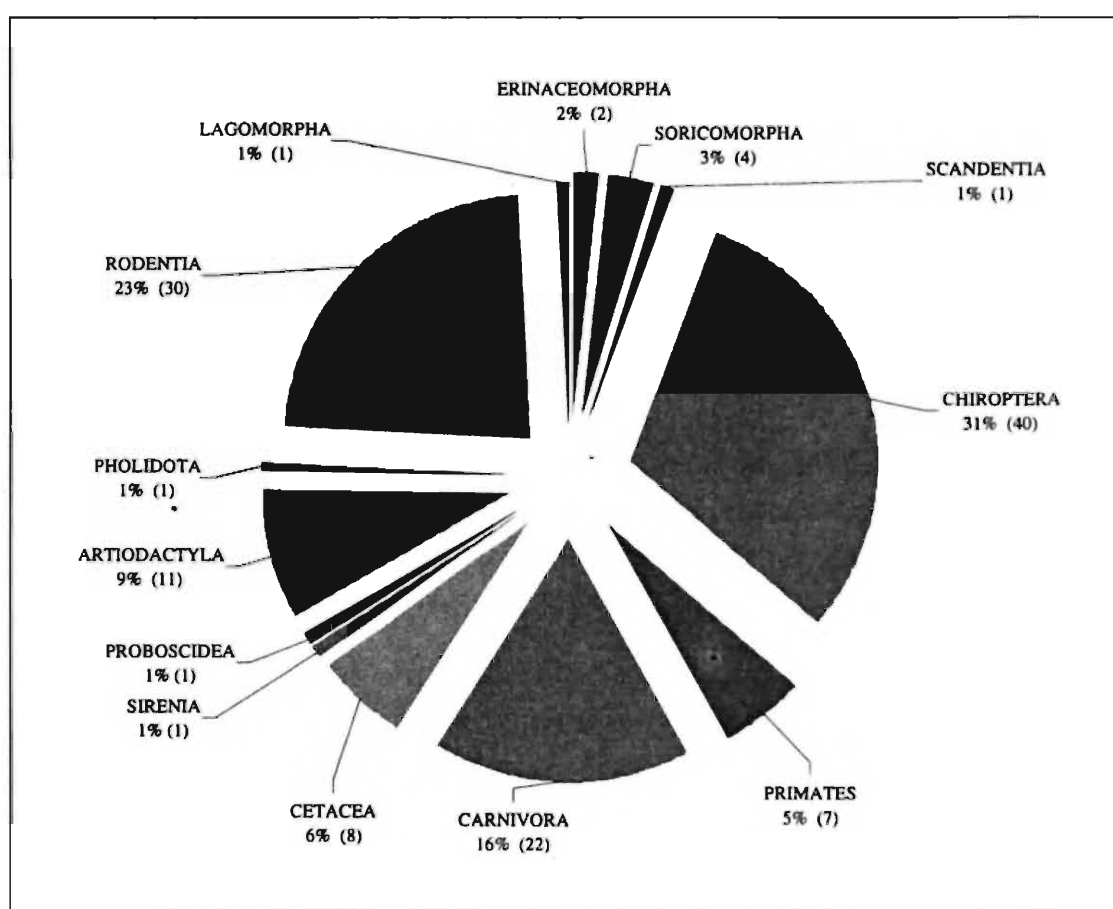
1. *Loris lydekkerianus malabaricus* Wroughton, 1917
2. *Macaca radiata* (Geoffroy, 1812)
3. *Semnopithecus entellus hypoleucos* Blyth, 1841
4. *Semnopithecus entellus achates* (Pocock, 1928)
5. *Semnopithecus entellus anchises* Blyth, 1844

Order RODENTIA

1. *Funambulus palmarum bellaricus* Wroughton

Table 1. Mammalian Diversity in Maharashtra State

Sr. No.	Orders	Suborders	Families	subfamilies	genera	Species/ subspecies
1.	PROBOSCIDEA		1		1	1
2.	SIRENIA		1		1	1
3.	SCANDENTIA		1		1	1
4.	PRIMATES		2	2	3	7
5.	RODENTIA	3	3	5	12	30
6.	LAGOMORPHA		1		1	1
7.	ERINACEOMORPHA		1	1	2	2
8.	SORICOMORPHA		1	1	2	4
9.	CHIROPTERA	2	8	6	20	40
10.	PHOLIDOTA		1		1	1
11.	CARNIVORA	2	7	7	17	22
12.	ARTIODACTYLA		4	3	11	11
13.	CETACEA	2	4		7	8
	TOTAL	9	35	25	79	129

**Fig. 2.** Order-wise mammal species /subspecies from Maharashtra state. (Total : 129)

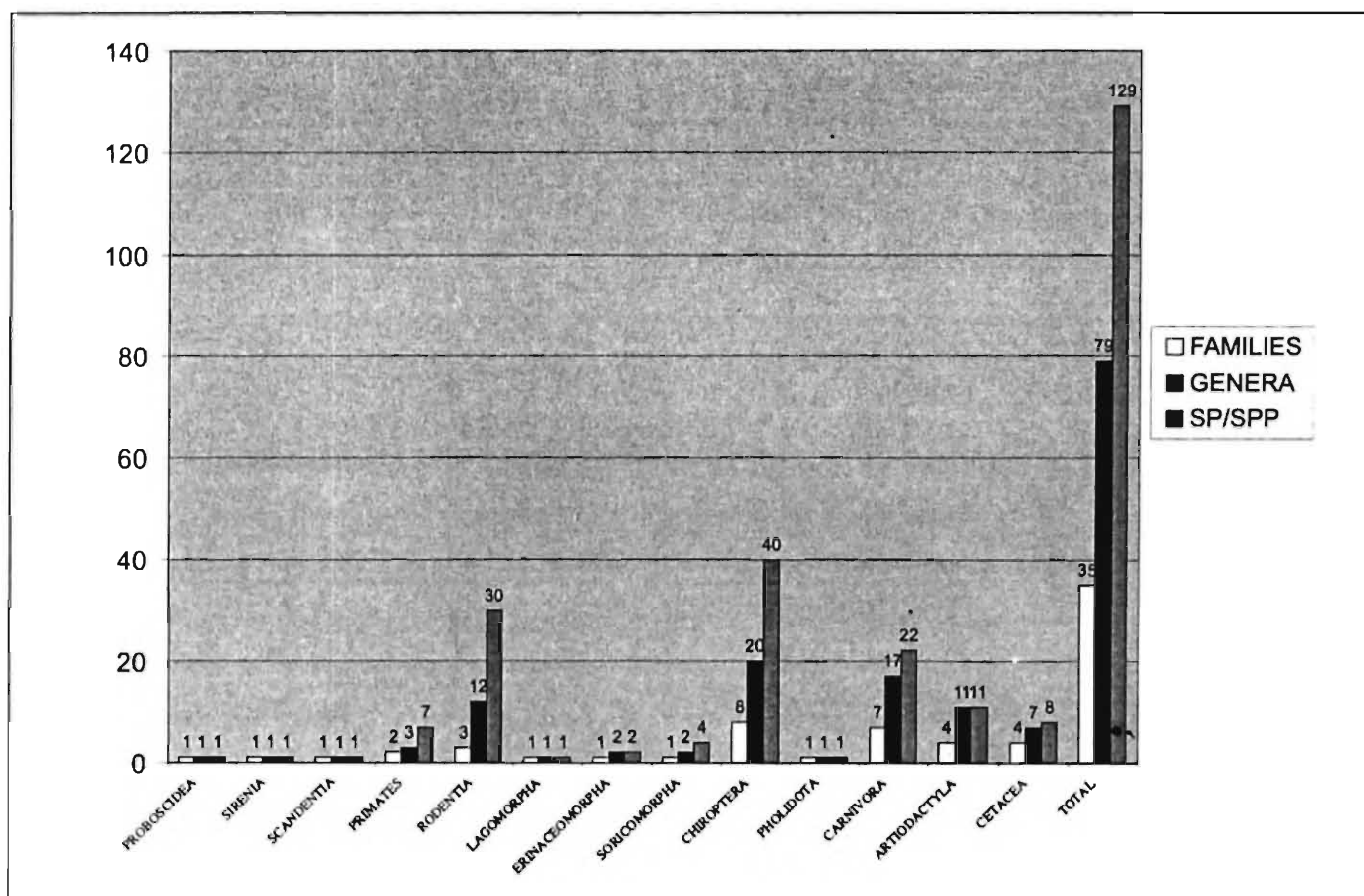


Fig. 3. Order-wise mammalian diversity in Maharashtra state.

2. *Funambulus palmarum robertsoni* Wroughton
3. *Funambulus tristriatus tristriatu* (Waterhouse)
4. *Funambulus pennantii pennantii* Wroughton
5. *Ratufa indica indica* (Erxleben)
6. *Ratufa indica centralis* Ryley
7. *Rattus rattus narbadae* Hinton
8. *Rattus rattus wroughtoni* (Hinton)
9. *Rattus satarae* Hinton
10. *Millardia kondana* Mishra and Dhanda
11. *Mus cookii nagarum* Thomas
12. *Mus platythrix* Bennet
13. *Mus saxicola saxicola* Elliot
14. *Bandicota indica malabarica* (Shaw)

Order CHIROPTERA

1. *Myotis montivagus peytoni* (Wroughton and Ryley, 1913)
2. *Myotis horsfieldi peshwa* (Thomas, 1915)

Conservation status of the mammalian species under Indian Wildlife (Protection) Act 1972

(amended upto 2006) was also studied. It was found that 84 out of 129 mammalian species have been included in all the five schedules of the Act (Fig. 5). However, on the other hand, there are about 45 mammalian species, mostly microchiropteran bat species, which have not been listed under any of the wildlife Act schedules.

There are three Critically Endangered mammal species reported from Maharashtra State viz: Sinhagarh Rat (*Millardia kondana* Mishra and Dhanda); Blue Whale (*Balaenoptera musculus* (Linnaeus)) and Dugong (*Dugong dugon* (Mueller)). Out of these, Sinhagarh Rat, is known only from its type locality Sinhgad, Pune.

Table 2 summarizes order-wise IUCN categories of threats assigned to the mammalian species/subspecies as per CAMP Reports for Mammalia (1998), Chiroptera (2002), Primates (2003) and Small Non-Volant mammals (2005). According to these reports, there are three species under Critically Endangered category, 3 in Endangered and 13 in Vulnerable categories, while

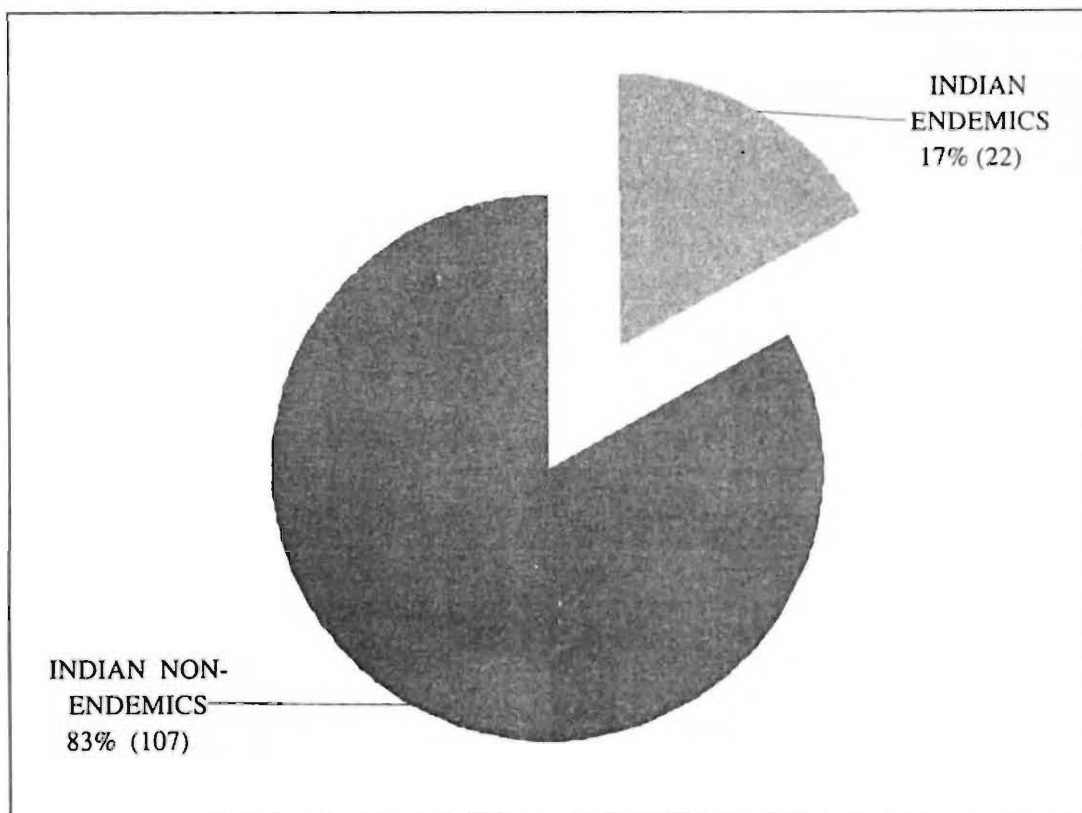


Fig. 4. Indian endemicity in Maharashtra state mammals.

there are at least 80 species listed under Least Concern category (Fig 6). These belong mostly to *Rodentia* and *Chiroptera* orders. Lastly, there are two Carnivore and two Rodent species listed as Not Evaluated, because of their unstable taxonomic placement for quite sometime. They are *Lutra lutra* (Lin.), *Lutragale perspicillata* (Geoffroy), *Rattus satarae* Hinton, *Rattus norvegicus* (Berkenhout).

Further, 129 species include 50 species (38%) which are under higher conservation status (Indian Wildlife Act Schedule I and II, CITES Appendix I & II and IUCN Categories from Endangered to Vulnerable) (Fig. 7).

Finally, following conclusions can be drawn on the basis of above observations:

1. Endemicity of the mammalian fauna (22, 17% of total 129) in Maharashtra State is mostly due to closeness to Western Ghats, one of the 25 biodiversity 'Hot Spots,' running along the west coast of the State.
2. Some of the most interesting mammalian species other than *Panthera tigris tigris* and *Panthera pardus fusca*, which can attract attention, are *Elephas maximus*, *Lutragale perspicillata*, *Bos gaurus*, *Ratufa indica*, etc. There is also records of movement of marine mammal species such as blue whale and sea cow along Maharashtra coastline.
3. Fairly large number of mammalian species (50 : 38%) with higher conservation status of Schedule I and Schedule II of Wildlife (Protection) Act, 1972 (2002), Appendices I & II of CITES and Categories from Endangered to Vulnerable of IUCN could be recorded, while about 28% of the total mammal species dominated by microchiropteran bats with no status under Wildlife (Protection) Act have also been reported from this region.
4. Thus, State of Maharashtra shows most diversified, rich and varied mammalian elements.

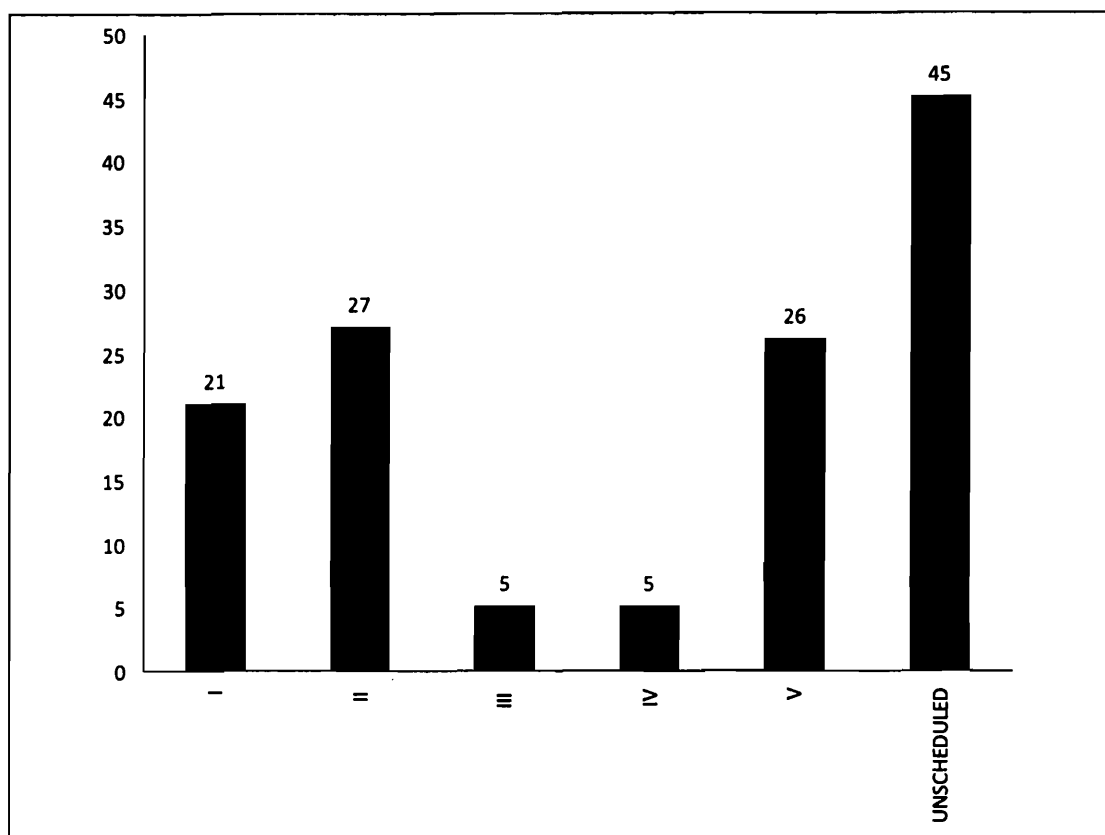


Fig. 5. Maharashtra state mammal sp./spp. Under various schedules of Indian wildlife (protection) act (1972 as amended up to 2006).

Table 2. Conservation Status (IUCN categories (National) as per CAMP Reports (1998, 2002, 2003 and 2005) of Mammal Species/Subspecies from Maharashtra State.

Sl. No.	Orders	Critically Endangered	Endangered	Vulnerable	Lower Risk-Near Threatened / Near Threatened	Lower Risk-Least Concern/ Least Concern	Data Deficient / Not Evaluated	Total
1	PROBOSCIDEA	*	*	1	*	*	*	1
2	SIRENIA	1	*	*	*	*	*	1
3	SCANDENTIA	*	*	*	1	*	*	1
4	PRIMATES	*	*	*	1	6	*	7
5	RODENTIA	1	*	2	2	23	2	30
6	LAGOMORPHA	*	*	*	*	1	*	1
7	ERINACEOMORPHA	*	*	*	*	2	*	2
8	SORICOMORPHA	*	*	1	*	3	*	4
9	CHIROPTERA	*	*	2	4	34	*	40
10	PHOLIDOTA	*	*	1	*	*	*	1
11	CARNIVORA	*	1	4	11	4	2	22
12	ARTIODACTYLA	*	1	2	1	7	*	11
13	CETACEA	1	1	*	6	*	*	8
	TOTAL	3	3	13	26	80	4	129

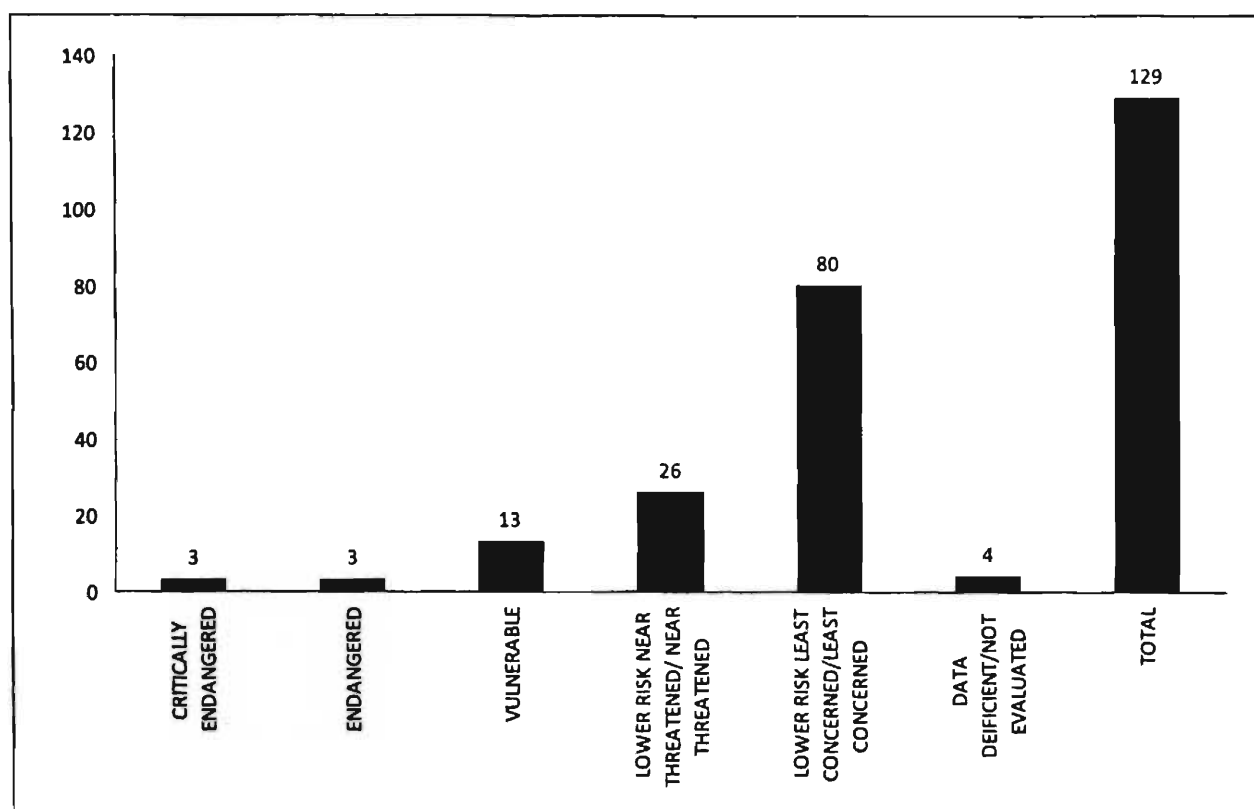


Fig. 6. Conservation Status (IUCN categories (National) as per CAMP Reports (1998, 2002, 2003 and 2005) of Mammal Species/Subspecies from Maharashtra State.

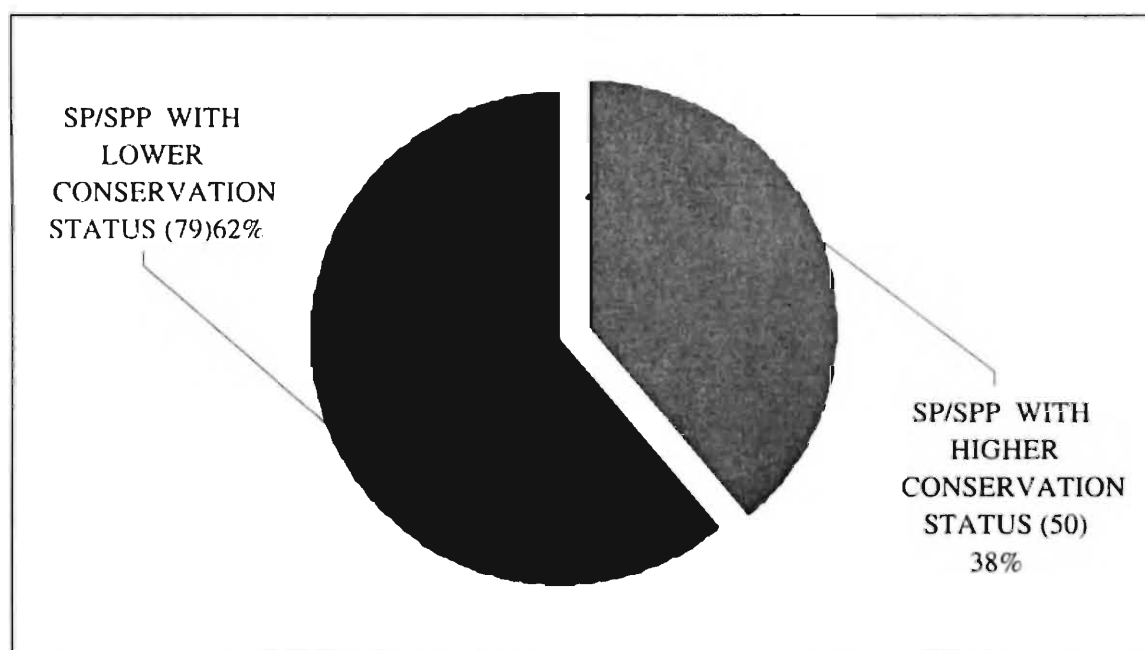


Fig. 7. Maharashtra state mammal sp/spp with higher conservation status.

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AVES

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INTRODUCTION

The study of birds in India received a great impetus with publication of Jerdon's (1862-1864) 'Birds of India' and later on by work of Baker (1922-1930 and 1932-1935); Ali and Ripley (1968-1974). This has influenced the study of avifauna of the respective regions in India and state of Maharashtra was not an exception. In mid 19th century a good deal of work was done particularly in Deccan, Khandesh, south Mahratta country and Konkan by Sykes (1832 and 1833), Fairbanks (1876), Davidson and Wenden (1878), Vidal (1880), Butler (1881) and Davidson (1882, 1895 and 1898).

Later on this study on birds continued in these regions giving more attention to the cities like Bombay by Aitken (1900), Ali and Abdulali (1936-1939), Abdulali and Ali (1940) and in Poona by Barnes (1888-1891), Betham (1899-1904). Subsequently after a gap of 80 to 90 years, Mahabal and Lamba (1987) and Kalpavriksha (2001) studied birds of Poona and vicinity. Further Soman (1963), Mahabal (1989), Kurhade (1991, 1996), Bharucha and Gogate (1996) published checklists of birds from western and south western parts of Maharashtra.

Almost 70 to 80 years after Fairbanks (1876) and Davidson (1886) the Western Ghats of Maharashtra – being the part of mega-biodiversity hotspots of India-again received more attention by various workers. Ali (1949) while dealing with Indian Hill birds described and listed the birds

from Western Ghats, particularly Lonavala, Matheran and Mahabaleshwar. Gole (1998) and Kurhade (2010) recorded birds from various high altitudinal areas from Sahyadris (Western Ghats of Maharashtra). Pande et al (2003) made a major contribution by studying the birds of entire Western Ghats. There are also some communications published on birds from some protected areas included under the Western Ghats zone such as Bhimashankar Wild Life Sanctuary (WLS) (Gole, 2000 and Mahabal and Patil, 2009). The west coast and waters of the Arabian Sea of Maharashtra were also given some attention for the avian studies. Gole (1994) reported some birds from the west coast whereas Pande (2001-02 and 2002) Mahabal *et al.* (2007) and Pande *et al.* (In Press) made bird surveys on the west coast as well as pelagic and offshore surveys along the west coast of Maharashtra.

In the central and north western parts of the state, particularly Marathwada and Uttar Maharashtra regions are paid less attention for avifaunal studies in the earlier years. However, recently there are few bird inventories made from these regions mainly by Vyawahare and Kulkarni (1986), Vyawahare (1986 and 1992), Yardi (2000), and Mahabal (1993 and 2005a). There is ample scope for the survey of birds and preparing inventories in many districts particularly in areas such as the Marathwada region where lacuna exists in this context.

In the eastern parts of the state, such as

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Amravati and Nagpur regions (Vidarbha) there are few publications on the collection, nidification and ornithological surveys in the earlier years by Blanford (1867), McMaster (1871), D'Abreu (1923) and Ali (1933-1934). But in recent years a serious attention is given to these regions for the systematic study of birds, mainly by Sawarkar (1988), Pradhan (1997), Wadatkar (2001), Mahabal (2004, 2005b and 2006), Kasambe and Wadatkar (2007), Vyawahare (2008), Mahabal *et al.* (2008) and Kasambe and Sani (2009).

A comprehensive checklist of birds of Maharashtra was first published by Abdulali (1973) and was subsequently revised in 1981 listing 540 species and subspecies from the state. Ambedkar and Mathew (1974) prepared a bird list of 497 species and subspecies from Maharashtra, whereas an annotated checklist of birds of western Maharashtra alone accounts for 532 species along with their distributional records. (Prasad, 2003). There are six National Parks (NP) and 35 Wild Life Sanctuaries (WLS) notified in the state. Pande (2005) in her reference guide while giving a detailed account of NP's and WLS enlisted bird species from these protected areas (PA).

Besides this, there are a number of published and unpublished short communications on the occurrence of individual bird species and checklist of birds from various ecosystems, zones and regions of the state of Maharashtra which have been cited in CD Rom (Pittie, 2000) as well as by Prasad (2003). Similarly, after 2003 till date a number of short communications are published in various Indian journals, but due to limitations, these are not mentioned here. However, only major contributions of mid 19th, 20th and beginning of the 21st centuries are referred in this paper.

This communication is an avifaunal study carried out by the authors in various parts of Maharashtra. The first author (AM) studied birds around Pune city and Pune district during various local faunistic surveys and while undertaking extensive faunistic surveys in various districts (Raigad, Ratnagiri, Sindhudurga, sangli, Kolhapur, Solapur, Dhulia, etc.) and conservation areas (Melghata Tiger Reserve, Pench NP, Tadoba-

Andhari Tiger Reserve, Lonar WLS, Bhimashankar WLS, Chandoli WLS, Radhanagari WLS and Nathsagar and Ujani Wetlands) from 1974 till 2009. The second author (SP) has undertaken bird surveys in all the coastal districts of Maharashtra, Kolhapur, Melghat, Solapur, Satara, Aurangabad, Ahmadnagar, NP's and WLS (Sanjay Gandhi NP, Chandoli, Bhimashankar, Phansad, Radhanagari WLS, etc.) and semiarid, grassland, coastal, wetland, offshore island and mountain ecosystems from 1998 till 2011. The third (AP) and fourth (PP) authors also participated with the second author (SP) in various bird surveys during 2006-2011.

Birds were observed with the help of 10x50 pair of binoculars. The identification of the birds and the accounts such as residential status, food habits, breeding season, etc. given in tabular form (Table 1) is based on Ali and Ripley (1968-1974), Grimmett *et al.* (2000), Kazmierczak and Perlo (2000), Prasad (2003) and Pande *et al.* (2003). Identified bird species related to Maharashtra State, deposited in the Zoological Survey of India, WRC. Pune, are given along with the number of specimens in the collection and their gender is also mentioned (Table 1). Further the common and scientific names and the taxonomic sequence are as per Manakadan and Pittie (2001), unless the species is recently revised, split or updated, where we have adopted and updated as per Rasmussen and Anderton (2005). Conservation status, endemism and the analysis of residential and feeding habits of birds of the state are also discussed in this paper.

OBSERVATIONS AND RESULTS

The inventory of birds of the state of Maharashtra comprises of 556 (Table 1) of which most of the birds are observed, recorded and published from time to time by the authors. However, for compiling this annotated checklist the other relevant published literature is also consulted which are referred in the reference section. The avian diversity represented in the checklist is further classified into four categories and is shown in Table 2. It shows that 556 species

belong to 271 genera under 86 families and 20 avian orders. Further, it can be pointed out that at the generic and species levels orders like Passeriformes, Charadriiformes and Falconiformes are particularly well represented in the state.

Residential status of these birds is plotted in Figure 1. It indicates that 58.6% bird species are resident showing local or seasonal movements. About 35.4% are winter migrants (September to March) to the state. 5.0% species are monsoon visitors and vagrants. Histogram is plotted in order of food habits of the birds of the state (Figure 2). This figure indicates that 38.1 % species are mainly insectivorous, followed by 23.9 % feeding on aquatic animals, 10.8 % carnivorous and 7.6% graminivorous. The relative percentage of scavenging and nectar feeding species is less (1.1% each). This analysis of residential status and food habits is based on the account given in Table 1.

ENDEMIC BIRDS AND CONSERVATION STATUS

Dasgupta *et al.* (2002) recorded 50 species of endemic birds from India. There after, Jathar and Rahmna (2006) revised and recorded 79 endemic birds from India, which is based on 8 Endemic Bird Areas of our country. Parts of Maharashtra state falls in two of these areas, Western Ghats and the southern Deccan Plateau. Out of the 79 endemic bird species, 29 occur in the state (Table 3). The conservation status of birds of the state as per the IUCN-BirdLife International (2010), Wildlife (Protection) Act, 1972 (as amended up to 2002), is given in Table 4. The table shows that 3 species are critically endangered and 5 are vulnerable, hence serious protection implementation is a must to save these species for the future.

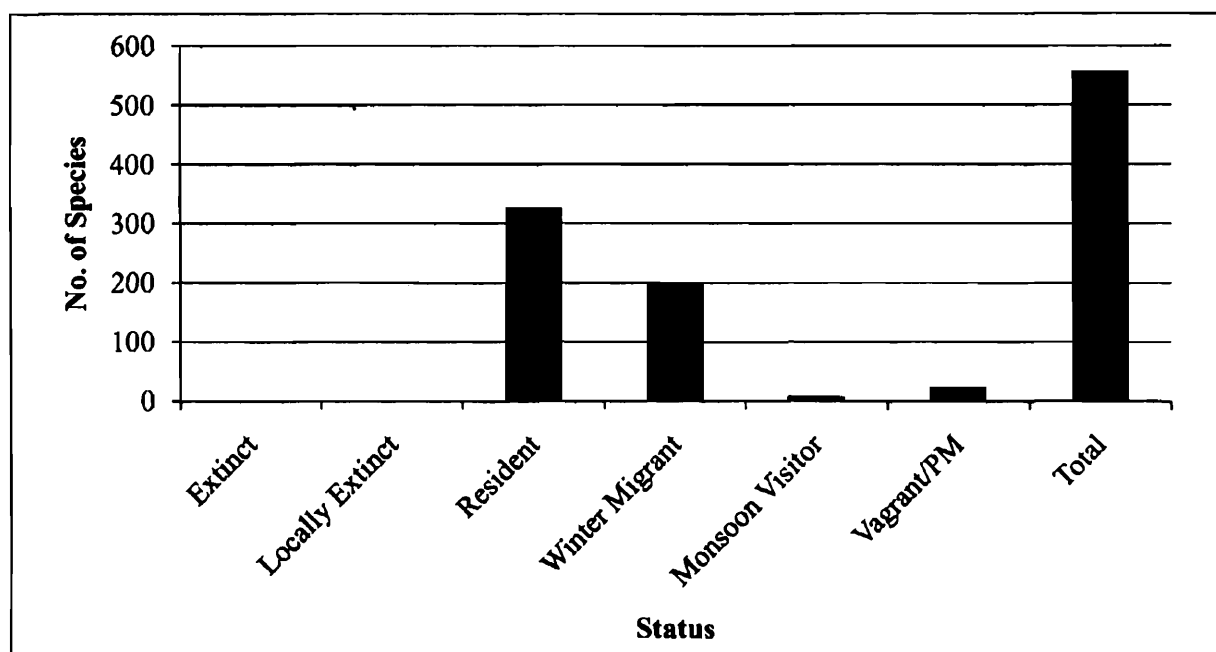


Fig. 1. Residential status of the birds of Maharashtra

Details of the above figure are given below :

Status	No. of Species	Rel. %
Extinct	1	0.2
Locally Extinct	1	0.2
Resident	326	58.6
Winter Migrant	197	35.4
Monsoon Visitor	7	1.3
Vagrant / PM	24	4.3
TOTAL	556	

Note : Resident includes LM–Local Movements;
SM–Seasonal Movements. PM–Passage Migrant.

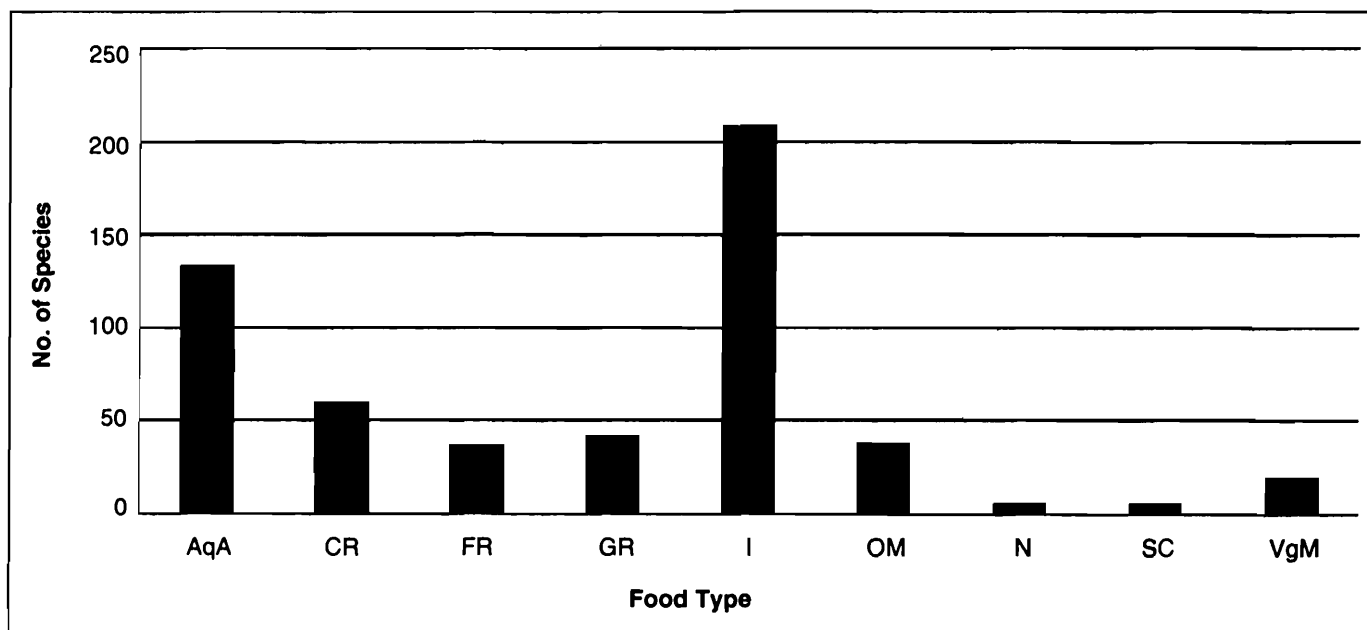


Fig. 2. Food habits of the birds of Maharashtra

Details of the above figure are given below :

Food	No. of Species	Rel. %
AqA	133	23.9
CR	60	10.8
FR	37	6.6
GR	42	7.6
I	212	38.1
OM	40	7.2
N	6	1.1
SC	6	1.1
VgM	20	3.6
TOTAL	556	

Abbreviations : Food : AqA = Aquatic Animals, CR = Carnivorous, FR = Frugivorous, GR = Graminivorous, I = Insects, OM = Omnivorous, N = Nectar, SC = Scavenger, VgM = Vegetable Matter.

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Table 1. Annotated checklist of the birds of Maharashtra

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
	AVES : PODICIPEDIFORMES					
	PODICIPEDIDAE					
1.	<i>Tachybaptus ruficollis</i> (Pallas)	Little Grebe	R/LM	Aq A, I	December to February	4♂, 2♀ (Pune), 3♀, 1♂ (Kolhapur), 1 Unsexed (Nasik)
2.	<i>Podiceps cristatus</i> (Linnaeus)	Great Crested Grebe	WM	Aq A, I	Extralimital	
3.	<i>Podiceps nigricollis</i> Brehm	Blacknecked Grebe	WM	Aq A, I	Extralimital	
	PROCELLARIIDAE					
4.	<i>Bulweria fallax</i> Jounanin	Jounanin's Petrel	PM	Squid, Fish	Extralimital	
5.	<i>Puffinus pacificus</i> (Gmelin)	Wedge-tailed Shearwater	PM	Squid, Fish	Extralimital	
6.	<i>Puffinus persicus</i> Hume	Persian Shearwater	PM	Squid, Fish	Extralimital	
	HYDROBATIDAE					
7.	<i>Oceanites oceanicus</i> (Kuhl)	Wilson's Storm Petrel	MV/PM	Zooplankton	Extralimital	
	PELECANIFORMES : PHAETHONTIDAE					
8.	<i>Phaethon aethereus</i> Linnaeus	Grey-backed or Red-billed Tropicbird	V	Squid, Fish	Extralimital	
	PELICANIDAE					
9.	<i>Pelecanus phillipensis</i> Gmelin	Spotbilled Pelican	V	Fish/squid	Extralimital	
	SULIDAE					
10.	<i>Sula dactylatra</i> Lesson	Masked Booby	V	Squids/ fishes	Extralimital	
11.	<i>Sula leucogaster</i> (Boddaert)	Brown Booby	V	Squids/ fishes	Extralimital	
	PHALACROCORACIDAE					
12.	<i>Phalacrocorax niger</i> (Vieillot)	Little Cormorant	R/LM	Aq A (Fish)	November to February	1♂ (Pune)
13.	<i>Phalacrocorax fuscicollis</i> Stephens	Indian Shag	R/LM	Aq A (Fish)	—do—	
14.	<i>Phalacrocorax carbo</i> (Linnaeus)	Great Cormorant	R/LM	Aq A (Fish)	September to February	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
	ANHINGIDAE					
15.	<i>Anhinga melanogaster</i> Pennant	Darter	R/LM	Aq A	November to February	
	FREGATIDAE					
16.	<i>Fregata ariel</i> (G.R.Gray)	Lesser Frigatebird	MV/Straggler	Aq A	—do—	
17.	<i>Fregata minor</i> (Gmelin)	Great Frigatebird	MV/Straggler	Fish/squid	Extralimital	
	CICONIIFORMES : ARDEIDAE					
18.	<i>Egretta garzetta</i> (Linnaeus)	Little Egret	R/LM	Aq A	—do—	1 ♂ (Jalgaon), 1 ♀ (Thane), 1 ♀ (Satara)
19.	<i>Egretta gularis</i> (Bosc)	Western Reef- Heron	R/LM (Nomadic)	Aq A	Local migration during season	
20.	<i>Egretta alba</i> (Linnaeus)	Great Egret	R/LM (Nomadic)	Aq A	November to February	
21.	<i>Egretta intermedia</i> (Wagler)	Intermediate Egret	R/LM (Nomadic)	Aq A	—do—	
22.	<i>Ardea cinerea</i> Linnaeus	Grey Heron	R/LM	Aq A, I	November to March	
23.	<i>Ardea purpurea</i> Linnaeus	Purple Heron	R/LM	Aq A	—do—	
24.	<i>Bubulcus coromandus</i> (Linnaeus)	Eastern Cattle Egret	R/LM	I	—do—	6 ♀, 2 Unsexed (Pune), 1 ♂ (Ratnagiri), 1 ♂, 1 ♀ (Nasik), 1 ♀ (Kolhapur)
25.	<i>Ardeola grayii</i> (Sykes)	Indian Pond-Heron	R/LM	Aq A	—do—	1 ♂, 3 ♀ (Ratnagiri), 1 ♂, 1 ♀ (Pune), 1 ♂ (Nasik), 1 ♂ (Solapur), 1 ♀ (Jalgaon), 2 ♂ (Thane)
26.	<i>Butorides striata</i> (Linnaeus)	Striated Heron	R	Aq A	March to September	
27.	<i>Nycticorax nycticorax</i> (Linnaeus)	Black-crowned Night-Heron	R/LM	Aq A	December to February	1 ♂ (Thane)
28.	<i>Gorsachius melanolophus</i> (Raffles)	Malayan Night-Heron	R	Aq A	May to August	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
29.	<i>Ixobrychus minutes</i> Linnaeus)	Little Bittern	V/WM	Aq A, I	Extralimital	
30.	<i>Ixobrychus sinensis</i> (Gmelin)	Yellow Bittern	R/LM	Aq A, I	June to September	
31.	<i>Ixobrychus cinnamomeus</i> (Gmelin)	Chestnut Bittern	R/LM	Aq A, I	—do—	
32.	<i>Dupetor flavicollis</i> (Latham)	Black Bittern	R/LM	Aq A, I	—do—	
33.	<i>Botaurus steallaris</i> (Linnaeus)	Eurasian Bittern	WM	Aq A, I	Extralimital	
	CICONIIDAE					
34.	<i>Mycteria leucocephala</i> (Pennant)	Painted Stork	R/LM	Aq A, I	November to March	
35.	<i>Anastomus oscitans</i> (Boddaert)	Asian Openbill Stork	R/ LM	Aq A (Molluscs)	—do—	1 ♂, 1 ♀, 1 Unsexed (Pune), 1 ♂ (Jalgaon)
36.	<i>Ciconia nigra</i> (Linnaeus)	Black Stork	WM	Aq A, CR	Extralimital	
37.	<i>Ciconia episcopus</i> (Boddaert)	Wooly-necked Stork	R/LM	Aq A, I	December to March	
38.	<i>Ciconia ciconia</i> (Linnaeus)	White Stork	WM	Aq A, CR	Extralimital	
39.	<i>Ephippiorhynchus asiaticus</i> (Latham)	Black-necked Stork	WM	Aq A, CR	Extralimital	
40.	<i>Leptoptilos javanicus</i> (Horsfield)	Lesser Adjutant	R/LM (Nomadic)	Aq A, I	November to January	
41.	<i>Leptoptils dubius</i> (Gmelin)	Greater Adjutant	V	AqA	Extralimital	
	THRESKIORNITHIDAE					
42.	<i>Plegadis falcinellus</i> (Linnaeus)	Glossy Ibis	R/WM (partly Nomadic)	Aq A, I	May to July/ Extralimital	
43.	<i>Threskiornis melanocephalus</i> (Latham)	Black-headed Ibis	R/LM	OM	November to March	
44.	<i>Pseudibis papillosa</i> (Temminck)	Indian Black Ibis	R/LM	OM	March to October	1 ♂, 1 ♀ (Ahmadnagar), 1 ♂ (Satara), 1 ♀, 1 ♂, 1 Unsexed (Jalgaon), 1 ♀ (Nasik)
45.	<i>Platalea leucorodia</i> Linnaeus	Eurasian Spoonbill	WM/R (Partly Nomadic)	Aq A & Vg M	Extralimital / November to January	

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
	PHOENICOPTERIFORMES : PHOENICOPTERIDAE					
46.	<i>Phoenicopterus ruber</i> Linnaeus	Greater Flamingo	WM (Nomadic)	Aq A	September to April/ Extralimital	
47.	<i>Phoeniconaias minor</i> (Geoffroy)	Lesser Flamingo	WM	Aq A, I	Extralimital	
	ANSERIFORMES : ANATIDAE					
48.	<i>Dendrocygna bicolor</i> (Vieillot)	Fulvous Whistling Duck	R/LM	Vg M, AqA	June to October	
49.	<i>Dendrocygna javanica</i> (Horsfield)	Lesser Whistling-Duck	R/LM (Partly Migrant)	Vg M & Aq A	June to October	
50.	<i>Cygnus olor</i> (Gmelin)	Mute Swan	V	Aq A, I	Extralimital	
51.	<i>Anser anser</i> (Linnaeus)	Greylag Goose	V/WM	Vg M	Extralimital	
52.	<i>Anser indicus</i> (Latham)	Bar-headed Goose	WM	Vg M	Extralimital	
53.	<i>Tadorna ferruginea</i> (Pallas)	Ruddy Shelduck	WM	OM	—do—	
54.	<i>Tadorna tadorna</i> (Linnaeus)	Common Shelduck	WM/V	OM	—do—	
55.	<i>Sarkidiornis melanotos</i> (Pennant)	Comb Duck	R/LM	Vg M	July to September	
56.	<i>Nettion coromandelianus</i> (Gmelin)	Cotton Teal	R/LM	Vg M	June to September	
57.	<i>Anas strepera</i> Linnaeus	Gadwall	WM	Vg M	Extralimital	
58.	<i>Anas penelope</i> Linnaeus	Eurasian Wigeon	WM	Vg M	—do—	
59.	<i>Anas platyrhynchos</i> Linnaeus	Mallard	WM	OM	—do—	
60.	<i>Anas poecilorhyncha</i> J. R. Forester	Spot-billed Duck	R/LM (Nomadic)	Vg M	November to December	3 ♂ (Nasik), 1 ♂ (Jalgaon)
61.	<i>Anas clypeata</i> Linnaeus	Northern Shoveller	WM	Aq A & Vg M	Extralimital	
62.	<i>Anas acuta</i> Linnaeus	Northern Pintail	WM	Vg M	—do—	
63.	<i>Anas querquedula</i> Linnaeus	Garganey	WM	Vg M & Aq A	—do—	
64.	<i>Anas crecca</i> Linnaeus	Common Teal	WM	Vg M	—do—	
65.	<i>Marmaronetta angustirostris</i> (Menetries)	Marbled Teal	WM/V	OM	—do—	
66.	<i>Rhodonessa caryophyllacea</i> (Latham)	Pink Headed Duck	Probably Extinct	OM	—	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
67.	<i>Rhodonessa rufina</i> (Pallas)	Red-crested Pochard	WM	Vg M	Extralimital	
68.	<i>Aythya ferina</i> (Linnaeus)	Common Pochard	WM	Vg M & Aq A	—do—	
69.	<i>Aythya nyroca</i> (Guldenstadt)	Ferruginous Duck	WM	Vg M & Aq A	—do—	
70.	<i>Aythya fuligula</i> (Linnaeus)	Tufted Pochard	WM	OM	—do—	
71.	<i>Aythya marila</i> (Linnaeus)	Greater Scaup	WM/V	OM	—do—	
72.	<i>Mergus serrator</i> Linnaeus	Red-breasted Merganser	WM/V	Fish	—do—	
	FALCONIFORMES : ACCIPITRIDAE					
73.	<i>Aviceda leuphotes</i> (Dumont)	Black Baza	R	CR	February to July	
74.	<i>Pernis ptilorhyncus</i> (Temminck)	Oriental Honey-Buzzard	R/LM	CR	February to June	
75.	<i>Elanus caeruleus</i> (Desfontaines)	Black-winged Kite	R	I & CR	Entire Year	1 Unsexed (Pune), 1 ♀ (Ahmadnagar), 1 ♂ (Satara), 2 ♀ (Solapur), 4 ♂, 1 ♀ (Jalgaon), 1 ♀ (Sangli), 2 ♀ (Nasik)
76.	<i>Milvus migrans</i> (Boddaert)	Black Kite	R	OM	September to April	1 ♂ (Ahmadnagar), 1 ♂ (Jalgaon)
77.	<i>Haliastur indus</i> (Boddaert)	Brahminy Kite	R/LM/SM	CR (Fish), I	December to April	1 ♂ (Pune)
78.	<i>Haliaeetus leucogaster</i> (Gmelin)	White-bellied Sea-Eagle	R	CR (Sea Snakes)	October to January	
79.	<i>Ichthyophaga ichthyaeus</i> (Horsfield)	Grey-headed Fish-Eagle	R	CR (Fish)	November to January	
80.	<i>Neophron percnopterus</i> (Linnaeus)	Egyptian Vulture	R	SC	February to May	1 ♀ (Ratnagiri)
81.	<i>Gyps bengalensis</i> (Gmelin)	White-rumped Vulture	R	SC	October to March	
82.	<i>Gyps indicus</i> (Scopoli)	Indian Vulture	R	SC	November to March	
83.	<i>Gyps fulvus</i> (Hablizl)	Griffon Vulture	V	SC	December to April	
84.	<i>Aegypius calvus</i> (Scopoli)	Red headed Vulture	R	SC	December to April	
85.	<i>Circaetus gallicus</i> (Gmelin)	Short-toed Eagle	R	CR	December to March	

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
86.	<i>Spilornis cheela</i> (Latham)	Crested Serpent-Eagle	R	CR	December to March	
87.	<i>Circus aeruginosus</i> (Linnaeus)	Western Marsh-Harrier	WM	CR, I	Extralimital	
88.	<i>Circus cyaneus</i> (Linnaeus)	Hen Harrier	WM/V	CR	Extralimital	
89.	<i>Circus macrourus</i> (S. G. Gmelin)	Pallid Harrier	WM	CR	Extralimital	
90.	<i>Circus melanoleucos</i> (Pennant)	Pied Harrier	WM	CR	Extralimital	
91.	<i>Circus pygargus</i> (Linnaeus)	Montagu's Harrier	WM	CR	Extralimital	
92.	<i>Accipiter trivirgatus</i> (Temminck)	Crested Goshawk	R	CR	March to May	
93.	<i>Accipiter badius</i> (Gmelin)	Shikra	R	CR	March to June	2♂ (Ratnagiri), 1♀ (Kolhapur), 1♀ (Solapur), 1♀ (Sangli), 1♂ (Thane)
94.	<i>Accipiter gularis</i> (Temminck & Schlegel)	Japanese Sparrowhawk	WM/V	CR	Extralimital	
95.	<i>Accipiter virgatus</i> (Temminck)	Besra Sparrowhawk	R	CR	March to May	
96.	<i>Accipiter nisus</i> (Linnaeus)	Eurasian Sparrowhawk	WM	CR	Extralimital	1♀ (Nasik)
97.	<i>Accipiter gentilis</i> (Linnaeus)	Northern Goshawk	WM/R (Partly Nomadic)	CR	Extralimital	
98.	<i>Butastur teesa</i> (Franklin)	White-eyed Buzzard	R	CR	February to May	3♀, 2♂ (Pune), 1♀ (Ratnagiri), 1♀ (Satara), 2♀, 1♂ (Jalgaon)
99.	<i>Buteo buteo</i> Linnaeus	Steppe Buzzard	WM	CR	Extralimital	
100.	<i>Buteo rufinus</i> (Cretzschmar)	Long-legged Buzzard	WM	CR	-do- (In Himalayas March to May)	
101.	<i>Ictinaetus malayensis</i> (Temminck)	Black Eagle	R/LM	CR, I	November to March	
102.	<i>Aquila hastata</i> (Lesson)	Indian Spotted Eagle	R	CR	April to July	
103.	<i>Aquila clanga</i> Pallas	Greater Spotted Eagle	R	CR	April to June	
104.	<i>Aquila rapax</i> (Temminck)	Tawny Eagle	R	CR	November to April	1♂ (Pune)
105.	<i>Aquila nipalensis</i> Hodgson	Steppe Eagle	WM	CR	Extralimital	
106.	<i>Aquila heliaca</i> Savigny	Eastern Imperial Eagle	WM/V	CR	Extralimital	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
107.	<i>Hieraaetus fasciatus</i> (Vieillot)	Bonelli's Eagle	R	CR	Mainly December to January	
108.	<i>Hieraaetus pennatus</i> (Gmelin)	Booted Eagle	WM (Partly Resident)	CR	Extralimital	
109.	<i>Hieraaetus kienerii</i> (E. Geoffroy)	Rufous-bellied Eagle	R	CR	December to March	
110.	<i>Spizaetus cirrhatus</i> (Gmelin)	Crested Hawk-Eagle	R	CR	November to April	
	PANDIONIDAE					
111.	<i>Pandion haliaetus</i> (Linnaeus)	Osprey	WM	CR	Extralimital & also along Himalayas	
	FALCONIDAE					
112.	<i>Falco naumanni</i> Fleisher	Lesser Kestrel	WM	I	Extralimital	
113.	<i>Falco tinnunculus</i> Linnaeus	Common Kestrel	WM, R (Breeding)	CR, I	January to March	1 ♀, 2 ♂ (Pune), 2 ♀ (Solapur), 1 ♀, 1 ♂ (Jalgaon), 1 ♀ (Ratnagiri)
114.	<i>Falco chicquera</i> Daudin	Red-headed Falcon	R, LM	1 ♀ (Solapur)		
115.	<i>Falco amurensis</i> Radde	Amur Falcon	PM	I	Extralimital	
116.	<i>Falco colubarius</i> Linnaeus	Merlin	WM/V	CR	Extralimital	
117.	<i>Falco subbuteo</i> Linnaeus	Eurasian Hobby	WM/R	CR	Extralimital	
118.	<i>Falco jugger</i> J.E. Gray	Laggar Falcon	R/LM	CR	January to March	
119.	<i>Falco peregrinus</i> Tunstall	Peregrine Falcon	WM & R	CR	In Himalayas from March to May / Extralimital	
	GALLIFORMES: PHASIANIDAE					
120.	<i>Francolinus pictus</i> (Jerdine & Selby)	Painted Francolin	R	GR	June to September	
121.	<i>Francolinus pondicerianus</i> (Gmelin)	Grey Francolin	R	GR	All Year	
122.	<i>Coturnix coturnix</i> (Linnaeus)	Common Quail	R/WM	GR	March & April	
123.	<i>Coturnix coromandelica</i> (Gmelin)	Rain Quail	R (Nomadic)	GR	March to October	1 ♂ (Kolhapur)

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
124.	<i>Coturnix chinensis</i> (Linnaeus)	Blue-breasted Quail	MV/V\ (Nomadic)	GR	March to April	
125.	<i>Perdica asiatica</i> (Latham)	Jungle Bush-Quail	R	GR	July to February	1 ♂ (Pune)
126.	<i>Perdica argoondah</i> (Sykes)	Rock Bush-Quail	R	GR	March to November	3 ♀, 1 ♂ (Pune), 1 Unsexed (Sangli)
127.	<i>Perdila erythrorhyncha</i> (Sykes)	Painted Bush Quail	R/LM	GR	All Year	
128.	<i>Galloperdix spadicea</i> (Gmelin)	Red Spurfowl	R	GR	January to June	1 ♂, 1 ♀, 1 Unsexed (Pune), 1 ♀ (Ratnagiri)
129.	<i>Galloperdix lunulata</i> (Valenciennes)	Painted Spurfowl	R	OM	—do—	
130.	<i>Gallus gallus</i> (Linnaeus)	Red Jungle Fowl	R	GR	March to May	
131.	<i>Gallus sonneratii</i> Temminck	Grey Junglefowl	R	GR	February to May	
132.	<i>Pavo cristatus</i> Linnaeus	Indian Peafowl	R	OM	April to May	
	GRUIFORMES : TURNICIDAE					
133.	<i>Turnix sylvaticus</i> (Desfontaines)	Small Buttonquail	R (Nomadic)	GR	June to September	
134.	<i>Turnix tanki</i> Blyth	Yellow-legged Buttonquail	R	GR	Undefined	
135.	<i>Turnix suscitator</i> (Gmelin)	Common Buttonquail	R	Vg M	June to October	
	GRUIDAE					
136.	<i>Grus leucogeranus</i> (Pallas)	Siberian Crane	Extinct locally	OM	—	
137.	<i>Grus antigone</i> (Linnaeus)	Saras Crane	R/LM V	OM	July December	
138.	<i>Grus virgo</i> (Linnaeus)	Demoiselle Crane	WM	OM	Extralimital	
139.	<i>Grus grus</i> (Linnaeus)	Common Crane	WM	OM	Extralimital	
	RALLIDAE					
140.	<i>Rallina eurizonoides</i> (Lafresnaye)	Slaty-legged Crake	R/LM	Aq A/I	June to September	
141.	<i>Rallus striatus</i> Linnaeus	Slaty-breasted Rail	R/LM	OM	Mid-June to October	
142.	<i>Amaurornis phoenicurus</i> (Pennant)	White-breasted Waterhen	R	OM	April to October	1 ♀, 2 ♂ (Kolhapur)
143.	<i>Porzana akool</i> (Sykes)	Brown Crake	R/LM	OM	March to August	1 ♀ (Satara)
144.	<i>Porzana parva</i> (Scopoli)	Little Crake	WM	I (Aquatic)	Extralimital	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
145.	<i>Porzana pusilla</i> (Pallas)	Eastern' Baillon's-Crake	R/ WM	Aq A, Vg M	May to August	
146.	<i>Porzana porzana</i> (Linnaeus)	Spotted Crake	WM	—do—	Extralimital	
147.	<i>Porzana fusca</i> (Linnaeus)	Ruddy-breasted Crake	R/SM	Aq A,	June to September	
148.	<i>Gallicrex cinerea</i> (Gmelin)	Watercock	R/LM	Aq A, Vg M	—do—	
149.	<i>Porphyrio porphyrio</i> Linnaeus	Purple Moorhen	R/LM	Aq A, Vg M	June to September	1 ♂ (Pune)
150.	<i>Gallinula chloropus</i> (Linnaeus)	Common Moorhen	R/WM (Partly)	OM	July to September	
151.	<i>Fulica atra</i> Linnaeus	Eurasian Coot	R/WM (Partly)	Vg M, I	November to December	1 ♀ (Pune), 2 ♀, 1 ♂ (Nasik)
	OTIDIDAE					
152.	<i>Ardeotis nigriceps</i> (Vigors)	Great Indian Bustard	R/LM	OM	June to September	
153.	<i>Sypheotides indicus</i> (J.F. Milller)	Lesser Florican	R/LM	OM	July to September	
	CHARADRIIFORMES : JACANIDAE					
154.	<i>Hydrophasianus chirurgus</i> (Scopoli)	Pheasant-tailed Jacana	R/LM	Aq A, Vg M	June to September	1 ♂ (Pune)
155.	<i>Metopidius indicus</i> (Latham)	Bronze-winged Jacana	R	Vg M, I	—do—	1 ♀ (Nasik)
	ROSTRATULIDAE					
156.	<i>Rostratula benghalensis</i> (Linnaeus)	Greater Painted-Snipe	R	Aq A, Vg M	July to September	
	HAEMATOPODIDAE					
157.	<i>Haematopus ostralegus</i> Linnaeus	Eurasian Oystercatcher	WM	Aq A (Marine Molluscs)	Extralimital	
	CHARADRIIDAE					
158.	<i>Pluvialis fulva</i> (Gmelin)	Pacific Golden-Plover	WM	Aq A, I	Extralimital	
159.	<i>Pluvialis squatarola</i> (Linnaeus)	Grey Plover	WM	Aq A	Extralimital	
160.	<i>Charadrius hiaticula</i> Linnaeus	Common Ringed Plover	WM	Aq A, I	Extralimital	
161.	<i>Charadrius dubius</i> Scopoli	Little Ringed Plover	R	Aq A, I	December to June	
162.	<i>Charadrius alexandrinus</i> Linnaeus	Kentish Plover	R	Aq A, I	April to August	
163.	<i>Charadrius mongolus</i> Pallas	Lesser Sand Plover	WM	Aq A	Extralimital	1 ♂ (Palghar)
164.	<i>Charadrius leschenaultii</i> Lesson	Greater Sand Plover	WM	Aq A	—do—	

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
165.	<i>Charadrius asiaticus</i> Pallas	Caspian Plover	V	Aq A	—do—	
166.	<i>Vanellus vanellus</i> (Linnaeus)	Northern Lapwing	V	I	—do—	
167.	<i>Vanellus malabaricus</i> (Boddaert)	Yellow-wattled Lapwing	R/LM	I	March to July	2♂ (Nasik)
168.	<i>Vanellus duvaucelii</i> (Lesson)	River Lapwing	WM	Aq A	—	
169.	<i>Vanellus cinereus</i> (Linnaeus)	Grey-headed Lapwing	WM	I	Extralimital	
170.	<i>Vanellus indicus</i> (Boddaert)	Red-wattled Lapwing	R	Vg M, I	March to September	4♀, 2♂, 1 Unsexed (Pune), 1♀ (Aurangabad), 1♀ (Ratnagiri), 1♂ (Ahmadnagar), 2♂, 1♀ (Nasik), 1♂ (Sangli)
171.	<i>Vanellus gregarius</i> (Pallas)	Sociable Lapwing	WM	Aq A	Extralimital	
172.	<i>Vanellus leucurus</i> (Lichtenstein)	White-tailed Lapwing	WM	Aq A	Extralimital	
	SCOLOPACIDAE					
173.	<i>Scolopax rusticola</i> Linnaeus	Eurasian Woodcock	WM	Aq A	Extralimital	
174.	<i>Gallinago nemoricola</i> Hodgson	Wood Snipe	WM	Aq A	—do—	1♀ (Pune)
175.	<i>Gallinago stenura</i> (Bonaparte)	Pintail Snipe	WM	Aq A	—do—	
176.	<i>Gallinago megala</i> Swinhoe	Swinhoe's Snipe	WM	AqA	—do—	
177.	<i>Gallinago gallinago</i> (Linnaeus)	Common Snipe	WM	Aq A	—do—	
178.	<i>Lymnocyrtus minimus</i> (Brunnich)	Jack Snipe	WM	Aq A, I	—do—	
179.	<i>Limosa limosa</i> (Linnaeus)	Western' Black-tailed Godwit	WM	Aq A	—do—	
180.	<i>Limosa lapponica</i> (Linnaeus)	Bar-tailed Godwit	WM	Aq A	—do—	
181.	<i>Numenius phaeopus</i> (Linnaeus)	Whimbrel	WM	Aq A	—do—	
182.	<i>Numenius arquata</i> (Linnaeus)	Eurasian Curlew	WM	Aq A, I	—do—	
183.	<i>Numenius madagasascariensis</i> (Linnaeus)	Far Eastern Curlew	WM	Aq A, I	—do—	
184.	<i>Tringa erythropus</i> (Pallas)	Spotted Redshank	WM	Aq A	—do—	
185.	<i>Tringa totanus</i> (Linnaeus)	Common Redshank	WM	Aq A	—do—	
186.	<i>Tringa nebularia</i> (Gunner)	Common Greenshank	WM	Aq A	—do—	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
187.	<i>Tringa stagnatilis</i> (Bechstein)	Marsh Sandpiper	WM	Aq A	—do—	
188.	<i>Tringa ochropus</i> Linnaeus	Green Sandpiper	WM	Aq A	—do—	1 ♂, 2 ♀ (Nasik)
189.	<i>Tringa glareola</i> Linnaeus)	Wood Sandpiper	WM	Aq A	—do—	2 ♂ (Pune)
190.	<i>Xenus cinereus</i> (Guldenstadt)	Terek Sandpiper	WM	Aq A	—do—	
191.	<i>Actitis hypoleucos</i> Linnaeus	Common Sandpiper	WM	Aq A	—do—	1 ♂, 1 ♀ (Ratnagiri)
192.	<i>Arenaria interpres</i> (Linnaeus)	Ruddy Turnstone	WM	Aq A	—do—	
193.	<i>Calidris tenuirostris</i> (Horsfield)	Great Knot	WM	Aq A	—do—	
194.	<i>Calidris canutus</i> (Linnaeus)	Red Knot	V/WM	AqA	—do—	
195.	<i>Calidris alba</i> (Pallas)	Sanderling	WM	Aq A	—do—	
196.	<i>Calidris minuta</i> (Leisler)	Little Stint	WM	Aq A	—do—	
197.	<i>Calidris ruficollis</i> (Pallas)	Rufous-necked Stint	WM	Aq A	—do—	
198.	<i>Calidris temminckii</i> (Leisler)	Temminck's Stint	WM	Aq A	—do—	
199.	<i>Calidris subminuta</i> (Middendorff)	Long-toed Stint	WM	Aq A	—do—	
200.	<i>Calidris alpina</i> (Linnaeus)	Dunlin	WM/PM	Aq A	—do—	
201.	<i>Calidris ferruginea</i> (Pontoppidan)	Curlew Sandpiper	WM	Aq A	—do—	
202.	<i>Tryngites subruficollis</i> (Vieillot)	Buff-breasted Sandpiper	V/ Accidental	Aq A	—do—	
203.	<i>Limicola falcinellus</i> (Pontoppidan)	Broad-billed Sandpiper	WM	Aq A	—do—	
204.	<i>Philomachus pugnax</i> (Linnaeus)	Ruff	WM	Aq A and	—do—	
	RECURVIROSTRIDAE					
205.	<i>Himantopus himantopus</i> (Linnaeus)	Black-winged Stilt	R/WM	Aq A and	April to August & Extralimital	3 ♀, 3 ♂ (Pune)
206.	<i>Recurvirostra avosetta</i> Linnaeus	Pied Avocet	WM, PM	Vg M	Extralimital	
	DROMADIDAE					
207.	<i>Dromas ardeola</i> Paykull	Crab-plover	WM	Aq A (Crabs)	Extralimital	
	BURHINIDAE					
208.	<i>Burhinus oedinemus</i> (Linnaeus)	Eurasian Stone-Curlew	R/LM	OM	February to August	1 ♀ (Pune), 1 Unsexed (Thane)

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
209.	<i>Esacus recurvirostris</i> (Cuvier)	Great Stone- Plover/ Thick-Knee	R/LM	Aq A (Crabs)	February to June	
	GLAREOLIDAE					
210.	<i>Cursorius coromandelicus</i> (Gmelin)	Indian Courser	R,LM	I	March to August	1 ♀, 1 ♂ (Solapur), 1 ♀ (Kolhapur)
211.	<i>Glareola pratincola</i> (Linnaeus)	Collared Pratincole	WM	I	Extralimital	
212.	<i>Glareola maldivarum</i> J.R. Forster	Oriental Pratincole	R/LM, (Nomadic)	I	April to June	
213.	<i>Glareola lactea</i> Temminck	Small Pratincole	R/LM (Nomadic)	I	February to April	
	STERCORARIIDAE					
214.	<i>Catharacta antarctica</i> (Lessen)	Brown Skua	WM	Aq A	Extralimital	
215.	<i>Stercorarius pomarinus</i> (Temminck)	Pomarine Jaeger	V/PM	Fish	—do—	
216.	<i>Stercorarius parasiticus</i> (Linnaeus)	Parasitic Jaeger	V/PM	Fish	—do—	
	LARIDAE					
217.	<i>Larus hemprichii</i> Bruch	Sooty Gull	WM	Fish	—do—	
218.	<i>Larus canus</i> Linnaeus	Mew Gull	V	AqA		
219.	<i>Larus heuglini</i> Bree	Heuglin's Gull	WM	Aq A (Fish)	Extralimital	
220.	<i>Larus barabensis</i> (Sushkin)	Steppe Gull	WM	Aq A (Fish)	—do—	
221.	<i>Larus ichthyaetus</i> Pallas	Pallas's Gull	WM	Aq A (Fish)	—do—	
222.	<i>Larus brunnicephalus</i> Jerdon	Brown-headed Gull	WM	Aq A, I	—do—	2 ♀, 2 ♂ (Ratnagiri)
223.	<i>Larus ridibundus</i> Linnaeus	Common Black-headed Gull	WM	Aq A, I	—do—	1 ♂, 1 ♀ (Ratnagiri)
224.	<i>Larus genei</i> Breme	Slender-billed Gull	WM	Aq A (Fish)	—do—	
225.	<i>Larus minutes</i> Pallas	Little Gull	WM	Aq A (Fish)	—do—	
	STERNIDAE					
226.	<i>Gelochelidon nilotica</i> (Gmelin)	Gull-billed Tern	WM/PM	Aq A	—do—	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
227.	<i>Sterna caspia</i> Pallas	Caspian Tern	WM/PM	Aq A (Fish)	—do—	
228.	<i>Thalasseus bengalensis</i> Lesson	Lesser Crested Tern	R (?)	Aq A (Fish & Prawn)	May and June	
229.	<i>Thalasseus bergii</i> Lichtenstein	Large Crested Tern	R	Aq A (Fish & Prawn)	April to June	
230.	<i>Thalasseus sandvicensis</i> Latham	Sandwich Tern	WM	Aq A (Fish & Prawn)	Extralimital	
231.	<i>Sterna aurantia</i> J.E. Gray	River Tern	R	Aq A	March to May	
232.	<i>Sterna dougallii</i> Montagu	Roseate Tern	R/SM/PM	Aq A	April to June	
233.	<i>Sterna sumatrana</i> Raffles	Black-naped Tern	WM	Aq A	March to May	
234.	<i>Sterna hirundo</i> Linnaeus	Common Tern	WM	Aq A (Fish)	Extralimital	
235.	<i>Sterna albifrons</i> Pallas	Little Tern	R/LM	Aq A	May and June	
236.	<i>Sterna saundersi</i> Hume	Saunder's Tern	WM	Aq A	Extralimital	
237.	<i>Sterna repressa</i> Hartert	White-cheeked Tern	R/SM/PM	Aq A	May to June	
238.	<i>Sterna acuticauda</i> J. E. Gray	Black-bellied Tern	R/V	Aq A (Fish)	March and April	
239.	<i>Sterna anaethetus</i> Scopoli	Bridled Tern	R/PM	Aq A (Fish)	June/July to September	
240.	<i>Sterna fuscata</i> Linnaeus	Sooty Tern	R/PM	Aq A (Fish & Squids)	April to August/September	
241.	<i>Chlidonias hybrida</i> (Pallas)	Whiskered Tern	WM	I & Aq A	June to August (in North India)	
242.	<i>Chlidonias leucopterus</i> (Temminck)	White-winged Black Tern	WM	I & Aq A	Extralimital	
243.	<i>Chlidonias niger</i> (Linnaeus)	Black Tern	V	I & Aq A	—do—	
244.	<i>Anous stodilus</i> (Linnaeus)	Brown Noddy	R	Aq A	June to September	
	RYNCHOPIDAE					
245.	<i>Rynchops albicollis</i> Swainson	Indian Skimmer	R/ Nomadic	Aq A (Fish only)	Mid February to mid April	

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
	COLUMBIFORMES : PTEROCLIDIDAE					
246.	<i>Pterocles exustus</i> Temminck	Chestnut-bellied Sandgrouse	R	I	January to May	1 ♂ (Solapur)
247.	<i>Pterocles indicus</i> (Gmelin)	Painted Sandgrouse	R	I	March to June	
	COLUMBIDAE					
248.	<i>Columba livia</i> Gmelin	Rock Pigeon	R	GR	All year (mainly May to July)	2 ♀ (Pune), 1 ♀ (Nasik)
249.	<i>Columba elphinstonii</i> (Sykes)	Nilgiri Wood-Pigeon	R/LM	FR	April to June	
250.	<i>Columba pumicea</i> Blyth	Pale-capped Wood Pigeon	R/LM	FR	May to August	
251.	<i>Streptopelia orientalis</i> (Latham)	Oriental Turtle-Dove	R/SM	GR	May to July	1 ♂ (Satara)
252.	<i>Streptopelia senegalensis</i> (Linnaeus)	Little Brown Dove	R	GR	All year	1 ♂, 2 ♀ (Pune), 1 ♀ (Satara)
253.	<i>Streptopelia chinensis</i> (Scopoli)	Spotted Dove	R/LM	GR	—do—	2 ♀, 1 ♂ (Pune)
254.	<i>Streptopelia tranquebarica</i> (Hermann)	Red Collared-Dove	R/LM	GR	—do—	
255.	<i>Streptopelia decaocto</i> (Frivaldsky)	Eurasian Collared-Dove	R/SM	GR	—do—	2 ♂, 1 ♀ (Pune)
256.	<i>Chalcophaps indica</i> (Linnaeus)	Emerald Dove	R/SM	GR	—do—	
257.	<i>Treron bicincta</i> (Jerdon)	Orange-breasted Green-Pigeon	R/SM/LM	FR	March to September	
258.	<i>Treron pompadora</i> (Gmelin)	Pompadour Green-Pigeon	R/LM	FR	December to March	
259.	<i>Treron phoenicopterus</i> (Latham)	Yellow-footed Green-Pigeon	R/LM	FR	March to June	2 ♂, 2 ♀ (Pune), 1 ♀ (Ratnagiri), 1 ♀, 2 ♂ (Nasik), 1 ♀ (Ahmadnagar), 1 ♀ (Jalgaon)
260.	<i>Ducula badia</i> (Raffles)	Mountain Imperial-Pigeon	R/SM/LM	FR	January to May	
261.	<i>Ducula aenea</i> (Linnaeus)	Green Imperial-Pigeon	R/LM	FR	February to June	
	PSITTACIFORMES : PSITTACIDAE					
262.	<i>Loriculus vernalis</i> (Sparman)	Vernal Hanging-Parrot	R/LM	FR, N	January to April	
263.	<i>Psittacula eupatria</i> (Linnaeus)	Alexandrine Parakeet	R/LM (Nomadic)	FR	November to April	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
264.	<i>Psittacula krameri</i> (Scopoli)	Rose-ringed Parakeet	R	FR	January to May	8 ♀, 5 ♂ (Pune), 2 ♂ (Ahmadnagar), 2 ♂, 2 ♀ (Nasik), 2 ♂, 1 ♀ (Ratnagiri), 1 ♀, 1 ♂ (Solapur), 2 ♂ (Sangli), 1 ♂ (Jalgaon)
265.	<i>Psittacula cyanocephala</i> (Linnaeus)	Plum-headed Parakeet	R/LM	FR, N	December to April	2 ♂ (Sangli), 3 ♀, 2 ♂ (Ratnagiri), 8 ♂, 1 ♀ (Pune), 2 ♀ (Nasik), 3 ♀, 1 ♂ (Jalgaon)
266.	<i>Psittacula columboides</i> (Vigors)	Malabar Parakeet	R (Nomadic)	FR & GR	January to March	
	CUCULIFORMES : CUCULIDAE					
267.	<i>Centropus sinensis</i> (Stephens)	Greater Coucal	R	CR & I	All the year (November to May)	4 ♂, 1 ♀, 1 Unsexed (Pune), 1 ♀ (Nasik), 1 ♀ (Jalgaon), 1 ♀ (Ratnagiri)
268.	<i>Centropus bengalensis</i> (Gmelin)	Lesser Coucal	R	CR & I	May to September	
269.	<i>Taccocua leschenautii</i> (Lesson)	Sirkeer Malkoha	R/LM	CR	March to August	1 ♂ (Dhule), 1 ♀ (Pune), 1 ♂ (Jalgaon)
270.	<i>Phaenicophaeus viridirostris</i> (Jerdon)	Blue-faced Malkoha	R	I	All the year (March to May) (Non-parasitic)	
271.	<i>Clamator jacobinus</i> (Boddaert)	Jacobin Cuckoo	MV	I	March-August (Brood Parasitic)	1 ♂ (Solapur)
272.	<i>Clamator coromandus</i> (Linnaeus)	Chestnut-winged Crested Cuckoo	MV/WM	I	April to August	
273.	<i>Eudynamys scolopaceus</i> (Linnaeus)	Asian Koel	R/LM/ (Nomadic)	FR	March to August (Brood Parasitic)	5 ♂, 4 ♀, 1 Unsexed (Pune), 2 ♂ (Ratnagiri), 3 ♂, 1 ♀ (Nasik), 2 ♀, 1 ♂ (Thane), 1 ♂ (Kolhapur), 2 ♂, 2 ♀ (Jalgaon), 1 ♀, 1 ♂ (Sangli)

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
274.	<i>Cacomantis sonneratii</i> (Latham)	Banded Bay Cuckoo	R/SM/LM	I	February to August (Brood Parasitic)	
275.	<i>Cacomantis passerinus</i> (Vahl)	Grey-bellied Cuckoo	R/LM/ (Nomadic)	I	June to September (Brood Parasitic)	
276.	<i>Surniculus lugubris</i> (Horsfield)	Square-tailed' Drongo Cuckoo	R/LM/ (Nomadic)	I	March to October (Brood Parasitic)	
277.	<i>Hierococcyx sparveroides</i> (Vigors)	Large Hawk-Cuckoo	WM	I	June-July (Brood Parasitic in Himalayas)	
278.	<i>Hierococcyx varius</i> (Vahl)	Common Hawk Cuckoo	R/LM (Nomadic)	I	March to June (Brood Parasitic)	1 ♀ (Pune), 1 Unsexed (Jalgaon)
279.	<i>Cuculus poliocephalus</i> Latham	Small Cuckoo	WM/ PM	I	May to July (in Himalayas) (Brood Parasitic)	
280.	<i>Cuculus micropterus</i> Gould	Indian Cuckoo	R/SM (Nomadic)	I	Brood Parasitic	
281.	<i>Cuculus saturatus</i> Blyth	Oriental Cuckoo	Vagrant	I	Brood Parasitic	
282.	<i>Cuculus canorus</i> Linnaeus	Common Cuckoo	R/SM/LM	I	March to August (Brood Parasitic)	
	STRIGIFORMES : TYTONIDAE					
283.	<i>Tyto alba</i> (Scopoli)	Barn Owl	R	CR	Practically entire year	1 ♂ (Pune)
284.	<i>Tyto longimembris</i> (A. Smith)	Eastern Grass Owl	R	CR	October to March	
	STRIGIDAE					
285.	<i>Otus brucei</i> (Hume)	Pallid Scops-owl	WM	CR	February to May	
286.	<i>Otus scops</i> (Linnaeus)	Eurasian Scops-owl	WM/Vagrant	CR	Extralimital	
287.	<i>Otus sunia</i> (Hodgson)	Oriental Scops-Owl	R	I & CR	February to May	
288.	<i>Otus bakkamoena</i> Pennant	Indian Scops-Owl	R	I & CR	January and February	
289.	<i>Bubo bengalensis</i> Franklin	Indian Eagle-Owl	R	CR	October to May	1 ♀ (Pune), 1 ♀ (Satara), 1 ♀ (Kolhapur), 3 ♀ (Jalgaon)

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
290.	<i>Bubo coromandus</i> (Latham)	Dusky Eagle-Owl	R/Uncertain	CR	November-April	
291.	<i>Bubo nipalensis</i> Hodgson	Spot-bellied Eagle-Owl	R	CR	December & January	
292.	<i>Ketupa zeylonensis</i> (Gmelin)	Brown Fish-Owl	R	Aq A & CR	December to March	
293.	<i>Strix ocellata</i> (Lesson)	Mottled Wood-Owl	R	CR & I	November to April	
294.	<i>Strix leptogrammica</i> Temminck	Brown Wood-Owl	R	CR	January to March	
295.	<i>Glaucidium radiatum</i> (Tickell)	Jungle Owlet	R	I, CR	March to May	
296.	<i>Athene brama</i> (Temminck)	Spotted Owlet	R	I, CR	November to March	1 ♂ (Jalgaon)
297.	<i>Athene blewitti</i> (Hume)	Forest Owlet	R	Cr	November to March	
298.	<i>Ninox scutulata</i> (Raffles)	Brown Hawk-Owl	R	I, CR	January to May	
299.	<i>Asio flammeus</i> (Pontoppidan)	Short-eared Owl	WM	CR, I	Extralimital	
	CAPRIMULGIFORMES : PODARGIDAE					
300.	<i>Batrachostomus moniliger</i> Blyth	Ceylon Frogmouth	R (Unclear)	I	January to April	
	CAPRIMULGIDAE					
301.	<i>Eurostopodus macrotis</i> (Vigors)	Great Eared-Nightjar	R/LM/WM (Unclear)	I	February to March	
302.	<i>Caprimulgus indicus</i> Latham	Indian Jungle-Nightjar	R/LM	I	March and April	1 ♂, 4 ♀ (Pune),
303.	<i>Caprimulgus europaeus</i> Linnaeus	European Nightjar	WM/ V	I	Extralimital	
304.	<i>Caprimulgus mahrattensis</i> Sykes	Syke's Nightjar	WM	I	Extralimital	
305.	<i>Caprimulgus atripennis</i> Jerdon	Jerdon's Nightjar	R/WM (Unclear)	I	March to July	
306.	<i>Caprimulgus asiaticus</i> Latham	Indian little Nightjar	R/SM	I	February to September	1 ♂, 2 ♀ (Pune)
307.	<i>Caprimulgus affinis</i> Horsfield	Savanna Nightjar	R	I	March to August	
	APODIFORMES : APODIDAE					
308.	<i>Aerodramus unicolor</i> (Jerdon)	Indian Swiftlet	R	I	March to June	
309.	<i>Zoonavena sylvatica</i> (Tickell)	Indian White-rumped Spinetail	R	I	February to May	
310.	<i>Hirundapus giganteus</i> (Temminck)	Brown-throated Needletail	R/LM (Unclear)	I	February to April	

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
311.	<i>Cypsiurus balasiensis</i> (J. E. Gray)	Asian Palm-Swift	R	I	All over the year	
312.	<i>Tachymarpis melba</i> (Linnaeus)	Alpine Swift	R/LM/SM	I	December to February	
313.	<i>Apus apus</i> (Linnaeus)	Common Swift	WM	I	Extralimital / in Kashmir-Himalayas. May-June	
314.	<i>Apus pallidus</i> (Shelley)	Pallid Swift	V	I	Extralimital	
315.	<i>Apus pacificus</i> (Latham)	Pacific Swift	V/Uncertain	I	April to July (in Himalayas)	
316.	<i>Apus affinis</i> (J.E. Gray)	Little Swift	R/LM	I	All year except November to February	1 ♂ (Sangli)
	HEMIPROCNIDAE					
317.	<i>Hemiprocne coronata</i> (Tickell)	Crested Tree-Swift	R/SM/LM	I	December to July	
	TROGONIFORMES : TROGONIDAE					
318.	<i>Harpactes fasciatus</i> (Pennant)	Malabar Trogon	R	I	February to May	
	CORACIIFORMES : ALCEDINIDAE					
319.	<i>Alcedo atthis</i> (Linnaeus)	Common Kingfisher	R	Aq A	February to September	1 ♂ (Ratnagiri), Unsexed (Pune), 1 ♂ (Jalgaon), 1 ♀ (Kolhapur)
320.	<i>Alcedo meninting</i> Horsfield	Blue-eared Kingfisher	R	Aq A	May to June	
321.	<i>Ceyx erithaca</i> (Linnaeus)	Black-backed Dwarf Kingfisher	MV/R (for Breeding)	Aq A	July to September	
322.	<i>Pelargopsis capensis</i> (Linnaeus)	Stork-billed Kingfisher	R	Aq A	February to May	
323.	<i>Halcyon smyrnensis</i> (Linnaeus)	White-throated Kingfisher	R/LM	OM	January to August	3 ♂, 3 ♀, 4 Unsexed (Pune), 2 ♂ (Ratnagiri), 2 ♀ (Kolhapur), 4 ♂ (Jalgaon), 2 ♀ (Sangli), 1 ♀ (Satara)
324.	<i>Halcyon pileata</i> (Boddaert)	Black-capped Kingfisher	R/LM	Aq A, I	May-June	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
325.	<i>Todiramphus chloris</i> (Boddaert)	Collared Kingfisher	R	Aq A	March to August	
326.	<i>Ceryle rudis</i> (Linnaeus)	Lesser Pied Kingfisher	R	Aq A (Fish)	Entire year	2♂, 1♀ (Pune), 2♂ (Kolhapur), 1♀ (Jalgaon)
	MEROPIIDAE					
327.	<i>Nyctyornis athertoni</i> (Jardine & Selby)	Blue-beared Bee-eater	R	I	February to August	
328.	<i>Merops orientalis</i> Latham	Little green Bee-eater	R/SM/LM	I	February to June	4♂, 2♀ (Pune), 3♂ (Ratnagiri), 1♂ (Nasik), 2♀, 1 Unsexed (Solapur), 1♂ (Jalgaon), 1♀ (Sangli)
329.	<i>Merops philippinus</i> Linnaeus	Blue-tailed Bee-eater	R/LM	I	March to June	1♂ (Dhule)
330.	<i>Merops apister</i> Linnaeus	European Bee-eater	WM	I	Extralimital	
331.	<i>Merops leschenaulti</i> Vieillot	Chestnut-headed Bee-eater	R/SM	I	February to June	
	CORACIIDAE					
332.	<i>Coracias garrulus</i> Linnaeus	European Roller	PM	I	Extralimital	1♂, (Nasik), 1♀ (Ahmadnagar), 1 Unsexed (Sangli)
333.	<i>Coracias benghalensis</i> (Linnaeus)	Indian Roller	R/LM	I	January to April	4♂, 5♀, 2 Unsexed (Pune), 1♀ (Satara), 5♀ (Solapur), 2♂ (Jalgaon), 1♂ (Sangli)
334.	<i>Eurystomus orientalis</i> (Linnaeus)	Dollarbird	R	I	March & April	
	UPUPIDAE					
225.	<i>Upupa epops</i> Linnaeus	Common Hoopoe	R/WM	I	January to April & Extralimital	2♀ (Ratnagiri), 1♀ (Satara), 3♀, 2♂ (Pune), 2♀ (Jalgaon), 2♀, 1 Unsexed (Nasik)
	BUCEROTIDAE					
336.	<i>Ocyrceros griseus</i> (Latham)	Malabar Grey Hornbill	R	FR	January to March	1♂, 1♀ (Pune)
337.	<i>Ocyrceros birostris</i> (Scopoli)	Indian Grey Hornbill	R/LM	OM	March-June	3♂, 3♀, 1 Unsexed (Pune), 1♀, 1♂ (Nasik), 2♂ (Nagar), 1♀ (Sangli)

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
338.	<i>Anthracoceros coronatus</i> (Boddaert)	Malabar Pied Hornbill	R/LM	FR, CR	March & April	1 ♂ (Ratnagiri), 1 ♂ (Satara)
339.	<i>Anthracoceros albirostris</i> (Shaw)	Oriental Pied Hornbill	R	FR/CR	April to May	
340.	<i>Buceros bicornis</i> Linnaeus	Great Pied Hornbill	R/LM	FR	February to April	Unsexed (Satara)
	PICIFORMES : CAPITONIDAE					
341.	<i>Megalaima zeylanica</i> (Gmelin)	Brown-headed Barbet	R	FR	March to May	
342.	<i>Megalaima viridis</i> (Boddaert)	White-cheeked Barbet	R	FR	December to March	1 ♀, 1 ♂ (Kolhapur), 1 ♀ (Satara), 1 ♂ (Pune), 1 ♂ (Nasik)
343.	<i>Megalaima rubricapillus</i> (Gmelin)	Ceylon Small Barbet	R	FR	January to March	
344.	<i>Megalaima haemacephala</i> (P.L.S. Müller)	Coppersmith Barbet	R	FR	November to June	2 ♂, 2 Unsexed (Pune), 2 ♀ (Ahamadnagar), 1 ♀ (Nasik), 2 ♀ (Thane), 2 ♀, 1 ♂ (Sangli), 1 ♂ (Kolhapur)
	PICIDAE					
345.	<i>Jynx torquilla</i> Linnaeus	Eurasian Wryneck	WM	I	Extralimital	
346.	<i>Picumnus innominatus</i> Burton	Speckled Piculet	R	I	January to March	
347.	<i>Dendrocopos nanus</i> (Vigors)	Indian Pygmy Woodpecker	R	I	February to July	1 ♀ (Jalgaon)
348.	<i>Dendrocopos mahrattensis</i> (Latham)	Yellow-fronted Pied Woodpecker	R	I	February to May	2 ♀, 1 ♂, (Pune), 1 ♂, 1 ♀ (Nasik), 2 ♂ (Jalgaon), 1 ♂ (Ratnagiri), 1 ♀ (Sangli)
349.	<i>Micropternus brachyurus</i> (Vieillot)	Rufous Woodpecker	R	I	February to April	
350.	<i>Dryocopus javensis</i> (Horsfield)	White-bellied Woodpecker	R	I	January to March	
351.	<i>Picus chlorolophus</i> Vieillot	Lesser Yellownappe	R	I	January to May	
352.	<i>Picus xanthopygaeus</i> (J.E. Gray & G.R. Gray)	Streak-throated Woodpecker	R	I	January to June	
353.	<i>Dinopium javanense</i> (Ljungh)	Common Flameback	R	I	—do—	
354.	<i>Dinopium benghalense</i> (Linnaeus)	Black-rumped Flameback	R	I	February-March & July-August	2 ♂ (Ratnagiri), 1 ♀ (Nasik)

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
355.	<i>Chrysocolaptes lucidus</i> (Scopoli)	Greater Flameback	R	I	December to March	1 ♂ (Nasik)
356.	<i>Chrysocopaptes festivus</i> (Boddaert)	White-naped Flameback	R	I	November to March	1 ♂ (Jalgaon), 1 ♂ (Pune)
357.	<i>Hemicircus canente</i> (Lesson)	Heart-Spotted Woodpecker	R	I	November to April	
	PASSERIFORMES : PITTIDAE					
358.	<i>Pitta brachyura</i> (Linnaeus)	Indian Pitta	R/SM	I	May-August	1 Unsexed (Pune)
	ALAUDIDAE					
359.	<i>Mirafra cantillans</i> Blyth	Singing Bushlark	R	I	March to September	
360.	<i>Mirafa erythroptera</i> Blyth	Indian Bushlark	R	I	April to October	
361.	<i>Eremopterix griseus</i> (Scopoli)	Ashy-crowned Finch-Lark	R/LM	GR	February to September	1 ♂ (Jalgaon), 1 ♂ (Dhule)
362.	<i>Ammomanes phoenicura</i> (Franklin)	Rufous-tailed Lark	R/SM	GR	February to May	2 ♂ (Sangli)
363.	<i>Calandrella brachydactyla</i> (Leisler)	Greater Short-toed Lark	WM	GR, I	Extralimital	
364.	<i>Galerida malabarica</i> (Scopoli)	Malabar Crested Lark	R/SM/LM	GR	All the year	1 ♀ (Pune)
365.	<i>Galerida deva</i> (Sykes)	Sykes's Lark	R/SM	GR, I	March to September	2 ♀, 1 ♂ (Jalgaon), 1 ♀ (Thane)
366.	<i>Alauda gulgula</i> Franklin	Oriental Skylark	R/SM	GR	March to August	
	HIRUNDINIDAE					
367.	<i>Riparia riparia</i> (Linnaeus)	Common Sand Martin	WM	I	October to March (in NE India)	
368.	<i>Riparia diluta</i> (Sharpe & Wyatt)	Pale Sand Martin	WM	I	November to May (in N India)	
369.	<i>Riparia chinensis</i> (Vieillot)	Grey-throated Sand Martin	WM	I	October to February (in N India)	
370.	<i>Ptynoprogne rupestris</i> Scopoli	Eurasian Crag-Martin	WM	I	Extralimital & in Himalayas	
371.	<i>Ptynoprogne concolor</i> Sykes	Dusky Crag-Martin	R	I	February to August	1 ♂ (Sangli)
372.	<i>Hirundo rustica</i> Linnaeus	Barn Swallow	WM	I	Extralimital & in Himalayas	2 ♂ (Ahmadnagar), 1 ♂, 1 ♀ (Pune)

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
373.	<i>Hirundo tahitica</i> Gmelin	House Swallow	R	I	March to May	
374.	<i>Hirundo smithii</i> Leach	Wire-tailed Swallow	R/LM	I	March to September	1 ♂ (Sangli), 1 ♂ (Waghur)
375.	<i>Hirundo daurica</i> Linnaeus	Red-rumped Swallow	R/SM	I	April to August	2 ♂ (Sangli)
376.	<i>Hirundo fluviicola</i> Blyth	Streak-throated Swallow	WM	I	All year	
377.	<i>Delichon urbica</i> (Linnaeus)	Northern House Martin	WM	I	Extralimal & in Kashmir, Ladakh	
	MOTACILLIDAE					
378.	<i>Dendronanthus indicus</i> (Gmelin)	Forest wagtail	WM	I	Extralimal	
379.	<i>Motacilla alba</i> Linnaeus	White Wagtail	WM	I	—do—	
380.	<i>Motacilla maderaspatensis</i> Gmelin	White-browed Wagtail	R	I	December to June	1 ♂ (Solapur), 1 ♂ (Sangli)
381.	<i>Motacilla citreola</i> Pallas	Citrine Wagtail	WM	I	Extralimal	
382.	<i>Motacilla flava</i> Linnaeus	Yellow Wagtail	WM	I	—do—	1 ♂ (Pune)
383.	<i>Motacilla cinerea</i> Tunstall	Grey Wagtail	WM	I	—do—	1 ♂ (Sangli)
384.	<i>Anthus richardi</i> Vieillot	Richard's Pipit	WM	I	—do—	
385.	<i>Anthus rufulus</i> Vieillot	Paddyfield Pipit	R/LM	I	November to June	
386.	<i>Anthus campestris</i> (Linnaeus)	Tawny Pipit	WM	I	Extralimal	
387.	<i>Anthus godlewskii</i> (Taczanowski)	Blyth's Pipit	WM	I	—do—	
388.	<i>Anthus similis</i> Jerdon	Long-billed Pipit	WM	I	May to June	
389.	<i>Anthus trivialis</i> (Linnaeus)	Tree Pipit	WM	I	—do—	
390.	<i>Anthus hodgsoni</i> Richmond	Olive-backed Pipit	WM	I	—do—	
391.	<i>Anthus cervinus</i> (Pallas)	Red-Throated Pipit	WM	I	—do—	
	CAMPEPHAGIDAE					
392.	<i>Coracina macei</i> (Lesson)	Large Cuckoo-Shrike	R/LM	I	January to October	1 ♀, 1 ♂ (Nasik), 1 ♀ (Jalgaon), 1 ♂ (Thane)
393.	<i>Coracina melaschistos</i> (Hodgson)	Black-winged Cuckoo-Shrike	WM	I	May & June (In Himalayas)	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
394.	<i>Coracina melanoptera</i> (Rüppell)	Black-headed Cuckoo-Shrike	R/SM	I	April & May	
395.	<i>Pericrocotus roseus</i> (Vieillot)	Rosy Minivet	WM	I	May & June (In Himalayas)	
396.	<i>Pericrocatus divaricatus</i> (Raffles)	Ashy Minivet	V/WM	I	Extralimital	
397.	<i>Pericrocotus cinnamomeus</i> (Linnaeus)	Small Minivet	R	I	March to October	1 ♂ (Pune), 1 ♂ (Sangli)
398.	<i>Pericrocotus erythropygeus</i> (Jerdon)	White-bellied Minivet	R	I	June to October	
399.	<i>Pericrocatus ethologus</i> Bangs & Philips	Long-tailed Minivet	WM	I	April to June (in Himalayas)	
400.	<i>Pericrocotus flammeus</i> (Forster)	Orange Minivet	R	I	July & August	2 ♂ (Nasik), 1 ♀ (Thane)
401.	<i>Hemipus picatus</i> (Sykes)	Pied flycatcher-Shrike	R	I	March to May	
402.	<i>Tephrodornis gularis</i> (Raffles)	Large Woodshrike	R	I	December to June	
403.	<i>Tephrodornis pondicerianus</i> (Gmelin)	Common Woodshrike	R	I	February to July	
	HYPOCOLIIDAE					
404.	<i>Hypocolius ampelinus</i> Bonnaparte	Grey Hypocolius	WM, V	I	Extralimital	
	MONARCHIDAE					
405.	<i>Terpsiphone paradisi</i> (Linnaeus)	Asian Paradise Flycatcher	R	I	March to August	1 ♂, 1 ♀ (Thane)
406.	<i>Hypothymis azurea</i> (Boddaert)	Black-naped Blue Monarch	R/LM	I	—do—	
	RHIPIDURIDAE					
407.	<i>Rhipidura aureola</i> (Lesson)	White-browed Fantail	R/LM (uncertain)	I	January to July	1 ♂ (Jalgaon), 1 ♂ (Dhule)
408.	<i>Rhipidura albicollis</i> (Vieillot)	White-throated Fantail	R/LM	I	March to July	1 Unsexed (Kolhapur), 1 Unsexed (Thane)
	PYCNONOTIDAE					
409.	<i>Pycnonotus priocephalus</i> (Jerdon)	Grey-headed Bulbul	R	FR	March to July	
410.	<i>Pycnonotus melanicterus</i> (Gmelin)	Black-capped Bulbul	R	FR, I	January to August	
411.	<i>Pycnonotus jocosus</i> (Linnaeus)	Red-whiskered Bulbul	R	FR	December to June	2 ♂, 3 ♀ (Pune), 1 ♂, 1 ♀ (Ratnagiri)

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
412.	<i>Pycnonotus leucotis</i> (Gould)	White-eared Bulbul	R	FR, I	March to September	
413.	<i>Pycnonotus cafer</i> (Linnaeus)	Red-vented Bulbul	R	FR	February to November	3♂, 4♀ (Pune), 1♂ (Ratnagiri), 1♂ (Sangli), 1♂, 2Unsexed (Jalgaon), 1♂ (Nasik)
414.	<i>Pycnonotus luteolus</i> (Lesson)	White-browed Bulbul	R	FR	January to November	
415.	<i>Iole indica</i> (Jerdon)	Yellow-browed Bulbul	R	FR	February to May	1♂ (Ratnagiri), 3♂ (Satara)
416.	<i>Hypsipetes ganeesa</i> Sykes	Square-tailed Black Bulbul	R/LM	FR	March to June	
	AEGITHINIDAE					
417.	<i>Aegithina tiphia</i> (Linnaeus)	Common Iora	R	I	January to August	♀ (Pune)
418.	<i>Aegithina nigrolutea</i> (Marshall)	Marshall's Iora	R	I	June to August	
	CHLOROPSEIDAE					
419.	<i>Chloropsis aurifrons</i> (Temminck)	Gold-fronted Leafbird	R	I, FR	February to August	
420.	<i>Chloropsis cochinchinensis</i> (Gmelin)	Blue-winged Leafbird	R	I	November to May	2♀ (Nasik)
	LANIIDAE					
421.	<i>Lanius collurio</i> Linnaeus	Red-backed Shrike	WM, V	CR	Extralimital	
422.	<i>Lanius isabellinus</i> Hemprich & Ehrenberg	Isabelline Shrike	WM/PM	I, CR	—do—	
423.	<i>Lanius cristatus</i> Linnaeus	Brown Shrike	WM	I	—do—	
424.	<i>Lanius vittatus</i> Valenciennes	Bay-backed Shrike	R/SM	I, CR	February to April	1♂ (Nasik), 2♂ (Ahmadnagar),
425.	<i>Lanius schach</i> Linnaeus	Long-tailed Shrike	R/SM	OM	March to June	1♂ (Nasik), 1♀ (Dhule), 1♂ (Pune)
426.	<i>Lanius tephronotus</i> (Vigros)	Grey backed Shrike	WM	CR	March to June (in Himlayas)	
427.	<i>Lanius meridionalis</i> Temminck	Southern Grey Shrike	R	CR	January to October	2♀ (Akkalkot), 1♀, 1♂ (Jalgaon), 1♀ (Sangli)

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
	TURDIDAE					
428.	<i>Zoothera citrina</i> (Latham)	Orange-headed Thrush	R/LM	I	June to August	1 ♀ (Kolhapur)
429.	<i>Turdus unicolor</i> (Tickell)	Tickell's Thrush	WM	I	Extralimal & in Himalayas	
430.	<i>Turdus merula</i> (Linnaeus)	Common Blackbird	R/SM	I	June to August	1 ♀ (Satara), 1 ♂ (Kolhapur)
431.	<i>Myiophonus horsfieldii</i> (Vigors)	Malabar Whistling-Thrush	R/SM	OM	May to September	
	MUSCICAPIDAE					
432.	<i>Monticola cinclorhynchus</i> (Vigors)	Blue-headed Rock-Thrush	WM	OM	May to July (in Himalayas)	1 ♂ (Nasik)
433.	<i>Monticola solitarius</i> (Linnaeus)	Blue Rock-Thrush	WM	I	April to July (in Himalayas)	2 ♂ (Jalgaon)
434.	<i>Luscinia svecica</i> (Linnaeus)	Bluethroat	WM	I	Extralimal	
435.	<i>Luscinia brunnea</i> (Hodgson)	Indian Blue Robin	WM	I	—do—	
436.	<i>Copsychus saularis</i> (Linnaeus)	Oriental Magpie-Robin	R	I	March to June	1 ♂ (Satara), 2 ♀ (Pune)
437.	<i>Copsychus malabaricus</i> (Scopoli)	White-rumped Shama	R	I	April to June	
438.	<i>Saxicoloides fulicatus</i> (Linnaeus)	Indian Robin	R	I	February to July	2 ♂ (Sangli), 1 ♂ (Nasik)
439.	<i>Phoenicurus ochruros</i> (Gmelin)	Black Redstart	WM	I	May to August; (in Himalayas)	1 ♂ (Thane)
440.	<i>Saxicola macrorhynchus</i> (Stolickza)	White-browed Bushchat	WM	I	Extralimal	
441.	<i>Saxicola torquatus</i> (Linnaeus)	Common Stonechat	WM	I	Extralimal (in Himalayas)	
442.	<i>Saxicola caprata</i> (Linnaeus)	Pied Bushchat	R/SM	I	March to August	
443.	<i>Oenanthe picata</i> (Blyth)	Variable Wheatear	WM	I	Extralimal	
444.	<i>Oenanthe crysopygia</i> (Hemprich & Ehrenberg)	Rufous-tailed Wheatear	WM/V	I	Extralimal	
445.	<i>Oenanthe deserti</i> (Temminck)	Deaser Wheatear	WM/V	I	—do—	
446.	<i>Oenanthe isabellina</i> (Temminck)	Isabelline Wheatear	WM	I	Extralimal	

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
447.	<i>Cercomela fusca</i> (Blyth)	Brown Rock Chat	WM	I	February to August	
448.	<i>Muscicapa dauurica</i> Pallas	Asian Brown Flycatcher	WM	I	Coorg to Cardamon Hills, NW Himalaya, Vindhya	
449.	<i>Muscicapa ruficauda</i> Swainson	Rusty-tailed Flycatcher	WM/PM	I	NW Himalayas	
450.	<i>Muscicapa muttui</i> (Layard)	Brown-breasted Flycatcher	WM	I	In Assam, Garo & Mizo Hills	
451.	<i>Ficedula parva</i> (Bechstein)	Red-breasted Flycatcher	WM/PM	I	Extralimital	
452.	<i>Ficedula albicilla</i> (Pallas)	Red-throated Flycatcher	WM	I	Extralimital	
453.	<i>Ficedula westermanni</i> (Sharpe)	Little Pied Flycatcher	WM	I	Extralimital	
454.	<i>Ficedula superciliaris</i> (Jerdon)	Ultramarine Flycatcher	WM	I	In Western Himalayas to Kumaon	
455.	<i>Eumyias thalassinus</i> (Swainson)	Verditer Flycatcher	WM	I	In Western & Eastern Himalayas	
456.	<i>Eumyias albicaudatus</i> (Jerdon)	Nilgiri Flycatcher	R	I	February to June	
457.	<i>Cyornis pallipes</i> (Jerdon)	White-bellied Blue Flycatcher	R	I	February to September	
458.	<i>Cyornis rubeculoides</i> (Vigors)	Blue-throated Flycatcher	WM	I	April to August in Himalayas	
459.	<i>Cyornis tickelliae</i> Blyth	Tickell's Blue Flycatcher	R/LM	I	April to August	
460.	<i>Culicicapa ceylonensis</i> (Swainson)	Grey-headed Canary Flycatcher	R/SM	I	March to June	
	TIMALIIDAE					
461.	<i>Dryonastes delesserti</i> (Jerdon)	Wynaad Laughingthrush	V	I	July to September in south	
462.	<i>Pellorneum ruficeps</i> Swainson	Puff-throated Babbler	R	I	April to September	
463.	<i>Pomatorhinus horsfieldii</i> Sykes	Indian Scimitar-Babbler	R	I	February to May	
464.	<i>Dumetia hypertyhra</i> (Franklin)	Tawny-bellied Babbler	R	I	June to October	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
465.	<i>Rhopocichla atriceps</i> (Jerdon)	Dark-fronted Babbler	R	I	March to July	
466.	<i>Chrysomma sinense</i> (Gmelin)	Yellow-eyed Babbler	R	I	June to November	
467.	<i>Turdoides caudata</i> (Dumont)	Common Babbler	R	CR	March to July	
468.	<i>Turdoides malcomi</i> (Sykes)	Large Grey Babbler	R	CR	All year	1 ♂ (Nasik), 1 ♀, 1 ♂ (Pune), 2 ♂ (Solapur), 1 ♂ (Jalgaon), 1 ♀, 1 ♂ (Sangli), 1 ♀ (Satara)
469.	<i>Turdoides subrufa</i> (Jerdon)	Indian Rufous Babbler	R	I	February to November	
470.	<i>Turdoides striata</i> (Dumont)	Jungle Babbler	R	I	March to October	2 ♀ (Kolhapur), 2 ♀ (Thane)
471.	<i>Turdoides affinis</i> (Jerdon)	Yellow-billed Babbler	R	I	January to November	
472.	<i>Alcippe poiocephala</i> (Jerdon)	Brown-Cheeked Fulvetta	R	I	January to May	
	CISTICOLIDAE					
473.	<i>Cisticola juncidis</i> (Rafinesque)	Zitting Cisticola	R/LM	I	May to October	
474.	<i>Cisticola exilis</i> (Vigors & Horsfield)	Bright-capped Cisticola	R	I	Unrecorded	
475.	<i>Prinia buchanani</i> Blyth	Rufous fronted Prinia	R	I	June to September	
476.	<i>Prinia hodgsonii</i> Blyth	Grey-breasted Prinia	R	I	June to October	
477.	<i>Prinia socialis</i> Sykes	Ashy Prinia	R	I	March to November	1 ♀, 1 Unsexed (Pune)
478.	<i>Prinia sylvatica</i> Jerdon	Jungle Prinia	R	I	June to September	
479.	<i>Prinia inornata</i> Sykes	Plain Prinia	R	I	June to October	
480.	<i>Orthotomus sutorius</i> (Pennant)	Common Tailorbird	R	I	March to December	1 ♀ (Pune)
	SYLVIIDAE					
481.	<i>Locustella naevia</i> (Boddaert)	Grasshopper Warbler	WM	I	Extralimital	
482.	<i>Locustella certhiola</i> (Pallas)	Rusty-rumped Warbler	WM	I	—do—	
483.	<i>Acrocephalus agricola</i> (Jerdon)	Paddyfield Warbler	WM	I	—do—	
484.	<i>Acrocephalus dumetorum</i> Blyth	Blyth's Reed-Warbler	WM	I	—do—	
485.	<i>Acrocephalus stentoreus</i> (Hemprich & Ehrenberg)	Indian Great Reed-Warbler	WM	I	—do—	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
486.	<i>Acrocephalus aedon</i> (Pallas)	Thick-billed Warbler	WM	I	—do—	
487.	<i>Hippolais caligata</i> (Lichtenstein)	Booted Warbler	WM	I	—do—	
488.	<i>Phylloscopus collybita</i> (Vieillot)	Common Chiffchaff	WM	I	—do—	
489.	<i>Phylloscopus affinis</i> (Tickell)	Tickell's Leaf-Warbler	WM	I	—do—	
490.	<i>Phylloscopus griseolus</i> Blyth	Sulphur-bellied Warbler	WM	I	—do—	
491.	<i>Phylloscopus inornatus</i> Blyth	Yellow-browed Leaf-Warbler	WM/V	I	—do—	
492.	<i>Phylloscopus humei</i> (Brooks)	Hume's Warbler	WM	I	—do—	
493.	<i>Phylloscopus trochiloides</i> (Sundevall)	Greenish Warbler	WM	I	—do—	
494.	<i>Phylloscopus magnirostris</i> Blyth	Large-billed Leaf Warbler	WM	I	—do—	
495.	<i>Phylloscopus tytleri</i> Brooks	Tytlers Leaf-Warbler	WM	I	Breeds in Kashmir, Himalayas	
496.	<i>Phylloscopus occipitalis</i> (Blyth)	Western Crowned Warbler	WM	I	—do—	
497.	<i>Phylloscopus reguloides</i> (Blyth)	Blyth's Leaf Warbler	WM	I	Extralimital	
498.	<i>Chaetornis striata</i> (Jerdon)	Bristled Grassbird	WM	I	May to September	
499.	<i>Sylvia curruca</i> (Linnaeus)	Lesser Whitethroat	WM	I	Extralimital	
500.	<i>Sylvia crasirostris</i> (Gmelin)	Eastern Orphean Warbler	WM	I	—do—	
	PARIDAE					
501.	<i>Parus major</i> Linnaeus	Great Tit	R	I	February to August	2♂ (Sangli)
502.	<i>Parus xanthogenys</i> Vigors	Black-lored Yellow-Tit	R	I	June to October	
	SITTIDAE					
503.	<i>Sitta castanea</i> Lesson	Indian Nuthatch	R	I	April to September	
504.	<i>Sitta frontalis</i> Swainson	Velvet-fronted Nuthatch	R	I	January to May	
	DICAEIDAE					
505.	<i>Dicaeum agile</i> (Tickell)	Thick-billed Flowerpecker	R	FR	January to June	
506.	<i>Dicaeum erythrorhynchos</i> (Latham)	Pale-billed Flowerpecker	R	FR	February to May & August-September	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
507.	<i>Dicaeum concolor</i> (Jerdon)	Nilgiri Flowerpecker	R	FR,I	January to April & May-June	
	NECTARINIIDAE					
508.	<i>Leptocoma zeylonica</i> (Linnaeus)	Purple-rumped Sunbird	R	N	February to April	1 ♂ (Pune)
509.	<i>Leptocoma minima</i> (Sykes)	Small Sunbird	R	N	September to April	
510.	<i>Cinnyris asiaticus</i> (Latham)	Purple Sunbird	R	N	February to June	2 ♂, 1 ♀ (Pune)
511.	<i>Cinnyris lotenius</i> (Linnaeus)	Loten's Sunbird	R	N	March to May	
512.	<i>Aethopyga siparaja</i> (Raffles)	Crimson Sunbird	R	N	June to September	
513.	<i>Arachnothera longirostra</i> (Latham)	Little Spiderhunter	R	N	December to August	
	ZOSTEROPIDAE					
514.	<i>Zosterops palpebrosus</i> (Temminck)	Oriental White-Eye	R	OM	April to September	
	EMBERIZIDAE					
515.	<i>Melophus lathamii</i> (Gray)	Crested Bunting	R/LM	I	June to August	1 ♂ (Kolhapur)
516.	<i>Emberiza buchanani</i> Blyth	Grey-necked Bunting	WM	GR	Extralimital	
517.	<i>Emberiza hortulana</i> Linnaeus	Ortolan Bunting	WM	I,GR	Extralimital	
518.	<i>Emberiza striolata</i> (Lichtenstien)	Striolated Bunting	R	GR,I	July to November	
519.	<i>Emberiza aureola</i> Pallas	Yellow-breasted Bunting	WM/V	GR	—	
520.	<i>Emberiza melanocephala</i> Scopoli	Black-headed Bunting	WM	GR	—	
521.	<i>Emberiza bruniceps</i> Brandt	Red-headed Bunting	WM	GR	—	
	FRINGILIIDAE					
522.	<i>Carpodacus erythrinus</i> (Pallas)	Common Rosefinch	WM	GR	—	1 ♂ (Thane)
	ESTRILDIDAE					
523.	<i>Amandava amandava</i> (Linnaeus)	Red Avadavat	R	GR	July to October	
524.	<i>Amandava formosa</i> (Latham)	Green Avadavat	R/Uncertain	GR	May and January	
525.	<i>Euodice malabarica</i> (Linnaeus)	Indian Silverbill	R	GR	July to May	
526.	<i>Lonchura striata</i> (Linnaeus)	White-rumped Munia	R	GR	March to November	

Table 1. *Contd.*

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
527.	<i>Lonchura kelaarti</i> (Jerdon)	Black-throated Munia	R/LM	GR	April to August	
528.	<i>Lonchura punctulata</i> (Linnaeus)	Scaly-breasted Munia	R	GR	May to September	
529.	<i>Lonchura malacca</i> (Linnaeus)	Tricoloured Munia	R	GR	June to December	
	PASSERIDAE					
530.	<i>Passer domesticus</i> (Linnaeus)	House Sparrow	R	GR	Throughout the year	1 ♀ (Pune)
531.	<i>Petronia xanthocollis</i> (Burton)	Yellow-throated Sparrow	R	GR	February to May	
	PLOCEIDAE					
532.	<i>Ploceus benghalensis</i> (Linnaeus)	Black Breasted Weaver	R/LM	I,GR	June to September	
533.	<i>Ploceus philippinus</i> (Linnaeus)	Baya Weaver	R/SM	GR	May to September	1 ♂ (Sangli)
	STURNIDAE					
534.	<i>Sturnia malabarica</i> (Gmelin)	Grey-headed Starling	R/SM/LM	OM	April to July	3 ♂ (Thane)
535.	<i>Temenuchus pagodarum</i> (Gmelin)	Brahminy Starling	R	FR, I	February to September	
536.	<i>Sturnus roseus</i> (Linnaeus)	Rosy Starling	WM	OM	Extralimital	1 ♂ (Nasik)
537.	<i>Sturnus vulgaris</i> Linnaeus	Common Starling	WM	OM	Extralimital	
538.	<i>Gracupica contra</i> Linnaeus	Pied Starling	R	OM	March to September	
539.	<i>Acridotheres tristis</i> (Linnaeus)	Common Myna	R/LM	OM	March to September	1 ♂ (Pune), 1 ♀ (Solapur), 1 ♀ (Jalgaon), 1 ♀ (Sangli), 2 ♀, 1 Unsexed (Nasik)
540.	<i>Acridotheres ginginianus</i> (Latham)	Bank Myna	R/SM/LM	OM	March to August	
541.	<i>Acridotheres fuscus</i> (Wagler)	Jungle Myna	R/SM/LM	OM	February to May	
542.	<i>Gracula indica</i> (Cuvier)	Lesser Hill-Myna	R/SM/LM	OM	—do—	
	ORIOLIDAE					
543.	<i>Oriolus kundoo</i> (Sykes)	Indian Golden Oriole	R/LM	FR,I	April to August	3 ♂ (Ahmadnagar), 2 (Nasik), 3 ♀ (Thane), 2 ♀, 1 ♂ (Pune), 1 ♂ (Jalgaon), 1 ♂ (Sangli)
544.	<i>Oriolus chinensis</i> Linnaeus	Black-naped Oriole	WM	FR,I	Extralimital	

Table 1. Contd.

Sl. No.	Taxa	Common name	Res. Status	Food	Br. Season	Sp. in Z.S.I. Pune
545.	<i>Oriolus xanthornus</i> (Linnaeus)	Black-hooded Oriole	R/LM	FR,I	March to July	1 ♀, 1 Unsexed(Nasik), 1 ♂(Jalgaon), 1 ♂(Thane)
	IRENIDAE					
546.	<i>Irena puella</i> (Latham)	Asian Fairy- Bluebird	R/SM	FR,I	January to June	
	DICRURIDAE					
547.	<i>Dicrurus macrocercus</i> Vieillot	Black Drongo	R	I	—do—	5 ♂, 3 ♀(Nasik), 1 ♀, 1 ♂ (Pune), 1 Unsexed (Kolhapur), 4 ♀(Solapur), 1 ♀, 1 ♂(Jalgaon), 2 ♀, 1 Unsexed (Pune), 1 ♂ (Thane)
548.	<i>Dicrurus leucophaeus</i> Vieillot	Ashy Drongo	WM	I	Extralimital (also in Himalayas)	
549.	<i>Dicrurus caerulescens</i> (Linnaeus)	White-bellied Drongo	R/SM/LM	I	March to June	1 ♂(Jalgaon), 1 ♂ (Ahmadnagar), 1 Unsexed (Nasik)
550.	<i>Dicrurus aeneus</i> Vieillot	Bronzed Drongo	R/LM	I	—do—	
551.	<i>Dicrurus hottentottus</i> (Linnaeus)	Spangled Drongo	R/SM	N, I	March to April	
552.	<i>Dicrurus paradiseus</i> (Linnaeus)	Greater Racket-tailed Drongo	R	I	February to May	1 ♀, 1 Unsexed (Nasik), 1 ♂(Thane)
	ARTAMIDAE					
553.	<i>Artamus fuscus</i> Vieillot	Ashy Wood Swallow	R/SM/LM	I	March to June	
	CORVIDAE					
554.	<i>Dendrocitta vagabunda</i> (Latham)	Rufous Treepie	R	OM	March to July	1 ♂, 1 ♀(Jalgaon), 1 ♀(Nasik)
555.	<i>Corvus splendens</i> Vieillot	House Crow	R	OM	March to August	
556.	<i>Corvus culminatus</i> Wagler	Jungle Crow	R	OM	February to June	

Key to abbreviations : Res. Status = Residential Status; R = Resident, LM = Local Movements, SM = Seasonal Movements, WM = Winter Migrant, PM = Passage Migrant, MV = Monsoon Visitor, V = Vagrant. **FOOD :** Aq A = Aquatic Animals, I = Insects, OM = Omnivorous, SC = Scavenger, CR = Carnivorous, Vg M = Vegetable Matter, GR = Graminivorous, FR = Frugivorous, N = Nectar.

Table 2. Avian diversity in Maharashtra.

	Order	Family	Genera	Species
1	PODICIPEDIFORMES	1	2	3
2	PROCELLARIIFORMES	2	3	4
3	PELECANIFORMES	6	6	10
4	CICONIIFORMES	3	18	28
5	PHOENICOPTERIFORMES	1	2	2
6	ANSERIFORMES	1	11	25
7	FALCONIFORMES	3	22	47
8	GALLIFORMES	1	6	13
9	GRUIFORMES	4	12	21
10	CHARADRIIFORMES	13	37	92
11	COLOUMBIFORMES	2	7	16
12	PSITTACIFORMES	1	2	5
13	CUCLIFORMES	1	9	16
14	STRIGIFORMES	2	9	17
15	CAPRIMUGIFORMES	2	3	8
16	APODIFORMES	2	7	10
17	TROGONIFORMES	1	1	1
18	CORACIIFORMES	5	14	22
19	PICIFORMES	2	10	17
20	PASSERIFORMES	33	90	199
	TOTAL (21 ORDERS)*	86(88)	271(432)	556(1342)

*Bird diversity in Indian Subcontinent is given in parenthesis.

Table 3. Endemic bird species of Maharashtra*

S. No.	Species Name	Common Name
	Family PHASIANIDAE	
1.	<i>Perdica argoondah</i> (Sykes)	Rock Bush-quail
2.	<i>Perdica erythrorhyncha</i> (Sykes)	Painted Bush-quail
3.	<i>Galloperdix spadicea</i> (Gmelin)	Red Spurfowl
4.	<i>Galloperdix lunulata</i> (Valenciennes)	Painted Spurfowl
5.	<i>Gallus sonneratii</i> Temminck	Grey Junglefowl
	Family COLUMBIDAE	
6.	<i>Columba elphinstonii</i> (Sykes)	Nilgiri Wood-Pigeon
7.	<i>Treron affinis</i> (Jerdon)	Grey-fronted Green-Pigeon

Table 3. Contd.

S. No.	Species Name	Common Name
8.	Family PSITTACIDAE <i>Psittacula columboides</i> (Vigors)	Malabar Parakeet
9.	Family STRIGIDAE <i>Strix ocellata</i> (Lesson)	Mottled Wood-Owl
10.	<i>Athene blewitti</i> (Hume)	Forest Owlet
11.	Family BUCEROTIDAE <i>Ocyrceros griseus</i> (Latham)	Malabar Grey Hornbill
12.	Family CAPITONIDE <i>Megalaima viridis</i> (Boddaert)	White-cheeked Barbet
13.	Family ALAUDIDAE <i>Gallerida malabarica</i> (Scopoli)	Malabar Crested Lark
14.	<i>Gallerida deva</i> (Sykes)	Sykes's Crested Lark
15.	Family PYCNONOTIDAE <i>Pycnonotus priocephalus</i> (Jerdon)	Grey-headed Bulbul
16.	<i>Iole indica</i> (Jerdon)	Yellow-browed Bulbul
17.	Family RHIPIDURIDAE <i>Rhipidura albogularis</i> (Lesson)	White-spotted Fantail
18.	Family TURDIDAE <i>Myophonus horsfieldii</i> (Vigors)	Malabar Whistling Thrush
19.	Family MUSCICAPIDAE Subfamily MUSCICAPINAE <i>Eumyias albicaudata</i> (Jerdon)	Nilgiri Flycatcher
20.	<i>Cyornis pallipes</i> (Jerdon)	White-bellied Blue Flycatcher
21.	Family TIMALIIDAE <i>Pomatorhinus horsfieldii</i> Sykes	Indian Scimitar-Babbler
22.	<i>Turdoides subrufa</i> (Jerdon)	Indian Rufous Babbler
23.	<i>Rhopocichla atriceps</i> (Jerdon)	Black-headed Babbler
24.	Family PARIDAE <i>Parus aplonotus</i> Blyth	Indian Yellow-Tit
25.	Family DICADAE <i>Dicaeum concolor</i> Jerdon	Nilgiri Flowerpecker
26.	Family NECTARINIIDAE <i>Leptocoma minima</i> (Sykes)	Small Sunbird
27.	<i>Aethopyga vigorsii</i> (Sykes)	Vigor's Sunbird
28.	Family ESTRILDIDAE <i>Amandava formosa</i> (Latham)	Green Avadavat
29.	Family STURNIDAE <i>Sturnia blythii</i> Jerdon	Malabar White-headed Starling

*based on Jathar and Rahmani (2006).

Table 4. Conservation status of birds of Maharashtra

Sl. No.	Species Name	Common Name	IUCN/ BirdLife International (2010)	IW(P) Act 1972
1.	Family PELECANIDAE <i>Pelecanus philippensis</i> (Gmelin)	Spot-billed Pelican	NT	—
2.	Family ANHINGIDAE <i>Anhinga melanogaster</i> Pennant	Oriental Darter	NT	—
3	Family CICONIIDAE <i>Mycteria leucocephala</i> (Penant)	Painted Stork	NT	—
4	<i>Leptoptilos javanicus</i> (Horsfield)	Lesser Adjutant-Stork	VU	—
5	<i>Leptoptilos dubius</i> (Gmelin)	Greater Adjutant Stork	EN	—
6	Family THRESKIORNITHIDA <i>Threskiornis melanocephalus</i> (Latham)	Oriental White Ibis	NT	—
7	<i>Platalea leucorodia</i> Linnaeus	Eurasian Spoonbill	—	Schedule-I, Part III (Birds)
8.	Family ANATIDAE <i>Aythya nyroca</i> (Guldenstadt)	Ferruginous Pochard	NT	—
9	<i>Marmaronetta angustirostris</i> (Menetries)	Marbled Teal	VU	—
10	Family ACCIPITRIDAE <i>Aviceda leuphotes</i> (Dumont)	Black Baza	—	Schedule-I, Part-III (Birds)
11	<i>Haliaeetus leucogaster</i> (Gmelin)	White-bellied Sea-Eagle	—	—do—
12	<i>Ichthyophaga ichthyaetus</i> (Horsfield)	Greater Grey-headed Fish-Eagle	NT	—do—
13	<i>Gyps bengalensis</i> (Gmelin)	Indian White-backed Vulture	CR	—do—
14	<i>Gyps indicus</i> (Scopoli)	Long-billed Vulture	CR	—do—
15	<i>Circus macrourus</i> (S. G. Gmelin)	Pallied Harrier	NT	—do—
16	<i>Aquila clanga</i> Pallas	Greater Spotted Eagle	VU	—do—
17	<i>Aquila hastata</i> (Brehm)	Indian Spotted Eagle	VU	—do—
18	<i>Aquila heliaca</i> (Savigny)	Eastern Imperial Eagle	VU	—do—
	All remaining Hawk species	—	—	—do—
19	Family PANDIONIDAE <i>Pandion haliaetus</i> (Linnaeus)	Osprey	—	—do—
20	Family FALCONIDAE <i>Falco peregrinus</i> Tunstall	Peregrine Falcon	—	—do—
21	<i>Falco chicquera</i> Daudin	Red-headed Falcon	—	—do—
22	<i>Falco naumani</i> Fleischer	Lesser Kestrel	VU	—do—
23	<i>Falco jugger</i> (J.E. Gray)	Laggar Falcon	NT	—do—
24	Family PHASIANIDAE <i>Gallus sonneratii</i> Temminck	Grey Jungle Fowl	—	Schedule-II, Part-II (Birds)
25.	<i>Pavo cristatus</i> Linnaeus	Indian Peafowl	—	Schedule-I, Part-III (Birds)

Table 4. Contd

Sl. No.	Species Name	Common Name	IUCN/ BirdLife International (2010)	IW(P) Act 1972
26.	Family GRUIDAE <i>Grus antigone</i> (Linnaeus)	Sarus Crane	VU	—
27.	Family OTITIDAE <i>Ardeotis nigriceps</i> (Vigors) (Linnaeus)	Great Indian Bustard	EN	—
28.	<i>Sypheotides indicus</i> (J.F. Miller)	Lesser Florican	EN	—
29.	Family SCOLOPACIDAE <i>Vanellus gregarious</i> (Pallas)	Sociable Lapwing	CR	—
30.	<i>Limosa lapponica</i> (Linnaeus)	Bar-tailed Godwit	NT	—
31.	<i>Numenius arquata</i> (Linnaeus)	Eurasian Curlew	NT	—
32.	<i>Calidris tenuirostris</i> (Horsfield)	Great Knot	VU	—
33.	Family LARIDAE <i>Sterna acuticauda</i> J.E. Gray	Black-bellied Tern	NT	—
34.	Family RYNCHOPIDAE <i>Rynchops albigollis</i> Swainson	Indian Skimmer	VU	—
35.	Family COLUMBIDAE <i>Columba elphinstonii</i> (Sykes)	Nilgiri Wood-pigeon	VU	—
36.	Family STRIGIDAE <i>Athene blewitti</i> Hume	Forest Owlet	CR	—
37.	Family PODARGIDAE <i>Batrachostomus moniliger</i> Blyth	Ceylon Frogmouth	—	Schedule-I, Part-III (Birds)
38.	Family APODIDAE <i>Collocalia unicolor</i> (Jerdon)	Indian Edible-nest Swiftlet	—	—do—
39.	Family CORACIIDAE <i>Coracias garrulus</i> Linnaeus	European Roller	NT	—
40.	Family BUCEROTIDAE <i>Ocyrceros griseus</i> (Latham)	Malabar Grey Hornbill	LC	—
41.	<i>Anthraceroceros coronatus</i> (Boddaert)	Malabar Pied Hornbill	NT	Schedule-I, Part-III (Birds)
42.	<i>Buceros bicornis</i> Linnaeus	Great Pied Hornbill	NT	—do—
43.	Family CAPITONIDAE <i>Megalaima viridis</i> (Boddaert)	White-cheeked Barbet	LC	—
44.	Family SYLVIIDAE <i>Phylloscopus tyleri</i> Brooks	Tytler's Leaf-Warbler	NT	—
45.	Family MUSCICAPIDAE <i>Saxicola macrorhynchus</i> (Stoliczka)	White-browed Bushchat	VU	—
46.	<i>Eumyias albicaudata</i> (Jerdon)	Nilgiri Flycatcher	NT	—
47.	Family ESTRILDIDAE <i>Amandava formosa</i> (Latham)	Green Avadavat	VU	—
48.	Family STURNIDAE <i>Gracula indica</i> (Cuvier)	Southern Hill-Myna	—	Schedule-I, Part-III (Birds)

Abbreviations : CR: Critically Endangered, VU: Vulnerable, EN: Endangered, NT: Near Threatened, LC: Least Concern as per IUCN / Birdlife International (2010). IW(P)Act: Indian Wildlife (Protection) Act, 1972-as amended up to 2002.

REPTILIA

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INTRODUCTION

The Bombay Presidency of the East India Company began with a trading factory. After Independence Bombay state succeeded the Presidency. Its area was altered by adding Kutch and Saurashtra and the Marathi speaking area of Hyderabad and Madhya Pradesh and taking away Kannada speaking areas (which were added to Mysore). In 1960 the Bombay reorganization Act divided Bombay state (presently Mumbai) between Gujrati and Marathi area of which Marathi area was reconized as Maharashtra. Berar Province was a province of British India. After India's independence in 1947, the Central Provinces and Berar became a province of India and in 1950 Berar became a province of Madhya Pradesh. In 1960 depending on the linguistic line, Berar (now Vidharba) and Nagpur became part of Bombay State and again in 1960 it was spilt along linguistic line, Marathi speaking portion of the state including Berar, became the new part of the Maharashtra.

Maharashtra has an area of 307, 713 sq km located in the north centre of Peninsular India with the command of the Arabian Sea through its port of Mumbai. Maharashtra has a remarkable homogeneity, enforced by its underlying geology. The dominant physical trait is its plateau character. Maharashtra is a plateau of plateaus, its western upturned rims rising to form the Sahyadri Range parallel to the western-sea coast and its slopes gently descending toward the east and south-east. Satpura ranges covered northern part of the state, while Ajanta and Satmala ranges runs through the

central part of the state, Arabian Sea guards the western boundary of Maharashtra, while Gujrat and Madhya Pradesh are on the northern side. Chhattisgarh covers the Eastern boundary of the state. Karnataka and Andhra Pradesh are on the Sourthern side.

There are 34 districts in Maharashtra, capital is Mumbai. Maharashtra experiences a tropical monsoon type of climate. Maximum amount of rainfall occurs in the month of July. Maharashtra has varied ecological conditions ranging from coastal plains to undulating Deccan plaeateu and high rise of moist tropical Shaderi hill ranges, which supports adverse faunal component.

Since long time there is no comprehensive reptilian faunal report on Maharashtra. Though there is a constructive paper of Western Maharashtra (Tiwari and Sharma 1971) which serves a great deal. The present paper is based on recent surveys and earlier specimens present in National Zoological collection as well as on the basis of published records by different authors (Wall, F 1909) (Prater, S 1924) (Gharpurey 1927, 1932) (Mullan, J.P. 1927) (Smith 1931, 1934, 1943) (Abdulali 1948) (Deoras, P.J. 1965) (Das, I 1995, 1997) (Borner, 1981) (Sharma, 2002, 2007); (Pradhan 2004) (Whitaker R & Ashoke Captain 2004) (Giri Varad 2007) (Giri and A.M. Baur 2008).

Hence, after amalgamation of all these accounts this will be the first consolidated report of reptiles of Maharashtra. Present study includes 117 species belonging to 65 genera under 22 familes. Species marked with asterisk have been included from literature.

Material and Methods : The class Reptilia includes Crocodiles, Turtles, Lizards and Snakes. These are found from different ecological niches, they are aquatic, terrestrial or arboreal. Aquatic forms are collected with the help of waternets and fishing hook. Both terrestrial and arboreal forms are collected by hand with the help of long forceps. Many characters are essential for identifying a species so collection should be done by taking care so that specimens are not damaged. After collecting the specimens from different habitat they are killed by anasthisising with chloroform and kept in 8% formalin solution at least for 24 hours for fixation. A small incision for bigger specimen is needed to ensure penetration of the solution. A label / tag with data of locality, habitat, date of collection and name of collector are attached to the fixed specimen and are preserved in 95% alcohol after washing with water for permanent preservation.

Pattern of head, shell and characters of limbs are nessery to identify turtles and tortoises. Scale characters, measurements, presence or absence of spines and tubercles are essential in case of lizard identification. In case of snake, scale characters specially that of head count serves a great deal for identification. The structure of hemipenis also helps as a specific character in some cases.

SYSTEMATIC LIST

Phylum CHORDATA

Class REPTILIA

Order 1. LORICATA

Family 1. CROCODILIDAE

1. *Crocodylus palustris* Lesson

Order 2. TESTUDINES

Suborder 1. CRYPTODIRA

Family 2. CHELONIDAE

2. *Chelonia mydas* (Linnaeus)
3. *Eretmochelys imbricata* (Linnaeus)
4. *Lepidochelys olivacea* (Eschscholtz)

Family 3. DERMOCHELYDAE

5. *Dermochelys coriacea* (Linnaeus)

Family 4. GEOMYDIDAE

6. *Melanochelys trijuga trijuga* (Schweigger)
7. *Pangshura tentatoria* (Gray)

Family 5. TESTUDINIDAE

8. *Geochelone elegans* (Schoepff)

Family 6. TRIONYCHIDAE

9. *Chitra indica* Gray
10. *Lissemys punctata punctata* Bonnaterre
11. *Nilssonia hurum* (Gray)
12. *Nilssonia leithii* (Gray)

Order 3. SQAMATA

Suborder II SAURIA

Family 7. GEKKONIDAE

13. *Cnemispis kandianus* (Kellart)
14. *Cnemaspis kolhapurensis* Giri, Bauer & Gaikward
15. *Geckoella collegalsensis* (Beddome)
16. *Geckoella dekkansensis* (Gunther)
17. *Hemidactylus aaronbaueri* Giri
18. *Hemidactylus albofasciatus* Grandison and Soman
19. *Hemidactylus brooki* Gray
20. *Hemidactylus flaviviridis* Ruppell
21. *Hemidactylus frenatus* Schlegel
22. *Hemidactylus giganteus* Stoliczka
23. *Hemidactylus gracilis* Blanford
24. *Hemidactylus leschenaulti* Dum. & Bibr.
25. *Hemidactylus maculatus* Dum. & Bibr.
26. *Hemidactylus satarensis* Giri & Bauer
27. *Hemidactylus triedrus* Daudin

Family 8. EUBLEPHARIDAE

28. *Eublepharis fuscus* Borner

Family 9. AGAMIDAE

29. *Calotes rouxi* Dum. & Bibr.
30. *Calotes versicolor* (Daudin)
31. *Draco dussumieri* Dum. & Bibr.
32. *Psamophilus blanfordianus* (Stoliczka)
33. *Sitana ponticeriana* Cuvier

Family 10. CHAMAELEONIDAE

34. *Chamaeleo zeylanicus* Laurenti

Family 11. SCINCIDAE

35. *Eumeces poonaensis* Sharma
36. *Eutropis beddomii* (Jerdon)
37. *Eutropis carinata* (Schneider)
38. *Eutropis innotata* Blanford
39. *Eutropis macularia* (Blyth)
40. *Eutropis trivittata* (Hardwicke & Gray)
41. *Lygosoma guentheri* (Peters)
42. *Lygosoma lineata* (Gray)
43. *Lygosoma punctata* (Gmelin)

Family 12. LACERTIDAE

44. *Ophisops beddomi* (Jerdon)
45. *Ophisops jerdoni* Blyth

Family 13. VARANIDAE

46. *Varanus bengalensis* (Daudin)
47. *Varanus griseus koniecznyi* Mertens

1. Suborder III SERPENTES

Family 14. TYPHLOPIDAE

48. *Gryptotyphlops acutus* (Dum & Bibr)
49. *Ramphotyphlops braminus* (Daudin)
50. *Typhlops porrectus* Stoliczka

Family 15. UROPELTIDAE

51. *Melanophidium punctatum* Beddome
52. *Uropeltis ellioti* (Gray)
53. *Uropeltis macrolepis macrolepis* (Peters)
Uropeltis macrolepis mahableswarensis
Chari
54. *Uropeltis phipsoni* (Mason)
55. *Uropeltis rubrolineatus* (Gunther)

Family 16. BOIDAE

56. *Gongylophis conicus* (Schneider)
57. *Eryx johani johani* (Russell)
58. *Eryx whitakeri* Das

Family 17. PYTHONIDAE

59. *Python molurus* (Linnaeus)

Family 18. ACROCHORDIDAE

60. *Acrochordus granulatus* (Schneider)

Family 19. COLUBRIDAE

Subfamily (i) COLUBRINAE

61. *Ahaetulla nasuta* (Lacepede)

62. *Ahaetulla pulverulenta* (Dum. & Bibr)
 63. *Amphiesma beddomi* (Gunther)
 64. *Amphiesma stolata* (Linn.)
 65. *Argyrogena fasciolatus* (Shaw)
 66. *Argyrogena gracilis* (Gunther)
 67. *Argyrogena ventromaculatus* (Gray & Hardwicke)
 68. *Boiga beddomi* (Wall)
 69. *Boiga ceylonensis* (Gunther)
 70. *Boiga forsteni* (Dum and Bibr)
 71. *Boiga trigonata* (Schneider)
 72. *Chrysopelea ornata* (Shaw)
 73. *Coelognathus helena* (Daudin)
 74. *Coronella brachyura* (Gunther)
 75. *Dendrelaphis pictus* (Gmelin)
 76. *Dendrelaphis tristis* (Daudin)
 77. *Liopeltis calamaria* (Gunther)
 78. *Lycodon aulicus* (Linn.)
 79. *Lycodon flavomaculatus* Wall
 80. *Lycodon striatus* (Shaw)
 81. *Lycodon travancoricus* (Beddome)
 82. *Macropisthodon plumbicolor* (Cantor)
 83. *Oligodon arnensis* (Shaw)
 84. *Oligodon brevicauda* Gunther
 85. *Oligodon taeniolatus* (Jerdon)
 86. *Psammophis condanarus* (Merrem)
 87. *Psammophis leithi* Gunther
 88. *Psammophis longifrons* Boulenger
 89. *Rhabdops bicolor* (Blyth)
 90. *Sphaelerosophis diadema* (Schlegel)
 91. *Sibynophis sagittarius* (Cantor)
 92. *Sibynophis subpunctatus* (Dum. & Bibr.)
 93. *Xenochrophis piscator* (Schneider)
- Subfamily (ii) HOMALOPSINAE
94. *Cerberus rhynchops* (Schneideer)
 95. *Enhydryis sieboldi* (Schlegel)
 96. *Gerardia prevostiana* (Eydoux & Grevias)
- Subfamily (iii) ELACHISTODONTINAE
97. *Elachistodon westermanni* Reinhardt

Family 20. ELAPIDAE

98. *Bungarus caeruleus* (Schneider)
99. *Bungarus fasciatus* (Schneider)
100. *Bungarus sindanus walli* Wall
101. *Calliophis melanurus* (Shaw)
102. *Calliophis nigriceps* Gunther
103. *Naja naja* (Linn.)

Family 21. HYDROPHIDAE

104. *Enhydrina schistosa* (Daudin)
105. *Hydrophis caeruleus* (Shaw)
106. *Hydrophis cyanocinctus* Daudin
107. *Hydrophis fasciatus* (Schneider)
108. *Hydrophis gracilis* Shaw
109. *Hydrophis mammillaris* (Daudin)
110. *Hydrophis obscurus* Daudin
111. *Hydrophis spiralis* (Shaw)
112. *Lapemis curtus* (Shaw)
113. *Pelamis platurus* (Linnaeus)

Family 22. VIPERIDAE

Subfamily (i) VIPERINAE

114. *Echis carinatus* (Schneider)
115. *Daboia russelli* (Shaw)

Subfamily (ii) CROTALINAE

116. *Trimeresurus gramineus* (Shaw)
117. *Trimeresurus malabaricus* (Jerdon)

SYSTEMATIC ACCOUNT

Phylum CHORDATA

Class REPTILIA

Order 1. CROCODYLIA

Family 1. CROCODILIDAE Gray, 1825

Genus 1. *Crocodylus* Laurenti 1768

*1. *Crocodylus palustris* Lesson
Marsh Crocodile

1831. *Crocodylus palustris* Lesson, Bull. Sci. nat. Paris, 25 : 2 : 121
1889. *Crocodylus palustris*, Boulenger, Cat. Chelon. Rhynchoceph. Crocod, brit. Mus. Nat. Hist., : 285

Material examined : Material not available known to occur in Maharashtra (Nagpur - Pradhan M.S. 2004) Description based on literature.

Diagnostic characters : Snout broad and without distinct ridges in front of the eye. A row of 4 distinct sharply raised scales, sometimes 6, longitudinal series of bony plates embedded in the skin. Ventrally the skin lacks armour. Finger webbed at the base.

Distribution : Maharashtra (Kanh river a nearest tributary of Pench river, Nagpur dist. - Pradhan 2004); Inhabits large bodies of water throughout the Indian subcontinent, from Beluchistan in the west to Assam in the east and from Nepal in the North to Tamil Nadu in the South. Also in Sri Lanka and Iran.

Remarks : The species is known to be hunted for trade for skin and body parts in domestic as well as international market.

Order 2 TESTUDINES

Key to the families of the order Testudines

1. Digits elongated 2
- Digits not elongated 3
2. Shell covered with smooth skin in adults
..... DERMOCHELYDAE
- Shell covered with horny shield
..... CHELONIDAE
3. Fore limbs semi- paddle shaped with 3 claws;
edge of the carapace flexible
..... TRIONYCHIDAE
- Fore limbs paddle shaped with 3 claws 4
4. Limbs paddle shaped but more or less
flattened; digits webbed; claws four-five-
..... GEOMYDIDAE
- Limbs more or less cylindrical; the hind limbs
club shaped or elephantine, digits not webbed
..... ESTUDINIDAE

Family 2. CHELONIDAE Gray, 1825

Key to the genera of the family CHELONIDAE

1. Upper jaw forward projecting to form a bird-like beak *Eretmochelys*
- Upper jaw not projecting forward to form a bird-like beak 2

2. Upper jaw hooked but without ridge
 *Lepdochelys*
 – Upper jaw lacking hook but with strong
 vertical ridges on the upper surface
 *Chelonia*

Genus 2. *Chelonia* Latreille 1814

*2. *Chelonia mydas* (Linnaeus)
Green Turtle

1758. *Testudo mydas* Linnaeus, *Syst. Nat. Ed.* 10, 1 : 97.

1931. *Chelonia mydas*, Smith, *Fauna Brit. India*, 1 : 70.

Material not available, known to occur in Maharashtra (Back bay and Chowpatty Beach, Mumbai). Description based on literature.

Diagnostic characters : Carapace heart shaped or oval with 4 pairs of costals, the first not in contact with nuchal; marginals sloping; vertebrals broader than long, bridge of the adults having four inframarginals; carapace scutes not overlapping; forehead with a single pair of prefrontals; typically four post oculars; fore limbs with a single claw and with large scales.

Distribution : India : Maharashtra (Mumbai); Gujrat (Gulf of Kutch); Orissa (Chilka Lake); Lakshdweep

Remarks : Juvenile Green Turtles are carnivorous, but adults are herbivorous.

Genus 3. *Eretmochelys* Fitzinger 1843

*3. *Eretmochelys imbricata* (Linnaeus)
Hawks Bill Turtle

1766. *Testudo imbricata* Linnaeus, *Syst. Nat. Ed.* 12, 1 : 350.

1933. *Eretmochelys imbricata*, Smith, *Fauna Brit. Ind.*, 1 : 67 -69.

Material not available, Known to occur in Maharashtra (Karbhari, J.P. 1981). Description based on literature.

Diagnostic characters : Carapace narrowly heart - shaped, a keel on the last four vertebrals; costal I not in contact with the nuchal; posteriorly marginals distinctly serrated; vertebrals wider than long; a distinct notch between marginals XII; four

inframarginals; upper jaw forward projecting to form a bird-like beak; two pairs of prefrontals; lower jaw slightly serrated; two claws on fore limbs.

Distribution : India : Maharashtra (off Elephanta cave near Mumbai); Orissa; Tamil Nadu; West Bengal; Andaman; Lakshadweep.

Elsewhere : Gulf of Mannar; Maldives.

Genus 4. *Lepidochelys* Fitzinger 1843

*4. *Lepidochelys olivacea* (Eschscholtz)
Olive Ridley Sea Turtle

1829. *Chelonia olivacea* Esch scholtz, *Zool. Atlas*, 1 : 3.

1995. *Lepidochelys olivacea*, Das, *Turtles and Tortoises of India*, p. 41-51.

Material not available, known to occur in Maharashtra, Description based on literature

Diagnostic characters : Carapace broad, fairly raised but with a flat top; posterior Marginals serrated; 5-9 Pairs costals and 12-14 pairs of marginals; a broad nuchal touching costal I; one or two small intergulars and a single internasal. Vertibrals I and V broader than long. Vertibrals II, III and IV longer than broad; distinct pores present on the inframarginal region; head small, triangular, upper jaw hooked but without a ridge.

Distribution : India : Maharashtra (Gorai, Khim, Manori, and Versova); Gujrat (Gulf of Kutch, Okha); Goa; Kerala (Lakshadweep); South of Tamil Nadu, Point Calimere; Andhra Pradesh; Orissa (Gahirmata); Andamans.

Elsewhere : Pakistan; Sri Lanka.

Family 3. DERMOCHELYDIDAE
 Siebenrock, 1090

Genus 5. *Dermochelys* Blainville 1816

*5. *Dermochelys coriacea* (Linnaeus)
Leather Back Turtle

1766. *Testudo coriacea* Linnaeus, *Syst. Nat. Ed.* 12, 1 : 350.

1995. *Dermochelys coriacea*, Das, *Turtles and Tortoises of India*, p. 23-28.

Material not available, Known to occur in

Maharashtra (Sindhudurg-Sanaye and Pawar, Indian Ocean Newsletter, January 2009). Description based on literature.

Diagnostic characters : Shell elongated, tapering to apoint posteriorly with aridgid leathery shell; scutes or scute like structure present only in hatchlings; seven ridges on carapace, five on plastron; snout blunt; upper jaw with a 'w' shaped cusp; skull roof complete; neck short and almost non retractable, head and limbs scuteless in adults; anterior plastral lobe longer and wider than posterior lobe; entoplasm absent; bridge comparitavely larger, limbs paddle shaped and clawless; a thick membrane joints the hind limbs to the tail. Dorsal colour black spotted with white around neck and base of flippers; spots are bluish or pinkish n; undersurface pale pink and white.

Distribution : India : Maharashtra (Sindhudurg district), Andaman; Goa; Southern Kerala, Gujrat (Gulf of Kutch) and West Bengal (Sundarban).

Remarks : A truely pelagic species, comes ashore only to nest and an exceptional diver

Family 4. GEOMYDIDAE Theobald 1868

Key to the genera of the family GEOMYDIDAE

1. Vertebral shields short sided anteriorly
..... **Pangshura**
- Vertebral shields short sided posteriorly
..... **Melanochelys**

Genus 6 *Melanochelys* Gray, 1869

*6. *Melanochelys trijuga trijuga* (Schweigger) Indian Black Turtle

1814. *Emys trijuga* Schweigger, *Monogr. Chel* 44.

1995. *Melanochelys trijuga trijuga*, Das, *Turtles and Tortoises of India*, p.137

Material not available known to occur in Maharashtra (Das 1995). Description based on literature

Diagnostic characters : Carapace elongated, fairly elevated in adults, depressed in juveniles, tricarinate; the posterior marginals feebly serrated;

nuc hal small, triangular; vertebrals typically as long as wide or longer than wide except vertebral fifth which is broader than long; plastron truncated anteriorly and notched posteriorly; head moderate with short snout; toes fully webbed. Carapace typically brown; plastron usually dark with a pale yellow which may be lost in old specimens. Limbs gray brown or blackish, pale yellow reticulations on head.

Distribution : Maharashtra (Andheri, Pune, Trombay)

Genus 7 *Pangshura* Gray 1856

*7. *Pangshura tentoria tentoria* (Gray) Peninsular Tent Turtle

1831. *Emys tentoria* Gray, *Proc. Zool. Soc.*, : 54.

1997. *Kachuga tentoria*, (Gray) Tikadar and Sharma, *Hand Book of Indian Testudines* : 74-77, Publ., Director, Z.S.I., Kolkata.

2002. *Pangshura tentoria tentoria*, Das, *A photographic guide to snakes and other reptiles of India*, New Holland Publishers p. 130

Material not available, Known to occur in Maharashtra (Nagpur, Dhond, Pune).

Diagnostic characters : Head more or less small and pointed, skin of the posterior part of the head is divided into large shields. Skull is with bony temporal arch. Upper jaw is not notched. The carapace is elevated and rounded in adults. Vertebral keel is prominent and abruptly forms a strong spinous process. Nuchal shield is usually broadest at the posterior margin. First vertebral is much variable in shape; second vertebral shield is not variable, obtusely pointed posteriorly; third vertebral shield is pointed behind and touches the sharp pointed extremity of the fourth vertebrae, fourth vertebral shield is much longer than the other vertebral shield; fifth is broadest than the other vertebral shield. Plastron is almost as long as the carapace angulate laterally, truncate anteriorly, the longest median suture is between the abdominal shields, the shortest between the gular and the anal; axillary and inguinal shields are semiequal. Limbs with webbed digits. General dorsal colouration is pale olivaceous. The head is dull olive, there is distinct red marking behind the tymphanum.

Distribution : India : Maharashtra (Dhond, Pune); Andhra Pradesh (Manthani); Madhya Pradesh (Bilaspur); Orissa (Tikarpara, Cuttack, Shambalpur, Nandy, Puri).

Family 5. TESTUDINIDAE Gray, 1825

Genus 8. *Geochelone* Fitzinger, 1835

*8. *Geochelone elegans* (Schoepff)

Indian Star Tortoise

1792. *Testudo elegans* Schoepff, *Hist. Test.*, 111

1931. *Testudo elegans*, Smith, *Fauna Brit. Ind.*, 1 : 138-140

1982. *Geochelone elegans*, Crumly, *J. Herpetol.*, 16 : 215-234.

1984. *Geochelone elegans*, Crumly, *The evolution of land tortoises*, (Family- Testudinidae) Doctoral dissertation Rutgers University, Newark. 426pp.

Material not available, known to occur in Maharashtra (Nagpur, Pradhan 2004). Description based on literature.

Diagnostic characters : Shell elongated, rounded in the young; domed dorsally with flattened sides. Nuchal absent; all vertebral (except vertebral one which is as long as broad) are broader than long; marginals xii fused; bridge with a single axillary and inguinal scute on each side; entroplastron not crossed by the humero - pectoral seam; head with a weak bi or tricuspid upper jaw; both carapace and plastron are star - marked with a pattern of dark brown or black on yellow or beige, the super imposed dark colour especially prominent in juveniles. Fore limbs yellowe beige, head and hind limbs of similer colour but with black pigmentations.

Distrribution : India : Maharashtra (Pench National Park, Nagpur); Rajasthan; Gujrat; Karnataka; Andhra Pradesh; Kerala.

Elsewhere : Pakistan; Sri Lanka.

Remarks : The species is largely herbivorous.

Family 6. TRIONYCHIDAE Bell, 1828

**Key to the genera of the family
TRIONYCHIDAE**

1. Marginal bones are present; snout short
..... *Lissemys*

- Marginal bones are not present; snout long.
..... 2
- 2. Orbit nearer the temporal than the nasal fossa; post orbital arch narrower than the diameter of the orbit *Nilssonina*
- Orbit nearer the nasal than the temporal fossa; post orbital arch twice as broad as the diameter of the orbit *Chitra*

Genus 9. *Chitra* Gray 1844

9. *Chitra indica* (Gray)

Narrow Headed Soft Shell Turtle

1829. *Trionyx indicus* Gray, *Syn. Rept.*, : 47

1931. *Chitra indica*, Smith, *Fauna Brit. India*, 1 : 162-164

1981. *Chitra indica*, Webb R.G., *Rec. zool. Surv. India*, 79 : 203-204.

Measurements : plastral length 175 mm.

Diagnostic characters : Shell oval and depressed; shell bones prominently pitted; four plastral callosities and eight pairs of pleurals; carapace of juveniles with numerous small tubercles and a vertebral keel; head extremely narrow, long with the eyes situated close to nostrils; postorbital bar twice the diameter of the orbit; a short proboscis.

Distribution : India : Maharashtra (Dhond); Punjab; West Bengal; Madhya Pradesh; Uttar Pradesh; Andhra Pradesh; Orissa; Tamil Nadu.

Elsewhere : Pakistan; Nepal.

Remarks : The turtle prefers to feed on fish and molluscs.

Genus 10. *Lissemys* Smith 1931

*10. *Lissemys punctata punctata* (Bonnaterre)

South Indian Flap Shell Turtle

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

1995. *Lissemys punctata punctata*, Das, *Turtles and Tortoises of India*, p. 87.

Material not available, Known to occur in Maharashtra, (Das, 1995) Description based on literature.

Diagnostic characters : Shell low - domed, oval in adults, almost circular in the young; shell

bones finely granular, eight pairs of pleurals, the last pair meeting medially; a small bone lying anterior to the proneural; seven callosities in plastron, peripherals are present. Young ones with granules forming longitudinal folds on the carapace; two external pairs of glands; shell has hinged anterior lobe; pair of flaps in the inguinal area. Colour olive brown, grey green or pale green above; the young ones being black spotted and cream, pale yellow or pink below.

Distribution : India : Maharashtra (Mumbai, Nagpur, Pune), West Bengal; Orissa; Bihar; Gujarat; TamilNadu; AndhraPradesh; Karnataka; Kerala; Rajasthan.

Elsewhere : SriLanka; Bangladesh.

Genus 11. *Nilssonina* Gray 1872

*11 *Nilssonina hurum* (Gray)

Indian Peacock Soft Shell Turtle

1829. *Trionyx hurum* Gray, *Syn. Rept.*, : 47.

1995. *Aspideretes huru*, Das, *Turtles & Tortoises of India*, p. 74.

2007. *Nilssonina hurum*, Praschag, P. *et al. Zoologica Scripta*, : 1-10

Material not available, known to occur in Maharashtra (Pune, Das 1995.) Description based on literature.

Diagnostic characters : Carapace low and oval; a preneural and a neural between the first pair of pleurals, eight pair of pleurals meet at carapace midline; plastral callosities large, five in number; anterior rim of carapace with blunt tubercles; head large with snout strongly turned below; several longitudinal rows of tubercles on the posterior surface of carapace; carapace olive with yellow rim with 4-6 dark centered, yellow bordered eye like markings. Plastron light gray.

Distribution : India : Maharashtra (Pune); Assam; Bihar; Orissa; Rajasthan; Uttar Pradesh; West Bengal.

12. *Nilssonina leithii* (Gray)

Leith's Soft Shelled Tortoise

1872. *Trionyx leithii* Gray, *Ann. Mag. Nat. Hist.*, (4) 10 : 334.

2007. *Nilssonina leithii*, Praschag, Peter, Anna K. Hundsdorfer, Ali H.M.A. Reza and Uwe Fritz. *Zoologica Scripta* : 1 -10.

Material examined : 1ex., (juvenile specimen) Mula river, near Sathe Biscuit Co. 10km north of W.R.S, Poona 5.11. 1960, S.A.Sadekar (Reg. No. 21477)

Measurements : Curved Carapace length : 118mm. : Curved Carapace width : 108mm. Straight Plastron length : 80mm. : Straight Plastron width : 90mm.

Diagnostic characters : Carapace low and oval; a pre neural; eight or nine neurals; hypoplastra lie close together but fail to meet; plastral callosities large, five in number. Patch of five wart like tubercles present on the anterior edge of carapace and along mid line posterior to the bony portion of the shell.

Distribution : Maharashtra (Nagpur, Pune, Satara); Karnataka; AndhraPradesh; Orissa; TamilNadu.

Remarks : Males have comparatively larger thicker tails than females.

Order 3. SQUAMATA

Suborder (1) SAURIA

Key to the families of suborder SAURIA

1. Tongue slender, forked VARANIDAE
- Tongue neither slender nor forked 2
2. Top of head with symmetrical shield 3
- Top of head without symmetrical shield 4
3. Body not covered with osteodermal plates, femoral pores absent..... SCINCIDAE
- Body covered with osteodermal plate, femoral pores present LACERTIDAE
4. Tail prehensile CHAMAELEONIDAE
- Tail not prehensile 5
5. Pupil rounded; dorsal scales imbricate AGAMIDAE
- Pupil a narrow slit, dorsal scales not imbricate 6

6. Eyes with immovable eyelids; digits dilated
..... GEKKONIDAE

– Eyes with movable eyelids, digits not dilated
.....EUBLEPHARIDAE

Family 7. GEKKONIDAE Smith, 1935

Key to the genus of family GEKKONIDAE

1. Pupil round, tail round without a crest
.....*Cnemaspis*

– Pupil vertical, tail not round 2

2. Digits feebly dilated & angularly bent
.....*Geckoella*

– Digits strongly dilated at the base & not
angularly bent*Hemidactylus*

Genus 12. *Cnemaspis* Strauch 1887

Key to the species of the genus *Cnemaspis*

1. Dorsum homogenous with small and feebly
keeled scales; no spine like tubercles on flanks
.....*kohlapurensis*

– Dorsum is with small granular, slightly keeled
scales intermixed with larger rounded
tubercles; flanks with small, widely separated
spine like tubercles.*kandiana*

13. *Cnemaspis kandiana* (Kelaart)

Kandy Day Gecko

1852. *Gymnodactylus kandianus* Kelaart, *Prod. Fauna Zeyl.*, P. 186

1935. *Cnemaspis kandiana*, Smith, *Fauna Brit Ind.*, 2 : 73-74.

Measurements : Total length 51 mm - 60 mm.

Diagnostic characters : Head and body cylindrical, covered dorsally with small keeled scale. Snout obtusely pointed. Longer than the distance between the eye and the ear opening, upper labial 6-9, lower labial 6-8, mental is large, broader than the rostral, postmentals are small. The first pair separated from one another behind the mental by a median scale. Digits elongate, the plates beneath the basal phalanger being usually large and few in number. The hind limb reaches the axilla or just beyond. Tail cylindrical covered

above with small keeled scales & whorls of large tubercle. Male with 2-4 pre anal and on each side 3-5 femoral pores.

Distribution : India : Maharashtra (Mahabaleshwar; Sharma 2002); Karnataka; Kerala; TamilNadu, Andaman islands.

Elsewhere : Srilanka; Sumatra.

*14. *Cnemaspis kolhapurensis* Giri, Bauer & Gaikwad

2009. *Cnemaspis kolhapurensis* Giri, Bauer & Gaikwad, *Zootaxa*, 2164 : 49 -60

Material : Described as a new species by Giri, Bauer and Gaikwad 2009 from Kolhapur district of Maharashtra; Holotype, Mumbai BNHS 1855; Paratypes Mumbai, BNHS 1844, 1845 1846. Description based on literature.

Diagnostic characters : Size moderate; mid body scales on dorsal side homogenous, small and feebly keeled, no spine like tubercles on flank. Ventral scales smooth, 20-23 scales across the venter between lowest rows of dorsal scales. Paired postmentals separated by one or two enlarged gular scales. A continuous series of 24-28 precloacal femoral pores. Subdigital scansors entire, unnotched, those on the basal part are larger than on distal portion, which are narrow; an enlarged scansor present near proximal interphalangeal joint; narrow distal lamellae under digit four of pes 10-12. Original tail cylindrical, covered above with large, flat, smooth, slightly imbricate scales; ventrally with three rows of smooth, imbricate enlarged plates of which the median row is slightly larger than the others. Yellowish and purplish brown dorsal colour pattern with flank and ventral markings variably developed. Original tail with a dorsal and lateral stripes. Juveniles with a broad pale dorsal stripe.

Distribution : Maharashtra (near Dajipur, Kolhapur district)

Genus 13. *Geckoella* Gray 1827

Key to the species of genus *Geckoella*

– Dorsal scales smaller than the ventrals
.....*collegalensis*

- Dorsal scales larger than the ventrals
..... *dekkananesis*

15. *Geckoella collegalensis* (Beddome)
Kollegal Ground Gecko

1870. *Gymnodactylus collegalensis* Beddome, Madras Month. J. Med. Sc., 2 : 173.

1997. *Geckoella collegalensis* (Beddome) Das, *Hamadryad*, 22 : 34.

Material examined : 1ex. Wadegoan (Mauhre) 4 km from Amravati, 7.4. 2009, B.H.C.K. Murthy (Reg. No. 25861)

Measurements : Snout vent length : 43 mm; tail length : 40 mm.

Diagnostic characters : Body stout cylindrical, covered with small granular scales in belly overlapping, enlarged tubercle tail short tapering, regenerated tail tunip shaped, 5 pairs of large dark brown spots on dorsal surface in addition to 3 pairs on head. Tail with 11 dark brown bands.

Distribution : India : Maharashtra; Gujrat; Kerala : Tamilnadu; Karnataka.

16. *Geckoella dekkanensis* (Günther)
Deccan Ground Gecko

1864. *Gymnodactylus dekkanensis* Günther, *Rept. Brit. Ind.*, p.115 pl.12, fig.

2002. *Cyrtodactylus dekkanensis*, Sharma, *Fauna of India & adjacent countries Reptilia*, 2 : 66-67

1997. *Geckoella dekkanensis*, Das, *Hamadryad*, 22 : 34

Material examined : 1ex. Matheran, Western Ghat, G.A. Boulenger (Reg. No. 15731); 1ex. Halvak, Koyana valley, Satara dist. ? coll. F.H. Graavelly (Reg. No. 17219); 2ex. Panchgani, August 1964, coll. B.K. Tikadar (Reg. No. 22404).

Measurements : Snout vent length : 44 mm-76 mm; Tail length : 33 mm-64 mm.

Diagnostic characters : This is more or less large gecko. Snout longer than the distance between the eye; upper labial 10- 12; lower labial 9-11 which are separated from the scales of gular region by series of large scales. Body is depressed, flattened dorsoventrally; dorsum is larger somewhat quadrangular juxtaposed scales forming

regular transverse series, few much smaller scales are present; belly with smaller imbricate scales across the mid body. The hind limb reaches to the axilla. Tail feebly swollen at the base and tapers to a point. Males are devoid of preanal femoral pores.

Distribution : India : Western Ghats, Maharashtra (Halvak, Koyana valley, Panchgani, Vihar lake near Mumbai).

Remarks : restricted to Maharashtra.

Genus 14. *Hemidactylus* Oken 1817

Key to the species of the genus *Hemidactylus*

1. Dorsal surface without trihedral tubercles
2
- Dorsal surface with trihedral tubercles
..... *brookii*
2. Males with continuous series of pre-ano femoral pores *frenatus*
- Males without continuous series of pre-ano femoral pores only 3
3. Males with femoral pores only 4
- Males with preanal pores only 9
4. Tail swollen at the base 5
- Tail not swollen at the base *maculatus*
5. Tail equal to head and body *flaviviridis*
- Tail longer than head and body 6
6. Tail with enlarged tubercles 7
- Tail without enlarged tubercles 8
7. Dorsum with quadrangular spots *gracilis*
- Dorsum without quadrangular spots
..... *leschenaultia*
8. Enlarged dorsal tubercles present
..... *aaronbaueri*
- Enlarged dorsal tubercles absent... *giganteus*
9. Tail cylindrical, tapering to a point 10
- Tail slightly depressed not tapering to a point
..... *triedrus*

10. SVL to 36mm; lamellae under toe IV 9
 *albofasciatus*
 – SVL to 46mm.; lamellae under toe IV- 11 .
 *satarensis*

***17. *Hemidactylus aaronbaueri* Giri**

2007. *Hemidactylus aaronbaueri* Giri Varad B.,
Hamadryad, 32(1) : 25-33.

Material : New species described by Varad B. Giri, both Holotype and Paratype deposited at BNHS. Description based on literature.

Diagnostic characters : A large *Hemidactylus*, snout vent length atleast 128 mm.; 18-20 rows of irregularly arranged, enlarged, rounded and feebly keeled dorsal tubercles; first labial touching nasal; two well developed pairs of postmentals, the inner pair elongated and larger than outer; ventrolateral folds not clearly visible; about 41-43 scale rows across venter between lowest rows of tubercles; 12-13 enlarged scapsors beneath 4th toe; digits with indistinct basal webs; about 19 femoral pores on each side separated by six scales in adult males; original tail tuberculate, with median subcaudal scales forming broad tranverse plates; dorsal pattern comprising a series of dark tranverse undulating crossbars bordered anteriorly and posteriorly with pale cream, first on nape followed by four more, all bands inconspicuous on flanks and alternately banded with pale and dark brown.

Distribution : India : Maharashtra : near Ghatnagar, Junner, District Pune. (Giri Varad B 2007).

***18. *Hemidactylus albofasciatus* Grandison & Soman**

1963. *Hemidactylus albofasciatus* Grandison and Soman,
J. Bombay nat. Hist. Soc., 60(2) : 322.

Material not available, known to occur in Maharashtra (Grandison & Soman 1963). Description based on literature.

Diagnostic characters : Head is moderately small, snout obtusely pointed, upper labial 8, Lower labial 7. Dorsum is with small, keeled granular scales, intermixed with larger trihedral

tubercles; Ventrums with smooth rounded imbricate scales. The hindlimb reaches to the axilla, digits are free; lamellae under the first toe are 5; under the fourth toe are 9. Tail cylindrical tapering to a point with a median row of scales on the tails are larger than dorsals of the body. Male with 7-10 preanal pores arranged almost in straight series. Dorsal colour dark brown, and tail has got dark brown cross bands.

Distribution : India; Maharashtra, Dordi, Dabhib, and Garkhadi village, Rajapur Taluka Ratnagiri district.

**19. *Hemidactylus brookii* Gray
 Brook's House Gecko**

1845. *Hemidactylus brookii* Gray, *Cat. Liz. Brit. Mus.*, : 153.

Material examined : 1ex. Katrajghat, 23.5.1964, R.C. Sharma (Reg. No. 21540); 1ex. Katrajghat, R.C. Sharma, 25.5.1964 (Reg. No. 21541); 1ex. Manji village, Poona, 25.5.1964, R.C. Sharma (Reg. No. 21542); 2ex. Khandala village west of Poona, 26.5.1964, R.C. Sharma (Reg. No. 21543); 9ex. Divaghat, Poona, 29.5.1964, R.C. Sharma (Reg. No. 21544); 4ex. Satara Town, Poona, 31.5.1964, R.C. Sharma (Reg. No. 21546); 7ex. Faltan Town, Satara dist. 5.6. 1964, R.C. Sharma (Reg. No. 21548); 16 ex. Dhond Town, Poona 2.6.1964, R.C. Sharma (Reg. No. 21549); 5ex. Chawfula village, ca. 24 km. of Dhond Town, 10.6.1964, R.C. Sharma (Reg. No. 21550); 6ex. Siripur village round about 16 km.N.W. Dhond Town, 12.6.1964, R.C. Sharma, (Reg. No. 21551); 10 ex. Bhigvan village, Taluka Dhond, 14.6.1964, R.C. Sharma (Reg. No. 21552); 8 ex. Narayangaon dist., Poona, 16.6.1964, R.C. Sharma (Reg. No. 21553); 1ex. Manchur village, Poona 17. 6. 1964, R.C. Sharma, (Reg. No. 21554); 1ex. Nagapura village, 21.6.1964., R.C. Sharma (Reg. No. 21555); 1ex. Pimpalvandi village, 10 km. N.E. Narayangaon, 22. 6. 1964. R.C. Sharma (Reg. No. 21556); 6ex. Satara Town ca 112 km. from Poona 31. 5. 1964, R.C. Sharma (Reg. No. 21557). 1ex. Junona Pond area, Junona forest area, dist. Chandrapur, 24.3.2009, B.H.C.K. Murthy (Reg. No. 25852); 1ex., Junona village, dist. Chandrapur, 23.3.2009, (Reg. No. 25853).

Measurements : Snout vent length : 19 mm.-60 mm.; Tail length : 20 mm.-70 mm.

Diagnostic characters : Head moderately large, snout obtusely pointed 8-10 upper and 7-9 lower labials. Back with trihedral tubercles arranged in regular rows. Colour brown or varying shades of grey with brown spots. Femoral and preanal vary from 15 to 27.

Distribution : Maharashtra as mentioned; whole of India.

Elsewhere : Sri Lanka : Borneo; Pakistan; Myanmar; South China; West India, Tropical Asia, and Northern half of Africa.

20. *Hemidactylus flaviviridis* Ruppell Yellow-green House Gecko

1835. *Hemidactylus flaviviridis* Ruppell, Neue Wirb. Fauna Abyss. P. 18. Pl. 6. fig 2.

Material examined : 2 exs. Inspection Bunglow, Baramati town, dist. Poona; 04.06.1964, R.C. Sharma & Party (Reg. No. 21565).

Measurements : Snout vent length : 77 mm - 78 mm; tail : 75 mm, another tail broken.

Diagnostic characters : Large robust gecko with large head & broad snout; Upper labials 12-15, Lower labials 10-12; tail almost equal to head & body. Dorsum pale grey or greenish grey brown or olive, back is with wavy dark cross bands, 5 to 7 femoral pores on each side.

Distribution : India : Maharashtra as mentioned, whole of India

Remarks : Most agile, pugnacious and marked climber. Its voice is like chirp of a bird which can be audible from long distance.

21. *Hemidactylus frenatus* Sclegel Asian House Gecko

1835. *Hemidactylus frenatus* Sclegel, *Erp. Gen.*, 3 : 366.

Material examined : 5 ex. Satara town ca 112 Km. from Poona, 31.5.64 R.C. Sharma & party (Reg. No. 21545) 1 ex Inspection Bunglow Baramati town, dist. Poona, 4.6.64, R.C. Sharma & party, (Reg. No. 22240) 1 ex. Methurdam, 19.8.64, R.C. Sharma & party (Reg. No. 22243)

Measurements : Snout vent length : 44 mm. to 53 mm.; tail : broken.

Diagnostic characters : This is a smaller gecko. Head is large and covered above with smaller granular scales which become larger on the snout; upper labial 10-12, lower labial 8-10; first toe less than half of the second; male with continuous series of 23 or more preanal femoral pores; dorsal tubercles scattered or partly in linear arrangement or absent. Colour dark brownish dorsally and whitish below; a dark stripe through the eye to the sides of groin; flanks with dark spots.

Distribution : India : Maharashtra as mentioned; Peninsular India; West Bengal; Andaman and Nicobar islands.

Elsewhere : Sri Lanka; Southern Indo China.

Remarks : The species is nocturnal, prefers to live in crevices of tree trunks, deserted houses, gardens and all sorts of habitats.

22. *Hemidactylus giganteus* Stoliczka Giant South Indian Gecko

1870. *Hemidactylus giganteus* Stoliczka *P. Asit. Soc. Beng.* P. 193.

Material examined : 2 ex. Bairwagadh (Fort) Taluka, Karjat Dist. Kolaba, 27.1.1965, P.W. Soman (Reg. No. 21648).

Measurements : Snout vent length : 96 mm. - 111 mm.; Tail length : 55 mm. - 96 mm.

Diagnostic characters : Head is big with obtusely pointed snout, ear opening small; head is covered above with small granular scales. Upper labials 12-15 and lower labials 10-12; rostral shield is broader than high; nostril is situated between the rostral. Digits free with almost transverse lamellae, 10-11 beneath the first toe and 13-15 lamellae under the fourth toe. Tail is slightly longer than the head and body, strongly depressed and swollen at the base. Male with 18-22 femoral pores. Dorsum grayish, back with 'w' shaped undulating cross bars; belly is whitish.

Distribution : India : Maharashtra as mentioned; Andhra Pradesh; Kerala; Tamil Nadu.

23. *Hemidactylus gracilis* Blanford
Slender Gecko

1870. *Hemidactylus gracilis* Blanford, *J. Asiat. Soc. Beng.*,
 39 : 362, pl. 16, figs. 4-6.

Material examined : 3 ex. Malavali, dist. Poona, 16.7. 67, G. Topal and P.W. Soman (Reg. No. 21889); 1ex. Wodegaon Moure village, 5km. from Amravati, 20.3.2009, B.H.C.K. Murthy. (Reg. No. 25851)

Measurements : Snout vent length : 31 mm-34 mm.; tail broken.

Diagnostic characters : Body slender, head narrow twice as long as broad. Tail is longer than the head and body. Upper labials 9-10, lower labials 7 or 8. Dorsum grayish with dark brown quadrangular spots; ventrum is white. Digits are free, moderately dilated, 5 lamellae under the first toe, 8-9 lamellae under the fourth toe. Male with angular series of preanal pores.

Distribution : India : Maharashtra as mentioned; Andhra Pradesh; Madhya Pradesh.

24. *Hemidactylus leschenaulti* Dum. and Bibr.
Berk Gecko

1836. *Hemidactylus leschenaulti* Dum. and Bibr., *Erp. Gen.*,
 3 : 364.

Material examined : 1ex. Agriculture college, Poona 22.4.61. K.A. Kashid (Reg. No. 21480); 1 ex Inspection Bunglow compound, Baramati town, dist. Poona, 4.6.1964, R.C. Sharma and party (Reg. No. 21558); 1ex. Diggi village ca 10 km. from Poona, (Reg. No. 21559); 1ex Khedsivapur village, dist. Poona, 27.5.1964, R.C. Sharma and party (Reg. No. 21560); 2ex University Garden Poona, 28.5.1964, R.C. Sharma and party (Reg. No. 21561); 1ex. Divaghat, ca 13 km. from Poona on Poonasasvad road 29.5.1964, R.C. Sharma and party (Reg. No. 21562); 1ex. Narayangaon town, dist. Poona, 16. 6. 1964, R.C. Sharma and party (Reg. No. 21563); 4 ex. Nagapur village, dist. Poona, 21.6.1964, R.C. Sharma, (Reg. No. 21564); 1ex. Nanded dist., 17.4. 2008, B.H.C.K. Murthy (Reg. No. 25803); 1ex. Chndrapur, 14.4.2008, B.H.C.K. Murthy (Reg. No. 25786).

Measurements : Snout vent length : 33 mm-68 mm; Tail length : 52 mm.

Diagnostic characters : Body stout with lateral fold; upper labial 10-12 and lower labial 8-10. Head and body dorsally covered with fine granules intermixed with small tubercles irregularly scattered; scales on the inner side small and imbricate. Digits rather long, 9 to 11 lamellae under the fourth toe. Tail strongly depressed with enlarged tubercles above. Male with 10-17 femoral pore on each side. Gray above and silvery white below, back with conspicuous wavy cross bars. A dark line from the eye to ear on each side of the head.

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

Elsewhere : Sri Lanka; Pakistan.

Remarks : The species is arboreal, Sylvetic, found on trees like Tamarind, Banyan, Mango etc. and during day time remains hidden under the barks and crevices of these trees.

25. *Hemidactylus maculatus* Dum. and Bibr.
Spotted House Gecko

1836. *Hemidactylus maculatus* Dum. and Bibr. *Erp. Gen.*,
 3 : 358.

Material examined : 3ex. Govt. Rest House, Panchgani, 18.8.64., K.K. Tiwari (Reg. No. 25608).

Measurements : Snout vent length : 87 mm-117 mm; tail-broken

Diagnostic characters : Head is large and prominent with a bulging on the tip of snout; eyes are moderately large with vertical pupil. Head is covered with granular scales intermixed with large conical tubercles; snout is sub triangular. Dorsum is with small juxtaposed scales and large trihedral tubercles. Upper labials 10-12, lower labials 9-10; nostril is situated between the rostral. Tail is longer than the head and body. Male with 19-25 femoral pores on each side. Dorsum is brown with dark brown spots; belly is dirty white.

Distribution : India : Maharashtra; Tamil Nadu; Gujrat.

Remarks : Carnivorous species consuming wide range of arthropods including small lizards including juveniles of its own and other species of geckos, worm snakes and earthworm.

***26. *Hemidactylus satarensis* Giri and Bauer**

2008. *Hemidactylus satarensis* Giri and Bauer, *Zootaxa*, 1700 : 21-34.

Material : Holotype, Mumbai (BNHS) 1743; Paratype (BNHS) 1742.

Description based on literature.

Diagnostic characters : A small sized Hemidactylus, snout - vent length atleast 46mm. Back with small keeled granular scales, intermixed with irregularly arranged, enlarged keeled tubercles. First supralabial touching nasal. Two well developed postmentals, the inner part is larger and in extensive contact behind the mental. Ventrolateral folds very feebly developed, about 26 -28 scale rows across between lowest rows of tubercles. Free distal phalanx of all digits short and about half as long as its lamellar pad; ten to eleven enlarged scansors beneath fourth toe. Original tail depressed constricted at base, swollen distal to constriction then tapering to fine point with a median dorsal furrow. Back ground dark colour with pale yellow to bright white paraventral and lateral stripes and orangish red to brown or buff oval spots on the head, dorsum flanks and limbs. Venter white with pronounced blackish stripes and throat and chin markings.

Distribution : India : Maharashtra (Chalakewadi, Satara district) Giri and Bauer 2008.

Remarks : Holotype BNHS 1743 adult female and Paratype BNHS 1742, collected by Varad Giri, Dilipkumar Dongare, V.Y. Deshpande, Yashodhon Parakhe and Rajen More.

**27. *Hemidactylus triedrus* (Daudin)
Termite Hill Gecko**

1802. *Gecko triedrus* Daudin, *Hist. Nat. Rept.*, 4 : 155

1832. *Hemidactylus triedrus*, Lesson, *Belang. Voy. Ind. Or.*, p. 311, pl.5 fig. 1.

Material examined : 2 ex., Poona, 10.7.61, S.M.

Ketaker, (Reg. No. 21482); 1ex. West of National Chemical Laboratory, Poona-8; 13.9.60, S.D. Kamble, (Reg. No. 21483); 1ex. Katrajghat, Poona, 28.7.61, B.K. Tikadar (Reg. No. 21484); 2ex. Bewadhan village, Poona, 11.7.61, S.M. Ketaker, (Reg. No. 21485); 1ex. Law College Library, Poona, 5.7.61, M.M. Chatterjee (Reg. No. 21486); 1ex. Wode gaon Moure village, 5 km from Amravati, March 2009, B.H.C.K. Murthy (Reg. No. 25850).

Measurement : Snout vent length : 21 mm. -65 mm.; tail 23 mm-57 mm.

Diagnostic characters : Head large and indistinct lateral fold present, dorsum with rows of convex tubercles; 7-10 upper and 6-9 lower labials; gular regions with small granules; nostril between the rostral, the first labial and two or three small scales. Back of the head with minute granules intermixed with large rounded, keeled or sub trihedral tubercles. Digits free moderately dilated. Tail with large pointed tubercles.

Distribution : India : Maharashtra; Andhra Pradesh; Madhya Pradesh; Karnataka; Tamil Nadu; Rajasthan.

Elsewhere : Sri Lanka; West Pakistan.

Family 8. EUBLEPHARIDAE Boulenger 1883

Genus 15. *Eublepharis*

**28. *Eublepharis fuscus* Borner
Common Leopard Gecko**

1981. *Eublepharis fuscus* Borner, *Saurologica Colognese* (3) : 4 (Fig. 1-3)

Material examined : 1ex. (Confiscated), collected from Amravati district of Maharashtra.

Measurements : Snout vent length : 141 mm; tail length : 72 mm.

Diagnostic characters : This is a stout species with a large head, snout bluntly pointed, distinct fleshy eyelids, enlarged smooth tubercles on dorsum; deep axillary pockets; femoral pores absent; digits slender; lamellae under toes entire, smooth; subcaudals enlarged; dorsum of adults light brown or drab with a single broad band between the nuchal loop and caudal constriction;

darker variegations within the pale bands on body and neck;

Distribution : Maharashtra; Punjab; Rajasthan.

Elsewhere : Pakistan; Transcaspia; Iraq.

Family 9. AGAMIDAE Gray, 1827

Key to the genera of family AGAMIDAE

1. A wing like expansion is present on the much expanded ribs *Draco*
- Wing like expansion is not present, ribs are not expanded 2
- 2 Body depressed *Psammophilus*
- Body not depressed 3
3. Dorsal crest present, five toes only *Calotes*
- Dorsal crest absent; four toes only *Sitana*

Genus 16. *Calotes* Rafinesque 1815

Key to the species of genus *Calotes*

1. A long fold is present in front of the shoulder, two spines on each side of the back of the head *rouxi*
- No fold in front of the shoulder; two erect and separated spines above the tympanum *versicolor*

29. *Calotes rouxi* Dum. and Bibr.

Roux's Forest Lizard

1836. *Calotes rouxi* Dum. and Bibr., *Erp. Gen.*, 4 : 407

Material examined : 2ex. Khandala, Poona, 26.5.1964., R.C. Sharma (Reg. No. 21610).

Measurement : Snout vent length : 72 mm. - 80 mm.

Diagnostic characters : Head is moderately large; small gular pouch present, missing in the female; a long oblique, curved fold in front of the shoulder, extends across the throat, covered with small granular scales; fourth toe longer than the third toe, the hind limb reaches to the temple. Tail is long slightly compressed, in adult male swollen

at the base. Dorsal colour is olive brown, head nape and gular pouch is red, side of head and neck banded with brown; ante humeral fold black; dark brown radiate from the eye; belly is brownish.

Distribution : Western coastal areas from Mumbai to Kerala (Mathern, Khandale, Kanan, Jog, Goa and Malabar).

30. *Calotes versicolor* (Daudin)

1802 *Agama versicolor* Daudin, *Hist. Nat. Rept.*, 3 : 595

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

Material examined : 1ex. Khandala, Poona, 14.11.1963, Dr. B.K. Tiwari (Reg. No. 23357); 1ex. Khindsi, dist. Nagpur, 18.1.1971, S.S. Saha, (Reg. No. 23631); 1ex., dist. Nagpur, 14.9.1964, Dr. Tiwari and R.K. Ghosh (Reg. No. 23433); 1 ex. Ramtek, dist. Nagpur, 1.4. 2008 (Reg. No. 25787); 7exs. Katrajghat, Poona, 23.5.1964, R.C. Sharma (Reg. No. 21586); 4ex. Diggi village, Poona 24. 5.1964, R.C. Sharma, (Reg. No. 21587) 1ex. Vetral and Chatursinghi Hill, Poona R.C. Sharma (Reg. No. 21588); 8 ex. Khandaguseta, Poona, 25.5.1964, R.C. Sharma (Reg. No. 21589); 2ex Manjni village 18 km. from Poona city, 25.5.1964, R.C. Sharma (Reg. No. 21590); 2ex. Chawfula village, Poona, 10.6.1964., R.C. Sharma (Reg. No. 21604); 3ex, bank of Bhima river, Poona, 11.6.1964, R.C. Sharma (Reg. No. 21605); 2ex. Patas village, Poona, 13.6.1964, R.C. Sharma, (Reg. No. 21606); 3ex. Narayangaum town, Poona, 16.6.1964 R.C. Sharma (Reg. No. 21607); 3exs Alephata village, Narayan gaon village 18.6.1964, R.C. Sharma (Reg. No 21608); 3exs Shivanani Fort, Poona, 20.6.1964, R.C. Sharma (Reg. No. 21609); 2ex. Wardha village ca 3km from Satara, 31.5.1964 (Reg. No. 21596); 1ex, Nanded dist., 17. 4. 2008, Dr B.H.C.K. Murthy (Reg. no. 25804); 2ex. Patkal village 16 km. from Satara, 31.5.1964, R.C. Sharma (Reg. No. 21597); 4ex., Satara Fort, dist. Satara, 2.6.1964, R.C. Sharma (Reg. No. 21598); 2ex. area around banks of Kara river, Baramati, 4.6.1964, R.C. Sharma (Reg. No. 21599).

Measurement : Snout vent length : 65 mm -78 mm; Tail length : 182 mm-187 mm.

Diagnostic characters : Head is oval and body laterally compressed. Dorsal scales strongly keeled and more or less larger than ventrals. Two distinct spines on each side of the head beyond tympanum. Dorsonuchal crest well developed expanding from the nape to above vent in the male. Tail long and rounded. Juveniles with light dorsoventral stripes which enclose transverse ventral spots. Adult grayish brown above with dark transverse bars; belly whitish with dark streaks; tail with dark brown crossbars.

Distribution : India : whole of India.

Elsewhere : Sumatra to South China; Sri Lanka; Pakistan; Afghanistan.

Genus 17. *Draco* Linnaeus 1758

31. *Draco dussumieri* Dum. and Bibr. Western Ghats Flying Lizard

1836. *Draco dussumieri* Dum. and Bibr., *Erp. Gen.*, 4 : 456.

Material not available, known to occur in Maharashtra (Reptile Camp Hand book, vol. 1, 2001)

Diagnostic characters : Head is moderately large, dorsal head scales unequal, strongly keeled and erect upon the canthus rostralis and much of the anterior part of the body. The presence of conical scale at the posterior part of the orbit is a characteristic feature. Upper labial 10-12; nostril directed vertically upwards. Tympanum is naked. Pategial ribs are 6 in number; gular appendage of male considerably longer than the head, the tip obtusely pointed, covered with scales which are about as large as the ventrals; appendage of female less than half the length of head. Males are with feeble nuchal fold and a distinct low but distinct caudal crest. Upper surface of head and limbs with black spots. (restricted only to the outer half of the ventral surface). Throat bluish with black spots. Gular appendage yellow with an orange tinge. Body is grayish brown or ashy brown with darker markings.

Distribution : Maharashtra; Karnataka; Goa; Tamil Nadu; Kerala; Gujarat.

Genus 18. *Psammophilus* Fitzinger 1843

32. *Psammophilus blanfordanus* (Stoliczka) Blanford's Rock Agama

1870. *Chersasia blanfordana* Stoliczka, *P. Asiat. Soc. Beng.*, : 194.

1935. *Psammophilus blanfordanus*, Smith, *Fauna Brit. Ind.*, 2 : 210.

Material examined : 1 ex. Khandsi, dist. Nagpur, 18.1.1971, S.S. Saha, (Reg. No. 23632); 1ex., Ramtak, dist. Nagpur, 1.4.2008, B.H.C.K. Murthy, (Reg. No. 25788); 2ex. Nagpur, 28.2.1867, Museum collection, (Reg. Nos. 6602, 6603); 1ex. Agezarai, Navegad Band, dist. Nagpur, 16.3.2009, B.H.C.K. Murthy (Reg. No. 25845); 1ex. Parsad village near Navegao band, dist. Nagpur, 15.3.2009, B.H.C.K. Murthy (Reg. No. 25842).

Measurement : Snout vent length : 42 mm-79 mm; Tail length : 79 mm-155 mm.

Diagnostic characters : Body depressed, Scales on the body 80 to 100 round the middle. The dorsal scales distinctly keeled and imbricate. The hind reaches to the orbit or little beyond; frequently a small spine behind the supraciliary edge. Dorsal coloration olive - bronze or dark brown, profusely spotted with brown and series of large - boat shaped dark brown spots with light brown pale centre on the complete back and tail.

Distribution : India : Maharashtra as mentioned; Andhra Pradesh; Bihar; Orissa; Madhya Pradesh; Eastern Ghats; and Western Ghats.

Remarks : Absolutely rock dwelling, lives in the crevices and holes in rocks.

Genus 19. *Sitana* Cuvier, 1829

33. *Sitana ponticeriana* Cuvier Fan Throated Lizard

1844. *Sitana ponticeriana* Cuvier, *Regne Anim. 2nd ex.*, 2 : 43.

1870. *Sitana deccanensis*, Jerdon, *P. Asiat. Soc. Beng.*, p. 76.

1935. *Sitana ponticerina*, Smith, *Fauna Brit. Ind.*, 2 : 144.

Material examined : 2ex. S.E. Berar and Chanda, 1867, Museum collection (Reg. No. 6314, 6315); 1ex, Ellore, 1867, W.T. Blanford (Reg. No. 6328); 1ex. S.E. Berar, Chanda, 15. 2. 1870., W.T. Blanford (Reg. No. 6329); 5ex, (Syn types) S.E. Berar, Chanda, 15.2.1870, W.T. Blanford (Reg. Nos. 5051 - 5055) 1ex. Dhond, F.H. Gravely (Reg. No. 17974); 8exs. Ali village, Poona, 18.6.1964, R.C. Sharma (Reg. No. 21582); 3ex. Shivnani Fort, Poona, 20.6.1964, R.C. Sharma (Reg. No. 21583); 10 ex. Nagapur village, dist. Poona, 21. 6. 1964, R.C. Sharma (Reg. No. 21584); 4ex. Pimpalvandi village, Dist. Poona, 22.6.1964. R.C. Sharma, (Reg. No. 21585); 2ex. Shetpal tank side, 13 km. from Indapur village, Poona, 6.6.1964, R.C. Sharma (Reg. No. 21572); 27 ex. Dhond and round about dist. Poona, 8.6.1964, R.C. Sharma (Reg. No. 21573); 13 ex. Sriganda village, 9.6.1964, R.C. Sharma (Reg. No. 21574); 7ex. Chowfula village, Poona, 10.6.1964, R.C. Sharma (Reg. No. 21575); 2ex. Bank of Bhima river, 11. 6. 1964, R.C. Sharma (Reg. No. 21576); 3ex. Dehu village, 25 km. from Poona city, 24.5. 1964, R.C. Sharma, (Reg. No. 21566). 18ex. Vital and Chatursinghi Hill, 10 km. from Poona, 24.5.1964, R.C. Sharma (Reg. No. 21567); 7ex. Khondenpur village, dist. Poona (Reg. No. 21568); 6ex. area around Kara river, Baramati, dist. Poona, 4. 6. 1964, R.C. Sharma (Reg. no. 21569); 11ex. Faltan village, dist. Satara, 5.6.1964 (Reg.No. 21570); 11ex. Indapur town, dist. Poona, 6.6.1964, R.C. Sharma (Reg. No. 21571); 11ex. Sivapur village, Poona, 12.6.1964, R.C. Sharma, (Reg. No.21577); 5ex. Patas village, dist. Poona, 13.6.1964, R.C. Sharma (21578); 12ex. Bhiguan village, 14.6.1964, R.C. Sharma, (Reg. No. 21579); 8ex. Narayangaum town, dist. Poona, 16.6.1964, R.C. Sharma (Reg. No. 21580); 9ex. Manshar village, Poona, 17. 6.1964, R.C. Sharma, (Reg. No. 21581); 2ex., Nagar road, Poona; 25.6.1962, B.K.Halder (Reg. No. 21500); 1ex. Chatursingi Hill, Poona, 10.4.1962, B.K. Halder (Reg. No. 21501); 1ex. Vishwatwadi, Poona, 19.6.1962 (Reg. No. 21502); 3ex. Vishwatwadi, Poona, 8.9.1960, B.K. Halder, (Reg. No.21504). 1ex. Damragad,

Koimgundanaca, dist. Gharchiroli, 19.3 2009 B.H.C.K. Murthy (Reg. No. 25847)

Measurements : Snout vent length : 30 mm.-80 mm.; Tail length : 45 mm-122 mm.

Diagnostic characters : This is a small agamid lizard. Body compressed, dorsal crest absent. Limbs long, only 4 toes are present, fourth toe longest, fifth toe is absent. Tail is extremely longer than head and body. Male with a gular pouch. Dark brown dorsally with a vertical series of dark brown, black edged, rhomboidal spots on the back. The ventral side is whitish.

Distribution : India : the whole of India.

Elsewhere : Sri Lanka.

Remarks : Sexamples (Reg. Nos. 5051 -5055) type specimens of *Sitana deccanensis*, Jerdon, T.C. which are mentioned in the paper and also examined, subjective to synonym of *Sitana ponticeriana* Cuvier; locality of these lizards written in the register as S.E. Berar & Chanda, whereas it is mentioned in the literature only as Deccan. Smith 1935 mentioned Type lost.

Family 10. CHAMAELEONIDAE Gray 1825

Genus 20. *Chamaeleo* Laurenti

34. *Chamaeleo zeylanicus* Laurenti Indian Chmaeleon

1768. *Chamaeleo zeylanicus* Laurenti, *Syn. Rept.*, : 46.

Material examined : 1ex. Chandrapur dist., 10.4.2008, B.H.C.K. Murthy (Reg. No. 25805)

Measurement : Snout vent length : 132 mm.; Tail length : 224 mm

Diagnostic characters : Body laterally compressed; a conical casque on the top of the head. Body covered with granular scales. A prominent canthal and supra orbital crest, the later continued backward as a ridge of enlarged tubercles along the side of the head and then curved upwards to meet the parietal crest; no rostral appendage. Eyes large except for a small transverse slit for the pupil covered thick granular lid. Tympanum absent. Tongue very extensile and club shaped at the tip. The digits of the hand in

two opposed set, two directed away from and three towards the body. The number is reversed in case of foot. Tail prehensile. The colour is blackish.

Distribution : India : Maharashtra as mentioned; Bihar; Orissa; Andhra Pradesh; West Bengal.

Remarks : Insectivorous, diurnal. Indian chameleon has got remarkable power of changing its colour.

Family 11. SCINCIDAE Gray, 1825

Key to the genera of family SCINCIDAE

1. Union of palatine bones takes place at the mid line of the palate 2
- Union of palatine bones not taking place at the mid line of the palate.....*Eumeces*
1. Limbs are well developed; supra ocular 4, second is largest *Eutropis*
2. Limbs are short; supraocular 4, first two largest*Lygosoma*

Genus 21. *Eumeces*

35. *Emuces poonaensis* Sharma

1963. *Eumeces poonaensis* Sharma, *Rec. zool. Surv. India*, 62(3-4) : 239.

Material : Type (Holo type). Described by R.C. Sharma; collected from Katrajghat, Poona; 28.6.61, B.K. Tikadar. (Reg. No. 21159).

Measurements : Standard length 118 mm.; tail length 85 mm.

Diagnostic characters : Head very small in comparison to body and tapering anteriorly; body longer slender. First supraocular slightly smaller than the second; fronto parietal small, 5 pairs of nuchal shield Present nasal shield moderate size & semi pentagonal; 2 pentagonal supranasals in close contact. Supralabial 7 in number; infralabials 7 in number. Ear opening oval and with 6 like projecting lobules on anterior margin. Lower eyelid scaly. 23 scales round the middle of the body limbs moderate sized pentadactyle, third toe longest; with 3 transverse lamellae beneath the fourth toe and 10 under the third.

Distribution : India : Maharashtra (Katrajghat, Poona).

Remarks : The lizards of this genus exhibit parental care and guard their eggs during incubation period (Sharma, 2002).

Genus 22. *Eutropis* Fitzinger 1843

Key to the species of genus *Eutropis*

1. Lower eyelid with semi transparent disc *innotata*
- Lower eyelids scaly 2
2. Frontonasal not broader than long *macularia*
- Frontonasal broader than long 3
3. Palms and hands with subconical tubercles .
..... *trivittata*
- No such tubercles present in palms and hands
.....4
4. Top of the head with dark spots or longitudinal markings *beddomii*
- No such spots present on the top of the head
..... *carinata*

36. *Eutropis beddomii* (Jerdon) Beddome's Grass Skink

1870. *Euprepes beddomii* Jerdon, *P. Asiat. Soc. Beng.*, p. 73

1887. *Mabuya beddomii*, Boulenger, *Cat. Liz. Brit. Mus.*, 3 : 171.

2003. *Eutropis beddomii*, Mausfeld Patrick & Andreas Schimtz, *Organism, Diversity & Evolution*, 3 : 161 - 171.

Material examined : 2ex., Berar, Oct. 1870, Dr. Anderson (Reg. Nos. 2354, 2355).

Measurements : Snout vent length : 55 mm-60 mm, tails are broken.

Diagnostic characters : Supranasals are in contact with one another; frontonasal broader than long; prefrontals are in contact with one another; a pair of nuchal shield is present, postnasal is missing. 30-32 scales round the middle of the body; digits moderately long with 12-15 keeled

lamellae under the fourth toe.; the hind limb reaches to the wrist 4 dark brown longitudinal stripes on the whole length of the back up to the base of the tail; abbroader stripe of the same colour is present on the lateral aspect of the head and antero - dorsal aspects of the flank. Top of the head with brown spots.

Distribution : India : North eastern parts of Maharashtra; Madhya Pradesh; Karnataka.

Elsewhere : Sri Lanka.

37. *Eutropis carinata* Schneider Keeled Grass Skink

1801. *Scincus carinatus* Schneider, *Hist. Amph.*, 2 : 182.

1935. *Mabuuya carinata*, Smith, *Fauna, Brit. Ind.*, 2 : 266-268.

2003. *Eutropis carinata*, Mausfeld, Patrick and Andreas Schmitz, *Organism, Diversity and Evolution*, 3 : 161-171.

Material examined : 2 exs, Diggi Village 16 km from Poona City, 24.5.64, R.C. Sharma & Party (Reg.No. 21613); 1 ex Law College, Poona, 28.5.64, R.C. Sharma & Party (Reg. No. 21614); 4 exs University Garden Poona 28.5.64, R.C. Sharma & Party (Reg. No. 21615); 2 exs, Satara Fort. Dist. Satara, 2.6.64, R.C. Sharma & Party (Reg. No. 21616); 2 exs Chowfulla Village, Dist. Poona, 10.6.64. R.C. Sharma & Party (Reg. No. 21617); 1 ex Mancher Village, Dist. Poona 17.6.64, R.C. Sharma & Party (Reg. No. 21618); 3 exs, Shivananifort, Junnar town, Dist. Poona, R.C. Sharma & Party (Reg. No. 21619).

Measurements : Snout vent length : 55 mm - 65 mm; Tail length 97 mm - 107 mm.

Diagnostic characters : Head shields arranged symmetrically. A single pair of nuchalis. Frontonasal broader than large. Dorsal & lateral scales sub-equal with 3 or 5 distinct keels; 30-35 scales round. the body. Digits moderately long with smooth or keeled lamellae from 14-18 under the fourth toe. Young dark bronze above with yellow lateral bands from snout to base of tail; adult light above with 4-6 black dots on back, a light band from behind the eye to the base of tail, belly white.

Distribution : India : Maharashtra, Bihar, Assam. West Bengal, Orissa.

Remarks : Common.

38. *Eutropis innotata* Blandford Blandford's Grass Skink

1870. *Euprepes innotatus* Blandford, *J. Asiat. Soc. Beng.*, 39 : 354.

1887. *Mabuuya innotata*, Boulenger, *Cat. Liz. Brit. Mus.*, 3 : 178.

2003. *Eutropis innotata*, Mausfeld, Patrick & Andreas Schmitz, *Organism, Diversity & Evolution*, 3 : 161-171.

Material examined : 1ex. (damaged specimen without tail), S.E. Berar, coll. ? (Reg. No.2358)

Measurements : Snout vent length : 50 mm.

Diagnostic characters : Supranasals are not touching one another; prefrontals are separated rarely touching one another; a pair nuchal is always present; postnasal are missing; lower eyelid with undivided transparent disc. 33-34 scales round the middle of the body. Digits long feebly keeled lamellae under the fourth toe, the leg reaches the wrist

Distribution : India : Maharashtra (Nagpur); Madhya Pradesh.

39. *Eutropis macularia* (Blyth) Bronze Grass Skink

1852. *Euprepes macularius* Blyth, *J. Asiat. Soc. Beng.*, 22 : 622.

1934. *Mabuuya macularia*, Smith, *Fauna Britt. India*, 2 : 264-266.

2003. *Eutropis macularia*, Mausfeld, Patrick & Andreas Schmitz, *Organism, Diversity & Evolution*, 3 : 161-171.

Material examined : 1 ex, Katrajghat, dist Poona, 23.6.64, R.C. Sharma & Party (Reg.No. 21611); 1ex, Empress Garden, dist. Poona 25. 5.1964, R.C. Sharma (Reg. No. 21612); 1ex., Forest rest House, dist. Chandrapur, 23.3.2009, B.H.C.K. Murthy, (Reg. No. 25854).

Measurements : Snout t vent length : 57 mm -59 mm, Tail : Broken.

Diagnostic characters : Head small, snout short, not depressed, eye small, fronto nasal not broader than long, ear opening oval; slightly smaller than eye. A pair of nuchalis present. 7 upper labials 7 lower labials; 12-17 lamellae under the fourth toe; 28-30 scales round the middle of the body. Tail round, colour pattern is variable. The colour is brown with or without spots.

Distribution : India : Whole of India.

Remarks : It is a common Lizard.

**40. *Eutropis trivittata* (Hardwicke and Gray)
Three Lined Grass Skink**

1827. *Tiliqua trivittata* Hardwicke and Gray, *Zool. Journ.*, 3 : 27.

1935. *Mabuya trivittata*, Smith, *Fauna Brit. Ind.*, 2 : 275.

2003. *Eutropis trivittata*, Mausfeld, Patrick & Andreas Schmitz *Organism, Diversity & Evolution*, 3 : 161-171.

Material examined : 1 ex. Wagheli village near Poona, 19.11.1961 S.N. Choube (Reg. No. 21512) 1 ex. Lohagaon near Poona, 8.8.1961, K.A. Kashid (Reg. No. 21513); 2 ex. Poona, hill at Vishwantwadi, 8.9.1960, B.K. Halder (Reg. No. 21514) 1 ex. Katrajghat, Poona, 23.6.1964, R.C. Sharma (Reg. No. 21620).

Measurements : Snout vent length : 55 mm.-72 mm.; tail length 39 mm.-73 mm.

Diagnostic characters : It is a more or large skink. Supranasal in contact with one another; frontonasal broader than long; lower eye lid scaly. Dorsal and lateral scales sub equal with 5 or 7 strong keels. 34 or 36 scales round the mid body. Digits moderately long, 13 or 14 lamellae under the fourth toe. Greyish brown with 5 broad black edged longitudinal stripes extended whole length of the body. Lower parts whitish.

Distribution : India : Maharashtra as mentioned; Andhra Pradesh; Tamil Nadu; West Bengal; Bihar.

Remarks : It is an uncommon lizard.

Genus 23. *Lygosoma*

Key to the species of genus *Lygosoma*

1. Presence of five fingers, five toes 2

- Presence of four fingers, four toes *lineata*
- 2. 62-76 rows of scales down middle of back. *punctata*
- 87-100 rows of scales down middle of back. *guentheri*

**41. *Lygosoma guentheri* (Peters)
Guenther's Supple Skink**

1879. *Eumeces guentheri* Peters, Sitz. Ges. Nat. Berlin Fr., : 36.

1890. *Lygosoma guentheri*, Boulenger, Cat. Liz. Brit. Mus., 3 : 311

1935. *Riopa guentheri*, Smith, *Fauna Brit. Ind.*, 2 : 319.

1977. *Lygosoma guentheri*, Greer, J. Nat. Hist., 11 : 516.

Material examined : 1 ex. Satara, 2.6.64. R.C. Sharma & party (Reg. No. 21621); 1 ex. Sheregoaband, dist. Nagpur, 15.3.2009, B.H.C.K. Murthy (Reg. No. 25846); 1 ex., Kajmgunda, Bhamragad, 20.3.2009, B.H.C.K. Murthy (Reg. No. 25848)

Measurements : Snout vent length : 58 mm - 82 mm.; tail : 47 mm. - 88 mm.

Diagnostic characters : Body elongated; frontal length is equal to combined length of frontoparietal and interparietal. 87-100 scales down middle of back; digits short, fourth toe is slightly larger than the third. The dorsum is brown, each scale is with a dark basal spot which form longitudinal lines on the back.

Distribution : Maharashtra; Goa; Karnataka; Kerala.

Remarks : Ground dwelling. insectivorous, oviparous.

**42. *Lygosoma lineata* (Gray)
Lined Supple Skink**

1839. *Chamela lineata* Gray, Ann. Mag. Nat. Hist., 2 : 333.

1887. *Lygosoma lineatum*, Boulenger, Cat. Liz. Brit. Mus., 3 : 316, pl. 25, fig. 3.

1935. *Riopa lineata*, Smith, *Fauna Brit. Ind.*, 2 : 321.

1977. *Lygosoma lineata*, Greer, J. Nat. Hist., 11 : 516.

Material examined : 2 ex. Poona, Law college

Hill, 28.5.64, R.C. Sharma (Reg. No. 21622); 1ex. Poona, 8.9.1911, T.B. Fletcher, (Reg. No. 19873)

Measurements : Snout vent length : 50 mm-53 mm; tail length : 53 mm-61 mm.

Diagnostic characters : The body is much elongated but size is smaller; snout is obtusely pointed; lower eye lids are with an undivided semitransparent disc; supranasals entire, just touching one another behind the rostral; frontal is smaller than the single fronto-parietal. Limbs are quite weak with four digits only. Dorsum is golden brown with dark brown dots forming distinct longitudinal lines.

Distribution : India : Maharashtra; Karnataka.

Remarks : Insetivorous, ground dwelling, oviparous.

43. *Lygosoma punctata* (Gmelin) Spotted Supple Skink

1799. *Scincus punctatus* Gmelin, *Hist. Amphib.*, : 197.

1845. *Riopa punctata*, Gray, *Cat. Liz. Brit. Mus.*, : 96.

1887. *Lygosoma punctatum*, Boulenger, *Cat. Liz. Brit. Mus.*, 3 : 310.

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

1977. *Lygosoma punctata*, Greer, *J. Nat. Hist.*, 11 : 516.

Material examined : 2ex. Premises of W. R. S. Poona, 3.8.60 and 24. 2. 61, R.N.Chopra, M.M.Chatterjee (Reg. Nos. 21505, 21506).

Measurements : Snout vent length : 31mm. - 49mm.; Tail length : 57mm., another tail broken.

Diagnostic characters : Elongated snake like body with 5 fingers and 5 toes; lower eyelid with undivided transparent disc. Body scales smooth. 24 m-26 scales round the middle of the body and 62-76 scales down middle of back Limbs reduced, fourth toe quite longer than the third; 11-14 lamellae under the fourth toe. Tail thick at base. Colour brown above, each side with a dark spot forming longitudinal series, belly yellowish white.

Distribution : Almost whole of India.

Elsewhere : Sri Lanka and Man-Son mountains; Tongking.

Family 12. LACERTIDAE Gray, 1825

Genus 24. *Ophisops* Menetries 1832

Key to the species of the genus *Ophisops*

1. A single frontonasal *jerdoni*
- Two or three frontonasals *beddomei*

44. *Ophisops beddomei* (Jerdon) Neddome's Lacerta

1870. *Pseudoophisops beddomei* Jerdon, *P. Asiat. Soc. Beng.*, P. 72.

1935. *Ophisops beddomei*, Smith, *Fauna Brit. India*, 2: 378.

Material examined : 2ex. Katrajghat, dist. Poona, 22.6.1964., R.C. Sharma (Reg. No. 21634); 1ex. Kas, Satara dist. ? F.H. Gravely (Reg. No. 17941).

Measurements : Snout vent length : 17 mm-30 mm.

Diagnostic characters : Upper head scales strongly keeled and striated. Two sometimes three frontonasals in a transverse series; prefrontal usually separated from one another by one or two shields; lateral scales smaller than the dorsal; 26-32 scales round the body; femoral pores 8 to 13.

Distribution : Maharashtra; S.Kanara plains; Tamil Nadu.

45. *Ophisops jerdoni* Blyth Snake-eyed Lacerta

1934. *Ophisops jerdoni* Blyth, *J. Asiat. Soc. Beng.*, 22 : 65.

Material examined : 1ex. on Nagar road, Poona, 9.10.1959, T.D. Soota (Reg. No. 24576); 1ex. Road to Racecourse, 6 km east of H.Q. Poona, 19. 10. 1959 T.D.Soota (Reg. No. 24578); 1ex. Salisbar Estate, Poona, 28.9.1959, T.D. Soota (Reg. No. 24577); 1ex. Anudh village, Poona, 10.1.1961, Dr. B.K. Tikadar (Reg. No. 24585).

Measurements : Snout vent length : 15 mm - 45 mm; tail length : 62 mm (other specimen tail broken).

Diagnostic characters : Upper head scales strongly keeled and striated; two smaller postnasals; frontonasal single; four supra oculars; no distinct collar. 25-35 scales round the

body. Ventral plates 6 longitudinal and 23-29 series.

Distribution : India : Maharashtra as mentioned; Gujrat; Rajasthan; Tamil Nadu.

Family 13. VARANIDAE Gray, 1827

Genus 25. *Varanus* Merrem 1820

Key to the species of the genus *Varanus*

1. Nostril is like an oblique slit which is nearer to the end of the snout *griseus konieczyi*
- Nostril is like an oblique slit which is nearer to the orbit than to the end of the snout
..... *bengalensis*

26. *Varanus bengalensis* (Daudin)

Bengal Monitor

1934. *Tupinambis bengalensis* Daudin, *Hist. Nat. Rept.*, 3 : 67.

1835. *Varanus bengalensis*, Boulenger *Cat. Liz. Brit. Mus.*, 2 : 310.

Material examined : 1 ex. Chandrapur dist., 15.3.2009, B.H.C.K. Murthy (Reg. No. 25856).

Measurements : Snout vent length : 195 mm.; tail length : 307mm.

Diagnostic characters : Head long and narrow, snout pointed; head covered with small scales; body scales granular; limbs strong; neck long and narrow; tail laterally compressed; no femoral pores. Young dark olive with numerous light spots or ocelli alternating with dark bars and whitish below with narrow dark transverse bars.

Distribution : India : found throughout India. Elsewhere : Nepal; Pakistan; Myanmar.

47. *Varanus griseus konieczyi* Mertens Yellow Monitor

1803. *Tupinambis griseus* Daudin, *Hist. Nat. Rept.*, 8 : 352.

1885. *Varanus griseus*, Boulenger, *Cat. Liz. Brit. Mus.*, 2 : 306.

1935. *Varanus griseus*, Smith, *Fauna Brit. Ind.*, 2 : 400

1954. *Varanus griseus konieczyi* Mertens, *Aquar. Terrar. Zeitschr.*, 7 : 355.

1965. *Varanus griseus konieczyi*, Minton, *Bull. Amer. Mus. nat. Hist.*, 134 : 113.

2002. *Varanus griseus konieczyi*, Sharma, *Fauna of India & adjacent countries*, 2 : 399 - 400.

Material not available, Known to occur in drier parts of Maharashtra, Sharma, 2002. Description based on literature.

Diagnostic characters : The snout is depressed at the end. The nostrils are oblique slits, lying much nearer to the eyes than the end of the snout. The digits are moderately elongated; the tail is rounded and whip-like. The scales on the crown are usually larger than the nuchal scales. The dorsal scales are indistinctly keeled.

Distribution : India : It occurs in drier parts of Maharashtra, Madhya Pradesh, and Rajasthan.

Elsewhere : Pakistan; Afghanistan; Iran and North Africa.

Remarks : It is a subspecies of *Varanus griseus* which occurs in India. It lives in burrows in undulating sandy ground.

Suborder II SERPENTES

Key to the families of suborder Serpentes

1. Eyes vestigial, covered by scales; body worm like TYPHLOPIDAE
- Eyes developed exposed; body not worm like 2
2. Ventral shield absent ACROCHORDIDAE
- Ventral shield present 3
3. Tail extremely short, ending obtusely, bearing a nail like scale UROPELTIDAE
- Tail not extremely short, tail scales not differentiated from body scales 4
4. Vestiges of hind limb present 5
- Vestiges hind limb absent 6
5. Head distinct from neck, hemipenis forked, labials pitted PYTHONIDAE
- Head not distinct from neck, hemipenis not forked, labials not pitted BOIDAE

6. Poisonous fangs absent in front of the mouth COLUBRIDAE
- Poisonous fangs present in front of the mouth 7
7. Fangs fixed, pupil round 8
- Fangs movable, pupil vertical VIPERIDAE
8. Tail cylindrical ELAPIDAE
- Tail laterally compressed, paddle shaped HYDROPHIDAE

Family 14. TYPHLOPIDAE Gray, 1845

Key to the genera of family TYPHLOPIDAE

1. Snout pointed with sharp horizontal edge *Grypotyphlops*
- Snout rounded with no horizontal edge 2
2. Snout terminating at the edge of the preocular *Ramphotyphlops*
- Snout not terminating at the edge of preocular *Typhlops*

Genus 26 *Grypotyphlops* Peters 1881

48. *Grypotyphlops acutus* (Dum. and Bib.) Beaked Blind Snake

1844. *Onycocephalus acutus* Dum. & Bib., *Erp. Gen.*, 6 : 333.
1943. *Typhlops acutus*, Smith *Fauna Brit. Ind.*, 3 : 56-57.
2003. *Grypotyphlops acutus*, Wallach, *Hamadryad*, 27(2) : 226.

Material examined : 1ex. (damaged), Vetal Hill, Poona, 19.8.1960, M.M. Chatterjee (Reg. No. 21521); 1ex. Poona, 16.7.1962 S.N. Chaubey, (Reg. No. 21522).

Measurements : Total length 248 mm.

Diagnostic characters : Head same width as body. Snout pointed with large hooked beak like strongly projecting Structure with sharp horizontal edge. Tiny scale covered eye visible as a black dot. Tail ends in a spinose structure, glossy brown above, distinctly paler below. Scales 28-34 round the body.

Distribution : India : Maharashtra; Gujrat; Bihar; Orissa; West Bengal.

Remarks : The largest South Asian worm snake. This is absolutely an endemic Indian species.

Genus 27. *Ramphotyphlops* Fitzinger 1943

49. *Ramphotyphlops braminus* (Daudin) Brahminy Worm Snake

1954. *Eryx braminus* Daudin, *Hist. Nat. Rept.*, 7 : 279.
1890. *Typhlops braminus*, Boulenger, *Fauna Brit. India*, : 236.
1943. *Ramphotyphlops braminus*, Fitzinger, *Bull. Zool. Nomencl.* (3/4) : 204-207.

Material examined : 2ex Satara dist. ? F.H. Gravely (Reg. No. 17545); 1ex. 5 km. west of W.R.S., Z.S.I., Poona, 5.6.1961, 19.8.1960, M.M. Chatterjee (Reg. No. 21523); 1ex University compound Poona, 5.6.1961, B.K. Halder (Reg. No. 21525); 2ex. Lalgaoon village, Poona, 8.8.1961 and 13. 10. 1961, K.A. Kashid (Reg. No. 21526, 21527); 1ex. Chandrapur dist. April 2009, B.H.C.K. Murthy (Reg. No. 25860).

Measurements : Total length : 103 mm - 155 mm.

Diagnostic characters : Head bluntly rounded eyes indistinct; rostral large, snout rounded; 4 upper labial, last two in contact with the ocular. Nasal suture terminating at the edge of the preocular. Body uniformly cylindrical. Tail very short ending in a short stiff point. Scales lightly polished. 20 rows of scale round the body. Colour brown or blackish above, lighter below. Snout, anal region and end of tail whitish.

Distribution : found throughout the oriental region.

Remarks : Common blind snake of the oriental region.

Genus 28. *Typhlops* Dum. & Bib. 1844

*50. *Typhlops porrectus* Stoliczka Slender Blind Snake

1870. *Typhlops porrectus* Stoliczka, *J. Asiat. Soc. Bengal*, 11 : 426.

Material not available, known to occur in Maharashtra (Smith, 1943.) Description based on literature

Diagnostic characters : Snout rounded strongly projecting; nostrils lateral; scales round the body 18; eye fairly distinct; prefrontal in contact with the rostral; tail ending in a fine point. Brownish above, paler below, snout chin, anal region whitish.

Distribution : India : Maharashtra; Punjab; Bihar; Orissa; Karnataka; Kerala.

Elsewhere : Sri Lanka; Myanmar.

Family 15 UROPELTIDAE Gray, 1845

Key to the genera of family UROPELTIDAE

Mental groove is present *Melanophidium*

Mental groove is not present *Uropeltis*

Genus 29. *Melanophidium* Gunther, 1864

*51. *Melanophidium punctatum* Beddome Pied Belly Shield Tail

1871. *Melanophidium punctatum* Beddome, *Madras monthly J. Med. Sci.*, : 401.

Material not available known to occur in Maharashtra (Whitaker R & Ashoke Captain 2004). Description based on literature.

Diagnostic characters : Snout obtusely pointed; rostral is small.; mental groove is present; scale round the body 15 Ventral shields are between 180-198, almost two times broader than the adjacent scales; tail is compressed, Caudal scales are smooth, upper surface of the tail end is with rigid scute. Dorsal colour is black, ventrals and outer 2- 3 scale rows are white with black central spots.

Distribution : India : Maharashtra; Kerala; Annamalai Hills; Goa.

Remarks : Available in sufficient number.

Genus 30. *Uropeltis* Cuvier 1829

Key to the species of genus *Uropeltis*

1. Scales in 15 rows *macrolepis*

– Scales in 17 rows 2

2. Visible rostral part equals the distance between it and the middle of frontal shield *elliotti*

– Visible rostral part not equals the distance between it and the middle of frontal shield.....3

3. Ventrals 138 - 157 *phipsoni*

– Ventrals 165-172 *rubrolineatus*

*52. *Uropeltis elliotti* (Gray) Elliot's Shield Tail

1858. *Silybura elliotti* Gray, *P. Z. S.*, P.262.

1943. *Uropeltis elliotti*, Smith, *Fauna Brit. India.*, 3 : 75.

Material not available, known to occur in Maharashtra (Whitaker R & Ashoke Captain 2004). Description based on literature.

Diagnostic characters : Head narrower than neck; body slender, smooth scaled. Tail very short ends in two small spines. Scales in 17 rows. Ventrals 144-176; caudals 5-11. General body colouration is dark brown with Purple blue tinge and with small yellow spots scattered all over, lateral aspects of neck and tail with yellow stripes. Ventral aspects of the tail is yellowish with large brown spots behind the vent.

Distribution : India : Maharashtra; Kerala; Andhra Pradesh; Tamil Nadu; Gujrat; Karnataka.

53. *Uropeltis macrolepis* (Peters) Large-scaled Shield Tail

1861. *Silybura macrolepis* Peters, *Serp. Fam. Uropel.*, p. 904.

1943. *Uropeltis macrolepis*, Smith, *Fauna Brit. Ind.*, 3 : 79.

2004. *Uropeltis macrolepis macrolepis*, Whitaker, R. and Captain Ashoke, *Snake Book of India, A Field Guide*, p. 66.

Material examined : 1 ex. Damaged, Mathern, Mumbai, Donor : Bombay Nat. Hist. Soc. (Reg. No. 19214) Description based on literature.

Diagnostic characters : Head is not differentiated from neck and snout is round; eyes are distinct with round pupil. Scale in 15 rows; end of tail obliquely truncate above; terminal scute large, depressed with small spine, ending in a transverse ridge with two points. Body coloration is black to dark brown with purple tinge.

Distribution : India : Maharashtra; Gujrat; Kerala.

****Uropeltis macrolepis mahableshwarensis* Chari**
Mahableshwar Shield Tail

1861. *Silybura macrolepis* Peters, *Serp. Fam. Uropelt.*, 904.
1943. *Uropeltis macrolepis*, Smith, *Fauna Brit. India*, 3 : 79.
1955. *Uropeltis macrolepis mahableshwarensis*, Chari, *J. Bombay nat. Hist. Soc.*, 52(1) : 901.
2004. *Uropeltis macrolepis mahableshwarensis*, Whitaker, R. and Captain Ashoke, *Snakes of India, A Field Guide*, p. 68.

Material not available, Known to occur in Maharashtra (Whitaker, R. and Ashoke Captain 2004) Description based on literature.

Diagnostic characters : Head narrower than neck; smooth scaled, body cylindrical; upper scales on tail rough; scales 15 rows at mid body. Ventrals 120-130; caudals 9-13 paired. Long (mostly unbroken), brownish yellow stripe on each side of the tail that is usually joined by a cross-line at the anal region.

Distribution : Restricted to a very small part of the Western Ghats Maharashtra (Mahableshwar and near by areas).

Remarks : Endemic to India.

54. *Uropeltis phipsoni* (Mason)
Phipson's Shield Tail

1864. *Silybura phipsoni* Mason, *Rept. Brit. Ind.*, p. 190.
1943. *Uropeltis phipsoni*, Smith, *Fauna Brit. Ind.*, 3 : 82.

Material examined : 1 ex. Damaged, from the University campus Poona, 5.9.1965, B.K. Halder (Reg. No. 23113).

Diagnostic characters : Snout obtusely pointed; Scales in 17 rows; ventral 138-157; caudal 7-12. Brown or purplish brown; amore or less yellow streak along each side of the neck and fore part of the body.

Distribution : India : the Western ghats from the Mumbai Hills to the Anamalai Hills.

Remarks : It is a rare snake.

***55. *Uropeltis rubrolineatus* (Beddome)**
Red-lined Shield Tail

1867. *Silybura rubrolineatus* Gunther, *Madras Quart. J. Med. Sci.*, 11 : 15.
1943. *Uropeltis rubrolineatus* Smith, *Fauna Brit. Ind.*, 3 : 82.

Material not available, known to occur in Maharashtra (Bhimshankar, Pune - Murthy 1990). Description based on literature.

Diagnostic characters : Snout obtusely pointed; rostral separating the nasals for less than half their length. Scales in 17 rows. Ventrals 165-172; caudals 6-12. Tail obliquely truncated, the truncated portion flat with bi- or tricarinate- scales, caudal scute depressed, ending in two blunt points. Colour blackish brown above with a broad yellow stripe along the flanks and tail; belly with a brown patch and yellow stripes.

Distribution : India : Maharashtra; Tamil Nadu.

Family 16. BOIDAE Gray, 1842

Key to the genera of family BOIDAE

- Tail tip blunt and rounded*Eryx*
- Tail tip pointed*Gongylophis*

Genus 31. *Eryx* Daudin 1803

Key to the species of genus *Eryx*

- Mental groove absent; males with a small spur on each side of the vent..... *whitakeri*
- Mental groove present; males without spur .
.....*johni johni*

56. *Eryx johni johni* (Russell)
Red Sand Boa

1801. *Boa johnii* Russell, *Ind. Serp.*, 2 18 & 20 pts 16 & 17.
1943. *Eryx johnii johnii*, Smith, *Fauna Brit. Ind.*, 3 : 113-114.

Material examined : 1ex. Narayangau town, dist. Poona, 16.6.1964 R.C. Sharma (Reg. No. 21636).

Measurements : Snout vent length : 902 mm.; tail length : 97 mm.

Diagnostic characters : Head not distinct from neck, snout broad, wedge shaped; rostral large broader than high, well visible from above with an angular horizontal edge. Nostril slit like between two horizontal nasals. Mental groove present, no chin shield. Body robust cylindrical. Eye small, pupil vertically elliptical. Tail short rounded at its end which appears like another head of the snake. Colour yellowish above, the scales edged with dark brown, lower part whitish mottled with brown.

Distribution : India : throughout the drier zones of peninsula and the North west.

Elsewhere : Pakistan and Nepal.

***57. *Eryx whitakeri* Das
Whitaker's Boa**

1991. *Eryx whitakeri* Das, *J. Bombay nat. Hist. Soc.*, 88 : 93 pl. figs 1-3.

Material not available known to occur in Maharashtra (Whitaker, R and Ashoke Captain 2004).

Diagnostic characters : Eye small with vertical pupil. Scales in 50-54 rows, smooth or weakly keeled. Ventrals 201-213, distinctly narrower than width of the belly. Anal tripartite. Subcaudals entire with 18-25 scales. Supralabials 13-14; scales around the eye 10-11. Mental groove absent. Males with a spur on each side of the vent. Tail Blunt and rounded. Colour brown blotched with darker brown.

Distribution : Maharashtra; Karnataka; Kerala.

Genus 32. *Gongylophis* Wagler, 1830

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

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

1842. *Gongylophis conicus*, Wagler, *Zool. Misc.*, (2) : 45.

Material examined : 1 ex., Loni, Poona 20.7.1961 (Reg. No. 23031); 1ex. Chandrapur dist. 14.4.2008, B.H.C.K. Murthy (Reg. No. 25785).

Measurements : Snout vent length : 109 mm-339 mm; tail length : 16 mm-33 mm.

Diagnostic characters : Head slightly distinct from neck, rostral about two times broader than high, mental groove absent. Nostril slit like between two nasals and inter nasal. Head covered with small keeled scales; 8-10 scales across the forehead; 11-13 upper labials, 14-17 lower labials. Body robust, dorsal scales keeled. Tail very short, bluntly pointed. Colour yellowish, grayish above with dorsal series of large dark brown black edged spots usually confluent with one another to form zigzag stripe, lower parts yellowish, outer scale rows with small brown spots.

Distribution : India : Throughout India except the North East and Andaman and Nicobar Islands.

Family 17 PYTHONIDAE Fitzinger, 1826

Genus 33. *Python* Daudin, 1803

***59. *Python molurus* (Linn.)
Indian Rock Python**

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

1890. *Python molurus*, Boulenger, *F.B.I.* 246.

Material not available, Description based on literature.

Diagnostic characters : Head distinct from neck, with symmetrical shields, eye with vertical pupil and rostral with a deep pit on either side. Nostril at the posterior and upper part of a large posterior nasal; 11-13 supralabial, first two labials deeply pitted, 6th or 7th touching the eye; a lance shaped mark on the top of the head extending on the nape; a dark streak on the side of the head which become wider behind the eye and extending to the angle of the mouth. Scales 60-75 rows, smooth; ventrals 253-270; subcaudals 58-70 pairs.

Distribution : Throughout India.

Elsewhere : Pakistan; Nepal; Bangladesh; Sri Lanka.

Family 18 ACROCHORDIDAE Bonaparte, 1831

Genus 34. *Acrochordus* Homstedt, 1787

***60. *Acrochordus granulatus*
Elephant Trunk Snake**

1799. *Hydrus granulatus* Schneider, *Hist. Amphib.*, : 243

1943. *Acrochordus granulatus* Smith, *Fauna Brit. Ind.*, 3 : 134

Material not available known to occur in Maharashtra (Mumbai) (Wall, F 1923) Description based on literature.

Diagnostic characters : Head is not distinct from neck and is covered with small granular scales; eyes are absolutely lateral in position; nostrils are on the upper surface of snout and point mainly upwards, body is having 100 scales in the middle, posterior portion of the tail strongly compressed. Body coloration is dark gray or somewhat blackish with whitish annulation all over the body.

Distribution : Maharashtra (Mumbai, Wall 1923), Gujrat, coastal waters of India.

19 Family. COLUBRIDAE Oppel, 1811

Subfamily 1. COLUBRINAE

Key to the genera of subfamily COLUBRINAE

1. All the maxillary teeth solid 2
- All the maxillary teeth not solid 16
2. Hypapophysis present throughout the vertebral column 3
- Hypapophysis absent throughout the vertebral column 8
3. Dentary bone freely movable on the articular; 30-50 maxillary teeth present *Sibynophis*
- Dentary bone not freely movable 4
4. Posterior maxillary teeth longest 6
- Posterior maxillary teeth not longest 5
5. Maxillary teeth equal *Xenochrophis*
- Maxillary teeth subequal *Rhabdops*
6. Scales disposed obliquely... *Pseudoxenodon*
- Scales not disposed obliquely 7
7. Hemipenis extending beyond the 15th caudal plate *Macropisthodon*
- Hemipenis extending beyond the 7th caudal plate *Amphiesma*

8. Posterior maxillary teeth longest 9
- Posterior maxillary teeth not longest 12
9. Head distinct from neck 10
- Head not distinct from neck *Oligodon*
10. Presence of presubocular 11
- Presubocular absent *Coronella*
11. Loreal region concave *Ptyas*
- Loreal region squarish 15
12. Ventrals and caudals with a suture like lateral keel *Dendrelaphis*
- No such keel present 13
13. Scales more than 17 rows.. *Coelonegnathus*
- Scales not more than 17 rows 14
14. Some of the maxillary teeth elongated and fang like *Lycodon*
- No such fang like teeth present *Liopeltis*
15. Prefrontals broken up into several shields ...
..... *Spalerosophis*
- Prefrontals not broken up into several shields
..... *Argyrogena*
16. Pupil round *Chrysopelea*
- Pupil horizontal *Ahaetulla*
- Pupil vertical *Boiga*

Genus 35. *Ahaetulla* Meize and Hening, 1932

Key to the species of genus *Ahaetulla*

1. Dermal appendage longer, without a median groove *pulverulentus*
- Dermal appendage with a median groove *nasuta*

61. *Ahaetulla nasuta* Lacepede Common Green Whip Snake

1789. *Coluber nasutus* Lacepede, *Hist. Nat. Serp.*, 1 : 100 and 2 : 277, pl. 4, fig. 2.

1898. *Dryophis nasutus*, Anderson, *Bih sven. Vet. Acad. Stockholm*, 24,4, 6 : 15.

1933. *Ahaetulla nasuta*, Stejneger, *Copeia*, p.23.

Material examined : 2ex. Matheram, dist. Poona, purchased (Reg. No. 23322)

Measurements : Snout vent length : 480 mm.-730 mm. Tail length : 370 mm - 397 mm.

Diagnostic characters : Snout acuminate, terminating in a pointed dermal appendage, variable in length shorter than eye. It has median groove and formed by nostril. Pupil horizontal; no loreal; the internasals prefrontals in contact with labials. 1 preocular, 2 postoculars, 8 supra labials, 3rd or 4th or 1 divided to form 1 or 2 presuboculars, 5th touching the eye. Colour above verdant green, belly with lighter shade of green adorned on each side by prominent white stripe, situated on the ventral shields. Chin and throat with light blue and yellow markings.

Distribution : India : Maharashtra; Rajasthan; Gujrat; Bihar; West Bengal; Assam.

***62. *Ahaetulla pulverulenta* (Dum. & Bib.)
Brown Whip Snake**

1854. *Dryinus pulverulentus* Dum. & Bib., *Erp. Gen.*, 7 : 812.

1933. *Dryophis pulverulentus*, Smith, *Fauna Brit. India*, 3 : 378.

2007. *Ahaetulla pulverulenta*, Sharma, *Fauna of India & adjacent countries* (Serpentes), 3 : 271-272.

Material not available, Known to occur in Maharashtra (Pune, Khaire A & Khaire N, 1991) Description based on literature.

Diagnostic characters : Dermal appendage long formed below by the rostral, no median groove above; nasal shields generally in contact with one another in front of the internasals; ventral shields are 179-203; subcaudals shields are from 151-208; anal shield is divided. Dorsal colouration is grey or brownish, powdered with brown and with black transverse or oblique spots, above a dark - brown rhomboidal spot is present on the top of the head and a brown stripe on either side passing through the eye.

Distribution : India : Maharashtra (Pune); Gujrat; Western Ghats.

Elsewhere : Sri Lanka.

Genus 36. *Amphiesma* Dumeril and Bibron 1864

Key to the species of genus *Amphiesma*

- Maxillary teeth 28-34; nostrils lateral *beddomei*
- Maxillary teeth 21-24; nostril slightly directed upwards *stolatum*

**63. *Amphiesma beddomei* (Gunther)
Beddomes' Keelback**

1864. *Tropidonotus beddomei* Gunther, *Rept. Brit. Ind.*, p. 269 pl. 22, fig.E.

1943. *Natrix beddomei*, Smith, *Fauna Brit. Ind.*, 3 : 306-307.

2007. *Amphiesma beddomei*, Sharma, *Fauna of India and adjacent countries* (Serpentes), 3 : 212-213.

Material examined : 2ex. Mahabaleshwar, ca 32 miles from Satara town, 1.6.1964, R.C. Sharma (Reg. No. 21638).

Measurements : Snout vent length : 281 mm.-31 mm. tail length : 121 mm.-136 mm.

Diagnostic characters : Head broader than neck; scales in 19 rows at mid body, keeled; ventral 140-150; subcaudals 62-82; supralabials 8 or 9; preocular 1. The dorsal colouration brown; belly whitish; labials are yellow.

Distribution : India : Western ghats from Maharashtra (northern most limit of range appears to be Mahabaleshwar); parts of Tamil Nadu to South Kerala between 500-2000 m.

Remarks : Endemic to India.

**64. *Amphiesma stolatum* (Linn.)
Striped Keelback**

1758. *Coluber stolatus* Linn., *Syst. Nat. 10th Ed.*, p. 219 and 12th Ed., 1766 p. 379.

1934. *Amphiesma stolatum*, Dumeril and Bibron, *Erp. Gen. Paris*, 7(1) : 727.

Material examined : 1ex. Telegaon, dist. Poona, 4.9.1966; R.N. Chopra (22837).

Measurements : Snout vent length : 310 mm.; tail length : 54 mm.

Diagnostic characters : Nostrils directed slightly upwards, inter nasals much narrowed

anteriorly as long as the prefrontals, frontal constricted in the middle, twice as long as broad. 8 supralabials 3rd 4th 5th touching the eye; scales in 19 rows; internasals truncate. Brownish above with two distinct ribbon like yellowish stripe. Under side white.

Distribution : India : Whole of India including the Andaman Island.

Elsewhere : Pakistan; Nepal; Bhutan and Bangladesh.

Remarks : Fairly common snake.

Genus 37. *Argyrogena* Warner, 1924

Key to the species of the genus *Argyrogena*

1. Scales in 19 rows *ventromaculatus*
- Scales 21 or 23 rows 2
2. Supralabials 8; subcaudals 77-92
..... *fasciolatus*
- Supralabials 9; Subcaudals 118-127
..... *gracilis*

65. *Argyrogena fasciolatus* (Shaw)

Barred Racer

1801. *Coluber fasciolatus* Shaw, *Gen. Zool.*, 3 : 528
1983. *Argyrogena fasciolatus*, Daniel, *Indian Reptiles*, : 78
2007. *Argyrogena fasciolatus* Sharma, *Hand Book Snakes*, p. 82-83.

Material examined : 1ex. Poona, 17. 8. 1967.

Measurements : Snout vent length : 704 mm.; tail length : 190 mm.

Diagnostic characters : The body is elongated; head short but distinct from neck; snout projects out a little bit; eyes are large with round pupil; tail is quite a long. Body scales smooth. Scales are with apical pits. Anal shield divided. Upper surface of the body brown, lower whitish.

Distribution : India : Maharashtra; Gujrat; West Bengal; Karnataka; Madhya Pradesh.

Remarks : If threatened it erects itself and flattens the body behind the neck.

*66. *Argyrogena gracilis* (Gunther)

Slender Racer

1861. *Zamenis gracilis* Gunther, *Ann. Mag. Nat. Hist.*, (3) 9 : 125 and *Rept. Brit. Ind.*, 1864 p. 234.
1943. *Coluber gracilis*, Smith, *Fauna Brit. India*, 3 : 171-172.
2003. *Argyrogena gracilis*, Sharma, *Hand Book Snakes*, p. 83-84.

Material not found; known from literature (Sharma 2003); description based on literature.

Diagnostic characters : Head very distinct from neck, rostral as broad as high not separating the internasals, 9 supralabials, 5th 6th touching the eye, 6th highest and in contact with the anterior lower temporal. Scales in 21 : 21 : 15 rows, ventral 206-222, subcaudals 118-127, annals 2. Colour is light grayish brown with narrow white black edged cross bars which expand on the outer side of the body and covers more or less completely those in front and behind thus enclosing circular or ovoid spots which become less distinct in the hinder part of the body and tail where they are replaced by short narrow black cross - bars or spots. Head above with white black edged markings, two ^ shaped marks one on the vertex and other on the nape, lower part yellowish, the outer margins of ventrals with black spots.

Distribution : India : Maharashtra and Madhya Pradesh.

*67. *Argyrogena ventromaculatus* (Gray &

Hardwicke)

Glossy Bellied Racer

1834. *Coluber ventromaculatus* Gray and Hardwicke, *Ill. Ind. Zool. II* pl. 80, fig. 1.
2003. *Argyrogena ventromaculatus*, Sharma, *Handbook of Indian snakes*, p. 81-82.

Known to occur in Maharashtra. (Sharma, 2002) Description based on literature.

Diagnostic characters : Slender cylindrical tapering body; head long and narrow, quite distinct from the neck. Scales 19 : 19 : 15 or 13, Ventral shields 195-213 laterally angulated; sub caudals 82-119; anal shield is divided. Dorsal colouration

light grayish or redish brown with a dorsal series of 57-74 black cross bars or rhomboidal spots. The head is grayish with regular markings of dark colour on the top. In most of the individuals a short vertebral stripe is present which is quite distinct on the neck. Ventrums are whitish with a yellow tinge; dorsal aspect of the tail is grey.

Distribution : India : Maharashtra; Gujrat; Uttar Pradesh; Rajasthan.

Genus 38. *Boiga* Fitzinger 1826

Key to the species of genus *Boiga*

1. One preocular, not reaching the upper surface of the head; temporals 2 + 3 *trigonata*
- One preocular reaching the upper surface of the head; temporals 3 + 3 or 3 + 4 2
2. Scales in 25 to 29 rows *forsteni*
- Scales in 19 rows 3
3. Maxillary teeth 14-20 + 2 *ceylonensis*
- Maxillary teeth 12 or 13 + 2 *beddomei*

*68. *Boiga beddomei* Wall Beddome's Cat Snake

1909. *Dipsadomorphus beddomei* Wall, *Rec. Ind. Mus.*, 3 : 152

2004. *Boiga beddomei*, Whitaker and Ashoke Captain, *Snakes of India*, (Field Guide) p. 288

Material not available known to occur in Maharashtra; description based on literature.

Diagnostic characters : Body long thin and laterally flattened; head much broader than neck; large eye has vertical pupil; tail long. Scales 19 : 19 : 15 or 13 oblique rows smooth. Ventral scales distinctly enlarged and hexagonal; ventrals 248-266, anal entire, subcaudals 111-129; loreal 1; preocular 1 reaches upper surface of head; temporals 3+3 or 3+4; supralabials 8 (4th to 6th touching eye). Maxillary teeth 12 or 13+2. Top of the head with small scattered dark brown or black marks. Usually a stripe present from behind the eye to angle of the mouth; underside with dark brown or black dots, outer edge of some belly scales have black lines.

Distribution : India : the western ghats from Maharashtra to Kerala and Tamil Nadu; Orissa (near hills of Ganjam district).

Elsewhere : Sri Lanka.

69. *Boiga ceylonensis* (Gunther) Ceylon Cat Snake

1858. *Dipsadomorphus ceylonensis* Gunther, *Cat. Col. Sn. Brit. Mus.*, p. 176.

1943. *Boiga ceylonensis*, Smith, *Fauna Brit. India*, 3 : 351-352.

Material examined : 1 ex. Satara dist. ? F.H. Gravely (Reg. No. 17143).

Measurements : Snout vent length : 585 mm.; tail length : 170 mm.

Diagnostic characters : Body long, thin and laterally flattened. Head distinctly broader than neck; scales 19 : 19 : 15 oblique rows, smooth. Vertebral scales distinctly enlarged and hexagonal. One preocular reaches upper surface of head, postoculars 2, supralabials 8 4th to 6th touching the eye. Pale grayish with a series of dark brown spots on the vertebral line, small scattered black marks on the top of head, lower part yellowish white.

Distribution : India : Western Ghats, Maharashtra; Orissa; Assam; Andaman Islands.

Elsewhere : Sri Lanka; Nepal.

70. *Boiga forsteni* (Dum. & Bib.) Forstein's Cat Snake

1854. *Triglyphodon forsteni* Dum. and Bib., *Erp. Gen.*, 7 : 1077.

1943. *Boiga forsteni*, Smith, *Fauna Brit. India*, 3 : 358-359.

Material examined : 1 ex. Chithpally Forest Range, dist. Chandrapur, 24.3.09, B.H.C.K. Murthy (Reg. No. 25835).

Measurements : Snout vent length : 920 mm.; tail length : 217 mm.

Diagnostic characters : Head distinctly broader than neck, large eye has a vertical pupil. Scales 27 : 27 oblique rows, smooth. 1 preocular touching

the top of head, post oculars 2.; supralabials 8 (3rd to 5th touching eye); caudal 104. Fore body grayish brown, black bands that are interspersed with white patches. Hind body has checkered pattern of same colour. A black stripe on the head from the frontal shield to the nape; a broad black stripe from the eye to the angle of the mouth. Belly scales spotted with black.

Distribution : India : Maharashtra (Matheran, Chandrapur); Gujrat; Kerala; Bihar, West Bengal; Western Himalayas (Nainital, Dehradun, Pauri dist.); found both in plains and Hills..

Elsewhere : Sri Lanka; Nepal.

Remarks : This is a rare snake. Some portion of the ventral region of this snake which is examined found damaged.

71. *Boiga trigonata* Schneider Indian Gamma

1801. *Boiga trigonatus* Schneider, in *Bescht. transl. Lacep.*, 4 : 256.
1934. *Dipsas trigonata*, Blyth, *J. Asiat. Soc. Bengal*, 23 : 294.
1943. *Boiga trigonata*, Smith, *Fauna Brit. India*, 3 : 349-350.

Material examined : 1 ex. Anudha village, Poona; 30.9.1964; R.N. Chopra (Reg. No. 23032).

Measurements : Snout vent length : 494 mm.; tail length : 115 mm.

Diagnostic characters : Body long and laterally flattened. Scales smooth. Head distinctly broader than neck. Eye large with vertical pupil. Scales in 21 : 21 : 15 oblique rows. Light brown with zigzag markings, Y-shaped mark on the top of the head, nape is with longitudinal mark; a stripe emerges from eye and reach upto the angle of the mouth; ventrum is whitish.

Distribution : Maharashtra as stated above. Throughout most of South Asia but not the Andaman and Nicobar Islands.

Remarks : The common Cat Snake is often mistaken for the Saw scaled viper but unlike Cat Snake this viper has rough scale and tiny short tail.

Genus 39. *Chrysopelea* Boie 1827

*72. *Chrysopelea ornata* Shaw Golden Tree Snake

1802. *Coluber ornatus* Shaw, *Gen. Zool.*, 3 : 477.
1943. *Chrysopelea ornata*, Smith, *Fauna Brit. India*, 3 : 251.
2006. *Chrysopelea ornata*, Khaire, N., *A Guide to the Snakes of Maharashtra, Goa and Karnataka*, p42

Material not available, Known to occur in Maharashtra (Khaire, N 2006) Description based on literature.

Diagnostic characters : Body elongate. Head distinct from neck.; snout much depressed broadly truncate; internasals shorter than pre frontal; frontal bell shaped; loreal elongate; 9 supralabials, 4th just touching, 5th 6th below the eye; scales smooth with apical pits, in 15 : 17 : 14 rows; ventrals 207-230; caudals 118-138. Dorsal colouration is most variable, but generally with red or orange spots or markings and a longitudinal series of oval or flower shaped flecks, in some individuals these are separated from one another by a pair of cross bars; lateral aspects are greenish, each scale with a black marginal tinge and with a black median streak.

Distribution : India : Maharashtra (Garchiroli, Chandrapur); Gujrat; Goa; Kerala; Bihar; Uttar Pradesh; Orissa; Nagaland; Andaman.

Genus 40. *Coelognathus* Helfenberger 2001

73. *Coelognathus helena* (Daudin) Common Trinket Snake

1801. *Coluber helena* Daudin, *Hist. Nat. Rept.*, 6 : 277.
1943. *Elaphe helena*, Smith, *Fauna Brit. India*, 3 : 149-150.
2001. *Coelognathus helena*, Das, *J. Bombay nat. Hist. Soc.*, 100(1 & 2) : 475.

Material examined : 1ex, damaged, Police Recreation Club near W.R.S. Z.S.I., Poona; 19.9.1960.; S.D. Kamble (Reg. No. 21531); 2ex. Ghanpadi Poona, 23.9.1964., purchased (Reg. No. 23253); 1ex. Madhiva village, Poona, 31.7.1965, purchased (Reg. No. 23329).

Measurements : Snout vent length : 260 mm-619 mm.; tail length : 48 mm-215 mm.

Diagnostic characters : Slender bodied, scales smooth, 23 to 27; anal scale entire; ventrals 210-234 angulate laterally; subcaudals 73-100 paired; supralabials 8-11, last supralabial below eye touching temporals; pre ocular 1, postocular 2. Colour brown. Two prominent black stripes on the hind body that continue upto tail; belly white.

Distribution : Throughout India.

Elsewhere : Nepal; Bangladesh; Sri Lanka.

Remarks : The snake when exited coils fore body into a series of near vertical 'S' shaped loops and opens mouth, may also strike repeatedly.

Genus 41. *Coronella* Laurenti 1768

**74. *Coronella brachyura* (Gunther)
Indian Smooth Snake**

1864. *Zamenis brachyura* Gunther, *Ann. Mag. Nat. Hist.*, (3) 18 : 27, pl. 6, fig. A.

1890. *Coronella brachyura*, Blanford, *F.B.I.*, 309.

Material examined : 1 ex. Poona, ?, G. Vidal (Reg. No. 11410); 1 ex. Wan, south east Berar (damaged) 2.8.1870 W.T. Blanford (Reg. No. 7335).

Measurements : Snout vent length : 206 mm.; Tail length : 35 mm.

Diagnostic characters : Head slightly broader than neck; smooth scaled; eye large with round pupil; snout not pointed; nostril large; frontal nearly as broad as long; 8 supralabials, 4th and 5th touching eye. Scales in 23 : 23 : 19 rows. Ventrals large; tail short. Olive brown above, creamy white below.

Distribution : Known from a few localities of Maharashtra.

Remarks : Endemic to India.

Genus 42. *Dendrelaphis* Boulenger 1890

Key to the species of genus *Dendrelaphis*

- Maxillary teeth 23 to 28, posterior largest ..
..... *pictus*

- Maxillary teeth 17 to 22, posterior smallest
..... *tristis*

**75. *Dendrelaphis pictus* (Gmelin)
Painted Bronze Back**

1803. *Coluber pictus* Gmelin, *Syst. Nat. Ed.*, 1 : 116.

1934. *Dendrelaphis pictus*, R. Mertens, *Arch Hydrobiol. Stuttgart, suppl.*, 12(4) : 693.

Material examined : 1 ex Deoli, dist. Ratnagiri, 22.2.1965, Dr. B.K. Tikadar (23323).

Measurements : Snout vent length : 335 mm.; tail length : 205 mm.

Diagnostic characters : Snout broadly rounded, eye as long as its distance from nostril; supralabials 9 4th just touching the eye, 5th and 6th below the eye. Scales 15 : 15 : 9 rows. Ventral 186, caudal 136. Bronze brown above, a black stripe along the side of the head strong on to the temple passing on to the neck where it breaks up into oblique bars.

Distribution : Maharashtra as mentioned.

Elsewhere : The whole of Indo Chinese region from Bengal and Eastern Himalayas to Southern China.

***76. *Dendrelaphis tristis* (Daudin)
Common Indian Bronze Back**

1803. *Coluber tristis* Daudin, *Hist. Nat. Rept.*, 6 : 430

1894. *Dendrelaphis tristis*, Boulenger, *Cat. Sn. Brit. Mus.*, 2 : 88.

Material not available, known to occur in Maharashtra (Whitaker 1969, J. Bombay nat Hist. Soc. 322-325). Description based on literature.

Diagnostic characters : Snout broadly rounded, internasals shorter than prefrontal. 15 scales at midbody; 9 upper labials 5th and 6th touching the eye. Ventrals 163-167; caudals 108-145; anal 2. Neck distinctly constricted; body long. Belly ridged on either side; tail long. Bronze brown or purplish brown above, light grayish, greenish or yellowish below, more or less distinct buff flank stripe along the outer two scale rows, edged or

spotted with black, an indistinct black temporal stripe extending on to the neck.

Distribution : Maharashtra (Matheran near Mumbai-Smith 1943, Whitaker 1969); Peninsular India as far as Sind in the north West and Darjeeling in the north east.

Genus 43. *Liopeltis* Fitzinger

*77. *Liopeltis calamaria* (Gunther)

1858. *Cyclophis calamaria* Gunther, *Cat. Col. Sn. Brit. Mus.*, : 250.

1943. *Liopeltis calamaria*, Smith, *Fauna Brit. India*, 3 : 184.

Material not available, Known to occur in Maharashtra (Matheran). Description based on literature.

Diagnostic characters : Head is not depressed, quite distinct from the neck; snout is not at all projecting. Nostril is very small, in a long undivided nasal; supralabials 7 rarely 6, the 3rd and 4th touching the eye. Scales in 15 rows throughout. Ventrals 126- 163; subcaudals 53-78; annals 2. Dorsal colouration is light brown or olive green. Head with a series of dark spot on each side. Belly pale yellow.

Distribution : Western Ghats as far north as Matheran (Smith 1943); Karnataka; Uttar Pradesh; Jharkhand; Western Himalayas adjacent to Nepal.

Remarks : A hill species.

Genus 44. *Lycodon* Boie 1826

Key to the species of genus *Lycodon*

1. Loreal not or but slightly in contact with the internasal; anterior and posterior shields subequal *travancoricus*
- Loreal extensively in contact with the internasal; anterior and posterior shields are not subequal 2
2. Vertebrae angulate laterally *aulicus*
- Vertebrae not angulate laterally 3
3. Supralabials 9. Hemipenis extending to the 15th caudal plate *flavomaculatus*

- Supralabials 8. Hemipenis extending to the 10th caudal plate *striatus*

78. *Lycodon aulicus* (Linn.)

Common Wolf Snake

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

1864. *Lycodon aulicus*, Gunther, *Rept. Brit. Ind.*, 3 : 316.

1943. *Lycodon aulicus*, Smith, *Fauna Brit. Ind.*, 3 : 264.

Material examined : 1 ex. Rly compound, Poona, 20.11.1963, R.S. Rao (Reg. No. 22834); 1 ex. Satara dist., 30.9.1964, Dr. K.K. Tiwari (Reg. No. 23434)

Measurements : Snout vent length : 360 mm. to 395 mm.; tail length : 57 mm. to 91 mm.

Diagnostic characters : Snout more or less spatulate and projecting beyond the lower jaw; loreal in good contact with the internasal, not touching the eye; 1 preocular; 9 supralabials. Scales in 17 : 17 : 15 rows; ventral 199-212; caudals 59-71; anal 2. Brown above with white cross bars which spread laterally or bifurcate, a whitish blotch on the occipit.

Distribution : Whole of India.

*79. *Lycodon flavomaculatus* Wall Yellow Spotted Wolf Snake

1907. *Lycodon flavomaculatus* Wall, *J. Bombay nat. Hist. Soc.*, 17 : 612.

Material examined : 1 ex. , Taluka Umred, Maharashtra; April, 2009; V. Chawhan & P Dande (Reg. No. 25868).

Measurement : Snout vent length : 334 mm; tail length : 67 mm.

Diagnostic characters : 9 supralabials; scales in 17 : 17 : 15 rows; ventrals 175; caudals 51; anal is divided. Black above with a series of roundish, yellow ventral spots, opposite which bars of the same colour form a reticulations on the flanks.

Distribution : Maharashtra; Gujrat.

Remarks : The snake is endemic to India.

80. *Lycodon striatus* (Shaw)
Bared Wolf Snake

1802. *Coluber striatus* Shaw, *Genl. Zool.*, 3 : 527.
1870. *Lycodon striatus*, Stoliczka, *J. Asiat. Soc. Bengal*, 39 : 200.
1943. *Lycodon striatus*, Smith, *Fauna Brit. India*, 3 : 261-262.

Material (confiscated) collected from Amaravati district of Maharashtra.

Measurements : Snout vent length : 270 mm.; tail length : 55 mm.

Diagnostic characters : Slender bodied, smooth scaled. Head flattened slightly broader than neck; snout broad projects beyond lower jaw; eye entirely black. Scales in 17 : 17 : 15 rows; preocular 1, postocular 2, supralabial 8 (3rd 4th 5th touching eye). Ventral 166; caudal 45. Dorsal coloration is dark brown with white cross bars from head to tail, which extends laterally and enclose triangular spots in the anterior part of the body, a white bar on the nape is present; upper lips and ventral part is whitish.

Distribution : Maharashtra; Gujrat; Himachal Pradesh; Punjab; Uttar Pradesh; Jharkhand; Orissa; Tamil Nadu; Jammu Kashmir.

*81. *Lycodon travancoricus* (Beddome)
Travancore Wolf Snake

1870. *Cercaspis travancoricus* Beddome, *Madras Month. J. Med. Sci.*, 2 : 169.
1890. *Lycodon travancoricus*, Boulenger *F.B.I.* p 293 and 1893 *Cat. Sn. Brit. Mus.*, p355.

Material not available, known to occur in Maharashtra, Matheran (Smith 1943). Description based on literature.

Diagnostic characters : Snout broad; body scales 17 : 17 : 15 rows, smooth; ventrals 176-206 angulated laterally; subcaudals 64-76 paired or some, rarely all of them may be single; anal 1. Hemipenis extends to the 12th caudal plate. Dark purplish brown or blackish above with pale yellow cross bars which bifurcate on the sides enclosing more or less triangular spots. The first cross bar

is on the nape, those on the anterior part of the body are further apart than those on the posterior, uniform white below.

Distribution : India : Maharashtra; Madhya Pradesh; Andhra Pradesh; Tamil Nadu.

Genus 45 *Macropisthodon* Lesson, 1834

82. *Macropisthodon plumbicolor* (Cantor)
Green Keelback

1839. *Tropidonotus plumbicolor* Cantor, *P.Z.S.*, p. 54.
1893. *Macropisthodon plumbicolor*, Boulenger, *Cat. Sn. Brit. Mus.*, 1 : 267.
1943. *Macropisthodon plumbicolor*, Smith, *Fauna Brit. India*, 3 : 314-316.

Material examined : 1ex. (Damaged) Inspection Bunglow, Baramati town, dist. Poona, 4.6.1964, R.C. Sharma and party (Reg. No. 21641); 1ex. Indapur town, Ca 31 miles from Baramati town, 6.6.1964, R.C. Sharma and party (Reg. No. 21642) 1ex., April 2009, B.H.C.K. Murthy (Reg. No. 25837).

Measurements : Snout vent length : 485 mm.-611 mm.; Tail length : 80 mm-85 mm.

Diagnostic characters : Stout bodied; scales on body strongly keeled, scales on upper surface of head smooth large and variable in size; eye large with round pupil. Scales in 23 or 25 : 25 or 27 : 17 or 19 rows; ventrals 144-162; caudals 34-48. A black stripe from the eye to the angle of the mouth. Grass green in life becoming dull olive brown in spirit., belly whitish.

Genus 46. *Oligodon* Boie 1827

Key to the species of genus *Oligodon*

1. Scales in 15 rows in mid body, ...2
- Scales in 17 rows *arnensis*
2. Nape with 'W' shaped dark collar
..... *taeniolatus*
- No such collar is present, presence of quadrangular or transverse spots in back.
..... *brevicauda*

**83. *Oligodon arnensis* (Shaw)
Common Kukri Snake**

1802. *Coluber arnensis* Shaw, *Genl. Zool.*, **3** : 526.

1943. *Oligodon arnensis*, Smith, *Fauna Brit. India*, **3** : 225-227.

Material examined : 1ex. Vishwadi, Poona, 12.8.1962, S.D. Kamble (Reg. No. 21530).

Measurements : Snout vent length : 273 mm.; Tail length : 65 mm.

Diagnostic characters : Head short, scales smooth. Head not differentiated from neck. Tail with pointed tip. Scales in 17 : 17 : 15 rows. Three ^ shaped mark on head. Light brown above with well defined transversely arranged black bars, whitish below.

Distribution : India : Throughout India except Andaman and Nicobar Islands.

Elsewhere : Pakistan; Nepal, Bangladesh; Sri Lanka.

Remarks : The Snake which has been examined, found head portion damaged.

***84. *Oligodon breviceauda* Gunther
Striped Kukri Snake**

1862. *Oligodon breviceauda* Gunther, *Ann. Mag. Nat. Hist.*, (3)**9** : 58.

1985. *Oligodon breviceauda*, Khair A and Khair N, *Gebios new reports* **4** : 113.

Material not available, known to occur in Maharashtra (Khair 1985). Description based on literature.

Diagnostic characters : Rostral in contact with and partly separating prefrontals; no internasal; no loreal, the posterior nasal touching the preocular; 7 supralabials, 3rd and 4th touching the eye; 1 anterior temporal. Scales in 15 rows; ventral 158-173; caudal 25-29. Brown above, with light vertebral stripe, bordered on each side by a dark brown or black band; a black narrow streak along each side; a rhomboidal dark spot on the frontal confluent with a broad crescentic transverse band anteriorly which passes through the eyes, a dark band from behind to the angle of the mouth;

a large dark nuchal spot. Lower surface (red in life) brownish or whitish with large quadrangular or transverse spots.

Distribution : Western Ghats south of the Goa gap.

Remarks : Khair, A and Khair, N. Recorded a single snake 1985 from Maharashtra around Kothrud village in Katraj area.

**85. *Oligodon taeniolatus* (Jerdon)
Streaked Kukri Snake**

1853. *Cornella taeniolata* Jerdon, *J. Asiat. Soc. Bengal*, **22** : 528.

1921. *Oligodon taeniolatus*, Wall, *Sn. Ceylon* p. 239 and 1923 *J. Bombay nat. Hist. Soc.*, **19** : 627.

Material examined : 1ex. Baital, Poona, 17.9.1964, K.K. Tiwari (Reg. No. 22484); 1ex. Pirnagute village, Poona 5.5. 1966, B.S. Lamba (Reg. No. 22836); 1ex. Narnala Forest, Melghat range, dist. Amaravati, 3.4.2009, B.H.C.K. Murthy (Reg. No. 25844).

Measurements : Snout vent length : 280 mm. to 322 mm.; tail length : 55 mm. to 58 mm.

Diagnostic characters : Body slender, and uniform diameter from neck to vent never exceeds. Scales in 15 rows; 7 supralabials 3rd, 4th touching the eye; 1 anterior temporal; ventral 158-218 feebly angulate laterally; caudal 29-56, variable colour form are found in this snake, nape with 'W' shaped mark.

Distribution : Maharashtra; Gujrat; Bihar; Tamil Nadu; West Bengal.

Remarks : A hill species but occurring in the plains, found frequently in vicinity of human habitation.

Genus 47. *Psammophis* Fitzinger 1826

Key to the species of the genus *Psammophis*

1. Preocular in contact with the frontal *leithii*
- Preocular not reaching the frontal 2
2. One anterior temporal; 4 infralabials in contact with the anterior sublinguals *condanarus*

- Two anterior temporals; 5 infralabials incontact with the anterior sublinguals
..... *longifrons*

***86. *Psammophis condanarus* Merrem**
Condanarus Sand Snake

1820. *Coluber condanarus* Merrem, *Tent. Syst. Amph.*, p. 107.
1943. *Psammophis condanarus*, Smith *Fauna Brit. India*, 3 : 364-365.

Material not available known to occur in Maharashtra (Sharma 2003). Description based on literature.

Diagnostic characters : Body of the snake is quite robust and cylindrical. Head long, narrow quite distinct from the neck. Scales in 17 : 17 : 15 or 13 rows. One anterior temporal; 4 infralabials in contact with the anterior sublingual. 8 supralabials 4th and 5th touching the eye. Dorsal colouration pale olive, brassy or buff with 4 to 5 brown longitudinal stripes distinctly edged with black. Head is brownish with longitudinal markings which extends forwards to unite with the stripes on body. Ventrums is yellowish with a black line along each side of the outer margin of the ventral shields. Ventrals 156-179; caudals 75-93.

Distribution : Maharashtra; Gujrat; Punjab; Uttar Pradesh; Orissa; West Bengal.

***87. *Psammophis leithii* (Gunther)**
Leith's Sand Snake

1869. *Pssamophis leithi* Gunther, *P.Z.S.*, p505

Material not available, known to occur in Maharashtra (Sharma, 2003) Description based upon literature.

Diagnostic characters : Head elongate tapers towards front, slightly broader than neck, distinct ridge between top and side of head, large eye has round pupil; tail long. Scales 17 : 17 : 15 or 13 rows, smooth. Ventrals rounded, males 159-179; females 170-187; anal 1; subcaudals paired, males 104-109, females 92-104; supralabials 8, 4th and 5th touching eye; preocular 1; temporal 1+2; frontal long and narrow abruptly broader in front;

preocular in contact with the frontal. Pale yellowish brown back, with four dark brown stripes that begin on head and run along length of the body. Middle of the head usually has a long dark marking. Body stripe dotted or lined on both side with black. Underside yellowish white.

Distribution : India : Maharashtra; Gujrat; Jammu Kashmir; Punjab; Rajasthan; Uttar Pradesh.

***88. *Pssamophis longifrons* Boulenger**
Stout Sand Snake

1896. *Pssamophis longifrons* Boulenger, *Cat. Sn. Brit. Mus.*, 3 : 165.

Material not available, known to occur in Maharashtra. (Sharma 2003) Description based on literature.

Diagnostic characters : Long stout bodied with smooth scales. Head elongate, tapers towards front, slightly broader than neck; distinct ridge between top and side of head, large eyes has round pupil; tail long and narrow. Two anterior temporals; 8 supralabials 4th, 5th touching the eye. Scales in 17 : 17 : 13 rows; ventrals 166-175; caudals 79-93. Greyish above, browner behind, the scales edged with black, particularly those of the ventral region; top of the head uniform grayish brown; or the scales edged with black; grayish or yellowish white below.

Distribution : Maharashtra; Gujrat.

Genus 48. *Rhabdops* Boulenger, 1893

***89. *Rhabdops olivaceous* (Beddome)**
Olive Forest Snake

1909. *Ablabes olivaceous* Beddome, *Madras Quart. J. Med. Sci.*, 6 : 2.
1893. *Rhabdops olivaceous*, Boulenger, *Cat. Sn. Brit. Mus.*, 1 : 300.
1943. *Rhabdops olivaceous*, Smith, *Fauna Brit. India*, 3 : 328.

Material not available known to occur in Maharashtra (Whitaker, R & Captain Ashoke 2004). Description based on literature.

Diagnostic characters : Head broader than neck, depressed, eye with vertically elliptical pupil

which appears round; rostral large much broader than high, well visible from above; frontal large; 2 post oculars; temporals 1 + 1; 5 supralabials, 3rd touching the eye, 5th very long. Scales smooth 17 : 17 : 17; ventrals 202-215; subcaudals 62-74 paired; anal 2. Olivaceous or yellowish brown above and below with four longitudinal series of small black spots, 2 dorsolateral and 2 lateral; ventral edged with dark brown.

Distribution : Maharashtra (Koyna); Kerala; Karnataka.

Remarks : Endemic to India.

Genus 49 *Sibynophis* Fitzinger 1843

Key to the species of the genus *Sibynophis*

- Two anterior temporals; a yellow transverse bar between the eyes and two broad ones bordering the dark colour of the nape
..... *subpunctatus*
- Normally one anterior temporal; no transverse bars between the eyes; along oval patch of yellow on each side of the back of the head
..... *sagittarius*

*90. *Sibynophis sagittarius* (Cantor) Cantor's Black Headed Snake

1837. *Calamaria sagittaria* Cantor, *Proc. Zool. Soc. London*, 49.
1943. *Sibynophis sagittarius*, Smith, *Fauna Brit. India*, 3 : 280.
1948. *Polydontophis sagittarius*, *J. Bombay nat. Hist. Soc.*, 47 : 551.
2007. *Sibynophis sagittarius*, Sharma, *Fauna of India and adjacent countries (Serpentes)*, 3 : 205-206.

Material not available, known to occur in Maharashtra (Abdulali H. 1948) Description based on literature.

Diagnostic characters : Snout broader more rounded; supralabials 7 or 8, 3rd 4th 5th touching the eye; normally one large temporal; parietal touches both postoculars. Ventrals 197-238; subcaudals 54-70. Dorsal colouration is light brown with vertebral series of black dots; head and nape dark brown or black with a large elongate

oval patch of yellow on each side of the back of the head; lower parts yellow with a black dot on outer edge of ventral shield.

Distribution : Maharashtra (Mumbai, Kalyan-Abdulali 1948); North eastern India from Central provinces to Bangla Desh; Wall records it from West Bengal.

Remarks : Abdulali 1947 recorded the snake from Ambernath (Kalyan dist.), now it is in Mumbai, (length 11½ inch, 205 ventrals, 8 supralabials).

91. *Sibynophis subpunctatus* (Dum. and Bib) Dumeril's Black Headed Snake

1854. *Sibynophis subpunctatus* Dum. and Bibr. *Erp. Gen.*, 7 : 58.

Material examined : 1ex. Dhanora Forest Range, 8 km. from Garhchiroli, 18.3.2009, B.H.C.K. Murthy (Reg. No. 25834).

Measurements : Snout vent length : 192 mm; Tail length : 55 mm.

Diagnostic characters : Head slightly distinct from neck; eye large with round pupil; body cylindrical. Scale smooth in 17 rows throughout. Loreal small, longer than high; 9 rarely 8 supralabials 4th to 6th touching the eye; parietal touches both the eye. Light brown above, with a vertebral series of black dots; head and nape black; a yellow transverse bar between the eyes and two broad ones bordering the dark colour of the nape; the dark colour extends bisecting the yellow; yellow below, each ventral shield with a black dots near its outer border.

Distribution : India : Maharashtra; Goa; Karnataka; Kerala; Tamil Nadu.

Genus 50. *Sphalerosophis* Jan 1865

*92. *Sphalerosophis diadema* diadema (Schlegel)

1837. *Coluber diadema* Schlegel, *Phys. Serp.*, 2 : 148 (based on Russell) 1801 : 34.
1963. *Coluber diadema*, Deoras, *Snakes of India*, Pub. National Book Trust, India, p. 105-106.

1966. *Sphalerosophis diadema diadema*, Minton, *Bull. Am. Mus. Nat. Hist.*, 134 : 126.

Material not available, known to occur in Maharashtra, (Mumbai, Bandra, 1963 P.J. Deoras.) Description based on literature.

Diagnostic characters : Head distinct from neck, eyes are large with round pupil, rostral is as broad as long or slightly less deep than broad; prefrontals are broken into several shields, lower labials 12, 6th is very small, supraoculars are 10, preocular is one, post ocular 3; sub ocular shields are arranged in a series; scales 25-33 rows at the mid body.

Distribution : India : Maharashtra (Deoras, 1965); Gujrat; Jammu Kashmir; Uttar Pradesh; Hariyana; Rajasthan.

Remarks : The snake is usually not available in the State but P.J. Deoras recorded it in 1965 and according to him the snake collected from Bhandara district in 1963 is yellow above, pale yellow below and the dorsal surface with full of black marks.

Genus 51. *Xenochrophis* Gunther 1864

93. *Xenochrophis piscator* (Schneider) Checkerd Keelback

1799. *Hydrus piscator* Schneider, *Hist. Amph.*, P. 247.

1934. *Natrix piscator*, Pope, *Rept. China*, 120.

1965. *Xenochrophis piscator*, Malnate and Minton, *Proc. Acad. Nat. Sci. Philadelphia*, 7 : 19.

Material examined : 1ex. Pirengul, Poona, 5.7.1966., R.N. Chopra (Reg. No. 23037); 1ex., Bhorghat, Poona, 1.6.1971., purchased, (Reg. No. 23039); 1ex. Matheran, 1.16.1971, purchased (Reg. No. 23040); 1ex. 2. 12.1970, purchased (Reg. No. 23041); 1ex. Juvenile, Mandhava village, dist. Poona, 10.8.1962., M.M. Chatterjee (Reg. No. 21533).

Measurements : Snout vent length : 473 mm-637 mm; Tail length : 185 mm-279 mm.

Diagnostic characters : Head distinct from neck, snout bluntly pointed, rostral wider than high, nostrils between nasals. One large loreal; eye with round pupil. Internasals directly narrowed

anteriorly; 10 upperlabials, 4th and 5th touching eye; 19 scale rows at mid body, scale on lateral rows feebly smooth, those of median rows feebly keeled. Colour olive brown with 5 rows small spots varying in size, some times occupying most of the back. Head olive brown with two black streaks one below and one behind the eye.

Distribution : Throughout India.

Remarks : It is a common fresh water snake.

Subfamily ii. HOMALOPSINAE Boulenger, 1890

Key to the genera of subfamily HOMALOPSINAE

1. Nasal shields separated by the internasal *Gerardia*
- Nasal shields not separated 2
2. Parietals well developed, scales smooth *Enhydris*
- Parietals more or less broken up, scales keeled *Cerberus*

Genus 52. *Cerberus* Cuvier 1829

*94. *Cerberus rhynchops* Schneider Dog Faced Water Snake

1799. *Hydrus rhynchops* Schneider, *Hist. Amph.*, 1 : 246

1864. *Cerberus rhynchops*, Gunther, *Rept. Brit. Ind.*, P. 279.

1943. *Cerberus rhynchops*, Smith, *Fauna Brit. India*, 3 : 393-394.

Material not available, known to occur in Maharashtra (Smith 1943). Description based on literature.

Diagnostic characters : Head distinct from neck, eyes with elliptical pupil, snout is long but broadly rounded. Body scales are striated and strongly keeled, in 23-25 rarely in 21 rows, the lateral scales are slightly larger than median dorsal. Ventrals 122-159, anal divided; subcaudals 49-72 paired. Loreal higher than long extending well on the top of the snout; 1 pre and 1 post and 2 suboculars; 9-10 supralabials 5th and 6th below eye last 2 or 3 horizontally divided. Grey brown or olive with darker patterns of crossbars or spots

on the back. A black streak passes through eye on to the neck. Belly white or yellow with black checks or plain dark grey.

Distribution : Coasts and tidal rivers of India and Indo China from Mumbai to Cochin China; Ceylon; Andaman and Nicobar Islands; the Malay Peninsula and Archipelago.

Genus 53. *Enhydris* Sonni. and Latr. 1802

*95. *Enhydris sieboldii* (Schlegel)

Siebold's Smooth-Scaled Water Snake

1837. *Homalopsis sieboldii* Schlegel, *Phys. Serp.*, 2 : 349.

1943. *Enhydris sieboldi*, Smith, *Fauna Brit. India*, 3 : 389-390.

Material not available, known to occur in Maharashtra, (Smith, 1943). Description based on literature.

Diagnostic characters : Body stout; snout blunt, squarish; internasal longitudinally divided, touching or just separated from the loreal; frontal broader than the supraocular; loreal about as long as high. 7-8 supralabials 4th touching the eye, last I or 2 horizontally divided. Scales in 27 or 29 (rarely 33) rows at mid body; ventral 143-158; caudal 48-56. Colour is yellow or pale brown, head with three longitudinal stripes confluent between the eyes; body with a series of dark brown elliptical or rhomboidal transverse blotches separated by narrow interspaces; lower parts white checkered with black.

Distribution : India : Maharashtra (Mumbai); Uttar Pradesh; Karnataka; Rajasthan; West Bengal; Nagaland; Kerala.

Elsewhere : Bangladesh, Myanmar.

Genus 54. *Gerardia* Gray 1849

*96. *Gerardia prevostiana* (Eydoux and Gervais)

Glossy Marsh Snake

1832-1837. *Coluber (Homalopsis) prevostianus*, Eydoux and Gervais in *Guer. Mag. Zool. cl.*, 3 : 5, col. pl. 15

1890. *Gerardia prevostiana* Boulenger, *F.B.I.*, p. 379 and 1896 *Cat. Sn. Brit. Mus.*, 3 : 20.

Material not available, known to occur in Maharashtra (Mumbai). Description based on literature.

Diagnostic characters : Body cylindrical. Head very slightly broader than neck, eye small situated high on head, pupil vertical; nostril in the nasal; frontal much broader than supraocular; 1 pre, 1-2 postoculars; 7 or 8 supralabials, 4th touching the eye; parietals well developed; scales 17 : 17 : 15 (rarely 13) rows, smooth; Ventrals 144-157; anal divided; subcaudals 29-36 paired. Short tail has pointed tips. Colouration light or dark gray or deepbrown; usually uniformly coloured. upper lip, chin and 3 outer scale rows are white. Ventrals are whitish with dark margins, in many individuals, the ventrum is entirely gray.

Distribution : India : Coastal and tidal rivers of Maharashtra (Mumbai); Kerala; Gujrat; Andhra Pradesh; West Bengal.

Elsewhere : Sri Lanka; Myanmar; Bangladesh; Malaysia and Thailand.

Subfamily iii. ELACHISTODONTINAE

Boulenger 1896

Genus 55. *Elachistodon* Reinhardt 1863

97. *Elachistodon westermanni* Reinhardt
Indian Egg Eater

1875. *Elachistodon westermanni* Reinhardt I c.s., p. 206.

Material confiscated, collected from Amaravati, Maharashtra.

Measurements : Snout vent length : 484 mm.; tail length : 91 mm.

Diagnostic characters : Body moderately elongate, feebly compressed; head somewhat distinct from the neck; tail short with paired subcaudals; eye large with vertically elliptic pupils; nasal large; 1 small preocular; the loreal below it touching the eye; 7 supralabials; 2 pairs of genials; scales in 15 rows 19 on the neck; ventral 206; caudal 62; anal 1. Colour dark olive brown to blackish above, the vertebral scales yellowish white, except at their outer margins forming a light vertebral stripe extending the whole length

of the body; sides spotted with same colour; whitish below, the outer margins of the ventrals and adjacent rows of scales edged with brown; a yellow stripe along the top of the head from the snout to the angle of the mouth passing above the eye; an angular bar or spot on the nape; lips yellow.

Distribution : Northern Bengal (near Jalpaiguri); Bihar (Purnea); Uttar Pradesh (Dehradun); Gujrat; Maharashtra.

Remarks : It is an egg eater, the enlarged hypapophyses serve to break the shell, when the egg has been swallowed and the mouth is closed contents are then passed on to the stomach after which fragments of shell are regurgited. (Smith, 1943)

Family 20. ELAPIDAE Boie, 1827

Key to the genera of family ELAPIDAE

1. Maxillary bone not extending forwards beyond the paletine **Bungarus**
- Maxillary bone extending forwards beyond the paletine 2
2. Scales disposed obliquely posteriorly on the neck **Naja**
- Scales not disposed obliquely, in the same number of rows throughout the body **Calliophis**

Genus 56. *Bungarus* Daudin, 1803

Key to the species of the genus *Bungarus*

1. A prominent ridge down the back and tail, back with alternate bands of black and yellow **fasciatus**
- No ridge down the back 2
2. Back with narrow white cross bars arranged more or less distinctly in pairs, a series of vertebral spots **caeruleus**
- Back with narrow white crossbars or transverse series of small spots not arranged in pairs .. **sindanus walli**

98. *Bungarus caeruleus* (Schneider) Common Krait

1801. *Pseudoboa caeruleus* Schneider, *Hist. Amph.*, 2 : 284

1890. *Bungarus caeruleus*, Boulenger, *F.B.I.*, p. 388 (in part) and 1896 *Cat. Sn. Mus.*, 3 : 368.

Material examined : 1 ex. Patas village ca 16 Km. From Dhond town, dist. Poona, 13.6.1964, R.C. Sharma and party (Reg. No. 21642).

Measurements : Snout vent length : 235 mm; Tail length : 30 mm.

Diagnostic characters : Body cylindrical slightly tapers anteriorly; head is not distinct from neck, it is flat with a blunt snout. Scales round the body in 17 rows; 1pre, 2 post oculars; supralabials 7, 3rd 4th touching the eye. Dorsal colouration is jet black with series of vertebral spots on neck and anterior most part of the body followed by narrow transverse band or spots in pairs; ventrum is whitish.

Distribution : India : Maharashtra; Gujrat; West Bengal; Punjab; Hariyana; Uttar Pradesh; Madhya Pradesh; Orissa; Andhra Pradesh; Karnataka; Tamil Nadu.

99. *Bungarus fasciatus* (Schneider) Banded Krait

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

1803. *Bungarus fasciata*, Daudin, *Hist. Nat. Rept.*, 5 : 263.

1943. *Bungarus fasciatus*, Smith, *Fauna Brit. Ind.*, 3 : 411.

Material examined : 1 ex., Bombay, ?, Hoffkin Institute (Reg. No.20684).

Measurements : Snout vent length : 914 mm; Tail length : 100 mm.

Diagnostic characters : Head slightly broader than neck. A prominent ridge down the back and tail formed by the spinous process of the vertebrae; tail ending bluntly, usually more or less swollen at the tip. Scales in 15 rows throughout smooth; v; anal entire, subcaudals 36 entire; preocular 1, postoculars 2; temporals 1+2; supralabials 7 (3rd 4th touching eye. Equally spaced white and black bands. Head & nape with a large black mark bordered by yellow.

Distribution : India. Maharashtra (Bombay, Gadchiroli, Chandrapur) West Bengal; Bihar; Orissa; Assam; Nagaland; Arunachal Pradesh; and Urrar Pradesh.

Elsewhere : Bangladesh; Nepal; Bhutan, Myanmar, Thailand, Malaysia; China.

***100. *Bungarus sindanus* walli Wall
Wall's Sind Krait**

1906. *Bungarus walli* Wall., *J. Bombay nat. Hist. Soc.*, **17** : 608.pl

1997. *Bungerus sindanus walli* (Wall) Das Hamadryad, **22** : 44.

Known to occur in Maharashtra. Material not available, description based on literature.

Diagnostic characters : Scales in 21 or 19 : 19 or 17 : 17 rows. Ventral 196-208; caudal 50-55. Tail is not pointed Bluish black above with narrow white cross tranverse bars 65-80 in number formed by small spots.

Distribution : India : Maharashtra; Uttar Pradesh; West Bengal; Bihar; Orissa; Rajasthan; Gujrat.

Genus 57. *Calliophis* Gray 1834

Key to the species of the genus *Calliophis*

1. Supralabials 6; tail with two black rings one at the base; the other near the tip
.....*melanurus*
- Supralabials 7 no black ring in the tail region
.....*nigriscens*

***101. *Calliophis melanurus* (Shaw)
Slender Coral Snake**

1796. *Coluber melanurus* Shaw, *Genl. Zool.*, **3** : 552.

1943. *Callophis melanurus* Smith, *Fauna Brit. Ind.*, **3** : 420.

1990. *Calliophis melanurus*, Murthy, *Rec. Zool. Surv. Occ. Paper.*, **114** : 53.

Material not found, known to found in Maharashtra (Sharma, 2003).

Diagnostic characters : Body extremely slender, scales smooth, head blunt little broader

than neck; eye entirely lack scales in 13 : 13 : 13 rows. India ventrals 249-277, subcaudals males 33-37, females 24-27. Single preocular touch; 2 postoculars; temporals 1+1, Supralabials 6 (3rd & 4th touching the eye; 5th & 6th touching temporal, anal scale divided; subcaudals paired. Dorsal coloration light brown each scale is speckled with brown (India) & from resultant longitudinal lines on the complete dorsum. Tail with two black rings one at the base & another at the tip; ventrum is yellowish with red ring.

Distribution : Maharashtra, Karnatake, TamilNadu and West Bengal.

Elsewhere : Bangladesh, Sri Lanka.

Remark : This snake when disturbed will raise & coil tail to draw the attention away from tail.

***102. *Calliophis nigriscens* Gunther
Striped Coral Snake**

1862. *Callophis nigriscens* Gunther, *Ann. Mag. Nat. Hist.*, (3)**9** : 131.

1990. *Calliophis nigriscens*, Murthy, *Rec. zool. Surv. Occ. Paper*, **114** : 53-54.

Material not found, known to occur in Maharashtra (R. Whitaker & A. Captain 2004). Description based on literature.

Diagnostic characters : Body extremely long, small eye entirely black. Scales in 13 : 13 : 13 rows, smooth; ventrals 234-251 anal scale divided; Subcaudal males 35-44; females 32-36 paired. Single preocular touches nasal; postoculars 2, temporals 1, very long or 1+2; supralabials 7 (3rd & 4th touching eye), 5th to 7th touching temporals. Dorsal coloration is blackish, with a white oblique bar on the nape; dorsum is with 5 black stripes, a white stripe from behind the eye & reaches upto the angle of the mouth a white streak extends from preocular to the labials, a white spot in present on parietal shield; ventram is coral red.

Distribution : Maharashtra (Ambali, Panchgoni, Sinhagad, Khandala, Bhimshankar), Kerala; Tamil Nadu; Gujrat.

Remarks : Smallest of the Coral snake, Deoras collected it from mangalbhedha, Maharashtra in 1965.

Genus. 58 *Naja* Laurenti, 1768

103. *Naja naja* (Linn.)

Indian Spectacled Cobra

1758. *Coluber naja* Linn. Syst. Nat. 10 ed., p. 221.

1997. *Naja naja* Wuster, Hamadryad, 23 : 15-32.

Material examined : 1 ex. 31 miles from Baramati town; Diggi Village Ca 10 km from Poona. 24.06.1964. R.C. Sharma & Party (Reg. No. 21644); 1 ex Ponna 06.08.1971 Purchased (Reg. No. 23044).

Measurements : snout vent length : 775 mm to 1168 mm; tail length : 156 mm to 169 mm.

Diagnostic characters : head is quite wide, expanded & heavy and slightly distinct from neck, rostral shield well developed & quite wide; eyes are moderately large with round pupil. 7 upper labial, 3rd largest; 8 lower labial 4th * 5th largest with a small triangular scale (CUNEATE) scale between them Scales 25-35 across the neck, 21-25 at the middle of the body, 17 or 15 in front of the vent. Ventral shields 176-200 subcaudal shields are 48-75. Ventral side of the hood is with 2-4 irregular, dark, transverse bars; generally there is a spectacle mark on dorsal aspect of hood. Dorsal colouration is uniformly jet black, dark olive or dark brown ventrum is pale gray to butter yellow.

Distribution : India : Maharashtra; Gujrat; Kashmir; Punjab Rajasthan; Hariyana; Bihar; West Bengal Orissa, Madhya Pradesh; Andhra Pradesh; Goa; Karnataka; Tamil Nadu.

Family 21 HYDROPHIDAE Boie 1827

Key to the genera of family HYDROPHIDAE

1. Mental elongate, partly hidden in a groove in the symphysis *Enhydrina*
- Mental not hidden in a groove 2
2. Body short, stout covered with squarish or hexagonal, juxtaposed scales 3
- Body elongate, scales are not squarish or hexagonal *Hydrophis*
3. Ventral divided by median longitudinal furrow or indistinguishable from the adjacent scales *Pelamis*

- Ventral entire and not divided by median longitudinal furrow *Lapemis*

Genus 59. *Enhydrina* Gray 1849

*104. *Enhydrina schistosa* (Daudin)

Hook-nosed Sea Snake

1801. *Hydrophis schistosus* Daudin, Hist. Nat. Rept., 7 : 386.

1890. *Enhydrina valakadien*, Boulenger, F.B.I., 406, fig 1.

1924. *Enhydrina valakadien*, Prater, J. Bombay. nat. Hist. Soc., 30 : 174.

1926. *Enhydrina schistosa*, Smith, Monogr. Sea Sn., P. 36.

Material not available, known to occur in Maharashtra (Prater 1924). Description based on literature.

Diagnostic characters : Rostral higher than broad, eye moderate; prefrontals much narrowed anteriorly, frontal small, shorter than its distance from the end of the snout; 1 pre and 1, sometimes 2 post oculars; 7-8 supralabials, the 3rd or 4th or sometimes 4th only touching the eye, the last 2 or 3 very small; mental narrow partly hidden in a groove; 5 infralabials in contact with the genials. 40-52 scale rows on the neck in males, 42-55 in females, 49-60 on the body in males, 51-66 in females. Ventrals 239-322 (354). The young are grey or bluish-grey above whitish below, with dark grey or black annuli broadest dorsally. These markings usually disappear in the adult.

Distribution : India : Maharashtra (Prater, 1924); Gujrat; coastal waters of Goa; Tamil Nadu; Orissa; West Bengal.

Genus 60. *Hydrophis* Laterille 1802

Key to the species of the genus *Hydrophis*

1. Parietals not touching the postoculars *caerulescens*
- Parietals touching the postoculars 2
2. One large anterior temporal 3
- Two large anterior temporals 5
3. 19-23 scale rows on the neck *obscurus*
- 25-33 scale rows on the neck 4

4. Head small, body long and slender anteriorly; compressed posteriorly *fasciatus*
- Head moderate, body elongate and not slender anteriorly, its greatest diameter posteriorly being twice *spiralis*
5. A series of small scales at the oral margin after the 2nd or 3rd infralabial
..... *cyanocinctus*
- Usually a small scale at the oral margin between 3rd and 4th infralabial
..... *mammillaries*

***105. *Hydrophis caerulescens* (Shaw)**
Malacca Sea Snake

1802. *Hydrophis caerulescens* Shaw, *Genl. Zool.*, **3** : 361.

1943. *Hydrophis caerulescens*, Smith, *Fauna Brit. India*, **3** : 463.

Material not available, known to occur in Maharashtra (Smith, 1943) Description based upon literature.

Diagnostic characters : Head small, eye entirely black; body not very slender anteriorly, compressed posteriorly. Tail flattened; Supralabials 7-8 (2nd touching prefrontal 3rd & 4th touching eye. Preocular 1; postoculars 1 or 2; anterior temporals 2 or 3, 14-18 Maxillary teeth behind poison fangs. Scales 31-43 in neck; 38-54 rows on the body (increase of 6-14); Ventrals 253-334. Dorsal colouration is bluish grey with 40-60 broad bands. Ventrals 253-334. Ventrum is whitish with yellow tinge.

Distribution : India : Between Mumbai and Karwar on the west coast of India and from Chennai north to the north of Ganges on the east coast.

Elsewhere : Pakistan; Bangladesh; China; Myanmar; Malaysia; Thailand to Australia.

***106. *Hydrophis cyanocinctus* Daudin**
Annulated Sea Snake

1803. *Hydrophis cyanocinctus* Daudin, *Hist. Nat. Rept.*, **7** : 383.

1924. *Leioselasma cyanocinctus*, Prater, *J. Bombay nat. Hist. Soc.*, **30** : 173.

1926. *Hydrophis cyanocinctus*, Smith, *Mongr. Sea Sn.*, P. 56.

Material not available, known to occur in Maharashtra (Prater 1924). Description based on literature.

Diagnostic characters : Head moderate, body elongate, not slender anteriorly, compressed posteriorly, eye small in the adult. 1 pre, 2 postoculars; 7-8 supralabials, the 2nd in contact with the prefrontal, the 3rd 4th 5th or only two touching the eye. A series of small scales at the oral margin after the 2nd or 3rd infralabial. (25) 27-35 scale rows on the neck; 37-47 on the thickest part of the body (increase 8-14). Ventrals 290-300; preanals enlarged.

Distribution : From the Persian Gulf to Japan and Indo Australian Archipelago. Common in the Persian Gulf and common on the west coast of Indian Peninsula.

***107. *Hydrophis fasciatus* (Schneider)**

1799. *Hydrophis fasciatus* Schneider, *Hist. Amphib.*, **1** : 240.

1924. *Microcephalophis fasciatus*, Prater, *J. Bombay nat. Hist. Soc.*, **30** : 173.

1926. *Hydrophis fasciatus*, Smith, *Monogr. Sea Sn.*, P. 94.

Material not available, Known to occur in Maharashtra (Prater 1924). Description based on literature.

Diagnostic characters : Head very small, body long and slender anteriorly, much compressed posteriorly; 1 pre and 1 rarely 2 post oculars; a single large anterior temporal succeeded by another scale as large or larger, a series of from 2 to 4 small scales behind the parietals and between the posterior temporals; 6 or 7 or rarely 5 supralabials, the 2nd in contact with the prefrontal, the 3rd and 4th touching the eye, the last 1 or 2 very small. 25-33 scale rows on the neck, 39-58 on the body; ventral 323-514. Head, neck and anterior part of the body shiny black to dark olive, with pale yellowish oval spots on the sides, posteriorly grayish above, whitish below with dark rhomboidal spots.

Distribution : Maharashtra (Prater, 1924) The coasts of India and Myanmar.

***108. *Hydrophis gracilis* (Shaw)**

1802. *Hydrus gracilis* Shaw, *Genl. Zool.*, 3 : 560.
 1924. *Microcephalophis gracilis*, Prater, *J. Bombay nat. Hist. Soc.*, 30 : 173.
 1926. *Mirocephalophis gracilis*, Smith, *Monogr. Sea Sn.*, P. 121.
 1999. *Hydrophis gracilis*, Das, *J. Bombay nat. Hist. Soc.*, 100 : 483.

Material not available, known to occur in Maharashtra (Prater, 1924). Description based on literature.

Diagnostic characters : Head small, the body is very long and most slender anteriorly and extremely compressed posteriorly; snout distinctly projects out beyond the lower jaw; 1 pre, 1 post ocular, 1 anterior temporal, followed by another scale as large or larger; 6 supralabials; 4 infralabials in contact with the genials. 17-23 scale rows on the neck, 29-43 on the body (increase 12-16). The dorsal colouration of young is blackish with a series of whitish dorsal bands or oval spots on lateral aspects on the slender portion of the body; in adult these markings become dull.

Distribution : India : both western coasts and eastern coasts of India. Elsewhere : From Persian Gulf to Southern China and the coast of Australia; gulf of Thailand; from the coastal areas of Patani and Singgora; in Southern China from the straits Hainan and Macao.

***109. *Hydrophis mamillaris* Daudin**

1873. *Hydrophis mamillaries* Daudin, *Hist. Nat. Rept.*, 7 : 340.
 1926. *Hydrophis mamillaris*, Smith, *Monogr. Sea Sn.*, P. 88.

Material not available, known to occur in Maharashtra (Smith 1943). Description based on literature.

Diagnostic characters : Head small, body slender anteriorly, much compressed posteriorly, eye moderate, 3rd & 4th touching the eye, last three very small 4infralabnials incontact with the genials, usually a small scale at the oral margin between 3rd & 4th infralabnial, 1 preoculars, 2 postoculars, 25-29 scale rows on the neck, 35-43

on the body (increase 10-15). Ventral 302-390). Ventral 302-390. Yellowish or grayish; with from 44 to 55 broad black band on the body. Head entirely black or with a yellow streak on the temporal region.

Distribution : Maharashtra (Mumbai) and other coasts of India.

***110. *Hydrophis obscurus* Daudin**

1803. *Hydrophis obscura* Daudin, *Hist. Nat. Rept.*, 7 : 375.
 1924. *Dolichodira diadema*, Prater, *J. Bombay nat. Hist. Soc.*, 30 : 173.
 1926. *Hydrophis obscurus*, Smith, *Monogro. Sea Sn.*, P. 66.

Material not available, known to occur in Maharashtra (Prater 1924). Description based on literature.

Diagnostic characters : Head small, eye moderate; frontal shorter than its distance from the rostral; a single large temporal; 6-7 supralabials. 19-23 scale rows on the neck, 29-37 on the body (increase by 8-14) Ventrals 300-338, preanals moderately large. The young are black with 35-55 whitish dorsal bands which on the hinder part of the body becomes complete. Head with a curved yellow mark above. In old individuals the back is of uniform grayish or bluish, lower side yellowish.

Distribution : Maharashtra (Mumbai-Prater 1924); from the coast of India to the Myanmar coast.

***111 *Hydrophis spiralis* (Shaw)**

1802. *Hydrus spiralis* Shaw, *Gen. Zool.*, 3 : 564.
 1924. *Leioselosma spiralis*, Prater, *J. Bombay nat. Hist. Soc.*, 30 : 174.
 1926. *Hydrrophis spiralis*, Smith, *Mongr. Sea Sn.*, P. 48.

Material not available, known to occur in Maharashtra (Prater, 1924). Description based on literature.

Diagnostic characters : Head moderate body elongate, not slender anteriorly, eye small in the adult; frontal as long as its distance from the rostral or the end of the snout; 1 pre and rarely 2 post

oculars; a single large temporal often decending to the labial margin; 6-8 supralabials, the 2nd in contact with the prefrontal, the 3rd 4th and 5th or only two of them touching the eye; 4 infralabials; usually a small scale at the oral margin after the 3rd 4th infralabial; 33-38 scales on the thickest part of the body; ventrals 205-362. Dorsal colouration is yellowish or yellowish green, golden yellow; dorsal scales with narrow black margin.

Distribution : India : Maharashtra (Prater 1924); Gujrat; all coasts of India.

Remarks : The snake is most pugnacious and bites readily.

Genus 61. *Lapemis* Gray 1835

*112. *Lapemis curtus* Shaw Short Sea Snake

1802. *Hydrus curtus* shaw, *Gen. Zool.*, 3 : 582.

1924. *Lapemis curtus*, Smith, *Mongr. Sea. Sn.*, P. 112.

Material not available, known to occur in Maharashtra (Sharma, 2003). Description based on literature.

Diagnostic characters : head large, body short & stout, 7 supralabials, the 2nd normally incontact with the prefrontal, the 3rd & 4th touching the eye, 3-4 infralabial incontact with 3-4 genials. Parietal broken into small shields. 28-31 scale rown on the neck in males, 31-35 in females; 33-43 in females. The scales are hexagonal or squarish, Ventral 154-168 in males, 160-194 in females light or dark olive or grayish above whitish below with from 45-55 narrow dark bands.

Distribution : India : Maharashtra; Goa; Tamil Nadu; Orissa; West Bengal.

Elsewhere : Persian Gulf and South East Asia to Asutralia; New Guinea and Nes Colidonia.

Remarks : It is common in West Coast of India.

Genus 62. *Pelamis* Daudin 1803

*113. *Pelamis platurus* (Linn) Black And Yellow Sea Snake

1766. *Anguis platurus* Linn., *Syst. Nat. ed.*, 12 : 391.

1924. *Hydrus platurus*, Prater, *J. Bombay nat. Hist. Soc.*, 30 : 172.

1926. *Pelamis platurus*, Smith, *Monogr. Sea Sn.*, P. 116.

Material not available, known to occur in Maharashtra (Prater 1924). Description based on literature.

Diagnostic characters : Head narrow, snout elongate; body much compressed; frontal shield large; preoculars 1 or 2; postoculars 2 or 3; supralabials 7 or 8, 2nd in contact with the prefrontal, 4th and 5th are below the eye generally separated from it by suboculars, 49-67 scale rows on the thickest part of the body. Ventrals 264-406. Dorsal colouration is extremely variable, this may be black or lemon yellow; with black dorsal stripe; ventrum, top of the head are of the same colouration, chin is pigmented dark; tail is with black and white bars or vermiculations.

Distribution : India : Maharashtra (Prater 1924) ; Coastal lines of India.

Family 22. VIPERIDAE Bonaparte, 1840

Key to the subfamilies of family VIPERIDAE

1. Without a deep depression, the loreal pit is between the eye and the nostril, maxillary bone not hollowed out VIPERINAE
2. With a loreal pit on each side of the snout formed by the hollowing out of the maxillary bone CROTALINAE

Subfamily i. VIPERINAE

Key to the genera of subfamily VIPERINAE

1. Subcaudals single; keels of lateral scale serrated *Echis*
- Subcaudals paired; keels of lateral scales without serration *Daboia*

Genus 63. *Daboia* Gray 1842

114. *Daboia russelli* (Shaw and Nodder)

1796. *Coluber russelli*, Shaw and Nodder, *Nat. Misc.*, 8pl. p. 291

1870. *Daboia russelli*, Fayrer, *Thanatoph. Ind. pl.*, 11.

1890. *Vipera russelli*, Boulenger, *F.B.I.*, P. 420.

1943. *Vipera russelli*, Smith, *Fauna Brit. India*, 3 : 482-485.

1997. *Daboia russelli*, Wuster, *Hamadryad*, 23(1) : 33-40.

Material examined : 1ex, Poona, 21.7.1969 (Reg. No. 23255)

Measurements : Snout vent length : 744 mm; Tail length : 210 mm.

Diagnostic characters : Head much long, wider than neck, snout bluntly pointed and rostral about twice as high as wide; nostril large crescent shaped in a large nasal shield; supra ocular entire; 11 upper labials separated by three rows of scales; 14 lower labials. Head covered with small scales without any shield; scales strongly keeled. Body stout and dorsoventrally flattened; dorsal scales in straight rows. Three longitudinal rows of dark rings with black edges forming chain like pattern on the back sides. Head with dark patch. A dark stripe from eye to labials.

Distribution : India : Throughout India.

Elsewhere : Pakistan; Nepal; Bhutan; Bangladesh; Sri Lanka and parts of South East Asia (Myanmar; Thailand).

Genus 64. *Echis* Merrem 1820

115. *Echis carinatus* Schneider
Saw-scaled Viper

1801. *Pseudoboa carinata* Schneider, *Hist. Amphib.*, 2 : 285.

1896. *Echis carinatus*, Boulenger, *Cat. Sn. Brit. Mus.*, 3 : 505.

Material examined : 1ex. Bewahum village, Poona, 11.7.1961, M.M. Chatterjee (Reg. No. 21537); 2ex. Veetal Hill, Poona, 27.6.1961, M.M. Chatterjee (Reg. No. 21538); 1ex. Diggi village, dist. Poona; 24.5.1964, R.C. Sharma (Reg. No. 23645); 3ex. Narayangaon town, Poona; 16.6.1964, R.C. Sharma (Reg. No. 21646); 1ex. Ranjee village, Poona, 7.7.1964, R.N. Chopra (Reg. No. 23674).

Measurements : Snout vent length : 123 mm to 371 mm.; Tail length : 13 mm. to 35 mm.

Diagnostic characters : Head short, distinctly wider than neck. Snout blunt, rostral about twice as wide as high; nostril in divided nasal shield; eye surrounded by 10-15 small scales exclusive of the supraocular; 3-4 scales between eye and nasal; temporal scales small keeled except the lowermost row 10-12 upperlabials, 4th largest. Scales in 25-29, 27-37, 21-27 rows the outermost row the largest, the oblique in 4-5 rows. Colour brownish with dark brown 'V' shaped flank mark enclosing a dark area connecting to each other forming a wavy flank line. Ventral whitish.

Distribution : India : Maharashtra; Karnataka; Tamil Nadu; Rajasthan; Andhra Pradesh; Bihar; Jammu Kashmir.

Elsewhere : Pakistan; Sri Lanka.

Remarks : The snake is most pugnacious and ill tempered.

Subfamily ii. CROTALINAE

Genus 65. *Trimeresurus* Lacepede 1804

Key to the species of the genus *Trimeresurus*

- Supraoculars broad or their margins indented by adjacent scales*malabaricus*
- Supraoculars narrow and not divided*gramineus*

*116. *Trimeresurus gramineus* (Shaw)
Bamboo Pitviper

1802. *Coluber gramineus*, Shaw, *Genl. Zool.*, 3 : 420.

1943. *Trimeresurus gramineus*, Smith, *Fauna Brit. India*, 3 : 515 -516.

Material not found, Known to occur in Maharashtra (D. Abreau, 1933).

Description based on literature.

Diagnostic characters : Head is quite distinct from neck. Snout two times as long as the diameter of the eye. Scales of the body 21 : 21 : 15. Tail prehensile. Dorsal coloration is yellowish green uniform or in many individuals with small dark brown spots. Ventrals are white with a green tinge, upper lip is whitish.

Distribution : Maharashtra (Nagpur); Peninsular India.

117. *Trimeresurus malabaricus* (Jerdon)

1854. *Trigonocephalus malabaricus*, Jerdon, *J. Asiat. Soc. Bengal*, 22 : 523.

1943. *Trimeresurus malabaricus*, Smith, *Fauna Brit. India*, 3 : 513.

Material not available, known to occur in Maharashtra (Smith 1943). Description based upon literature.

Diagnostic characters : Head is covered with small, unequal strongly imbricate scales. Supraoculars divided into two or three pieces, with 7-9 scales on a line between them. Supralabials 8-10, the first completely separate from nasal. An elongate subocular present, separated from the supralabials by a series of small scales. Scales in 21 or 23 : 21 (rarely 19) : 15 or 17. Ventrals 136-159. Tail prehensile; subcaudals 44-63 paired. Typically green, olive or brown back with prominent brown / black spots that may join to form faint / bold zigzag pattern. There may be scattered yellow spots along sides. Dark streaks sometimes present behind the eye. Underside pale green or greenish white with scattered brown yellow markings. Tail black and yellow mosaic pattern. Most forms have a pair of kidney shaped marks on back, which may obscure in darker coloured form. Young pale/dark brown with indistinct darker brown pattern on back and tail tip.

Distribution : Western Ghats from Maharashtra (Mahabaleshwar) south to Kanyakumari in suitably wet and cool forests at altitudes varying from 610-2134 m.

Remarks : A hill species.

SUMMARY

Reptile Fauna of Maharashtra based on the collections made during the year 2007 - 2009, comprising districts Amravati, Wardha, Nagpur, Bhandara, Gondia, Akola, Yavatmal, Chandrapur, Garhchiroli and also on earlier collections made

by Dr. R.C. Sharma from Poona, Kolhapur, Ahmednagar, Kolaba districts. Beside this, collections from other districts like Mumbai, Satara, Ratnagiri have been taken in to account. Collections made from Berar (now Vidharba) in 1870 also included. 117 species with two subspecies are described in this paper, comprising one crocodile species, 11 turtles and tortoises, 35 species of lizards and 71 species of snakes. Some confiscated specimens collected from Amravati also described here which include *Elachistodon westermanni* Reinhardt, *Lycodon striatus* (Shaw) and *Eublepharus fuscus* Borner. All the 117 species have been dealt with in details regarding diagnostic characters of the species; keys of the relevant genera and species and their families; colour, measurements, remarks; and material examined (which are available) have been given. Updated synonyms of families and genera are also mentioned in the paper.

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AMPHIBIA

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INTRODUCTION

The present study is a compilation of the known species from published literature (see Reference section) with a few additions based on our own recent surveys (2008 to 2011). The notes are based on our surveys carried out during the last few years (1990 to 2011) in the various parts of the state. The scientific names of most of the species are as per the recent on-line publication of ZSI, Kolkata, by Dinesh *et al.*, 2011. The only exception is that we have treated *Duttaphrynus* as a subgenus of the genus *Bufo* following Teynié *et al.*, 2010.

Amphibian fauna of Maharashtra State is represented by 53 species accounting about 15.5% of the total number of species (336 including recently described 9 species of *Raorchestes*, one species of *Polypedates* and 12 species of *Nyctibatrachus* from Western Ghats) found in India. These belong to 2 orders (out of 3 Indian orders), 9 families (out of 14 Indian families) and 22 genera (out of 54 Indian genera). We have discussed in detail, the distribution, status, threats as well as conservation issues of various species, in our previous publications (Ghate and Padhye, 1996; Padhye and Ghate, 2002; Padhye *et al.*, 2002 and Dahanukar & Padhye, 2005).

Surveys of Western Ghats are done more frequently by amphibian experts as well as amateur herpetologists. However, herpetofaunal surveys of arid and dry areas are also equally important but

lacking. Forested areas such as Toranmal, Melghat, Chikhaldara, Pench, Nagzira, Navegaon, Tadoba etc. of the northern and eastern parts of Maharashtra State would be of immense value. These regions are not yet been fully explored for the amphibian fauna.

Not only Western Ghats, but also the other parts of the State are suffering from habitat loss which is a major threat to the amphibian populations. A new possible threat that is coming up is the habitat loss by erection of wind mills personal observations (ADP data being published separately). Species such as *Xanthophryne koynayensis*, *Xanthophryne tigrinus* as well as a newly described species *Nyctibatrachus danieli*, which are inhabitants of the plateaus, are subjected to this new threat. Currently, plateaus near Patan, which are inhabited by *Xanthophryne koynayensis*, *Nyctibatrachus danieli* and *Indotyphlus maharashtraensis* are used for erecting the windmills. Further, during our recent surveys, we have also noticed the amphibian limb deformities from different areas in at least 6 different species. This may be due to some parasite attack, as is known from elsewhere in the world (Johnson and Sutherland 2003), that is considered as an emerging threat to amphibians (Kiesecker *et al.*, 2004). This could also be due to chemicals / pollutants that cause abnormal development, as there is ample literature published on this subject. Recently, Gurushankara *et al.*, (2007) have studied morphological abnormalities in natural populations

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of common frogs inhabiting agro-ecosystems of central Western Ghats. On this background, detailed study of these emerging threats to amphibian population is urgently required.

SYSTEMATIC LIST

Class AMPHIBIA Gray

Order ANURA Fischer von Waldheim

Family BUFONIDAE Gray

1. *Bufo (Duttaphrynus) beddomii* Gunther, 1876

Known by only one record from the collection of WRC-ZSI (collected on 19th Sept. 1979 from Wasumbe Tank, Vita). Recently (in August 2011) we studied this specimen and compared it with the other specimens of the same species, in the collection of WRC-ZSI, collected from Goorangoodi, South Kannada district of Karnataka State, to confirm the identification. Further, we tried to confirm the presence of this species from the same locality on 9th Sept. 2011, however, no specimens of the species could be observed.

2. *Bufo (Duttaphrynus) melanostictus* Schneider, 1799

Common toad found all over the state. Breeds even during the day time.

3. *Bufo (Duttaphrynus) microtypanum* Boulenger, 1882

Not very commonly seen, not seen by us in past 10 years of our study nor is any photographic evidence of its presence in the state available.

4. *Bufo (Duttaphrynus) parietalis* Boulenger, 1882

Not very commonly seen, not seen by us in past 10 years of our study nor is any photographic evidence of its presence in the state available.

5. *Bufo (Duttaphrynus) scaber* Schneider, 1799

Earlier not known from the state however it was recently sighted in Nasik.

6. *Bufo (Duttaphrynus) stomaticus* Lutken, 1864

Not very common, however it is sometimes seen even on the outskirts of Pune city.

7. *Pedostibes tuberculosus* Gunther 1876

Known from only one locality in the state—Koyana WLS (Dahanukar *et al.*, 2004). However there is no further report of this species, either from Koyana WLS or from any where else from Maharashtra state.

8. *Xanthophryne koynayensis* (Soman, 1963)

Common in the type locality—Humbrali village near Koynanagar.

9. *Xanthophryne tigrinus* Biju, Bocxlaer, Giri, Loader and Bossuyt, 2009

Common in the type locality – Amboli.

Family DICROGLOSSIDAE Anderson

10. *Euphlyctis cyanophlyctis* (Schneider, 1799)

Common, found all over the state. Usual habitat is ponds, lakes, ephemeral freshwater pools, pools on the sides of the river, etc.

11. *Euphlyctis hexadactylus* (Lesson, 1834)

Not known from any locality in recent years. Known from only past literature.

12. *Fejervarya limnocharis* (Gravenhorst, 1829)

Known earlier as *Rana limnocharis*. According to Frost, 2011, “At one time or another almost all populations now considered to be members of *Fejervarya* were construed to be of this species. On the basis of molecular and morphological studies the populations seemingly strictly associated with the name *Fejervarya limnocharis* are in Indonesia, Malaysia, Thailand, Laos, and Cambodia, and populations from India, Bangladesh, Japan and elsewhere associated with this name are currently unnamed species.” Therefore there may be some undescribed species that are wrongly named as *Fejervarya limnocharis*. Recently, Kuramoto *et al.*, 2007, described four new species belonging to the genus *Fejervarya* from central Western Ghats while Meenakshi *et al.*, 2010, tried to reveal the molecular resolution of four species of *Fejervarya* from Western Ghats. Thus, a detailed survey and DNA studies from the state may change the species profile under the genus from the state.

13. *Fejervarya brevipalmata* (Peters, 1871)

Known from only few localities, common in Koyna WLS and nearby areas as well as Amboli.

14. *Fejervarya keralensis* (Dubois, 1981)

A species very similar to *F. keralensis* is found in some localities like Bhimashankar, Tamhini, Khandala, Amboli etc. A few specimens from Tamhini were identified as *F. keralensis* by Dr. Sushil Dutta on the basis of which Padhye & Ghate, 2002 and Padhye *et al.*, 2002 have mentioned its presence in the state. However it needs to be confirmed by recent techniques of DNA analysis.

15. *Fejervarya nilagirica* (Jerdon, 1854)

Very rare. A male and female was found from Tamhini area 10 years back (Padhye & Ghate, 2002 and Padhye *et al.*, 2002). A female was found in the same locality in September 2011. Also found in Nadhavde village, Sindhudurga district in July 2009.

16. *Fejervarya rufescens* (Jerdon, 1854)

Common in some pockets found in core parts of Western Ghats at places such as Tamhini, Khandala, Koyna, Amboli etc.

17. *Fejervarya syhadrensis* (Annandale, 1919)

Common, found all over the state.

18. *Hoplobatrachus crassus* (Jerdon, 1854)

Known from literature but not a very distinguishable species from *Hoplobatrachus tigerinus*. In fact Boulenger (1920) had treated this as variety and this needs to be confirmed by DNA studies.

19. *Hoplobatrachus tigerinus* (Daudin, 1802)

Common, found all over the state. Shows cannibalism.

20. *Minervarya sahyadris* Dubois, Ohler and Biju, 2001

Known from Amboli, Common. Also seen in Village Pendur, Sindhudurga District (2009) and Village Velneshwar, Ratnagiri District (2010). Not known from any other localities.

21. *Sphaerotheca breviceps* (Schneider, 1799)

Common, found all over the state. Interesting burrowing frog. Shows cannibalism in captivity.

22. *Sphaerotheca dobsonii* (Boulenger, 1882)

Not very Common, found in some pockets in core parts of Western Ghats at places such as Tamhini, Khandala, Koyna, Amboli etc.

23. *Sphaerotheca rolandae* (Dubois, 1983)

Not very Common, found in some pockets in eastern parts of the state such as Mahoor, Tadoba, etc. Distinguished on the basis of a very minor character – namely presence of tarso-metatarsal tubercle and needs DNA confirmation.

Family MICROHYLIDAE Gunther

24. *Kaloula taprobanica* Parker, 1934

Was not known from the state earlier. Now reported from Navegaon Bandh—a photographic record was made in 2010 by Mr. Anirudh Chaoji, Director, 'Pugmarks' an NGO from Pune.

25. *Microhyla ornata* (Dumeril and Bibron, 1841)

Common, found all over the state.

26. *Microhyla rubra* (Jerdon, 1854)

Known from Wasumbe Tank, Vita from only one record from the collection of WRC-ZSI (19th Sept. 1979). Recently (in August 2011) we studied this specimen to confirm the identification. Further, we tried to confirm the presence of this species from the same locality on 9th Sept. 2011, however, no specimens of the species could be observed.

27. *Ramanella montana* (Jerdon, 1854)

Not very Common, found in some pockets in core parts of Western Ghats at places such as Tamhini, Khandala, Koyna, Amboli etc.

28. *Ramanella variegata* (Stoliczka, 1872).

Presence of this species from Maharashtra is evident from BNHS records and a recent record from Navegaon Bandh WLS—a photographic record was made in 2010 by Mr. Anirudh Chaoji.

29. *Uperodon globulosus* (Gunther, 1864)

Common, found all over the state. Another interesting burrowing frog.

30. *Uperodon systoma* (Schneider, 1799)

Not very common. Recently reported from eastern parts of Pune District and western parts of Solapur District—Photographic record was by Amod Zambre a student of Abasaheb Garware College.

Family NYCTIBATRACHIDAE Blommers-Schlosser

31. *Nyctibatrachus humayuni* Bhaduri and Kripalani, 1955

Common in the Western Ghats streams in the state.

32. *Nyctibatrachus major* Boulenger, 1882

A few specimens from Tamhini were identified as *Nyctibatrachus major* by Dr. M.S. Ravichandran on the basis of which Padhye & Ghate, 2002 and Padhye *et al.*, 2002 have mentioned its presence in the state. However it needs to be confirmed by recent techniques of DNA analysis.

33. *Nyctibatrachus petraeus* Das and Kunte, 2005

Common in Amboli.

34. *Nyctibatrachus danieli* Biju, Bocxlaer, Mahony, Dinesh, Radhakrishnan, Zachariah, Giri & Bossuyt, 2011

Known from two localities—Amboli and Village Humbrali, near Koynanagar.

Family RANIDAE Rafinesque

35. *Clinotarsus curtipes* (Jerdon, 1854)

Common, but known only from Amboli.

36. *Hylarana aurantiaca* (Boulenger, 1904).

Known only from one locality Thoseghar, Near Satara (Padhye & Ghate, 2002). A population still exists in this small pocket, confirmed recently in Sept. 2011.

37. *Hylarana malabarica* (Tschudi, 1838)

Common. Found all over the western parts of the state. Also Known from Tadoba (Padhye & Ghate, 2002).

38. *Hylarana temporalis* (Gunther, 1864)

Common in Amboli, Koyna WLS and Mahabaleshwar. Observed near the forest campsite at Vasota Fort in 2008 and on the banks of Ozarde waterfall near village Navja as well as a waterfall near Village Humbrali – Koynanagar in September 2011.

Family RANIXALIDAE Dubois

39. *Indirana beddomii* (Gunther, 1876)

Common, found in Western Ghats at places such as Tamhini, Khandala, Koyna, Amboli, Bhimashankar, Ghatghar, etc.

40. *Indirana leithii* (Boulenger, 1888)

Common, found in Western Ghats at places such as Tamhini, Khandala, Koyna, Amboli, Bhimashankar, Ghatghar, etc.

41. *Indirana phrynoderma* (Boulenger, 1882)

Single specimen from Tamhini was identified as *Indirana phrynoderma* by Dr. Sushil Dutta on the basis of which Padhye & Ghate, 2002 and Padhye *et al.*, 2002 have mentioned its presence in the state. However it needs to be confirmed by recent techniques of DNA analysis.

Family RHACOPHORIDAE Hoffman

42. *Polypedates leucomystax* (Gravenhorst, 1829)

Known only from the literature. This species was included in the list of Amphibia of Maharashtra as *Rhacophorus leucomystax* by Ravichandran and Pillai (1990).

43. *Polypedates maculatus* (Gray, 1830)

Once Common, found all over the Western Ghats and the eastern parts of the state such as Tadoba. Declining very fast due to deforestation.

44. *Pseudophilautus amboli* (Biju and Bossuyt, 2009)

Described from Amboli and Amba. (Earlier known as *Philautus leucorhinus*). Known from many parts of the state. In our surveys in 2009, it was found in Village Belne and Pendur, Sindudurga district, Village Panchanadi, near Dapoli, and village Velneshvar, Ratnagiri district as well as from Koynanagar in September 2011.

45. *Raorchestes bombayensis* (Annandale, 1919)

Common, found all over the Western Ghats of the state.

46. *Raorchestes glandulosus* (Jerdon, 1854)

A few specimen from Tamhini were identified as *Philautus glandulosus* by Dr. Sushil Dutta on the basis of which Padhye & Ghate, 2002 and Padhye *et al.*, 2002 have mentioned its presence in the state. However it needs to be confirmed by recent techniques of DNA analysis.

47. *Raorchestes tuberochumerus* (Kuramoto and Joshy, 2003)

Known from Amboli as well as Koyna (WLS). A photographic record of its presence from Amboli by Mr. Rohan Pandit, a student of Abasaheb Garware College was further confirmed during our surveys in 2009. During our surveys in 2002 it was observed in Thoseghar near Satara. This was confirmed during the recent surveys in September 2011. It was also observed near the forest campsite at Vasota Fort in 2008.

Order GYMNOPIHIONA Muller

Family CAECILIIDAE Rafinesque

48. *Gegeneophis danieli* Giri, Wilkinson and Gower, 2003

Known from the type locality near Amboli.

49. *Gegeneophis seshachari* Ravichandran, Gower and Wilkinson, 2003

Known only from the type locality Dorle Village, Ratnagiri District the type specimen was collected by P.W. Soman in 1967. The species was rediscovered in 2003 by Varad Giri and others at the same locality.

50. *Indotyphlus battersbyi* Taylor, 1960

Known from the type locality and nearby areas.

51. *Indotyphlus maharashtraensis* Giri, Gower and Wilkinson, 2004

Known only from the type locality.

Family ICHTHYOPHIIDAE Taylor

52. *Ichthyophis beddomei* Peters 1880

Known only from Amboli.

53. *Ichthyophis bombayensis* Taylor, 1960

Common according to Gower *et al.*, 2007, *Ichthyophis malabarensis* Taylor, 1960; *Ichthyophis peninsularis* Taylor, 1960 and *Ichthyophis subterrestris* Taylor, 1960 are considered to be junior synonyms of *Ichthyophis bombayensis* Taylor, 1960.

SUMMARY

An inventory of 53 amphibian species belonging to 22 genera spread over 9 families is presented from the Maharashtra State.

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FRESHWATER FISHES

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INTRODUCTION

Maharashtra is a land of mind-boggling diversity. From its tropical coastal waters, estuaries and mangroves, and its impressive Western Ghats, the state extends north and eastwards, after giving birth to mighty rivers, to reach the austere, dry deciduous zones of Vidarbha. Everywhere, nature has provided the state with vast water reservoirs, protected by thick-canopied forests. These have enabled animals and people to take their sustenance from the land for eons. In the recent past, however, the situation has changed somewhat. The great forests, rivers, streams have all but disappeared and its water resources have consequently begun drying up. Fortunately, however, enough of natural Maharashtra remains to allow effective regeneration to take place (Bharucha, 1993).

The wetland of Maharashtra extended over 3,007 sq. km; of these 216 sq. km were classified as 'natural', the rest 'man-made'- either paddy fields or reservoirs of dams (Ministry of Environment and Forests, 1989 'Conservation of Wetland in India'). Lesser known wetlands include the Vena Lake near Nagpur and Mayeni near Satara. The latter is an ancient silted-up lake. The backwaters of Ujani Irrigation Project, a vast shallow expanse of water, can be rated one of the country's best wetlands. Ujani soon also become the largest freshwater fishing co-operative in Maharashtra. Narmada, Tapi, Godavari, Krishna, Bhima – Maharashtra is blessed with an abundant

supply of water from such mighty rivers whose lives depend on the health of the forests which clothe their catchments. The Western Ghats of Maharashtra between Khandala in the Pune district and Koyna Nagar in Satara, is a hilly region surrounded by forests, forts of architectural and historical significance and 74 existing or planned man-made lakes.

Kulkarni (1940) established a new family (Horaichthyidae) and genus (*Horaichthys*) of Cyprinodont fish from the province of Bombay. Frazer (1942) recorded 54 species of fish from Poona district. Suter (1944) recorded 17 more species of fish from Poona district. Bhimachar (1945) thoroughly studied zoo-geographical divisions of the Western Ghats as evidenced by the distribution of hill stream fishes like *Balitora*, *Travancoria*, *Bhavana*, *Schismatorhynchus*, *Thynnichthys*, *Osteochilus*, *Silurus*, *Batasio*, *Pristolepis* and *Macropodus*. Kulkarni (1949) enlisted scientific and local names of 117 species of commercial fishes (both marine and freshwater) from Bombay. Kulkarni (1951) found a few interesting species from Kolhapur i.e., *Balitora*, *Botia striata* and a Schilbeid, on which a new genus and a new species (*Neotropius khavalchor*) was established (Kulkarni, 1952). Silas (1953) published a note on fishes of Maharashtra and Wai (Satara district, Bombay state). David (1963) reported 157 species from his own collection and all earlier records in the Godavari and the Krishna drainage and briefly discussed its commercial,

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sport or culturable value. Tilak and Tiwari (1976) reported 112 species of fish from Poona district. Yazdani and Babu Rao (1976) described a new species, *Puntius deccanensis* from Poona and also furnished a distributional list of Indian species of *Puntius*. Yazdani & Singh (1990) published an account of fish resources of Ujani Wetland and reported 42 species belonging to 14 families. Ghate and Wagh (1991) recorded for the first time the Belontiid fish, *Macropodus cupanus* (Valenciennes) from Pune. Gujar (1992) reported 24 species of fish from Gavilgarh Ridges of Melghat. Singh and Yazdani (1992) established a new Cyprinid fish, *Osteobrama bhimensis*, from Bhima river, Pune district. Singh and Yazdani (1993) published an account of 106 species (freshwater, estuarine and marine) from five coastal districts (Thane, Greater Bombay, Raigad, Ratnagiri and Sindhudurg) of Konkan Region. Yadav (1996) recorded a percoid fish, *Pristolepis marginata* Jerdon, for the first time from Krishna Drainage System of Western Ghats. Pradhan (1997) published a quantitative account of ichthyofauna of Wardha river basin, Chandrapur district, consisting of 72 species. Yazdani and Singh (2002) further, gave an account of 54 species under 32 genera and 15 families from Ujani wetland. Yadav (2003) presented an account of 135 species of fish under 57 genera and 22 families from northern part of Western Ghats. Yadav (2004) reported 33 species under 23 genera and 11 families from Pench National Park. Yadav (2005A & B) reported 96 species under 52 genera and 19 families from Melghat Tiger Reserve and 33 species under 22 genera and 12 families from Nathasagar Wetland. Further, Yadav (2006) included 84 species under 52 genera and 18 families from Tadoba Andhari Tiger Reserve.

A perusal of literature shows that several papers have been published on the subject which reveal important but fragmental picture of fish fauna of Maharashtra State not exhaustive and comprehensive in nature. Therefore, with a view to reveal a complete and comprehensive picture of freshwater fish fauna of Maharashtra, a separate research project on freshwater fish fauna of

Maharashtra was assigned to the authors by the Director, Zoological Survey of India in the year 2004.

The present contribution is based upon recent (2005 & 2006) comprehensive fish collections made by the first author & party from Nagpur, Akola, Jalgaon, Nasik, Pune, Chandrapur, Nanded, Parbhani, Aurangabad and Ahmadnagar districts; earlier (1985) collections made by the first author from Sangli and Solapur districts and collections made by Dr. K. K. Tiwari (1964) from Satara and Kolhapur districts, Maharashtra together with large number of identified and registered fish collections made by Z.S.I. survey parties earlier from Maharashtra housed in the Z.S.I., H.Q., Kolkata and also collection present in the Western Regional Station, Z.S.I., Pune along with all relevant information and records available for this purpose up to the year 2006.

The total freshwater fish collections so far recorded from Maharashtra both earlier and by the authors reveal a wide range of forms belonging to 11 orders, 32 families, 93 genera and 216 species. Further, 9 species under 7 genera were recorded for the first time from Maharashtra.

An attempt has been made in this present study to provide and up to date classification, nomenclature, synonyms, local name, common name, diagnostic characters, details of material studied, distributional pattern, fishery information, remarks, along with a species identification keys under each genera.

SYSTEMATIC LIST OF FISHES

Class PISCES

Division TELEOSTEI

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

1. *Chitala chitala* (Ham-Buch)
2. *Notopterus notopterus* (Pallas)

Order ANGUILLIFORMES

Family ANGUILLIDAE

3. *Anguilla bengalensis bengalensis* (Gray & Hardwicke)

Order CLUPEIFORMES

Family CLUPEIDAE

4. *Goniolosa manmina* (Ham-Buch)

Order CYPRINIFORMES

Family CYPRINIDAE

Subfamily CYPRININAE

5. *Carassius auratus* (Linnaeus)
6. *Catla catla* (Ham-Buch)
7. *Cirrhinus cirrhosus* (Bloch)
8. *C. fulungee* (Sykes)
9. *C. mrigala* (Ham-Buch)
10. *C. reba* (Ham-Buch)
11. *Crossocheilus latius latius* (Ham-Buch)
12. *Ctenopharyngodon idellus* (Valenciennes)
13. *Cyprinus carpio* var. *communis* Linnaeus
14. *H. kolus* (Sykes)
15. *H. thomassi* (Day)
16. *Labeo ariza* (Ham-Buch)
17. *L. bata* (Ham-Buch)
18. *L. boga* (Ham-Buch)
19. *L. boggut* (Sykes)
20. *L. calbasu* (Ham-Buch)
21. *L. dussumieri* (Valenciennes)
22. *L. fimbriatus* (Bloch)
23. *L. goni* (Ham-Buch)
24. *L. kawrus* (Sykes)
25. *L. nigrescens* (Day)
26. *L. pangusia* (Ham-Buch)
27. *L. porcellus* (Heckel)
28. *L. potail* (Sykes)
29. *L. rohita* (Ham-Buch)
30. *L. sindensis* (Day)
31. *Neolissocheilus hexagonolepis* (McClelland)
32. *Oreochthys cosuatus* (Ham-Buch)
33. *Osteobrama bakeri* (Day)
34. *O. bhimensis* Singh & Yazdani
35. *O. cotio cotio* (Ham-Buch)
36. *O. cotio peninsularis* Silas
37. *O. dayi* (Hara & Misra)
38. *O. neilli* (Day)
39. *O. vigorsii* (Sykes)
40. *Osteocheilichthys godavariensis* (Rao)
41. *O. nashii* (Day)
42. *O. thomassi* (Day)
43. *Puntius amphibius* (Valenciennes)
44. *P. arenatus* Day
45. *P. carnaticus* (Jerdon)
46. *P. chola* (Ham-Buch)
47. *P. conchoni* (Ham-Buch)
48. *P. deccanensis* Yazdani & Babu Rao
49. *P. dorsalis* (Jerdon)
50. *P. fasciatus* (Day)
51. *P. filamentosus* (Valenciennes)
52. *P. fraseri* (Hara & Misra)
53. *P. gelius* (Ham-Buch)
54. *P. jerdoni* (Day)
55. *P. melanostigma* (Day)
56. *P. narayani* Hora
57. *P. parrah* (Day)
58. *P. sahyadriensis* Silas
59. *P. sarana sarana* (Ham-Buch)
60. *P. sarana subnasutus* (Valenciennes)
61. *P. sophore* (Ham-Buch)
62. *P. ticto* (Ham-Buch)
63. *P. vittatus* Day*
64. *Rohtee ogilbii* Sykes
65. *Schismatorhynchus (Nukta) nukta* (Sykes)
66. *Tor khudree* (Sykes)
67. *T. kulkarni* Menon
68. *T. mussullah* (Sykes)
69. *T. tor* (Ham-Buch)
70. *Thynnichthys sandkhal* (Sykes)

Subfamily CULTRINAE

71. *Chela cachi* (Ham-Buch)
72. *C. dadidurjori* (Menon)
73. *C. laubuca* (Ham-Buch)
74. *Salmostoma acinaces* (Valenciennes)

75. *S. bacaila* (Ham-Buch)
76. *S. boopis* (Day)
77. *S. clupeoides* (Bloch)
78. *S. Horai* (Siras)
79. *S. longicaudata* Srithar & Jayaram
80. *S. novacula* (Valenciennes)
81. *S. phulo phulo* (Ham-Buch)
82. *S. sardinella* (Valenciennes)
83. *S. untrachi* (Day)

Subfamily LEUCISCINAE

84. *Hypophthalmichthys molitrix* (Valenciennes)
85. *H. nobilis* (Richardson)

Subfamily RASBORINAE

86. *Amblypharyngodon mola* (Ham-Buch)
87. *Aspidoparia morar* (Ham-Buch)
88. *Barilius bakeri* Day
89. *B. barila* (Ham-Buch)*
90. *B. barna* (Ham-Buch)
91. *B. bendelisis* (Ham-Buch)
92. *B. evezardi* Day
93. *B. gatensis* (Valenciennes)
94. *B. vagra* (Ham-Buch)*
95. *Brachydanio rerio* (Ham-Buch)
96. *Danio aequipinnatus* (McClelland)
97. *D. devario* (Ham-Buch)
98. *D. fraseri* Hora & Mukherjee
99. *D. malabaricus* (Jerdon)
100. *Esomus danricus* (Ham-Buch)
101. *Parluciosoma daniconius* (Ham-Buch)
102. *P. labiosa* Mukherjee
103. *R. rasbora* (Ham-Buch)

Subfamily GARRINAE

104. *Garra bicornuta* Rao
105. *G. gotyla gotyla* (Gray)
106. *G. gotyla stenorhynchus* (Jerdon)
107. *G. maclellandi* (Jerdon)*
108. *G. mullya* (Sykes)
109. *G. notata* (Blyth)

Family PARAPSIORHYNCHIDAE

110. *Parapsilorhynchus discophorus* Hora
111. *P. elongatus* Singh
112. *P. prateri* Hora & Misra
113. *P. tentaculatus* (Annandale)

Family BALITORIDAE

114. *Acanthocobitis botia* (Ham-Buch)
115. *A. mooreh* (Sykes)
116. *B. mysorensis* Hora
117. *Nemacheilus anguilla* Annandale
118. *N. denisoni denisoni* (Day)
119. *N. denisoni dayi* Hora
120. *N. evezardi* (Day)
121. *N. multifasciatus* Day*
122. *N. rupecola* (McClelland)
123. *N. ruppelli* (Sykes)
124. *N. savona* (Ham-Buch)
125. *N. striatus* Day*

Family COBITIDAE

126. *Lepidocephalus guntea* (Ham-Buch)
127. *L. thermalis* (Valenciennes)
128. *Botia striata* Rao

Order SILURIFORMES

Family BAGRIDAE

129. *Mystus bleekeri* (Day)
130. *M. cavasius* (Ham-Buch)
131. *M. gulio* (Ham-Buch)
132. *M. keletius* (Valenciennes)
133. *M. malabaricus* (Jerdon)
134. *M. menoda* (Ham-Buch)
135. *M. montanus* (Jerdon)
136. *M. oculatus* (Valenciennes)
137. *M. vittatus* (Bloch)
138. *Hemibagrus maydelli* (Rossel)
139. *R. gogra* (Sykes)
140. *R. kuturnee* (Sykes)
141. *R. rita* (Ham-Buch)
142. *Sperata aor* (Ham-Buch)

143. *S. seenghala* (Sykes)

Family SILURIDAE

144. *Ompok bimaculatus* (Bloch)
 145. *O. malabaricus* (Valenciennes)
 146. *O. pabo* (Ham-Buch)
 147. *Pterocryptis wynaadensis* (Day).
 148. *Wallago attu* (Schneider)

Family SCHILBEIDAE

149. *Ailia coila* (Ham-Buch)
 150. *Clupisoma bastari* Datta & Karmakar*
 151. *C. garua* (Ham-Buch)
 152. *C. taakree taakree* (Sykes)
 153. *Eutropiichthys vacha* (Ham-Buch)
 154. *E. goongwaree* (Sykes)
 155. *Neotropius atherinoides* (Bloch)
 156. *N. khavalchor* Kulkarni
 157. *Silonia childreni* (Sykes)
 158. *S. silondia* (Ham-Buch)

Family PANGASIIDAE

159. *Pangasius pangasius* (Ham-Buch)

Family SISORIDAE

160. *Bagarius bagarius* (Ham-Buch)
 161. *B. yarrelli* Silas
 162. *Gagata gagata* (Ham-Buch)*
 163. *G. itchkeea* (Sykes)
 164. *Nangra nangra* (Ham-Buch)
 165. *N. viridescens* (Ham-Buch)
 166. *Glyptothorax annandalei* Hora
 167. *G. conirostrae poonaensis* Hora
 168. *G. lonah* (Sykes)
 169. *G. madraspatnam* (Day)
 170. *G. trewavasae* Hora

Family CLARIIDAE

171. *Clarias batrachus* (Linnaeus)
 172. *C. dussumieri dussumieri* Valenciennes

Family HETEROPNEUSTIDAE

173. *Heteropneustes fossilis* (Bloch)

Order SALMONIFORMES

Family SALMONIDAE

174. *Salmo gairdnerii gairdnerii* Richardson

Order BELONIFORMES

Family ADRIANICHTHYIDAE

175. *Horaichthys setnai* Kulkarni

Family BELONIDAE

176. *Xenentodon cancila* (Ham-Buch)

Family HEMIRAMPHIDAE

177. *Hyporhamphus limbatus* (Valenciennes)

Order CYPRINODONTIFORMES

Family APLOCHEILIDAE

178. *Aplocheilus lineatus* (Valenciennes)
 179. *A. panchax* (Ham-Buch)

Family POECILIDAE

180. *Gambusia affinis* (Baird & Girard)
 181. *Poecilia (Lebistes) reticulata* (Peters)

Order PERCIFORMES

Family CENTROPOMIDAE

182. *Lates calcarifer* (Bloch)

Family AMBASSIDAE

183. *Chanda nama* Ham-Buch
 184. *Pseudambassis baculis* (Ham-Buch)
 185. *P. ranga* (Ham-Buch)

Family SCATOPHAGIDAE

186. *Scatophagus argus* (Linnaeus)

Family NANDIDAE

187. *Badis badis* (Ham-Buch)
 188. *Nandus nandus* (Ham-Buch)
 189. *Pristolepis marginata* Jerdon

Family CICHLIDAE

190. *Etilapia maculatus* (Bloch)
 191. *Etilapia suratensis* (Bloch)
 192. *Oreochromis mossambica* (Peters)
 193. *O. niloticus* (Linnaeus)

Family GOBIIDAE

194. *Glossogobius giuris* (Ham-Buch)
 195. *Stigmatogobius javanicus* (Bleeker)
 196. *Pseudogobiopsis oligactis* (Bleeker)

Family ANABANTIDAE

197. *A. cobojius* (Ham-Buch)*
 198. *Anabas testudineus* (Bloch)

Family BELONTIDAE

199. *Colisa fasciatus* (Schneider)
 200. *Macropodus cupanus* (Valenciennes)

Family OSPHRONEMIDAE

201. *Osphronemus goramy* Lacepede

Family MUGILIDAE

202. *Liza parsia* (Ham-Buch)
 203. *L. tade* (Forsskal)
 204. *Mugil cephalus* Linnaeus
 205. *Rhinomugil corsula* (Ham-Buch)

Family CHANNIDAE

206. *Channa marulius* (Ham-Buch)
 207. *C. orientalis* Bloch & Schneider
 208. *C. punctatus* (Bloch)
 209. *C. stewartii* (Playfair)
 210. *C. striata* (Bloch)

Order SYNGNATHIFORMES

Family SYGNATHIDAE

211. *Microphis cuncalus* (Ham-Buch)

Order SYNBRANCHIFORMES

Family SYNBRANCHIDAE

212. *Monopterus indicus* (Silas & Dawson)

Family MASTACEMBELIDAE

213. *Mastacembelus armatus* (Lacepede)
 214. *Macrogathus aral* (Bloch & Schneider)
 215. *M. guentheri* (Day)
 216. *M. pancalus* Ham-Buch

* New Record from Maharashtra

LIST OF COLLECTING STATIONS and COLLECTORS OF THE FISH MATERIAL STUDIED

(M. M. Chatterjee-1960, 1966, 1969, 1970)

1. Mula river, Sathe Biscuits, Pune.
2. Vishrantwadi, Pune.
3. Godavari river, Mehale-Mashid, Paithan.
4. Nashrapur, Dist.-Pune.
5. Pashan lake, Dist.-Pune.
6. Moshi, Pune.

(Dr. R.N. Chopra-1963, 1964, 1965, 1966, 1968, 1970, 1971, 1973)

1. Mula-Mutha river, Bundgarden, Pune.
2. Sambhaji bridge, Pune.
3. Dhanewadi, Jalna.
4. Mutha river, Lakadi bridge, Pune / Sambhaji Park, Pune.
5. Hamalwadi, Aurangabad.
6. Godavari river, Mahale-Mashid, Paithan.
7. Mula-Mutha river, near MES College, Pune.
8. Pirangut nalla, Pune.
9. Narshapur, Pune.
10. Bhugaon Pond.
11. Khed, Shivapur.
12. Padampura, Dist.- Aurangabad.
13. Mula river, Vishrantwadi, Pune.
14. Moshi, Pune.
15. Khadakwasla, Pune.
16. Kirkee nalla, Chandkas, Dist.-Ahmadnagar.
17. Mutha river, Sambhaji bridge, Pune.
18. Kamshet, Pune.
19. Pand village, Pune.
20. Godavari River, Mahale-Mashid Paithan, Aurangabad.
21. Talegaon, Pune.
22. Shindwadi, Pune.
23. Khamthodi, Pune.
24. Indrayani River, Paithan.
25. Rajbagh, Pune.

26. Bund garden, Pune.
27. Mula River, Aundh, Pune.
28. Mutha River, MES College, Pune.
29. Bhosari, Pune.
30. Khadakwasla, Pune.
31. Vadgaon, Pune
32. Urlikanchan, Pune.
33. Bhugaon-Paud Road, Pune.

(Dr B.K. Tikader – 1963, 1965, 1967, 1975, 1976, 1977)

1. Stream Tatapipe, Khandala, Dist. Pune.
2. Danoli, Ratnagiri Dist.
3. Indrayani river, Karla, Pune.
4. Nalla near Santosh Lodge , Lonavala.
5. Nalla Bushy Dam, Lonavala- Khandala.
6. Hadapsar Fish Pond, Pune.
7. Nalla near Katraj tank, 13 km south of Pune.
8. Pashan tank, Pune.
9. Nalla near Lonawala-Khandala.
10. Kowdi, Pune.
11. Danoli, Ratnagiri Dist.
12. Vir dam Tandal Vill., Satara dist.
13. Nalla near Tata pump Station, Khandala, Pune.

(Dr. K.K. Tiwari – 1964)

1. Nira river, Khirwad, Satara district.
2. Koyana river, Karad, Satara district.
3. Venna river near Wada village, 5 km north of I. B., Satara.,Dist. Satara.
4. Satara, Dist. Satara.
5. Bovada, Dharan, Pancha Ganga river, Kolhapur, Dist. Kolhapur.
6. Confluence of Bhagaboti and Kasari rivers, 5 miles from Kolhapur, Dist. Kolhapur.

(Dr. B. S. Lamba – 1964, 1965, 1966, 1967, 1968, 1969, 1971, 1972, 1977)

1. Khaudi, Pune.
2. River near Ambenehe villege, Pune.

3. Khamgaon tank, Pune.
4. Wagh river, Ozar, Dist. Nasik.
5. Malawadi, Pune.
6. Khed, Pune.
7. Karha river, Saswad, Pune.
8. Bhatgar Dam, Pune.
9. Vadgaon, Pune-Bombay Road.
10. Loni, Pune.
11. Bharghat, Pune.
12. Kowadi, Pune.
13. Talegaon, Pune.
14. Savitri river, Poladpur, Mahad.
15. Kanthadi, Pune.
16. Moshi, Pune.
17. Rajbag, Loni, Pune.
18. Pirangut, Pune.
19. Katrajghat, Pune.
20. Bhorghat, Pune.
21. Mahad, Dist. Kolaba.
22. Khopoli, Pen, Dist. Kolaba.
23. Saswad, Pune.
24. Koregaon, Pune.
25. Paud Villege, Pune.
26. Stream at Panchgani Ghat, Mahabaleswar, Satara distt.
27. Mahali, Pune.
28. River near Velhe Village bridge, Pune.
29. Bhimashankar ghat, Ambegaon, Pune distt.
30. Indrayani river, Moshi, Pune.
31. Sindh Colony, Awudh Road, Pune.
32. Mula river, Udam Engineering Works, Pune.

(D.N. Tiwari – 1965, 1966, 1967)

1. Mula-Mutha River near Shera, Pune.
2. Khed, Pune.
3. Kowdi, Pune.
4. Paud village, Pune.
5. Bund Garden, Pune.
6. River near Shera, Pune.

(Dr. K.R. Rao – 1971, 1972, 1990)

1. Moshi, Pune.
2. Godavari river, Nanded.
3. Khed, Pune.
4. Rajbagh, Pune.
5. Nalla at Kasanali village, Nanded.
6. Kamshet, Pune.

(Dr. M. Babu Rao – 1972, 1973, 1978)

1. Wagholi Pond, Pune.
2. Vinita river, Agra – Bombay Road, Nasik.
3. Kadrage Lake, Nasik
4. Godavari river, Singweyi, Dist. Ahmadnagar.
5. Kirkeenallah, Chandkas, Ahmadnagar.
6. Aven nalla, Ratnagiri.
7. Pundi nalla, Trimbak, Nasik.
8. Stream near Trimbak, Nasik.
9. Godavari river, (a) Paithan, Dist- Aurangabad, (b) Trimbak, Nasik.
10. Sindfana river, Manjlegaon, Dist- Beed.
11. Chandgaon talab, Deolali, Nasik.
12. Vadoli River, Niphad, Nasik.
13. Stream near Trimbak, Nasik district.
14. Stream Banganga, Trimbak, Nasik.
15. Koyana river, Urishi, 20 km South-West of Mahabaleswar.
16. Par village, 20 km of Mahabaleswar, Satara district.
17. Rajbag, Loni.
18. Kalbhor village, Pune.
19. Paud, Pune.
20. Nalla near Dolyi village in the vicinity of Sinhgad, Pune.
21. Banganga Stream near Trimbak, Nasik.

(Dr. G. M. Yazdani – 1972, 1973, 1975, 1976, 1977, 1987, 1988, 1989, 1990, 1994)

1. Khanota, Ujani, Dist- Pune.
2. Bhima River, Koregaon, Dist-Pune.
3. Kalbha river, Kalbhor village, Pune.

4. Nalla at Gadvira, 2 km east of Palghar, Dist.- Thane.
5. Kalbhor river, Kalbhor village, Pune.
6. Kondapur village, Dist.-Pune.
7. Ujani Wetland, Pune.
8. Ghod river, Shirwa, Dist.-Pune.
9. Peacock bay, Khadakwasla.
10. Mutha river, Pune.
11. Khanota Ujani Wetland.
12. Pond near Wagholi, Pune.
13. Pimpalgaon dukra, Nasik district.
14. Kadwa River, Nasik.
15. Darna River, Deolali, Nasik.
16. Ghod River, Dimbhe dam, Bhimashankar, Pune district.
17. Bhaka Devi, Bhimashankar, Pune.
18. Kondanpur village, Pune.
19. Shahav village, Ujani Wetland, Pune district.
20. Nalla near Nandewadi, s.w. of Jaigad, Ratnagiri.
21. Bander Bassain, Thane district.
22. Karwa River, Pimpalgaon dukra, Nasik district.
23. Nagpani Point, Bhimashankar.

(Dr. R.H. Kamble – 1973, 1975, 1977, 1978, 1979, 1983, 1986, 1989)

1. Chandrabhaga river, Pandharpur, Dist – Sholapur.
2. Ghodgaon, Purna river, Dist – Jalgaon.
3. Aner Dam, Chopda, Jalgaon.
4. Sukhi river dam, Pal, Jalgaon.
5. Paud, Pune.
6. Kamshet, Pune.
7. Shelgaon River, 34 km North to Sholapur on Barshi Road.
8. Girna River, Erandol, Jalgaon.
9. Mutha River, Loni, Pune.
10. Jamner Kong River, Jalgaon.
11. Lahasar nalla, Jamner, Jalgaon.

12. Purna River, Kund, Jalgaon.

13. Alkheda, Chopda, Jalgaon.

14. Indrayani river, Kamshet, Pune.

(C.B. Prashad – 1974, 1979)

1. Bawdhan, Pune.

2. Nalla near Pashan village, Pune.

3. Nalla near Katraj tank, 13 km south of Pune.

4. Pashan tank, near ARDL colony, Pune.

(Dr. Ramakrishna – 1977, 1979, 1981, 1982)

1. Karade Hills, Varnavati.

2. Talegaon, Pune

3. Nandgaon Bhor, Pune.

4. Mal near Talegaon.

5. Kamshet, Pune.

(Dr. A.S. Mahabal – 1977, 1978, 1979, 1983)

1. Sina river, Malik Peth, Mahal, Sholapur.

2. Malewadi, Man river, Pandharpur.

3. Nalla near Futijawalgawn, 7 km north of Tembhurni.

4. Sholgaon nalla near Jeur, Karmala.

5. Shinovali, Ghod river, Bhimashankar.

6. Alardi, Pune.

7. Alipur, Barshi.

8. Chichol talav, Sangola, Dist. Sholapur.

9. Man river, 12 km south west of Sangola.

10. Sangvi villege, Akkalkot.

11. Bhima river, Ujani Dam, Ujani.

12. Kondapuri, Pune.

13. Indrayani river, Mandi, Pune.

14. Dathandi tank, Barshi, Sholapur distt.

15. Pathandi tank, Latur Road, Barshi.

(S.V. Mulay – 1978, 1990)

1. Wagholi pond, Pune.

2. Indrayani river, Lonavala.

3. Baride village, Sawantwadi, Sindhudurg district.

4. Malgaon, Sawantwadi, Sindhudurg district.

(Dr. M.S. Pradhan – 1979, 1980, 1981, 1983, 1985, 1986, 1987, 1989, 1990)

1. Wagholi Tank, Pune.

2. Indrayani river, Kamshet, Pune.

3. Mina river, Shivneri Junnar, Dist. Pune.

4. Malhar Sagar tank, Jejuri.

5. Indrayani river, Dehu, Pune.

6. Sedor bridge, Dasgaon, Mahad.

7. Shivaganga river, Narsapur, Pune.

8. Nalla near Municipal Tank, Talegaon.

9. Kashale village, Karjat, Dist.–Raigad.

10. Shivganga river, Narsapur, Dist.–Pune.

11. Kodav village, Karjat, Raigod.

12. Ghatprabha river, Dist.–Kolhapur.

13. Kamshet, near Animal Hospital.

14. Kasarbhat, Panvel, Raigad district.

15. Birwadi, Mahad, Raigad district.

16. Nevade village, Karjat, Raigad district.

17. Talaja Khadi, Pannel.

18. Stream near Phejiwode, Radhanagari, Kolhapur.

19. Stream near Radhanagari village, Kolhapur.

20. Bori River, Anvi, Dhule.

21. Poynad village, Alibag, Raigad district.

22. Nalla near Municipal Tank, Talegaon.

23. Mulla River near Ghotawade bridge, Pune.

24. Minan River, Vadraj Dam, Shivneri, Junnar, Pune.

25. Mannyad River, Nandgaon, Aurangabad Road, Nasik.

26. Gangai River, Parli, Thane district.

27. Radhanagari village, Kolhapur.

28. Shaha village, Ujani, Pune.

29. Ghod River, Dimbe, Bhimashankar Ghat, Pune.

30. Uran Khadi, Raigad district.

31. Nira River, Shinwal, Pune.

32. Kadavaipada River, Harsul, Nasik district.

33. Ghod River, Khondwal village, Bhimashankar.

34. Umberdor, Kajrat, Raigad district.

(Dr. D.F. Singh – 1983, 1985, 1987, 1989, 1991)

1. Panshet Pune.
2. Sangam of Bhaura & Bhima rivers, Pimpalgaon, Pune.
3. Bhima river, Bhigvan.
4. Valvan dam, Lonavala.
5. Saha villege, Ujani wetland, Dist. Pune.
6. Khamgaon tank, Shelanwadi.
7. Kukdi river, Annapur, Pune.
8. Waghad river, Yevatmal distt.
9. Sangam at Mula-Mutha-Bhima river, Ranjangaon, Sandae, Pune.
10. Ghod river, Shirur, Pune.
11. Malkhedewala, Panshet, Pune.

(Dr. A.K. Karmakar & party – 1985)

1. Krishna river at Miraj Ghat, 6 kms from P.W.D. Rest House, Miraj, Dist. Sangli.
2. Krishna river near Mhaishal Dam, 14 kms north west of P.W.D. Rest House, Miraj, Dist. Sangli.
3. Confluence of Krishna river with Warna river at Haripur, 12 kms south west of P.W.D. Rest House, Miraj, Dist. Sangli.
4. Krishna river at Umadgaon, 18 km north west of P.W.D. Rest House, Miraj, Dist. Sangli.
5. Warna river at Narsingpur, 40 km north west of P.W.D. Rest House, Miraj, Dist. Sangli.
6. Krishna river at Bhilawadi, 38 km north west of P.W.D. Rest House, Miraj, Dist. Sangli.
7. Fish market of Pandharpur (Bhima river collection), 4 km from P.W.D. Rest House, Pandharpur, Dist. Solapur.
8. Bhima river at Degaon, 10 km north of P.W.D. Rest House, Pandharpur, Dist. Solapur.
9. Mangla Market, Solapur, 4 km from P.W.D. Rest House, Solapur, Dist. Solapur.

10. Ekrukhi reservoir, 10 km north of P.W.D. Rest House, Solapur, Dist. Solapur.

11. Horni river at Naldru, 16 km south west of P.W.D. Rest House, Solapur, Dist. Solapur.

12. Sina river at Aurad, 28 km south west of P.W.D. Rest House, Solapur, Dist. Solapur.

13. Sina river at Mohal, 35 km north west of P.W.D. Rest House, Solapur, Dist. Solapur.

14. Ujani reservoir near Kanda, 10 km away from Ujani Dam, Dist. Solapur.

15. Ujani reservoir near Kalashi, 25 km away from Ujani Dam, Dist. Solapur.

(Dr. D.B. Bastawade – 1987, 1988)

1. Sina river, Paranda, Dist. Osmanabad.
2. Terna river, Osmanabad.
3. Khandepar, Dist. Raigad.
4. 75 km of Mangaon Ambenali Ghat
5. 30 km west of Amboli Ghat, Dist. Sindhudurg.

(Dr. R.M. Sharma – 1987, 1988, 2001)

1. Pimpalgaon, Dist – Ahmadnagar.
2. Saraswati river, Dealakhurd, Mazalgaon, Dist-Beed.
3. Lake near Eagle Flask, Talegaon.
4. Stream near Sita Nahani, Dhanwar, Beed District.
5. Bansiwadi, Dhanur, Beed District.
6. Lakhepal, Nathasagar wetland, Aurangabad.
7. Palgod, 25 km south-east of Mandangod tal, Dapoli, Ratnagiri District.

(Dr. P.P. Kulkarni – 1988, 1989)

1. Nalla near Phaltan-Bodkewadi Road, Satara.
2. God river Kankavali, Sindhudurg district.
3. Karkhel village, Satara district.
4. Munavale village, Karad, Satara district.
5. Shaha village, Ujani Wetland, Pune district.
6. Bav River at Nive village on Sangameshwar-Marleswar Road.

7. Raghoha nalla, Phaltan, Bodkenadi/Ratnagiri district Road, Satara.

(Dr. B.E. Yadav – 1989, 1990, 1995, 1996)

1. Indrayani river, Kamset.
2. Stream of Godavari river, Trimbak, Nasik.
3. Darna river, Deolali, Nasik.
4. Krishna river near Mahabaleswar
5. Hadapsar Fish Farm, Pune.
6. Wagholi, Pune.

(Dr. S.G. Patil – 1990, 1994, 1995)

1. Khanota, Bhima river, Ujani, Dist-Pune.
2. Telinala Tadoba, Nath Park.
3. Saha village, Ujani.
4. Murbadi Dam, Thane District.
5. Katraj tank, Pune.

(Dr. K.C. Jayaram – 1997)

1. Morna River, Amrali Road, Satara.
2. Morna river, Guhagar.
3. Koyana reservoir, Satara district.
4. Morna river, Morna Dam, Dist-Satara.
5. Warna river, Kolhapur.
6. Panchganga river, Kolhapur.

(Dr. A.K. Karmakar & party – 2005)

1. Pench river, 60 km north of Nagpur.
2. Kolar river, 15 km north of Nagpur.
3. Purna river near Gandhigram, 20 km north of P.K.V. University Guest House, Akola, Dist. Akola.
4. Purna river, 3 km south of P.K.V. University guest House, Akola, Dist. Akola.
5. Tapi river at Muktainagar, 63 km north east of P.W.D. Rest House, Jalgaon, Dist. Jalgaon.
6. Purna river near Muktainagar Irrigation Plant, 73 km east of P.W.D. Rest House, Jalgaon, Dist. Jalgaon.
7. Waghur river (tributary of Tapi river), 20 km south of P.W.D. Rest House, Jalgaon, Dist. Jalgaon.

8. Bahula Medium Project on Bahula river (tributary of Girana river), 40 km south of P.W.D. Rest House, Jalgaon, Dist. Jalgaon.

9. Hirana Medium Project on Hirana river (tributary of Girana river), 58 km south of P.W.D. Rest House, Jalgaon, Dist. Jalgaon.

10. Fish Seed Rearing Farm, Gangapur, Dist. Nasik.

11. Gangapur reservoir on Godavari river, 10 km west of Govt. Guest House, Tapoban, Nasik, Dist. Nasik.

12. Darna reservoir on Darna river (tributary of Godavari river), 40 km south west of Govt. Guest House, Tapoban, Nasik, Dist. Nasik.

13. Mukni reservoir on Mukni river (tributary of Godavari river), 25 km south west of Govt. Guest House, Tapoban, Nasik, Dist. Nasik.

14. Bhadrakali Fish Market (Godavari river collection), Nasik, Dist. Nasik.

15. Satpur Fish Market (Godavari river collection), Nasik, Dist. Nasik.

16. Mula river, 10 km south west of Pune University, Pune.

17. Mulashi river, 35 km west of Pune University, Dist. Pune.

18. Kothrud Fish Market (Ujani Reservoir Collection), Pune.

19. Chaskaman reservoir on Bhima river, 65 km north of Pune University, Dist. Pune.

20. Pashan Dam, 15 km north east of Pune university, Dist. Pune.

21. Mula Mutha river near Pipalgaon, 50 km north-east of Pune University, Dist. Pune.

(Dr. A.K. Karmakar & party – 2006)

1. Ramala Talab, 1.5 km south-east of P.W.D. Rest House, Chandrapur, Dist. Chandrapur.

2. Irri Dam on Irri river, 18 km north-east of P.W.D. Rest House, Chandrapur, Dist. Chandrapur.

3. Wardha river, 15 km south-west of P.W.D. Rest House, Chandrapur, Dist. Chandrapur.

4. Godavari river near road bridge, 2 km south of P.W.D. Rest House, Nanded, Dist. Nanded.
5. Tank at Kawelgaon, Taluka-Purna, 35 km west of P.W.D. Rest House, Nanded, Dist. Parbhani.
6. Godavari river near Gobhardhan Ghat, 3 km south of P.W.D. Rest House, Nanded, Dist. Nanded.
7. Godavari river at Ghangrala, 51 km south-east of P.W.D. Rest House, Nanded, Dist. Nanded.
8. Godavari river at Sikar ghat, 12 kms south-east of P.W.D. Rest House, Nanded, Dist. Nanded.
9. Godavari river at Dhangarh, Tagri, 15 km west of P.W.D. Rest House, Nanded, Dist. Parbhani.
10. Samjul Talav near Phulambri, 25 km north-east of P.W.D. Rest House, Aurangabad, Dist. Aurangabad.
11. Sukhana Dam on Sukhana river, 25 km east of P.W.D. Rest House, Aurangabad, Dist. Aurangabad.
12. Godavari river at Paithan near down stream of Nath Sagar, 50 Km south of P.W.D. Rest House, Aurangabad, Dist. Aurangabad.
13. Confluence of Godavari and Pravara river near Kaigaon, Toka village, 45 km south-west of P.W.D. Rest House, Aurangabad, Dist. Aurangabad.
14. Mula river at Maheshgaon, 40 km north-west of P.W.D. Rest House, Ahmadnagar, Dist. Ahmadnagar.
15. Mushalwadi Irrigation Tank on Pravara river canal, 40 km north of P.W.D. Rest House, Ahmadnagar, Dist. Ahmadnagar.
16. Visapur Reservoir, fed by Kukadi river canal, 40 km south of P.W.D. Rest House, Ahmadnagar, Dist. Ahmadnagar.
17. Ghod Reservoir, connected with Ghod river, 55 km south-west of P.W.D. Rest House, Ahmadnagar, Dist. Ahmadnagar.

SYSTEMATIC ACCOUNT

Class PISCES

Subclass TELEOSTOMI

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

Genus *Chitala* Fowler, 1934

1934. *Chitala* Fowler, *Proc. Acad. Nat. Sci. Philad.*, 85, p. 244 (as subgenus of *Notopterus*: type-species, *Mystus chitala* Hamilton-Buchanan, 1822, by absolute tautonymy).

It differs from *Notopterus* in having the craniodorsal profile excessively concave, rather than convex, nearly straight, or slightly concave. Jaws increasing in length throughout life. Preopercular scale rows more than 10.

1. *Chitala chitala* (Ham-Buch)

1822. *Mystus chitala* Hamilton- Buchanan, *Fishes of Ganges*, : 236, 382 (type- locality : Rivers of Bengal and Bihar).
1999. *Chitala chitala*, Jayaram, *The Freshwater Fishes of Indian Region*, pp. 20.

Common Name : Humped Featherback.

Diagnostic Characters : D 9-10; A + C 110-135; V 6.

Mouth large, maxilla extends considerably beyond hind edge of eye. Pre-orbital smooth. Dorsal fin inserted nearer to base of caudal fin than to snout-tip. Pectoral fins moderate, extend to anal fin. Scales small.

Material examined : 2 exs., Darna river, Nasik dist., 16.03.05, S.S. Jadhav.

Geographical Distribution : India.

Elsewhere : Pakistan, Bangladesh and Myanmar.

Remarks : The catches of this species are fastly declining.

Genus *Notopterus* Lacepede, 1800

1800. *Notopterus* Lacepedae, *Hist. nat. Poiss.*, 2 : 189 (type-species : *Notopterus kapirat* Lacepede = *Gymnotus notopterus* Pallas).

Body broad, strongly compressed. Caudal portion long and tapering. Abdominal edge serrated, with about 28 scutes. Head compressed with large membranous opercular flap. Mouth opening wide; teeth small on jaws, also on palate and tongue. Dorsal fin short, inserted near middle of back with seven to ten rays. Anal fin very long with 100 to 135 rays, confluent with small caudal fin. Pelvis fins rudimentary.

2. *Notopterus notopterus* (Pallas)

1769. *Gymnotus notopterus* Pallas, *Specil Zool.*, 7 : 40, pl. 6, fig. 2 (type-locality : ? Indian Ocean).
 1991. *Notopterus notopterus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 64-65, fig. 25.

Common Name : Feather back.

Local Name : Patre, Chalhat.

Diagnostic Characters : D 7-9; A + C 100-110; V 5-6.

Craniodorsal profile usually almost straight. Jaws not increasing in length throughout life, extending only to posterior border of eyes. Preopercular scale rows 6 to 8.

Material examined : i) 1 ex., Chandrabhaga river, Pandharpur, Sholapur dist., 19.12.86, R.H. Kamble; ii) 1 ex., Mula-Mutha river, Bundgarden, Pune, 29.03.63, R.N. Chopra; iii) 1 ex., Mula-Mutha river near Shera, Pune, 29.05.65, D.N. Tiwari; iv) 1 ex., Kaudi, Pune, 26.10.67, B.S. Lamba; v) 4 exs., Sambhaji bridge, Pune, 23.09.64, R.N. Chopra; vi) 1 ex., Dhanewadi, Jalua, 26.09.64, R.N. Chopra; vii) 1 ex., Mutha river, Lakadi bridge, Pune, 29.03.63, R.N. Chopra; viii) 1 ex., Sambhaji bridge, Pune, 13.03.68, R.N. Chopra; ix) 1 ex., river near Shera, 29.05.65, D.N. Tiwari; x) 1 ex., Kowdi, Pune, 26.10.67, B.S. Lamba; xi) 1 ex., Pimpalgaon, Ahmadnagar dist., 03.07.88, R.M. Sharma; xii) 1 ex., Sina river, Paranda, Osmanabad dist., 29.07.88, D.B. Bastawade; xiii) 2 exs., Wagholi tank, Pune, 28.03.83, M.S. Pradhan; xiv) 2 exs., Reservoir at Talegaon, Pune, 06.04.02, S. Thakur. xv) 1 ex., 170 mm, Ekrukh reservoir, 10 km north from PWD Rest House, Sholapur, 27.03.85, A.K.

Karmakar; xvi) 2 exs., 182-250 mm, Ujani Reservoir near Kalashi, 25 km away from Ujani Dam, 26.03.85, A.K. Karmakar; xvii) 1 ex., 215 mm, Ujani reservoir near Kanda, 10 km away from Ujani Dam, 26.03.85, A.K. Karmakar; xviii) 2 exs., 165-200 mm, Mongla Market, Sholapur, 4 km from PWD Rest House, Sholapur, 24.03.85, A.K. Karmakar; xix) 2 exs., 155-180 mm, Tapi river, Muktainagar, near Khamkera Bridge, Jalgaon distt., 06.04.05, A.K. Karmakar; xx) 2 exs., 144-185 mm, Ghoti Fish Market (Darna river collection), Nasik, 10.04.05, A.K. Karmakar. xxi) 2 exs., 115-127 mm, Ramala Talab, 15 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal, Bangladesh; Myanmar; Thailand; Malaya and Indonesia.

Fishery Information : It attains a length of about 45 cm. Due to its carnivorous nature, this fish can only be cultured in wild waters or in fattening ponds where large fishes are only present. A commercially important species, consumed both in fresh and dried state.

Remarks : It inhabits rivers, swamps, canals and estuaries.

Order ANGUILLIFORMES

Family ANGUILLIDAE

Genus *Anguilla* Shaw, 1803

1803. *Anguilla* Shaw, *General Zoology*, 4 : 15 (type-species : *Anguilla vulgaris* Shaw).

Eel like fishes, anteriorly cylindrical with minute embedded scales. Vertical gill opening; gill slits near base of pectoral fin. Dorsal fin commences far behind gill openings. Pectoral fin well developed. Dorsal and caudal fins confluent. Lateral line present.

3. *Anguilla bengalensis bengalensis* (Gray)

1831. *Muraena bengalensis* Gray, *Illus. Indian Zool.*, : pl. 95, fig. 5 (type-locality : Ganges river).
 1991 *Anguilla bengalensis bengalensis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 74-75.

Common Name : Freshwater eel.

Local Name : Ahir.

Diagnostic Characters : D 250-305, A 220-250, P 18.

Dorsal fin inserted nearer anus than gill opening. Tooth bands on jaws and vomer relatively narrow. Variegated yellow-olive over brown body markings.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Sri Lanka; Myanmar and the East India.

Fishery Information : It attains a length of about 120 cm, common size being 80cm. This is the most common eel in Indian inland waters and of considerable commercial value; and is supposed to have special nutritional importance.

Remarks : It inhabits streams, pools and reservoirs. Common in mud substrates, descending to estuaries and to sea to spawn.

Order CLUPEIFORMES

Family CLUPEIDAE

Genus *Gonialosa* Regan, 1970

1970. *Gonialosa* Regan, *Ann. Mag. Nat. Hist.*, (8)19 : 315.
(type species : *Chatoessus modestus* Day)

Body deep; belly fully scuted. Mouth usually inferior; lower jaw short. Gill rakers fine and numerous. Anal fin equal to or slightly shorter than head. Scales moderate or small, 43 to 71 in lateral. A dark spot behind gill opening.

4. *Gonialosa manmina* (Ham-Buch)

1822. *Clupanodon manmina* Ham-Buch, *Fishes of Ganges*, : 247 (type-locality : Ganges river).

1976. *Gonialosa manmina*, Misra, *Fauna of India, Pisces* (2nd ed.), 2 : 96, pl. 2, fig. 4.

Common Name : Ganges river gizzard shad.

Diagnostic Characters : D iii-iv 11-13; A ii-iii 20-24; P i 14; V i 8.

Body moderately deep and somewhat compressed. Belly with 27 to 33 scutes. Mouth

inferior; upper jaw slender at tip and distinctly turned down. Scales small, 51 to 71 in lateral series.

Geographical Distribution : India : Ganga and other rivers of Orissa, Uttar Pradesh, West Bengal, Assam, Maharashtra.

Elsewhere : Bangladesh and Sri Lanka.

Fisheries Information : It attains a standard length of about 11.5 cm.

Order CYPRINIFORMES

Family CYPRINIDAE

Subfamily Cyprininae

Genus *Carassius* Jarocki, 1822

1822. *Carassius* Jarocki, *Zoologia*, 4 : 71 (type-species : *Cyprinus carassius* Linnaeus).

Body more or less stout and deep, moderately compressed. Head rather small. Mouth small and terminal; lips thick and fleshy. Barbels absent. Eyes large, dorsolateral in position, not visible from underside of head. Dorsal fin very long, with 18 to 25 rays, its last simple ray strong, osseous and serrated on its posterior edge. Anal fin short, with 9 to 11 rays. Pelvic fins placed well forward. Scales large-sized; lateral line with 23 to 31 scales.

5. *Carassius auratus* (Linnaeus)

1758 *Cyprinus auratus* Linnaeus, *Systema Naturae*, ed. 10, 1 : 323 (type-locality : rivers of China and Japan).

1991 *Carassius auratus*: Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 161-162.

Common Name : Gold fish, Gold carp.

Diagnostic Characters : D iii 16-18; A ii-iii 5; P i 16; V i 8.

Body stout, rather high and compressed, its dorsal and ventral profiles more or less equally arched. Head small; mouth small, terminal and oblique; upper jaw protractile. Dorsal fin inserted nearer to snout tip than to caudal fin base; dorsal spine strong. Scales large and cycloid; lateral line with 28 scales.

Geographical Distribution : China and Japan. Domesticated in almost all countries of the world for ornamental purpose.

Fishery Information : Best known and most extensively cultivated member of the family Cyprinidae and, indeed, of aquarium fishes in general. A hardy and extremely adaptable fish, most favourably displayed in isolation from other species. This fish spawns in captivity.

Genus *Catla* Valenciennes, 1844

1844. *Catla* Valenciennes, *Hist. nat. Poiss.*, **18** : 14 (type-species : *Catla buechanani* Valenciennes = *Cyprinus catla* Hamilton-Buchanan).

Body deep, somewhat laterally compressed, its depth more than head length. Head very large, more than half of the body length, snout bluntly rounded. Eye large, lateral in position, visible from underside of head. Mouth wide and terminal; upper lip absent, but lower lip is very thick. No barbel. Dorsal fin inserted slightly in advance of pelvic fins, with 18 to 19 rays. Lateral line scales 40 to 43.

Monotypic

6. *Catla catla* (Ham-Buch)

1822. *Cyprinus catla* Hamilton-Buchanan, *Fish of Ganges* : 287, 318, pl. 13, fig. 81 (type-locality : rivers and tanks of Bengal).

1991. *Catla catla* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 163–165.

Common Name : Catla.

Local Name : Catla.

Diagnostic Characters : D iii-iv 14-16; A iii 5; P I 20; V I 8.

Body deep, its depth 2.5 to 3 times in standard length. Head enormously large. Mouth wide and upturned. Pectoral fins long, extend to pelvic fins. Scales large; lateral line scales 40 to 43.

Material examined : i) 2 exs, Hadapsar fish farm, Pune, B.E. Yadav, 10.10.1996; ii) 1 ex, Bori river, Arvi, Dhule, M.S. Pradhan, 4.12.1985. ii) 3 exs., 97-147 mm, Purna river at Gandhi Gram, 20 km north of P.K.V. University Guest House, Akola, 05.04.05, A.K. Karmakar.

Geographical Distribution : India : Throughout (In India Catla was originally confined to the plains north of Krishna, but during the last three decades it has been introduced to all river systems and most of the tanks and reservoirs).

Elsewhere : Pakistan; Bangladesh; Nepal and Myanmar. This species has been transplanted in recent times into Sri Lanka and China.

Fishery Information : Catla grows over 120 cm under favourable environmental condition. It attains sexual maturity at the age of two years. It is one of the renowned and fastest growing among the Indian Major carps. It is excellent in eating, especially fishes with moderate size. Catla is non-predatory and feeds mainly to the surface or sub-surface, thus not competing with other Indian major carps. It breeds in river which is its natural habitat though artificial propagation by hypophysation is very successful in India. Catla is a good fish for angling.

Genus *Cirrhinus* Cuvier, 1817

1817. *Cirrhinus* Oken, *Isis* : 1833 (on les *Cirrhinus* Cuvier, 1817, *Regne Animale*, **2** : 193) (type-species : *Cyprinus cirrhosus* Bloch).

Body more or less elongate; abdomen rounded. Snout depressed, sometimes with pores. Mouth wide, lower jaw generally devoid of horny covering; with a small symphysial knob. Upper lip not continuous with the lower lip around corners of mouth. Dorsal fin inserted anterior to pelvic fins, with 10 to 19 rays. Caudal fin deeply forked lateral line complete, with 35 to 45 scales.

7. *Cirrhinus cirrhosus* (Bloch)

1792. *Cyprinus cirrhosus* Bloch, *Naturges ausland Fish.*, **9** : 52, fig. 411 (type locality : Cauvery river, Tamil Nadu).

1999. *Cirrhinus cirrhosus*, Menon, *Rec. zool. Surv. India, Occ. Paper*, **175** : 120–121.

Common Name : Cauvery white carp.

Diagnostic Characters : D iii-iv 13-15; A iii 5; P i 18; V i 8.

Body elongate, its depth more than length of head. Snout not projecting beyond mouth,

generally with some fine pores. Mouth broad; lower lip fairly thick, upper lip entire. Barbels two well-developed pairs; rostral pair longer than maxillary barbels. Lateral line with 42–46 scales.

Material examined : 20 exs. Wagholi pond, Pune, 8.2.1978, M.B. Rao.

Geographical Distribution : India : Cauvery, Godavari and Krishna river systems, South India.

Remarks : It is a major carp having irregular distribution.

8. *Cirrhinus fulungee* (Sykes)

1841. *Chondrostoma fulungee* Sykes, *Trans. Zool. Soc.*, P. 358 (type locality : Deccan).

1999. *Cirrhinus fulungee*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 121–122.

Common Name : Carp.

Local Name : Mulicha ganna.

Diagnostic Characters : D ii 8; A ii 5; P i 14; V i 8.

Dorsal fin with 8 branched rays. Lateral line scales 44–48. Dorsal fin about as high as body.

Material examined : i) 1 ex., Nalla near Futjawalgaon 7 km North of Tembhumi, Sholapur dist., 23.08.83, A.S. Mahabal; ii) 4 exs., Indrayani river, Karla, Pune, 05.11.63, B. K. Tikader; iii) 1 ex., Mutha river, Lakadi bridge, Pune, 29.03.63, R.N. Chopra; iv) 4 exs., Khamgaon tank, Pune, 05.04.67, B.S. Lamba; v) 1 ex., Talegaon, Pune, 17. 11.66, B.S. Lamba; vi) 1 ex., Pirangut, Pune, 22.12.66, R.N. Chopra; vii) 7 exs., Malvali, Pune, 09.02.66, B.S. Lamba; viii) 45 exs., Khamgaon tank, Pune, 06.04.67, B.S. Lamba; ix) 6 exs., Mutha river, Sambhaji bridge, Pune, 24.05.64, R.N. Chopra; x) 2 exs., Karla caves, 15.10.76, K.S. Ohal; xi) 4 exs., Indrayani river, Karla, Pune, 15.10.76, B.K. Tikader; xii) 3 exs., Khamgaon tank Shelarwadi, 29.04.83, D.F. Singh. xiii) 6 exs., 90–142 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : Maharashtra, Karnataka and Peninsular region.

Remarks : It is a common species of Western Ghats. This carp attains a length of about 30 cm.

9. *Cirrhinus mrigala* (Ham-Buch)

1822. *Cyprinus mrigala* Hamilton-Buchanan, *Fishes of Ganges* : 279, 386, pl. 6, fig. 79 (type-locality : Ponds and freshwater rivers of Gangetic provinces).

1991. *Cirrhinus mrigala* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 172–173.

Common Name : Mrigal.

Local Name : Mriya.

Diagnostic Characters : D iii- iv 12- 13; A iii 5; P I 17; V I 8.

Body streamlined, its depth about equal to head length. Mouth broad; upper lip entire, lower lip most indistinct. A single short pair of rostral barbels only. Dorsal fin as high as body. Lateral line with 40 to 45 scales.

Material examined : i) 1 ex, Sangavi village, Akkalkot, A. S. Mahabal, 19.11.1978; ii) 1 ex, Saha village, Ujani, S.G. Patil, 6.6.1990; iii) 1 ex, Khanota, Ujani Wetland, G.M. Yazdani, 13.3.1989. iv) 1 ex., 240 mm, Purna river at Gandhi Gram, 20 km north of P.K.V. University Guest House, Akola, 05.04.04, A.K. Karmakar; v) 1 ex., 260 mm, Purna river near Muktainagar Lift Irrigation Plant, Jalgaon dist., 07.04.05, A.K. Karmakar.

Geographical Distribution : India : Northern India from Punjab to West Bengal and Assam. Also successfully transplanted into water of peninsular India and other states for aquaculture.

Elsewhere : Pakistan and Bangladesh.

Fishery Information : It attains a length of about one meter and is an important major carp in India. It is also regarded as a good game fish. A large number of intergeneric hybrids has been produced at Central Inland Fisheries Research Institute, Barrackpore.

10. *Cirrhinus reba* (Ham-Buch)

1822. *Cyprinus reba* Hamilton-Buchanan, *Fishes of Ganges*, pp. 280, 386 (Type locality : Rivers and pond of Bengal and Bihar).

1999. *Cirrhinus reba*, Menon, *Rec. zool. Surv. India, Occ. Paper No.*, 175 : 123-124.

Common Name : Carp.

Local Name : Kandai.

Diagnostic Characters : D ii-iii 8; A iii 5; P i 15; V i 8.

Dorsal fin with 8 branched rays. Lateral line scales 34-38. Dorsal fin height less than body depth.

Material examined : i) 1 ex., Mula-Mutha river, Bundgarden, Pune, 15.07.63, R.N. Chopra; ii) 5 exs., Godavari river, Nanded, 16.11.87, D.D. Gogte; iii) 2 exs., Sina river, Paranda, Osmanabad, 29.07.88, D.B. Bastawade; iv) 1 ex., Reservoir at Telegaon, Pune, 06.04.02, S. Thakur; v) 1 ex., Wagholi pond, Pune, 15.11.77, M.B. Rao; vi) 1 ex., Bori river, Jalgaon, 27.07.92, P.G. Student of Pratap College, Amalner. vii) 2 exs., 222-235 mm, Ujani Reservoir near Kalashi, 25 km away from Ujani Dam, 26.03.85, A.K. Karmakar; viii) 1 ex., 230 mm, Ujani Reservoir near Kanda, 10 km away from Ujani Dam, 26.03.85, A.K. Karmakar; ix) 1 ex., 222 mm, Sina river at Aurad, 28 km south of P.W.D. Rest house, Sholapur, 27.03.85, A.K. Karmakar; x) 9 exs., 91-139 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; xi) 1 ex., 145 mm, Purna river near Muktainagar Lift Irrigation Plant, Jalgaon distt., 07.04.05, A.K. Karmakar. xii) 1 ex., 135 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan, Nepal, Bangladesh.

Remarks : It inhabits large streams, rivers and tank. This carp attains a length of about 30 cm.

Genus *Crossocheilus* van Hasselt, 1823

1823. *Crossocheilus* Kuhl & van Hasselt, *Algem-Konst Letter-Bodde*, 2, p. 132 (type-species : *Crossocheilus oblongus* Kuhl & van Hasselt, by monotypy).

Body more or less elongate. Abdomen rounded. Head rather small, slightly depressed anteriorly.

Mouth inferior, upper lip well-developed, lower lip fleshy. Eyes large, lies in the posterior half of the head, not visible from below ventral surface. A pair of rostral and maxillary barbel present. Dorsal fin inserted in advance of pelvic fins, with 8 to 9 branched rays. Anal fin short, with 5 branched rays. Caudal fin forked. Lateral line complete with 33 to 46 scales.

11. *Crossocheilus latius latius* (Ham-Buch)

1822 *Cyprinus latius* Hamilton Buchanan, *Fishes of Ganges* : 345, 393 (type-locality : Tista river at base of Darjeeling Himalaya).

1991. *Crossocheilus latius latius* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 416, fig. 147.

Common Name : Gangetic latia.

Diagnostic Characters : D iv 8; A ii 5; P i 13; V i 8.

Body rather elongate, its depth 4.3 to 5.9 times in standard length. Head flat and compressed. Mouth inferior. Barbels two pairs. Lateral line with 39 to 41 scales.

Material examined : i) 25 exs, Mula river near Ghotawade bridge, Pune, M.S. Pradhan, 29.7.1983; ii) 3 exs, Kondapuri, Pune, 11.11.1977, Purchased; iii) 4 exs, Godavari river, Mahale-Mashid, Paithan, R.N. Chopra, 25.9.1964; iv) 1 ex, Mina river, Shivneri, Junar, Pune dist., M.S. Pradhan, 5.7.1983; v) 1 ex, Wagholi, Pune, M. B. Rao, 25.11.1977; vi) 7 exs, Changaon talab, Deolali, Nasik, M.B. Rao, 23.9.1973; vii) 3 exs, Vadoli river, Niphad, Nasik, M.B. Rao, 3.10.1973. viii) 2 exs., 140-180 mm, Confluence of Krishna river with Warna river at Haripur, 12 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar; ix) 2 exs., Mukna Reservoir, 25 km s.w. of Govt. Guest house, Nasik, 10.04.05, A.K. Karmakar. x) 1 ex., 104 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : The Ganga and Brahmaputra in northern India; Mahanadi in Orissa; Western Ghats, head waters of Krishna river.

Fishery Information : This species attains a length of about 12.5 cm. of little interest to fisheries.

Genus *Ctenopharyngodon* Steindachner, 1866

1866. *Ctenopharyngodon* Steindachner, *Verh. Zool. bot. Ges. Wien.*, **16** : 782 (type-species : *Ctenopharyngodon laticeps* Steindachner = *Leuciscus idella* Valenciennes).

Body more or less elongate. Head broad and anteriorly depressed. Large operculum. Eyes large. Mouth wide and terminal. A horizontal rostral fold covers base of upper lip. Barbel absent. Gill racker short and spiny; arranged biserially. Dorsal fin short with 7 branched rays, inserted opposite to or slightly anterior to pelvic fins; last simple ray non-osseous and non-serrated. Caudal fin forked. Lateral line complete, with 40 to 42 scales.

Monotypic

12. *Ctenopharyngodon idellus* (Valenciennes)

1844. *Leuciscus idella* Valenciennes, *Hist. nat. Poiss.*, **17** : 362 (type-locality : China).
1991. *Ctenopharyngodon idellus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 175-176.

Common Name : Grass Carp.

Local Name : Gavatyasa masa.

Diagnostic Characters : Body sub-cylindrical anteriorly and compressed posteriorly. Head depressed and flattened. A horizontal rostral fold covering base of upper lip. Upper jaw slightly longer than lower and protractile. Barbels absent. Lateral line with 40 to 42 scales. Caudal fin forked.

Geographical Distribution : Flat land rivers of China and middle and lower reaches of river Amur in USSR; introduced in many countries including India.

Fishery Information : It attains a length of about 86 cm when it is three years old. The Grass carp is of considerable economic importance as a source of protein and in weed control. The adults are exclusively herbivorous. This fish has been introduced in many countries and is cultured in India, Bangladesh, Sri Lanka and Myanmar of

the Indian region. In many of the countries the main purpose of its introduction, in addition to culture, is biological control of aquatic weeds in natural waterways, lakes, man-made lakes, etc. This fish breeds during monsoon months in the flowing waters of its natural habitat, the rivers.

Genus *Cyprinus* Linnaeus, 1758

1758. *Cyprinus* Linnaeus, *Systema Naturae*, ed. **10**, **1** : 320 (type-species : *Cyprinus carpio* Linnaeus).

Body robust, elongate and compressed. Abdomen rounded. Head relatively small with a bluntly rounded snout. Eyes moderate, placed on the upper half of the head. Mouth small and terminal. Barbels 2 pairs, rostral and maxillary. Dorsal fin very long, inserted opposite to pelvic fins, with three spines and 5 rays. Scales large; lateral line with 30 to 40 scales.

13. *Cyprinus carpio* var. *communis* Linnaeus

1875. *Cyprinus carpio* Linnaeus, *Systema Naturae* ed. **10**, **1** : 320 (type-locality : Europe).
1991. *Cyprinus carpio* var *communis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 184-186.

Common Name : Common Carp.

Local Name : Soneri masa.

Diagnostic Characters : D iii-iv 18-20; A iii 5; P I 15; V I 8.

Body stout, slightly compressed. Head triangular; snout obtusely rounded. Mouth small, oblique and protrusible. Lips thick and fleshy. Two pairs of barbels. Dorsal fin inserted midway between snout-tip and caudal fin base. Pectoral fins large and rounded. Scales large; lateral line scales 30 to 40.

Material examined : i) 3 exs., Hadapsar fish pond, Pune, 02.08.75, B.K. Tikader; ii) 1 ex., Hadapsar, 04.07.75, B.K. Tikader.

Geographical Distribution : Naturally found in China; Korea; Japan; Thailand; Europe; America; introduced in India for culture.

Fishery Information : It attains a length around 1 meter. Cultivated in freshwater impoundments

all over the world. It is omnivorous, mostly bottom feeder. Breeds in confined waters. Its rapid growth, tasty flesh, good reproductive ability and modest requirements have led it becoming the stable fish of warm water fisheries.

Hypselobarbus Bleeker, 1859

1859. *Hypselobarbus* Bleeker, *Nat. Tijds. Ned. Ind.*, **20** : 430 (type-species : *Barbus mussullah* Sykes). Rainboth, 1989. *Occ. Pap. Mus. Zool. Univ. Michigan*, (718) : 23-25. (status recognized).
1859. *Gonoproktopterus* Bleeker, *Nat. Tijds. Ned. Ind.* **20** : 430 (type-species : *Barbus kolus* Sykes). Rainboth, 1986. *Occ. Pap. Mus. Zool. Univ. Michigan*, (712) : 11-14.

Body more or less deep. Head somewhat triangular. Eyes fairly large, not visible from underside of head. Mouth sub-terminal. Lips fleshy, with loose skin appearing rough; post labial groove incomplete, no demarcation between lower lip and jaw. Usually two well-developed pairs of barbels. Dorsal fin inserted anterior to pelvic fins. Caudal fin forked. Lateral line complete, with 31 to 45 scales.

Members of this genus are found only in peninsular India.

Key to the species of Genus *Hypselobarbus*

1. One pair of barbels present.....*H. kolus*
- Two pair of barbels present 2
2. Dorsal spine weak 3
3. Lateral line scales 31 to 34. Each scale with a red lunule and with a dark base.....*H. thomassi*
- Lateral line scales 38 to 42. Jaws without cartilaginous covering *H. curmuca*

14. *Hypselobarbus kolus* (Sykes)

1841. *Barbus kolus* Sykes, *Trans zool. Soc. Lond.*, **2** : 357, pl. 62, fig. 1 (type-locality : Moota Mola river nr. Poona).
1860. *Hypselobarbus* (*Gonoproktopterus*) *kolus* : Bleeker, *Nat. Tijds. Dierk.*, **20** : 275.

Common Name : Kolus.

Local Name : Tahrak Kalshi.

Diagnostic Characters : D iv 9; A iii 5; P I 14. V I 8.

Body moderately deep and compressed, with considerable rise in profile from occiput to dorsal fin. Eyes large, its upper edge near the dorsal profile. Mouth slightly sub-terminal; barbels one pair. Dorsal fin inserted anterior to pelvic fins. Scales relatively small; lateral line scales 40 to 43.

Material examined : i) 1 ex, Bhima river, Khed, Pune, K. Reddiah, 3.7.1976; ii) 2 exs, Alipur, barshi, A.S. Mahabal, 26.11.1978; iii) 1 ex, Mula river, Sathe Biscuit, Pune, M.M. Chatterjee, 25.4.1960. iv) 5 exs, Savitri river, Poladpur, 12 km south of Mahad, B.S. Lamba, 16.2.1966; v) 5 exs, Godavari river, Mahala-Mashid, Paithan, R.N. Chopra, 25.9.1964; vi) 1 ex, Mutha river, Sambhaji bridge, Pune, R.N. Chopra, 25.5.1964; vii) 115 exs, Moshi, Pune, K.P. Rao, 25. 3. 1972; viii) 1 ex, Koyana river, Karad, Satara dist., C.A.N. Rao, 18.1.1988. ix) 1 exs, Warna river, Kolhapur, K.C. Jayaram, 30.1.1977. x) 2exs., 102-216 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari; xi) 2 exs., 60-63 mm, Satara (Purchased), 02.09.64, K.K. Tiwari; xii) 2 exs., 208-230 mm, Sina river at Aurad, 28 km south of PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; xiii) 2 exs., 200-202 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest House, Miraj, 18.03.85, A.K. Karmakar; xiv) 2 exs., Krishna river near Mhaishal Dam, 14 km s.w. of PWD Rest house, Miraj, 16.03.85, A.K.Karmakar; xv) 2 exs., 225-230 mm, Krishna River at Umargaon, 18 km n.w. of PWD rest House, Miraj, 17.03.85, A.K. Karmakar; xvi) 1 ex., 220 mm, Mangla market (Horni river coll.), 4 km from PWD Rest House, Sholapur, 24.03.85, A.K. Karmakar; xvii) 1 ex., 150 mm, Horni river at Naldru, 16 km from PWD Rest House, Sholapur, 25.03.85, A.K. Karmakar. xviii) 1 ex., 166 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar.

Geographical Distribution : India : Krishna, Godavari and Cauvery river systems in peninsular India.

Fishery Information : It attains a length of about 30 cm. This fish is moderately well known south Indian species and very common in Poona waterways. It breeds during June to August.

15. *Hypselobarbus thomassi* (Day)

1873. *Barbus (Barbodes) thomassi* Day, *Proc. Zool. Soc. London*, : 707 (type-locality : South Canara).

1999. *Hypselobarbus thomassi* : Menon, Checklist Freshwater Fishes of India, *Occ. Paper No.*, 175, *Rec. zool. Surv. India* : 82.

Common Name : Red Canarese barb.

Diagnostic Characters : D iii-iv 9; A iii 5; P I 16; V I 9.

Body elongate, both dorsal and ventral profile equally convex. Eyes moderate, its diameter about 3 times in head. Mouth sub-inferior; lower labial fold interrupted. Two pairs of barbels. Dorsal fin inserted equidistant between tip of snout and base of caudal fin. Lateral line scales 31 to 34.

Geographical Distribution : India : South Canara, Trichur : Chalakudi river and Cardomom hills (Western Ghats).

Fishery Information : It attains a length of about 1 m, is of moderate interest to fisheries in South Canara (Karnataka).

Remarks : This species is endemic to western ghats.

Genus *Labeo* Cuvier, 1817

1817. *Labeo* Cuvier, *Regne Animale*, 2 (ed. 1) : 194 (type-species : *Cyprinus rufescens* Hasselquist).

Body cylindrical, elongate; abdomen rounded. Generally overhanging mouth, inferior, transverse and semicircular. Snout broadly rounded or obtusely pointed. Lip thick, covering the jaws, continuous at the corner of the mouth. Barbels one or two pairs, or absent; when single pair, always maxillary. Dorsal fin inserted anterior to pelvic fins, with 11 to 26 rays, devoid of spine.

Anal fin short with 7 to 8 rays. Lateral fin complete, with 36 to 85 scales.

Key to the species of genus *Labeo*

1. Dorsal finrays not more than 13; barbels one pair 2
 - Dorsal finrays usually more than 13; barbels usually two pairs 8
2. Lateral line scales 60-65; lateral transverse scale-rows 8 or 9 between lateral line and pelvic fin base *L. boggut*
 - Lateral line with less than 45 scales; lateral transverse scale-rows 7 or less between lateral line and pelvic fin base 3
3. Lateral transverse scale-rows 6 ½ or 7 between lateral line and pelvic fin base. Snout generally devoid of groove; lower lip smooth *L. sindensis*
 - Lateral transverse scale-rows 4 ½ to 6 between lateral line and pelvic fin base 4
4. Lateral transverse scale-rows 4½ between lateral line and pelvic fin base *L. kawrus*
 - Lateral transverse scale-rows 5 or 6 between lateral line and pelvic base 5
5. Pectoral fins extend to pelvic fins. Eyes large, its diameter 4 to 4.3 in head; a small tubercle above mandibular symphysis *L. bata*
 - Pectoral fin do not reach pelvic fins 6
6. Snout with distinct lateral lobe *L. pangusia*
 - Snout without any lateral lobe 7
7. Dorsal fin inserted slightly posterior to tip of pectoral fins *L. ariza*
 - Dorsal fin inserted slightly anterior to or above tip of pectoral fins. Lateral line scales 37 to 39 *L. boga*
8. Dorsal fin rays 19 to 22; lateral transverse scales-rows 6 or 7 between lateral line and pelvic fin base *L. fimbriatus*
 - Dorsal fin rays 11 to 20 9
9. Lateral line scales 53 to 84 10

- Lateral line scales 36 to 47 11
- 10. Lateral line scales 71 to 84; lateral transverse scale rows 9 to 13 between lateral line and pelvic fin base *L. gonius*
- Lateral line scales 53 to 60; lateral transverse scale-rows 5 or 5½ between lateral line and pelvic fin *L. dussumieri*
- 11. Lateral line scales 36; lateral transverse scale rows 4½ between lateral line and pelvic base *L. nigrescens*
- Lateral line scales 38 to 44 12
- 12. Simple dorsal finrays 3 or 4 13
- Simple dorsal finrays 2 14
- 13. Dorsal fin rays 16 to 20, pre dorsal scales 15 to 18. Lateral transverse 5 to 6 between lateral line and pelvic fin base *L. calbasu*
- Dorsal fin rays 15 to 18, pre dorsal scales 12 to 16. Lateral transverse 6 to 6½ between lateral line and pelvic fin base *L. rohita*
- 14. Snout with lateral lobe; dorsal finrays 13 or 14. *L. potail*
- Snout without lateral lobe; dorsal finrays 15 or 16 *L. porcellus*

16. *Labeo ariza* (Ham-Buch)

1807. *Cyprinus ariza* Ham-Buch, *Journey in Mysore*, 3 : 344, pl. 31 (type locality : Rivers of Peninsular India).
1999. *Labeo ariza*, Jayaram, *The Freshwater Fishes of the Indian Region*, pp. 133

Common Name : Ariza labeo.

Local Name : Kaudasa

Diagnostic Characters : D ii 9; A ii–iii 5; P i 17; V i 8.

Mouth moderate and sub-inferior. Barbels one very short maxillary pair. Dorsal fin inserted slightly posterior to tip of pectoral fins. Pectoral fin as long as head. Caudal fin deeply forked. Lateral line with about 38 scales.

Geographical Distribution : Peninsular India : Nilgiri Hills, Wynaad and Cauvery river system, and up to Orissa.

Remarks : It has leaden grey above, silvery on flanks and abdomen.

17. *Labeo bata* (Ham-Buch)

1822. *Cyprinus bata* Hamilton-Buchanan, *Fishes of Ganges*, 283 (Type locality : Bengal).
1999. *Labeo bata*, Menon, *Rec. zool. Surv. India*, Occ. Paper, 175 : 126–127.

Common Name : Bata.

Local Name : Tambti.

Diagnostic Characters : D ii–iv 9–10; A ii–iii 5; P i 15–17; V i 8.

Eyes large, its diameter 4 to 4.3 times in head, a small tubercle above mandibular symphysis. Pectoral fins extend to pelvic fins. Lateral transverse scales rows between lateral line and pelvic fin base. Lateral line with 37 – 40 scales.

Material examined : i) 1 ex., 120 mm, Godavari river near Gobardhan Ghat, 3 km south of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar; ii) 2 exs., 155–205 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Peninsular river systems, S. India, Orissa, Madhya Pradesh, Uttar Pradesh, Bihar, West Bengal, Assam.

Elsewhere : Bangladesh, Nepal.

Fishery Information : It attains a maximum length of 60 cm. This minor carp is cultivated along with Indian major carps. It breeds in river during monsoon months; normally does not breed in ponds.

Remarks : It inhabits rivers, tanks and ponds.

18. *Labeo boga* (Ham-Buch)

1822. *Cyprinus boga* Hamilton-Buchanan, *Fishes of Ganges*, : 286.386, pl. 28, fig. 80 (type-locality : Brahmaputra river).
1991. *Labeo boga* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 200–201, fig. 73.

Common Name : Boga labeo.

Diagnostic Characters : D ii–iii 9–10; A ii 5; P i 15; V i 8

Body elongate; its dorsal profile more convex than ventral. Head 4.5 to 5.0 in standard length. Snout projecting beyond mouth, devoid of lateral lobe. Eyes large, not visible from underside of head. Mouth more or less narrow, lips quite thick, lower lip joined to isthmus by a bridge. A minute maxillary pair of barbel present. Dorsal fin inserted nearer to tip of snout than caudal fin base. Pectoral fins do not extend to pelvic fin. Lateral line with 37 to 39 scales.

Geographical Distribution : India : rivers of gangetic provinces, Assam, Orissa, Andhra Pradesh, Tamil Nadu , Maharashtra.

Elsewhere : Pakistan; Bangladesh; Nepal and Myanmar.

Fishery Information: It attains a length of about 30 cm, is common in the tributaries of the Ganga, Godavari and Krishna rivers. It spawns in flooded rivers.

19. *Labeo boggut* (Sykes)

1841. *Chondrostoma boggut* Sykes, *Trans. Zool. Soc. London*, 2 : 359 (type locality : Dukhun waterways).

1999. *Labeo boggut*, Menon, *Rec. zool. Surv. India*, Occ. Paper, 175 : 128-129.

Common Name : Boggut labeo carp.

Local Name : Sandshi.

Diagnostic Characters : D iii 8-9; A ii 5; P i 16; V i 8.

Lateral line scales 60 to 65. Lateral transverse scale rows 8 or 9 between lateral line and pelvic fin base. Dorsal fin rays not more than 13, barbels one pair. Eyes dorsolateral in position, not visible from under side of head. Lower lip joined to isthmus by a bridge. Lips fringed.

Material examined : i) 5 exs., Hammalwadi, Aurangabad, 04.09.64, R.N. Chopra; ii) 7 exs., Kadaragi lake, Nasik, 30.09.73, M. Babu Rao; iii) 1 ex., Terna river, Osmanabad, 27.07.88, D.B. Bastawade; iv) 1 ex., Shivan river, Nandurbar, 18.01.95, V.R. Borane; v) 4 exs., Chandgaon talab, Deolali, Nasik, 23.09.73, M.B. Rao. vi) 2 exs, 175-188 mm, Kolar river, 15 km north of Nagpur,

02.04.05, A.K. Karmakar; vii) 3 exs., 120-130 mm, Waghur river, 20 km south of PWD rest house, Jalgaon, 06.04.05, A.K. Karmakar; viii) 2 exs., 140-165 mm, Tapi river, near Khamkera bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; ix) 5 exs., 140-175 mm, Purna river , Gandhi Gram, 20 km north of P.K.V. University Guest House, Akola, 05.04.05, A.K. Karmakar; x) 4 exs., 83-106 mm, Hivara medium Project, near Khadak vill., Deola, Jalgaon distt., 07.04.05, A.K. Karmakar; xi) 2 exs., 135-137 mm, Behula river, near Beruli villege, 40 km south of PWD Rest House, Jalgaon, 07.04.05, A.K. Karmakar; xii) 3 exs., 130-195 mm, Bhadrakali Fish Market (Collection from Godavari river), Nasik, 08.04.05, A.K. Karmakar; xiii) 5 exs., 85-190 mm, Mukna Reservoir, 25 km south of Govt. Guest house, Nasik, 10.04.05, A.K. Karmakar. xiv) 2 exs., 106-165 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar; xv) 1 ex., 125 mm, Wardha river, 15 km south west of PWD Rest House, Chandrapur, 04.06.06, A.K. Karmakar.

Geographical Distribution : India : Northern India, Maharashtra, Cauvery basin.

Elsewhere : Pakistan, Bangladesh.

Remarks : It occurs in the upper reaches of the rivers and ponds.

20. *Labeo calbasu* (Ham-Buch)

1822. *Cyprinus calbasu* Hamilton-Buchanan, *Fishes of Ganges*, : 297, 387, pl. 2, fig. 33 (type-locality : rivers and ponds of Bengal and in the western provinces).

1999. *Labeo calbasu* : Talwar and Jhingran, *Inland fishes of India and Adjacent Countries*, : 203-204.

Common Name : Kalbasu, Black rohu.

Local Name : Kanas.

Diagnostic Characters : D iii-iv 13-16; A ii-iii 5; P i 16-18; V i 8.

Body stout and more or less deep. Head conical, its length less than body depth. Snout depressed and fairly pointed, studded with pores. Eyes not visible from underside of head. Mouth

inferior, lips thick and conspicuously fringed. Two pairs of barbels. Dorsal fin with long base, inserted midway between tip of snout and base of caudal fin. Lateral line scales 40-44.

Material examined : i) 1 ex, Bund garden, Pune, D. N. Tiwari, 24.12.1966; ii) 1 ex, Kowdi, Pune, B. S. Lamba, 26.10.1967; iii) 2 exs, Panchganga river, Kolhapur, Jay Samant, 4.8.1987; iv) 1 ex, Indrayani river, Karla, B.K. Tikader, 22.8.1976; v) 1 ex, Indrayani river, Dehu, M. S. Pradhan 19.5.1983. v) 2 exs., 108-215 mm, Sina river at Aurad, 28 km south of PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; vi) 1 ex., 220 mm, Ekrugh Reservoir, 10 km north of PWD Rest house, Sholapur, 27.03.85, A.K. Karmakar; vii) 2 exs., 157-200 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; viii) 2 exs., 160-200 mm, Krishna river near Mhaishal Dam, 14 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar. ix) 2 exs., 110-130 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Bangladesh; Nepal; Myanmar; Thailand and South China.

Fishery Information : It attains a length of about 90 cm. It is one of the Indian major carps and an important food fish. It thrives better in ponds and lakes than in running waters. It is cultivated along with other carps; an bottom feeder and does not normally breed in ponds.

21. *Labeo dussumieri* (Valenciennes)

1842. *Rohita dussumieri* Valenciennes, *Hist. nat. Poiss.*, 16 : 258, pl. 475 (type-locality : Alipey, Kerala state).
1991. *Labeo dussumieri* : Talwar and Jhingran, *Inland fishes of India and Adjacent Countries*, : 206-207.

Common Name : Malabar labeo.

Diagnostic Characters : D iii 12-13; A ii 5; P i 16; V i 8.

Body elongate and compressed; ventral profile more convex than dorsal. Snout slightly projecting

beyond mouth. Eyes not visible from underside of head. Mouth sub-inferior; lips fleshy and fringed. Two minute pairs of barbels. Dorsal fin inserted nearer to snout-tip than to caudal fin base. Lateral line scales 53-60.

Material examined : i) 1 ex, Poynad villegge, Alibag, Raigad dist, M.S. Pradhan, 14.8.1984.

Geographical Distribution : India : Western Ghats up to north Canara.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 35 cm; is fairly common in the rivers of south Malabar. It is of little interest to fisheries.

22. *Labeo fimbriatus* (Bloch)

1795. *Cyprinus fimbriatus* Bloch, *Naturgesch. ausland. Fische*, 12 : 50, pl. 409 (type-locality : "Malabarischen Kueste" = ? Madras).
1991. *Labeo fimbriatus* : Talwar and Jhingran, *Inland fishes of India and Adjacent Countries*, : 208-209.

Common Name : Fringed-lipped peninsular carp.

Local Name : Tambra, Tambir.

Diagnostic Characters : D iii- iv 15-18; A ii- iii 5; P i 15-18; V i 8.

Body elongate, dorsal profile more convex than ventral. Snout blunt, fairly swollen. Eyes not visible from under side of head. Mouth sub-inferior; lips thick and fringed. Dorsal fin inserted nearer to snout-tip than to caudal fin base. Pectoral fins as long as head. Lateral line scales 43 to 47. Pre-dorsal scales 13 to 18.

Material examined: i) 1 ex., 220 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest House, Miraj, 14.03.85, A.K. Karmakar; ii) 2 exs., 242-280 mm, Mongla Market (Horni river coll.), 4 km from PWD Rest House, Sholapur, 24.03.85, A.K. Karmakar; iii) 1 exs., 200 mm, Horni river at Naldru, 16 km from PWD Rest house, Sholapur, 25.03.85, A.K. Karmakar; iv) 1 ex., 315 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest house, Miraj, 17.03.85, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Myanmar.

Fishery Information : This fish attains a length of about 90 cm. It is the commonest major carp in Tamil Nadu. This carp does not normally breed in ponds and is cultivated along with other carp species. It feeds mainly on diatoms, green and blue-green algae, other aquatic vegetation, insects and decayed organic matter.

23. *Labeo gonius* (Ham-Buch)

1822. *Labeo gonius* Hamilton-Buchanan, *Fishes of Ganges*, pp. 292, fig 82 (type locality : Bengal).

1999. *Labeo gonius*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 133-134.

Common Name : Kuria labco.

Local Name : Kursi.

Diagnostic Characters : D ii-iii 13-16; A ii 5-6; P i 16; V i 8.

Snout projecting, without lateral lobe, studded with pores. Scales small lateral line scales 71-84. Barbels two very short pairs.

Material examined : i) 2 exs., Murbadi dam, Thane dist., 26.08.94, S.G. Patil. ii) 1 ex., 160 mm, Wardha river, 15 km south west of PWD Rest House, Chandrapur, 04.06.06, A.K. Karmakar; iii) 2 exs., 145-148 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Northern India, Maharashtra.

Elsewhere : Pakistan, Bangladesh and Myanmar.

Remarks : It occurs in rivers, ponds, etc.

24. *Labeo kawrus* (Sykes)

1841. *Chondrostoma kawrus* Sykes, *Trans. zool. Soc. London*, 2 : 358, pl. 67, fig. 2 (type locality : Poona).

1999. *Labeo kawrus*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 134.

Local Name : Deccan labeo.

Diagnostic Characters : D ii 9; A ii 5; P i 16; V i 8.

Body elongate, its dorsal and ventral profiles equally convex. Mouth sub-inferior, lower lip joined to isthmus by a narrow bridge. Barbels a minute maxillary pair only. Dorsal fin inserted nearer to snout-tip than to base of caudal fin. Pectoral fins as long as head. Lateral line with about 38 scales. Caudal fin deeply forked.

Material examined : i) 1 ex., Mula-Mutha river, Bound Garden, Pune, 17.07.63., R.N. Chopra; ii) 2 exs., Mula river, Aundh, Pune, 20.03.87, Dr. Latey; iii) 1 ex., Reservoir at Talegaon, Pune, 06.04.02, S. Thakur iv) 1 ex., 100 mm, Godavari river near Gobardhan Ghat, 3 km south of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Western Ghats up to the Deccan.

Remarks : It is endemic to Maharashtra. Inhabits rivers, upper reaches.

25. *Labeo nigrescens* Day

1870. *Labeo nigrescens* Day, *Proc. Zool. Soc. London*, 371 (type locality : Mangalore).

1999. *Labeo nigrescens*, Jayaram, *The Freshwater Fishes of the Indian region*, pp. 134.

Common Name : Karnataka labeo.

Diagnostic Characters : D ii-iii 14-15; A ii 5; P i 18; V i 8.

Mouth sub-inferior, lower lip deeply fringed. Barbels two pairs, maxillary one as long as orbit, the rostral one short. Dorsal fin inserted nearer to snout tip than to caudal fin base. Pectoral fins long, extend to pelvic fins. Caudal fin deeply forked. Lateral line with 36 scales.

Geographical Distribution : India : Karnataka and River Krishna.

Remarks : Deep brown, each scale with a black spot at its base.

26. *Labeo pangusia* (Ham-Buch)

1822. *Cyprinus pangusia* Hamilton-Buchanan, *Fishes of Ganges*, pp. 285, 386 (Type locality : River Kosi)

1999. *Labeo pangusia*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 135–136.

Common Name : Pangusia laqueo.

Local Name : Pangasia.

Diagnostic Characters : D ii-iii 10-11; A ii 5; P i 14-15; V i 8.

Body elongate, its dorsal profile more convex than the ventral. Eyes small, not visible from underside of head, the diameter 4.5 to 5.5 times in head. Barbels a short maxillary pair. Pectoral fins do not extend up to pelvic fin. Lateral line with 40 to 42 scales, lateral transverse scale $5\frac{1}{2}$ or 6 between lateral line and pelvic fin base. Caudal fin deeply forked.

Material examined : i) 1 ex., Gode Maharaj Math, Nasik, 13.09.80, K.R. Pawar; ii) 1 ex., Ghatprabha river, Kolhapur, 22.02.89, M.S. Pradhan.

Geographical Distribution : India : Throughout except Kerala..

Elsewhere : Pakistan, Bangladesh.

Remarks : It occurs in rivers in upper reaches and lower streams.

27. *Labeo porcellus* (Heckel)

1844. *Tylognathus porcellus* Heckel, in *Hugel's Kashmir*, 4 : 385 (type locality : Bombay).

1999. *Labeo porcellus*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 137-138.

Common Name : Bombay laqueo.

Local Name : Khanoos, Tambudki.

Diagnostic Characters : D ii 13-14; A ii 5; P i 16; V i 8.

Head length 5.3 times in standard length. Snout slightly projecting over mouth, devoid of lateral lobe. Eyes small, not visible from underside. Eye diameter 5 times in head. Mouth sub-inferior. Lips thick with distinct inner fold to both jaws. Barbels two pairs. Lateral line scales 39. Lateral transverse scale rows 5 between lateral line and pelvic fin base.

Material examined : i) 2 exs., 170-208 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest House, Miraj, 14.03.85, A.K. Karmakar. ii) 4 exs., 115-123 mm, Godavari river at Sikar Ghat, 3 km south of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar; iii) 1 ex., 93 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Western Ghats, Maharashtra.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 30 cm, is of minor interest to fisheries in Maharashtra.

28. *Labeo potail* (Sykes)

1841. *Cyprinus potail* Sykes, *Trans. zool. Soc. London*, 2 : 354 (Type locality : Beema river, Maharashtra).

1999. *Labeo potail*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 137.

Local Name : Dotondi.

Common Name : Deccan laqueo.

Diagnostic Characters : D ii 11-12; A ii 5; P i 16; V i 8.

Body elongate, its dorsal profile slightly more convex than the ventral. Head length about 5 times in standard length. Mouth small and inferior. Barbels one pair only (maxillary). Pectoral fins nearly as long as head. Lateral line with 39 or 40 scales.

Material examined : i) 1 ex., Koyana river, Karad, Satara dist., 18.01.88, C.A.Rao. ii) 1 ex., 310 mm, Sina river at Aurad, 28 km south of PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar.

Geographical Distribution : India : Maharashtra, The Deccan and the Cauvery river system.

Remarks : It occurs in upper reaches of rivers and streams. It is endemic to Peninsular India.

29. *Labeo rohita* (Ham-Buch)

1822. *Cyprinus rohita* Hamilton-Buchanan, *Fishes of Ganges*, : 301, 388, pl. 36, fig. 85 (type-locality : Freshwater rivers of Gangetic Provinces)
1991. *Labeo rohita* : Talwar and Jhingran, *Inland fishes of India and Adjacent Countries*, : 219-220, fig. 78.

Common Name : Rohu.

Local Name : Tambada-massa.

Diagnostic Characters : D iii-iv 12-14; A ii-iii 5; P I 16-18; V I 8.

Body more or less elongate; dorsal profile more arched than ventral. Snout fairly depressed, projects beyond mouth. Eyes not visible from underside of head. Mouth small and inferior; lips thick and fringed. Dorsal fin inserted midway between snout-tip and caudal fin base. Lateral line scales 40 to 44. Pre-dorsal scales 12 to 16.

Material examined : i) 1 ex, Kowdi, Pune, B. S. Lamba, 26.10. 1967; ii) 2 exs, Hadapsar fish farm, Pune, B.E. Yadav, 10. 10. 1996. iii) 2 exs., 118-132 mm, Purna river, Gandhi Gram, 20 km north of P.K.V. University Guest House, Akola, 05.04.05, A.K. Karmakar.

Geographical Distribution : India : North and Central Provinces (It has been transplanted into number of rivers in peninsular India, Andamans, Maharashtra, Gujarat and also tanks of North-Eastern States).

Elsewhere : Pakistan; Bangladesh; Nepal and Myanmar.

Fishery Information : It is one of the major carps in India. It attains a length of about 1 meter. Rohu is a bottom feeder and prefers plant matter including decaying vegetation. It attains maturity towards end of second year and spawning takes place in flooded rivers. Rohu of river is more active and stronger than that of tank.

30. *Labeo sindensis* (Day)

1872. *Cirrhitina sindensis* Day, *J. Asiat. Soc. Bengal*, 41(2) : 319 (type locality : Sind Hills, Pakistan).
1991. *Labeo sindensis*, Talwar & Jhingran, *J. Inland Fishes*, 2 : 220.

Diagnostic Characters : D ii-iii 10; A ii 5; P i 17; V i 8.

Snout overhanging on mouth. Eyes small, not visible from below. Barbels short maxillary pair. Pectoral fins shorter than head. Lateral line scales 43.

Material examined : 3 exs., Nalla near Municipal tank, Talegaon, 10.07.80, M.S. Pradhan.

Geographical Distribution : India : Haridwar, Punjab, Pune (Maharashtra).

Elsewhere : Pakistan.

Remarks : This carp attains a length of 20 cm. It is a good food fish. It shows discontinuous distribution.

Genus *Neolissochilus* Rainboth, 1985

1985. *Neolissochilus* Rainboth, *Beaufortia*, 35(3) : 26 (type-species: *Barbus stracheyi* Day).

Body deep anteriorly. Eyes in upper half of head, visible from dorsal and ventral aspects. Cheeks with numerous tubercles. Head broad; snout blunt. Mouth smoothly rounded to nearly truncate. Two long pairs of barbels. Dorsal fin with 13 rays; anal fin with 8 rays; pectoral fin with I 13-17 rays; pelvic finrays I 8. Scales large, lateral line scales 20 to 29.

31. *Neolissochilus hexagonolepis* (McClelland)

1839. *Barbus hexagonolepis* McClelland, *Asiat. Res.*, 19(2): 270, 340, pl. 41, fig. 3 (type-locality : Upper Assam).
1991. *Neolissochilus hexagonolepis*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, pp. 229-230, fig. 80.

Common Name : Katli.

Diagnostic Characters: D iv 9; A iii 5; P I 16; V I 8.

Body graceful and moderately elongate. Head broad, its length 3.5 to 4.3 in standard length. Eyes moderate. Mouth truncate, its lower jaw edge sharp; lower labial fold widely interrupted in the middle. Barbels two pairs, longer than orbit. Unbranched dorsal ray osseous and strong. Scales large; lateral line with 28 to 32 scales.

Geographical Distribution : India : Eastern Himalaya and Assam.

Elsewhere : Bangladesh; Nepal; Myanmar; Thailand; Malaysia; Sumatra; and China.

Fishery Information : It attains a length of about 60 cm; is an esteemed game fish. This fish is an omnivorous feeder. The species is known to breed from April to October. It Breeds in ponds with running water.

Genus *Oreichthys* Smith, 1933

1933. *Oreichthys* Smith, *Jour. Siam Soc., Nat. Hist. Suppl.*, 9 : 63 (type-species: *Oreichthys parvus* Smith = *Cyprinus cosuatus* Hamilton Buchanan).

Body oblong and compressed. Head with numerous distinct fine rows of pores. Eyes large, dorso-lateral in position. Mouth small and terminal; lips thin and plain. Dorsal fin inserted above posterior half of pectoral fins, with 11 rays. Anal fin short, with 7 rays. Lateral line incomplete, about 22 scales in longitudinal series.

32. *Oreichthys cosuatis* (Ham-Buch)

1822. *Cyprinus cosuatis* Hamilton-Buchanan, *Fishes of Ganges*, : 338, 392 (type-locality: Kosi river, Uttar Pradesh).

1937. *Oreichthys cosuatis*: Hora, *Rec. Indian Mus.*, 39(4) : 321.

Common Name : Cosuatis barb.

Local Name : Khavli.

Diagnostic Characters: D iii 8; A ii 5; P i 13; V i 8.

Body fairly deep and compressed. Head with numerous, fine, parallel sensory folds on sides. Mouth small; barbels absent. Dorsal fin inserted slightly nearer to snout tip than to caudal fin base. Lateral line incomplete, scales in longitudinal series about 22.

Geographical Distribution: India: Assam, West Bengal, Madhya Pradesh, Maharashtra, Karnataka, and Kerala.

Elsewhere : Bangladesh; and Thailand.

Fishery Information : It attains a length of 8 cm; is of no interest to fisheries in our region.

Genus *Osteobrama* Heckel, 1842

1842. *Osteobrama* Heckel in : *Russeger's Reisen in Europa, Asien and Africa etc.*, 1 (i) : 1033 (type-species : *Cyprinus cotio* Hamilton-Buchanan).

Body deep and strongly compressed laterally. Abdominal edge sharp and trenchant entirely or only from pelvic fin base to vent. Mouth small, somewhat directed upward. Upper jaw slightly longer than lower. Barbels 2 pairs, 1 pair or absent. Dorsal fin inserted considerably behind pelvic fin, with 11 to 12 soft rays and a strong serrated spine. Anal fin with 14 to 36 rays. Lateral line complete with 42 to 80 scales.

Key to the species of genus *Osteobrama*

1. One or two pairs of barbels 2
 - No barbels 4
2. Barbels two well defined pairs 3
 - Barbels one rudimentary maxillary pair only. Anal fin long, with 21-27 branched rays; lateral line scales 73-85 *O. vigorsii*
3. Anal fin with 11 branched rays; lateral line scales about 44 *O. bakeri*
 - Anal fin with 16-18 branched rays; lateral line scales 55-59 *O. neilli*
4. Anal fin with 33 to 38 branched rays; 10½ scale-rows between lateral line and pelvic fin *O. cotio cotio*
 - Anal fin with 25-31 branched rays; less than 10 ½ scale-rows between lateral line and pelvic fin 5
5. Lateral line scales 42-53; predorsal scales 28-30 *O. cotio cunma*
 - Lateral line scales 55-60; predorsal scales 21-24 *O. cotio peninsularis*

33. *Osteobrama bakeri* (Day)

1875. *Rohtee bakeri* Day, *Proc. Zool. Soc. London* : 240 (type-locality : Kottayam, Kerala).

1991. *Osteobrama bakeri* : Talwar and Jhingran, *Inland fishes of India and Adjacent Countries* : 237.

Common Name : Malabar Osteobrama

Diagnostic Characters : D iii 8; A iii 11; P i 12; V i 10.

Body trapezoid and considerably compressed; abdominal edge sharp and trenchant between bases of pelvic and anal fins. Mouth small. Two small pairs of barbels. Dorsal spine weak and serrated. Scales small; lateral line scales 44. Pre-dorsal scales 15.

Geographical Distribution : India : Kerala, Maharashtra.

Remarks : This is rather remarkable species having only 11 branched rays in the anal fin and fewer lateral line scales. It is an endemic species.

Fishery Information : It attains a length of about 11 cm and is of no interest to fisheries.

34. *Osteobrama bhimensis* Singh & Yazdani

1991. *Osteobrama bhimensis* Singh & Yazdani, *J. Bombay nat. Hist. Soc.*, 89 : 96-99 (type locality : Bhima river, Shaha village, Indapur taluka, Pune dist., Maharashtra).

1999. *Osteobrama bhimensis*, Jayaram, *Freshwater Fishes of Indian Region*, p. 101.

Local Name : Bhogni

Diagnostic Characters : Barbels absent. Anal fin with more than 20 branched rays, scales between lateral line and pelvic fin base 13 to 17. Lateral scales 76-83.

Material examined : i) 5 exs., Saha village, Ujani Wetland, Pune dist., 12.12.89, D.F. Singh; ii) 2 exs., Ujani wetland, Pune, 16.01.92, G.M. Yazdani.

Geographical Distribution : India : River Bhima, Pune, Ujani (Maharashtra).

Remarks : It is endemic species to Maharashtra. It is sympatric species with *O. vigorsii* (Sykes).

35. *Oseobrama cotio cotio* (Ham-Buch)

1822. *Cyprinus cotio* Ham-Buch, *Fishes of Ganges* : 339, 393, pl. 39, fig. 93 (Type locality : Ponds and ditches of Bengal).

1999. *Osteobrama cotio cotio*, Jayaram, *The Freshwater Fishes of the Indian Region*, p.101.

Common Name : Cotio

Local Name : Bhongi

Diagnostic Characters : D iii-iv 8; A iii 33-38; P i 12-14; V i 8.

Mouth small, barbels absent. Dorsal spine weak and serrated. Lateral line with about 65 scales, lateral line to base of pelvic fins 10 ½ rows of scales.

Material examined : i) 1 ex., Sina river, Paranda, Osmanabad, 29.07.88, D.B. Bastawade; ii) 30 exs., Ghod river, Shirwal, Pune dist., 02.07.77, G.M. Yazdani; iii) 1 ex., Ghatprabha river, Kolhapur, 22.02.89, M.S. Pradhan; iv) 1 ex., Godavari river, Nanded, 15.08.71, K.R. Rao. v) 1 ex., 51 mm, Koyna river, Korad (Purchased), 05.09.64, K.K. Tiwari; vi) 8 exs., 72-103 mm, Nira river, Khirwad, Satara distt.(Purchased), 22.08.64, K.K. Tiwari; vii) 11 exs., Krishna river at miraj Ghat, 6 km from PWD Rest house, Miraj, 14.03.85, A.K. Karmakar; viii) 6 exs., 70-106 mm, Krishna river at Maishal Dam, 14 km s.w. of PWD rest house, Miraj, 16.03.85, A.K. Karmakar; ix) 6 exs., 67-85 mm, Sina river at Aurad, 28 km south of PWD Rest house, Sholapur, 27.03.85, A.K. Karmakar; x) 4 exs., Ujani Reservoir near Kanda, 10 km away from Ujani Dam, 26.03.85, A.K. Karmakar; xi) 1 ex., 75 mm, Darna Reservoir, 40 km s.w. of Govt. Guest House, Nasik, 09.04.05, A.K. Karmakar.

Geographical Distribution : India : Assam, West Bengal, Bihar, Punjab, Madhya Pradesh, Uttar Pradesh, Maharashtra.

Elsewhere : Pakistan, Bangladesh.

Remarks : Inhabits freshwater rivers, ponds and lakes.

36. *Osteobrama cotio peninsularis* Silas

1952. *Osteobrama cotio* var. *peninsularis* Silas, *Proc. nat. Inst. Sci. India*, 18(5) : 433 (type-locality : Poona).

1991. *Osteobrama cotio peninsularis* : Talwar and Jhingran, *Inland fishes of India and Adjacent Countries*, : 240.

Common Name : Peninsular Osteobrama.

Local Name : Bhongi.

Diagnostic Characters : D iii-iv 8-9; A iii 28-31; P i 12-14; V i 9.

Body trapezoid and considerably compressed, its depth 2.2 to 2.8 in standard length. Abdominal edge trenchant from base of pelvic fins to anal fin. Mouth small; no barbel. Lateral line with 55 to 60 scales. Pre-dorsal scales 21 to 24.

Material examined : i) 1 ex., Bhima river, Ujani dam, Ujani, 25.08.83, A.S. Mahabal; ii) 5 exs., Khamgaon tank, Pune, 06.04.67, B.S. Lamba; iii) 1 ex., Khanota, Bhima river, Ujani, Pune, 08.06.90, S.G. Patil. iv) 1 ex., 108 mm, Pench river, 60 km north of Nagpur, 01.04.05, A.K. Karmakar; v) 4 exs., 85-90 mm, Tapi river near Khamkera Bridge, Muktainagar, Distt. Jalgaon, 06.04.05, A.K. Karmakar; vi) 6 exs., 66-82 mm, Satpur Fish market at Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar.

Geographical Distribution : Peninsular India : Maharashtra, Orissa, Andhra Pradesh and Kerala.

Fishery Information : This species is the commonest of *Osteobrama* in Peninsular India. It contributes a minor fishery in this region.

Remarks : It occurs in rivers and streams.

37. *Osteobrama dayi* (Hara & Misra)

1940. *Rohtee dayi* Hora and Misra, *Rec. Indian Mus.*, 42(1) : 162 (type locality : Godavari river, Andhra Pradesh).

1991. *Osteobrama dayi*, Talwar and Jhingran, *Inland Fishes of India and Adjacent countries* : 240-241.

Common Name : Godavari osteobrama

Diagnostic Characters : Div 8; A iii 16-18; P i 15-16; V i 8.

Body trapezoid and compressed, its depth 2.1 to 2.3 in standard length. Abdominal edge sharp and trenchant from base of pelvic fin and anal fin, but rounded in front of pelvic fins. Mouth small; a minute maxillary pair of barbels. Lateral line with 68 to 70 scales. Predorsal scales 28 to 30.

Material examined : 1 ex., Godavari river, Nanded, 10.12.70, R. N. Chopra.

Geographical Distribution : India : Godavari river and ? Deccan.

Fishery Information : It attains a length of about 30 cm, and is of no interest to fisheries.

38. *Osteobrama neilli* (Day)

1873. *Rohtee neilli* Day, *Proc. Zool. Soc.*, 239 (type locality : Bowany river).

1999. *Osteobrama neilli*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 65-66.

Common Name : Nilgiri osteobrama.

Diagnostic Characters : D iv 8; A iii 16-18; P i 12; V i 10

Barbels two pairs, upper jaw longer than lower. Dorsal fin three fourth as high as body. Lateral line scales 55-59. Predorsal scales 20-22.

Material examined : i) 1 ex., Bhima river, Ujani dam, Ujani, 25.08.83, A.S. Mahabal; ii) 1 ex., Ghatprabha river, Kolhapur, 22.08.89, M.S. Pradhan; iii) 2 exs., Mula-Mutha river, Pune, 08.03.63, R.N. Chopra. iv) 1 ex., 195 mm, Confluence of Bhagabati and Kasari rivers, 5 miles from Kolhapur, 13.09.64, K.K. Tiwari; v) 3 exs., 112-120 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest House, Miraj, 14.03.85, A.K. Karmakar; vi) 3 exs., 135-150 mm, Ujani Reservoir near Kanda, 10 km away from Ujani Dam, 26.03.85, A.K. Karmakar; vii) 3 exs., 92-98 mm, Krishna river near Mhaishal Dam, 14 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar.

Geographical Distribution : India : Maharashtra, Karnataka and Tamil Nadu.

Remarks : It occurs in fast flowing streams and river.

39. *Osteobrama vigorsii* (Sykes)

1841. *Rohtee vigorsii* Sykes, *Trans. zool. Soc. London*, 2 : 364, pl. 6, fig-3 (type locality: Bheema river at Pairgaon, Maharashtra).

1999. *Osteobrama vigorsii*, Menon, *Rec. zool. Surv. India*, Occ. Paper No., 175 : 66-67.

Local Name : Phenkut.

Diagnostic Characters : D iii 8; Aiii 21-27; P i 18; V i 9.

Mouth small. A pair of rudimentary barbel present. Dorsal spine very strong and denticulated. Scales very small. Lateral line with 73-85 scales. Predorsal scales 33-37.

Material examined : i) 1 ex., Mutha river, Lakadi bridge, Pune, 13.03.63, R.N. Chopra; ii) 1 ex., Mutha river, Lakadi bridge, Pune, 14.05.64, R.N. Chopra; iii) 1 ex., Vadgaon, Pune, 29.09.65, B.S. Lamba; iv) 1 ex., Pawna dam, 09.08.73, P.D. Gupta; v) 1 ex., Peacock bay Khadakwasla, 15.10.77, G.M. Yazdani. vi) 5 exs., 182-290 mm, Nira river, Khirwad, Satara distt., 21.08.64, K.K. Tiwari; vii) 2 exs., 75-190 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari; viii) 1 ex., 190 mm, Confluence of Bhagabati and Kasari rivers, 5 miles from Kolhapur, 13.09.64, K.K. Tiwari; ix) 1 ex., 90 mm, Nira river, khirwad, Satara distt. (Purchased), 22.08.64, K.K. Tiwari; x) 7 exs., 142-178 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest House, Miraj, 14.03.85, A.K. Karmakar; xi) 1 ex., 135 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; xii) 2 exs., 200-215 mm, Ujani Reservoir near Kalashi, 25 km away from Ujani Dam, 26.03.85, A.K. Karmakar; xiii) 7 exs., 190-210 mm, Ujani reservoir near Kanda, 10 km away from Ujani Dam, 26.03.85, A.K. Karmakar; xiv) 1 ex., 165 mm, Warna river at Narsingpur, 40 km n.w. of PWD Rest House, Miraj, 15.03.85, A.K. Karmakar; xv) 6 exs., 120-195 mm, Krishna river near Mhaishal Dam, 14 km, s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar. xvi) 2 exs., 86-94 mm, Purna river near Muktainagar Lift Irrigation Plant, Jalgaon distt., 07.04.05, A.K. Karmakar.

Geographical Distribution : India : Orissa, Maharashtra, Krishna and Godavari rivers system.

Remarks : It occurs in fast flowing streams and rivers.

Genus *Osteochilichthys* Hora

1942. *Osteochilichthys* Hora, *Rec. Indian Mus.*, 44, p. 86 (type-species : *Scaphiodon thomassi* Day).

Body oblong and compressed. Snout obtusely rounded without large rostral pores which may contain horny tubercles. Eyes moderate to large, places in the middle of the head. Mouth inferior or sub-inferior, lips large, papillated or fimbriated; lower lip broadly confluent with isthmus, lower jaw with sharp bony edge. Barbels one or two pairs, or entirely absent. Three rows of pharyngeal teeth. Dorsal fin long with 13 to 21 rays, last unbranched ray often osseous, strong and smooth. Caudal fin forked. Lateral line complete, with 33 to 43 scales.

Key to the species of genus *Osteochilichthys*

1. Barbels two pairs; dorsal fin with 14 or 15 branched rays; one or two dusky blotches on lateral line below dorsal fin origin *O. godavariensis*
- Barbels absent; dorsal fin with 11 branched rays; no dusky blotches on lateral line below dorsal fin origin 2
2. Body depth 2.8-3.0 in standard length; lips continuous and fleshy at the angle of the mouth *O. thomasi*
- Body narrow, its depth 3.2-3.6 in standard length; lips continuous and simple at the angle of the mouth *O. nashii*

40. *Osteochilichthys godavariensis* (Rao)

1977. *Osteocheilus godavariensis* Rao, *Sci. Cult.*, 43(11) : 492, fig.1,2 (type locality : Chandkas tributary of Godavari river, Maharashtra).

1999. *Osteochilichthys godavariensis*, Jayaram, *The Freshwater Fishes of Indian Region*, p. 125.

Common Name : Chandkas barb.

Diagnostic Characters : D iii 14-15; A iii 6; P i 14; V i 8.

Snout overhanging on the mouth covered with papillae. Lower jaw with cartilaginous covering internally. Lips fringed. Barbel two pairs. Two dusky blotches on lateral line below insertion of dorsal fin, another dark spot at the base of caudal fin.

Geographical Distribution : India : Western Ghats, Godavari river system.

Remarks : It is an endemic species of Maharashtra.

41. *Osteochilichthys nashii* (Day)

1868. *Barbus nashii* Day, *Proc. zool. soc. Lond.* : 584 (type-locality : Fraserpett river, Coorg dist. Karnataka).

1999 *Osteochilichthys nashii* : Jayaram, *The Freshwater Fish of the Indian Region*, : 125-126, Narendra Publishing House, Delhi.

Common Name : Nash's barb.

Diagnostic Characters : D iv 11; A iii 5-6; P i 14; V i 8.

Body oblong and compressed, its depth 3.2 to 3.6 in standard length. Snout overhanging mouth. Mouth broad and inferior, each jaw with cartilaginous covering. Lips simple and continuous at angles of mouth. Barbels absent. Lateral line scales 40 to 43.

Material examined : 1 ex, Pavana river, Pune, Indira Patil, 23.8.2005.

Geographical Distribution : India : Western Ghats of Karnataka and Kerala, also in Maharashtra.

Fishery Information : It attains a length of about 18 cm, and is of no interest to fisheries.

42. *Osteochilichthys thomassi* (Day)

1877. *Scaphiodon thomassi* Day, *Fishes of India*, : 551, pl. 134, fig. 1 (type-locality : South Canara).

1999. *Osteochilichthys thomassi* : Jayaram, *The Freshwater Fish of the Indian Region*, : 125-126, Narendra Publishing House, Delhi.

Local Name : Konti barb.

Diagnostic Characters : D iv 11; A ii-iii 6; P i 15; V i 8.

Body more or less deep and slightly compressed, its depth 2.8 to 3.0 times in standard length. Snout overhanging mouth; presence of large pores on snout and upper lip. Mouth inferior; lower jaw with a horny covering anteriorly. Lips continuous and fleshy at angles of mouth. Barbels absent. Lateral line scales 39.

Geographical Distribution : India : Western Ghats of Karnataka.

Fishery Information : It attains a length of about 32 cm and is of minor interest to fisheries. This species is fast growing and is valuable for stocking even in temporary waters. It breeds only in running water.

Genus *Puntius* Hamilton-Buchanan, 1822

1822. *Puntius* Hamilton-Buchanan, *Fishes of Ganges* : 310, 388 (type-species : *Cyprinus sophore* Hamilton-Buchanan).

Body short or moderately elongate, often deep and slightly compressed; with rounded abdomen. Mouth terminal to inferior; lip thin, devoid of horny covering. Barbels 2 pairs, 1 pair or absent. Dorsal fin short, inserted nearly opposite to pelvic fins, with 9 to 13 rays and with or without spine. Anal fin with 7 to 9 rays. Lateral line complete or incomplete, with 20 to 47 scales in longitudinal series.

Key to the species of genus *Puntius*

1. Barbels absent 2
 - Barbels present 7
2. Last un-branched dorsal fin-ray non-osseous, weak and articulated 3
 - Last un-branched dorsal fin-ray osseous and strong, often serrated 4
- 3 Body with seven vertical dark blotches
 - *P. sahayadriensis*
 - Body devoid of vertical colour bands. Predorsal scales 6-7; scales in longitudinal series 20-22 *P. vittatus*
4. Body with vertical colour bands. Lateral line

- incomplete. Dorsal spine longer than depth of body *P. gelius*
- Body devoid of vertical colour bands, but with one or two black blotches 5
5. Body with one black blotch over posterior portion of anal fin. No spot on operculum ..
..... *P. conchoni*
- Body with two black blotches, first on the anterior part of body and second above anal fin or at caudal base 6
6. Dorsal spine serrated on its posterior edge ..
..... *P. ticto*
- Dorsal spine smooth *P. sophore*
7. Barbels one pair only 8
- Barbels two pairs 17
8. Lateral line scales 42-47 9
- Lateral line scales less than 35 10
9. Dorsal fin with eight branched rays; lateral line incomplete *P. fraseri*
- Dorsal fin with nine branched rays; lateral line complete *P. deccanensis*
10. Lateral line complete; last un-branched dorsal finray strongly osseous 11
- Last un-branched dorsal finray non-osseous; but if osseous, only very feeble 12
12. Body marked with two dark blotches, first behind the operculum and second near base of caudal fin *P. chola*
- Body with single blotch only, placed on the base of caudal fin 13
13. Dorsal fin inserted equidistant between tip of snout and base of caudal fin *P. parrah*
- Dorsal fin inserted nearer to base of caudal fin than to snout tip *P. dorsalis*
14. A distinctive deep black oval blotch on lateral line, which generally extends from 14th to 16th lateral line scales *P. filamentosus*
- No black blotch / mark on lateral line 15
15. No black blotch on base of caudal fin; dorsal fin inserted equidistant between tip of snout and base of caudal fin *P. arenatus*
- A well-marked dark blotch at the base of caudal fin 16
16. Depth of body about 3.6 times in standard length; lateral line scales 23 or 24
..... *P. amphibius*
- Depth of body 2.8 to 3.0 times in standard length; lateral scales 26 to 28
..... *P. melanostigma*
17. Last un-branched ray of dorsal fin non-osseous, weak and articulated 18
- Last un-branched ray of dorsal fin osseous and strong 19
18. Body with three vertical black bands; lateral line scales 18 to 20 *P. fasciatus*
- Body devoid of vertical colour bands; lateral line scales 27 to 32 *P. jerdoni*
19. Last unbranched dorsal fin ray smooth; Lateral line scale 28 to 32 *P. carnaticus*
- Last unbranched dorsal fin ray serrated; Lateral line scales 28 to 33 20
20. Pre-dorsal scales 11 or 12; dorsal fin inserted slightly nearer to tip of snout than to base of caudal fin *P. sarana sarana*
- Pre-dorsal scales 10; dorsal fin inserted equidistant between tip of snout and base of caudal fin *P. sarana subnasutus*
- 43. *Puntius amphibius* (Valenciennes)**
1842. *Copoeta amphibia* Valenciennes, *Hist. nat. Poiss.*, 16 : 282, pl. 478 (type-locality : Bombay).
1991. *Puntius amphibius* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 257-258.
- Common Name** : Scarlet-banded barb.
- Local Name** : Bhondgi, Khavli.
- Diagnostic Characters** : D ii-iii 8; A ii-iii 5; P i 14; V i 8.
- Both profile of body equally convex; its depth about 3.6 in standard length.

Mouth small and sub-terminal. One pair of maxillary barbel, shorter than orbit. Dorsal fin inserted nearer to tip of snout than caudal fin base. Lateral line complete with 23 to 24 scales. Pre dorsal scales 7 or 8.

Material examined : i) 2 exs., Paud, Pune, 07.10.78, R.H. Kamble; ii) 1 ex., Karla cave, Pune, 15.10.76, K.S. Ohal; iii) 20 exs., Kamshet, near animal hospital, 02.01.79, M.S. Pradhan; iv) 2 exs., Talegaon, Pune, 03.08.77, Ramakrishna; v) 3 exs., Panshet, Pune, 12.07.89, D.F. Singh; vi) 1 ex., Indryani river, Kamshet, 01.09.89, B.E. Yadav; vii) 4 exs., Indryani river, Karla, Pune, 05.11.63, B.K. Tikader; viii) 1 ex., Mula-Mutha river Bund garden, Pune, 17.07.63, R.N. Chopra; ix) 12 exs., Pen, dist. Kolaba, 13.02.66, B.S. Lamba; x) 1 ex., Talegaon, Pune, 17.11.66, B.S. Lamba; xi) 1 ex., Pirangut, Pune, 22.12.66, R.N. Chopra; xii) 2 exs., Wadgaon, Pune-Bombay Road, 29.09.65, B.S. Lamba; xiii) 3 exs., Malvali, Pune, 09.02.66, B.S. Lamba; xiv) 9 exs., Wadgaon, Pune, 31.10.66, B.S. Lamba; xv) 1 ex., Mutha river, Lakadi bridge, Pune, 04.05.63, R.N. Chopra; xvi) 9 exs., Wadgaon, Pune, 12.10.66, B.S. Lamba; xvii) 3 exs., Mutha river, Sambhaji bridge, Pune, 24.05.64, R.N. Chopra; xiii) 2 exs., Wagholi pond, 01.12.77, M.B. Rao; xix) 1 ex., Wagholi, Pune, 01.12.77, M.B. Rao; xx) 9 exs., Kamshet, Pune, 13.08.70, R.N. Chopra; xxi) 7 exs., Kamshet, Pune, 03.09.70, R.N. Chopra; xxii) 6 exs., Mula-Mutha river, Sumbhaji bridge, Pune, 29.11.66, R.N. Chopra; xxiii) 1 ex., Nallah at Gdvira, 2 km east of Palghar R. H., Thana Dist., 01.11.72, G.M. Yazdani; xxiv) 1 ex., Kasarbhat, Pauvel, Raigad dist., 12.08.87, M.S. Pradhan; xxv) 8 exs., Birwadi, Mahad, Raigad dist., 12.08.87, M.S. Pradhan; xxvi) 8 exs., Sedor bridge, Dasgaon, Mahad, Raigad dist., 12.08.87, M.S. Pradhan; xxvii) 5 exs., 106-110 mm, Krishna river near Mhaishal Dam, 14 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar; xxviii) 1 ex., 95 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; xxix) 1 ex., 55 mm, Waghur river, 20 km south of PWD Rest House, Jalgaon, 06.04.05, A.K. Karmakar; xxx) 3 exs., 88-102 mm, Satpur

Fish Market at Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar; xxxi) 6 exs., 65-90 mm, Darna Reservoir, 40 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar.

Geographical Distribution : India : Peninsular India as high as Orissa, Madhya Pradesh and Rajasthan.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 20 cm. This species is known to breed in shallow waters during June-July in Tamil Nadu and in October – November in South Karnataka. Also larvivorous in nature.

Remarks : Upper half of body dark blue, becoming pale.

44. *Puntius arenatus* (Day)

1878. *Barbus arenatus* Day, *Fish India*, p. 574, pl. 142, fig. 7 (type locality : Madras).

1999. *Puntius arenatus*, Jayaram, *The Freshwater Fishes of the Indian Region*, pp. 110.

Common Name : Aranatus barb.

Diagnostic Characters : D ii 8; P-15; V i 8; A iii 5.

A deep bodied fish without any colour bands on body. A pair of barbel present. Lateral line complete with 24-27 scales. Body depth 3.00 to 3.67, head length 3.24 to 3.75 in standard length.

Geographical Distribution : India : Tamil Nadu. Maharashtra.

Remarks : This species close to *P. melanostigma* differing from it in having a plain body and scale count. It is very rare species.

45. *Puntius carnaticus* (Jerdon)

1849. *Barbus carnaticus* Jerdon, *Madras J. Lit. & Sci.*, 15 : 311 (Type locality : Cauvery river).

1991. *Puntius carnaticus*, Jayaram, *Rec. zool. Surv. India, Occ. Paper*, 135 : 108.

Common Name : Karnatica carp.

Local Name : Khavli.

Diagnostic Characters : D iv 8; A ii-iii 5; P i 14; V i 8.

A deep bodied fish with 4 barbels. Dorsal ray osseous, strong, smooth, longer than head length. Lateral line complete with 28-31 scales.

Material examined : i) 2 exs., Panchganga river, Kolhapur, 29.01.97, K.C. Jayaram; ii) 1 ex., Morna river, Amroli Road, Satara, 28.01.97, K.C. Jayaram; iii) 1 ex., Godavari river, Nanded, 15.08.71, K.R. Rao.

Geographical Distribution : India : Cauvery, Krishna river systems, Maharashtra, Nilgiri, Wynad in Kerala, Canara in Karnataka.

Remarks : This species is endemic to Western Ghats.

46. *Puntius chola* (Ham-Buch)

1822. *Cyprinus chola* Hamilton-Buchanan, *Fishes of Ganges*, : 321, 289 (type- locality : northeastern parts of Bengal).

1991. *Puntius chola* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 52-56.

Common Name : Swamp barb, Chola barb.

Local Name : Khavli.

Diagnostic Characters : D iii 8; A ii 5; P i 14; V i 8.

Body more or less deep and compressed, lower profile less convex than upper. Mouth moderate ; one pair of short maxillary barbel. Dorsal fin inserted equidistant between snout tip and caudal fin base. Last un-branched dorsal ray osseous, fairly strong and smooth. Lateral line complete, with 26 to 28 scales. Pre-dorsal scales 10 to 12.

Material examined : i) 2 exs., Khamgaon tank, Pune, 06.04.67, B.S. Lamba; ii) 31 exs., Katrajghat, Pune, 21.06.65, B.S. Lamba; iii) 2 exs., Khamgaon tank, Pune, 10.04.67, B.S. Lamba; iv) 1 ex., Whagholi pond, Pune, 23.08.78, S.V. Mulay. v) 1 ex., 90 mm, Warna river at Narsingpur, 40 km n.w. of PWD Rest House, Miraj, 15.03.85, A.K. Karmakar; vi) 4 exs., 88-93 mm, Sina river at Aurad, 28 km south from PWD Rest House,

Sholapur, 27.03.85, A.K. Karmakar. vii) 4 exs., 108-120 mm, Pench river, 60 km north of Nagpur, 01.04.05, A.K. Karmakar.

Geographical distribution : India : Throughout.

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

Fishery Information : It attains a length of about 12 cm and is of minor interest to fisheries.

Remarks : Colour dark brown on dorsal and above lateral line; light brown below underneath.

47. *Puntius conchoni* (Ham-Buch)

1822. *Puntius conchoni* Hamilton-Buchanan, *Fishes of Ganges*, pp. 317, 389 (type-locality : ponds of north east Bengal; Kosi river and Ami river).

1991. *Puntius conchoni* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 27-29.

Common Name : Rosy barb, Red barb.

Local Name : Gulabi Khavali.

Diagnostic Characters : D iii 7-8; A ii-iii 5; P i 18; V i 8.

Body deep and compressed, its depth 2.2 to 2.5 in standard length. Head 4.1 to 4.5 in standard length. Mouth moderate, barbels absent. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Last dorsal ray osseous, moderately strong and serrated. Lateral line incomplete, ceases after 10th to 12th scales; with 24 to 26 scales in longitudinal series.

Material examined : i) 3 exs., Pashan tank, Pune, B.K. Tikadar, 07.02.76; ii) 1 ex., Sina river, Malik Peth, Sholapur, A.S. Mahabal, 30.08.83; iii) 1 ex., Chichol Talav, Sargola, Sholapur, A.S. Mahabal, 04.09.83; iv) 18 exs., Aner dam, Chopda, Jalgaon, R.H. Kamble, 25.11.83; v) 1 ex., Mula-Mutha river, Bundgarden, Pune, A.K. Kashid, 05.02.60; vi) 1 ex., Mutha river, Lakadi bridge, Pune, R.N. Chopra, 13.03.63; vii) 1 ex., Mutha river, MES College, Pune, R.N. Chopra, 08.03.63; viii) 12 exs., Wagh river Ozar, Nasik, B.S. Lamba, 26.12.64; ix) 1 ex., Godavari river, Singwagi, Nagar, M. Babu Rao, 09.10.73; x) 1 ex., Sangam

of Bhama & Bhima river, Pimpalgaon, Pune, D.F. Singh, 22.01.87. xi) 6 exs., 44-56 mm, Satara (Purchased), 02.09.64, K.K. Tiwari; xii) 9 exs., 52-75 mm, Tapi river near Khamkera bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; xiii) 10 exs., 33-51 mm, Purna river at Gandhi Gram, 20 km north of P.K.V. University Guest house, Akola, 05.04.05, A.K. Karmakar; xiv) 3 exs., 53-55 mm, Gangapur Reservoir on Godavari river, 10 km n.w. of Govt. Guest House, Nasik, 09.04.05, A.K. Karmakar; xv) 20 exs., 40-60 mm, Darna Reservoir, 40 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar. xvi) 2 exs., 70-72 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Ganga, Brahmaputra, Mahanadi and Cauvery River Systems.

Elsewhere : Pakistan; Nepal and Bangladesh.

Fishery Information : It attains a length of about 10 cm. This is one of the most important ornamental *Puntius* species and very beautiful aquarium fish.

Remarks : This fish is close to *P. ticto* (Ham-Buch) but differing from it in having deeper body, more number of lateral line scales (24-28 VS. 22-26) and absence of anterior colour spot. The colour of fish is pinkish.

48. *Puntius deccanensis* Yazdani & Rao

1976. *Puntius deccannensis* Yazdani & Rao, *J. Bombay nat. Hist. Soc.*, 73 : 171 (type locality : Katraj tank, Pune).
1991. *Puntius deccanensis*, Jayaram, *Rec. zool. Surv. India, Occ. Paper*, 135 : 44.

Common Name : Deccan barb.

Local Name : Khavali, Bhondgi.

Diagnostic Characters : D iii 9; A ii 7; P i 10-12; V i 8.

A deep bodied fish. Two barbels; predorsal spine long, serrated. Lateral line complete with 42 scales. Ridge like longitudinal swelling present along posterior half of lateral line.

Material examined : i) 3 exs., Nalla near Katraj, 13 km south of Pune, 20.07.74, C.B. Prasad; ii) 1 ex., Nalla near Katraj tank, 13 km south of Pune, 13.02.76, Dr. B.K. Tikader.

Geographical Distribution : India : Maharashtra, Pune.

Remarks : It is an endemic fish from Maharashtra.

49. *Puntius dorsalis* (Jerdon)

1849. *Systomus dorsalis* Jerdon, *Madras J. Lit. & Sci.*, 15 : 314 (type-Localities : tanks and rivers in neighbourhood of Madras).
1991. *Puntius dorsalis* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 64-67.

Common Name : Long-snouted barb.

Diagnostic Characters : D iii-iv 8; A iii 5; P i 11-12; V i 8.

Body elongate and sub-cylindrical, its depth 3.5 in standard length. Head 3.8 in standard length. Snout rather long and pointed. Mouth sub-terminal; one short pair of maxillary barbel. Dorsal fin inserted nearer to base of caudal fin than to snout tip. Last un-branched dorsal ray osseous, strong and smooth. Lateral line complete with 22 to 28 scales.

Material examined : i) 9 exs, Malvali, Pune, B.S. Lamba, 9.2.1966; ii) 4 exs, Paud, Pune, R.N. Chopra, 24.12.1969. iii) 1 ex., 102 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar; iv) 2 exs., 80-98 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Cauvery & Krishna River Systems, Kerala, Karnataka, Andhra Pradesh, Mahanadi in Orissa, Narmada in Hoshangabad dist., Madhya Pradesh.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 24 cm and of minor interest to fisheries. This fish has been proved useful in guinea worm control.

50. *Puntius fasciatus* (Jerdon)

1849. *Cirrhinus fasciatus* Jerdon, *Madras J. Lit. & Sci.*, 15 : 305 (type-locality : Malabar).

1991. *Puntius fasciatus* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 135-139.

Common Name : Melon barb.

Local Name : Khavali, Bhondgi.

Diagnostic Characters : D iii 8; A ii 5; P i 14; V i 7.

Body elongate, its depth 2.5 to 2.8 in standard length. Length of head about 3.7 in standard length. Mouth moderate ; barbels two pairs. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Last un-branched dorsal ray non-osseous, weak and articulated. Lateral line complete, with 18 to 20 scales.

Geographical Distribution : India : Wynad, Nilgiri hill range in Kerala and Karnataka. Also in the Cauvery at the base of the hills, besides Nallamalai hills in the Eastern Ghats.

Fishery Information : It attains a length of about 7 cm. A popular aquarium fish. It breeds in ponds and in very large aquaria heavily laden with plants.

51. *Puntius filamentosus* (Valenciennes)

1844. *Leuciscus filamentosus* Valenciennes, *Hist. nat. Poiss.*, 17 : 96, pl. 492 (type-locality : "les eaux douces d'Alleppey" = Alleppey, Kerala State).

1991. *Puntius filamentosus* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 77-84.

Common Name : Black-spot barb, Indian tiger barb.

Local Name : Khavali, Bhondgi.

Diagnostic Characters : D iii (iv) 8; A ii-iii 5; P i 14; V i 8.

Body elongate, its depth 3.3 to 3.8 in standard length. Head about 4.3 in standard length. Mouth moderate; a very small pair of maxillary barbel only. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Last un-branched

dorsal ray non-osseous, weak and smooth. Lateral line complete, with about 21 scales.

Material examined : i) 1 ex., Dandoli, district Ratnagiri, 22.02.65, B.K. Tikader; ii) 1 ex., Nevade village, Karjat, Raigad dist., 05.10.81, M.S. Pradhan. iii) 1 ex., 67 mm, Verna river near Wada village, 5 km north of I.B., Satara, 31.08.64, K.K. Tiwari; iv) 7 exs., 46-69 mm, Satara, 02.09.64, K.K. Tiwari. v) 1 ex., 55 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari.

Geographical Distribution : India : Cauvery, Krishna drainages in Kerala, Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu and Goa.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 18 cm. A popular aquarium fish; breeds in ponds and in very large aquaria heavily laden with plants.

Remarks : Young fishes have dark black vertical band and fin of pinkish colour. In males, 4-5 branched of dorsal fin dark tipped and elongated.

52. *Puntius fraseri* (Hora & Misra)

1938. *Barbus fraseri* Hora & Misra, *J. Bombay nat. Hist. Soc.*, 40(1) : 29, pl. 3, fig. 2 (type locality : Darna river, Deolali, Maharashtra).

1991. *Puntius fraseri*, Jayaram, *Rec. zool. Surv. India, Occ. Paper*, 135 : 41.

Common Name : Dhama barb.

Local Name : Kadwi.

Diagnostic Characters : D ii 8; A iii 5; P i 11-12; V i 8.

Two barbels, dorsal spine ossified and serrated. Lateral line scales 42-45. Incomplete scales 8-10. Predorsal scale 15 or 16. One spot present on caudal base.

Material examined : i) 5 exs., Man river, 12 km south-west of Sangola, Sholapur, 03.09.83, A.S. Mahabal. ii) 3 exs., 44-45 mm, Bavada, Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari.

Geographical Distribution : India :

Maharashtra, Darna river, Deolali, Nasik dist., Pune.

Remarks : This is rare and endemic species in Maharashtra.

53. *Puntius gelius* (Ham-Buch)

1822. *Cyprinus gelius* Hamilton-Buchanan, *Fishes of Ganges* : 320, 390, pl. 145, fig. 3 (type-locality : ponds and ditches of north-east Bengal).

1991. *Puntius gelius*, Talwar and Jhingran, *Inland Fishes Of India and Adjacent Countries*, pp. 272-273.

Common Name : Golden barb, Golden dwarf barb.

Diagnostic Characters : D ii-iii 8; A iii 5; P i 14; V i 8.

Body elongate, its depth 2.5 to 2.8 in standard length. Mouth moderate; barbels absent. Dorsal fin inserted slightly in advance of pelvic fins. Scales fairly small; lateral line incomplete, with 23 or 24 scales in longitudinal series.

Geographical Distribution : India : Bihar; West Bengal; Assam; Orissa; Uttar Pradesh; Madhya Pradesh; Maharashtra.

Elsewhere : Bangladesh.

Fishery information : It attains a length of about 4 cm; inhabits still waters. An ideal aquarium fish. A peaceful and shy species, suitable for community tank. Although it is fairly easy to induce this fish to spawn, it eats its own eggs just as soon as it drops them.

54. *Puntius jerdoni* (Day)

1870. *Barbus (Barbus) jerdoni* Day, *Proc.zool. Soc. Lond.*, : 372 (type-locality : Mangalore, Karnataka).

1991. *Puntius jerdoni* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 46-48.

Common Name : Jerdon's carp.

Local Name : Potil, Parag.

Diagnostic Characters : D iii-iv 9; A iii 5 (6); P i 13-14; V i 8.

Body more or less deep, its depth 2.7 to 3 in standard length. Head 4.2 to 5.0 in standard length.

Mouth narrow; barbels two pairs. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Last un-branched dorsal ray non-osseous, weak and articulated. Lateral line complete, with 25 to 32 scales.

Material examined: i) Paud, Pune, 7.10.1978, R.H. Kamble, ii) 1 ex, Alandi, Pune, 10.5.1977, A.S. Mahabal; iii) 5 exs, Kondapuri, Pune, 11.11.1977, purchased.

Geographical Distribution : India : South Karnataka, Kerala, Tamil Nadu and Maharashtra.

Fishery Information : It attains a length of about 45 cm and inhabits running waters of Western Ghats, near the coast from Mumbai to Kerala. This barb forms exclusive fishery in Anjanapur Reservoir, Simoga district, Karnataka. It is also endemic to reservoirs in the Tungabhadra sub-drainage.

Remarks : This species is endemic to western ghats.

55. *Puntius melanostigma* (Day)

1878. *Barbus melanostigma* Day, *Fishes of India*, : 573, pl. 143, fig. 1 (type-locality : Wynaad, Kerala).

1991. *Puntius melanostigma* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 73-75.

Common Name : Wynaad barb.

Diagnostic Characters : D ii 8; A ii 5; P I 14; V I 8.

Body elongate, its depth 2.8 to 3.0 in standard length. Head about 3.7 in standard length. Mouth small, slightly sub-terminal; one pair of maxillary barbel only. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Last un-branched dorsal ray feebly osseous and smooth. Lateral line complete, with 26 to 28 scales.

Geographical Distribution : India : Wynaad, Kerala; Bhavani and Cauvery rivers; Maharashtra.

Fishery Information : It attains a length of about 10 cm; is of no interest to fisheries.

Remarks : A deep black blotch on base of caudal fin.

56. *Puntius narayani* (Hora)

1937. *Barbus narayani* Hora, *Rec. Indian Mus.*, 39(1) : 24, fig. 10 (type-locality : Cauvery river, coorg, Karnataka).
 1991. *Puntius narayani* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 275-276.

Common Name : Narayan barb.

Diagnostic Characters : D iii 9; A iii 6; P i 13; V i 8.

Small sized fish; dorsal and ventral profiles strongly arched, its depth 2.5 in standard length. Eyes large, its diameter about 2.9 in head length. Mouth small; lips fleshy and continuous; labial groove interrupted in the middle; barbels absent. Dorsal fin inserted nearer to tip of snout than to caudal fin base. Last unbranched ray nonosseous, weak and articulated. Lateral line complete with 22 to 23 scales.

Material examined : 2 exs., Borisoi nalla, Ratnagiri, 22.02.73, M. B. Rao.

Geographical Distribution : India : Karnataka and Maharashtra.

Fishery Information : It attains a length of about 4.7 cm in standard length, and is of no interest to fisheries.

57. *Puntius parrah* Day

1865. *Puntius parrah* Day, *Proc. zool. Soc. Lond.*, : 301 (type-locality : Kuriavanoor nr. Trichur, Kerala).
 1991. *Puntius parrah* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 56-58.

Common Name : Parrah barb.

Diagnostic Characters : D ii 7-8; A ii-iii 5; P i 14; V i 8.

Body fairly deep, its depth 2.8 to 3.2 in standard length. Head about 4.2 in standard length. Mouth moderate; single maxillary pair of barbel only. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Last un-branched dorsal ray osseous and smooth. Lateral line complete with 25 to 26 scales.

Material examined : i) 2 exs., 75-83 mm, Hirna river near Khadak villege, Deola, Jalgaon distt., 07.04.05, A.K. Karmakar; ii) 1 ex., 98 mm, Irri Dam on Irri River, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar; iii) 1 ex., 110 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Kerala; Karnataka; Tamil Nadu and Maharashtra.

Fishery Information : It attains a length of 15 cm, is of minor interest to fisheries.

58. *Puntius sahyadriensis* Silas

1953. *Puntius sahyadriensis* Silas, *J. Bombay. nat. Hist. Soc.*, 51 : 582 (type locality : Yanna river, Satara Dist., Maharashtra)
 1999. *Puntius sahyadriensis*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 99-100.

Common Name : Khavli barb.

Local Name : Khavli.

Diagnostic Characters : D iii 8-9; A iii5; P i 12; V i 8.

A deep bodied fish 7 vertical colour bands on the body. No barbels. Dorsal ray weak, articulated. Lateral line complete with 23 to 24 scales. Circumpeduncular scales 10 and 3½ scales between lateral line and fin.

Material examined : i) 3 ex., stream near Phejiwade, Radhanagari, Kolhapur, 17.02.89, M.S. Pradhan; ii) 7 exs., Stream near Radhanagari village, Kolhapur, 17.02.89, M.S. Pradhan; iii) 10 exs., Krishna river, Mahabaleswar, 24.08.96, B.E. Yadav; iv) 1 ex, Morna river Amroli Road, Satara, 28.01.97, K.C. Jayaram; v) 8 exs., Stream at Panchgani ghat, Mahabaleswar, Satara dist., 22.02. 65, B.S. Lamba. vi) 1 ex., 57mm, Satara (Purchased), 02.09.64, K.K. Tiwari.

Geographical Distribution : India : Satara and Kolhapur dist., Maharashtra.

Remarks : This is an endemic species of Maharashtra.

59. *Puntius sarana sarana* (Ham-Buch)

1822. *Cyprinus sarana* Hamilton-Buchanan, *Fishes of Ganga*, pp. 307, 388 (Type locality : Gangetic river system, Bengal).

1991. *Puntius sarana sarana*, Jayaram, *Rec. zool. Surv. India, Occ. Paper No.*, 135 : 133.

Common Name : Olive barb.

Local Name : Dardi.

Diagnostic Characters : D iii-iv 8; A iii 5; P i 14-16; V i 8.

A moderately deep bodied fish with 4 barbels. Dorsal ray osseous, serrated.

Lateral line complete with 30-33 scales and prominent finger like dark spot on caudal peduncle. Each scale gives an appearance of black longitudinal lines over body, dark border posteriorly.

Material examined : i) 2 exs., Mula-Mutha river, Bund garden, Pune, R.N. Chopra, 27.07.63; ii) 11 exs., Inrayani river, Karla, Pune, B.K. Tikader, 05.11.63; iii) 2 exs., Vadgaon, Pune, B.S. Lamba, 29.09.65; iv) 1 ex., Danoli, Ratnagiri, B.K. Tikader, 22.02.65; v) 1 ex., Mutha river, Lakadi bridge, Pune, R.N. Chopra, 02.05.63; vi) 1 ex., Vadgaon, Pune, B.S. Lamba, 31.10.66 vii) 2 exs., Nalla near Kabraj tank, Pune, P.R. Salunke, 23.08.74; viii) 1 ex., Dudhganga river, Radhanagari, Kolhapur dist., 20.06.91, purchased; ix) 1 ex., 185 mm, Nira river, Khirwad, Satara distt., 21.08.64, K.K. Tiwari; x) 1 ex., 135 mm, Bavana, Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; xi) 1 ex., 167 mm, Sina river at Aurad, 28 km south from PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; xii) 1 ex., 166 mm, Ekrukh Reservoir, 10 km north from PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; xiii) 2 exs., 180-225 mm, Krishna river at Bhilavoli, 38 km n.w. of PWD Rest House, Miraj, 18.03.85, A.K. Karmakar; xiv) 2 exs., 200-205 mm, Kolar river, 15 km north of Nagpur, 02.04.05, A.K. Karmakar; xv) 1 ex., 170 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; xvi) 1 ex., 150 mm, Darna reservoir, 40 km s.w. of Govt.

Guest House, Nasik, 09.04.05, A.K. Karmakar; xvii) 3 exs., 125-185 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical distribution : Throughout India, north of Krishna river system.

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

Remarks : A finger like black spot present on caudal peduncle.

60. *Puntius sarana subnasutus* (Valenciennes)

1842. *Barbus subnasutus* Valenciennes, *Hist. nat. Poiss.*, 16 : 154 (type-locality : Pandicherry).

1991. *Puntius sarana subnasutus* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 120-123.

Common Name : Peninsular olive-barb.

Local Name : Khavli.

Diagnostic Characters : D iii 8; A ii 5; P i 16; V i 7.

Body oblong and fairly deep, its depth 2.7 to 2.9 in standard length. Head small, its length 4.4 to 4.8 in standard length. Mouth moderate; barbels two pairs. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Last un-branched dorsal ray osseous, fairly strong and posteriorly serrated. Lateral line complete, with 28 to 31 scales.

Material examined: i) 1 ex., Sangavi village, Akkalkot, 19.11.78, A.S. Mahabal; ii) 1 ex., Aner dam, Chopda, Jalgaon, R.H. Kamble; iii) 2 exs., Indrayani river, Kamshet, 1.09.89, B.E. Yadav; iv) 1 ex., Nalla at Gadvira, 2 km east of Palghar, 01.11.72, G.M. Yazdani; v) 1 ex., Kashale village, Karjat, Raigod dist., 04.10.81, M.S. Pradhan; vi) 2 exs., Nevade village, Karjat, Raigod dist., 04.10.81, M.S. Pradhan; vii) 1 ex., Talaja Khadi, Pannel, 15.08.87, M.S. Pradhan; viii) 1 ex., Warna river, Kolhapur, 30.01.97, K.C. Jayaram. ix) 3 exs., 48-77 mm, Nira river, Khirwade, Satara distt., 22.08.64, K.K. Tiwari; x) 2 exs., 66-95 mm, Bhima river at Degaon, 10 km from PWD Rest House,

Pandharpur, 21.03.85, A.K. Karmakar; xi) 1 ex., 170 mm, Bhadrakali Fish Market (Godavari river coll.), Nasik, 08.04.05, A.K. Karmakar; xii) 1 ex., 185 mm, Ghoti Fish market (Darna river coll.), Nasik, 10.04.05, A.K. Karmakar. xiii) 2 exs., 127-145 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar.

Geographical Distribution : India : Krishna and Cauvery River Systems, and Kerala.

Fishery Information : It attains a length of about 25 cm; very common in Kerala backwaters. This barb is of considerable economic importance.

Remarks : It differ from *P. sarana sarana* (Ham-Buch), in lesser number of lateral line scales (28-31 VS. 30-34).

61. *Puntius sophore* (Ham-Buch)

1822. *Cyprinus sophore* Hamilton-Buchanan, *Fishes of Ganges*, : 310, 389 (nec pl. 19, fig. 86) type-locality : ponds and rivers in Gangetic Provinces).

1991. *Puntius sophore* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 15-20.

Common Name : Spot-fin swamp barb.

Local Name : Kudale.

Diagnostic Characters : D iii-iv 8-9; A iii 5; P i 14-16; V i 8.

Body fairly deep, its dorsal profile more convex than ventral. Head short, its length 3.8 to 4.1 in standard length. Mouth terminal; barbels absent. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Last unbranched dorsal ray osseous and smooth. Lateral line complete, with 22 to 27 scales.

Material examined : i) 1 ex., Pashet, Pune, D.F. Singh, 12.07.89; ii) 1 ex., Chichol Talav, Sangole, Sholapur, A.S. Mahabal, 04.09.83; iii) 7 exs., Sholgaon nalla near Jeur, Karmala, A.S. Mahabal, 25.08.83; iv) 6 exs., Man river, 12 km south-west of Sangola, A.S. Mahabal, 03.09.83; v) 45 exs., Kowdi, Pune, D.N. Tiwari, 27.04.67; vi) 3 exs., Dhanewadi, Jalna, R.N. Chopra, 23.09.64; vii) 1 ex., Rajbagh, Loni, Pune, B.S. Lamba, 07.08.71; viii) 5 exs., Kalbhor river near

Kalbhor village, Pune, G.M. Yazdani, 19.02.75; ix) 1 ex., Nalla near Pashan village, Pune, C.B. Prasad 14.08.74; x) 4 exs., Khamgaon tank, B.S. Lamba, 10. 04.67. xi) 5 exs., 73-97 mm, Sina river at Aurad, 28 km south from PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; xii) 1 ex., 112 mm, Pench river, 60 km north of Nagpur, 01.04.05, A.K. Karmakar; xiii) 34 exs., 56-98 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; xiv) 5 exs., 46-72 mm, Purna river near Lift Irrigation Plant, Muktainagar, Jalgaon distt., 07.04.05, A.K. Karmakar; xv) 2 exs., 43-76 mm, Hirana river near Khadak villege, Deola, Jalgaon distt., 07.4.5, A.K. Karmakar; xvii) 1 ex., 72 mm, satpur Fish Market at Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar; xviii) 7 exs., 86-98 mm, Behula river near Beruli villege, 40 km south of PWD Rest House, Jalgaon, 07.04.05, A.K. Karmakar; xix) 2 exs., 56-60 mm, Gangapur reservoir on Godavari river, 10 km n.w. of Govt. Guest House, Nasik, 09.04.05, A.K. Karmakar. xx) 2 exs., 90-91 mm, Wardha river, 15 km south west of PWD Rest House, Chandrapur, 04.06.06, A.K. Karmakar; xxi) 1 ex., 85 mm, Godavari river near Gobardhan Ghat, 3 km south of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar; xxii) 2 exs., 75-98 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar; xxiii) 4 exs., 72-86 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Widely distributed.

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

Fishery Information : It attains a length of about 13 cm. This barb is considered of medicinal value in Tamil Nadu. It is a very common in the ponds of West Bengal and constitutes a minor fishery.

62. *Puntius ticto* (Ham-Buch)

1822. *Cyprinus ticto* Hamilton-Buchanan, *Fishes of Ganges*, : 314, 398, pl. 8, fig 87 (type-locality : south-eastern parts of Bengal).

1991. *Puntius ticto* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 22-26.

Common Name : Ticto barb, Fire fin barb, Two-spot barb.

Diagnostic Characters : D iii-iv 8; A ii-iii 5; P i 12-14; V i 8.

Body more or less elongate, its depth 2.4 to 2.9 in standard length. Head length 3.5 to 4.0 in standard length. Mouth terminal and small; barbels absent. Dorsal fin inserted slightly posterior to pelvic fin origin; its last un-branched ray osseous, fairly strong and serrated at its posterior edge. Lateral line incomplete, often ceases after six to eight scales; 23 to 25 scales in longitudinal series.

Material examined : i) 1 ex., Panshet, Pune, D.F. Singh, 12.07.89; ii) 10 exs., Bhama river, Khed, Pune, K. Raddiah, 03.07.76; iii) 13 exs., Shivganga river, Narsapur, Pune, M.S. Pradhan, 08.04.83; iv) 5 exs., Mal near Talegaon, Ramakrishna, 03.08.79; v) 25 exs., Alandi, Pune, 10.05.77; vi) 4 exs., Nandgaon, Bhore, Pune, Ramakrishna, 20.03.82; vii) 1 ex., Saswad, Pune, B.S. Lamba, 23.05.68; viii) 6 exs., Sukhei river dam, Pal, Jalgaon, R.H. Kamble, 01.02.79; ix) 6 exs., Mutha river, MES College, Pune, C.B. Prasad, 01.11.78; x) 1 ex., Kondapuri, Pune, Purchased, 11.11.77; xi) 9 exs., Nalla near Futijawalgaon, Tembhurni, A.S. Mahabal, 23.08.83; xii) 2 exs., Aner dam, Chopda, Jalgaon, R.H. Kamble, 25.11.83; xiii) 1 ex., Indryani river, Kamshet, B.E. Yadav, 01.09.89; xiv) 4 exs., Mutha river, MES College, Pune, R.N. Chopra, 08.03.63; xv) 1 ex., Nalla near Lonawala-Khandala, B.K. Tikader, 09.11.63; xvi) 5 exs., Indryani river, Karla, Pune, B.K. Tikader, 17.11.63; xvii) 13 exs., Mutha river, Lakadi bridge, Pune, R.N. Chopra, 29.09.63; xviii) 11 exs., Mutha river Lakadi bridge, Pune, R.N. Chopra, 04.05.63; xix) 3 exs., Mula-Mutha river Bund garden, Pune, R.N. Chopra, 08.03.63; xx) 6 exs., Pirangut, Pune, B.S. Lamba, 05.05.66; xxi) 4 exs., Talegaon, Pune, B.S. Lamba, 09.09.66; xxii) 6 exs., Moshi, Pune, B.S. Lamba, 11.10.67; xxiii) 12 exs., Moshi, Pune, B.S. Lamba, 24.01.67; xxiv) 10 exs., Moshi, Pune, B.S. Lamba, 28.03.67; xxv) 4 exs., Kowdi, Pune,

B.S. Lamba, 26.10.67; xxvi) 4 exs., Wagholi, Pune, R.N. Chopra, 15.11.67; xxvii) 1 ex., Lonikand, Pune, B.S. Lamba, 19.10.67; xxviii) 4 exs., Loni, Pune, B.S. Lamba, 06.05.68; xxix) 2 exs., Kowdi, Pune, B.K. Tikader, 06.04.67; xxx) 15 exs., Talegaon, Pune, B.S. Lamba, 17.11.66; xxxi) 25 exs., Koregaon, Pune, B.S. Lamba, 20.04.67; xxxii) 6 exs., Paud village, Pune, R.N. Chopra, 31.12.66; xxxiii) 10 exs., Pirangut, Pune, R.N. Chopra, 22.12.66; xxxiv) 1 ex., Paud village, Pune, B.S. Lamba, 08.03.67; xxxv) 12 exs., Talegaon, Pune, R.N. Chopra, 04.01.67. xxxvi) 4 exs., 47-53 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari; xxxvii) 2 exs., 54-57 mm, Bavada, Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; xxxviii) 11 exs., 36-60 mm, Satara, 02.09.64, K.K. Tiwari; xxxix) 2 exs., 63-67 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest house, Miraj, 17.03.85, A.K. Karmakar; xL) 42 exs., Waghur river, 20 km south of PWD Rest House, Jalgaon, 06.04.05, A.K. Karmakar; xLI) 1 ex., 66 mm, Purna river near Muktainagar Lift Irrigation Plant, Jalgaon dist., 07.04.05, A.K. Karmakar; xLII) 4 exs., 54-58 mm, Satpur Fish Market, at Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar.

Geographical Distribution : India : widely distributed.

Elsewhere : Pakistan; Bangladesh; Nepal; Sri Lanka; Myanmar; Thailand.

Fishery Information : It attains a length of about 10 cm, a popular barb in the aquaria. This fair-sized barb is prized for its iridescence and the red edging on its dorsal fin which changes to a deep ruby hue during mating period.

Remarks : It is a surface feeding fish.

63. *Puntius vittatus* Day

1865. *Puntius vittatus* Day, *Proc. zool. Soc. Lond.*, : 303 (type-locality : Cochin, Kerala).

1991. *Puntius vittatus* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region, *Rec. zool. Surv. India, Occasional Paper No.*, 135 : 86-88.

Common Name : Kooli barb.

Local Name : Khavli.

Diagnostic Characters : D ii 8; A ii 5; P i 11; V i 8.

Body elongate, its depth 2.5 to 2.8 in standard length. Mouth small and terminal; barbels absent. Dorsal fin inserted nearer to base of caudal fin than to tip of snout. Last un-branched dorsal ray weak and entire. Lateral line incomplete, ceases after three to six scales; scales in longitudinal series 20 to 22.

Material examined : i) 1 ex, Kodav villegge, Karjat, Raigad dist., M.S. Pradhan, 3.10. 1981.

Geographical Distribution : India : Tamil Nadu, Kerala, Karnataka, upper Goa and Kutch, Orissa, Rajasthan, Maharashtra. (New record).

Elsewhere : Pakistan; Sri Lanka.

Fishery Information : It attains a length of about 3.5 cm. This fish is one of the smallest barbs. It is a hardy fish and good breeder in community tank.

Genus *Rohtee* Sykes, 1839

1839 *Rohtee* Sykes, *Proc. Zool. Soc. Lond.*, (6) : 161; (type-species : *Rohtee ogilbii* Sykes).

Body deep and strongly compressed. Abdominal edge sharp and trenchant between pelvic fin base and vent. Mouth small and terminal; upper jaw slightly longer than lower. A postlabial groove on each side present. Barbels absent. Dorsal fin inserted considerably behind base of pelvic fins. A predorsal precumbent spine present. Scales small. Lateral line complete, with about 55 scales.

Monotypic; Restricted to peninsular India.

64. *Rohtee ogilbii* Sykes

1841. *Rohtee ogilbii* Sykes, *Trans. Zool. Soc.*, 64, pl. 63, fig. 2 (type locality : Beema river at Pairgaon).

1999. *Rohtee ogilbii*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 67.

Common Name : Vatani rohtee.

Local Name : Vatani.

Diagnostic Characters: D iii 8; A iii 13-14; P i 14; V i 9.

Deep compressed body. Abdominal edge sharp and trenchant between pelvic fin base and vent. Mouth small terminal. Dorsal fin inserted behind base of pelvic fin with 11 rays (8 branched). First ray osseous and serrated predorsal procumbent spine present. Anal fin long with 13 or 14 branched rays. Scales small, Lateral line scales 55. Barbels absent.

Material examined : i) 1 ex., Alandi, Pune, 05.10.77, A.S. Mahabal; ii) 1 ex., Vithalwadi, Mutha river, Pune, 22.11.76, G.M. Yazdani. iii) 1 ex., 112 mm, Krishna river near Maishal Dam, 14 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar; iv) 3 exs., 142-165 mm, Ujani reservoir near Kalashi, 25 km away from Ujani Dam, 26.03.85, A.K. Karmakar; v) 1 ex., 160 mm, Warna river at Narsingpur, 40 km n.w. of PWD Rest House, Miraj, 15.03.85, A.K. Karmakar.

Geographical Distribution : India : Western Ghats.

Remarks : This species is endemic to Western Ghats.

Genus *Schismatorhynchus* Bleeker, 1855

1855 *Schismatorhynchus* Bleeker, *Nat. Tijdschr. Ned. Indie*, 9 : 258, 269 (type-species: *Lobocheilus heterorhynchus* Bleeker).

Body moderately elongate and compressed. Snout projecting over mouth, divided by deep groove to a thick pronounced upper and a prominent lower part. Both parts studded with large pores and tubercles. Mouth inferior, large and crescentic. A pair of maxillary barbel. Eyes large, dorso-lateral in position. Dorsal inserted in advance of pelvic fins, with eight or nine branches rays, devoid of any osseous ray. Scales large. Lateral line complete, but rather indistinct.

65. *Schismatorhynchus (Nukta) nukta* (Sykes)

1841. *Cyprinus nukta* Sykes, *Trans. Zool. Soc. London*, 2 : 255 (type locality : Indranee river, Duthun).

1999. *Schismatorhynchus (Nukta) nukta*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 139.

Common Name : Nukta.

Local Name : Nukta, Shendra

Diagnostic Characters : D ii-iii 8-9; A ii 5; P i 14; V i 8.

Snout projecting over mouth, divided by a deep groove (passing from one orbit to opposite one) lips studded with large pores and tubercles, Large papillae. Barbels small, flap like, crenulated. Scales large. Lateral line with 37 or 38 scales.

Material examined : i) 1 ex., Mula-Mutha river, Band garden, Pune, 15.07.63, R.N. Chopra; ii) 2 exs., 140-142 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; iii) 2 exs., 173-225 mm, Confluence of Krishna river with Warana river at Haripur, 12 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar.

Geographical Distribution : India : Maharashtra and Karnataka.

Fishery Information : It attains a length of about 30 cm, not common in fish catches.

Genus *Tor* Gray, 1834

1834. *Tor* Gray *Illustrations of Indian Zoology*, 2 : 196 (type-species : *Cyprinus tor* Hamilton-Buchanan).

Body elongate; deep anteriorly, the trunk and peduncle smoothly tapered. Head small, with a prominent snout. Mouth inferior to sub-inferior. Upper jaw often protractile. Lip thick and well developed, lower lip with a distinct median fleshy lobe. Well developed 2 pairs of barbels. Dorsal fin inserted opposite to pelvic fins, with 7 to 8 rays. Lateral line complete, with 22 to 37 scales.

Key to the species of genus *Tor*

1. Length of head almost equal to body depth. Snout covered with a patch of indistinct tubercles. Eyes clearly visible from under side of head *T. khudree*
- Length of head shorter than body depth 2
2. Snout and cheeks with rows of indistinct tubercles. Scale rows $3\frac{1}{2}$ between lateral line and pelvic fin base. Eyes not visible from under side of head. *T. mussullah*
- Snout smooth. Scales rows $2\frac{1}{2}$ between lateral

line and pelvic fin base. Eyes visible from under side of head *T. tor*.

66. *Tor khudree* (Sykes)

1839. *Barbus khudree* Sykes, *Trans. Zool. Soc. Lond.*, 2 : 357 (type-locality : Mulla Mutha river nr. Poona, Maharashtra).

1991. *Tor khudree* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 303-305.

Common Name : Yellow Mahaseer, Deccan Mahaseer.

Local Name : Khadra, Khadashi.

Diagnostic Characters : D iv 9; A ii 7; P i 14; V i 8.

Body elongate, its depth equal to length of head. Eyes small, visible from underside of head. Mouth moderate, lips fleshy, lower lip produced in to a median lobe of varying length. Barbels two equal pairs, slightly shorter than eye diameter in adults. Pectoral fins short, much shorter than head. Scales large; lateral line with 25 to 27. Lateral sides of snout covered with a patch of small indistinct tubercles.

Material examined : i) 1 ex., Bhama river, Khed, Pune, 3. 7. 1976, K. Reddiah; ii) 2 exs., Sindfana river, Manglegaon, Beed dist., 8. 7. 1972, M.B. Rao; iii) 2 exs., Panchaganga river, Kolhapur, 4. 8. 1987, Jay Samant; iv) 3 exs., Valvan dam, Lonawala, 5. 12. 1989, D.F. Singh; v) 6 exs., Morna river, Amroli Road, Satara, 28. 1. 1997, K.C. Jayaram; vi) 1 ex. Godavari river, Nanded, 15. 8. 1971, K.R. Rao; vii) 1 ex., Godavari river, Paithan, 26. 9. 1964, R.N. Chopra. viii) 1 ex., 180 mm, Verna river near Wada villegge, 5 km north of Inspection Bunglow, Satara, 31.08.64, K.K. Tiwari; ix) 1 ex., 205 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; x) 2 exs., 172-175 mm, Darna reservoir, 40 km s.w. of Govt Guest house, Nasik, 10.04.05, A.K. Karmakar.

Geographical Distribution : India : Madhya Pradesh, Deccan and entire Peninsular India, especially Karnataka, Kerala, Maharashtra hill streams.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 46 cm. This fish is more or less common in the head waters of the Godavari river and also in the rivers of the deccan. In Tamil Nadu, this fish is considered to be of medicinal value. This mahaseer is important for angling and as food. This species breeds during July and August when the water level rises due to rain. This mahaseer can be cultured both in ponds and lakes.

Remarks : Endangered; on the verge of extinction.

67. *Tor kulkarnii* Menon

1992. *Tor kulkarnii* Menon, *J. Bombay Nat. Hist. Soc.*, 89(2) : 210-228, pl. 1-3; figs. 1-5 (type locality : Darna River, Deolali).

1999. *Tor kulkarnii*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 59.

Diagnostic Characters : Lateral line scales less than 24-27, length of the head shorter than body depth. Length of head more than four times in standard length.

Geographical Distribution : India : Maharashtra, Darna river, Nasik District.

Remarks : It is rare, endemic species of Maharashtra.

68. *Tor mussullah* (Sykes)

1838. *Barbus mussullah* Sykes, *Proc. Zool. Soc. London*, 159 (type locality : Ghod river at Siner, Poona).

1999. *Tor mussullah*, Jayaram, *Freshwater Fishes of the Indian Region*, p. 96.

Common Name : High-backed mahseer.

Local Name : Mahsiya, Masundi-mahseer.

Diagnostic Characters : D iv 9; A iii 5; P i 15; V i 8.

Body deep. Head small. Barbels two pairs. Its length four times in standard length and much less than body depth. Eyes small not visible from underside of head.

Lateral line scales 26 or 27. Length of head considerably shorter or more or less equal to body

depth. Mostly 4.5 rows of scales between base of dorsal fin and lateral line. A distinct hump over occiput.

Material examined : i) 1 ex., Mula-Mutha river, Pune, 12.05.83, R.N. Chopra; ii) 1 ex., Morna river, Guhagar, 28.01.97, K.C. Jayaram; iii) 4 exs., Koyana reservoir, Satara dist., 27.05.97, K.C. Jayaram; iv) 6 exs., Morna river, Morna dam, Satara, 27.05.97, K.C. Jayaram; v) 1 ex., Krishna-Koyana river confluence, Karad, Satara dist., 05.10.08, M. Chavan.

Geographical Distribution : Peninsular India : Krishna and Godavari river systems.

Remarks : Jayaram (1999) considered *Tor musullah* (Sykes) as a distinct species.

69. *Tor tor* (Ham-Buch)

1822. *Cyprinus tor* Hamilton-Buchanan, *Fishes of Ganges*, : 305, 388 (type-locality: Mahananda River, West Bengal).

1991. *Tor tor*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, pp. 309-310.

Common Name: Tor mahaseer.

Diagnostic Characters: D iv 8; A iii 5; P i 14-17; V i 8.

Body stout and more or less deep, its depth 3.0 to 3.7 in standard length. Head relatively small and shorter than body depth. Eyes visible from underside of head. Mouth small, lips fleshy. Two pairs of barbels. Scales large, lateral line with 22 to 27 scales.

Material examined: i) 1 ex., 225 mm, Satpur Fish Market at Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar.

Geographical Distribution: India : Sub-Himalayan range, Assam, Bihar, North Bengal, Ganga and Narmada rivers. systems.

Elsewhere : Pakistan; Bangladesh.

Fishery information : It attains a length of about 150 cm. This species has afforded a lucrative source of sport since long. It is a powerful mahaseer and one of the important food fishes. *Tor tor* travels towards headwaters at the

beginning of rains and downstream when rain cease. It breeds during August- September and continues up to December. This fish is voracious in feeding habit.

Genus *Thynnichthys* Bleeker, 1859

1859 *Thynnichthys* Bleeker *Act. Soc. Sci. Indo-Neerl.*, 6 : 153 (type-species: *Leuciscus thynnoides* Bleeker).

Body more or less finely scaled. Head broad with large gill covers. Eyes low-set. Mouth terminal, broad. Premaxillae moderately protrusible. No lips or horny sheath. Barbels absent. Gill arches elongate; gill-rakers absent. Gill membranes broadly united with isthmus. Dorsal fin small, inserted more or less opposite to pelvic fins, with nine branched rays, without any spine. Scales very small. Lateral line complete.

70. *Thynichthys sandkhol* (sykes)

1841. *Leuciscus sandkhol* Sykes, *Trans. Zool. Soc. Lond.*, 2 : 363 (type locality : Gorah river at Kullumb, Deccan).

1999. *Thynichthys sandkhol*, Menon, *Rec. zool. Surv. India*, Occ. Paper, 175 : 54-55.

Local Name : Sandkhol.

Common Name : Sandkhol carp.

Diagnostic Characters : D iii 9; A ii 5; P i 18; V i 8.

Body moderately elongate. Tail compressed. Head fairly broad. Its width about half its length. Mouth wide and terminal. Lower jaw prominent. Dorsal fin small, inserted anterior to pelvic fin. Scales very small. Lateral line with 120 scales.

Geographical Distribution : India : Mahanadi, Krishna, Godavari River system.

Remarks : It can easily recognized by its tunny-like shape, silvery skin, minute scales and deficient upper lip.

Subfamily CULTRINAE

Genus *Chela* Hamilton-Buchanan, 1822

1822. *Chela* Hamilton-Buchanan, *Fishes of Ganges*, : 258, 383 (Type-species : *Cyprinus (Chela) cachius* Hamilton-Buchanan).

Body elongate, strongly compressed, with cutting abdominal edge. Mouth directed obliquely upward, cleft extending to below anterior margin of the eye. Symphysial knob absent on the lower jaw. Dorsal fin with 9 to 11, anal fin with 17 to 25 rays. Outer ray of pelvic fin elongated. Lateral line curved downwards, with 34 to 68 scales.

Key to the species of genus *Chela*

1. Lateral line incomplete or absent, when present piercing a few anterior scales only. Anal fin with 10 to 12 branched ray *C. dadidurjori*
- Lateral line complete 2
2. Scales in lateral line 51 to 56; scale-rows above lateral line 9 to 12; predorsal scales 23 to 29 *C. Cachius*
- Scales in lateral line 31 to 37; scale-rows above lateral line 6 or 7; pre-dorsal scales 15 to 20 *C. laubuca*

71. *Chela cachius* (Ham-Buch)

1822. *Cyprinus cachius* Hamilton-Buchanan, *Fishes of Ganges*, pp. 258, 384 (type locality : River Ganges).

1999. *Chela cachius*, Menon, *Rec. Zool. Surv. India*, Occ. Paper, 175 : 35.

Common Name : Silver headed chela.

Local Name : Sonukli.

Diagnostic Characters : D ii 7-8; A ii-iii 19-23; P i 8-11; V i 5-6.

Body deep and greatly compressed. Abdomen keeled only between and behind pelvic fins. Mouth slightly oblique. Outer ray of pelvic fin strongly produced, filamentous. Lateral line complete, with 51 to 56 scales. Pre-dorsal scales 23 to 29.

Material examined : i) 7 exs., Chichol talav, Sangola, Sholapur dist., 04.09.83, A.S. Mahabal; ii) 89 exs., Malavali, Pune, 09.02.66, B.S. Lamba.

Geographical Distribution : India.

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

Remarks : Inhabits ponds, ditches and rivers in plains and sub-mountain regions.

72. *Chela dadidurjori* (Menon)

1952. *Laubuca dedidurjori* Menon, *Rec. Indian Mus.*, **49** : 1 (type-locality : Cochin, Kerala).

1991. *Chela dadidurjori* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 314–315.

Common Name : Dadio.

Diagnostic Characters : D ii-iii 6-7; A iii 10-12; P i 9-12; V i 56.

Interorbital region naked. Predorsal scales commence far behind eyes. No symphysial process on lower jaw. Lateral line when present piercing a few anterior scales only.

Material examined : i) 2 exs., Khanota, Bhima river, Ujani, 8. 6. 1990, S.G. Patil.

Geographical Distribution : India : Nagercoil (Tamil Nadu), Sanguen (Goa), Maharashtra.

Fishery Information : It grows to 3 cm in adult female; the male being few mm less. This little fish is popular in home aquarium and is a lively jumper.

Remarks : Inhabits ponds and streams.

73. *Chela laubuca* (Ham-Buch)

1822. *Cyprinus (Chela) laubuca* Hamilton-Buchanan, *Fishes of Ganges*, : 260, 384 (type-locality : ponds in northern parts of Bengal).

1991. *Chela laubuca* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 316–317.

Common Name : Indian glass barb.

Diagnostic Characters : D ii 8-10; A ii 17-22; P i 8-11; V i 6.

Body depth 3.5 to 4.0 in total length. Body deep. Lateral line complete. Anal fin with 17 to 23 branched rays. Scales in lateral line 31 to 37. Scales rows above lateral line 6 to 7. Predorsal scales 15 to 20.

Material examined : i) 1 ex., Sedar bridge, Dasgaon, Mahad, 12.8.1987, M.S. Pradhan.

Geographical Distribution : India : Andhra Pradesh, Assam, Kerala, Madhya Pradesh, Maharashtra, Manipur, Nagaland, Orissa, West Bengal.

Elsewhere : Bangladesh; Myanmar; Nepal; Pakistan; Sri Lanka; Malay Peninsula and Sumatra.

Fishery Information : It attains a length of about 5.5 cm. The pectoral fins are large and wing-like, giving its other name—Winged Danio. This species breeds freely in ponds, tanks and small streams and are found in groups. It is a desirable tropical aquarium fish with same larvicidal quality.

Remarks : Inhabits both shallow and deeper streams.

Genus *Salmostoma* Swainson, 1839

1839. *Salmostoma* Swainson, *The natural History of Fishes*, **2** : 184 (type-species : *Cyprinus bacaila* Hamilton-Buchanan).

Body elongate and laterally compressed. Abdomen keeled below pectoral fin to vent, Keel not hardened. Mouth oblique, its cleft extending to anterior margin of eye or slightly beyond. Lower jaw often with a symphysial knob. Dorsal fin short, with 9 or 10 and anal fin with 14 to 20 rays. Outer ray of pelvic fin usually not elongated. Lateral line gently curved downwards above pectoral fins, with 38 to 112 scales.

Key to the species of genus *Salmostoma*

1. Lateral line scales 39 to 64 2
- Lateral line scales 74 to 112 4
2. Lateral line strongly curved, with 59 to 63 scales *S. untrachi*
- Lateral line only slightly curved, with 39 to 46 scales 3
3. Anal fin with 12 to 14 branched rays. Lateral line scales 39 to 42. Dorsal fin inserted well in advance of anal fin. *S. boopis*
- Anal fin with 14 or 15 branched rays. Lateral line scales 42 to 46. Dorsal fin inserted above or slightly behind origin of anal fin *S. acinaces*
- 4a. Gillrackers on first arch 76 to 94; lateral line scales 79 to 95 *S. novacula*
- 4b. Gill rackers 58 to 76; lateral line scales 51 to 70 *S. longicauda*

- Gillrackers on first arch less than 30; anal fin with 11 to 19 branches rays 5
- 5. Anal fin with 10 to 13 branched rays 6
- Anal fin with 17 to 19 branched rays. Gillrackers on first arch 13 to 16. Lateral line scales 99 to 112 *S. phulo phulo*
- 6. Gillrackers 17 to 21 on first arch; transverse scale-rows 17-19/4-6 *S. bacaila*
- Gillrackers 24 to 29 on first arch; transverse scale rows 12-15 / 3-4 *S. clupeoides*

74. *Salmostoma acinaces* (Valenciennes)

1842. *Leuciscus acinaces* Valenciennes, *Hist. nat. Poiss.*, 17 : 209 (type-locality : Kaveri drainage, Mysore).
1991. *Salmostoma acinaces* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 321.

Common Name : Silver razor-belly minnow.

Diagnostic Characters : D iii 7; A ii-iii 14-17; P i 14; V i 8.

Anal fin with 16 to 19 branched rays. Lateral line scales 42 to 45. Symphysial knob on lower jaw rudimentary. Lateral line slightly curved.

Material examined : i) 1 ex., Indrayani river, Kamshet, Pune, 19.05.83, M.S. Pradhan. ii) 3 exs., 75-95 mm, Verna river near Wada Village, 5 km north of Inspection Bunglow, Satara, 31.08.64, K.K. Tiwari.

Geographical Distribution : India : West Bengal, Maharashtra, Tamil Nadu, Kerala and Nagaland.

Fishery Information : It attains a length of about 15 cm, of no interest to fisheries.

Remarks : Inhabits hill streams.

75. *Salmostoma bacaila* (Ham-Buch)

1822. *Cyprinus bacaila* Hamilton-Buchanan, *Fishes of Ganges*, pp. 265, 384, pl. 8, fig. 76 (type locality : Gangetic Provinces).
1999. *Salmostoma bacaila*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 25.

Common Name : Large razor-belly minnow, Chilwa.

Local Name : Dental, Alkut.

Diagnostic Characters : D ii-iii 7; A iii 10-13; P i 11-12; V i 8.

Lateral line scales more than 70 (74 to 112). Body without vertical dark stripes. Gill rackers 17 to 21. Anal fin with 11 to 14 branched rays. Number of scales between lateral line and pelvic fin base 3 to 4.

Material examined : i) 6 exs., Khamgaon tank, Pune, 10.04.67, B.S. Lamba; ii) 1 ex., Wagh river, Ozar, Nasik, 26.12.64, B.S. Lamba; iii) 1 ex., Wagholi pond, Pune, 08.09.78, S.V. Mulay; iv) 2 exs., Wagholi, Pune, 21.02.78, M.B. Rao; v) 1 ex., Bori river, Jalgaon, 27.07.92, P.G. Student of Amalner College. vi) 3 exs., 108-145 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar; vii) 1 ex., 145 mm, Wardha river, 15 km south west of PWD Rest House, Chandrapur, 04.06.06, A.K. Karmakar; viii) 2 exs., 130-135 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : North India, Orissa, Maharashtra.

Elsewhere : Pakistan, Nepal, Bangladesh.

Remarks : It is a surface feeder and lavivarous fish Inhabits rivers, streams and canals.

76. *Salmostoma boopis* (Day)

1873. *Chela boopis* Day, *Proc. zool. Soc. Lond.*, : 708 (type-locality : South Canara).
1991. *Salmostoma boopis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 322.

Local Name : Allcut Amli.

Common Name : Boopis razor-belly minnow, Chilwa.

Diagnostic Characters : D iii 7; A iii 12-14; P i 14; V i 8.

Dorsal fin inserted in advance of anal fin. Scales large; lateral line slightly curved with 39 to 42 scales; lateral transverse scale- rows 6/3. Anal fin with 12-14 branched rays.

Material examined : i) 15 exs, Panshet, Pune, 12.7.1989, D.F. Singh; ii) 2 exs, Bhama river, Khed, Pune, 3.7.1976, K. Reddiah; iii) 1 ex, Sina river, Malik Peth, Mahol, Sholapur, 30.8.1983, A. S. Mahabal; iv) 2 exs, Malewadi, Man river, Pandharpur, 16.11.1978, A. S. Mahabal; v) 1 ex, Nalla near Futijawalgaon, 7 km north of Temburni, 23.8.1983, A.S. Mahabal; 2 exs, Sholgaon nalla near Jeur, Karmala, 25.8.1983, A.S. Mahabal; vi) 3 exs, Mutha river, Sambhaji Park, Pune, 4.11.1960, B.K. Halder; vii) 5 exs, Mula-Mutha river, Bundgarden, Pune, 1.6.1973, R.N. Chopra; viii) 1 ex, Mina river, Shivneri, Junner, Pune dist., M.S. Pradhan. ix) 21 exs., 62-82 mm, Bavada Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; x) 14 exs., 60-75 mm, Satara (Purchased), 02.09.64, K.K. Tiwari.

Geographical Distribution : India : Western Ghats-South Canara, Poona-Maharashtra, Kerala and Manipur.

Fishery Information : It attains a length of about 12 cm and is of no interest to fisheries.

Remarks : Inhabits upper reaches of river.

77. *Salmostoma clupeoides* (Bloch)

1782. *Cyprinus clupeoides* Bloch, *Naturges ausland. Fisches*, 12 : 49, pl. 408, fig. 2 (type-locality : "Indian Ocean", evidently not the ocean but some freshwater).
1991 *Salmostoma clupeoides* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 323.

Common Name : Bloch razor-belly minnow, Chilwa.

Local Name : Vadashi, Balshi.

Diagnostic Characters : D iii 7; A iii 11-12; P i 12; V i 8.

Body without vertical Strips. Lateral line scales 78 to 93. Anal fin with 11 to 14 branched rays. Number of scales between lateral line and ventral fin base 3 or 4.

Material examined : i) Mula river, Sathe Biscuits, Pune, 25.4.1960, M. M. Chatterjee; ii) 2 exs, Vishrantwadi, Pune, 25.4.1960, M.M. Chatterjee; iii) 3 exs, River near Ambenthe villege, Pune, 24.3.1965, B. S. Lamba; iv) 2 exs, Bawdhan,

Pune, 17.8.1979, C. B. Prashad; v) 1 ex, Malhar Sagar Tank, Jejuri, 16.5.1983, M.S. Pradhan. vi) 5 exs., 66-85 mm, Bavada Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; vii) 1 ex., 190 mm, Ekrukh reservoir, 10 km north from PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; viii) 3 exs., 97-110 mm, Waghur river, 20 km south of PWD Rest House, Jalgaon, 06.04.05, A.K. Karmakar; ix) 145 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; x) 18 exs., 80-117 mm, Satpur Fish Market at Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar.

Geographical Distribution : India : Eastern and Western Ghats, Maharashtra, Madhya Pradesh and Gujarat.

Elsewhere : Myanmar.

Fishery Information : It attains a length of about 15 cm. This is a tasty fish and is of minor interest to fisheries.

Remarks : Inhabits upper tributaries of large rivers.

78. *Salmostoma horai* (Silas)

1951. *Chela horai* Silas, *J. Zool. Soc. India*, 3(1) : 8, Fig. 1 (type locality : Cauvery river, coorg, Karnataka)
1991. *Salmostoma horai* : Talwar and Jhingran, *Inland Fishes of India and Adjacent countries* : 323-324.

Common Name : Hora razorbelly minnow.

Diagnostic Characters : D iii 7; A iii 15; Pi 12; Vi 8.

Body clongate, its dorsal profile more or less horizontal and ventral profile slightly arched. Eyes large, its diameter almost equal to interorbital width. Mouth directed upwards; lower jaw with a well-developed symphysial knob. Dorsal fin inserted in advance of origin of anal fin. Lateral line with 76 to 85 scales.

Material examined : 1 ex., Nira river at Bhor, Pune Dist., N. Dahanukar and M. Paingankar, May 2009.

Geographical Distribution : India : Karnataka, Maharashtra and ? Andhra Pradesh.

Fishery Information : It attains a length of about 10 cm and is of no interest to fisheries.

Remarks : Heda (2009) reported this species from Adan river. The present study confirms its occurrence in the state.

79. *Salmostoma longicauda* Srithar & Jayaram

1990. *Salmostoma longicauda* Srithar & Jayaram, *J. Bombay nat. Hist. Soc.*, 87(2) : 272-274 (type-locality) : Dhom reservoir, Satara district, Maharashtra)

1999. *Salmostoma longicauda* : Jayaram, *The Freshwater Fishes of the Indian Region*, : 66-67.

Diagnostic Characters : Lower jaw with symphysical process. Gill rackers 58-76. Caudal peduncle long. Lateral line scales 51 to 70.

Geographical Distribution : India : Dhom reservoir on Krishna river, Satara district, Maharashtra.

Remark : This species is endemic to Maharashtra, India.

80. *Salmostoma novacula* (Valenciennes)

1842. *Leuciscus novacula* Valenciennes, *Hist. nat. Poiss.*, 17 : 347 (type locality : Madras).

1999. *Salmostoma novacula*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 28.

Common Name : Novacula razorbelly minnow.

Local Name : Alkut.

Diagnostic Characters : D iii 7; A iii 14-17; P i 12; V i 8.

Lower jaw with distinct symphysial process. Dorsal fin inserted opposite to anal fin. Lateral line curved with 79 to 95 scales. Lateral transverse scales 12 to 15/6.

Material examined : i) 1 ex., Shinovali, Ghod river, Bhimashankar, 31.05.79, A.S. Mahabal; ii) 2 exs., Ghodgaon, Purna river, Jalgaon, 06.02.89, R.H. Kamble; iii) 2 exs., Bhima river, Koregaon, Pune, 02.07.77, G.M. Yazdani; iv) 1 ex., Alandi, Pune, 10.05.77, A.S. Malabal; v) 1 ex., Pawana dam, Pune, 09.08.73, P.D. Gupta. vi) 11 exs., 104-130 mm, Warna river at Narsingpur, 40 km n.w. of

PWD Rest House, Miraj, 15.03.85, A.K. Karmakar; vii) 2 exs., 230-233 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest House, Miraj, 16.03.85, A.K. Karmakar; viii) 12 exs., 110-135 mm, Krishna river near Mhaishal Dam, 14 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar; ix) 4 exs., 103-117 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; x) 2 exs., 115-130 mm, Behula river near Beruli villegge, 40 km south of PWD Rest House, Jalgaon, 07.04.05, A.K. Karmakar.

Geographical Distribution : India : Chennai, Godavari, Krishna drainages, Maharashtra and Western Ghats.

Remarks : This species is endemic to India. Inhabits upper reaches of rivers. Attains a length of about 12 cm.

81. *Salmostoma phulo phulo* (Ham-Buch)

1822. *Cyprinus phulo* Hamilton-Buchanan, *Fishes of Ganges*, p. 262 (Type locality : Rivers and ponds of north-east part of Bengal).

1999. *Salmostoma phulo phulo*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 29.

Common Name : Fine-scale razor-belly minnow.

Local Name : Alkut.

Diagnostic Characters : D iii 7; A iii 17-19; P i 12; V i 7.

Lateral line scales 99 to 112. Inter-orbital width equal to eye diameter. Lower jaw about two times in head length. Pectoral fin length $3\frac{1}{2}$ times in standard length. Lower jaw with distinct symphysial process.

Material examined : i) 2 exs., Indrayani river, Dehu, Pune, 19. 05.83, M.S. Pradhan. ii) 14 exs., 65-100 mm, Bavada Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; iii) 1 ex., 110 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest House, Miraj, 14.03.85, A.K. Karmakar; iv) 4 exs., 130-160 mm, Sina river at Aurad, 28 km south of PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; v) 6 exs., 102-120 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; vi) 6 exs.,

95-118 mm, Krishna river at Bhilavali, 38 km n.w. of PWD Rest House, Miraj, 18.03.85, A.K. Karmakar; vii) 3 exs., 77-90 mm, Darna reservoir, 40 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar.

Geographical distribution : India : Brahmaputra, Ganga river systems, Maharashtra.

Elsewhere : Bangladesh.

Remarks : Inhabits lower reaches of rivers.

82. *Salmostoma sardinella* (Valenciennes)

1842. *Leuciscus sardinella* Valenciennes, *Hist. nat. Poiss.*, 17 : 344 (type-locality : Rangoon, Burma)

1968. *Salmostoma sardinella* : Banarescu, *Revue. Roum. Biol. (Zool.)*, 13(1) : 11, figs. 13 & 14.

1991. *Salmostoma sardinella* : Talwar and Jhingran, *Inland Fishes of India and Adjacent countries*, : 327.

Common Name : Sardinella razorbelly minnow.

Diagnostic Characters : D ii - iii 7; A iii 16-19; P i 12; V i 7.

Body elongate and compressed, its dorsal profile convex as good as the ventral profile. Mouth obliquely upward; lower jaw with a small symphyseal process. Dorsal fin inserted above or slightly behind the origin of anal fin. Lateral line with 47 to 53 scales; lateral transverse scales 7-8/1-2.

Geographical Distribution : India, Ganga-Brahmaputra drainage, Orissa, Satara Dist. Maharashtra Shows discontinuous distribution, Arunachalam et al. 2002)

Elsewhere : Bangladesh ; Myanmar.

Fishery Information : This fish attains a length of about 15 cm and is of no interest to fisheries.

83. *Salmostoma untrachi* (Day)

1869. *Chela untrahi* Day, *Proc. Zool. Soc. London*, p. 381 (Type locality : Mahanadi River, Orissa).

1999. *Salmostoma untrahi*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 30.

Common Name : Mahanadi razor-belly minnow, Chilwa.

Local Name : Alkut.

Diagnostic Characters : D iii 7; A iii 14-15; P i 12; V i 6.

Ventral profile of body more convex than dorsal profile. Anal fin with 12 to 15 rays. Lateral line strongly curved with 59 to 63 scales. Symphyseal knob fairly developed.

Material examined : i) 3 exs., Khanota, Ujani, Pune, 13.03.89, G.M. Yazdani. ii) 7 exs., 52-72 mm, Karad (Purchased : Koyana river coll.), 05.09.64, K.K. Tiwari.

Geographical Distribution : India : Orissa, Maharashtra and South India.

Remarks : It attains a length of about 12 cm. Inhabits lower reaches of river.

Subfamily LEUCISCINAE

Genus *Hypophthalmichthys* Bleeker 1860

1860. *Hypophthalmichthys* Bleeker, *Natuurk. Tijdschr. Ned. Indie*, 20 : 283 (type-species : *Leuciscus molitrix* Valenciennes).

Body elongate and compressed. Abdomen wholly or partially keeled. Mouth terminal. Eyes small, set low on head. Operculum large. Gill membranes joined together; gill-arches modified and possesses a unique complex epibranchial organ. Dorsal fin small, with 10 rays. Scales minute, cycloid. Lateral line complete.

84. *Hypophthalmichthys molitrix* (Valenciennes)

1844. *Leuciscus molitrix* Valenciennes, *Hist. nat. Poiss.*, 17 : 360 (type-locality : China).

1991. *Hypophthalmichthys molitrix*, Talwar & Jhingran, *Inland fishes of India and Adjacent Countries*, : 330-332.

Common Name : Silver carp.

Local Name : Chanderi masa.

Diagnostic Characters : D iii 7; A ii-iii 12-14; P I 17; V I 7.

Body stout and compressed; abdomen with a sharp keel from throat to vent. Head rather small.

Mouth terminal, lower jaw slightly longer than upper. Dorsal fin short, inserted slightly behind pelvic fins. Scales small; lateral line scales 110 to 115.

Material examined: 1 ex., Bhosan talao, Pune, Anil Khaire, 5.12.2006.

Geographical Distribution : China (introduced in India and many other countries).

Fishery Information : The silver carp naturally occurs in the river systems in south and central China and in Amur basin. It is a pelagophil and plantophagous species. When kept in pond, it thrives well on artificial feed. This carp is of considerable economic importance as a good source of protein. It breeds well in captivity. It attains an length of 82cm and a weight of 7 kg within a period of 4 years.

Subfamily RASBORINAE

Genus *Amblypharyngodon* Bleeker, 1860

1860. *Amblypharyngodon* Bleeker, *Natuurk Tijdschr. Ned. Indie*, 20 : 433 (type-species : *Cyprinus mola* Hamilton-Buchanan).

Body rather elongate and somewhat compressed. Abdomen rounded. Mouth somewhat superior, upper lip absent. No barbel. Dorsal fin very short, inserted slightly behind pelvic fin base, with 7 branched rays. Anal fin short, with 5 or 6 branched rays. Lateral line incomplete, 55 to 77 scales in lateral series.

85. *Hypophthalmichthys nobilis* (Richardson)

1844. *Leuciscus nobilis* Richardson, *Voy. H.M.S. "Sulphur"* : 140, pl. 63, fig. 3 (type-locality : Canton, China).
1981. *Hypophthalmichthys nobilis* : Howes, *Bull. Br. Mus. nat. Hist. (Zool.)*, 41(1) : 2.

Common Name : Big head carp.

Diagnostic Characters : D iii 7; A iii 11; P i 19; V i 7.

Body stout and compressed, high in front; abdomen rounded, postventral part keeled. Head large, snout rather short, broad, obtusely rounded anteriorly. Mouth oblique and terminal, lower jaw

protruding. Gill rakers separated, slender and long. Dorsal fin short, inserted behind origin of pelvic fins. Scales small, lateral line with about 115 scales.

Material examined : 2 exs., Nathsagar wetland, Paithan, Aurangabad Dist., S. S. Jadhav, 22.04.06.

Geographical Distribution : Southern and Central China (introduced in India and many other countries).

Fishery Information : It is one of the important cyprinids cultivated in the Indo-Pacific region. This species has been transplanted in Sri Lanka and Bangladesh in our area. Three examples of big head were accidentally introduced in India along with silver carp fry. (Alikunhi *et al.*, 1963). Feeding habits of big head are similar to those of catla (Jhingran, 1986).

86. *Amblypharyngodon mola* (Ham-Buch)

1822. *Cyprinus mola* Hamilton-Buchanan, *Fishes of Ganges*, : 334, 392, pl. 38, fig. 92 (type-locality : ponds and rivers of gangetic provinces).
1991. *Amblypharyngodon mola* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 338.

Local Name : Mola carplet, Pale carplet.

Diagnostic Characters : D ii-iii 7; A ii-iii 5-6; P i 13-15; V i 8.

Body elongate, its depth 3.5 to 3.8 in standard length. Eyes large, its diameter 3.5 to 4.0 in head length. Lateral line incomplete, 65 to 91 scales in lateral series. Lateral line ceases after 9 to 18 scales.

Material examined : i) 1 ex., Godavari river, Paithan, Aurangabad dist., 08.10.73, M. Babu Rao; ii) 4 exs., Kirkee nalla, Chandkas, Ahmadnagar dist., 25.09.64, R. N. Chopra; iii) 2 exs., Bawdhan, Pune, 17.08.79, C.B. Prasad; iv) 2 exs., Panjra river, Dhule dist., 21.12.95, K.S. Ohal. v) 10 exs, 55-73 mm, Tapi river, Muktainagar, near Khamkera Bridge, 63 km n. e. of P.W.D., I.B., Jalgaon, 06.04.05, A.K. Karmakar; vi) 9 exs, 53-75 mm, Satpur Fish Market, Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar; vii) 4 exs, 60-79

mm, Darna reservoir, 40 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar. viii) 5 exs., 65-85 mm, Ramala Talab, 15 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar; ix) 2 exs., 78-87 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout (except Kerala).

Elsewhere : Pakistan : Indus plain and adjoining hills; Bangladesh; and Myanmar.

Fishery Information : It attains a length of 20 cm; is of little interest to fisheries in West Bengal.

Genus *Aspidoparia* Heckel 1843

1843. *Aspidoparia* Heckel Abbild. Fenzl. Thiere Pill. Syriens Fische : 186 (type-species: *Aspidoparia sardina* Heckel = *Cyprinus morar* Hamilton-Buchanan).

Body elongate and sub-cylindrical; abdomen rounded. A broad ring of sub-orbital bones; sub-orbital process well developed. Mouth small and inferior. Lower jaw without any lip but with a sharp crescentic bony edge. Barbels absent. Dorsal fin inserted above or behind base of pelvic fins, devoid of any osseous ray. Lateral line greatly curved, running in lower half of caudal peduncle, with 38 to 60 scales.

87. *Aspidoparia morar* (Ham-Buch)

1822. *Cyprinus morar* Hamilton-Buchanan, *Fishes of Ganges*, pp. 264, 384, pl.31, fig. 74 (type locality: Yamuna and Tista rivers).

1999. *Aspidoparia morar*, Menon, *Rec. zool. Surv. India, Occ. Paper No.*, 175 : 11-12.

Common Name : *Aspidoparia*.

Local Name : Amlee.

Diagnostic Characters : D ii-iii 7-8; A ii 8-10; P i 14; V i 7.

Lateral line scales 38 to 42. Anal fin with 8 to 10 branched rays. Pharyngeal teeth in 3 rows. Dorsal fin inserted well behind pelvic fin base.

Material examined : i) 4 exs., Bhama river, Khed, Pune, 03.07.76, K. Reddiah; ii) 1 ex.,

Godavari river, Mahale-Mashid, Paithan, 25.04.60, M.M. Chatterjee; iii) 1 ex. Krishna river, Satara dist., W.A. Wallinger.

Geographical Distribution : India : North India, Western Ghats, Maharashtra.

Elsewhere : Iran, Pakistan, Nepal, Bangladesh, Myanmar, Thailand.

Remarks : Inhabits freshwater bodies.

Genus *Barilius* Hamilton-Buchanan, 1822

1822. *Barilius* Hamilton-Buchanan, *Fishes of Ganges*, : 266, 384 (type-species : *Cyprinus barila* Hamilton-Buchanan).

Body elongated, laterally compressed, abdomen rounded. Mouth terminal; maxilla extends to below or slightly beyond anterior margin of eye. Barbels 1 or 2 pairs or absent. Dorsal fin inserted opposite to inter space between pelvic fin and anal fin, often extended over anal fin. Dorsal fin with 9 to 13 and anal fin with 9 to 17 rays. Lateral line concave and complete with 38 to 75 scales. Usually dark spots or bands present on body.

Key to the species of genus *Barilius*

1. Tubercles on snout and lower jaw large and well-developed; barbels usually one pair, often absent; Jaw short 2
- Tubercles on snout and lower jaw small and poorly developed; barbels two pairs; jaw long 3
2. Body with 12 to 15 vertical bars; barbels one minute pair, often absent; lateral line scales 39 or 40 *B. gatensis*
- Body with 9 to 11 vertical bars; anal fin with 10 or 11 branched rays; barbels absent *B. barna*
- Body without vertical bars, but often with rows of spots 4
3. Body uniformly silvery. Lower jaw with a well-developed symphyseal process; maxilla extends to below front edge of eye *B. evezardi*

- Body with a single row of large spots; maxilla reaches to below middle of orbit.. *B. bakeri*
- 4. Lateral line scales 40 to 45; maxilla extends to below anterior-third to middle of orbit; anal fin short, with seven or eight branched rays *B. bendelisis*
- Anal fin long, with 10 to 12 branched rays 5
- 5. Body with 14 or 15 vertical bars, pectoral fin as long as head *B. barila*
- Body with 10 to 14 vertical bars; pectoral fin slightly shorter than head..... *B. vagra*

88. *Barilius bakeri* Day

1865. *Barilius bakeri* Day, *Proc. zool. Soc. Lond.*, : 305 (type-locality : Mundakayam, Kerala).

1991. *Barilius bakeri* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 343.

Common Name : Malabar baril.

Diagnostic Characters : D ii-iii 10; A ii-iii 14; P i 14; V i 8.

Body deep, its depth 2.9 to 3.2 in standard length. Mouth moderate; jaws short, maxilla extends to below middle of orbit. Barbels absent. Dorsal fin inserted in advance of anal fin. Lateral line with 37 or 38 scales. Predorsal scales 16.

Geographical Distribution : India : Western Ghats of Kerala, Maharashtra.

Fishery Information : It attains a length of about 15 cm and is of no interest to fisheries.

89. *Barilius barila* (Ham-Buch)

1822. *Cyprinus (Barilius) barila* Hamilton-Buchanan, *Fishes of Ganges*: 267, 384 (type-locality : rivers of northern Bengal).

1991. *Barilius barila*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, pp.343-344, fig. 120.

Common Name : Barrel baril.

Diagnostic Characters: D ii 7; A iii 10-11; P I 12; V I 8.

Body elongate and shallow, its depth 4.6 to 4.8 in standard length. Mouth moderate, jaws long,

maxilla extends to below anterior third of orbit. Barbels two pairs. Dorsal fin originated entirely in advance of anal fin. Pectoral fin as long as head. Lateral line with 43 to 46 scales. Predorsal scales 22.

Material examined: i) 2 exs, 72-73 mm, Satara (Purchased), 02.09.64, K.K. Tiwari.

Geographical Distribution : India : Jammu & Kashmir, Delhi, Uttar Pradesh, Madhya Pradesh, Bihar, West Bengal, Assam, Manipur, Orissa, Maharashtra (New record).

Elsewhere : Nepal; Bangladesh; and Myanmar.

Fishery Information : It attains a length of about 10 cm, a fairly common species. It is used by the fishermen as a bait on hooks for other bigger fishes.

90. *Barilius barna* (Ham-Buch)

1822. *Cyprinus barna* Hamilton-Buchanan, *Fishes of Ganges*, pp. 268, 384 (type locality : Yamuna and Brahmaputra).

1999. *Barilius barna*, Menon, *Rec. zool. Surv. India, Occ. Paper No.*, 175 : 13-14.

Common Name : Barna baril.

Local Name : Jhorya.

Diagnostic Characters : D ii 7; A iii 10-11; P i 14; V i 8.

Body depth 3.4 to 4 in standard length. Barbels absent or rudimentary. Lateral line scales 39 to 42. Pre-dorsal scales 15 to 16. Tubercles present on snout and lower jaw.

Material examined : i) 4 exs., Kondapuri, Pune, 11.11.77, Purchased; ii) 4 exs., Malewadi, Man river, Pandharpur, 16.11.78, A.S. Mahabal; iii) 3 exs., Sangam of Bhama & Bhima rivers, Pimpalgaon, Pune, 21.01.87, D.F. Singh; iv) 1 ex., Mina river, Shivneri, Junnar, Pune dist., 05.07.83, M. S. Pradhan; v) 5 exs., Morna river, Amroli Road, Satara, 28.01.97, K.C. Jayaram. vi) 1 ex., 80 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari; vii) 1 ex., 55 mm, Bavada, Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; viii) 21 exs., 48-79 mm, Satara (Purchased), 02.09.64, K.K. Tiwari.

Geographical Distribution : North India, Orissa, Maharashtra.

Elsewhere : Nepal, Bangladesh, Myanmar.

Remarks : Well defined vertical dark bars 7 to 11 on the body. The flanks with silvery shots with 7 to 9 vertical bands. Dorsal and caudal fins edged with black.

91. *Barilius bendelisis* (Ham-Buch)

1807. *Cyprinus bendelisis* Hamilton-Buchanan, *Journey in Mysore*, 3 : 345, pl. 32 (type-locality : Vedawati stream, head waters of Krishna river near Heriuru, Mysore).

1991. *Barilius bendelisis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 346-347.

Common Name : Hamilton's barila.

Local Name : Jodhia, Jhorya, Jhor.

Diagnostic Characters : D ii 7; A ii-iii 7-8; P i 14; V i 8.

Body more or less long, its depth 3.8 to 4.2 in standard length. Jaws long, maxilla extends to below anterior third of orbit. Two short pairs of barbels.

Material examined : i) 2 exs, Malewadi, Man river, Pandharpur, 16.11.1978, A.S. Mahabal; ii) 1 exs, Alipur Barshi, 26.11.1978, A.S. Mahabal; iii) 1 ex, Aner dam, Chopda, Jalgaon, 25.11.1983, R.H. Kamble; iv) 16 exs, Hamalwadi, Aurangabad, 4.9.1964, R. N. Chopra; v) 74 exs, Godavari river, Mahale-Mashid, Paithan, 25.4.1964, R.N. Chopra; vi) 2 exs, Vinita river, Agra-Bombay Road, Nasik, 28.9.1973, M. Babu Rao; vii) 3 exs, Kadrage lake, 30.9.1973, M. Babu Rao; viii) 1 ex, Mula-Mutha river, near MES College, Pune, 8.3.1963, R. N. Chopra; ix) 1 exs, Morna river, Amroli Road, Satara, 28.1.1997, K.C. Jayaram. X) 1 ex., 77 mm, Koyna river, Karad (Purchased), K.K. Tiwari; xi) 3 ex., 81-85 mm, Bavada, Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; xii) 1 ex., 110 mm, Sina river at Aurad, 28 km south of PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh and Sri Lanka.

Fishery Information : It attains a length of about 16 cm. It is one of the principal commercial hillstream fish in the rivers of Jammu and different areas of the Eastern Himalaya.

Remarks : It shows distinct sexual dimorphism. Male variety called Chedra and female Cocsa. Males are larger and stout. Paired fins are enlarged fan-like.

92. *Barilius evezardi* Day

1872. *Barilius evezardi* Day, *J. Asiat. Soc. Bengal*, p. 322, pl. 2 (type locality : Poona).

1999. *Barilius evezardi*, Menon, *Rec. zool. Surv. India, Occ. Paper No.*, 175 : 17-18.

Local Name : Jhorya.

Common Name : Day's baril.

Diagnostic Characters : D ii 7; A ii 12-13; P i 12; V i 8.

Body uniformly silvery. Barbels absent. Lower jaw shorter or equal to combined length of snout and eye. Pectoral axillary scales may be with a fleshy border.

Material examined : 1 ex., Godavari river, Singweyi, Ahmadnagar dist., 09.10.73, M.B. Rao.

Geographical Distribution : India : Pune, Ahmadnagar (Maharashtra).

Remarks : This species is endemic to Maharashtra. Inhabits clear streams and upper reaches of river.

93. *Barilius gatensis* (Valenciennes)

1844. *Leuciscus gatensis* Valenciennes, *Hist. nat. Poiss.*, 17 : 309, pl. 503 (type-locality : Peninsula of India).

1991. *Barilus gatensis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 349.

Common Name : River carp baril.

Local Name : Jodhie, Jhorya.

Diagnostic Characters : D ii-iii 8-9; A iii 12-14; P i 14; V i 8.

Body deep; its depth 3.2 to 3.5 in standard length. Jaws short; maxilla extends to below middle of orbit. One minute rostral pair of barbel. Dorsal fin inserted in advance of anal fin. Scales moderate; lateral line scales 39 to 40. Predorsal scales 15.

Material examined : 2 exs, Morna river, Amroli Road, Satara, 28. 1. 1997, K. C. Jayaram.

Geographical Distribution : India : Western Ghats in Maharashtra, Southern Karnataka and Kerala; also in the Nilgiri Hills (Tamil Nadu).

Fishery Information : It attains a length of about 15 cm; inhabits hill-streams. It is of no interest to fisheries, though this fish is a highly coloured ornamental species.

Remarks : This species is endemic to western Ghats. It is an active swimmer.

94. *Barilius vagra* (Ham-Buch)

1822. *Cyprinus (Barilius) vagra* (Hamilton-Buchanan), *Fishes of Ganges*, : 269, 385 (type-locality: Ganges river at Patna).

1991. *Barilius vagra*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, 353, fig. 123.

Common Name : Vagra baril.

Diagnostic Characters: D ii-iii 7; A ii-iii 10-12; P i 14-15; V i 8.

Body long and shallow, its depth 4.5 to 4.6 in standard length. Mouth moderate; jaws long, maxilla extends to below middle of orbit. Two pairs of barbels. Dorsal fin originated almost anterior to anal fin. Pectoral fin shorter than head. Scales moderate, with many radii. Lateral line with 38 to 44 scales. Predorsal scales 21 to 26.

Material examined : i) 1 ex., 118 mm, Verna river near Wada village, 5 km north of I.B., Satara, 31.08.64, K.K. Tiwari.

Geographical distribution: India: Himalayan and Sub-Himalayan rivers, Maharashtra (New record).

Elsewhere : Pakistan; Nepal; Bangladesh; Sri Lanka.

Fishery Information: It attains a length of about

12.5 cm and of no interest to fisheries. The colour of the fish with beautiful combination of different shades, is very attractive.

Genus *Brachydanio* Weber & de Beaufort 1916

1916. *Brachydanio* Weber and de Beaufort, *Fishes Indo-Australian Archipelago*, 3 : (type-species : *Nuria albolineata* Blyth) (as a sub-genus).

Body elongate and compressed. Mouth small, directed obliquely upwards. Maxilla not extending to vertical from anterior margin of eye. Lower jaw with symphysial knob. Barbels one or two pairs, or absent. Dorsal fin short, inserted anterior to origin of anal fin. Anal fin with 9 to 14 branched rays. Lateral line incomplete or entirely absent.

95. *Brachydanio rerio* (Ham-Buch)

1822. *Cyprinus rerio* Hamilton-Buchanan, *Fishes of Ganges*, : 323, 390 (type-locality : Kosi river, Uttar Pradesh).

1991. *Brachydanio rerio* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 360.

Common Name : Zebra danio.

Local Name : Pidtuli.

Diagnostic Characters : D ii 6-7; A ii-iii 12-13; P I 11-12; V I 6.

Body elongate, very slim and slightly compressed. Head length 3.8 to 4.4 in standard length. Mouth small, obliquely directed upwards. Barbels two pairs; the maxillary pair extend beyond half of pectoral fin. Lateral line usually absent, often rudimentary or incomplete. Lateral line scales 28 to 30.

Material examined : i) 2 exs., Telinala, Tadoba, 13.08.95, S.G. Patil; ii) 2 exs., Tapi river near Deval ghat, Rangubelli, 29.11.94, S.S. Kamble.

Geographical distribution : India : Eastern parts from West Bengal to Krishna river system, Kerala, Tripura, Meghalaya, Mizoram and Nagaland.

Elsewhere : Pakistan; Bangladesh and Nepal.

Fishery Information : It attains a length of about 7 cm, is hardy and easy to breed and maintain, desirable in community tank. This danio

with blue and silver horizontal stripes, is one of the most popular aquarium fishes. With its active and graceful habit, this zebra danio is probably the finest small tropical aquarium fish known.

Genus *Danio* Hamilton-Buchanan, 1822

1822. *Danio* Hamilton-Buchanan, *Fishes of Ganges*, : 321, 390 (type-species : *Cyprinus dangila* Hamilton-Buchanan).

Body more or less elongate and compressed. Mouth anterior, small and directed obliquely upwards. Lower jaw with a symphyseal Knob. Maxilla extends up to anterior margin of the eye. Barbels 2 pairs, one pair or absent. Dorsal fin with 6 to 17 and anal fin with 11–20 rays. Caudal fin emarginated, lunate or forked. Lateral line complete, incomplete or absent; With 32 to 65 scales.

Key to the species of genus *Danio*

1. Lachrymal bone with a backwardly directed spine.....2
- No pre-orbital spine on front margin of orbit 3
2. Lateral line scales 32 to 34; no supra-orbital spines; barbels two pairs, rudimentary *D. malabaricus*
- Lateral line scales 35 to 37; no supra-orbital spines; barbels two pairs, short..... *D. aequipinnatus*
3. Dorsal fin with 15 to 17 rays; barbels absent; lateral line scales 33 to 38 *D. devario*
- Dorsal fin with 10-11 rays; barbels moderate; lateral line scales 38 to 40..... *D. fraseri*.

96. *Danio aequipinnatus* (McClelland)

1839. *Perilampus aequipinnatus* McClelland, *Asiat. Res.*, 19(2) : 393, pl. 60, fig. 1 (type-locality : Assam).
1991. *Danio aequipinnatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 364-365, fig. 128.

Common Name : Giant danio.

Local Name : Balooki.

Diagnostic Characters : D ii-iii 9-12; A ii-iii 14-16; P i 11-12; V i 6.

Body elongate and compressed, its depth 2.9 to 3.5 in standard length. A backwardly directed pre-orbital spine present. Mouth small, directed upwards. Barbels two pairs. Dorsal fin inserted well in advance of origin of anal fin. Lateral line complete, with 35 to 37 scales.

Material examined : i) 18 exs, Shivaganga river, Narsapur, Pune, M. S. Pradhan, 8.4.1983; ii) 13 exs, Karade hills, Varnavati, Ramakrishna, 31.10.1981; iii) 2 exs, Alandi, Pune, A. S. Mahabal, 10.5.1977; iv) 3 exs Khed, Pune, B.S. Lamba, 18.5.1971; v) 2 exs, Talegaon, Pune, Ramakrishna, 3.8.1977, vi) 10 exs, Karha river, Saswad, Pune, B. S. Lamba, 3.5.1968; vii) 1 exs, Wagholi, Pune, E. V. Muley, 21.6.1978; viii) 3 exs, Nandgaon, Bhor, Pune, Ramakrishna, 20.3.1982; ix) 6 exs. Kondapuri, Pune, Purchased, 11.11.1977; x) 3 exs, Chichol talav, Sangola, Sholapur, A. S. Mahabal, 4.9.1983; xi) 2 exs, Man river, 12 km s.w. of Sangola, A. S. Mahabal, 26.11.1978; xii) 3 exs, Telinalla, Tadoba, S. G. Patil, 13.8.1995. xiii) 5 exs, Dhanewada, Jalna, R.N. Chopra, 23.9.1964; xiv) 1 ex, Kirkee nalla, Chandkas, Ahamadnagar dist., M. Babu Rao, 18.10.1973; xv) 4 exs, Kalva river, Kalbhor village, Pune, G. M. Yazdani, 19.2.1975; xvi) 2 exs, Nala near Katraj tank, P.R. Salunke, 23.8.1974; xvii) 46 exs, Vinita river, Agra-Bombay Road, Nasik, M. Babu Rao, 25.9.1973, xviii) 2 exs, Mula-Mutha river, Bundgarden, Pune, R. N. Chopra, 27.7.1963; xix) 11 exs, river near Amberane village bridge, Pune, B.S. Lamba, 24.3.1965, xx) 9 exs, Bhatghar dam, Pune, B.S. Lamba, 23.9.1965; xxi) 2 exs, Pirangut nalla, Pune, R.N. Chopra, 8.11.1965; xxii) 7 exs, Narshapur, Pune, R.N. Chopra, 8.3.1966; xxiii) 1 exs, Mutha river, Datlaudi, Pune, R.N. Chopra, 19.3.1963; xxiv) 7 exs, Pirangut, Pune, B.S. Lamba, 5.5.1966; xxv) 5 exs, Vadgaon, pune, B.S. Lamba, 9.9.66; xxvi) 1 ex, Khed, Pune, D.N. Tiwari, 9.11.1967; xxvii) 2 exs, Loni, Pune, B.S. Lamba, 6.5.1968; xxviii) 7 exs, Nalla, Pirangut, Pune, B.S. Lamba, 8.9.1965, xxix) 4 exs, Bhorghat, Pune, B.S. Lamba, 8.2.1966; xxx) 9 exs, Paud, Pune, R.N. Chopra, 22.12.1966; xxxi)

2 exs., Bhugaon, Paud Road, Pune, R.N. Chopra, 3.3.1966; xxxii) 12 exs., Malavali, Pune, B.S. Lamba, 9.2.1966; xxxiii) 1 ex., Mula river, Lakadi bridge, Pune, 02.05.63, R.N. Chopra; xxxiv) 27 exs., Hammalwadi village, Aurangabad, 04.09.64, R.N. Chopra; xxxv) 1 ex., Vadgaon, Pune, 07.02.66, B.S. Lamba; xxxvi) 3 exs., Paud, Pune, 15.12.65, D.N. Tiwari; xxxvii) 139 exs., Vadgaon, Pune, 12.10.66, B.S. Lamba; xxxviii) 22 exs., Pirangut, Pune, 16.01.67, R.N. Chopra; xxxix) 3 exs., Moshi, Pune, 10.04.70, K.R. Rao; xl) 2 exs., Averi nalla, Ratnagiri, 26.02.73, M.B. Rao; xli) 1 ex., Paud, Pune, 06.11.69, B.S. Lamba; xlii) 2 exs., Kawadi, Pune, 10.01.69, B.S. Lamba; xliii) 5 exs., Nashrapur, 07.01.69, M.M. Chatterjee; xlv) 4 exs., Khed, Pune, 03.10.70, R.N. Chopra; xlv) 7 exs., Khed, Shivapur, Pune, 26.06.69, R.N. Chopra; xlvii) 3 exs., Kamthadi, 19.02.69, B.S. Lamba; xlvii) 2 exs., Kamshet, Pune, 23.07.70, R.N. Chopra; xlviii) 1 ex., Khed, Pune, 19.11.71, K.R. Rao; xlix) 4 exs., Talegaon, Pune, 19.11.71, K.R. Rao; l) 2 exs., Nalla near Municipal tank, Talegaon, 10.07.80, M.S. Pradhan; li) 5 exs., Moshi, Pune, 23.10.70, K.R. Rao; lii) 2 exs., Kamshet, Pune, 13.08.70, R.N. Chopra; liii) 3 exs., Sangam of Bhama and Bhima rivers Pimpalgaon, Pune, 21.01.87, D.F. Singh. liv) 3 exs., 68-82 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari; lv) 9 exs., 40-78 mm, Bovada, Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; lvi) 7 exs., 65-77 mm, Satara (Purchased), 02.09.64, K.K. Tiwari.

Geographical Distribution : India : Throughout.

Elsewhere : Nepal; Sri Lanka; Bangladesh; Myanmar and Thailand.

Fishery Information : It attains a length of about 15 cm and is a widely distributed beautiful fish of this region. This fish also proves to be peaceful and hardy aquarium fish.

Remarks : It inhabits clear streams and rivulets at foot-hills.

97. *Danio devario* (Ham-Buch)

1822. *Cyprinus devario* Hamilton-Buchanan, *Fishes of Ganges*, : 341, 393, pl. 6, fig. 94 (type-locality : rivers and ponds of Bengal).

1991. *Danio devario* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 367-368, fig. 130.

Common Name : Devario danio.

Diagnostic Characters : D ii-iii 15-17; A ii-iii 16-17; P i 11-12; V i 7.

Body rhomboidal and compressed; its depth 2.6 to 2.9 in standard length. Mouth small, obliquely directed upwards. Barbels absent. Dorsal fin inserted slightly in advance of anal fin. Lateral line complete, with 33 to 38 scales.

Material examined : i) 2 exs., Tapi river near Devalghat, Rangubelli, 29.11.94, S.S. Kamble; ii) 3 exs., Khapra river, Ghohud village, Melghat, 30.11.94, S.S. Kamble.

Geographical Distribution : India : northern India to Krishna-Godavari river system.

Elsewhere : Pakistan; Nepal and Bangladesh.

Fishery Information : It attains a length of about 10 cm and is a fairly popular aquarium fish. Inhabits plains and submontane region.

98. *Danio fraseri* Hora & Mukerji

1935. *Danio fraseri* Hora and Mukerji, *Rec. Indian Mus.*, 37 : 378, fig. 3 (type locality : Deolali, Nasik dist., Bombay presidency).

1999. *Danio fraseri*, Menon, *Rec. zool. Surv India, Occ. Paper No.*, 175 : 42.

Common Name : Fraser danio.

Local Name : Gayroonjee.

Diagnostic Characters : D ii 10-11; A ii-iii 15-16; P i 11-12; V i 6.

Mouth small obliquely directed upwards. Lower lip hypertrophied forming a broad loose flap along jaw. Upper lip normal. Two pairs of barbels present. Lateral line scales 38-40. Pre-dorsal scales 16 or 17.

Material examined : i) 1 ex., Nallah at Godavari, 2 km east of Palghar, Thane dist., 01.11.72, G.M. Yazdani; ii) 1 ex., Kashale village, Karjat, Raigad dist., 04.10.81, M.S. Pradhan; iii) 5 exs., Waldevi river, 2 miles east Junction with Darna river, 07.11.35, A.G.I. Fraser. iv) 3 exs., 67-75 mm,

Fish Farm at Gangapur, 6 km n.w. of Govt. Guest House, Nasik, 09.04.05, A.K. Karmakar; v) 9 exs., 50-63 mm, Darna Reservoir, 40 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar.

Geographical Distribution : India : Nasik dist., Maharashtra.

Remarks : It is clear hill streams inhabitant and endemic to Nasik dist., Maharashtra.

99. *Danio malabaricus* (Jerdon)

1849. *Perilampus malabaricus* Jerdon, *Madras J. Lit. and Sci.*, 15 : (type-locality : Malabar).

1991. *Danio malabaricus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 370-371, fig. 131.

Common Name : Malabar danio.

Diagnostic Characters : D ii 10-13; A iii 12-16; P i 14; V i 7.

Body elongate and strongly compressed, its depth 3.0 to 3.5 in standard length. A backwardly directed weak pre-orbital spine present. Mouth small, directed upwards. Barbel two pairs. Dorsal fin inserted well in advance of origin of anal fin. Lateral line complete, with 32 to 35 scales.

Material examined : i) 11 exs., Stream Tatapipe, Khandala, Pune, 11.10.63, B.K. Tikader; ii) 10 exs., Talegaon, Pune, 17.11.66, B.S. Lamba; iii) 18 exs., Hammamalwadi, Aurangabad, 04.09.64, R.N. Chopra; iv) 7 exs., Paud, Pune, 31.12.66, R.N. Chopra; v) 6 exs., Pirangut, Pune, 22.12.66, R.N. Chopra; vi) 3 exs., Padampura, Aurangabad, 03.09.64, R.N. Chopra; vii) 1 ex., Talegaon, Pune, 31.03.67, B.S. Lamba; viii) 37 exs., Wadgaon, Pune, 29.09.65, B.S. Lamba; ix) 1 ex., Pirangut, Pune, 05.05.66, B.S. Lamba; x) 29 exs., Talegaon, Pune, 31.01.67, B.S. Lamba; xi) 75 exs., Pirangut, Pune, 03.11.66, B.S. Lamba; xii) 8 exs., Savitri river, Poladpur, Mahad, 16.02.66, B.S. Lamba; xiii) 2 exs., Pirangut, Pune, 08.03.67, B.S. Lamba; xiv) 2 exs., Danoli, Ratnagiri dist., 22.02.65, B.K. Tikadar; xv) 2 exs., Nalla near Pashan village, Pune, 14.08.74, C.B. Prasad; xvi) 2 exs., Kalbhorn village, Pune, 23.08.73, G.M. Yazdani; xvii) 21 exs., Kamthadi, Pune, 25.04.72, B.S. Lamba.

Geographical Distribution : India : Krishna river basin and Western Ghats from Maharashtra to Kerala.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 12 cm. This fish is gorgeously coloured and is popular with aquarists. It is peaceful, well behaved and hardy in community aquaria with easy breeding characteristic.

Genus *Esomus* Swainson, 1839

1839. *Esomus* Swainson, *The natural history of fishes*, 2 : 185, 285 (type-species : *Esomus vittatus* Swainson = *Cyprinus danrica* Hamilton-Buchanan).

Body elongate and slender, strongly compressed. Mouth small, upwardly directed. Symphysial knob on lower jaw absent. Barbels two pairs, maxillary barbels very long extending upto anal fin. Dorsal fin inserted almost above anal fin, with 6 branched rays; anal fin with 5 branched rays. Lateral line, when present, strongly arched anteriorly and passes through lower half of caudal peduncle, with 27 to 34 scales.

Key to the species of genus *Esomus*

1. Lateral line incomplete, very short, piercing only 4 to 6 scales anteriorly; side of body with a lateral, broad, dark band; pre-dorsal scales 16 or 17 *E. danricus*
2. Lateral line complete or nearly so, extending to at least base of anal fin. Sides of body with dark, broad, lateral bands; pre-dorsal scales 19 or 20 *E. thermoicos*

100. *Esomus danricus* (Ham-Buch)

1822. *Cyprinus danrica* Hamilton-Buchanan, *Fishes of Ganges*, : 325, 390, pl. 16, fig. 88 (type-locality : ponds and ditches of Bengal).

1991. *Esomus danricus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 377-378, fig. 134.

Common Name : Flying barb. Danrica.

Local Name : Kurria, Dahwi.

Diagnostic Characters : D ii 6; A iii 5; P i 14-15; V i 6-7.

Lateral line incomplete or absent. Side of body with a lateral, broad dark band. 14 scales around caudal peduncle. Maxillary barbels very long.

Material examined : i) 4 exs., Saraswati river, Deolakund, Mazalgaon, Beed District, 12.10.1988, R. M. Sharma.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Bangladesh; Nepal; and probably also Sri Lanka and Myanmar.

Fishery Information : It attains a length of about 12 cm; very active; a surface feeder; equipped with exceptionally wide pectoral fins and is an accomplished jumper. Inhabits ponds and weedy ditches.

Genus *Parluciosoma* Howes, 1980

1980. *Parluciosoma* Howes, *Bull. Br. Mus. nat. Hist. (Zool.)*, 37(3) : 183 (type-species : *Leuciscus argyrotaenia* Bleeker).

Body more or less elongate and compressed. Head rather large; operculum broad. Eyes large, prominent; situated on the anterior half of the head. Mouth small; lower jaw with well developed symphyseal process followed by a deep notch. Barbels absent. Dorsal fin with seven and anal fin with five branched rays. Lateral line usually complete. Presence of distinctive colour pattern comprising black lateral stripes and dark edges to caudal fin.

Key to the species of genus *Parluciosoma*

1. Lower lip hypertrophied and forms a broad loose membrane round lower jaw, with three distinct lobe like structures; lateral line incomplete *P. labiosa*
- Lower lip simple; lateral line nearly complete *P. daniconius*

101. *Parluciosoma daniconius* (Ham-Buch)

1822. *Cyprinus daniconius* Hamilton-Buchanan, *Fishes of Ganges*, : 327, 391, pl. 15, fig. 89 (type-locality : river of southern Bengal).

1991. *Parluciosoma daniconius* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 382-383, fig. 136.

Local Name : Dandai, Gana.

Common Name : Rasbora.

Diagnostic Characters : D ii 7; A ii 5; P i 14; V i 8.

Lower lip simple. Lateral line complete with 31-34 scales. Body oblong and compressed. Mouth small. Pectoral fin shorter than head. Distinct blue black mid-lateral stripe from eye to base of caudal fin present.

Material examined : i) 1 ex., Mosi, Pune, B.S. Lamba, 8.2.1968; ii) 11 exs, Rajbag, Loni, Pune, B.S. Lamba, 18. 9. 1971; iii) 15 exs, Shivganga river, Narsapur, Pune, M. S. Pradhan, 8.4.1983; iv) 4 exs, Karade hills, Varnavati, Ramakrishna, 31.10.1981, v) 1 ex, Shinovali, Ghod river, Bhimshankar, A.S. Mahabal, 31.5.1979; vi) 1 ex Lake near Eagle flask, Talegaon, R.M. Sharma, 8.2.2001; vii) 1 ex, Bhima river, Bhigvan, D.F. Singh, 17.12.1985, viii) 5 exs, Alardi, Pune, A. S. Mahabal, 10. 5. 1977, ix) 1 exs, Karha river, Sawad, Pune, B.S. Lamba, 3.5.1968; x) 1 ex, Saswad, Pune, B.S. Lamba, 23.5.1968; xi) 4 exs, Sukhi river dam, Pal, Jalgaon, R.H. Kamble, 1.2.1979; xii) 4 exs, Kondapuri, Pune, Purchased, 11.11.1977; xiii) 4 exs, Cichol Talav, Sangola, Sholapur, A.S. Mahabal, 4. 9. 1983, xiv) 1 ex, Nalla near Futijawal gaon, 7 km north of Tembhurru, A.S. Mahabal, 26.11.1978; xv) 6 exs, Raghal nalla, Phaltan-Bodkewadi road, Satara, P.P. Kulkarni, 6.5.1989; xvi) 12 exs, Kodav vill., Karjat, Raigad, M.S. Pradhan, 3.10.1981; xvii) 1 ex, Telinala, Tadoba, S.G. Patil, 18.8.1995; xviii) 2 exs, Indryani river, Kamshet, B.E. Yadav, 1.9.1989; xix) 4 exs, Aneer dam, Chopda, Jalgaon, R.H. Kamble, 25.11.1983; xx) 3 exs, Pashan lake, Pune, S.M. Kelkar, 20.8.60; xxi) 4 exs, Indryani river, Karla, Pune, B.K. Tikedar, 5.11.1963; xxii) 1 ex, Nalla near Santosh Lodge, Lonavala, B.K. Tikedar, 9.11.1963; xxiii) 9 exs, Indryani river, Karla, Pune, B.K. Tikedar, 17.11.1963; xxiv) 5 exs, nalla Bush Dam, Lonavala-Khandala, B.K. Tikader, 13.11. 1963; xxv) 10 exs, Bhatgar dam, B. S. Lamba, 23.

9.1965;xxvi) 1 ex, Pond, Pune, R. N. Chopra, 23.11.1965; xxvii) 6 exs, Pirangut, Pune, B.S. Lamba, 5.5.1966; xxviii) 2 exs, Katrajghat, Pune, B.S. Lamba, 21.8.1965; xxix) 6 exs, Vadgaon, Pune, B.S. Lamba, 9.9.1966; xxx) 1 ex, Mosi, Pune, B.S. Lamba, 6.10.1966; xxxi) 6 exs, Pond, Pune, R.N. Chopra, 18.1.1967; xxxii) 6 exs, Pirangut, Pune, R.N. Chopra, 16. 2. 1967; xxxiii) 10 exs, Talegaon, Pune, B.S. Lamba, 31.1.1967. xxxiv) 1 ex., 82 mm, Verna river near Wada village, 5 km north of I.B, Satara, 31.08.64, K.K.Tiwari; xxxv) 2 exs., 65-68 mm, Bavada, Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; xxxvi) 11 exs., 51-80 mm, Satara (Purchased), 02.09.64, K.K. Tiwari; xxxvii) 2 exs., 95-102 mm, Fish market at Pandharpur (Bhima river coll.), 4 km from PWD Rest House, Pandharpur, A.K. Karmakar; xxxviii) 9 exs., 78-118 mm, Bhima river at Degaon, 10 km from PWD Rest House, Pandharpur, 21.03.85, A.K. Karmakar; xxxix) 26 exs., 53-105 mm, Fish Farm at Gangapur, 6 km north of Govt. Guest House, Nasik, 09.04.05, A.K. Karmakar; xl) 6 exs., 45-106 mm, Darna Reservoir, 40 km s.w. of Govt. Guest house, Nasik, 10.04.05, A.K. Karmakar. xli) 3 exs., 65-80 mm, Ramala Talab, 15 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Sri Lanka; Bangladesh; Myanmar and Mekong.

Fishery Information : It attains a length of about 10 cm. This a hardy and active fish;with of minor fishery importance in Gangetic plains.

102. *Parluciosoma labiosa* (Mukerji)

1935. *Rasbora labiosa* Mukerji, *Rec. Indian Mus.*, 37(3) : 376; figs. 1, 2 (type locality : Deolali, Maharashtra).

1999. *Parluciosoma labiosa*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 383.

Common Name : Slender rasbora.

Local Name : Dandai, Gayroonjee.

Diagnostic Characters : D ii 7; A ii 5; P I 11; V I 8.

Body elongate and compressed. Mouth small; lower lip hypertrophied, with three distinct lobe like structures. Pectoral fin shorter than head length. Lateral line incomplete, 30 to 32 scales in longitudinal series; lateral transverse scales 4/1½.

Material examined : i) 34 exs., 42-53 mm, Waghur river (a tributary of Tapi river), 20 km south of PWD Inspection Bungalow, Jalgaon, 06.04.05, A.K. Karmakar.

Geographical Distribution : India : Nasik dist., Maharashtra.

Remarks : It attains a length of 8.5 cm, inhabits rivers and streams; endemic to Nasik district, Maharashtra.

Genus *Rasbora* Bleeker, 1860

1860 *Rasbora* Bleeker, *Acta Soc. Sci. Indo-Neerl.*, 7 : 435 (type-species: *Cyprinus rasbora* Hamilton-Buchanan).

Body elongate and slender to short and moderately deep, laterally compressed. Head large, snout slightly pointed. Mouth terminal and upwardly directed, with projecting lower jaw. A symphysial knob present on lower jaw. Barbels absent. Dorsal fin inserted behind origin of pelvic fins, with nine rays. Anal fin with 7 or 8 rays. Lateral line complete, with 25 to 37 scales.

103. *Rasbora rasbora* (Ham-Buch)

1822. *Cyprinus rasbora* Hamilton-Buchanan, *Fishes of Ganges*, pp. 329, 391; pl. 2, fig. 90 (Type locality : Ponds of Bengal).

1999. *Rasbora rasbora*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 53-54.

Local Name : Dandai.

Common Name : Gangetic scissor tail rasbora.

Diagnostic Characters : D ii 7 ; A ii-iii 5; P i 14; V i 8.

Anal fin with five branched rays. Lateral line complete. Pre-dorsal length longer. Dorsal hypural distance falling at anterior border of eye. Caudal fin with well defined black hind margin. Lateral stripe of regular width, not ending in a pre-caudal spot.

Material examined : i) 1 ex., Indrayani river, Kamshet, 01.09.89, B.C. Yadav; ii) 1 ex. Morna river, Satara, 28. 01.97, K.C. Jayaram; iii) 10 exs., stream of Godavari river, Trimbak, Nasik, 06.12.95, B.E. Yadav; iv) 1 ex., Indrayani river, Lonavala, 21.06.90, S.V. Mulay; v) 8 exs., God river Knakavali, Sindhudurg dist., 03.12.90, P.P. Kulkarni; vi) 3 exs., Baride village, Sawantwadi, Sindhudurg dist., 22.07.90, S.V. Mulay.

Geographical Distribution : India : Gangetic provinces, Coromandal coast and Maharashtra.

Remarks : Inhabits clear streams and ponds. It is a good aquarium fish.

Subfamily GARRINAE

Genus *Garra* Hamilton-Buchanan 1822

1822. *Garra* Hamilton-Buchanan, *Fishes of Ganges*, : 343, 393 (type-species : *Cyprinus lamta* Hamilton-Buchanan).

Body elongate and sub-cylindrical. Under-surface of head and body flattened. Mouth inferior, transverse and semi-circular; a suctorial disc present on chin. A proboscis may be present. Barbels 1 or 2 pairs or entirely absent. Dorsal fin inserted in advance of pelvic fins, with 9 to 12 rays and no spine. Paired fins horizontally placed. Anal fin with 6 to 8 rays. Lateral line complete, with 32 to 40 scales.

Key to the species of Genus *Garra*

1. Barbels one pair; proboscis trilobed
..... *G. bicornuta*
- Barbels two pairs 2
2. Proboscis present 3
- Proboscis absent 4
3. Depth of body 3.7 to 4.5 in standard length
..... *G. gotyla gotyla*
- Depth about 5.0 or more in standard length
..... *G. gotyla stenorhynchus*
4. A series of dark spots at base of branched dorsal rays; lateral line scales 33 or 34
..... *G. notata*

- No such dark spots at base of branched dorsal rays 5
- 5. Lateral line scales 34 or fewer 6
- Lateral line scales 35 to 40 7
- 6. Distance of vent from base of anal fin less than 4 times in that between anterior origins of anal and pelvic fins. Inter-orbital width less than or about 2.0 times in head length. Mental disc small, width of disc about 2 times in width of head *G. mullya*
- 7. Dorsal fin inserted distinctly nearer tip of snout than to caudal fin base. Breast and belly scaled. Lateral line scales 35–38
..... *G. maclellandi*

104. *Garra bicornuta* Rao

1920. *Garra bicornuta* Rao, *Ann. Mag. Nat. Hist.*, **16** : 57, pl. 1, figs. 3, 3a, 3b (type locality : River Tunga in Shimoga, Karnataka State).

1999. *Garra bicornuta*, Menon, *Rec. zool. Surv. India, Occ. Paper*, **175** : 143.

Local Name : Shingacha mallya.

Common Name : Tunga garra, stone sucker.

Diagnostic Characters : D ii 9; A i-ii 5; P i 13-14; V i 8.

Barbels one pair (rostral). Proboscis trilobed. Sucking disc well developed. Lateral line scales 31–32. Distance of vent to anal fin 3.3 to 4.9 times in interdistance between pelvic fin origin and anal fin.

Material examined : 1 ex., Neera river dam, Pune, 07.10.91, V.M. Pawar.

Geographical Distribution : India : Tunga river system, Karnataka and Maharashtra.

105. *Garra gotyla gotyla* (Gray)

1832. *Cyprinus gotyla* Gray, *Ill. Ind. Zool.*, **1** : 88, figs. 3, 3a (Type locality : Northern India).

1999. *Garra gotyla gotyla*, Menon, *Rec. zool. Surv. India, Occ. Paper*, **175** : 143.

Local Name : Shingacha-mallya.

Common Name : Gotyla, stone sucker.

Diagnostic Characters : D iii 7-8; A ii 5; P i 14; V i 8.

Two pairs of barbels. Proboscis with a well developed single median projection without lateral lobes on snout. Tubercles present on snout. Depth of body 3.7 to 4.5 times in standard length.

Material examined : i) 1 ex., Darna river, Deolali, Nasik, 07.12.95, B.E. Yadav; ii) 8 exs., Dapoli, Ratnagiri dist., 23.02.65, B.K. Tikader; iii) 23 exs., Wagh river, Ozar, Nasik, 26.12.64, B.S. Lamba; iv) 3 exs., Karkhel village, Satara dist., 01.07.88, P.P. Kulkarni; v) 1 ex., Munavale village, Karad, Satara dist., 27.06.88, P.P. Kulkarni; vi) 1 ex., 115 mm, Kolar river, 15 km north of Nagpur, 02.04.05, A.K. Karmakar.

Geographical Distribution : India : All along the Himalaya, Chhota Nagpur plateau and the Vindhya Satpura Mountains of the peninsula.

Elsewhere : Pakistan, Bangladesh and Myanmar.

Remarks : This species can be easily distinguished by the presence of a well developed median proboscis without any lateral lobes on the snout. Males with prominent tubercles on snout.

106. *Garra gotyla stenorhynchus* (Jerdon)

1847. *Gonorhynchus stenorhynchus* Jerdon, *Madras J. Lit. Sci.*, 15 : 310 (type locality : Bhawany river, Neilgiri).

1999. *Garra gotyla stenorhynchus*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 144-145.

Common Name : Nilgiris garra.

Diagnostic Characters : D iii 7-8; A ii 5; P i 14; V i 8.

Lower lip modified into suckorial disc. Upper and lower lips continuous. Barbels 2 pairs. Proboscis with a single median projection without lateral lobes on snout. Proboscis well developed with lateral tubercular area. Depth of body 5 times in standard length.

Material examined : i) 1 ex., Kalbhor river, Kalbhor village, Pune, 19.02.75, G.M. Yazdani; ii) 1 ex., Palgod, 25 km south-east of Mandangod, Dapoli, Ratnagiri dist., iii) 4 exs., Terna river, Osmanabad, 27.07.88, D.B. Bastawade; iv) 2 exs.,

Pond near Wagholi, Pune, 05.10.90, G.M. Yazdani; v) 1 ex., Indrayani river, Lonavala, 21.06.90, S.V. Muley; vi) 1 ex., Darna river, Deolali, Nasik, 07.12.95, B.E. Yadav.

Geographical Distribution : India : Cauvery, Krishna drainages, Western Ghats.

Fishery Information : It attains a length of 15 cm and is of no interest to fisheries.

107. *Garra mcClellandi* (Jerdon)

1849 *Gonorhynchus mcClellandi* Jerdon, *Madras J. Lit. Sci.*, 15: 309 (type-locality: Bowany river and Manantoddy river at base of Nilgiris).

1991 *Garra mcClellandi*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, pp. 428.

Common Name : Cauvery garra.

Diagnostic Characters : D ii-iii 8, A i-ii 5; P i 15; V i 8.

Body elongate and sub-cylindrical, its depth 4.3 to 5.7 in standard length. Head flat or concave, its length 4.6 to 5.0 in standard length. Snout conical, smooth, with large number of prominent tubercular areas. Barbels two pairs. Dorsal fin inserted distinctly nearer tip of snout than caudal fin base. Lateral line with 35-38 scales. Predorsal scales 8 to 10.

Material examined : i) 7 exs., 60-78 mm, Hirana Medium Project on Hirana river, near Khadak villege, Deola, 50 km south of PWD Rest House, Jalgaon, 07.04.05, A.K. Karmakar; ii) 3 exs., 78-113 mm, Fish Farm at Gangapur, 6 km north of Govt. Guest house, Nasik, 09.04.05, A.K. Karmakar; iii) 3 exs., 81-94 mm, Darna reservoir, 40 km south of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar; iv) 2 exs., 75-160 mm, Mukna Reservoir, 25 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar. v) 3 exs., 103-122 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution: India: Cauvery Drainage, Nilgiri dist., Tamil Nadu, also in Maharashtra (New record).

Fishery Information: It attains a length of about 17.5 cm; is of no interest to fisheries.

108. *Garra mullya* (Sykes)

1841. *Chondrostoma mullya* Sykes, *Trans. zool. Soc. Lond.*, 2 : 359, pl. 62, fig. 3 (type-locality : Bheema river at Daunde, nr. Poona).
1991. *Garra mullya* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 429.

Common Name : Mullya garra, stone sucker.

Local Name : Mallya.

Diagnostic Characters : D iii 7-8; A i-ii 5; P i 12-15; V i 7-8.

Two pairs of barbels present. Lateral line scales 34. Proboscis absent. Distance of vent from anal fin base less than 4 times in interdistance between pelvic fin origin and anal fin base.

Material examined : i) 3 exs., Bhama river, Khed, Pune, K. Reddiah, 03.07.76; ii) 8 exs., Shivganga river, Narsapur, Pune, M.S. Pradhan, 08.04.83; iii) 9 exs., Kavade hills, Varanavati, Ramkrishna, 31.10.81; iv) 3 exs., Shinovali, Ghod river, Bhimashankar, A.S. Mahabal, 31.05.79; v) 2 exs., Karha river, Saswad, Pune, 03.05.68; vi) 10 exs., Kondapuri, Pune, Purchased, 11.11.77; vii) 6 exs., Pathardi tank, Latur road Barshi, A.S. Mahabal, 29.11.78; viii) 3 exs., Raghoba nalla, Phaltan, Bodkewadi road, Satara, P.P. Kulkarni, 06.05.89; ix) 2 exs., Mutha river, Lakadi bridge, Pune, R.N. Chopra, 13.03.63; x) 2 exs., Mutha river, Lakadi bridge, Pune, R.N. Chopra, 29.03.63; xi) 2 exs., Mula-Mutha river, Bund garden, Pune, R.N. Chopra, 27.07.63; xii) 5 exs., Mula-Mutha river, Bund garden, Pune, R.N. Chopra, 16.07.63; xiii) 3 exs., Mutha river, Sambhuji bridge, Pune, R.N. Chopra, 14.05.64; xiv) 1 ex., Urlikanchan, Pune, R.N. Chopra, 14.05.64; xv) 2 exs., Mutha river, Sambhaji bridge, Pune, R.N. chopra, 14.05.64; xvi) 2 exs., Pen, Kolaba, B.S. Lamba, 13.02.66; xvii) 3 exs., Talegaon, Pune, B.S. Lamba, 17.11.66; xviii) 1 ex., Koregaon, Pune, B.S. Lamba, 20.04.67; xix) 1 ex., Hamalwadi, Aurangabad, R.N. Chopra, 04.09.64; xx) 1 ex., Paud, Pune, R.N. Chopra, 31.12.66; xxi) 1 ex., Padampura, Aurangabad, R.N. Chopra, 05.09.64; xxii) 2 exs., Paud, Pune, R.N. Chopra, 22.12.66; xxiii) 5 exs., Talegaon, Pune, B.S. Lamba, 31.03.67; xxiv) 3 exs., Wadgaon, Banbon, Pune, B.S. Lamba, 29.09.65; xxv) 53 exs., Bhugaon,

Paud Road, Pune, R.N. Chopra, 03.03.66; xxvi) 8 exs., Khadakwasla, Pune, R.N. Chopra, 31.08.65. xxvii) 2 exs., 74-98 mm, Satpur Fish Market at Nasik (Godavari river collection), 08.04.05, A.K. Karmakar; xxviii) 1 ex., 85 mm, Behula Medium Project on Behula river, 40 km south of PWD Rest House, Jalgaon, 07.04.05, A.K. Karmakar. xxix) 2 exs., 105-111 mm, Godavari river near Gobardhan Ghat, 3 km south of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar; xxx) 8 exs., 91-103 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest house, Nanded, 07.06.06, A.K. Karmakar.

Geographical distribution : India : Throughout except Assam and the Himalaya.

This is the most widely distributed species of the genus.

Fishery Information : It attains a length of about 17 cm and of no interest to fisheries.

Remarks : These are hillstream fish found under rocky bottom.

109. *Garra notata* (Blyth)

1861. *Platycara notata* Blyth, *J. Asiat. Soc. Bengal*, 29 : 161 (type locality : Tenasserim, Burma).
1999. *Garra notata*, Jayaram, *Freshwater Fish Indian Region*, P. 155.

Common Name : Tenasserim garra.

Diagnostic Characters : D ii 7-8; A ii 5; P i 13-14; V i 8.

Barbels present. Proboscis absent. A series of dark spots at base of branched dorsal fin rays. Vent located close to the base of anal fin. Distance of vent from base of anal fin more than 5 times in that between anterior origins of pelvic and anal fins.

Material examined : 1 ex., Stream near Trimbak, Nasik dist., 15.10.73, M.B. Rao.

Geographical Distribution : India : Western Ghats.

Elsewhere : Myanmar.

Remarks : It is a relic species, migrated from ancestral home i.e. South-West China, Yunnan. Menon (1964), Rao (1974), Talwar and Jhingran

(1991) doubted its occurrence in the W. Ghats but we have verified the characters and confirmed its occurrence in India.

Family PARAPSYLORHYNCHIDAE

Genus *Parapsylorhynchus* Hora, 1921

1921. *Parapsylorhynchus* Hora, *Rec. Indian Mus.*, 23(1), p.13 (type-species : *Psilorhynchus tentaculatus* Annandale, by original designation).

Body more or less depressed. Head broadly pointed anteriorly, with sensory pores. Snout conical, smooth or with pores. Mouth small, inferior and horizontal. Eyes prominent and lateral. Upper lip covered by a prominent rostral fold fringed and covered with minute tubercles. Lower lip finely papillated. Pharyngeal teeth sickle shaped, in two rows. Dorsal fin inserted opposite to pelvic fins, with eight branched rays and no spine. Outer pectoral rays with adhesive pads ventrally. Lateral line with 33 to 47 scales.

Key to the species of Genus *Parapsylorhynchus*

1. Scales 43 to 47 in lateral line; depth of body 5.3 to 6.0 in standard length..... *P. prateri*
- Scales 33 to 39 in lateral line; depth of body 4.0 to 5.0 in standard length..... 2
2. Pectoral fin with two simple rays; lateral line scales 33 to 35; eyes distinctly visible from underside of head *P. discophorus*
- Pectoral fin with three simple rays; lateral line scales 36 to 39; eyes not visible from underside of head..... *P. tentaculatus*

110. *Parapsylorhynchus discophorus* (Hora)

1921. *Parapsylorhynchus discophorus* Hora, *Rec. Ind. Mus.*, 22 (1) : 14, Fig. (type locality : Popholi, Ratnagiri dist., W. Ghats).
1991. *Parapsylorhynchus discophorus*, Yazdani, 6th Indian Engg. Congress, Pune, 215-225, figs. 216, 217.

Common Name : Ratnagiri minnow.

Diagnostic Characters : D ii 6-8; A ii 5-6; P ii 11-14; V i 7-8.

Elongated body, ventral surface flattened.

Dorsal profile arched. Paired fins in horizontal plane. Snout rounded, blunt. One pair of barbels. Head arched behind lower lip. Well developed mental disc. Pectoral fins with 2 simple rays. Lateral line scales 33-35, scales small.

Material examined : i) 3 exs., Kondapuri, Pune, Purchased, 11.11.77; ii) 1 ex., River near Velhe village bridge, Pune, B.S. Lamba, 24.03.65 iii) 1 ex., Koyana river, Urishi, 20 km south-west of Mahabaleswar, 24.10.76, M.B. Rao.

Geographical Distribution: India : Western Ghats, Koyana river, Maharashtra to Vāsisthi valley, Ratnagiri dist.

Remarks : This hill stream fish is endemic to the Western Ghats.

111. *Parapsylorhynchus elongatus* Singh

1994. *Parapsylorhynchus elongatus* Singh, *J. Bombay nat. Hist. Soc.*, 91 : 282-285 (type locality : Ghod river, Khondwal village, Ambegaon taluka, Pune dist.

Common Name : Top minnow.

Diagnostic Characters : Pectoral fin with 3 simple rays. Posterior part of lower lip merely thickened. Lateral line scales 35-36. Eyes visible from underside of head.

Geographical Distribution : India : Bhimashankar, Pune, Maharashtra.

Remarks : It is an endemic hill stream fish of Western Ghats.

112. *Parapsylorhynchus prateri* Hora & Misra

1938. *Parapsylorhynchus prateri* Hora and Misra, *J. Bombay nat. Hist. Soc.*, 40 : 32 (Type locality : Narsullah wadi, Deolali).
1999. *Parapsylorhynchus prateri*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 154.

Common Name : Deolali minnow.

Diagnostic Characters : D ii 8; A ii 5; P ii 13; V i 8.

Body depressed, ventral surface flattened, dorsal profile gently arched. Mouth small, inferior, horizontal, upper lip having rostral fold and tubercles, a pair of short stumpy barbels. Lateral line scales small, Lateral line with 43-47 scales.

Material examined : i) 50 exs., stream near Trimbak, Nasik, M.B. Rao, 20.10.73, ii) 3 exs., stream near Bauganpa, Trimbak, Nasik, M.B. Rao, 16.10.73.

Geographical Distribution : India : Western Ghats, Nasik, Pune dist.

Remarks : This is endemic fish of Western Ghats.

113. *Parapsilorhynchus tentaculatus* (Annandale)

1919. *Psilorhynchus tentaculatus* Annandale, *Rec. Indian Mus.*, **16** : 125 (type locality : Pophli, Vashishti valley, Ratnagiri Dist. Poona, Maharashtra).

1999. *Parapsilorhynchus tentaculatus*, Menon, *Rec. zool. Surv. India, Occ. Paper*, **175** : 154-155.

Common Name : Khandala minnow.

Diagnostic Characters : D iii 6-7; A ii 4; P (ii)iii 12-13; V i 8.

One pair of barbels present. Pectoral fin with 3 simple rays. Posterior part of lower lip merely thickened without disc. Lateral line scales 36-39. Eyes not visible from under side of head.

Material examined : i) 1 ex., Nalla near Douji village in the vicinity of Sinhgad, Pune, 09.04.76, M. Babu Rao; ii) 8 exs., Pune, 17.04.76, M. Babu Rao; iii) 17 exs., Kamalhadi, Pune, 25.04.72, B.S. Lamba; iv) 6 exs., Nalla, Tata pumping stn. Khandala, Pune, 12.11.63, B.K. Tikader; v) 90 exs., Bhugaon, Paud, Pune, 03.03.66, R.N. Chopra; vi) 6 exs., Stream near Malkhedewada, Panshed, Pune, 14.10.87, D.F. Singh; vii) 14 exs., Kadavaipada river, Hasul, Nasik dist., 14.11.1987, M.S. Pradhan; viii) 5 exs., Ghod river, Khandwal village, Bhimasankar, Pune dist., 03.06.86, M.S. Pradhan; ix) 2 exs., Nagphani point, Bhimashankar, 10.08.94, G.M. Yazdani.

Geographical Distribution : India : Western Ghats, Pune, Khandala, Nasik dist.

Remarks : These are small size fish, length about 3 to 4 cm. It is an endemic fish of Western Ghats.

Family BALITORIDAE

Genus *Acanthocobitis* Peters 1861

1861. *Acanthocobitis* Peters, *Monats. Akad. Wiss Berlin*, p. 712 (type-species : *Acanthocobitis longipinnis* Peters = *Cobitis pavonaceus* McClelland, by monotype).

1987. Menon, *Fauna of India*, **4**(1), p. 140 (as a sub-genus).

1990. Kottelat, *Verlog. Dr. Friedrich Pfeil, Munchen*, p. 18 (as a valid genus).

1995. Banareseu & Nalbant, *Trav. Mus. Hist. nat. "Grigore Antipa"*, **35**, p. 430 (as valid genus).

Body deeper than in most other nemacheiline fishes, strongly compressed posteriorly. Head more or less compressed. Snout blunt. Slight adipose keel present. Barbel like projection absent. Upper lip covered by two or three rows of papillae; lower lip broad on both sides, interrupted in the middle, with numerous papillae. Dorsal fin usually with 10 to 18 branched rays. Caudal fin either emarginated or convex, sometimes truncate. Scales large all over body. Lateral line either complete or extending at least upto under dorsal fin.

114. *Acanthocobitis botia* (Ham-Buch)

1822. *Cobitis botia* Hamilton-Buchanan, *Fishes of Ganges*, pp. 350, 394 (type locality : River of North-eastern parts of Bengal).

1999. *Acanthocobitis botia*, Jayaram, *Freshwater Fish of Indian Region*, P. 173.

Local Name : Chikli.

Common Name : Striped loach.

Diagnostic Characters : D iii 9-11; A iii 5; P i 11; V i 7.

This species with 9 to 11 branched dorsal fin rays. Complete lateral line. 12 to 16 blackish cross bar broken up and scattered irregularly on the sides in adult specimen. A round dark spot on upper part of caudal base.

Material examined : i) 4 exs., Paud, Pune, 07.10.78, R.H. Kamble; ii) 2 exs., Karade hills, Varnavati, 31.10.81, Ramakrishna; iii) 1 ex., Hadapsar, Pune, 04.07.75, B.K. Tikader; iv) 15 exs., Khed, Pune, 18.08.71, B.S. Lamba; v) 1 ex., Nandgaon, Bhore, Pune, 20.03.82, Ramakrishna; vi) 4 exs., Paud, Pune, 07.10.78, R.H. Kamble;

vii) 2 exs., Waghhol, Pune, 10.06.91, B.E. Yadav; viii) 2 exs., Kondapuri, Pune, 11.11.77, Purchased; ix) 1 ex., Sina river, Malik Peth, Sholapur, 30.08.83, A.S. Mahabal; x) 4 exs., Pathardi tank, Latur Road Barshi, 29.11.78, A.S. Mahabal; xi) 6 exs., Mutha river, Sambhaji bridge, Pune, 14.05.64, R.N. Chopra; xii) 2 exs., Kowdi, Pune, 06.04.67, B.S. Lamba; xiii) 1 ex., Paud, Pune, 22.12.66, R.N. Chopra; xiv) 2 exs., Malvali, Pune, 09.02.66, B.S. Lamba; xv) 2 exs., Mutha river, Pune, 05.03.65, B.S. Lamba; xvi) 2 exs., Pirangut, Pune, 08.03.67, B.S. Lamba; xvii) 1 ex., Godavari river Mahale Mashid, Paithan, 25.09.64, B.N. Chopra; xviii) 1 ex., Kirkee nalla Chandkas, Nagar dist., 09.10.73, M. Babu Rao; xix) 1 ex., Khed, Pune, 25.03.72, K.K. Rao; xx) 6 exs., Kamshet, Pune, 12.02.75, R.H. Kamble; xxi) 11 exs., Vadgaon, Pune, 17.12.66, R.N. Chopra; xxii) 5 exs., Kamshet, Pune, 04.11.70, K.R. Rao; xxiii) 2 exs., Moshi, Pune, 28.03.67, B.S. Lamba; xxiv) 6 exs., Pirangut, Pune, 29.11.66, R. N. Chopra; xxv) 14 exs., Sangam Mula- Mutha and Bhima rivers, Ranjangaon Sandas, Pune dist., 20.01.87, D.F. Singh; xxvi) 1 ex., Mannyad river, Nandgaon-Aurangabad Road, Nasik, 23.11.87, M. S. Pradhan; xxvii) 7 exs., 55-60 mm, Darna Reservoir, 40 km s.w. of Govt. Guest House, Nasik, 10.04.04, A.K. Karmakar; xxviii) 2 exs., 62-75 mm, Kolar river, 15 km north of Nagpur, 02.04.05, A.K. Karmakar; xxix) 1 ex., 90 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : North India, Ganga, Brahmaputra river systems; Maharashtra.

115. *Acanthocobitis mooreh* (Sykes)

1841. *Cobitis moreh* Sykes, *Trans. Zool. Soc. Lond.*, 2 : 266 (type-locality : Western Ghats).

1999. *Acanthocobitis moreh* : Jayaram, *The Freshwater fishes of the Indian Region*, : 173.

Diagnostic Characters : D iii 9-10; A iii 5; P i 11; V i 7.

Body straight and horizontal. Lower lip broad on both sides, interrupted in the middle. With 9-10 branched dorsal fin rays. Incomplete lateral

line ending opposite to posterior end of dorsal fin. Males having suborbital flap.

Material examined : i) 3 exs, Minar river, Vadraj dam, Shivneri, Pune dist, 5.7.1983, M.S. Pradhan; ii) 21 exs, Sindfana west bank, Majalgaon, Beed district, 5.7.1972, M.B. Rao; iii) 1 ex, Mutha river, Khadakwasta, Pune, 3.6.1995, H.V. Ghatge; iv) 3 exs, Indrayani river, Lonavala, 21.6.1990, S.V. Muley; v) 3 exs, Indrayani river, Dehu, 22.5.1997, S.S. Kharat; vi) 1 ex, Mutha river, Varje village, Pune, 15.10.1997, S.S. Kharat.

Geographical Distribution : India : Peninsular India.

Fishery Information : It attains a length of 4.4 cm in standard length and of no interest to fisheries.

Remarks : This is an endemic species.

Genus *Balitora* Gray 1830

1830. *Balitora* Gray, *Illustrations of Indian Zoology*, 1 : pl. 88, fig 1 (type-species : *Balitora brucei* Gray).

Body strongly depressed; head and abdomen flattened. Eyes small, more or less on dorsal side of head, not visible from underside of head. Mouth inferior and arched, both jaws cover with horny sheath. Rostral flap divided into three lobes; both lips with one or two rows of papillae; lower lip not interrupted. Four rostral barbels; one maxillary barbel at corner of mouth. Gill openings extending on ventral side of head. Dorsal fin inserted above or slightly anterior to pelvic fins with 11 to 12 rays. Anal fin with 7 rays. Paired fins broad and horizontal. Adhesive pads present on ventral surface of 8 to 11 anterior pectoral rays and 3 or 4 anterior pelvic rays. Caudal fin forked. Scales small in size.

116. *Balitora mysorensis* Hora

1941. *Balitora brucei* var. *mysorensis* Hora, *Rec. Indian Mus.*, 43(2) : 232, pl.8, fig. 4 (type-locality : Sivasamudram, Cauvery River System, Karnataka).

1991. *Balitora mysorensis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 448.

Common Name : Slender stone loach.

Local Name : Pattar-Chatu.

Diagnostic Characters : D ii-iii 8-9; A ii 5; P viii-ix 10-11; V ii 9.

Body depressed, its depth 7.9-8.4 in standard length. Head length 4.0-4.3 in standard length. Eye diameter 6.0-6.2 in head length. Caudal peduncle two times longer than deep. Scales small, absent on chest and belly; lateral line scales 64-65.

Geographical Distribution : India : Cauvery and Tungabhadra river systems, Karnataka; Kolhapur, Maharashtra and Kerala.

Fishery information : It attains a length of about 5 cm in standard length and is of no interest to fisheries.

Remarks : This species is endemic to Western Ghats.

Genus *Nemacheilus* Bleeker 1863

1863. *Nemacheilus* Bleeker, *Ned. Tijdschr. Dierk. Indie*, 1 : 365 (type species : *Cobitis fasciatus* Valenciennes).

Body elongate, almost cylindrical and somewhat depressed. Mouth small and inferior. Eye minute to small. Pre-orbital spine on head absent. Barbels 2 to 4 pairs. Dorsal fin inserted opposite to pelvic fins, with 8 to 20 soft rays and devoid of any spine. Anal fin with 6 to 8 soft rays. Caudal fin emarginate, truncate, or lunate. Scales minute. Lateral line complete or incomplete.

Key to the species of Genus *Nemacheilus*

1. Pair of well-developed nasal barbels present 2
 - Well-developed nasal barbels absent 3
2. Body marked with well-defined and regular crossbars *N. evezardi*
 - Body marked with narrower and ill-defined crossbars, split up below lateral line *N. keralensis*
3. Caudal fin truncate or slightly emarginate; a black ocellus at upper margin of base of caudal fin 4
 - Caudal fin truncate, emarginated or forked;

no dusky ocellus at the upper margin of caudal fin base 5

4. Dorsal fin with 9 or 10 branched rays; lateral line ending below or end of dorsal fin base *N. zonalternans*
5. Snout elongated *N. rueppelli*
 - Snout not elongated 6
6. Body marked with series of vertical bands 7 (Subgenus *Schistura*)
 - Body not marked with series of vertical bands; a black horizontal band along lateral line *N. anguilla* (Subgenus *Nemacheilus*)
7. Dorsal fin with nine or ten branched rays 8
 - Dorsal fin with less than nine branched rays 9
8. Dorsal fin with nine branched rays. Caudal fin emarginated *N. savona*
 - Dorsal fin with ten branched rays. Caudal fin emarginated *N. striatus*
9. Dorsal fin with eight branched rays 10
 - Dorsal fin with seven branched rays; lateral line complete; body with 14 or 16 vertical black bands *N. rupecola*
10. Caudal fin truncate; body marked with 14 to 16 vertical black bands, broader than interspaces; lateral line complete *N. multifasciatus*
 - Caudal fin deeply emarginate, with rounded lobes; body marked with 10 to 14 bands, as wide as interspaces; lateral line incomplete *N. denisoni*

117. *Nemacheilus anguilla* Annandale

1919. *Nemacheilus anguilla* Annandale, *Rec. Indian Mus.*, 16 : 127, pl. 1, fig. 1 type locality : Yenna river, Krishna drainage system at Medha, Satara district, Maharashtra).

1987. *Nemacheilus anguilla*, Menon, *The Fauna of India and adjacent countries*, 4, Part 1, p. 154.

Local Name : Chikli.

Common Name : Loach.

Diagnostic Characters : D iii 8; A ii 4; P i 13; V i 7.

8 branched rays in dorsal fin. A black horizontal line along lateral line.

Material examined : i) 1 ex., Indrayani river, Karla, Pune, 05.11.63, B.K. Tikader; ii) 1 ex., Kamshet, Pune, 12.02.73, R. H. Kamble; iii) 1 ex., Mutha river, Pune, 03.06.95, H.V. Ghate; iv) 4 exs., Indrayani river, Dehu, 22.05.97, S.S. Kharat.

Geographical Distribution : India : Western Ghats, Karnataka, Maharashtra (Krishna River Basin).

Remarks : It is endemic to Western Ghats. These are hills stream fishes.

118. *Nemacheilus denisoni denisoni* Day

1867. *Nemacheilus denisoni* Day, *Proc. zool. Soc. Lond.*, : 287 (type-locality : Bhowany river, base of Nilgiris).

1987. *Nemacheilus denisoni denisoni* : Menon, *Fauna of India, Pisces*, 4 : 93, pl.10, figs. 3 &4.

Common Name : Loach.

Local Name : Munenga.

Diagnostic Characters : D iii 8; A ii-iii 5; P I 9-10, v I 6.

Species with 8 branched dorsal fin rays. Pelvic fin touches anal opening. Caudal deeply emerginate. Lateral line incomplete. Body marked with varying number of brown bands, more distinct behind dorsal fin.

Material examined : i) 33 exs, Karuna river, Pimpalgaon dukra, Nasik dist., 18.2.1988, G.M. Yazdani; ii) 2 exs, Mannyad river, Nandgaon-Aurangabad road, Nasik, 23.11.1987, M.S. Pradhan, iii) 1 exs, Kadwa river, Nasik, 19.2.1988, G.M. Yazdani; iv) 8 exs, Dama river, Deolali, Nasik, 17.2.1988, G.M. Yazdani; v) 1 ex, Minar river, Vadraj dam, Shivneri, Junnar, Pune dist., 5.7.1983, M.S. Pradhan; vi) 10 exs, Bhimashankar ghat, Ambegaon, Pune dist., 5.5.1965, B.S. Lamba; vii) 11 exs, Ghod river, Dimbhe dam, Bhimashankar, Pune dist., 11.8.1994, G.M.

Yazdani; viii) 1 ex, Radhanagari village, Kolhapur, 17.2.1989, M.S. Pradhan; ix) 1 exs, Indrayani river, Dehu, 22.5.1997, S.S. Kharat; x) 2 exs, Mula river, Pune, 22.5.1998, S.S. Kharat; xi) 1 ex, Gargai river, Pardi, Thane dist., 20.10.1986, M.S. Pradhan. xii) 4 exs., 40-55 mm, Darna Reservoir, 40 km s.w. of Govt. Guest house, Nasik, 10.04.05, A.K. Karmakar; xiii) 10 exs., 44-60 mm, Waghur river (a tributary of Tapi river), 20 km south of PWD Rest House, Jalgaon, 06.04.05, A.K. Karmakar.

Geographical Distribution : Peninsular India, Chota Nagpur plateau (Jharkhand) and Bastar district (Chattisgarh).

Fishery Information : It attains a length of about 5.0 cm in standard length; and is of no interest to fisheries.

Remarks : A blakish band at the base of caudal fin. A black spot at the base of dorsal origin. Dorsal and caudal banded with varying rows of brownish spots, often fins unspotted.

119. *Nemacheilus denisoni dayi* Hora

1935 *Nemacheilus dayi* Hora, *Rec. Indian Mus.*, 37(1) : 57 (type-locality: hills nr. Ranigani, Chota Nagpur, Bihar).

1987 *Nemacheilus denisoni dayi*: Menon, *Fauna of India, Pisces*, 4 : 99, pl. 16, fig.6.

Diagnostic Characters : D iii 8; A ii 5; P i 10; V i 6.

Body elongate, its depth 5.3 to 7.3 in standard length. Eyes small, not visible from underside of head. Nostril close to each other; mouth semicircular; lips fleshy, lower one weekly furrowed and interrupted. Dorsal fin inserted equidistant between tip of snout and caudal fin base. Caudal fin deeply emerginate. Scales small, absent on under surface; lateral line incomplete.

Geographical Distribution : India : Peninsular India, Chota Nagpur plateau (Jharkhand), and Bastar (Chattisgarh).

Fishery Information : It attains a length of 5 cm in standard length; and is of no interest to fisheries.

Remarks : This subspecies can be distinguished from *N. Denisoni denisoni* by its body markings (bands separated by wider interspaces in *denisoni*, narrower in *dayi*).

120. *Nemacheilus evezardi* Day

1878. *Nemacheilus evezardi* Day, *Fishes of India*, : 613, pl. 153, fig. 11 (type-locality : Poona).

1987. *Nemacheilus evezardi* : Menon, *Fauna of India, Pisces*, 4 : 191, pl. 4, figs. 1 & 2; and pl. 10, fig. 1.

Common Name : Loach.

Local Name : Chikli.

Diagnostic Characters : Body sub-cylindrical. Well developed nasal barbels. Caudal fin rounded. Dorsal fin with 7 branched rays, nearer caudal fin base than tip of snout. Well developed, imbricate scales covering the whole body including breasts. Usually a number of dark vertical blotches present.

Material examined : i) 40 exs, stream on Sita Nehani, Dhanur, Beed dist., 9.10.1988, R.M. Sharma; ii) 3 exs, Radhanagari village, Kolhapur, 17.2.1989, M.S. Pradhan; iii) 8 exs, Bhaka Devi, Bhimashankar, Pune, 12.8.1995, G.M. Yazdani, iv) 4 exs, Khandepar, Raigad, 16.2.1987, D.B. Bastawade.

Geographical Distribution : Western Ghats : Krishna and Godavari basins; and Satpura range : Pachmari Hills.

Fishery Information : It attains a length of about 3.8 cm in standard length; and of no interest to fisheries.

121. *Nemacheilus multifasciatus* Day

1878. *Nemacheilus multifasciatus* Day, *Fishes of India*, : 617, pl. 153, fig. 7 (type-locality : Darjeeling and Assam).

1987. *Nemacheilus multifasciatus* Menon, *Fauna of India, Pisces*, 4 : 52, pl.1, figs. 3 & 4.

Diagnostic Characters : D ii 8; A ii 5; P i 10-11; V i 7-8.

Body robust and slender, its depth 6.4 to 10 in standard length. Eye small, not visible from under side. Nostril close to each other. Mouth

semicircular, lips moderately fleshy and poorly furrowed. Barbels well developed. Dorsal fins inserted slightly nearer to base of caudal fin than to tip of snout. Caudal fin truncate or slightly emarginated. Scales small and indistinct, lateral line complete.

Material examined: i) 2 exs., 45-63 mm, Hirana Medium Project, near Khadak vill., 50 km south of PWD Rest House, Jalgaon, 07.04.05, A.K. Karmakar.

Geographical Distribution : India : Eastern Himalaya : from Tista, through the base of Nepal Himalaya, as far as the Ghaghra and Kali drainages. Also in Maharashtra (New record).

Fishery Information : It attains a length of about 9.8 cm in standard length; is of no interest to fisheries.

Remarks : This species has never again being collected from Darjeeling and Assam since its original discovery from this localities.

122. *Nemacheilus rupecola* (McClelland)

1838. *Schistura rupecola* McClelland, *J. Asiat. Soc. Beng.*, 7 : 948, pl. 55, fig. 3 (type-locality : Simla).

1987. *Nemacheilus rupecola*, Menon, *Fauna of India, Pisces*, 4 : 49, pl. 13, fig. 6.

Diagnostic Characters : D ii 8; A ii 5; P i 11; V i 7.

Body elongate, its depth 5.4 to 9 in standard length. Eyes small, not visible from under side. Nostril close to each other. Mouth semicircular; lips moderately fleshy and poorly furrowed. Barbels well developed. Dorsal fin inserted equi distance between tip of snout and base of caudal fin. Caudal fin truncate or slightly emarginated. Scales small and indistinct, Lateral line complete.

Geographical Distribution : India : Western Himalaya : Kumaon through Garhwal Himalaya to Yamuna, Sutlej and Beas drainages of Himachal Pradesh.

Fishery Information : It attains a length of 6.6 cm; is of no interest to fisheries.

123. *Nemacheilus ruppelli* (Sykes)

1841. *Cobitis ruppelli* Sykes, *Trans. Zoo. Soc. London*, 2 : 366, pl. 61. (type locality : Deccan)
1987. *Nemacheilus ruppelli*, Menon, *The Fauna of India and adjacent countries*, *Zool. Surv. India*, 4(Part 1) : 158.

Local Name : Chikli.

Common Name : Loach.

Diagnostic Characters : D iii 10(11); A ii 5; P i 12; V i 7.

A large size *Nemacheilus* with elongate body. A long snout, prominent eyes, long barbels; 10 branched rays in the dorsal fin. Deeply forked caudal, anal opening situated near ventral axis than to anal fin. Body marked with 18-19 brownish vertical bands reaching below lateral line but not ventral side.

Material examined : i) 2 exs., Mutha river, Sambhaji Park, Pune, 13.03.63, R.N. Chopra; ii) 1 ex., Mutha river, Sambhaji Park, Pune, 14.05.63, R.N. Chopra; iii) 1 ex., Ghod river, Shinovali, Bhimashankar, Pune dist., 31.05.79, A.S. Mahabal; iv) 5 exs., Ghod river, near Dimbedan, Bhimasankar, Pune, 11.08.94, G.M. Yazdani.

Geographical Distribution : India : Western Ghats, Maharashtra, Karnataka, Krishna river basin.

Remarks : It is an endemic loach to Western Ghats.

124. *Nemacheilus savona* (Ham-Buch)

1822. *Cobitis savona* Hamilton-Buchanan, *Fishes of Ganges*, p. 357 (type locality : Kosi river at Nathpur).
1999. *Nemacheilus savona*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 177.

Diagnostic Characters : Body slender, its depth 5.7 to 6.8 times in standard length. Mouth semicircular. Barbels well developed, nasal pair short. Dorsal fin inserted nearer to snout tip than to base of caudal fin. Caudal fin deeply emarginate. Lateral line complete. Body marked with 10 yellowish bands.

Material examined : i) 6 exs., Kowdi, Pune, 06.04.67, B.S. Lamba; ii) 4 exs., River near Velhe village bridge, Pune, 24.03.65, B.S. Lamba; iii) 1 ex., Vadgaon, Pune, 07.02.66, B.S. lamba.

Geographical Distribution : India : Eastern Himalaya; Teesta drainage at Darjeeling through Nepal to Karnali and Uttar Pradesh. Also in Maharashtra.

125. *Nemacheilus striatus* Day

1867. *Nemacheilus striatus* Day, *Proc. zool. Soc. Lond.*, : 347 (type-locality : Wynaad, Kerala).
1987. *Nemacheilus striatus* : Menon, *Fauna of India, Pisces*, 4 : 113, pl. 5, fig. 1.

Diagnostic Characters : Body elongate and compressed. Dorsal fin long with ten branched rays. Narrow vertical dark bands 12 to 16 behind the commencement of dorsal fin and seven more between dorsal fin and head where last is marked with black lines and spots. A black band at the base of caudal fin.

Material examined : i) 4 exs., 45-59 mm, Fish Farm at Gangapur, 6 km north west of Govt. Guest House, Nasik, 09.04.05, A.K. Karmakar.

Geographical Distribution : India : Western Ghats : Kerala : Wynaad; Karnataka : Shimoga; Nasik: Maharashtra (New record).

Fishery Information : It attains a length of about 5.8 cm in standard length; and is of no interest to fisheries.

Family COBITIDAE

Genus *Lepidocephalus* Bleeker, 1858

1858. *Lepidocephalus* Bleeker, *Natuurk. Tijdschr. Nederl. Ind.*, 16 : 303 (type-species : *Cobitis macrochir* Bleeker).

Body elongate, slightly compressed. Back not arched. Mouth inferior with 6 barbels. A small erectile, bifid suborbital spine present. Dorsal fin inserted opposite to ventrals and placed almost on middle of body. Caudal fin rounded, truncate or emarginate. Scale small, but visible. Sides of head covered with smaller scales in patches. Lateral line absent.

Key to the species of Genus *Lepidocephalus*

1. Depth of body 5.8 to 6.8 in total length; dorsal fin inserted slightly behind pelvic fin origin
..... *L. guntea*
- Depth of body 7.5 to 9.7 in total length; dorsal fin inserted somewhat anterior to pelvic fin
..... *L. thermalis*

126. *Lepidocephalus guntea* (Ham-Buch)

1822. *Cobitis guntea* Hamilton-Buchanan, *Fishes of Ganges*, pp. 353, 394 (Type locality : Ponds and rivers of Bengal).
1999. *Lepidicephalus guntea*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 160–162.

Common Name : Guntea loach.

Local Name : Mori.

Diagnostic Characters : D ii-iii 6-7; A ii-iii 5; P i 6-7; V i 6-7.

Body elongate and moderately compressed. The dorsal profile slightly arched, ventral profile almost straight. Distance between insertion of ventral and anal fin about two in distance between insertion of pectoral and anal fins. A broad intensive dark band from end of snout to caudal. In females below this band and the back are festooned with dark-brown pigmentation.

Material examined : i) 1 ex., Khed, Pune, 18.08.71, B.S. Lamba; ii) 5 exs., Karla caves, 05.10.76, K.S. Ohal; iii) 2 exs., Mallewadi, Man river, Pandharpur, 16.11.78, A.S. Mahabal; iv) 2 exs., Mutha river, Sambhaji park, Pune, 04.11.60, B.K. Halder; v) 1 ex., River near Shera, Pune, 19.05.65, D.N. Tiwari; vi) 2 exs., Kondanpur village, Pune, 23.08.73, G.M. Yazdani; vii) 2 exs., Moshi, Pune, 04.03.72, K.R. Rao; viii) 2 exs., Indrayni river, Moshi, Pune, 28.04.66, B.S. Lamba; ix) 50 exs., Khadakwasla, Pune, 31.08.65, R.N. Chopra; x) 50 exs., Talegaon, Pune, 17.12.66, R.N. Chopra; xi) 60 exs., Vadgaon, Pune, 16.08.67, R.N. Chopra; xii) 5 exs., Paud village, Pune, 15.12.65, D.N. Tiwari; xiii) 50 exs., Godavari river, Trimbak, Nasik, 18.10.73, M.B. Rao; xiv) 4 exs., Moshi, Pune, 10.04.70, K.R. Rao; xv) 1 ex., Khed, Pune, 03.10.70, R.N. Chopra; xvi) 4 exs.,

Kowdi, Pune, 10.01.69, B.S. Lamba; xvii) 3 exs., Mula river, Pune, 20.05.64, R.N. Chopra; xviii) 6 exs., Paud, Pune, 10.12.69, R.N. Chopra; xix) 4 exs., Mula-Mutha river, Pune, 22.04.64, R.N. Chopra; xx) 3 exs., Mula river, Pune, 20.05.64, R.N. Chopra; xxi) 5 exs., Paud, Pune, 10.12.69, R.N. Chopra; xxii) 3 exs., Kowdi, Pune, 10.01.69, B.S. Lamba; xxiii) 1 ex., Khed, Pune, 03.10.70, R.N. Chopra; xxiv) 4 exs., Moshi, Pune, 10.04.70, K.R. Rao; xxv) 1 ex., Sindh-colony-Aundh Road, Pune, 11.09.64, B.S. Lamba; xxvi) 5 exs., Shindewadi, Pune, 31.12.69, R.N. Chopra; xxvii) 3 exs., Kamthadi, Pune, 19.02.69, B.S. Lamba; xxviii) 1 ex., Kamshet, Pune, 27.07.70, R.N. Chopra; xxix) 3 exs., Paud, Pune, 08.05.69, R.N. Chopra; xxx) 2 exs., Kamthadi, Pune, 29.05.69, R.N. Chopra; xxxi) 1 ex., Khed, Pune, 03.01.70, B.S. Lamba; xxxi) 1 ex., 56 mm, Nira river, Khirwad, Satara dist., 22.08.64, K.K. Tiwari; xxxii) 16 exs., 46-60 mm, Sina river at Mohol, 35 km n.w. of PWD Rest House, Sholapur, 24.03.85, A.K. Karmakar; xxxviii) 2 exs., 57-58 mm, Waghur river (a tributary of Tapi river), 20 km south of PWD Rest House, Jalgaon, 06.04.05, A.K. Karmakar; xxxix) 8 exs., 48-66 mm, Hirana Medium Project, near Khadak vill., 58 km south of PWD Rwest House, Jalgaon, 07.04.05, A.K. Karmakar; xl) 1 ex., 49 mm, Fish Farm at Gangapur, 6 km north of Govt. Guest house, Nasik; xli) 6 exs., 46-50 mm, Darna Reservoir, 40 km south of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar.

Geographical Distribution : India : Brahmaputra, Ganges and Indus drainages along the Himalayas, and the drainage along the Satpura-Vindhya.

Elsewhere : Bangladesh, Nepal and Pakistan.

Remarks : In young series of 10 to 12 dark grey spots on the sides. A black ocellus present above the middle of base of caudal fin.

127. *Lepidocephalus thermalis* (Valenciennes)

1846. *Cobitis thermalis* Valenciennes, *Hist. nat. Poiss.*, 18 : 78 (type-locality : Malabar).

1991. *Lepidocephalus thermalis* : Talwar and Jhingran,

Inland Fishes of India and Adjacent Countries, : 527-528, fig. 172.

Local Name : Mori

Common Name: Malabar loach.

Diagnostic Characters: D ii-iii 6, A ii-iii 5; P i 6-7; V i 6.

Body elongate. Origin of dorsal distinctly before that of ventrals and considerably nearer caudal base than tip of snout. Generally 10-12 spots along the side of body; caudal with 4 "V" shaped bands and a black spot on caudal base.

Material examined: i) 12 exs, Rajbag Loni, Pune, B.S. Lamba, 18.9.1971; ii) 5 exs, Karla caves, K.S. Ohal, 15.10.1976; iii) 5 exs, Talegaon, Pune, Ramakrishna, 3.8.1977, iv) 4 exs, Nandgaon, Bhor, Pune, Ramakrishna, 20.3.1982; v) 1 ex, Nalla near Santosh Lodge, Lonawala, B.K. Tikader, 9.11.1963; vi) 2 exs, Indrayani river, Karla, Pune, B.K. Tikader, 17.11.1963; vii) 1 exs, stream Tata pipe, Khandala, Pune, B.K. Tikader, 10.11.1963; viii) 9 exs, Nalla Bushy dam, Lonawala, B.K. Tikader, 13.11.1963; ix) 9 exs, River near Shera, Pune, D.N. Tiwari, 29.5.1965; x) 29 exs, Pen, dist. Kolaba, B.S. Lamba, 13.2.1966; xi) 4exs, Talegaon, Pune, B.S. Lamba, 17.11.1966; xii) 10 exs, Nalla Pirangut, Pune, B.S. Lamba, 8.9.1965; xiii) 64 exs, Moshi, Pune, R.N. Chopra, 7.12.1966, xiv) 70 exs, Paud Village, Pune, R.N. Chopra, 31.12.1966; 10 exs, Bhorghat, pune, B.S. Lamba, 08.02.66; xv) 1 ex., Pirangut, Pune, R.N. Chopra, 22.12.66; xvi) 1 ex., Paud village, Pune, B.S. Lamba, 08.03.67; xvii) 85 exs., River near Velhe village, Pune, B.S. Lamba, 24.03.65; xviii) 3 exs., Padampura, Aurangabad, R.N. Chopra, 05.09.64; xix) 83 exs., Paud, Pune, R.N. Chopra, 22.12.66; xx) 94 exs., Talegaon, Pune, B.S. Lamba, 31.03.67; xxi) 8 exs., Mahad, dist. Kolaba, B.S. Lamba, 15.02.66; xxii) 30 exs., Malvali, Pune, B.S. Lamba, 09.02.66; xxiii) 15 exs., Pirangut, Pune, B.S. Lamba, 05.05.66; xxiv) 76 exs., Mutha river, Udhan Engineering Works, Pune, B.S. Lamba, 05.03.65; xxv) 89 exs., Talegaon, Pune, B.S. Lamba, 31.01.67; xxvi) 390 exs., Vadgaon, Pune, B.S. Lamba, 31.10.66; xxvii) 220 exs., Pirangut, Pune, B.S. Lamba, 03.11.66;

xxviii) 1 ex., Hamalwadi village, Aurangabad, R.N. Chopra, 04.09.64; xxix) 12 exs., Vadgaon, Pune, R.N. Chopra, 07.12.66; xxx) 1 ex., Kukdi river, Annapur, Pune dist., D.F. Singh, 13.07.83.

Geographical Distribution : India : Coastal districts of Kerala, Karnataka and Maharashtra.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 8 cm; and is of no interest to fisheries. But used as aquarium fish to some extent.

Genus *Botia* Gray, 1831

1831 *Botia* Gray, *Zool. Misc.*, : 8 (type-species : *Botia almorhae* Gray)

Body robust, elongate and laterally compressed. Head long and anteriorly pointed. Eyes with a free circular orbital margin; a bifid spine present before and partly below the eye. Mouth small and ventral; lips thick. Barbels three or four pairs. Nostrils close together. Dorsal fin inserted over or anterior to origin of pelvic fins. Caudal fin deeply forked. No scales on head. Lateral line present.

128. *Botia striata* Rao

1920. *Botia striata* Rao, *Ann. Mag. Nat. Hist.*, 6(9) : 60, pl. 2, figs. 4, 4a, 4b (type locality : River Thunga in Mysore State).

1999. *Botia striata*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 158-159.

Local Name : Waghmasa.

Common Name : Tiger loach.

Diagnostic Characters : D ii 9-10; A ii 5-6; P ii 11-12; V i 7.

Barbels 4 pairs (mental lobe forming a barbel). Snout not very long. Its length equal to or less than postorbital distance. Eyes absent in posterior half of head. Head and body with number of narrow oblique bands.

Material examined : i) 1 ex., Par village, 20 km of Mahabaleshwar, Satara dist., 24.10.76, M.B. Rao; ii) 1 ex., Panchganga river, Kolhapur, 04.08.87, Jay Samant. iii) 3exs., 50-52 mm,

Bavana, Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari.

Geographical distribution : India : River Thunga in Karnataka, Satara dist., Maharashtra.

Remarks : This species is endemic to Peninsular India.

Order SILURIFORMES

Family BAGRIDAE

Genus *Mystus* Scopoli 1777

1777. *Mystus* Scopoli, *Introductio ad historium naturalem*, : 451 (type-species : *Bagrus haplepis* Valenciennes = *Silurus pelusius* Solander).

Body moderately elongate, posteriorly compressed. Head rather depressed and smooth. Eye moderately large, not visible from underside of head. Mouth terminal and moderately wide. 4 pairs of barbels, maxillary barbels extend beyond dorsal fin. Rayed dorsal fin with one serrated spine and 7 soft rays; adipose dorsal low. Anal fin short, with 9 to 16 soft rays. Lateral line complete.

Key to the species of genus *Mystus*

1. Occipital process reaching basal bone of dorsal fin.....2
- Occipital process not reaching basal bone of dorsal fin 8
2. Adipose dorsal fin commencing almost after rayed dorsal fin.....3
- Adipose dorsal fin short, commencing after an interspace from rayed dorsal fin 4
3. Maxillary barbels reach anal fin. Interorbital width less than 3.0 in head length. No dark spot at the base of dorsal fin. Body with two light longitudinal bands, one each above and below lateral line*M. bleekeri*
- Maxillary barbels reach caudal fin base or beyond. Interorbital width more than 3.0 in head length. A dark spot at the base of dorsal fin. No band on body*M. cavasius*
4. Median longitudinal groove on head short, reaching base of occipital process. Adipose fin base longer than anal fin base*M. oculatus*
- Median longitudinal groove on head short, or long, not reaching base of occipital process 5
5. Body plain, without any colour bands 6
- Body with one or two longitudinal colour bands on either side of the lateral line 7
6. Body plain. Occipital crest rugose. No blotch at the base of caudal fin. Adipose dorsal fin base shorter than or equal to anal fin base*M. gulio*
7. Eye diameter 3.5 to 4.0 in head length. Pectoral fin with six rays. Body with bluish shoulder spot, and a silvery line along the side ending in a dark spot at the base of caudal, one or two light bands along sides above lateral line*M. montanus*
- Eye diameter 4.5 to 6.0 in head length. Pectoral fin with nine rays. Body with 3 or 4 longitudinal colour bands above and below lateral line. A dark shoulder spot. No spot at the base of caudal fin*M. vittatus*
8. Median longitudinal groove on head reaching base of occipital process 9
- Median longitudinal groove on head not reaching base of occipital process 10
9. Ten black rounded solid spots along lateral line. Body depth 7.8 to 8.4 in standard length*M. punctatus*
- Clusters of small vertical spots along anterior part of lateral line. Body depth 4.4 to 5.0 times in standard length*M. menoda*
10. Eye diameter 4.0 to 5.0 in head length. Body depth 4.5 to 6.0 times in standard length. A dark band along lateral line ending with a dark blotch at the base of caudal fin*M. malabaricus*

129. *Mystus bleekeri* (Day)

1846. *Bagrus keletius* (nec Valenciennes) Bleeker, *Nat. Geneesk. Arch. Ned. Indie*, 3(2) : 135 (type-locality : Bengal).

1877. *Macrones bleekeri* Day, *Fishes of India*, : 451, pl. 101, fig. 1. (Replacement name for *Bagrus keletius* Bleeker, 1946).

1991. *Mystus bleekeri* : Jayaram, *The Freshwater Fishes of Indian Region*, : 235, fig. 118D.

Common Name : Day's Mystus.

Local Name : Singhala.

Diagnostic Characters : D I 7-8; A iii 6-7; P I 9-10; V i 5.

Body with two light longitudinal colour bands, one above and other below the lateral line. Median longitudinal groove on head reaching base of occipital process. Three broad conspicuous dark bands separated by narrow pale lines on either side of lateral line.

Material examined : i) 3 exs., Man river 12 km south-west of Sangola, A.S. Mahabal, 03.09.83; ii) 2 exs., Sina river, Paranda, Osmanabad, D.B. Bastawade, 29.07.88; iii) 1 ex., Sina river, Malik Peth, Sholapur, A.S. Mahabal, 30.08.83; iv) 2 exs., Mallewadi, Man river, Pandharpur, A.S. Mahabal, 16.11.78; v) 2 exs., Indrayani river, Karla, Pune, B.K. Tikader, 05.11.63; vi) 1 ex., Khed, Shinapur, Pune, R.N. Chopra, 25.02.66; vii) 8 exs., Khamgaon tank, Pune, B.S. Lamba, 06.04.67; viii) 2 exs., Kalbhor river near Kalbhor village, Pune, G.M. Yazdani, 19.02.75; ix) 1 ex., Indrayani river, Kamshet, Pune, M.S. Pradhan, 19.05.83; x) 1 ex., Wagholi, Pune, M.B. Rao, 06.07.78; xi) 1 ex., Kamshet, Pune, Ramkrishna, 03.08.79; xii) 2 exs., Panchganga river, Kolhapur, J.Samant, 04.08.87; xiii) 1 ex., Rajbag, Loni, M.B. Rao, 23.02.77. xiv) 1 ex., 71 mm, Nira river, Khirwad, Satara distt. (purchased), 20.08.64, K.K. Tiwari; xv) 5 exs., 102-127 mm, Mongla Market, 4 km from PWD Rest House, Sholapur, 24.03.85, A.K. Karmakar; xvi) 4 exs., 93-130 mm, Pench river, 60 km north of Nagpur, 01.04.05, A.K. Karmakar; xvii) 3 exs., 105-125 mm, Kolar river, 15 km north of Nagpur, 02.04.05, A.K. Karmakar.

Geographical Distribution : India : Generally confined to north India : The southern most limit being the Mahanadi headwaters. Also recorded from Maharashtra.

Elsewhere : Pakistan; Bangladesh; Nepal; Myanmar.

Fishery Information : It attains a length of about 13.5 cm. Inhabits lakes, tanks and rivers. Fairly common in West Bengal where it descends to the upper reaches of the tidal rivers.

130. *Mystus cavasius* (Ham-Buch)

1822. *Pimelodus cavasius* Hamilton-Buchanan, *Fishes of Ganges*, : 203, 379, pl. 11, fig.67 (type-locality : Gangetic provinces).

1999. *Mystus cavasius* : Jayaram, *The Freshwater Fishes of Indian Region*, : 235, fig. 118C.

Common Name: Gangetic Mystus.

Local Name : Katirna, Khirkirya.

Diagnostic Characters: D I 7; A iv 7-9; P I 8; V i 5.

Maxillary barbels reaching anal fin or beyond. A black spot at the base of dorsal fin present. Body plain without any colour stripes or bands. Median longitudinal groove on head reaching base of occipital process. Dorsal fin black tipped.

Material examined : i) 1 ex, Panshet, Pune, D. F. Singh, 12.7.1989; ii) 1 ex, Shelgaon river, 34 km north of Sholapur on Barshi Road, R.H. Kamble, 24.12.1986, iii) 1 ex, Kowdi, Pune, B.S. Lamba, 6.4.1967; iv) 31 exs, Khamgaon tank Pune, B.S. Lamba, 6.4.1967; v) 1 ex, Mula-Mutha river, Bund garden, Pune, R.N. Choopra, 16. 7. 1963; vi) 1 ex, Godavari river, Paithan, Aurangabad, R.N. Chopra, 26.9.1964; vii) 1 ex, Vadgaon, Pune, B.S. Lamba, 29.9.1965; viii) 18 exs, Khamgaon tank, Pune, B.S. Lamba, 6.4.1967; ix) 1 ex, Mula-Mutha river, Bund garden, Pune, R.N. Chopra, 27.7.1963; x) 1 ex, Raj Bagh, Pune, K.R. Rao, 14.4.1972; xi) 8 exs, Khamgaon tank, B.S. Lamba, 10.4.1967; xii) 1 ex, Reservoir at Telegaon, Pune, S. Thakur, 6.4.2002; xiii) 1 ex, Panchganga river, Kolhapur, J. Samant, 4.8.1987; xiv) 1 ex, Koregaon, 27.9.1971, B.S. Lamba; xv) 1 ex, Panjara river, Dhule dist., K.S. Ohal, 21. 12. 1995; xvi) 3 exs., 167-205 mm, Confluence of Bhagabati and Kasari rivers, 5 miles from

Kolhapur, 13.09.64, K.K. Tiwari; xvii) 1 ex., 80 mm, Nira river, Khirwad, Satara distt. (Purchased), 20.08.64, K.K. Tiwari; xviii) 1 ex., 95 mm, Bhima river at Degaon, 10 km from PWD Rest house, Pandharpur, 21.03.85, A.K. Karmakar; xix) 2 exs., 178-232 mm, Ujjani Reservoir near Kanda, 10 km away from Ujjani Dam, 26.03.85, A.K. Karmakar; xx) 1 ex., 258 mm, Ujjani Reservoir near Kalashi, 25 km away from Ujjani Dam, 26.03.85, A.K. Karmakar; xxi) 1 ex., 190 mm, Ekrukh Reservoir, 10 km north of PWD Rest house, Sholapur, 27.03.85, A.K. Karmakar; xxii) 6 exs., Mangla Market, 4 km from PWD Rest House, Sholapur (Horni river coll.), 24.03.85, A.K. Karmakar; xxiii) 3 exs., 120-135 mm, Horni river at Naldru, 16 km from PWD Rest House, Sholapur, 25.03.85, A.K. Karmakar; xxiv) 2 exs., 135-140 mm, Krishna river at Bhilawadi, 38 km n.w. of PWD Rest House, Miraj, 18.03.85, A.K. Karmakar; xxv) 2 exs., 170-190 mm, Pench river, 60 km north of Nagpur, 01.04.05, A.K. Karmakar; xxvi) 4 exs., 137-165 mm, Tapi river near Khemkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; xxvii) 5 exs., 150-230 mm, Purna river, Gandhi Gram, 20 km north of P.K.V. University Guest House, Akola, 05.04.05, A.K. Karmakar; xxviii) 1 ex., 85 mm, Darna Reservoir, 40 km s.w. of Govt. Guest house, Nasik, 10.04.05, A.K. Karmakar; xxix) 2 exs., 137-160mm, Bhadrakali Fish market (Godavari river coll.), Nasik, 08.04.05, A.K. Karmakar; xxx) 4 exs., 95-130 mm, Mukna Reservoir, 25 km s.w. of Govt. Guest house, Nasik, 10.04.05, A.K. Karmakar; xxxi) 3 exs., 108-170 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar; xxxii) 4 exs., 108-150 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Sri Lanka; Nepal; Bangladesh; Myanmar; Thailand.

Fishery Information : It attains a length of about 40 cm. It is very common food fish in Indian region.

131. *Mystus gulio* (Ham-Buch)

1822. *Pimelodus gulio* Hamilton-Buchanan, *Fishes of Ganges*, : 201, 379, pl. 23, fig. 66 (type-locality : higher part of Gangetic estuaries).

1999. *Mystus gulio* : Jayaram, *The Freshwater Fishes of the Indian Region*, : 236, pl.XI, fig. 1.

Common Name : Long whiskered catfish.

Local Name : Singala.

Diagnostic Characters : D 17; Aiii-iv 9-11, P18-9, vi5.

Body elongate and compressed, its depth 3.8 to 4.1 in standard length. Occipital process triangular, about 1.5 times longer than broad at its base. Eye diameter 5 to 6 times in head. Dorsal spine strong, serrated on its inner edge. Caudal fin forked. Branchiostegal rays 9.

Geographical Distribution : India : Throughout.

Elsewhere : Bangladesh; Borneo; Java; Malaysia; Myanmar; Pakistan; Sri Lanka; Sumatra; Thailand.

Fishery Information : It attains a length of 40 cm. This is a very common species in the fishery catches in the Gangetic estuary, Chilka lake and Kerala backwater. Often enters the sea.

132. *Mystus keletius* (Valenciennes)

1839. *Bagrus keletius* Valenciennes, *Hist. Nat. Poiss.*, **14** : 411 (type locality : Pondicherry, S. India).

1999. *Mystus keletius*, Menon, *Rec. zool. Surv. India, Occ. Paper*, **175** : 202-203.

2006. *Mystus keletius*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, P. 45.

Common Name : Keletius mystus.

Diagnostic Characters : D I 7; A ii-iii 7-8; P I 10; V i 5.

Body plain without any stripes or bands. No dark spot at base of caudal fin. Dorsal and caudal fin tinged black. Anal fin rays 26 – 28. Occipital process reaching basal bone of dorsal fin. Median longitudinal process on head not reaching base of occipital process.

Material examined : 1 ex., Poynad village, Raigad dist., 26.09.89, M.S. Pradhan.

Geographical Distribution : South India, Maharashtra.

Elsewhere : Sri Lanka.

Remarks : Slender body, narrow caudal peduncle. Confined to Western Ghats and S. India.

133. *Mystus malabaricus* (Jerdon)

1849. *Bagrus malabaricus* Jerdon, *Madras Jour. Lit. & Sci.*, **15** : 338 (type-locality : mountain streams of Malabar).

1999. *Mystus malabaricus* : Jayaram, *The Freshwater Fishes of the Indian Region*, : 236, pl. XII, fig. 2.

Common Name : Jerdon's mystus.

Local Name : Shingeti.

Diagnostic Characters : D I 7; A ii-iii 8; P I 9; V i 5.

Body with a shoulder spot and a black streak along lateral line. Maxillary barbels extend to pectoral fin. Adipose fin base greater than anal fin. Occipital process not reaching basal bone of dorsal fin. Median longitudinal groove not reaching base of occipital process.

Material examined : i) 2 exs, Ghod river, Dimbe, Bhimashankar ghat, Pune dist., M.S. Pradhan, 7.6.1986. ii) 10 exs, Ghod river, Dimbe dam, Bhimashankara, Pune, G.M. Yazdani, 11.8.1984; iii) 1 ex, Indrayani river, Alandi, 6.5.1975, E.V. Muley iv) 1 ex, Kamshet, Pune, Ramakrishna, 3.8.1979; v) 2 exs, Malgaon, Sawantwadi, Sindhudurg dist., S.V. Muley, 20.7.1990.

Geographical Distribution : India : Western Ghats from Karnataka, Kerala, Maharashtra.

Fishery Information : It attains a length of 15 cm; inhabits freshwater, also estuaries; contributes a minor fishery in Kerala and Karnataka.

Remarks: It is endemic to Western Ghats.

134. *Mystus menoda* (Ham-Buch)

Pimelodus menoda Hamilton-Buchanan, *Fishes of Ganges*, : 203, 379, pl. 1, fig. 72 (type-locality: Kosi river and Mahananda river)

Mystus menoda, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 565-566, fig. 186.

Common Name : Menoda catfish.

Diagnostic Characters: D I 7; A iii-v 8; P I 9; V i 5.

Body elongate and compressed, its depth 4.4 to 6.2 in standard length. Head depressed, occipital process long, extending to basal bone of dorsal fin. Median longitudinal groove on head extends to base of occipital process. Mouth terminal; teeth villiform I bands on jaws. Barbels four pairs, maxillary barbels extend posteriorly to anal fin. Dorsal fin serrated on its inner edge. Least height of caudal peduncle about two times in its length. Branchiostegal rays 10.

Geographical Distribution : India : Assam, West Bengal, Bihar, Orissa, Maharashtra.

Elsewhere : Nepal; Bangladesh; Myanmar.

Fishery Information : It attains a length of about 45 cm, fairly common in gangetic provinces. It is also dug out from bottom of ponds.

135. *Mystus montanus* (Jerdon)

1849. *Bagrus montanus* Jerdon, *Madras Jour. Lit. & Sci.*, **15**(2) : 337 (type-locality : Manantoddy, Wynaad, Kerala State).

1999. *Mystus montanus* : Jayaram, *The Freshwater Fishes of the Indian Region*, : 236.

Common Name : Wynaad mystus.

Local Name : Shingati.

Diagnostic Characters : D I 7; A iii 9; P I 6; V i 5.

Body with bluish shoulder spot and silvery live along the sides ending in a dark spot at base of caudal fin. One or two light bands on sides along lateral line. Adipose dorsal fin long with little interspace from the dorsal fin. Occipital process reaching basal bone of dorsal fin. Median longitudinal process on head not reaching base of occipital process.

Material examined : 1 ex., Mula-Mutha river, Pune, R.N. Chopra, 14.05.64.

Geographical Distribution : India : Assam; Madhya Pradesh, Hoshangabad dist; Kerala State, Wayanad range of hills; Javadi Hills, Eastern Ghats; Maharashtra.

Fishery Information : It attains a length of about 15 cm; inhabits freshwaters, also estuaries; is of minor interest to fisheries.

136. *Mystus oculatus* (Valenciennes)

1839. *Bagrus oculatus* Valenciennes, *Hist. nat. Poss.*, 14 : 424 (type-locality : Malabar).

1999. *Mystus oculatus* : Jayaram, *The Freshwater Fishes of the Indian Region*, : 236, fig. 118E.

Common Name : Malabar mystus.

Diagnostic Characters : D I 7; A iii-iv 8-9; P I 6; V i 5.

Body with a single dark band along lateral line. Median longitudinal groove on head reaching base of occipital process. Dark shoulder spot present.

Material examined : 1 ex., Mula-Mutha river, Bund garden, Pune, R.N. Chopra, 16.07.73.

Geographical Distribution : India : Kerala, Coimbatore district, Tamil Nadu, Maharashtra.

Fishery Information : It attains a length of about 15 cm; inhabits freshwaters, probably also estuaries; is of minor fishery value in Kerala.

137. *Mystus vittatus* (Bloch)

1797. *Silurus vittatus* Bloch, *Ichthyol Hist. Nat.*, 11 : 40, pl. 371, fig. 2 (type-locality : Tranquebar, Tamil Nadu).

1999. *Mystus vittatus* : Jayaram, *The Freshwater Fishes of the Indian Region*, : 236, pl. XI, fig. 4.

Common Name : Striped dwarf catfish.

Diagnostic characters : D I 7; A ii-iii 7-9; P I 9; V i 5.

Adipose dorsal fin small. Body with 3-4 longitudinal colour bands above and below lateral line. No spot at caudal fin base. Occipital process reaching basal bone of dorsal fin. Median longitudinal process on head not reaching base of occipital process.

Material examined : i) 2 exs., Uran Khadi,

Raigad dist., 14.08.87, M.S. Pradhan; ii) 1 ex., 83 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar; iii) 2 exs., 100-102 mm, Wardha river, 15 km south west of PWD Rest House, Chandrapur, 04.06.06, A.K. Karmakar; iv) 1 ex., 98 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Bangladesh; Myanmar; Nepal; Pakistan; Sri Lanka; Thailand.

Fishery Information : It attains a length of 21 cm in standard length. A widely distributed species occurring within tidal influence also. This species is one of the most common, small sized cat fishes caught in large quantities from ponds, lakes, river & other water masses.

Genus *Hemibagrus* Bleeker 1862

1862. *Hemibagrus* Bleeker, *Atlas Ichthyologique Indices Orientales*, 2 : 9 (type-species: *Bagrus nemurus* Valenciennes)

Dorsal profile rising evenly from tip of snout to origin of dorsal fin. Body short or moderately elongated. Head depressed broad and ventrally flattened. Eyes moderately large, with wide inter-orbital space. Jaws sub-equal, mouth opening crescentic. Four pairs of barbels; maxillary pair longer than head length. Rayed dorsal fin with a long spine, inner surface serrated. Adipose dorsal moderately long, with considerable inter-space from rayed dorsal. Pelvic fin not reaching and fin. Anal fin not reaching caudal base. Lateral line complete.

138. *Hemibagrus maydelli* (Rossel)

1964. *Mystus maydelli* Rossel, *Mitt. Hamburg Zool. Mus.* 61 : 149, fig. 1 (type-locality : Wadgaon, Bhima falls, Maharashtra).

2006. *Hemibagrus maydelli* : Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 59-60.

Diagnostic characters : D II 7; P. I 7-9; V i 5; A iv-v 8-10.

Body moderately elongate; its depth 5.8, head length 3.1 to 3.2, head width 4.9 to 5.3 in standard length. Eye diameter 6.5 to 7.3, inter-orbital width 3.3 to 3.5, length of snout 2.8 to 3.2 in head length. Median longitudinal groove on head very long, reaches base of occipital process. Occipital process not reaching basal bone of dorsal fin. Barbels four pairs. Rayed dorsal fin inserted nearer tip of snout than to caudal fin base, spines strong, last rays of fin reaching origin of adipose fin. Adipose dorsal fin short. Pectoral fin not reaching pelvic fin and pelvic fin not reaching anal fin. Upper lobe of caudal fin extending into a long filament.

Material examined : i) 2 exs., Chaskaman dam, 22.10.10., S. Teurkar ii) 1 ex., Pavana river, Ravet, 02.04.09, S. S. Jadhav.

Geographical Distribution : India : Maharashtra and Andhra Pradesh.

Remarks : Close to *Mystus malabaricus* but differing genetically and also by flat head and long caudal fin.

Genus *Rita* Bleeker 1858

1858. *Rita* Bleeker, *Acta Soc. Sc. Indo-Neerl.*, 4 : 60 (type-species: *Pimelodus rita* Hamilton-Buchanan)

Body rather short and compressed. Head large and depressed; occipital region osseous. Mouth subterminal and fairly wide; teeth villiform on both jaws. Barbels three pairs, nasal barbel small with a valve like base. Eyes subcutaneous, dorsolateral in position, not visible from underside of head. Dorsal fin with a very strong spine; adipose fin short and low. Pectoral fin with a serrated spine. Lateral line with well-developed scutes along anterior quarter.

Key to the species of Genus *Rita*

1. Dorsal surface of head covered with thin skin, underside bones visible 2
- Dorsal surface of head covered with thick skin, often with mucous secretion (in fresh specimens) *R. gogra*
2. Teeth on palate (vomarine band) in a single

undivided patch; eyes large, 17.0 to 29.0% in head length *R. chrysea*

- Teeth on palate (vomarine band) in two elliptical patches 3
- 3. Vomarine teeth pear shaped, very narrowly separated in the middle. Dorsal spine smooth anteriorly except for a few serrate at the base *R. kuturnee*
- Vomerine teeth in two elongated elliptical patches. Dorsal spine reaching to origin of adipose dorsal fin base *R. rita*

139. *Rita gogra* (Sykes)

1839. *Phractocephalus gogra* Sykes, *Trans. Zool. Soc. London*, 2: 374, pl. ixvi, fig. 1 (type-locality: River Bhima, "Seedataik").

2006. *Rita gogra*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 15.

Common Name : Gogra rita.

Local Name : Ghoghrya.

Diagnostic Characters : D I 6; A iii 8-9; P I 10; V i 6-7.

Dorsal surface of head covered with thick skin often with mucous secretion (in fresh specimens).

Material examined : i) 1 ex., Pond near Mula river, 24.07.76, K. Reddiah. ii) 2 exs., 102-110 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06. A. K. Karmakar.

Geographical Distribution : India : Rivers of Deccan, Krishna River System.

Remarks : The specimens remain alive for several hours due to dermal papillae and moisture. This species is endemic to Deccan.

140. *Rita kuturnee* (Sykes)

1939. *Phractocephalus kuturnee* Sykes, *Proc. Zool. Soc. London*, 164 (type locality : River Bhima, Pairgaon).

1999. *Rita kuturnee*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 196-197.

2006. *Rita kuturnee*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 16.

Local Name : Katarnee.

Common Name : Deccan rita.

Diagnostic Characters : D I 6; A iii 10-11; P I 9-10; V i 6-7.

A dorsal surface of head covered with thin skin, underside bones visible. Teeth on palate (vomerine band) in two elliptical patches may be divided by a thin midline. Vomerine teeth pear shaped, very narrowly separated in the middle. Dorsal spine smooth anteriorly except for a few serrated at base.

Material examined : i) 1 ex., Indrayani river, Paithan, 25.09.64, R. N. Chopra; ii) 2 exs., Panchganga river, Kolhapur, 04.08.87, Jay Samant; iii) 2 exs., Krishna river, Satara dist., Date ?, D.A. Wallinagar. iv) 6 exs., 100-130 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest house, Miraj, 14.03.85, A.K.Karmakar; v) 4 exs., 110-142 mm, Confluence of Krishna river with Warna river at Haripur, 12 km s.w. of PWD Rest House, Miraj, 18.03.85, A.K. Karmakar.

Geographical Distribution : India : Rivers of Deccan in Andhra, Karnataka, Maharashtra State up to Krishna river system in the south.

Remarks : Orbit tinged yellow. A thin skin present on head without any mucous secretion and dermal papillae.

141. *Rita rita* (Ham-Buch)

1822. *Pimelodus rita* Hamilton-Buchanan, *Fishes of Ganges*, pp. 165, 376, pl. 104, fig. 3 (type locality : Estuaries of Bengal).

1999. *Rita rita*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 197-198.

2006. *Rita rita*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 19.

Common Name : Rita.

Local Name : Rita.

Diagnostic Characters : D I 6; A ii 10-11; P I 10; V i 6-7.

Median longitudinal groove on head short, not reaching base of occipital process. Three pairs of barbels. Vomerine teeth in two elongated elliptical patches. Dorsal spine reaching to origin of adipose dorsal fin base. Pectoral spine reaching to less

than half distance between tip of cliethral process and pelvic fin base. Caudal peduncle depth 9.3 to 12.2 times in standard length.

Material examined : i) 4 exs., Godavari river, Nanded, 16.11.87, D.D. Gogle; ii) 1 ex., Shaha village, Ujani, Pune, 25. 09.90, M.S. Pradhan.

Geographical Distribution : India : Most rivers of North India (Ganga river system); also in Maharastra.

Elsewhere : Pakistan, Bangladesh, Myanmar.

Remarks : This species occurs in brackish water also. It is a carnivorous fish.

Genus *Sperata* Holly, 1939

1939 *Sperata* Holly, *Zool. Anzeiger*, 125(5/6): 143, (replacement name for *Macrones* Dumeril, 1856; therefore taking the same type species *Bagrus lamarii* Valenciennes, 1840).

Dorsal profile arched. Head large, elongate and slightly depressed. Snout spatulate or rounded; jaws sub-equal; lips thin. Mouth sub-terminal, transverse and moderately wide. Eyes more or less large, supra-lateral. A distinct inter-neural shield in between basal bone of dorsal fin and occipital process present. Four pairs of barbels. Gill membranes free from each other, overlapping and also from isthmus.

Key to the species of Genus *Sperata*

1. Snout rounded; maxillary barbels extend to base of caudal fin or beyond; width of mouth less than half of head length; caudal finrays 17 *S. aor*
- Snout spatulate; maxillary barbels extend no further than pelvic fins; width of mouth one-third of head length; caudal finrays 19 to 21 *S. seenghala*

142. *Sperata aor* (Ham-Buch)

1822. *Pimelodus aor* Hamilton-Buchanan, *Fishes of Ganges*, pp. 205, 379, pl. 2 fig. 68 (Type locality : River of Bengal and upper part of gangetic estuaries).

1999. *Aorichthys aor*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 208-209.

2006. *Sperata aor*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 27-29.

Local Name : Alli, Addi, Singala.

Common Name : Long-whiskered catfish, Singhala.

Diagnostic Characters : D I 7; A iii-iv 8-10; P I 9-10; V i 5; C I 17.

Snout rounded. Median longitudinal groove on head long narrow as two fontanels reaching base of occipital process. Barbels 4 pairs, maxillary pair long reaching caudal peduncle or even beyond, nasal half to orbit, outer mandibular extend to pectoral base, inner pair slightly beyond orbit. Dorsal fin inserted half of pectoral fin. Spine strong, serrated. Lateral line complete.

Material examined : i) 1 ex., Shaha village, Ujani wetland, Pune dist., 27.08.88, P.P. Kulkarni; ii) 2 exs., Panchaganga river, Kolhapur, 04.08.87, Jay Samant; iii) 1 ex., Shaha village, Ujani, 25.09.90, M.S. Pradhan. iv) 1 ex., 310 mm, Nira river, Khirwad, Satara distt., 21.08.64, K.K. Tiwari; v) 1 ex., 170 mm, Bavada Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; vi) 1 ex., 268 mm, Krishna river at Miraj Ghat, 6 km from PWD Rest house, Miraj, 14.03.85, A.K. Karmakar; vii) 3 exs., 80-100 mm, Bhima river at Degaon, 10 km from PWD Rest House, Pandharpur, 21.03.85, A.K. Karmakar; viii) 2 exs., 262-270 mm, Ujani reservoir near Kanda, 10 km away from Ujani Dam, 26.03.85, A.K. Karmakar; ix) 1 ex., 255 mm, Ujani Reservoir near Kalashi, 25 km away from Ujjani Dam, 26.03.85, A.K. Karmakar; x) 2 exs., 185-365 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar.

Geographical Distribution : India : Upto Cauvery river system in the south.

Elsewhere : Bangladesh, Pakistan and Nepal.

143. *Sperata seenghala* (Sykes)

1839. *Platystoma seenghala* Sykes, *Trans. zool. Soc. London*, 2 : 371, pl. 65, fig. 2 (type locality : Mutha-Mula river, Poona).

1999. *Aorichthys seenghala*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 209-210.

2006. *Sperata seenghala*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 31-34.

Common Name : Gaint river catfish, Tengara, Seenghari

Local Name : Shingta, Singhala.

Diagnostic Characters : D I 7; A iii 8-9; P I 9; V i 5; C 19-21.

Shape of snout spatulate. Barbels 4 pairs, maxillary pair reaching middle or end of rayed dorsal fin; nasal barbels not reaching middle of orbit, outer mandibular not reaching pectoral base and inner pair reaching just posterior border of eye. Pectoral fin not reaching pelvic fin.

Material examined : i) 1 ex., Saha village, Ujani wetland, Pune dist., 18.07.87, G.M. Yazdani. ii) 1 ex., 260 mm, Krishna river near Mhaishal Dam, 14 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar.

Geographical Distribution : India : Large river of India up to Krishna river system in the south.

Elsewhere : Bangladesh, Pakistan, Yunnan.

Remarks : Differs from *S. aor* in having shorter barbels, different shape of snout and in gape of mouth.

Family SILURIDAE

Genus *Ompok* Lecepede, 1803

1803. *Ompok* Lacepede, *Hist. nat. Poiss.*, 5 : 49 (type-species : *Ompok siluroides*, Lacepede = *Silurus bimaculatus* Bloch).

Body strongly compressed laterally. Head depressed. Mouth broad, oblique, its angle not reaching anterior margin of eye, lower jaw longer than upper one. Eyes subcutaneous, lying more or less at the corner of mouth. Barbels two pairs. Dorsal fin short with 3 to 5 rays; anal fin long with 52 to 75 rays. Pectoral fin with a spine and 11 to 14 rays. Pelvic fin with 6 to 10 rays. Caudal fin forked, separated from anal fin.

Key to the species of Genus *Ompok*

1. Maxillary barbels short, extend posteriorly no further than head; pelvic fin with 9 or 10 rays
..... *O. pabo*

- Maxillary barbels longer, extending posteriorly well beyond head; pelvic fin with 7 to 9 rays 2
- 2. Anal fin with 63 to 69 branched rays. Maxillary barbels extend to slightly beyond pelvic fin origin *O. malabaricus*
- Anal fin with 57 to 58 branched rays. Maxillary barbels extend posteriorly to anal fin base or slightly beyond *O. bimaculatus*

144. *Ompok bimaculatus* (Bloch)

1797. *Silurus bimaculatus* Bloch, *Ichthyol. Hist. nat. des. Poiss.*, 11 : 17, pl. 364 (type-locality : Malabar).
1991. *Ompok bimaculatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 582-583, fig. 194.

Common Name : Indian-butter catfish.

Local Name : Moone, Wanz, Valanj.

Diagnostic Characters : D 4; A ii-iii 57-58; P I 12-14; V i 7-8.

Median longitudinal groove on head not reaching base of occipital process. Two pairs of barbels. Maxillary pair longer than head length, reaching anal fin, mandibular pair short. Pelvic fin not reaching anal fin origin. Anal fin rays 50-75. Pelvic fin rays 7-9. Caudal fin forked but lobes pointed.

Material examined : i) 4 exs., Kondapuri, Pune, Purchased, 11.11.77; ii) 2 exs., Mallewadi, Man river, Purchased, 16.11.78; iii) 7 exs., Kodav village, Karjat, Raigad, M.S. Pradhan, 03.10.81; iv) 5 exs., Indrayani river, Karad, Pune, B.K. Tikader, 05.11.63; v) 5 exs., Khamgaon tank, Pune, B.S. Lamba, 06.04.67; vi) 5 exs., Khed, Pune, D.N. Tiwari, 09.11.67; vii) 4 exs., Khamgaon tank, Pune, B.S. Lamba, 06.04.67; viii) 1 ex., Danoli, Ratnagiri, B.K. Tikader, 22.02.65; ix) 8 exs., Khamgaon tank, B.S. Lamba, 10.04.67; x) 1 ex., Koyana river, Karad, Satara, C.A.N. Rao, 18.01.88; xi) Pimpalgaon, Ahmadnagar dist., R.M. Sharma, 03.07.88; xii) 1 ex., Kukdi river, Annapur, Pune dist., D.F. Singh, 13.07.83; xiii) 1 ex., Girna river, Erandol, Jalgaon, R.H. Kamble, 06.12.83;

xiv) 1 ex., Rajbag, Loni, Pune, B.S. Lamba, 26.11.71; xv) 1 ex., Bori river, Jalgaon, P.G. Student of Pratap College, Amalner, 27.07.92. xvi) 1 ex., 220 mm, Nira river, Khirwad, Satara distt., 22.08.64, K.K. Tiwari; xvii) 1 ex., 220 mm, Krishan river at Miraj Ghat, 6 km from PWD Rest House, Miraj, 14.03.85, A.K. Karmakar; xviii) 1 ex., 270 mm, Ujani Reservoir near Kalashi, 25 km away from Ujani Dam, 26.03.85, A.K. Karmakar; xix) 1 ex., 180 mm, Horni river at Naldru, 16 km from PWD Rest House, Sholapur, 25.03.85, A.K. Karmakar; xx) 1 ex., 265 mm, Krishna river at Umadgaon, 18 km north of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; xxi) 2 exs., 170-200 mm, Waghur river, 20 km south of PWD Rest House, Jalgaon, 06.04.05, A.K. Karmakar; xxii) 2 exs., 145-165 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Afghanistan; Sri Lanka; Bangladesh; Myanmar; Thailand; Java; Sumatra; Barneo and China.

Fishery Information : It attains a length of about 50 cm; caught in fairly good quantities. This is very tasty and highly priced fish. It spawns during monsoon and inhabits rivers, reservoirs, tanks and ponds.

145. *Ompok malabaricus* (Valenciennes)

1839. *Silurus malabaricus* Valenciennes, *Hist nat. Poiss.*, 14 : 353 (type-locality : Malabar).
1991. *Ompok bimaculatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 583-584.

Common Name : Goan catfish.

Local Name : Kala gugli.

Diagnostic Characters : D 4; A iii 63-69; P I 11-12; V i 7.

Anal fin free from caudal. Caudal fin forked. Anal fin rays 50-75. Caudal fin lobes rounded. Lower border of eyes on level of edge of mouth. Anal fin rays 61-69.

Material examined : i) 2 exs., Katrajgaon, Pune, E.V. Mulay, 15.05.83. ii) 5 exs., 115-195 mm, Tapi

river near Khamera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; iii) 2 exs., 215-220 mm, Purna river near Muktainagar Lift Irrigation Plant, Jalgaon distt., 07.04.05, A.K. Karmakar; iv) 1 ex., 220 mm, Hirana river near Khadak villege, Deola, Jalgaon distt., 07.04.05, A.K. Karmakar; v) 1 ex., 203 mm, Darna river, 40 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar. vi) 3 exs., 125-220 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar.

Geographical Distribution : India : Goa, Western Ghats of Kerala and Maharashtra.

Fishery Information : It attains a length of about 51 cm in standard length ;constitute a very little portion of local fishery.

146. *Ompok pabo* (Ham-Buch)

1822. *Silurus pabo* Hamilton-Buchanan, *Fishes of Ganges*, p. 153, pl. 17, fig. 48 (type locality : River Brahmaputra, Assam).
1999. *Ompok pabo*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 219.
2006. *Ompok pabo*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 109.

Local Name : Kaliwanz.

Common Name : Pabo catfish.

Diagnostic Characters : D 5; A iii 63-68; P I 14; V i 8-9.

Median longitudinal groove on head reaching base of occipital process. Two pairs of barbels, maxillary pair reaching hind border of eyes, mandibular pair short. Pelvic fin reaching anal fin. Anal fin long, not confluent with the caudal, separated by a notch. Caudal fin forked.

Material examined : i) 1 ex., Mula-Mutha river, 24.07.76, K. Reddiah; ii) 3 exs., 132-245 mm, Nira river, Khirwad, Satara distt., 22.08.64, K.K. Tiwari; iii) 1 ex., 280 mm, Ujani Reservoir near kanda, 10 km away from Ujani Dam, 26.03.85, A.K. Karmakar.

Geographical Distribution : India : Assam, North Bengal, Brahmaputra, Ganga, Jamuna river system; also in Maharashtra.

Elsewhere : Bangladesh, Myanmar.

Remarks : This species has a faint shoulder spot and differs from other species in colour pattern.

Genus *Pterocryptes* Peters, 1861

1861. *Pterocryptes* Peters, *Monatst Konig. Akad. Wissens.*, Berlin, 7: 712, (type species: *Pterocryptes engelica* Peters, 1861: 712 equals *Silurus cochinchinensis* Cuvier & Valenciennes)

Body elongate and laterally compressed. Head broad and depressed. Mouth terminal or sub-terminal. Barbels 2 or 3 pairs. Maxillary barbels well developed and extending beyond gill opening. Eye small, not visible from underside of head, covered with skin, lying above corner of mouth. Dorsal fin very short with 1 or 4 rays. Anal fin very long, with 58 to 85 rays, confluent with caudal fin or not. Pectoral fin with 7 to 11 soft rays. Caudal fin rounded or truncate.

147. *Pterocryptis wynaadensis* (Day)

1868. *Silurus punctatus* Day, *Proc. Zool. Soc. London*, 155 (type locality : Wynaad, Kerala). (name preoccupied by *Silurus punctatus* cantor, 1842)
1873. *Silurus wynaadensis* Day, *proc. Zool. soc. Lond.*, : 237 (replacement name of *Silurus punctatus* Day)
2006. *Pterocryptis wynaadensis*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 103.

Diagnostic Characters: D. 4-5; P I 10; V I 7; A ii 56-60; C 19.

Body depth 7.2 to 8.6, head length 4.7 to 5.4 in standard length. Eyes small, subcutaneous, 8.0 in head length. Teeth villiform on jaws in continuous bands, on palate in two discontinuous patches. Barbels three pairs. Rayed dorsal fin inserted above last half of pectoral fin, devoid of any spine. Adipose dorsal fin absent. Pectoral fin not reaching pelvic. Pelvic fin reaching anal fin. Anal fin long. Caudal fin rounded.

Geographical distribution : India : Wynaad range of hills in Kerala. Cauvery and Thungabhadra drainages system. Uttara Kannada, Satara distt., Maharashtra.

Remarks: Differs from other species in having three pair of barbels, one of maxillary and two of mandibular. It is an endemic species.

Genus *Wallago* Bleeker, 1851

1851. *Wallago* Bleeker, *Natuurk. Tijdschr. Ned. Indie*, 1 : 265 (type-species : *Slurus mulleri* Bleeker = *Silurus attu* Schneider).

Body elongate and compressed. Head large and depressed. Eyes lying entirely above level of corner of mouth, not visible from underside of head. Mouth wide, its gape very long, extending well beyond eye. Teeth in villiform bands on jaws. Two pairs of barbels. Dorsal fin with 5 rays; anal fin very long, with 77 to 96 rays. Pectoral fin with 13 to 15 rays; pelvic fin with 8 to 10 rays. Caudal fin deeply forked.

148. *Wallago attu* (Schneider)

1801. *Silurus attu* Schneider, *Syst. Ichth.*: 378, pl. 75 (type-locality : Malabar).
1991. *Wallago attu* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 590–591.

Common Name : Boal, Freshwater shark.

Local Name : Shivada, Pattan, Valashivda.

Diagnostic Characters : D 5; A iii 74-93; P I 13-15; V i 7-9.

Median longitudinal groove on head reaching base of occipital process. Two pairs of barbels, maxillary pair reaching anal fin origin, mandibular as long as snout. Gape of mouth reaching below eyes. Adipose dorsal fin absent. Pectoral fin reaching beyond pelvic fin. Pelvic fin reaching anal fin origin.

Material examined : i) 1 ex., Chichol talav, Sangola, Sholapur dist., A.S. Mahabal, 04.09.83; ii) 1 ex., Khed, Pune, K.R. Rao, 15.10.71; iii) 1 ex., Bori river, Jalgaon, 27.07.92. iv) 1 ex., 265 mm, Horni river at Naldru, 16 km from PWD Rest House, Sholapur, 25.03.85, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Sri Lanka; Nepal;

Bangladesh; Myanmar; Thailand; Vietnam; Kampuchea; Malay Peninsula; Sumatra and Java.

Fishery Information : It attains a length of about 2 metres. This cat fish inhabits large rivers, tanks and lakes. It is one of the largest, voracious and predatory of local catfishes. It is esteemed as good food and has good market value. It is a good sport fish also and can be easily taken on a hook with dead or live bait. This catfish is very destructive to other more valuable food-fishes such as major carps. Due to its oil content it is liked by many.

Family SCHILBEIDAE

Genus *Ailia* Gray 1831

1831. *Ailia* Gray, *Zool. Miscellany*: 8 (type-species: *Malapterus (sic) (Ailia) bengalensis* Gray = *Malapterurus coila* Hamilton-Buchanan).

Body elongate and strongly compressed, almost leaf-like. Mouth subterminal and fairly wide. Eyes small and placed behind angle of mouth, visible from under side of head. Rayed dorsal fin absent, adipose dorsal small. Anal fin long with 58 to 90 rays. Pectoral fin long, with 13 to 16 rays. Pelvic fins, if present, small with 6 rays.

149. *Ailia coila* (Ham-Buch)

1822. *Malapterurus coila* Hamilton- Buchanan, *Fishes of Ganges*: 158, 375 (type-locality: freshwater rivers of Bengal).
1991. *Ailia coila* : Talwar & Jhingran, *Inland Fishes of India and Adjacent Countries*, : 593-594.

Common Name : Gangetic ailia.

Diagnostic Characters : A 58-75; P I 14-16; V i 5.

Body elongate. Mouth subinferior, its cleft extends posteriorly halfway to front edge of eye. Four pairs of well developed barbels. Adipose dorsal fin small. Pectoral spine slender, finely serrated along its inner edge. Pelvic fin short.

Geographical Distribution : India : Jamuna, Ganga, Brahmaputra and Mahanadi River system.

Elsewhere : Pakistan; Bangladesh and Nepal.

Fishery Information : It attains a length of about 30 cm; is much esteemed as food fish. It is surface to midwater fish, lives in shoals and confined to large rivers.

Genus *Clupisoma* Swainson 1839

1839. *Clupisoma* Swainson, *Natural History Animals, Fishes*, 2: 306 (type-species: *Pimelodus argentata* Swainson = *Silurus garua* Hamilton-Buchanan).

Body elongate and compressed. Abdominal edge either rounded or keeled. Eyes moderate, ventro-lateral in position, visible from underside of head. Mouth moderate and sub-terminal, its gape not extending to eye. Barbels four pairs, all placed at the same level. Dorsal fin inserted considerably in advance of pelvic fins. A small adipose fin generally present in young only. Anal fin long, with 29 to 54 rays.

Key to the species of Genus *Clupisoma*

1. Caudal peduncle bent downwards after anal fin end. Eye diameter 2.75 to 3.0 in head length. Maxillary barbels reach pelvic fin ...
..... *C. takree takree*
- Caudal peduncle normal; straight not bent as above 2
2. Abdominal edge keeled from vent to thorax. Pectoral fin not reaching pelvic fin. Maxillary barbels reaching anal fin base. Anal fin with 52 to 54 rays *C. bastari*
3. Abdominal edge keeled between pelvic and vent. Maxillary barbels extending beyond pectoral fin, just reaching pelvic fin. Anal fin with 29 to 36 branched rays *C. garua*

150. *Clupisoma bastari* Datta & Karmakar

1980. *Clupisoma bastari* Datta & Karmakar, *Bull. Zool. Surv. India*, 2(2/3): 193, fig. 1&2 (type-locality: Indrabati river at Lohandigura, Bastar distt., Madhya Pradesh).

1991. *Clupisoma Bastari*: Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 596.

Common Name : Bastar garua.

Diagnostic Characters: D I 7-8; A iii 49-51; P I 10-12; V i 5.

Body elongate and compressed. Abdominal edge keeled between thorax and vent. Head short. Mouth sub-terminal; teeth villiform in bands on jaws. Barbels four pairs, nasal barbels extend to middle of orbit, maxillary barbels extend to anal fin. Pectoral fins do not extend to pelvic fin.

Material examined: i) 1 ex., 176 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar; ii) 1 ex., 165 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Indravati river, Bastar distt. , Madhya Pradesh; Maharashtra (New record).

Fishery Information: It is a small-sized fish; its interest to fisheries is yet to be known.

151. *Clupisoma garua* (Ham-Buch)

1822. *Silurus garua* Hamilton- Buchanan, *Fishes of Ganges*, : 156, 375, pl. 21, fig. 50 (type-locality : freshwater rivers of gangetic provinces).

1991. *Clupisoma garua*: Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 596-597.

Common Name : Garua Bachcha, Guarchcha.

Diagnostic Characters: D I 7; A iii 26-33; P I 11; V i 5.

Body elongate and compressed. Abdominal edge keeled between pelvic fin and vent. Mouth sub-terminal; teeth in villiform bands on jaws. Barbels four pairs; nasal barbels do not reach the eye, maxillary barbels extend to base of pelvic fins. Adipose fin absent in adults. Pectoral fins do not extend to pelvic fins.

Material examined : 2 exs., 118-123 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari.

Geographical Distribution: India: Northern India, Assam, West Bengal, Bihar, Poonch valley, Jammu & Kashmir; Maharashtra.

Elsewhere : Pakistan; Bangladesh and Nepal.

Fishery Information : It grows upto a meter in length; common in freshwater rivers of Gangetic

plains. It is considered as a good food fish. It is bottom feeder and feeds on insects, shrimps, crustaceans and small fish. It is very destructive in tanks and hence not advisable to rear there.

152. *Clupisoma taakree taakree* (Sykes)

1838. *Proeutropiichthys taakree* Sykes, *Proc. Zool. Soc. London*, (6) : 163 (type-locality : Beema river near Pairgaon).

1999. *Proeutropiichthys taakree*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 226.

2006. *Clupisoma taakree taakree*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 132.

Local Name : Moonia, Munvi.

Common Name : Indian taakree.

Diagnostic Characters : D I 6-8; A iii-iv 40-50; P I 8-10; V i 5.

Caudal peduncle bent downwards after anal fin end. Interoperculum with true prominent spurs separated by a notch. Eye diameter 2.75 to 3 in head length. Maxillary barbels reach pelvic fins.

Material examined : i) 1 ex., Mula-Mutha river, Bundgarden, Pune, 15.07.63, R.N. Chopra; ii) 2 exs., Godavari river, Paithan, Aurangabad, 26.01.64, R.N. Chopra; iii) 1 ex., Mula-Mutha river, Bundgarden, Pune, 16.07.63, R.N. Chopra; iv) 1 ex., Narsapur, Pune, 08.03.66, R.N. Chopra; v) 1 ex., Panchganga river, Kolhapur, 04.08.87, Joy Samant.

Geographical Distribution : India : North India, Western Ghats (Maharashtra).

Remarks : It is the original Sykes specimen but Blyth changed its genus (Jayaram, 2006).

Genus *Eutropiichthys* Bleeker 1862

1862. *Eutropiichthys* Bleeker, *Verh. Akad. Amsterdam*, 14 : 398 (type-species: *Pimelodus vacha* Hamilton-Buchanan).

Body elongate and laterally compressed. Head of moderate size, snout rather pointed. Nostrils wide apart. Mouth wide. Teeth on palate form a continuous vomero-palatine band. Barbels four

pairs. Gill opening wide, gill-membranes separated by a deep notch, free from isthms. Dorsal fin short, with one weak spine and 7 soft rays. Anal fin long, with 38 to 54 rays. Pectoral fin with one strong spine and 10 to 16 soft rays; pelvic fin with 6 rays.

Key to the species of Genus *Eutropiichthys*

1. Vomero-palatine teeth on palate uninterrupted. Nasal barbels reach end of head or slightly beyond *E. vacha*
- Vomero-palatine teeth on palate interrupted in the middle. Nasal barbels longer than head length extending to dorsal fin base *E. goongwaree*

153. *Eutropiichthys vacha* (Ham-Buch)

1822. *Pimelodus vacha* Hamilton-Buchanan, *Fishes of Ganges*, : 196, 378, pl. 19, fig. 64 (type-locality: larger freshwater rivers of Gangetic provinces).

1991. *Eutropiichthys vacha*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 603-604.

Common Name : Batchwa vacha.

Diagnostic Characters : D I 7; A iii-iv 41-52; P I 13-16; V i 5.

Body elongate and compressed. Mouth large, its cleft extends to posterior border of orbit. Teeth villiform in broad bands on jaws. Barbels four pairs, maxillary barbels extend slightly beyond orbit. Dorsal spine finely serrated on its posterior border.

Geographical Distribution : India : North India, Orissa, West Bengal, Bihar, etc.

Elsewhere : Pakistan; Bangladesh; Myanmar; and probably also Thailand.

Fishery Information : It grows upto 35 cm in length. This is an excellent table catfish. It is caught in large numbers in the rivers of north India. It is easily acclimatized to large tanks, wheels and lakes. It is a voracious feeder on other small fish and insects. In ordinary tanks this fish may prove very destructive to other small fishes.

154. *Eutropiichthys goongwaree* (Sykes)

1838. *Hypophthalmus goonwaree* Sykes, *Proc. Zool. Soc. London*, 163. (type. locality-Mula Mutha river nr. Poone, Maharashtra).

1999. *Eutropiichthys goongwaree*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 224.

Diagnostic Characters : DI 6; P I 13; V I 5; A iii 51; C 17.

Body laterally flattened and elongated. Body depth 4.4 in standard length. Eye diameter 2.7 in head length. Eyes with a very broad circular adipose lid. Median longitudinal groove on head extending to base of occipital process. Occipital process reaching basal bone of dorsal fin. Four pairs of barbels. Rayed dorsal fin inserted above posterior half of pectoral fin. Adipose dorsal fin short and small. Pectoral fin extends beyond pelvic fin origin. Pelvic fin reaching anal fin origin. Anal fin long.

Geographical Distribution : Peninsular India : Maharashtra, Andhra Pradesh.

Remarks : This species is endemic to India.

Genus *Neotropius* Kulkarni 1952

1952. *Neotropius* Kulkarni, *Rec. Indian Mus.*, 49 (3/4) : 231 (type-species: *Neotropius khavalchor* Kulkarni).

Body elongate and more or less compressed. Head rather small and depressed; snout protruded. Eyes large, ventro-lateral in position, visible from under side of head. Mouth inferior and moderate, its cleft barely reaching to below front margin of orbit. Teeth exposed in upper jaw. Barbels four pairs. Dorsal fin short, with a serrated spine and 6 or 7 soft rays. A small adipose fin present. Anal fin long, with 24 to 26 rays.

Key to the species of Genus *Neotropius*

1. Body with three or four bands along the sides formed by black spots. Pectoral fins long, extending beyond pelvic fins. Anal fin with 33 to 41 rays..... *N. atherinoides*
- No such bands or stripes on body. Upper jaw extending over entire under surface of snout

excepting lips. Teeth on palate in three separate patches. Anal fin with 24 to 36 rays
..... *N. khavalchor*

155. *Neotropius atherinoides* (Bloch)

1794. *Silurus atherinoides* Bloch, *Natuges Ausland. Fische*, 8 : 48, pl. 371, fig. 1 (type locality : Tranquebar).

1999. *Pseudotropius atherinoides*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 228.

2006. *Neotropius atherinoides*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 74.

Common Name : Indian potasi.

Local Name : Sura.

Diagnostic Characters : Body with 3 or 4 bands along the sides formed by black spots. Pectoral fin long extending beyond pelvic fins. Anal fin with 33–41 rays.

Geographical Distribution : Throughout India (except West coast).

Elsewhere : Bangladesh, Pakistan.

Remarks : It has silvery greenish along the back with three or four bands along sides formed by black spots. A black spot on occiput and another at base of dorsal fin present.

156. *Neotropius khavalchor* Kulkarni

1952. *Neotropius khavalchor* Kulkarni, *Rec. Indian Mus.*, 49 : 232, figs. 1, 2 (type locality : Krishna river, near Islampur, Satara Dist., Panchaganga river, near Kolhapur).

1999. *Neotropius khavalchor*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 228–229.

2006. *Neotropius khavalchor*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 76.

Local Name : Khavalchor.

Common Name : Khavalchor catfish.

Diagnostic Characters : D I 6–7; A ii–iii 22–23; P I 7; V i 5.

No bands or stripes. Upper jaw extending over entire undersurface of snout. Teeth on palate in 3 separate patches. Anal fin with less than 40 rays. No bands or stripes on body.

Material examined : i) 3 exs., Krishna-Koyana confluence, Karad, Satara dist., 05.10.08, M. Chavan. ii) 7 exs., 110-135 mm, Confluence of Krishna river with Warna river at Haripur, 12 km s.w. of PWD Rest House, Miraj; 16.03.85, A.K. Karmakar; iii) 1 ex., 112 mm, Warna river at Narsingpur, 40 km n.w. of PWD Rest House, Miraj, 15.03.85, A.K. Karmakar; iv) 2 exs., 118-133 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; v) 3 exs., 85-133 mm, Krishna river at Bhilavadi, 38 km n.w. of PWD Rest House, Miraj, 18.03.85, A.K. Karmakar.

Geographical Distribution : India : Pennar river, Andhra Pradesh, Maharashtra (Krishna-Panchaganga river systems).

Remarks : This is a unique species having exposed teeth on upper jaw. It is an endemic fish.

Genus *Silonia* Swainson 1839

1839. *Silonia* Swainson, *Natural History Animals, Fishes*, 2 : 305 (type-species : *Silonia lurida* Swainson = *Pimelodus silondia* Hamilton-Buchanan).

Body elongate and compressed. Head of moderate size; eyes placed behind angle of mouth; visible from underside of head. Mouth wide and terminal; Teeth caniniform on jaws, project outside mouth opening. Two minute pairs of barbels, either pair may become vestigial or absent. Gill membranes free from isthmus. Dorsal fin short-based, with a pungent spine and 7 soft rays. Adipose dorsal small. Anal fin long, with 40 to 46 rays. Caudal fin deeply forked.

Key to the species of Genus *Silonia*

1. Air bladder greatly reduced; maxillary barbels minute, not extending behind orbit; mandibular barbels vestigial; anal fin rays 40 to 46 *S. silondia*
2. Air bladder large; maxillary barbels long, extending to operculum; mandibular barbels equal to eye-diameter; anal fin rays 44 to 50 *S. childreni*

157. *Silonia childreni* (Sykes)

1838. *Ageneiosus childreni* Sykes, *Proc Zool. Soc. Lond.*, (pt. 6) : 165; Sykes, 1841, *Trans. zool. Soc. Lond.*, 2 : 375 (type-locality : Mula Mutha river near Poona)
1991. *Silonia childreni* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 611-612, fig. 201.

Common Name : White Catfish.

Local Name : Silan.

Diagnostic Characters : DI 7; A ii-iii 44-50; P I 12; V I 5.

Two pairs of barbels, maxillary pair extend to opercle, mandibular pair shorter. Adipose dorsal fin small and separated from the caudal base. Anal fin long, not reaching caudal fin base. Pelvic fin reaching anal fin origin. Caudal fin deeply forked; lobes sub-equal.

Geographical Distribution : India : Western Ghats, and the Krishna, Godavari and Cauvery River Systems.

Fishery Information : It attains a length of about 48 cm and forms an important food fish in Maharashtra. This species is highly predaceous fish and due to its voracious feeding habits they destroy other fishes in the tanks. Despite all these drawbacks, this fish provides good sport to anglers.

158. *Silonia silondia* (Ham-Buch)

1822. *Pimelodus silondia* Hamilton-Buchanan, *Fishes of Ganges*, : 160, 375, pl.7, fig. 50 (type-locality : Gangetic estuaries).
1991. *Silonia silondia*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 612-613.

Common Name : Silondia vacha.

Diagnostic Characters: D I 7; A iv 36-42; P I 10-12; V i 5.

Body elongate and compressed. Mouth wide and terminal, obliquely directed upwards. Barbels two pairs. Dorsal fin placed considerably in advance of pelvic fins. Pectoral fins extend beyond origin of pelvic fins in young, but in larger specimens do not reach pelvic fins.

Geographical Distribution : India : Indo-Gangetic basin.

Elsewhere : Pakistan; Nepal; Bangladesh; and ? Myanmar.

Fishery Information : It commonly attains a length of 100 cm in length. It is very common in gangetic estuaries and common foodfish in West Bengal. It causes considerable damage to fisheries being voracious feeder, but it , however, provides considerable sport to anglers. This is a gregarious catfish moving in shoals; during monsoons the adults ascends from the estuaries into large rivers for breeding, but after the water level recedes, this fish gets stranded in small pools.

Family PANGASIIDAE

Genus *Pangasius* Valenciennes 1840

1840. *Pangasius* Valenciennes, *Hist. nat. Poiss.*, **15** : 45 (type-species: *Pangasius buechanani* Valenciennes = *Pimelodus pangasius* Hamilton-Buchanan).

Body elongate, moderately compressed and smooth-skinned. Mouth sub-terminal and moderately wide. Presence of maxillary barbels and single pair of mental barbels. Nostrils widely separated. Gill membranes united with each other but free from isthmus. Dorsal and pectoral fin spines well developed. Anal fin elongate, with 28 to 34 rays.

Only one species in Indian region.

159. *Pangasius pangasius* (Ham-Buch)

1822. *Pimelodus pangasius* Hamilton-Buchanan, *Fishes of Ganges*, : 163, 376, pl. 33, fig. 52 (type-locality : estuaries of Bengal).

1991. *Pangasius pangasius*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 613-614.

Common Name : Pungas.

Diagnostic Characters : D I 6-7; A iv-v 26-29; P I 12-13; V i 5.

Body elongate and compressed. Occipital process reaches basal bone of dorsal fin. Eyes large, visible from ventral surface of head. Mouth more or less wide. Teeth villiform on jaws and palate. Barbels two pairs. Dorsal spine strong, strongly serrated on its inner edge and finely serrated on its outer edge. Caudal fin deeply forked.

Geographical Distribution : India.

Elsewhere: Pakistan; Bangladesh; Myanmar; Thailand; Malay Peninsula and Java.

Fishery Information: It grows upto 1.5 meters, and inhabits lower portions of large river and estuaries. It is a food fish, but not of good quality. It feeds on foul and decaying animals and vegetables. As it attains a good size, it affords a good sport to anglers.

Family SISORIDAE

Genus *Bagarius* Bleeker 1853

1853. *Bagarius* Bleeker, *Verh. Bataqv. Genoot. Kunst. Wet.*, **25** : 121 (type-species: *Bagarius buechanani* Bleeker = *Pimelodus bagarius* Hamilton-Buchanan).

Head broad, moderately or strongly depressed. Head and body entirely or almost entirely covered by heavily keratinized skin. Eyes small, covered with skin, not visible from underside of head. Mouth broad, more or less inferior. Barbels four pairs; maxillary barbels large and stiff-based. Gill-openings wide, gill membranes free. Dorsal fin with a spine and 7 soft rays. Anal fin with 13 to 17 soft rays. Dorsal and pectoral fins, and both caudal fin lobes often with filamentous extensions. Three pigmented bands or blotches on the body.

160. *Bagarius bagairus* (Ham-Buch)

1822. *Pimelodus bagarius* Hamilton-Buchanan, *Fishes of Ganges*, pp. 186, 378, pl. 7, fig. 62 (Type locality : Ganga river and its tributaries)

1999. *Bagarius bagarius*, Menon, *Rec. zool. Surv. India, Occ. Paper*, **175** : 234-235

2006. *Bagarius bagarius*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 202.

Local Name : Khirit.

Common Name : Gangetic goonch, Giant blanded catfish.

Diagnostic Characters : D I 7; A iii 9-12; P I 9-12; V i 5.

Four pairs of barbels. Rayed dorsal fin inserted above half of pectoral fin. Pectoral fin long, spine strong as long as or longer than head, serrated along inner edge. Pelvic fin origin anterior to a

vertical line through base of last dorsal fin rays. Pectoral fin rays 9 to 12. Maximum length 192 mm. caudal fin deeply forked, upper lobe longer than lower.

Material examined : 2 exs., Indrayani river on the way to Paithan, 25.09.64, R.N. Chopra.

Geographical distribution : India.

Elsewhere : Bangladesh, Thailand, Malaya.

Remarks : It has a basic colour pattern of three darkly pigmented bands or blotches on the body. Irregularly distributed spots of varying size and intensity may also present.

Genus *Gagata* Bleeker 1858

1858. *Gagata* Bleeker, *Ichthyol. Archipel. Ind. Prodromus*, 1 : 204 (type-species: *Gagata typus* Bleeker = *Pimelodus gagata* Hamilton-Buchanan).

Body compressed. Head compressed and snubnosed: a distinct median groove bordered by prominent longitudinal ridges present. Occipital process does not reach basal bone of dorsal fin. Eyes large, dorso-lateral in position. Nostrils large, close together. Mouth small and ventral. Teeth villiform on jaws; no teeth on palate. Barbels four pairs. Mandibular pair of barbels inverted on a transverse line at same level. Maxillary barbels with osseous bases lying in a groove anteriorly. Gill membranes confluent with isthmus. Dorsal spine strong, adipose fin short. Anal fin with 11 to 16 rays.

Key to the species of Genus *Gagata*

1. Body without dark saddles although faintly present in some. Caudal fin with fine black margins. Dorsal fin relatively large, extending atleast to adipose origin. Pelvic fins reach anal fin origin. Anal fin with 11 branched rays ..
..... *G. gagata*
- Dorsal surface of body with 4 or 5 dark saddles. Caudal fin with dark margin. Snout tip broadly rounded in lateral profile without any notch. Anal fin with 8 to 10 branched rays
..... *G. itchkeea*

161. *Bagarius yarrelli* Silas

1841. *Bagarius yarrelli*, Sykes, *Trans. Zool. Soc. Lond.*, 2 : 370, fig.65(1) (type-locality: Mula Mutha river at Poona).

2006. *Bagarius yarrelli* : Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 204 : 205.

Local Name : Moonlandah.

Common Name : Goonch.

Diagnostic Characters : D I 7; A iii 9-12; P I 11-14; V i 5.

Body more or less elongate. Head depressed, its length 2.9 to 3.3 in standard length. Mouth inferior and crescentic; barbels four pairs. Dorsal fin inserted nearer to adipose fin than to snout tip. Pelvic fins inserted usually posterior to a vertical line through base of last dorsal finray. Pectoral finrays 11 to 14.

Material examined : 1 ex., Indrayani river, Pune, 25.09.64, R. N. Chopra.

Geographical Distribution: India:

Elsewhere : Bangladesh; Bormo, Java, Kampuchea, Laos, Myanmar, Thailand, Sumatra, Vietnam.

Fishery information : It is the giant species of *Bagarius*. It attains a size of 2 m or more. The flesh is not much relished due to its stiffness and fibrous nature.

162. *Gagata gagata* (Ham-Buch)

1822. *Pimelodus gagata*, Hamilton-Buchanan, *Fishes of Ganges*, : 197, 379, pl. 39, fig.65 (type-locality: rivers and estuaries of Bengal).

1991. *Gagata gagata*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 638-639.

Common Name : Gangetic gagata.

Local Name : Itchaka.

Diagnostic Characters : D I 6; A iii-iv 10-12; P I 9; V i 5.

Body laterally compressed, stoutly built. Head broadly pointed in front, its length 3.6 to 3.9 in

standard length. Snout prominent and globular, extends slightly beyond mouth. Mouth small; teeth villiform in patches on jaws. Barbels four pairs, maxillary barbels with stiff long bases. Dorsal spine long, finely serrated along distal-third of anterior edge. Pelvic fins extend to annals.

Material examined : 1 ex., 86 mm, Confluence of Krishna river with Warna river at Haripur, 12 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar.

Geographical Distribution: India: Ganga and Brahmaputra river systems; also in Maharashtra (New record).

Elsewhere : Bangladesh; Myanmar.

Fishery information : It attains a length of about 30 cm and is of no interest to fisheries.

163. *Gagata itchkeea* (Sykes)

1839. *Phractocephalus itchkeea* Sykes, *Proc. Zool. Soc. London*, 6 : 164 (type locality : Dukhun).

2006. *Gagata itchkeea*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 193.

Common Name : Decan Nangra.

Local Name : Itchka, Pedhna.

Diagnostic Characters : DII 6; Aiii-iv 8; vi5.

Median longitudinal groove on head extending to base of occipital process. Four pairs of barbels, maxillary reaching half length of pectoral fin. Rayed dorsal fin inserted above half of pectoral fin, spine strong. Adipose dorsal fin well separated. Body depth 4.0 to 5.4, head length 3.5 to 4.0 in standard length.

Material examined : i) 3 exs., Sanghi village, Akkalkot, 19.11.78, A.S. Mahabal. ii) 2 exs., 28-33 mm, Nira river, Khirwad, Satara distt. (Purchased), 20.08.64, K.K. Tiwari.

Geographical Distribution : India : Peninsular India, Cauvery, Krishna and Narmada rivers.

Fishery Information : It attains a length of about 7.6 cm and is of minor fishery value in Maharashtra.

Genus *Nangra* Day 1877

1877. *Nangra* Day, *Fishes of India*, : 493 (type-species: *Pimelodus nangra* Hamilton-Buchanan).

Body short and compressed. Head short and snobnosed. Eyes large, not visible from underside of head. Mouth narrow and ventral; lips thick and fimbriated. Teeth villiform in band on jaws. Barbels four pairs, mandibular barbels are set wide apart and placed on a transverse row at different levels. The maxillary barbels with osseous bases and lying in a groove anteriorly. Gill membranes not confluent with each other nor with isthmus. Dorsal fin inserted above posterior quarter of pectoral fin. Pectoral fin with a strong spine, serrated on its inner or both edges.

Key to the species of Genus *Nangra*

1. Dorsal fin with 9 or 10 soft rays; outer mandibular barbels extend beyond pectoral fins; nasal barbels very long, about as long as head *N. nangra*
- Dorsal fin with 6 or 7 soft rays; outer mandibular barbels do not extend beyond pectoral fins; nasal barbels small or rudimentary. A pair of finger-like processes present between bases of inner mandibular barbels *N. viridescens*

164. *Nangra nangra* (Ham-Buch)

1822. *Pimelodus nangra* Hamilton-Buchanan, *Fishes of Ganges*, : 193, 378, pl.11, fig. 63 (type-locality : Kosi river, Utter Pradesh).

1991. *Nangra nangra*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 676-677, fig. 215.

Common Name : Kosi nangra.

Diagnostic Characters : D I 9-10; A iii 10; P I 9; V i 5.

Body elongate and slender. Head long and oval; median longitudinal groove broad, extends to base of occipital process. Occipital extends to basal bone of dorsal fin. Mouth inferior; teeth villiform on jaws. Barbels four pairs; bases of mandibular barbels set wide apart. Dorsal spine strong and smooth, adipose fin small. Caudal fin deeply forked.

Geographical Distribution : India; Ganga, Hugli, Kosi and Yamuna river systems.

Elsewhere : Pakistan; Bangladesh; and Nepal.

Fishery Information : It attains a length of about 5 cm, is of no interest to fisheries.

165. *Nangra viridescens* (Ham-Buch)

1822. *Pimelodus viridescens* Hamilton-Buchanan, *Fishes of Ganges*,: 173,376, pl.10,fig.56 (type-locality; rivers of northern Bengal).

1991. *Nangra viridescens*, Talwar and Jhingran; *Inland Fishes of India and Adjacent Countries*, : 677-678, fig. 216.

Common Name : Huddah nangra.

Diagnostic Characters : D I 6-8; A iii-iv 8, P I 8; V i 5.

Body elongate. Head greatly depressed, large and broad. Median longitudinal groove extends to base of occipital process. Mouth wide and inferior. Teeth villiform in bands on jaws. Barbels four pairs; a pair of finger like processes present between bases of inner mandibular barbels. Dorsal spine strong and smooth; adipose fin small and well-marked. Caudal fin deeply forked.

Geographical Distribution : India : Yamuna river at Delhi, rivers of northern parts of West Bengal., Punjab, Uttar Pradesh, Bihar, Assam.

Elsewhere : Bangladesh.

Fishery Information : It attains a length of about 8.5 cm. A good fishery exists in the Sone river, Bihar and a minor fishery in North Bengal.

Genus *Glyptothorax* Blyth, 1861

1861. *Glyptothorax* Blyth, *J. Asiat. Soc. Beng.*, **29** : 154 (type-species : *Glyptothorax trilineatus* Blyth).

Body laterally depressed or cylindrical. Head depressed; eye small, dorsal in position. A prominent thoracic sucking disc present often with central pit. Mouth inferior, transverse and narrow; lips thick and fleshy. Barbels 4 pairs, maxillary barbels with broad base. Gill membranes confluent with the skin of isthmus. Rayed dorsal fin with one spine and 5 to 7 soft rays. A short adipose dorsal fin present. Pectoral fin with a short strong

spine, denticulated internally. Anal fin with 7 to 14 soft rays. Lateral line complete.

Key to the species of Genus *Glyptothorax*

1. Sucking apparatus not only on chest between pectoral fins but also on lower surface of outer rays of paired fins; longer than broad. Dorsal fin lower or as high as depth of body. Body with two longitudinal light coloured bands..
..... *G. annandalei*
- Sucking apparatus present only on chest between pectoral fins 2
2. Both front and hind edges of dorsal spine serrated. Adhesive thoracic apparatus longer than broad *G. madraspatanum*
- Only hind edge of dorsal spine serrated or both edges smooth 3
3. Skin on head and body smooth. Adhesive thoracic apparatus longer than broad and poorly developed. Dorsal spine usually smooth. Rayed dorsal fin inserted distinctly nearer to snout tip than to base of adipose fin. Maxillary and nasal barbels much shorter ...
..... *G. conorostre poonaensis*
- Skin on head and body rough, coarsely granulated or tuberculated 4
4. Adhesive thoracic apparatus longer than broad. Body plain, devoid of coloured bands. Occipital process apposed to basal bone of dorsal fin *G. lonah*
- Adhesive thoracic apparatus as long as or broader than long and well developed. Occipital process not reaching basal bone of dorsal fin; dorsal spine smooth.....
..... *G. trewavasae*

166. *Glyptothorax annandalei* Hora

1923. *Glyptothorax annandalei* Hora, *Rec. Indian Mus.*, **25**(1) : 14, pl. 1, fig. 3 (type-locality : Bhavani river at base of Nilgiri Hills).

1991. *Glyptothorax annandalei*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*,: 648-649.

Diagnostic Characters : D I 6; A iii 7; P I 9; V i 5.

Body elongate; head heavily depressed, longer than broad. Occipital process reaching basal bone of dorsal fin. Mouth inferior; lips papillated. Barbels four pairs. Adhesive thoracic apparatus longer than broad, devoid of a central pit. Dorsal fin inserted nearer to snout tip than to adipose fin; dorsal spine rather weak and smooth. Anal fin inserted opposite to origin of adipose fin. Paired fins plaited ventrally. Caudal fin forked. Skin on head and body minutely tuberculated.

Geographical Distribution : India : Western Ghats and the Vindhyas.

Elsewhere: Nepal.

Fishery Information: It attains a length of 11.5 cm; and is of no interest to fisheries.

167. *Glyptothorax conirostre poonaensis* Hora

1877. *Glyptosternum lonah* (nec. Sykes), Day (in part), *Fish India*, : 496, pl.133, fig. 5.

1938. *Glyptothorax conirostre poonaensis* Hora, *Rec. Indian Mus.*, 40(4) : 368, pl. 7, fig. 5,6 (type-locality : Mula Mutha river at Poons).

2006. *Glyptothorax conirostre poonaensis*, Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, p. 221.

Common Name : Rock sucker.

Local Name : Pathar chatoo.

Diagnostic Characters : D I 6; A ii 10; P I 10; V i 5.

Occipital process not reaching basal bone of dorsal fin. Paired fins not plaited ventrally. Skin smooth, adhesive apparatus longer than broad, poorly developed.

Material examined : 2 exs., Mula-Mutha river, Bundgarden, Pune, 16.07.63, C.V. Kulkarni.

Geographical Distribution : India : Mula-Mutha river, Poona, Maharashtra.

Remarks : This species is endemic to Maharashtra.

168. *Glyptothorax lonah* (Sykes)

1838. *Bagrus lonah* Sykes, *Proc. zool. Soc. Lond.*, (pt. 6) : 164 (type-locality : Deccan).

1999. *Glyptothorax lonah* : Jayaram, *The Freshwater Fishes of the Indian Region*, : 289, pl. XIII, fig. 4A & B.

2006. *Glyptothorax lonah* Jayaram, *Catfishes of India*, Narendra Publishing House, Delhi, P. 231.

Common Name : Rock sucker.

Local Name : Phattar chattu.

Diagnostic Characters : D I 6; A iii 8-10; P I 9; V i 5.

Occipital process reaching basal bone of dorsal fin. Paired fins plaited ventrally. Body plain without colour bands.

Material examined : i) 1 ex., Neera river, Veer dam, Pune, V.M. Pawar, 21.07.91; ii) 1 ex., Krishna-Koyana river confluence, Karad, Satara dist., M. Chavan, 05.10.08.

Geographical Distribution : India : Deccan, Godavari and Krishna river systems, Nasik, Poona (Maharashtra), Orissa and Western Ghats.

Fishery Information : It attains a length of about 15 cm; and is of no interest to fisheries. In living condition the colours of this fish are strikingly beautiful.

169. *Glyptothorax madraspatanum* (Day)

1873. *Glyptosternum madraspatanum* Day, *J. Linn. Soc. Lond.*, 11 : 526 (type-locality : Bhabani river at base of Nilgiri hills).

1999. *Glyptothorax madraspatanum* : Jayaram, *The Freshwater Fishes of the Indian Region*, : 289, pl. XIII, fig.5.

Diagnostic Characters : DI6; Aii-iii 8; PI9-10; vi5.

Body elongated. Head depressed and broadly pointed in front. Mouth inferior, lips papillated. Barbels four pairs, maxillary barbels extend posteriorly to base of pectoral fins. Dorsal fin inserted nearer to adipose fin than to snout-tip. Dorsal spine strong and serrated near apex on both edges. Caudal fin deeply forked. Skin smooth on head and body.

Geographical Distribution : India : Western Ghats, Anaimalai hills, Nilgiri hills, Cauvery river.

Fishery Information : It attains a length of about 11.5 cm; and is of no interest to fisheries.

170. *Glyptothorax trewavasae* Hora

1919. *Euglyptosternum saisii* (nec Jenkins) Annandale, *Rec. Indian Mus.*, 16 : 126 (type locality : Yenna valley, Satara Dist.).

1938. *Glyptothorax trewavasae* Hora, *Rec. Indian Mus.*, 40 : 373, pl. 17, figs. 3, 4.

1999. *Glyptothorax trewavasae*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 252.

Local Name : Phattar chatta.

Diagnostic Characters : D I 6; A ii 9; P I 9; V i 5.

Adhesive apparatus well developed extending forward to a point in between union of gill membranes to isthmus.

Geographical Distribution : India : Western Ghats Krishna river system : Yenna, Koyana and Tunga rivers.

Remarks : It occurs in mountain rapids. This species is endemic to Western Ghats.

Family CLARIIDAE

Genus *Clarias*, Scopoli 1777

1777. *Clarias* Scopoli, *Introductio ad Historiam Naturalem*, : 455 (type-species : *Silurus anguillaris* Linnaeus).

Body elongate and compressed. Head moderately depressed, covered with osseous plates dorsally and laterally forming a cask covering a diverticulum of gill-cavity. Eye small, dorsally placed. Gill-membranes free from isthmus. Dorsal and anal fin long-based. Pectoral fin with a strong pungent spine. Distinct lateral line. Accessory dendritic apparatus well-developed. Branchiostegal rays 7 to 9.

Key to the species of Genus *Clarias*

1. Distance from dorsal fin base to base of occipital process 4.5 to 6.0 times in head length *C. batrachus*
- Above distance 2.0 to 3.5 times in head length 2
2. Snout pointed. Nasal barbels more than two times in head length. Pectoral spine strongly serrated on its outer border *C. dayi*

- Snout broad. Nasal barbels not more than two times in head length. Pectoral spine strongly serrated on its posterior border *C. dussumieri*

171. *Clarias batrachus* (Linnaeus)

1758. *Silurus batrachus* Linnaeus, *Systema Naturae*, 1, ed., 10 : 305 (type-locality : Asia and Africa).

1991. *Clarias batrachus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 684-685, fig. 218.

Common Name : Magur.

Local Name : Magur.

Diagnostic Characters : D 70-76; A 45-58; P I 8-11; V i 5.

Snout not pointed but broad. Nasal barbels not more than two times head length. Dorsal fin with 70-77 rays. Dorsal fin inserted slightly anterior to tip of pectoral fin. Anal fin with 45-58 rays.

Material examined : i) 1 ex., Waghad river, Yeotmal dist., D.F. Singh, 23.04.91; ii) 2 exs., Krishna-Koyana river confluence, Karad, Satara dist., M. Chavan, 05.10.08.

Geographical Distribution : India : Throughout.

Elsewhere : ?Bali; Bangladesh; Borneo; Java; Malacca; Malaya; Myanmar; Nepal; Pakistan; Philippines; Singapore; Sri Lanka; Sumatra; Thailand.

Fishery Information : It attains a length of about 46 cm. This fish is abundant in ponds and rivers; found in all type of waters but more so in derelict and swampy waters. It can live out of water for quite some time as it has an accessory respiratory organ. It is highly esteemed for its nourishing properties and for quick recovery from prolonged illness. This cat fish is cultured in shallow ponds. Also cultured in cages, cement cisterns, paddy fields and sewage water.

172. *Clarias dussumieri dussumieri*
Valenciennes

1840. *Clarias dussumieri* Valenciennes, *Hist. nat. Poss.*, 15 : 382 (type-locality : Pandicherry; Malabar).

2006. *Clarias dussumieri dussumieri* : Jayram, *cat Fishes of India*, : 307-309.

Common Name : Valenciennes clariid.

Diagnostic Characters : D 66-69; A 45-59; P I 10-11; V i 5.

Snout not pointed but broad. Nasal barbels not more than 2 times head length. Dorsal fin with 66-69 rays.

Material examined : 1 exs., Ghataprabha river, near Alkur, Kolhapur, M.S. Pradhan, 22.02.89.

Geographical Distribution : Peninsular India : Goa, Karnataka, Maharashtra, Kerala and Pondicherry.

Fishery Information : It attains a length of about 25 cm; inhabits tanks and ditches; is of minor interest to fisheries.

Family HETEROPNEUSTIDAE

Genus *Heteropneustes* Muller, 1840

1840. *Heteropneustes*, Muller, *Arch. Anat. Physiol.*, : 115 (type-species : *Silurus fossilis* Bloch).

Body elongate, compressed. Mouth small, lips fleshy and papillated. Eyes small, lateral, in anterior part of head. Teeth villiform in broad bands on jaws and in two oval patches on vomer. Dorsal fin short, inserted above tip of pectoral fins, without any spine. Anal fin long-based with 60 to 79 rays, just reaching or confluent with caudal fin. Caudal fin almost rounded. Lateral line complete and simple.

Key to the species of genus *Heteropneustes*

1. Anal fin separated from caudal fin by deep notch; occipital process not extending to base of dorsal fin *H. fossilis*
2. Anal fin confluent with caudal fin; occipital process reaching base of dorsal fin
..... *H. microps*

173. *Heteropneustes fossilis* (Bloch)

1794. *Silurus fossilis* Bloch, *Naturgesch. aus. Fische*, 8 : 46, pl. 370, fig. 2 (type-locality : Tranquebar, Tamil Nadu).

1991. *Heteropneustes fossilis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 689-690, fig. 219.

Common Name : Stinging catfish.

Local Name : Bitchuka machi, Shingi.

Diagnostic Characters: D 6-7; A 60-70; P I 7; V i 5.

Occipital process not reaching basal bone of dorsal fin. Four pairs barbels; maxillary extending to middle of pectoral fin or to pelvic fin base, nasals to middle of pectoral fins; outer and inner mandibular pairs reaching beyond pectoral fin end. Pectoral fins short and rounded. Caudal fin rounded. Body slender to deep. Eyes small; more than 6.0 in head length. Air bladder large, about $\frac{1}{2}$ in standard length extending to about $\frac{1}{3}$ rd to $\frac{1}{2}$ length of anal fin.

Material examined : i) Pashan tank, Pune, 17.6.1991, H.V. Ghate; ii) 1 ex, pond near Wagholi, Pune, 5.10.1990, G.M. Yazdani; iii) 1 ex, Reservoir at Talegaon, Pune, 6.4.2002, S. Thakur; iv) 4 exs., 115-140 mm, Morna river, 3 km from P.K.V. University Guest House, Akola, 04.04.05, A.K. Karmakar; v) 1 ex., 130 mm, Tapi river near Khemkera bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Bangladesh; Laos; Myanmar; Nepal; Pakistan; Sri Lanka; Thailand.

Fishery Information : It attains a length of about 300 mm and is well known because of its nourishing properties and for quick recovery from illness. A fish of high economic importance. It is primarily found in ponds, ditches, beels, swamps, marshes and sometime in the muddy rivers.

This fish is much dreaded for its aggressive behaviour and causes painful wounds with its potentially dangerous pectoral spines.

Order SALMONIFORMES

Family SALMONIDAE

Genus *Salmo* Linnaeus 1758

1758. *Salmo* Linnaeus, *Systema Naturae*, 1, ed. 10 : 308 (type-species : *Salmo salar* Linnaeus).

Body elongate and stream lined. Head of moderate size. Mouth large, cleft of mouth

extending to front edge of eye. Teeth conical and well-developed on jaws, palate and tongue. Dorsal fin inserted above pelvic fins, with 12-14 rays. Adipose dorsal short. Anal fin with 8 to 12 rays. Caudal fin forked. Scales small. Lateral line straight, with 115-160 scales. The salmonid fishes exhibit a large amount of variation in shape and colouration in different habitats. The nuptial colouration of male is much brighter than that of female. The species of this genus interbreed among themselves and produce a variety of interspecific hybrids.

174. *Salmo gairdnerii gairdnerii* Richardson

1836. *Salmo gairdnerii* Richardson, *Fauna boreali Amer., Fish.* (3) : 221 (type-locality : Columbia river at Port Vancouver).

1982. *Salmo gairdnerii gairdnerii* : Tilak and Sharma, *Game Fishes of India and Angling*, : 150, fig. 56b.

Common Name : Rainbow trout

Diagnostic Characters : D iv 9-10; A iii 10-11; P i 12; V i 8.

Body stout, with both its profile equally arched. Head slightly smaller than depth of body. Mouth large. Eyes moderate, dorsolateral in position. Dorsal fins inserted in advance of pelvic fins. Adipose dorsal fin situated above anal fin. Pectoral fin short, much shorter than head. Scales very small, lateral line scales 127-160.

Geographical Distribution : India (Introduced).

Elsewhere : Atlantic coast of North America, from South Alaska to Mexico; introduced in Pakistan and Sri Lanka.

Fishery Information : It attains a length of about 38 cm; considered the best-suited salmonid for commercial production of table fish. Average weight in the Deccan Plateau ranges between 100-150 gm. The Rainbow trout is basically an anadromous fish like Salmon. It was introduced in India in 1869 from U.K., New Zealand and Sri Lanka, it is now cultured almost in all hill stations in India. First of all, it was introduced into a hatchery in Nilgiris (Tamil Nadu) and established there well. It is highly esteemed as food and provides a good sport to anglers.

Order BELONIFORMES

Family ADRIANICHTHYIDAE

Genus *Horaichthys* Kulkarni, 1940

1940. *Horaichthys* Kulkarni, *Rec. Indian Mus.*, **42** (2) : 385 (type-species : *Horaichthys setnai* Kulkarni).

Body thin and translucent, covered with thin cycloid scales. Maxilla absent; premaxilla not protractile. Gill membranes broadly united, but free from isthmus. Dorsal fin small, very near to caudal. Anal fin base very long. Right pelvic fin absent in female. Lateral line developed mainly on head, not on body.

Monotypic

175. *Horaichthys setnai* Kulkarni

1940. *Horaichthys setnai* Kulkarni, *Rec. Indian Mus.*, **42**(2) : 385, fig. 2 (type-locality : backwaters near Bombay).

1991. *Horaichthys setnai* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 746-747, fig. 240.

Common Name : Thready top-minnow.

Local Name : Anu.

Diagnostic Characters : D 6-7; A 28-32; V 5.

Body elongate, slender and compressed. Head slightly depressed; snout broad and truncate. Eyes large and prominent. Mouth directed upward. Dorsal fin inserted far posterior on body, near caudal fin. Anal fin long, in adults modified into two parts: in male, the first six rays separated off into an independent gonopodium; in female, anal finray simple but the second to sixth rays more elongated. Pelvic fins paired in male, right fin absent in female. Caudal fin large and rounded. 32 to 34 scales in lateral line series.

Geographical Distribution : India : from near Gulf of Kutch to Trivandrum.

Fishery Information : It is the smallest fish in India; is hardly, 2 cm in length. This fish is outstanding in manifesting distinct sexual dimorphism. It is an estuarine form capable to live in freshwater also. Being a surface feeder, it destroys early instars of mosquitos and other insects.

Remarks : This species is endemic to India.

Family BELONIDAE

Genus *Xenentodon* Regan, 1911

1911. *Xenentodon* Regan, *Ann. Mag. Nat. Hist.*, (8)7 : 322 (type-species : *Esox cancila* Hamilton-Buchanan).

Body very elongate and cylindrical; jaws with large canine teeth and much more numerous conical teeth. Gill rakers absent. Dorsal and anal fin almost equal and nearly opposite to each other. Caudal fin truncate or rounded. Scales very small. Lateral line placed very low on the body.

176. *Xenentodon cancila* (Ham-Buch)

1822. *Esox cancila* Hamilton-Buchanan, *Fishes of Ganges*, : 213, 380, pl. 27, fig. 70 (type-locality : Gangetic provinces).
1991. *Xenentodon cancila* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 743-744.

Common Name : Freshwater gar fish.

Local Name : Kutra masa, Tokali.

Diagnostic Characters : Elongated body. Snout long, beak-like. Dorsal fin oppose to anal fin. Anal fin-rays 15-18. A median black line present on body. Caudal fin truncate.

Material examined : i) 1 ex, Mona river, Amroli road, Satara, 28.1.1997, K.C. Jayaram; ii) 2 exs, Khangaon tank, Pune, 29.4. 1983, D.F. Singh; iii) 1 ex, Panchaganga river, Kolhapur, 4.8.1987, Jay Samant; iv) 1 ex, Indrayani river, Alandi, Pune, 10.5.1977, A.S. Mahabal.v) 4 ex., 155-210 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari; vi) 3 exs., 230-285 mm, Ujjani Reservoir near Kanda, 10 km away from Ujjani Dam, 26.03.85, A.K. Karmakar; vii) 4 exs., 155-220 mm, Bhima river at Degaon, 10 km from PWD Rest House, Pandharpur, 21.03.85, A.K. Karmakar; viii) 8 exs., 110-205 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; ix) 1 ex., 293 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Bangladesh; Sri Lanka; Myanmar and Thailand.

Fishery Information : It attains a length of about 40 cm, common size being 30 cm. This is an elegant surface living fish, fairly common in Ganga-Brahmaputra system.

Family HEMIRAMPHIDAE

Genus *Hyporhamphus* Gill, 1859

1859. *Hyporhamphus* Gill, *Proc. Acad. Nat. Sci. Philad.*, 11 : 131 (type-species : *Hyporhamphus tricuspidatus* Gill).

Body elongate. Presence of prolonged beak-like lower jaw. Upper jaw short and triangular, scaled. Pre-orbital ridge well-developed. Nasal papilla rounded or fan-shaped. Dorsal fin with 12 to 17 and anal fin with 13 to 16 rays. Pectoral fin short. Caudal fin emarginate.

Key to the species of genus *Hyporhamphus*

1. Total gill rakers on the first arch 23 to 37; upper jaw width 0.6 to 0.8 in its length *H. limbatus*
2. Total gill rakers on the first arch 41 to 53; upper jaw width 0.8 to 1.0 times in its length *H. xanthopterus*

177. *Hyporhamphus limbatus* (Valenciennes)

1846. *Hemirhamphus limbatus* Valenciennes, *Hist. nat. Poiss.*, 19 : 44 (type-locality : Malabar, Bombay and Pondicherry).
1991. *Hyporhamphus limbatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 734, fig. 236.

Common Name : Congaturi halfbeak.

Dioagnostic Characters : D 12-16; A 13-16; P i 10-11; V i 5.

Body elongate and more or less compressed. Lower jaw beak-like and greatly prolonged, equal to or longer than head length. Upper jaw short, triangular and scaly. Caudal fin emarginate, not strongly forked.

Geographical Distribution : India : Ganga river

drainages, Chilka lake (Orissa), Ashthamundi and Vembanad lake (Kerala), Maharashtra.

Elsewhere : Persian Gulf; Pakistan; Sri Lanka; Myanmar; Thailand and China.

Fishery Information : It attains a length of about 15 cm, and of little fishery value. This euryhaline species is frequently observed in the Ganga river drainage. It is reported to breed in the Chika lake at least twice a year.

Order CYPRINODONTIFORMES

Family APLOCHEILIDAE

Genus *Aplocheilus* McClelland, 1839

1839. *Aplocheilus* McClelland, *Asiat. Res.*, **19**(2) : 301 (type-species : *Esox panchax* Hamilton-Buchanan).

Body moderately elongate, compressed. Head and nape broad and flattened above. Mouth terminal, upper jaw protractile, lower jaw greatly attenuated. Barbels absent. Dorsal fin originates above posterior end of anal fin, with 7 to 9 rays and no spine. Anal fin longer with 15 to 18 rays. Caudal fin rounded. Lateral line absent. Scales on longitudinal series 25 to 31.

Key to the species of Genus *Aplocheilus*

1. Pelvic fin without a prolonged ray 2
- Pelvic fin with a prolonged ray (at least in male) 3
2. Eye diameter equal to interorbital width. 30 to 34 scales in longitudinal series *A. panchax*
3. Anal finrays 15 or 16 *A. lineatus*

178. *Aplocheilus lineatus* (Valenciennes)

1846. *Panchax lineatum* Valenciennes, *Hist. nat. Poiss.*, **18** : 381 (type-locality : Peninsular India).

1991. *Aplocheilus lineatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 751-752.

Common Name : Killi fish, Top minnow.

Local Name : Pikao, Poochaatie.

Diagnostic Characters : Small sized fish. Head semicircular. Snout flat. Lower jaw shows upward

bent. Lateral line present on head. Large eyes widely situated. 9-10 vertical brownish black bars present on body. A black spot present at the base of dorsal fin. Caudal fin rounded with dark bands. Pelvic fin with a prolonged ray. Rows of metallic golden green and red spots on body.

Material examined : i) 5 exs, 75 km of Mangaon, Amberali ghat, Poladpur-Mahabaleswar Road Raigad, 7.12.1987, D.B. Bastawade; ii) 4 exs, Mashii, Pune, B.S. Lamba; 24.1.1967; iii) 8 exs, Savitri river, Poladpur, 12 miles south of Mahad, B.S. Lamba, 16.2.1966; iv) 3 exs, Moshi, Pune, K.R. Rao, 4.3.1972; v) 23 exs, Nalla near Nandewadi, south west of Jaigad, Ratnagiri, G.M. Yazdani, 13.1.1974; vi) 4 exs, Mosi, Pune, B.S. Lamba, 26.3.1967; vii) 3 exs, Sangam of Mula-Mutha and Bhima rivers, Ranjangaon, Pune, D.F. Singh, 19.1.1987; viii) 3 exs, Rajeewadi, Ujani wetland, Pune dist., 13.3.1989, G.M. Yazdani; ix) 4 exs, stream near Radhanagari village, Kolhapur, 17.2.1989, M.S. Pradhan.

Geographical Distribution : India : Western and south-eastern regions, Kodagu, Waynad, Kerala.

Fishery Information : It attains a length of about 10 cm. This is a valuable larvivorous fish and its utility for mosquito control has been established. This species is the best known of the *Aplocheilus* species, as well as easiest to breed.

179. *Aplocheilus panchax* (Ham-Buch)

1822. *Esox panchax* Hamilton-Buchanan, *Fishes of Ganges*, : 211, 380, pl. 3, fig. 69 (type-locality : Bengal).

1991. *Aplocheilus panchax* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 752-753.

Common Name : Panchax minnow.

Local name : Pikoo.

Diagnostic Characters : Body long. Anal fin square shaped, greenish blue colour. Fins yellow in colour and double bordered. Tail fin oval in male. Pelvic fin without prolonged ray. 30-34 scales in longitudinal series. Eye diameter equal to interorbital width.

Material examined : i) 1 ex, Moshi, Pune,

23.10. 1970, K.R. Rao; ii) 2 exs, Danoli, Ratnagiri dist., 21.2.1965, B.K. Tikader.

Geographical Distribution : India : Andaman Islands, Orissa, West Bengal; also in Maharashtra.

Elsewhere : Pakistan; Bangladesh; Myanmar and Indo-Malayan Archipelago.

Fishery Information : It attains a length of about 8 cm. This is a larvivorous fish; its utility in mosquito control has been established.

Family POECILIDAE

Genus *Gambusia* Poey, 1854

1854. *Gambusia* Poey, *Memorias sobre la historia natural de la Isla de Cuba*, 1 : 376, 384 (type-species : *Gambusia punctata* Poey).

Body elongate; head small; lower jaw projecting. Dorsal and anal fin short; dorsal fin inserted behind anal fin origin. On dorsal and caudal fins, a distal and sub-distal zone of melanophores present.

180. *Gambusia affinis* (Baird & Girard)

1853. *Heterandria affinis* Baird and Girard, *Proc. Acad. nat. Sci. Philad.*, 6 : 390 (type-locality : San Antonio river drainage, Texas).

1991. *Gambusia affinis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 756-757, fig. 242.

Common Name : Mosquito fish, Guppy.

Local Name : *Gambusia*, Guppy.

Diagnostic Characters : body elongate; its depth 3.5 to 4.0 times in standard length. Dorsal fin inserted in the middle of body in male, but in female, midway between front edge of eye and tip of caudal fin. Lateral line scales 30 to 32. Gonopodium as long as head.

Material examined : i) 50 exs, Rajbag Loni, Pune, B.S. Lamba, 18.9.1971, ii) 4 exs, Hadapsar, Pune, B.K. Tikader, 4.7.1975, iii) 5 exs, Kowdi, Pune, B.S. Lamba, 6.4.1967; iv) 6 exs, Hadapsar, Pune, Dr. Nabiar, 7.6.1974; v) 40 exs, Rajbagh, Pune, B.S. Lamba, 24.11.1971; vi) 63 exs, Loni, Mutha river, Pune, R.H. Kamble, 14.3.1975; vii) 5 exs, Sambhaji bridge, Pune, R.N. Chopra,

18.8.1968; viii) 11 exs, Samgam of Mula-mutha and Bhima rivers, Ranjangaon Sandas, Pune dist., D.F. Singh.

Geographical Distribution : South-eastern United States of America. Introduced in India into several states.

Fishery Information : It attains a length of about 6.2 cm. This fish was introduced in India during 1928 from Italy for malaria control and adjusted readily in Indian waters. This species is predaceous, hardy and can withstand all types of foul water conditions; temperature tolerance above freezing point to 33 degree C. Reported to consume mosquito larvae equal to its own body weight per day. Today, this fish has widest distribution of any freshwater fish in the world, largely due to mosquito control programmes.

Genus *Poecilia* Bloch and Schneider, 1801

1801. *Poecilia* Bloch and Schneider, *Syst. Ichth.*, 2 : 452 (type-species : *Poecilia vivipara* Bloch and Schneider).

Projecting lower jaw. Dorsal and anal fins short. Dorsal fin origin in advance of anal fin. No distinctive marking on dorsal and caudal fin.

181. *Poecilia (Lebistes) reticulata* Peters

1859. *Poecilia reticulata* Peters, *K. Preussischen Akad. Wiss., Berlin* : 412 (type-locality : Venezuela).

1977. *Lebistes reticulatus* : Menon, *Sci. & Cult.*, 43(3) : 113.

1991. *Poecilia (Lebistes) reticulata* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 758-759.

Common Name : Guppy, Barbados Millions.

Diagnostic Characters: D ii 5; A ii 7; P ii 11; V I 5.

Body cylindrical. Mouth moderate, lower jaw projecting. Dorsal fin short, inserted in front of anal fin.

Material examined: i) 48 exs, Wagholi, Pune, 13.12.1977, M.B. Rao, ii) 5 exs, Kalbhor village, Pune, 19.2.1977, M.B. Rao, iii) 50 exs, Wagholi, Pune, 2.1.1978, M.B. Rao.

Geographical Distribution : India : Introduced.

Elsewhere : The Netherlands Antilles; the Venazuelan Islands, Trinidal and British Guiana.

Fishery Information : It attains a length of about 3 cm in male and 6 cm in female. Besides its beauty, the guppy have other merits also. It is a live bearer, an extremely fertile and dependable breeder. It is unusually active. It was introduced in India from South America in 1908 for mosquito control.

Order PERCIFORMES

Family CENTROPOMIDAE

Genus *Lates* Cuvier, 1828

1828. *Lates* Cuvier, *Hist. nat. Poiss.*, 2 : 88 (type-species : *Perca nilotica* Linnaeus).

Body elongate and compressed. Head rather pointed, with concave dorsal profile at nape and becoming convex in front of dorsal fin. Mouth large; upper jaw reaching behind eyes. Nostrils of each side close together. Horizontal limb of preopercle with 3 or 4 large, flattened and triangular spines. Lateral line scales in three series on caudal fin. Branchiostegal rays 7.

182. *Lates calcarifer* (Bloch)

1790. *Holocentrus calcarifer* Bloch, *Naturges. Ausland. Fische*, (4) : 100, pl. 244 (type-locality : ? Indonesia).
1991. *Lates calcarifer* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 789-790, fig. 248.

Common Name : Barramundi.

Diagnostic Characters : D VII-IX + I 10-11; A III 7-8; P 17; V I 5.

Body elongate compressed. Mouth large and oblique; teeth villiform on jaws; some teeth are present on tongue. Gillrakers on lower arm of first arch 11 to 13. Large ctenoid scales present.

Geographical Distribution : India : Throughout.

Elsewhere : Bangladesh; Pakistan; Malaya; Myanmar; Thailand.

Fishery Information : It attains a length of about 150 cm. This is a coastal and estuarine species. It enters estuaries and backwaters in pursuit of food and shelter, but returns to marine environment for

spawning. This fish is cultured in brackishwater impoundments popularly known as 'Bhasabadha' fisheries in West Bengal. This estuarine perch comes into the Chilka lake as young fish and constitutes a rich fishery. This fish is esteemed as a food fish and has a very good market value.

Family AMBASSIDAE

Genus *Chanda* Hamilton-Buchanan, 1822

1822. *Chanda* Hamilton-Buchanan, *Fishes of Ganges*, : 103, 270 (type-species : *Chanda nama* Hamilton-Buchanan).

Body oval and fairly transparent, with vertebral column and its adjoining elements visible externally. Lower limit of pre-opercle provided with double serrated edge. Mouth large, with a conspicuous lower jaw. First dorsal fin with 7 spines, second one with 1 spine and 9 to 17 soft rays. Anal fin with 3 spines and 9 to 17 soft rays. Lateral line complete, incomplete, interrupted or absent.

Monotypic

183. *Chanda nama* Ham-Buch

1822. *Chanda nama* Hamilton-Buchanan, *Fishes of Ganges*, : 109, 371, pl. 39, fig. 37 (type-locality : Ponds throughout Bengal).
1991. *Chanda nama* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 799-800, fig. 249.

Common Name : Elongate glass-perchlet.

Local Name : Kackki-chembardi

Diagnostic characters : D VII + I 15-17; A III 15-17; P ii 11-12; V I 5.

Lower jaw longer than upper, maxilla extending to below middle of the orbit. Preorbital slightly serrated. Two dorsals united at their base, first dorsal with 7 spines and a recumbent spine present. Lateral line indistinct, complete. Scales minute. Caudal fin deeply forked.

Material examined : i) 3 exs., Chichol talav, Sangola, Sholapur dist., A.S. Mahabal, 04.09.83; ii) 6 exs., Bhima river, Ujani dam, A.S. Mahabal, 25.08.83; iii) 1 ex., Panshet, Pune, D.F. Singh, 12.07.89. iv) 1 ex., 78 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House,

Miraj, 17.03.85, A.K. Karmakar; v) 10 exs., 59-78 mm, Tapi river near Khamkera Bridge, Muktainagar, 06.04.05, A.K. Karmakar; vi) 3 exs., 33-58 mm, Purna river near Muktainagar lift Irrigation Plant, Jalgaon distt., 07.04.05, A.K. Karmakar; vii) 2 exs., 43-53 mm, Satpur Fish Market at Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar; viii) 25 exs., 22-63 mm, Hirana river near Khadak villege, Deola, Jalgaon distt., 07.04.05, A.K. Karmakar; ix) 11 exs., 37-52 mm, Gangapur Reservoir on Godavari river, 10 km n.w. of Govt. Guest house, Nasik, 09.04.05, A.K. Karmakar; x) 4 exs., 58-78 mm, Mukna Reservoir, 25 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar. xi) 2 exs., 75-80 mm, Ramala Talab, 1.5 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar; xii) 1 ex., 73 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh and Myanmar.

Fishery Informaton : It attains a length of 9 cm and are sold in heaps along with other small fishes as low priced item.

Genus *Pseudambassis* Bleeker, 1874

1874 *Pseudambassis* Bleeker, *Natuurk. Verh. Holl. Maatsch. Wetench.*, 2(2); 86 (type-species : *Chanda lala* Hamilton-Buchanan).

Body oval and compressed. Supraorbital ridge dentate; preorbit dentate on both ridge and edge; suborbit dentate. Interoperculum usually entire, often feebly serrate posteriorly. Mouth moderate; tongue edentate. Scales very small; lateral line complete, with 47 to 90 scales. Cheek with 4 to 7 transverse scale-rows.

Key to the species of Genus *Pseudambassis*

1. Lateral line scales about 90 2
- Lateral line scales less than 70 3
2. Fins hyaline; body yellowish-green on back, silvery on flanks and belly, with a silvery

lateral band on flank; lower gillrackers about 11 *P. baculis*

3. Preopercular hind edge smooth, often with few serrations; lower gillrackers 15 or 16
..... *P. ranga*

184. *Pseudambassis baculis* (Ham-Buch)

1822. *Chanda baculis* Ham-Buch, *Fishes of Ganges*, pp. 112, 371 (type locality : N.E. Bengal).

1999. *Pseudambassis baculis*, Jayaram, *The Freshwater Fishes of Indian Region*, : 370.

Common Name : Himalayan glassy perchlet.

Local Name : Kachki.

Diagnostic Characters : D VI + I 12-13; A III 12-13; P i 11-12; V I 5.

Humeral spot present. Dorsal and anal fins long, with 12 to 17 soft rays. Gill rakers on lower limb of first arch 12 to 18. Fins hyaline. Body with only a silvery lateral band on sides. Second spine of dorsal fin not elongated.

Material examined : i) 3 exs., Ghod river, Shirur, Pune, 13.07.83, D.F. Singh.

Geographical Distribution : India : Ganga basin; also in Maharashtra.

Elsewhere : Bangladesh, Pakistan.

Remarks : Inhabits ponds, ditches and pools.

185. *Pseudambassis ranga* (Ham-Buch)

1822. *Chanda ranga* Ham-Buch, *Fishes of Ganges*, pp.113, 371, pl. 6, fig. 38 (type-locality : Gangetic provinces).

1999. *Pseudambassis ranga*, Jayaram, *The Freshwater Fishes of Indian Region*, : 370.

Common Name : Indian glassy fish.

Local Name : Chembardi.

Diagnostic Characters : D VIII+I 11-14; A III 13-15; P I 11-12; V I 5.

Body stout, deep and compressed. Humeral spot present. Dorsal and anal fins long with 12 to 17 soft rays. Gill rakers on lower limb of first arch 21 to 25. Body depth 2.3 to 2.4, caudal peduncle depth 8.3 to 9.1, diameter of eyes 11.3 to 11.8 times in standard length.

Material examined : i) 2 exs., Mula river, Sathe Biscuits, Pune, 25.04.60, M.M. Chatterjee; ii) 3 exs., Mula-Mutha river Bundgarden, Pune, 27.07.63, R.N. Chopra; iii) 1 ex., Katraj tank, Pune, 21.08.65, B.S. Lamba; iv) 1 ex., Mula River, Aundh, Pune, 27.06.63, R.N. Chopra; v) 1 ex., Bundgarden, Pune, 27.07.63, R.N. Chopra; vi) 1 ex., Kowdi, Pune, 27.04.67, D.N. Tiwari; vii) 1 ex., Kowdi, Pune, 06.07.67, R.N. Chopra; viii) 1 ex., Mula river Sathe Biscuits, 04.05.63, R.N. Chopra; ix) 1 ex., Tapi river, Kund village, 30.11.94, S.S. Kamble; x) 2 exs., Krishna-Koyana confluence, Karad, Satara dist., 05.10.08, Madhavi Chavan. xi) 55 exs., 36-57 mm, Koyna river, Karad (Purchased), 05.09.64, K.K. Tiwari; xii) 3 exs., 26-63 mm, Nira river, Khirwad, Satara dist., 22.08.64, K.K. Tiwari; xiii) 7 exs., 57-73 mm, Bavada, Dharan, Pancha Ganga River, Kolhapur, 10.09.64, K.K. Tiwari. xiv) 8 exs., 77-86 mm, Pench river, 60 km north of Nagpur, 01.04.05, A.K. Karmakar; xv) 8 exs., 35-57 mm, Tapi river near Khamkera Bridge, Muktainagar, 06.04.05, A.K. Karmakar; xvi) 4 exs., 50-57 mm, Purna river near Muktainagar Lift Irrigation Plant, Jalgaon distt., 07.04.05, A.K. Karmakar; xvii) 4 exs., 48-60 mm, Gangapur Reservoir on Godavari river, 10 km n.w. of Govt. Guest House, Nasik, 09.04.05, A.K. Karmakar; xviii) 9 exs., 35-81 mm, Darna Reservoir, 40 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar; xix) 1 ex., 72 mm, Ramala Talab, 1.5 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar; xx) 1 ex., 75 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar.

Geographical Distribution : India.

Elsewhere : Bangladesh, Malaysia, Myanmar, Pakistan.

Remarks : Inhabits fresh and brackish water.

Family SCATOPHAGIDAE

Genus *Scatophagus* Cuvier, 1831

1831. *Scatophagus* Cuvier, *Hist. nat. Poiss.*, 7 : 136 (type-species : *Chaetodon argus* Linnaeus).

Body almost squarish in out line, with

triangular head. Mouth small; teeth on jaw in several rows, very small. Dorsal fin with 11 spines and 16 to 18 soft rays; anal fin with 4 spines and 14 to 15 soft rays. Pectoral fins small. Caudal fin truncate or slightly emarginate.

186. *Scatophagus argus* (Linnaeus)

1766. *Chaetodon argus* Linnaeus, *Systema Naturae* (ed.12), 1 : 464 (type-locality : India).
1991. *Scatophagus argus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 875-876, fig. 264.

Common Name : Spotted scat.

Diagnostic Characters : DXI 16-18; AVI 14-15; P 16-17; VI5.

Body quadrangular, strongly compressed. Head profile rises steeply to nape; snout rounded. Mouth small. Dorsal fin deeply notched; dorsal fin membrane incised between spines. Scales very small. Numerous dark spots mainly confined to upper portion of sides.

Geographical Distribution : India : Common in backwaters.

Elsewhere : Bangladesh; Sri Lanka; Through East Indies to Australia; New Hebrides and Solomon Islands.

Fishery Information : It attains a length of about 30 cm and common in Indian backwaters. In young stage it is a handsome aquarium fish. It has some importance in local fishery in backwater areas.

Family NANDIDAE

Genus *Badis* Bleeker, 1853

1853. *Badis* Bleeker, *Verh. Batav. Genoot. Kunst. Wet.*, 25 : 253 (type-species: *Badis bucharani* Bleeker = *Labrus badis* Hamilton-Buchanan).

Body more or less elongate and slightly compressed. Mouth relatively small and slightly protrusible. Maxilla not extending to anterior margin of orbit. Operculum distinctly triangular, its posterior corner with prominent spine, projecting posteriorly. Dorsal fin large, with 16 to 18 spines and 7 to 10 soft rays. Caudal fin wedge shaped. Moderate sized ctenoid scales. Lateral line

interrupted or absent; with 26 to 33 scales in longitudinal series.

187. *Badis badis* (Ham-Buch)

1822. *Labrus badis* Hamilton-Buchanan, *Fishes of Ganges*, pp. 70-72, 368, pl. 25, fig. 23 (type locality : Gangetic provinces).

1999. *Badis badis*, Jayaram, *The Freshwater Fishes of the Indian Region*, pp. 394.

Common Name : Badis, Dwarf Chameleon fish.

Diagnostic Characters DXVI-XVIII 7-10; A III 6-8; P 12; V I 5.

Body elongated, compressed. Snout bluntly rounded. Lower jaw longer. A single dorsal fin inserted above base of pectoral fins, with 10 to 18 spines and 7 to 10 rays. Anal fin with three spines and 6 to 8 rays. Lateral line interrupted with 26 to 33 scales. Caudal fin wedge shaped.

Geographical Distribution : Throughout India.

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

Fishery Information : It attains a maximum length of about 8 cm. It is column feeder and feeds mainly on mosquito larval. The Badis is of interest as an aquarium fish.

Remarks : Inhabits fresh waters; in rivers, ponds and ditches. It is one of the most colourful fish in this family. This is a solitary fish spending much of its time motionless. The adult males are highly territorial.

Genus *Nandus* Valenciennes 1831

1831. *Nandus* Valenciennes, *Hist. nat. Poiss.*, 7 : 481. (type-species : *Nandus marmoratus* Cuvier = *Coius nandus* Hamilton-Buchanan).

Body oblong and compressed. Mouth large and highly protrusible; lower jaw projecting; maxilla reaches beyond hind edge of orbit. Teeth villiform on jaws, palate and tongue. Eye large. Nostrils close together. Operculum triangular, with a single prominent spine. Dorsal fin with 12 to 14 spines and 11 to 13 soft rays; anal fins with 3 spines and 7 to 9 soft rays. Caudal fin more or less rounded. Scales ctenoid; lateral line incomplete.

188. *Nandus nandus* (Ham-Buch)

1822. *Coius nandus* Hamilton-Buchanan, *Fishes of Ganges*, : 96, 370, pl. 30, fig. 32 (type-locality : ponds of Gangetic provinces).

1991. *Nandus nandus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 878-879, fig. 265.

Common Name : Mottled Nandus.

Diagnostic Characters : D XII-XIV 11-13; P15; AIII 7-9; V15.

Body deep and compressed. Mouth very large, protrusible. Dorsal spine strong; anal spines moderately strong, second spine longest. Lateral line interrupted at about 36th scale, 46 to 57 in longitudinal series.

Material examined: 2 exs., 112-125 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh; Myanmar and Thailand.

Fishery Information : It attains a length of about 20 cm and common in ditches and inundated fields. It is very popular in West Bengal, though now a days its catch is very much declining. It is a high-priced fish and available in summer months when this fish is collected from dried up tanks, beels, bheries, etc.

Genus *Pristolepis* Jerdon 1848

1848. *Pristolepis* Jerdon, *Madras J. Lit. & Sci.*, 15 : 141 (type-species : *Pristolepis marginatus* Jerdon).

Body deep and compressed. Mouth small, slightly protractile. Maxilla reaches front edge of orbit. Teeth villiform on jaws and palate, villiform or globular on prevomer and globular on base of tongue. Operculum with two flattened spines and preoperculum serrated. Dorsal fin with 12 to 16 spines and 11 to 16 soft rays; anal fin with 3 (rarely 4) spines and 8 or 9 soft rays. Caudal fin rounded.

189. *Pristolepis marginatus* Jerdon

1848. *Pristolepis marginatus* Jerdon, *Madras J. Lit. & Sci.*, 15 : 141 (type-locality : Manantoddy river, North Malabar).

1991. *Pristolepis marginata* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 881.

Common Name : Malabar Catopra.

Diagnostic Characters : DXLV-XVIII 11-14; AIII-IV 8; P14-15; V15

Body short oblong, compressed. Snout sharply rounded. Lips thin. Jaws equal. Opercle with two flat spines. Preopercle and preorbital serrated. Teeth on vomer villiform. Dorsal fin inserted above pectoral fin base with 12 to 16 spines and 11 to 16 rays. Anal fin with 3 or 4 spines and 8 or 9 rays. Caudal fin rounded.

Material examined : i) 1 ex., Ghod river, Dimbhe Dam, Bhimashankar, Pune, G.M. Yazdani, 11.08.94; ii) 7 exs., Pond near Wagholi, Pune, B. Yadav, 10.06.91; iii) 27 exs., Katraj tank, Pune, S.G. Patil, 05.04.95.

Geographical Distribution : India : Western Ghats of Kerala, Mananthanady river, Wyanaad; also in Maharashtra.

Fishery Information : It attains a length of about 15 cm in standard length. Inhabits clear and rapid streams. This species is of only minor interest to fisheries.

Family CICHLIDAE

Genus *Eetroplus* Cuvier 1830

1830. *Eetroplus* Cuvier, *Hist. nat. Poiss.*, 5 : 486 (type-species : *Eetroplus meleagris* Cuvier = *Chaetodon suratensis* Bloch).

Body deep and compressed. Head small; mouth small and terminal; teeth villiform, in two or three rows on jaws. Dorsal fin inserted above pectoral fin base, with 17 to 22 spines and 8 to 15 soft rays. Anal fin with 12 to 16 spines and 6 to 12 soft rays. Pelvic fins thoracic, with 1 spine and 5 soft rays. Caudal fin lunate. Scales of moderate size; lateral line interrupted. Branchiostegal rays 6.

Key to the species of Genus *Eetroplus*

1. Body with three dark blotches along flanks; dorsal fin with 17 to 20 spines and 8 to 10

soft rays; anal fin with 12 to 15 spine and 8 or 9 soft rays *E. maculatus*

- Body with about eight vertical bands; dorsal fin with 18 or 19 spines and 14 to 15 soft rays; anal fin with 12 or 13 spines and 11 or 12 soft rays *E. suratensis*

190. *Eetroplus maculatus* (Bloch)

1785. *Chaetodon maculatus* Bloch, *Syst. Ichth.*, : pl. 427, fig. 2 (type-locality : India).

1991. *Eetroplus maculatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 886.

Common Name : Orange Chromide.

Local Name : Thikree.

Diagnostic Characters : D XVII-XX 8-10, A XII-XV 8-9; P i 15-16; V I 5.

Body compressed. Abdomen rounded. Mouth terminal, cleft small. Body with one to three dark blotches along sides. Pectoral fin with 17 to 20 spines. Caudal fin lunate. Lateral line interrupted with about 35 scales in longitudinal series.

Material examined : i) 1 ex, Bav river at Nive villege on Sangameshwar-Maleshwar Road, dist. Ratnagiri, 29.11.1990, P.P. Kulkarni; ii) 6 exs., 65-73 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Tamil Nadu, Kerala and Karnataka (south). Introduced in Andhra Pradesh and Maharashtra.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of 9 cm and of little fishery value. Inhabits fresh and brackish waters along coastal areas.

191. *Eetroplus suratensis* (Bloch)

1785. *Chaetodon suratensis* Bloch, *Syst. Ichth.*, : 217 (type-locality : ? Surat).

1991. *Eetroplus suratensis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 885-887, fig. 267.

Common Name : Banded pearlspot, Striped chromide.

Diagnostic Characters : D XVIII-XIX 14-15; A XII-XIII 11-12; P i 16; V I 5.

Body very deep, oval and strongly compressed. Eyes large, its diameter 3 to 4 in head length. Mouth small; teeth villiform. Caudal fin slightly emerginate. Scales weakly ctenoid; lateral line interrupted at 16th to 18th scales; 35 to 40 scales in longitudinal series.

Material examined : 1 ex., 140 mm, Godavari river near Gobardhan Ghat, 3 km south of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Maharashtra.

Elsewhere : Sri Lanka.

Fishery Information : It attains a length of about 40 cm; inhabits brackishwaters and mouth of rivers. It is an excellent delicious fish, especially when large, with a good market value. Very common in brackish waters of Kerala, Tamil Nadu, Andhra Pradesh and Orissa. This fish is extensively cultivated in ponds and tanks where it breeds naturally.

Genus *Oreochromis* Gunther 1889

1889. *Oreochromis* Gunther, *Ann. Mag. Nat. Hist.*, (6) 4 : 70 (type-species : *Oreochromis hunteri* Gunther).

Body more or less elongate and laterally compressed. Mouth large and terminal; teeth on jaws in 3 to 5 rows. Dorsal fin inserted above base of pectoral fins, with 15 to 16 spines and 10 to 12 soft rays; anal fin with 3 spines and 10 or 11 soft rays. Caudal fin truncate.

192. *Oreochromis mossambica* (Peters)

1852. *Chromis (Tilapia) mossambicus* Peters, *Montab. Akad. Wiss., Berlin*, : 681 (type-locality : Mozambique).

1983. *Oreochromis mossambicus* : Trewavas, *Tilapiine Fische* : 292, fig. 100.

Common Name : Mozambique cichlid.

Local Name : Tilapia.

Diagnostic Characters : D XV-XVI 10-12; A III 10-11; P 14-15; V I 5.

Body more or less elongate. Abdomen rounded. Mouth terminal large. Dorsal fin inserted above base of pectoral fins with 15 spines and 10 or 12 rays. Anal fin with 3 spines. Caudal fin rounded. Lateral line incomplete, with 30 to 32 cycloid scales.

Material examined : i) 2 exs., Pashan tank, Pune, G.R. Dangat, 20.06.94; ii) 2 exs., Pashan tank, Pune, G.R. Dangat, 20.09.95; iii) 1 ex., Reservoir at Talegaon, Pune, S.Thakur, 06.04.02; iv) 3 exs., Taleja Khadi, Panvel, Raigad dist., M.S. Pradhan.

Geographical Distribution : India : Introduced.

Elsewhere : East Africa; Introduced in Bangladesh; Sri Lanka; Pakistan, etc.

Fishery Information : This fish was introduced in India in 1952 and cultured in freshwater ponds. It is hardy fish, but unsuitable for aquaculture along with major carps because of its adverse effect on growth and production of carps. The Tilapias became an important food fish in India and customer demand for tilapia has increased dramatically. It is suitable for farming because it can be easily breed, and are high-yielding.

193. *Oreochromis niloticus* (Linnaeus)

2005. *Oreochromis niloticus* : Rahman, *Freshwater Fishes of Bangladesh*, : 29-30.

Diagnostic Characters : This species differs from the former species in not having a bright red margin to the dorsal fin.

Material examined : 2 exs., 75-115 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : Natural habitat are the rivers and lakes in West,North and South Africa; India (Introduced).

Elsewhere : Indonesia; Malaysia; Phillipines; Thailand; Sri Lanka; Pakistan; Vietnam; China and other countries in Asia (Introduced).

Fishery Information : The Nile tilapia is one of the most widely cultured species in the world.

It grows faster than *Tilapia mossambica* and dominate in production also. Like Mozambique *Tilapia* it also became an important food fish in India; but not suitable for culture along with Indian major carps.

Family GOBIIDAE

Genus *Glossogobius* Gill, 1862

1862. *Glossogobius* Gill, *Ann. Lye. Nat. Hist. New York*, 7 : 46 (type-species : *Gobius platycephalus* Peters = *Gobius giuris* Hamilton-Buchanan).

Body elongate, anteriorly cylindrical, posteriorly compressed. Head depressed, pointed; scaled above behind eyes. Gill openings from below rear of preopercle to below eyes. Isthmus narrow. Mouth slightly oblique; lower jaw prominent. First dorsal with 6 spines; second one with 1 spine and 6 to 10 soft rays. Pelvic fin united forming a disc. Caudal fin oblong to rounded. 28 to 36 scales along lateral series.

194. *Glossogobius giuris* (Ham-Buch)

1822. *Gobius giuris* Hamilton-Buchanan, *Fishes of Ganges*, : 51, pl. 33, fig. 15 (type-locality : Gangetic provinces).
1991. *Glossogobius giuris* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 936.

Common Name : Tank goby.

Local Name : Khapya, Khabi.

Diagnostic Characters : D VI+I 8-9; A I 7-8; P i 16-21.

Body elongate and somewhat compressed. Eyes small; iris without process in pupil. Branchiostegal membranes attached to isthmus. Dorsal, pectoral and caudal fins mottled with dark spots, spots darkest along spine of second dorsal fin.

Material examined : i) 2 exs., Panshet, Pune, D.F. Singh, 12.07.89; ii) 1 ex., Alandi, Pune, A.S. Mahabal, 10.05.77; iii) 1 ex., Nalla near Futijawal gaon, 7 km north of Tembhurni, A.S. Mahabal, 23.08.83; iv) 10 exs., Pathardi tank, Latur Road, Barshi, A.S. Mahabal, 29.11.78; v) 1 ex., Telinala, Tadoba National Park, S.G. Patil, 13.08.95; vi) 1 ex., Kund, Purna river, Jalgaon, R.H. Kamble, 06.02.79; vii) 1 ex., Godavari river, Paithan,

Aurangabad, R.N. Chopra, 26.09.64; viii) 1 ex., Mutha river, MES College, Pune, R.N. Chopra, 08.03.65; ix) 1 ex., Mula river, Vishrautwadi, Pune, R.N. Chopra, 20.04.63; x) 1 ex., Mutha river, Sambhaji Park, Pune, R.N. Chopra, 29.09.63; xi) 1 ex., Wagh river, Ozar, Nasik, B.S. Lamba, 20.12.64; xii) 1 ex., Moshi, Pune, B.S. Lamba, 06.10.66; xiii) 1 ex., Paud, Pune, D.N. Tiwari, 15.12.65; xiv) 1 ex., Mutha river, Lakadi bridge, Pune, R.N. Chopra, 04.05.63; xv) 2 exs., Khed, Pune, R.N. Chopra, 03.10.70; xvi) 1 ex., Pashan tank, Near ARDL colony, Pune, C.B. Prashad, 20.07.74; xvii) 6 exs., Katraj tank, Pune, U.A. Gajbe, 11.09.74; xviii) 1 ex., Kila Bandar, Bassain, Thane dist., G.M. Yazdani, 10.03.82; xix) 3 exs., Bhima river, Koregaon, Pune, G.M. Yazdani, 24.01.87; xx) 9 exs., Karwa river, Pimpalgaon, Dupra, Nasik dist., G.M. Yazdani, 18.02.88. xxi) 1 ex., 134 mm, Koyna river, Korad (Purchased) ,05.09.64, K.K. Tiwari; xxii) 2 ex., 74-86 mm, Bavada Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; xxiii) 5 exs., 75-94 mm, Sina river at Mohol, 35 km n.w. of PWD Rest House, Kolhapur, 24.03.85, A.K. Karmakar; xxiv) 1 ex., 97 mm, Krishna river at Umadgaon, 18 km n.w. of PWD Rest House, Miraj, 17.03.85, A.K. Karmakar; xxv) 1 ex., 196 mm, Ekrukh Reservoir, 10 km north of PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; xxvi) 1 ex., 135 mm, Sina river at Aurad, 28 km south of PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; xxvii) 1 ex., 250 mm, Ujjani Reservoir near Kalashi, 25 km away from Ujjani Dam, 26.03.85, A.K. Karmakar; xxviii) 2 exs., 135-140 mm, Krishna river near Mhaishal Dam, 14 km s.w. of PWD Rest House, Miraj, 16.03.85, A.K. Karmakar; xxix) 1 ex., 50 mm, Kolar river, 15 km north of Nagpur, 02.04.05, A.K. Karmakar xxx) 9 exs., 76-111 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon dist., 06.04.05, A.K. Karmakar; xxxi) 2 exs., 72-105 mm, Satpur Fish market at Nasik (Godavari river coll.), 08.04.05, A.K. Karmakar; xxxii) 9 exs., 80-125 mm, Gangapur Reservoir on Godavari river, 10 km n.w. of Govt. Guest House, Nasik, 09.04.05, A.K. Karmakar; xxxiii) 2 exs., 78-81 mm, Darna Reservoir, 40 km s.w. of Govt. Guest House, Nasik, 10.04.05, A.K. Karmakar. xxxiv) 1 ex.,

125 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar; xxxv) 6 exs., 71-103 mm, Godavari river at Sikar Ghat, 12 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar; xxxvi) 2 exs., 110-122 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Remarks : Inhabits primarily in freshwater and estuaries; also in the sea.

Genus *Stigmatogobius* Bleeker., 1874

1874. *Stigmatogobius* Bleeker Arch. Neerl. Sci. Nat., 9 : 323 (type-species : *Gonius pleurostigma* Bleeker = *Gobius sadanundio* Hamilton-Buchanan)

Body elongate and slightly compressed. Head more or less compressed and depressed, scaled above behind eyes. Gill opening narrow, isthmus broad. Mouth oblique, teeth on jaws in several rows. Pelvic fins united; caudal fin obtuse. Scales ctenoid on posterior part of body, more cycloid on anterior part. Head and belly scaled.

195. *Stigmatogobius javanicus* (Bleeker)

1856. *Gobius javanicus* Bleeker, *Natuurk. Tijdschr. Ned. Indie*, 11 : 88 (type-locality: Java).
1991. *Stigmatogobius javanicus*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 947-948.

Diagnostic Characters : D₁ VI, D₂ I 6-7; A I 6-7; P i 14.

Body elongate. Mouth slightly oblique, upper jaw prominent; teeth on jaw in several rows. Scales large, 25 to 27 in longitudinal series. Pre-dorsal scales 6 to 8.

Geographical Distribution : India : Mumbai, Chilka lake, Madras, Port Blair.

Elsewhere : Indo-Australian Archipelago, Philippines, Queensland, Tasmania.

Fishery Information : It attains a length of about 4.5 cm; and is of no interest to fisheries. Common in the Chilka lake and Godavari estuary.

Genus *Pseudogobiopsis* Koumans, 1935

1935. *Pseudogobiopsis* Koumans, *Zoologische Mededelingen* (Leiden), 18 : 121-150 (type-species : *Gobiopsis oligactis* Bleeker).

196. *Pseudogobiopsis oligactis* (Bleeker)

1875. *Gobiopsis oligactis* Bleeker, Arch. neerland. Sci. Nat., 10 : 113-134.
(type-locality : Abar Island, Moluccas Island, Indonesia).
1999. *Stigmatogobius oligactis*, Arunachalam et al, New record of *Stigmatogobius oligactis* (Bleeker) from India, *J. Bombay nat. Hist. Soc.*, 96(1) : 167.
2009. *Pseudogobiopsis oligactis* : Larson; *Raffles Bull. Zool.*, 57(1) : 127-181.

Diagnostic Characters : DIV+I 6-7; AI 5-7; P 16-19. Body elongate, anteriorly cylindrical, posteriorly compressed. Head depressed. Snout convex, tongue bilobate. Head scaled above, behind the eye and laterally on opercle with large cycloid scales. Head with crowded blackish spots on lateral sides.

Geographical Distribution : India : Dhom Dam, Krishna river, Satara Dist., Maharashtra.

Elsewhere : Southern & South eastern Asia
Bangladesh to Thailand to Indonesia.

Family ANABANTIDAE

Genus *Anabas* Cuvier & Cloquest 1816

1816. *Anabas* Cuvier and Cloquest, *Dictionnaire des Sciences naturelles* (ed 2), 2, Suppl. : 35 (type-species : *Perca scandens* Daldoff = *Anthias testudineus* Bloch).

Body oblong and compressed. Head and anterior part of body broad, posterior portion compressed. Mouth small, terminal; upper jaw slightly protrusile. Dorsal fin inserted above pectoral fin base, with 16 to 18 spines and 8 to 10 soft rays. Anal fin with 8 to 10 spines and 9 to 11 soft rays. Caudal fin rounded. Lateral line interrupted with 21 to 29 ctenoid scales.

Key to the species of Genus *Anabas*

1. Depth of body 3.0 to 3.5 times in standard

length; snout length 13.0 to 17.5 times in standard length *A. testudineus*

- Depth of body 2.2 to 2.8 times in standard length; snout length 10.5 to 12.5 times in standard length *A. cobojius*

197. *Anabas cobojius* (Ham-Buch)

1822. *Coilus cobojius* Hamilton-Buchanan, *Fishes of Ganges*, : 98, 370, pl. 13, fig. 33 (type-locality : Gangetic provinces).

1999. *Anabas cobojius* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 996.

Common Name : Gangetic Koi.

Diagnostic Characters: D XVI-XVIII 9-10; A IX-XI 9-11; P i 13-15; V I 5.

Body elongate and fairly deep, its depth 2.2 to 2.8 and snout length 10.5 to 12.5 in standard length. Mouth fairly large; teeth villiform on jaws. Scales large, lateral line scales 25 to 28.

Material examined: 1 ex., 114 mm, Ramala Talab, 1.5 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar.

Geographical Distribution : India : West Bengal; Orissa; Andhra Pradesh, Kerala and Maharashtra (New record).

Elsewhere : Bangladesh and Borneo.

Fishery Information : It is a valuable food fish in West Bengal and Andhra Pradesh. This species is very hardy and can live out of water for a long period. It is established as a valuable item of diet for sick and convalescent.

198. *Anabas testudineus* (Bloch)

1795. *Anthias testudineus* Bloch, *Natarges Ausland Fische*, (6) : 121, pl. 322 (type-locality : ? Java).

1991. *Anabas testudineus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 996-998, fig. 283.

Common Name : Climbing perch.

Diagnostic Characters: D XVI-XVIII 8-10; A VIII-XI 9-11; P i 13-14; V I 5.

Body elongate and moderately deep. Body depth 3.0 to 3.5, snout 5.7 to 7.7 times in standard

length. Dorsal fin with eight to ten rays. Scales large, 21 to 29 in lateral series.

Material examined: i) 1 ex, Parel, Bombay, 2.6.1908, S. H. Fraser.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Bangladesh; Sri Lanka; Myanmar; Malay Archipelago; Singapore and Philippines.

Fishery Information : It attains a length of about 20 cm and is of considerable fisheries interest. Despite its moderate size, this fish is regarded as highly esteemed fish for its flavour, restorative values and prolonged freshness.

Family BELONTIDAE

Genus *Colisa* Cuvier, 1831

1831. *Colisa* Cuvier, *Hist. nat. Poiss.*, 7 : 359 (type-species: *Trichopodus colisa* Hamilton-Buchanan = *Trichogaster fasciatus* Schneider).

Body oblong and compressed. Mouth small and highly protrusile. Jaws with fixed conical teeth; palate devoid of teeth. Ventral border of preopercle serrated. Dorsal fin long with 15 to 18 spines and 6 to 14 soft rays. Anal fin with 15 to 22 spines and 11 to 20 soft rays. Pelvic fin with a single elongated filamentous ray and a rudimentary adnate spine. Lateral line often absent or vestigial., usually present comprising an upper anterior and a lower posterior portion.

199. *Colisa fasciatus* (Schneider)

1801. *Trichogaster fasciatus* Schneider, *Syst. Ichth.*, : 164, pl. 36 (type-locality : Tranquebar).

1991. *Colisa fasciatus*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 1006.

Common Name: Striped Gourami, Giant Gourami.

Diagnostic Characters: D XV-XVII 9-14; A XV-XVIII 14-19; P 9-10.

Body oval and strongly compressed. Mouth small, slightly protrusile. Dorsal and anal fin long-based. Pelvic fin thread-like. Caudal fin truncate. Scales large, 29 to 31 in longitudinal series; anal fin scaly at base only.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh and Upper Myanmar.

Fishery Information : It attains a length of about 12 cm, a peaceful and beautiful aquarium fish. It is traditionally liked for its good taste. It is easily bred and adapts well to life in community aquaria.

Genus *Macropodus* Lacepede 1802

1802. *Macropodus* Lacepede, *Hist. nat. Poiss.*, 3 : 417 (type-species : *Macropodus viridiauratus* Lacepede = *Labrus opercularis* Linnaeus).

Body oblong and more or less compressed. Mouth small and slightly protrusile; jaws with fixed conical teeth. Lower margin of pre-opercle serrated. Dorsal fin inserted above anal fin, with 13 to 15 spines and 5 to 7 soft rays; anal fin with 16 to 20 spines and 9 to 13 soft rays. Pelvic fin with 1 spine and 5 soft rays, its first ray filamentous. Scales large, lateral line ceases after 8-10 scales. Dorsal and anal fins with a basal scaly sheath.

200. *Macropodus cupanus* (Valenciennes)

1831. *Polyacanthus cupanus* Valenciennes, *Hist. nat. Poiss.*, 7 : 357 (type-locality : Ariancoupan river at Pondicherry).
1991. *Macropodus cupanus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 1002-1003, fig. 286.

Common Name: Paradise Fish.

Local Name : Chhoti Khajuri.

Diagnostic Characters: D XIV-XVII 5-7; P 10; V i 5; A XVI-XIX 9-11.

Opercle non-spinate, serrated. Preorbital serrated. Dorsal spine not so high as soft rays. Caudal fin wedge shaped. Lateral line incomplete with 29 to 32 scales. A round dark spot at the base of caudal fin and numerous small spots on head.

Geographical Distribution : India : South India.

Elsewhere : Bangladesh; East and South East

Asia; Java; Malaya; Malay Archipelago; Pakistan; Sri Lanka.

Fishery Information : It attains a length of about 7.5 cm; a fairly good larvivorous fish. This species is hardy and often used in the aquarium.

Family OSPHRONEMIDAE

Genus *Osphronemus* Lecepede, 1802

- 1802 *Osphronemus* Lacepede, *Hist. nat. Poiss.*, 3 : 116 (type-species: *Osphronemus olfax* Cuvier = *Osphronemus goramy* Lacepede).

Body more or less deep and compressed. Eyes placed in anterior half of head. Mouth small, protrusile; lips thin. Spinous part of dorsal fin longer than soft part. Outer ray of pelvic fin much elongates, reaches beyond caudal fin. Lateral line complete and continuous.

Monotypic.

201. *Osphronemus goramy* Lacepede

1802. *Osphronemus goramy* Lacepede, *Hist. nat. Poiss.*, 3 : 116, Pl. 8, Fig. 2 (type-Localities : ? Mauritius).
1876. *Osphronemus olfax* Cuvier: Day, *Fishes of India*, : 372, pl. 79, fig. 6.
1991. *Osphronemus goramy*: Talwar and Jhingran, *Inland Fishes of India and Adjacent countries*, 1012-1013, fig. 288.

Common Name : Giant Gouramy.

Diagnostic Characters : D XI-XIII 11-12; A IX- XII 19-21; P i 11; V i 5.

Body oval, strongly compressed. Head relatively small. Mouth small; teeth small and conical on jaws. Outer ray of pelvic fin filamentous and extends beyond caudal fin. Lateral line complete , with 30 to 35 scales.

Geographical Distribution: Sumatra, Borneo and Java; introduced in many tropical countries including India.

Remarks: It is one of the most celebrated of Asian food fishes and an important species in freshwater aquaculture in tropical Asia. It naturally breeds in stream and ponds. This species does not thrive in brackish or saline water.

Family MUGILIDAE

Genus *Liza* Jordon and Swain, 1884

1884. *Liza* Jordon and Swain, *Proc. U.S. natn. Mus.*, 7 : 261 (type-species : *Mugil capito* Cuvier).

Body robust; head wide and flattened above. Spine on operculum absent. Anterior nostrils above level of eye-centre. Lip thin, lower lip with a high symphysial knob; maxilla and premaxilla curved downwards, maxilla end exposed when mouth shut. Anal fin with 3 spines. Caudal fin forked. Scales ctenoid or cycloid; pectoral axillary scale rudimentary or absent.

Key to the species of Genus *Liza*

1. Transverse rows of scales less than 12 2
2. Second dorsal fin inserted over posterior half of anal fin base *L. tade*
- Second dorsal fin inserted over anterior half of anal fin base. First dorsal fin origin nearer to snout tip than to caudal fin base; transverse rows of scales 11 *L. parsia*

202. *Liza parsia* (Ham-Buch)

- 1822.. *Mugil parsia* Hamilton-Buchanan, *Fishes of Ganges*, : 215, pl. 17, fig. 71 (type-locality : freshwater rivers of Bengal).
1991. *Liza parsia* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 893-894, fig. 268.

Common Name : Goldspot mullet.

Diagnostic Characters : D₁IV D₂ 18; AIII 9; P14; V15.

Body slender. Head dorsally flattened. Adipose tissue covers most of iris posteriorly and part of it anteriorly. Pre-arbital wide. First dorsal fin inserted nearer to snout tip than to caudal fin base. Pectoral fin 76 to 79% of head length. Dorsal and anal fin densely scaled. Scales on lateral line 31 to 36.

Geographical Distribution : India : East and West coast entering tidal rivers and estuaries. Common in West Bengal and Andamans.

Elsewhere : Bangladesh.

Fishery Information : It attains a length of about

40 cm in natural waters and 25 cm in ponds. This is a common mullet in Hooghly-Matlah estuary (W.B.) and Mahanadi estuary (Orissa). A minor fishery of this mullet exists in the Pulicat lake (Tamil Nadu) and the Kayamkulam and Vembanad lake (Kerala).

203. *Liza tade* (Forsskal)

1775. *Mugil crenilabis tade* Forsskal, *Descript. Animal.*, : 74 (type-locality : Arabia).
1889. *Mugil tade* : Day, *Fauna Br. India, Fishes*, 2 : 344.
1991. *Liza tade* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 894-895.

Common Name : Tade mullet.

Diagnostic Characters : D₁IV, D₁18; AIII 9; P17; V15.

Body slender and elongate. Head much depressed and pointed. Adipose tissue covers most of iris. Pre-arbital wide. Pectoral fin length 75-79% of head length. Second dorsal and fin densely scaled. Lateral line scales 30-35.

Geographical Distribution : India : Kerala and Maharashtra coast. Common in east coast entering tidal rivers and estuaries. Also in Andamans.

Elsewhere : Bangladesh.

Fishery Information : It attains a length of about 47 cm. This species contributes a minor fishery in the Hooghly-Matlah estuary (West Bengal) and the Mahanadi estuary (Orissa). It also forms an important fishery in the Kayamkulam lake (Kerala). This fish is capable of adapting to freshwater; cultivated in brackish waters in our country. When freshly caught, have a good market value.

Genus *Mugil* Linnaeus, 1758

1758. *Mugil* Linnaeus, *Systema Naturae*, ed. 10, 1 : 316 (type-species : *Mugil cephalus*, Linnaeus).

Body robust; head flattened dorsally. No spine on operculum. Anterior nostrils above level of centre of eye. Adipose eye lid well developed. Maxilla and pre-maxilla not hooked downwards, hence maxilla not exposed when mouth closed. Lips thin, lower lip with a symphysial knob. Anal

fin with 3 spines and 8 soft rays. Scales mainly cycloid; pectoral axillary scale long and pointed. Lateral line scales 38 to 42.

204. *Mugil cephalus* Linnaeus

1758. *Mugil cephalus* Linnaeus, *Systema naturae*, ed. 10, 1 : 316 (type-locality : European sea).

1991. *Mugil cephalus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 896-897.

Common Name : Flat head mullet.

Local Name : Pilsa.

Diagnostic Characters : D_1 IV, D_2 18, A III 8; P 15; V 15.

Body robust. Head broad and much flattened dorsally. Lipsthin, lower lip with a symphysial knob. preorbital slender. Pectoral fin 66 to 74% of head length. Pectoral axillary scales long. Lateral line line scales 38-42

Geographical Distribution : India : very common in both east and west coasts of India, ascending tidal rivers and estuaries.

Elsewhere : Pakistan; Caroline islands; East Indies; New Guinea; Japan; Hawaii.

Fishery Information : This fish is a common species of mullets in the Indian region. In the Chilka lake (Orissa) it is the most abundant mullet. In Mahanadi and Godavari estuaries also this species is common. In Pulicat lake (Tamil Nadu) this fish is also abundant in catches. It is capable of surviving in ponds with high salinity.

Genus *Rhinomugil* Gill 1863

Rhinomugil Gill *Proc. Acad. Nat. Sci. Philad.*, 15 : 169 (type-species: *Mugil corsula* Hamilton – Buchanan).

Body fairly stout and elongated. Head concave between eyes; eyes prominent and almost on top of head. No spine on operculum. Anterior nostril at level of eye-centre, or lower. Mouth Conspicuously ventral; lips thin, directed downward, without lobes or papillae. Maxilla and premaxilla not strongly bent downward posteriorly. Caudal fin emerginate. Scales ctenoid in adults, cycloid in young.

Monotypic

205. *Rhinomugil corsula* (Ham-Buch)

1822. *Mugil corsula* Hamilton-Buchanan, *Fishes of Ganges*, pp. 221, 381, pl. 9, fig. 97 (type locality : Gangetic provinces).

1999. *Rhinomugil corsula*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 293.

Local Name : Vardoli.

Common Name : Corsula mullet.

Diagnostic characters : D_1 IV, D_2 I 8; A III 9; P 16; V I 5.

It has dorsally placed eyes and swims in shoals. Scales in lateral line 48 to 52. Head slightly depressed. Snout short, flat overhanging. Mouth ventral and protrussible. Two dorsal fins present.

Material examined : i) 4 exs., Nira river, Shirwal, Pune, 17.05.83, M.S. Pradhan; ii) 1 ex., Bori river, Jalgaon, 25.07.92, P.G. Student Pratap College, Amalner. iii) 1 ex., 210 mm, Bhima river at Degaon, 10 km from PWD Rest House, Pandharpur, 21.03.85, A.K. Karmakar. iv) 1 ex., 250 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical distribution : India : Mahanadi, Chilka lake, Ganga, Cauvery, Bhima, Godavari rivers, Ujani Dam.

Elsewhere : Bangladesh, Nepal, Myanmar.

Remarks : A native of Indo-Gangetic belt has spread southwards up to Cauvery drainage. Nelson (1994) separated *Mugiliformes* from *Perciformes* and considered series *Mugilimorpha*.

Family CHANNIDAE

Genus *Channa* Scopoli, 1777

1777. *Channa* Scopoli, *Introd. Hist. Nat.*, : 459 (type-species : *Channa orientalis* Bloch & Schneider).

Body elongate, almost cylindrical anteriorly and somewhat compressed posteriorly. Head large, with plate like scales. Cephalic pits present. Mouth fairly large, lower jaw protruding beyond upper jaw. Dorsal and anal fin long-based, both spineless and free from caudal fin. Dorsal fin inserted almost

above pectoral fin, with 29 to 55 rays. Anal fin with 21-36 rays. Caudal fin rounded.

Key to the species of Genus *Channa*

1. 4 to 5 scales between orbit and angle of preopercle. 12 to 13 predorsal scales 2
- 9 to 10 scales between orbit and angle of preopercle. 15 to 20 predorsal scales 4
2. Anal finrays 27; dorsal finrays 39 or 40; black spots on many scales of body .. *C. stewartii*
- Anal finrays 20 to 23; dorsal finrays 28 to 37 3
3. Pelvic fin less than half length of pectoral fin. Pectoral fin spotted in zones, darker and lighter patches. No black spot on scales. Dorsal finrays 32 to 37 *C. orientalis*
- Pelvic fin more than half length of pectoral fin. Pectoral fin plain. Dorsal finrays 28 to 32 *C. punctatus*
4. 18 to 20 predorsal scales. Several dark vertical bands below lateral line *C. striatus*
- 15 to 16 predorsal scales. A large black white edged ocellus on caudal fin base *C. marulius*

206. *Channa marulius* (Ham-Buch)

1822. *Ophiocephalus marulius* Hamilton-Buchanan, *Fishes of Ganges*, : 65, 367, pl. 17, fig.19 (type-locality : Gangetic provinces).

1991. *Channa marulius* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 1017-1018.

Common Name : Giant snakehead.

Local Name : Moral, Kalamasa.

Diagnostic Characters : D 45-55; A 28-36; P 16-18; V 6.

Mouth large. Lower jaw with 7 to 18 canines. Pectoral fin about half the head length, 9 or 10 scales between orbit and angle of preopercle. 15 to 16 predorsal scales. No such colour markings on lateral line. A black white-edged ocellus on basal portion of caudal fin present.

Material examined : i) 1 ex., Rajbagh, Loni,

Pune, B.S. Lamba, 07.08.71; ii) 2 exs., Panchganga river, Kolhapur, J. Samant, 04.08.87. ii) 2 exs., 182-210 mm, Koyna river, Korad (Purchased), 05.09.64, K.K. Tiwari; iii) 2 exs., 200-225 mm, Bavada Dharan, Pancha Ganga River, Kolhapur, 10.09.64, K.K. Tiwari; iv) 1 ex., 340 mm, Ujani Reservoir near Kanda, 10 km away from Ujani Dam, 26.03.85, A.K. Karmakar; v) 1 ex., 276 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar. vi) 1 ex., 98 mm, Ramala Talab, 1.5 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Sri Lanka; Bangladesh; Nepal; Myanmar; Thailand and China.

Fishery Information : It attains a length of about 120 cm. A favourite sporting fish, is cultured in irrigation wells in part of South India. In the Telangana area of Andhra Pradesh, it forms an important part in the freshwater fishery. Giant snakeheads are common in rivers of Duars in West Bengal. In Maharashtra this species grows well and attains about 30 kg in weight. This fish is esteemed as food, but avoided in culturable waters because of its carnivorous nature.

207. *Channa orientalis* Bloch & Schneider

1801. *Channa orientalis* Bloch and Schneider, *Syst. Ichth.*, : 496, pl. 90, fig. 2 (type-locality : India).

1991. *Channa orientalis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 1019-1020, fig. 289.

Common Name : Asiatic snakehead.

Local Name : Dokrya, Daku.

Diagnostic Characters : D 32-37; A 20-23; P 14-15; V 6.

Pelvic fins less than half length of pectoral fins. Pectoral fins spotted in zones, darker and lighter patches. Chin marbled. Anal fin with 20 to 23 rays. No black spots on scales. Dorsal fin with 32 to 37 rays.

Material examined : i) 1 ex., Pashan tank, Pune, U.A. Gajabe, 04.09.74; ii) 1 ex., Moshi, Pune,

B.S. Lamba, 08.02.68; iii) 1 ex., Bhama river, Khed, Pune, K. Reddiah, 03.07.76; iv) 1 ex., Loni, Pune, B.S. Lamba, 18.09.71; v) 1 ex., Khed, Pune, B.S. Lamba, 18.08.76; vi) 1 ex., Kamshet, M.S. Pradhan, 02.01.79; vii) 1 ex., Nandgaon, Bhore, Pune, Ramakrishna, 20.03.82; viii) 3 exs., Khed, Pune, B.S. Lamba, 03.02.70; ix) 3 exs., Alkheda, Chopda, Jalgaon, R.H. Kamble, 25.11.83; x) 4 exs., Aner dam, Chopda, Jalgaon, R.H. Kamble, 25.11.83; xi) 1 ex., Kodav village, Karjat, Raigad, M.S. Pradhan, 03.10.81; xii) 11 exs., Khopoli, Pen, Kolaba, B.S. Lamba, 13.02.66; xiii) 1 ex., Danoli, Ratnagiri, B.K. Tikader, 21.02.65; xiv) 1 ex., Pirangut, Pune, R.N. Chopra, 22.12.66; xv) 1 ex., Bhosari, Pune, B.S. Lamba, 08.11.66; xvi) 1 ex., Talegaon, Pune, R.N. Chopra, 17.12.66; xvii) 1 ex., Talegaon, Pune, R.N. Chopra, 16.03.67; xviii) 6 exs., Moshi, Pune, R.N. Chopra, 22.06.67; xix) 1 ex., Bhosari, Pune, R.N. Chopra, 31.08.66; xx) 2 exs., Khadakwasla, Pune, R.N. Chopra, 31.08.65; xxi) 2 exs., Mahad, Kolaba dist., B.S. Lamba, 16.02.66; xxii) 2 exs., Hamalwadi, Aurangabad, R.N. Chopra, 04.09.64; xxiii) 1 ex., Moshi, Pune, R.N. Chopra, 07.12.66; xxiv) 3 exs., Khed, Pune, B.S. Lamba, 02.03.67; xxv) 2 exs., Lonavala, Pune, B.S. Lamba, 06.02.66; xxvi) 1 ex., Savitri river Poladpur, 12 km south of Mahad, B.S. Lamba, 16.02.66; xxvii) 3 exs., 110-118 mm, Morna river, 3 km from P.K.V. university Guest House, Akola, 04.04.05, A.K. Karmakar; xxviii) 2 exs., 75-82 mm, Waghur river (a tributary of River Tapi), 20 km south of PWD Rest House, Jalgaon, 06.04.05, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Iran; Pakistan; Sri Lanka; Nepal; Bangladesh; Myanmar and East Indies.

Fishery Information : It attains a length of about 20 cm and is of minor interest to fisheries in Indian region.

208. *Channa punctatus* (Bloch)

1793. *Ophiocephalus punctatus* Bloch, *Naturges ausland Fische*, (7) : 139, pl. 358 (type-locality : rivers and lakes of Coromandel coast).

1991. *Channa punctatus* : Talwar and Jhingran, *Inland*

Fishes of India and Adjacent Countries, : 1020-1021, fig. 290.

Common Name : Spotted snakehead.

Local Name : Maral, Mangsha.

Diagnostic Characters : D 28-33; A 20-23; P 15-18; V 6.

Eyes moderate, its diameter 7 to 8.5 times in head length. Mouth large, lower jaw with 3 to 6 canines, 4 or 5 scales between orbit and angle of preopercle, 12 or 13 predorsal scales. Pelvic fins more than half length of pectoral fins. Pectoral fins plain.

Material examined : i) 2 exs., 180-195 mm, Sina river at Aurad, 28 km south of PWD Rest House, Sholapur, 27.03.85, A.K. Karmakar; ii) 2 exs., 75-80 mm, Kolar river, 15 km north of Nagpur, 02.04.05, A.K. Karmakar; iii) 4 exs., 70-150 mm, Morna river, 3 km from P.K.V. University Guest House, Akola, 04.04.05, A.K. Karmakar; iv) 4 exs., 95-200 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar. v) 2 exs., 120-135 mm, Ramala Talab, 1.5 km south east of PWD Rest House, Nanded, 02.06.06, A. Karmakar; vi) 1 ex., 112 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Afghanistan; Pakistan; Sri Lanka; Nepal; Bangladesh; Myanmar and China.

Fishery Information : It attains a length of about 30 cm; very common along the plains of Indian region.

209. *Channa stewartii* (Playfair)

1867. *Ophiocephalus stewartii* Playfair, *Proc. Zool. Soc. Lond.*, 14, pl. 77, fig. 3 (type-locality : Cachar, Assam).

1991. *Channa stewartii*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 1021-1022, fig. 291.

Common Name : Assamese Snakehead.

Diagnostic Characters : D 39-40; A 27; P 17; V 6.

Body elongate and more or less rounded in cross section. Eye diameter about 6.5 in head length. Mouth large, lower jaw with some canine teeth; teeth on vomer and palate. Scales are large; 4 or 5 scale rows between pre-opercular angle and hind border of orbit. 47 to 50 scales in lateral series; pre-dorsal scales 13.

Geographical Distribution : India : mainly Eastern Himalaya.

Elsewhere : Nepal.

Fishery information : It attains a length of about 25 cm and is of minor fishery interest in the Eastern Himalayan region. Inhabits both running and standing waters.

210. *Channa striatus* (Bloch)

1793. *Ophiocephalus striatus* Bloch, *Naturges. Ausland. Fische*, (7) : 141, pl. 359 (type-locality : Malabar).

1991. *Channa striatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 1022-1023, fig.291.

Common Name : Banded snakehead.

Local Name : Dakhu.

Diagnostic Characters : D 37-46; A 23-29; P 15-17; V 6.

Scale rows 9 or 10 between orbit and angle of preopercle. Predorsal scales 18 to 20. Lateral line with peninsula of the darker colour extending into the yellow; several dark vertical bands below lateral line.

Material examined : i) 1 ex., Lakhephal, Nathsagar wetland, Aurangabad, 18.04.99 R.M. Sharma; ii) 2 exs., 94-100 mm, Ramala Talab, 1.5 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmkar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Sri Lanka; Bangladesh; Nepal; Myanmar; Malay archipelago; Thailand and South China.

Fishery Information : It attains a length of about 75 cm. this species is fairly common in the plains of India. In West Bengal, it is a popular and highly

priced fish, when freshly caught. This species is most widely distributed and economically the most important member of the genus *Channa*. The flesh of this fish is practically boneless with excellent flavour. It is cultivated India, Pakistan and also in Bangladesh.

Order SYNGNATHIFORMES

Family SYNGNATHIDAE

Genus *Microphis* Kaup 1853

1853. *Microphis* Kaup, *Arch. Naturgesch.*, 19(1) : 234 (type-species : *Syngnathus deocata* Hamilton-Buchanan).

Superior trunk and tail ridges discontinuous near vertical through rear of dorsal fin base; lateral tail ridge ends on trunk, usually near vertical through dorsal fin origin; inferior trunk ridge ends at anal ring; lateral trunk ridge confluent with inferior tail ridge. Trunk rings 15 to 22, total rings 39 to 55; caudal fin rays nine. Brood pouch originates on 1st to 3rd trunk ring.

211. *Microphis cuncalus* (Ham-Buch)

1822. *Syngnathus cuncalus* Hamilton-Buchanan, *Fishes of Ganges*, : 12, 362 (type-locality : estuaries near Calcutta).

1991. *Microphis cuncalus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 770-771.

Common Name : Crocodile-tooth pipefish.

Diagnostic Characters : Rings(16-18) + (24-27); D 47-56; P 16-19; subdorsal rings (3.5-2.0) + (5.75-7.5).

Longitudinal opercular ridge distinct and complete, without supplemental opercular ridges. Lateral snout ridge distinct and arched. Principal body ridges distinct. Head length 7.3 to 8.8 in standard length. Snout relatively deep, its depth 4.7 to 7.0 in snout length.

Geographical Distribution : India : West Bengal, Orissa, Tamil Nadu, Maharashtra, Goa and Kerala.

Elsewhere : Bangladesh and Sri Lanka.

Fishery Information : It attains a length of about 17.5 cm standard length. Inhabits freshwaters, estuaries and low salinity habitats. This pipe fish is fairly common in the Hooghly estuary and is of no interest to fisheries.

Order SYNBRANCHIFORMES

Family SYNBRANCHIDAE

Genus *Monopterus* Lacepede 1800

- 1800 *Monopterus* Lacepede, Hist. nat. Poiss., 2 : 139 (type-species : *Monopterus javanensis* Lacepede = *Muraena alba* Zuiew).

Body eel-like. Head short, with dome-shaped muscular occipital region. Gill-opening triangular or crecentic, without lateral folds. Gill-opening on ventral surface of head. Caudal fin absent. Scales, when present, confined mainly to caudal region.

212. *Monopterus indicus* (Silas & Dawson)

1961. *Amphipnous indicus* Slias and Dawson, *J. Bombay nat. Hist. Soc.*, 58(2) : 366, fig. 7, pl. 2 (type locality : Robbers cave, Mahabaleshwar, Maharashtra).
1999. *Monopterus indicus*, Jayaram, *The Freshwater Fishes of the Indian Region*, : 354.

Common Name : Bombay swamp eel.

Diagnostic Characters : Body much elongated, eel like, compressed. Snout bluntly rounded. Upper lip thick, overlapping part of lower lip. Body with scales present posteriorly. Longitudinal folds of skin of branchial region of the ventral side of head shallow. Caudal fin absent. Lateral line well developed, conspicuous.

Material examined : 1 ex., Patalgana river, Kambe village talab, Khalapur, Raigad dist., 20.06.94, H. V. Ghate.

Geographical Distribution : India: Robber cave, Dhobi falls, Mahabaleshwar, Satara dist., Davri river, Krishnagiri, National Park, Boriveli, Kanheri cave, Bombay, Maharashtra.

Remarks : Inhabits colder waters of hill-streams. This species is endemic to Maharashtra.

Family MASTACEMBELIDAE

Genus *Mastacembelus* Scopoli, 1777

1777. *Mastacembelus* Scopoli, *Introductio Historiam Naturalem*, : 458 (type-species : *Ophidium mastacembelus* Solander).

Body elongate, eel-like and compressed. Mouth inferior, cleft narrow. The long fleshy appendage of snout not transversely striated below. Pre-orbital spine present. Dorsal fin inserted above middle of pectoral fin, with 24 to 39 detached spines and 50 to 90 soft rays. Anal fin with 3 spines and 31 to 98 soft rays. Dorsal and anal fins may or may not be confluent with caudal fin, which is rounded. Lateral line present.

213. *Mastacembelus armatus* (Lacepede)

1800. *Macrognathus armatus* Lacepede, *Hist. nat. Poiss*, 2 : 286 (type-locality : not known).
1991. *Mastacembelus armatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 1031-1032.

Common Name : Tire-track spinyeel.

Local Name : Vam.

Diagnostic Characters : D XXXII-XL 64-92; A III 64-90; P 21-27; C 14-17.

Body elongated, cylindrical and eel-like. Cleft of mouth narrow. A pre-orbital spine present. Anal fin with 3 spines. Caudal fin merged with that of dorsal and anal fins. Caudal fin rays 17 to 21. Dorsal fin with more than 100 spines and soft rays.

Material examined : i) 1 ex., Sangvi village, Akkalkot, A.S. Mahabal, 19.11.78; ii) 2 exs., Dathardi tank, Sholapur dist., A.S. Mahabal, 27.11.78; iii) 1 ex., Vir dam, Tandel village, Satara dist., B.K. Tikader, 29.01.77; iv) 1 ex., Bhama river, Khed, Pune, K. Raddiah, 03.07.76; v) 1 ex., Rajbag, Pune, R.N. Chopra, 16.07.71; vi) 1 ex., Bhigwani, R.M. Sharma, 25.01.91; vii) 1 ex., Jamner, Kong river, Jalgaon, R.H. Kamble, 10.02.79; viii) 3 exs., Khed, Pune, B.S. Lamba, 18.08.71; ix) 2 exs., Dathardi tank, Barshi, Solapur, A.S. Mahabal, 27.11.78; x) 2 exs., Sangavi village, Akkalkot, Sholapur, A.S. Mahabal, 19.11.78; xi) 1 ex., Lahasar nalla,

Tamner, Jalgaon, R.H. Kamble, 12.02.79; xii) Bund garden, Pune, R.N. Chopra, 27.07.63; xiii) 3 exs., Mutha river, Lakadi bridge, Pune, R.N. Chopra, 29.09.63; xiv) 2 exs., Moshi, Pune, B.S. Lamba, 06.10.66; xv) 1 ex., Talegaon, Pune, R.N. Chopra, 17.12.66; xvi) 4 exs., Khed, Pune, D.N. Tiwari, 09.11.67; xvii) 1 ex., Nalla Talegaon, Pune, B.S. Lamba, 13.04.66; xviii) 2 exs., Pirangut, Pune, B.S. Lamba, 06.11.69; xix) 1 ex., Paud, Pune, M.B. Rao, 16.07.75; xx) 4 exs., Moshi, Pune, B.S. Lamba, 08.11.66; xxi) 3 exs., Khed, Pune, B.S. Lamba, 25.10.66; xxii) 1 ex., Moshi, Pune, M.M. Chatterjee, 22.08.70. xxiii) 1 ex., 310 mm, Koyna river, Korad (Purchased), 05.09.64, K.K. mTiwari; xxiv) 1 ex., 153 mm, Bavada Dharan, Pancha Ganga river, Kolhapur, 10.09.64, K.K. Tiwari; xxv) 1 ex., 380 mm, Ujani Reservoir near Kanda, 10 km away from Ujanm Dam, 26.03.85, A.K. Karmakar; xxvi) 2 exs., 135-142 mm, Kolar river, 15 km north of Nagpur, 02.04.05, A.K. Karmakar; xxvii) 1 ex., 480 mm, Tapi river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A.K. Karmakar; xxviii) 1 ex., 270 mm, Bhadrakali Fish Market (Godavari River coll.), Nasik, 08.04.05, A.K. Karmakar; xxix) 2 exs., 165-170 mm, Irri Dam on Irri river, 18 km north east of PWD Rest House, Chandrapur, 03.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan; Sri Lanka; Nepal; Myanmar; through Thailand and Malaya, to South China.

Fishery Information : It attains a length of about 65 cm and is the largest spiny eel. It is reported to be a good food fish specially when freshly caught.

Remarks : These are nocturnal, carnivorous fishes survive in muddy holes at the bottom of pond (Yazdani, 1990).

Genus *Macroganthus* Lacepede, 1800

1800. *Macroganthus* Lacepede, *Hist. nat. Poiss.* 2 : 283
(type-species : *Ophidium aculeatum* Bloch).

Body elongate and compressed, with slender

neural and haemal spines. Pre-orbital and preopercular spine absent. Fleshy operculum fairly large, often its concave ventral surface lined with toothplates. Rim of anterior nostril with six slender, finger-like projections. Dorsal fin spines 13 to 32; spiny dorsal fin usually originating posterior to sixth vertebra.

Key to the species of Genus *Macroganthus*

1. Rostrum with concave ventral surface lined with paired toothplates *M. aral*
- Rostrum rounded in cross section, without toothplates 2
2. Dorsal fin with 24 to 26 spines and 30 to 42 soft rays *M. pancalus*
- Dorsal fin with 27 to 30 spines and 58 to 74 soft rays *M. guentheri*

214. *Macroganthus aral* (Bloch & Schneider)

1801. *Rhynchobdella aral* Bloch and Schneider, *Syst. Ichth.*, 479, pl. 89 (type-locality: Tranqueber, Tamil Nadu)
1991. *Macroganthus aral*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries.*: 1026.

Common Name : One-stripe spinyeel.

Local Name : Vam.

Diagnostic Characters : D XVI- XXIII 44-45; A III 44-52; P 19-24; C 15.

Body elongate. Rostrum relatively large, with concave ventral surface lined with paired toothplates. No spine on preorbital or preopercular bones. Mouth very small, not extending to below posterior nostrils. Dorsal fin inserted far behind tip of pectoral fin. Caudal fin distinctly separated from dorsal and anal fins.

Geographical Distribution : India : Throughout.

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

Fishery Information : It attains a length of about 38 cm; considered as a wholesome food-fish. It apparently occurs in lowland habitats and at moderate elevations in all the large river systems of the Indian subcontinent.

215. *Macrognathus guentheri* (Day)

1865. *Mastacembelus guentheri* Day, *Proc. Zool. Soc. Lond.*, : 37 (type-locality : Trichoor, Kerala).
 1991. *Macrognathus guentheri* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries*, : 1027.

Common Name : Malabar spiny eel.

Diagnostic Characters : D XXVII-XXX 58-74; A III 59-75; P 17-21; C 11-13.

Body eel-like and compressed. Preopercle with 2 or 3 spines. Mouth narrow. Dorsal fin inserted behind tip of pectoral fin; dorsal and anal fins entirely confluent with caudal fin.

Material examined : 1 ex., Mutha river, Dattawadi, Pune, R.N. Chopra, 19.03.63.

Geographical Distribution : India : Kerala, Maharashtra.

Fishery Information : It attains a length of about 26 cm. This fish is fairly common in marshy canals and rivers of Kerala and Maharashtra and is of minor interest to fisheries in that region.

216. *Macrognathus pancalus* Ham-Buch

1822. *Macrognathus pancalus* Ham-Buch, *Fishes of Ganges*, pp. 30, 364, pl. 22, fig. 7 (type-locality : Bengal).
 1999. *Macrognathus pancalus*, Menon, *Rec. zool. Surv. India, Occ. Paper*, 175 : 302.

Common Name : Striped spiny eel.

Local Name : Vam, Vambat.

Diagnostic Characters : D XXIV-XXVI 30-42; P. 19; A. III 31-45; C 11-16.

Body elongated, cylindrical and eel-like. Cleft of mouth narrow. Preopercular spines present hidden under skin. Caudal fin with 11 to 13 rays. Dorsal fin with 24 to 26 spines and 30 to 42 soft rays. Anal fin with 3 spines. Caudal fin not united with dorsal and anal fins.

Material examined : i) 1 ex., Sangvi village, Akkalkot, 19.11.78, A.S. Mahabal; ii) 1 ex., Dathardi tank, Barshi, Sholapur dist., 27.11.78, A.S. Mahabal. iii) 1 ex., 130 mm, Kolar river, 15 km north of Nagpur, 02.04.05, A.K. Karmakar;

iv) 1 ex., 112 mm, Tapi' river near Khamkera Bridge, Muktainagar, Jalgaon distt., 06.04.05, A. K. Karmakar. v) 1 ex., 80 mm, Ramala Talab, 1.5 km south east of PWD Rest House, Chandrapur, 02.06.06, A.K. Karmakar; vi) 1 ex., 150 mm, Godavari river at Ghangrala, 51 km south east of PWD Rest House, Nanded, 07.06.06, A.K. Karmakar.

Geographical Distribution : India : Throughout.

Elsewhere : Pakistan, Bangladesh.

Remarks : Inhabits slow and shallow waters. It attains a length of 18 cm in peninsular India, but in North Bengal it is half that size.

SUMMARY

In the present contribution, an attempt has been made to provide an upto date classification, nomenclature, synonyms, common & local names, diagnostic characters of each genus and species, details of material studied, distributional records, fishery information, remarks along with species identification keys, as far as possible. During the preparation of this faunal work, we have made use of all the earlier informations available in the literature up to the year 2011 in addition to the study of fish material collected by the authors and other scientists of the Zoological Survey of India (both H.Q. & Western Regional Station, Pune) and also earlier identified and registered fish collections present in the National Zoological Collection of the Zoological Survey of India. In all 216 species belonging to 11 orders, 32 families and 93 genera have been dealt with in this contribution. Further, 9 species under 7 genera were recorded for the first time from Maharashtra.

DISCUSSION

Among the fishes recorded from Maharashtra, Order cypriniformes forms the largest assemblage with 121 species followed by Siluriformes with 45 species and perciformes with 29 species. The Ichthyofauna consists mainly of food fishes, game fishes and ornamental fishes.

The Godavari and Krishna river systems offer good number of localities from where 46 species have originally been described (Sykes 1841, David 1963, Jayaram 1995). During present study 12 species are found to be Endemic to Maharashtra State.

The rich ichthyofauna of Maharashtra seems to be reducing in number as many fish species like *Osteocheilichthys godavariensis* (Rao), *Puntius deccanensis* Yazdani and Rao, *Tor kulkarni* Menon, *Thynnichthys sandkhal* (Sykes), *Schismatorhynchus (Nukta) nukta* (Sykes), *Eutropiichthys goongwaree* (Sykes), *silonia Childreni* (Sykes) could not be collected from their type localities and elsewhere. The reason for this is human interference, destruction of habits, over exploitation and water quality deterioration. Hence, some conservation steps are to be taken to protect the ichthyofauna, like, regulation of mesh size, construction of fish ladder, ban on mass killing, to protect broods, fry and young ones, observing

close period during breeding, judicious introduction of exotic species, etc. Keeping vigilant check on fishing and restoration of habitats are also essential steps. Moreover, public awareness programmes are also very fruitful measures for conservation of ichthyofauna.

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MARINE AND ESTUARINE FISHES

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INTRODUCTION

Maharashtra state lies along western side of peninsular India between 20°08' N and 72°45' E in north and 15°45' N and 73°40' E in south. It has a 720 km long coast line and a continental shelf of 111512 sq. km. The coastal line is characterized by pockets of beaches and rocky cliffs flanked by estuaries and patches of mangroves. Tidal mudflats, mangroves and sandy beaches are predominant ecosystems of the coastal line of this state. Mangroves generally occur along the estuaries and creeks. This state possesses a rich potential for marine fish production. The coastal regions in this state lies between the Western Ghats and the Arabian Sea. Maharashtra has declared coastal regions of Malvan as Malvan Marine Sanctuary in Sinndurgh district. Coral patches and mangroves are found in this sanctuary. Scattered patches of coral in the intertidal and in the subtidal regions at Ratnagiri, Malvan, Redi Port and Vizhingam have attributed for declaration of the Malvan Marine sanctuary.

The 720 km. long coastline of this state has been surveyed exploring almost all the major fish landing centres. The present study is a consolidated work of our explorations for the marine and estuarine fishes along all the coastal districts. The marine and estuarine fishes which were earlier recorded from this state has been included to the fishes of the state. This study has recorded 653 species under 131 families and 27 orders from the state. A brief description of all the families, along with the systematic key to the families,

genera and species has been furnished in this study. Remarks or systematic notes of some species are also included in this work. Common English name of the species has been incorporated against each species in the text, where the English name is known. The status of the fishes has been mentioned as per the IUCN Red List criteria. In the systematic list of the fishes, the fishes examined by us are marked with (*) asterisk and the other species were taken from literature.

The key to the species is meant only for the fishes which occur along Maharashtra coast and not applicable to other parts of the country.

SYSTEMATIC LIST OF MARINE AND ESTUARINE FISHES OF MAHARASHTRA

Class I CHONDRICHTHYES

Order 1 ORECTOLOBIFORMES

Family 1 HEMISCYLLIIDAE

1. *Chiloscyllium griseum* Muller & Henle (Nearly threatened)*
2. *C. indicum* (Gmelin) (Nearly threatened)*

Family 2 STEGOSTOMATIDAE

3. *Stegostoma fasciatum* (Hermann) (Vulnerable)

Family 3 GINGLYMOSTOMATIDAE

4. *Nebrius ferrugineus* (Lesson) (Vulnerable)

Family 4 RHINCODONTIDAE

5. *Rhincodon typus* Smith (Vulnerable)

- Order 2 LAMNIFORMES
Family 5 ODONTASPIDIDAE
6. *Carcharias tricuspidatus* Day
Family 6 LAMNIDAE
7. *Isurus oxyrinchus* Rafinesque
Order 3 CARCHARHINIFORMES
Family 7 SCYLORHINIDAE
8. *Atelomycterus marmoratus* (Bennett)
Family 8 TRIAKIDAE
9. *Mustelus mosis* Hemprich and Ehrenberg.
Family 9 HEMIGALEIDAE
10. *Chaenogaleus macrostoma* (Bleeker)
11. *Hemipristis elongata* (Klunzinger) (Vulnerable)
Family 10 CARCHARHINIDAE
12. *Carcharhinus amblyrhynchoides* (Whitley)
13. *C. brevipinna* (Muller and Henle)
14. *C. dussumieri* (Muller and Henle) (Nearly threatened)
15. *C. hemiodon* (Muller and Henle) (Critically Endangered)
16. *C. leucas* (Muller and Henle)
17. *C. limbatus* (Muller and Henle) (Nearly threatened)
18. *C. macrotis* (Muller and Henle) (Nearly threatened)
19. *C. melanopterus* (Quoy and Gaimard) (Nearly threatened)
20. *C. sorrah* (Muller and Henle)
21. *Galeocerdo cuvier* (Peron and Le Sueur) (Nearly threatened)
22. *Glyptocheilus gangeticus* (Hamilton) (Critically Endangered)
23. *Lamiopsis temminckii* (Muller and Henle)
24. *Loxodon macrorhinus* (Muller and Henle)
25. *Negaprion acutidens* (Ruppell)
26. *Rhizoprionodon acutus* (Ruppell)*
27. *R. oligolinx* Springer
28. *Scoliodon laticaudus* Muller and Henle (Nearly threatened)*
29. *Triaenodon obesus* (Ruppell)
Family 11 SPHYRNIDAE
30. *Eusphyrna blochii* (Cuvier)
31. *Sphyrna lewini* (Griffith and Smith) (Nearly threatened)
32. *S. mokarran* (Ruppell)
33. *S. zygaena* (Linnaeus) (Nearly threatened)
Order 4 PRISTIFORMES
Family 12 PRISTIDAE
34. *Anoxypristis cuspidata* (Latham) (Endangered)
35. *Pristis microdon* Latham (Endangered)
Order 5 TORPEDINIFORMES
Family 13 TORPEDINIDAE
36. *Torpedo sinuspersici* (Olfers)
Family 14 NARCINIDAE
37. *Narcine indica* Henle
38. *Narke dipterygia* (Bloch & Schneider)
Order 6 RAJIFORMES
Family 15 RHINOBATIDAE
39. *Rhina ancylostoma* Schneider (Vulnerable)
40. *Rhinobatos granulatus* Cuvier
41. *R. obtusus* Muller and Henle
42. *R. thounianus* (Shaw)
43. *Rhynchobatus djeddensis* (Forsskal) (Vulnerable)
Order 7 MYLIOBATIFORMES
Family 16 MYLIOBATIDAE
44. *Aetobatus narinari* (Euphrasen)
45. *Aetomylaeus maculatus* (Gray)
46. *A. milvus* (Muller and Henle)
47. *A. nichofii* (Bloch and Schneider) (Vulnerable)
48. *Mobula eregoodootenkee* (Bleeker)
49. *M. mobular* (Bonnaterre)
50. *Rhinoptera javanica* Muller and Henle
Family 17 DASYATIDAE
51. *Dasyatis kuhlii* (Muller and Henle)

52. *D. zugei* (Muller and Henle)
53. *Himantura bleekeri* (Blyth)
54. *H. imbricata* (Schneider)
55. *H. uarnak* (Forsskal)
56. *Pastinachus sephen* (Forsskal)
57. *Taeniura meyeni* Muller & Henle

Family 18 GYMNURIDAE

58. *Gymnura poecilura* (Shaw)

Class II OSTEICHTHYES

Order 8 ELOPIFORMES

Family 19 ELOPIDAE

59. *Elops machnata* (Forsskal)

Family 20 MEGALOPIDAE

60. *Megalops cyprinoides* (Broussonet)

Order 9 ANGUILLIFORMES

Family 21 ANGUILLIDAE

61. *Anguilla bengalensis bengalensis* (Gray & Hardwicke)*

62. *A. bicolor bicolor* McClelland

Family 22 MURAENIDAE

63. *Echidna nebulosa* (Ahl)*
64. *Gymnothorax favagineus* (Bloch & Schneider)
65. *G. meleagris* (Shaw and Nodder)
66. *G. pseudothyrsoides* (Bleeker)
67. *G. punctatofasciatus* (Bleeker)
68. *G. undulatus* (Lacepede)
69. *Siderea picta* (Ahl)
70. *Strophiodon sathete* (Hamilton)

Family 23 OPHICHTHIDAE

71. *Lamnostoma orientalis* (McClelland)
72. *Muraenichthys gymnopterus* (Bleeker)
73. *Neenchelys buitendijki* Weber & de Beaufort
74. *Ophichthus apicalis* Bennett*
75. *O. cephalozona* Bleeker
76. *Pisodonophis boro* (Hamilton)
77. *P. cancrivorus* (Richardson)

Family 24 CONGRIDAE

78. *Uroconger lepturus* (Richardson)

Family 25 MURAENESOCIDAE

79. *Congresox talabon* (Cuvier)
80. *C. talabonoides* (Bleeker)
81. *Muraenesox bagio* (Hamilton)
82. *M. cinereus* (Forsskal)*

Order 10 CLUPEIFORMES

Family 26 CLUPEIDAE

83. *Amblygaster clupeoides* Bleeker*
84. *Anodontosoma chacunda* (Hamilton)
85. *Dayella malabarica* (Day)
86. *Dussumieria acuta* Valenciennes*
87. *D. elopsoides* Bleeker*
88. *Escualosa thoracata* (Valenciennes)*
89. *Herklotsichthys quadrimaculatus* (Ruppell)
90. *Hilsa kelee* (Cuvier)*
91. *Nematolosa nasus* (Bloch)*
92. *Sardinella albella* (Valenciennes)
93. *S. brachysoma* (Steindachner)
94. *S. fimbriata* (Valenciennes)*
95. *S. gibbosa* (Bleeker)
96. *S. melanura* (Cuvier)*
97. *S. longiceps* Valenciennes*
98. *S. sindensis* (Day)
99. *Spartelloides delicatulus* (Bennett)
100. *S. gracilis* (Schlegel)
101. *Tenualosa ilisha* (Hamilton)
102. *T. toli* (Valenciennes)*

Family 27 PRISTIGASTERIDAE

103. *Ilisha elongata* (Bennett)
104. *I. filigera* (Valenciennes)*
105. *I. megaloptera* (Swainson)*
106. *I. melastoma* (Schneider)*
107. *I. obfuscata* Wongratana
108. *Opisthopterus tardoore* (Cuvier)*
109. *Pellona ditchela* Valenciennes*
110. *Raconda russeliana* Gray

Family 28 ENGRAULIDIDAE

111. *Coilia dussumieri* Valenciennes*
112. *C. neglecta* Whitehead*

113. *Encrasicholina devisi* (Whitely)
 114. *E. heteroloba* (Ruppell)
 115. *E. punctifer* Fowler
 116. *Setipinna taty* (Valenciennes)
 117. *Stolephorus baganensis* Hardenberg
 118. *S. commersonnii* Lacepede
 119. *S. indicus* (van Hasselt)*
 120. *S. insularis* Hardenberg
 121. *S. waitei* Jordon and Seale
 122. *Thryssa dayi* Wongratana
 123. *T. dussumieri* (Valenciennes)*
 124. *T. hamiltonii* (Gray)*
 125. *T. malabarica* (Bloch)*
 126. *T. mystax* (Schneider)*
 127. *T. polybranchialis* Wongratana
 128. *T. purava* (Hamilton)*
 129. *T. setirostris* (Broussonet)*
 130. *T. vitrirostris* (Gilchrist & Thompson)*
 Family 29 CHIROCENTRIDAE
 131. *Chirocentrus dorab* (Forsskal)*
 132. *C. nudus* Swainson
 Order 11 GONORYNCHIFORMES
 Family 30 CHANIDAE
 133. *Chanos chanos* (Forsskal)*
 Order 12 SILURIFORMES
 Family 31 ARIIDAE
 134. *Arius arius* Hamilton*
 135. *A. caelatus* Valenciennes*
 136. *A. crossocheilus* Bleeker
 137. *A. dussumieri* Valenciennes*
 138. *A. jella* Day
 139. *A. macronotacantha* (Bleeker)
 140. *A. maculatus* (Thunberg)*
 141. *A. nenga* (Hamilton)
 142. *A. platystomus* Day*
 143. *A. sagor* (Hamilton)*
 144. *A. sona* (Hamilton)*
 145. *A. subrostratus* (Valenciennes)*
 146. *A. sumatranus* (Bennett)

147. *A. tenuispinis* Day*
 148. *A. thalassinus* (Ruppell)*
 149. *Batrachcephalus mino* (Hamilton)
 150. *Osteogeneiosus militaris* (Linnaeus)*
 Family 32 PLOTOSIDAE
 151. *Plotosus canius* Hamilton
 152. *P. lineatus* (Thunberg)
 Order 13 AULOPIFORMES
 Family 33 CHLOROPHTHALMIDAE
 153. *Chlorophthalmus agassizi* Bonaparte
 Family 34 SYNODONTIDAE
 154. *Harpadon nehereus* (Hamilton)*
 155. *Saurida micropectoralis* Shindo & Yamada*
 156. *S. tumbil* (Bloch)*
 157. *S. undosquamis* (Richardson)
 158. *Synodus englemani* Schultz
 159. *S. macrops* Tanaka
 160. *S. variegatus* (Lacepede)
 161. *Trachinocephalus myops* (Forster)*
 Order 14 GADIFORMES
 Family 35 BREGMACEROTIDAE
 162. *Bregmaceros maclellandi* Thompson
 Family 36 MACROURIDAE
 163. *Malacocephalus laevis* (Lowe)
 Order 15 OPHIDIFORMES
 Family 37 OPHIDIIDAE
 164. *Brotula multibarbata* (Temminck & Schlegel)
 Order 16 BATRACHOIDIFORMES
 Family 38 BATRACHOIDIDAE
 165. *Allenbatrachus grunniens* (Bloch)*
 166. *Austrobatrachus dussumieri* (Valenciennes)
 Order 17 LOPHIIFORMES
 Family 39 LOPHIIDAE
 167. *Lophiodes mutilus* (Alcock)
 168. *Lophiomus setigerus* (Valenciennes)
 Family 40 ANTENNARIIDAE
 169. *Antennarius hispidus* (Bloch and Schneider)

Order 18 MUGILIFORMES

Family 41 MUGILIDAE

170. *Liza carinata* (Valenciennes)*
171. *L. macrolepis* (Smith)*
172. *L. melinoptera* (Valenciennes)
173. *L. parsia* (Hamilton)*
174. *L. subviridis* (Valenciennes)
175. *L. tade* (Forsskal)*
176. *L. vaigiensis* (Quoy & Gaimard) *
177. *Mugil cephalus* Linnaeus*
178. *Valamugil cunnesius* (Valeniennes)*
179. *V. seheli* (Forsskal)
180. *V. speigleri* (Bleeker)*

Order 19 BELONIFORMES

Family 42 EXOCOETIDAE

181. *Cheilopogon cyanopterus* (Valenciennes)
182. *C. furcatus* (Mitchill)
183. *C. nigricans* (Bennett)
184. *C. spilopterus* (Valenciennes)
185. *Cypselurus poecilopterus* (Valenciennes)
186. *Exocoetus monocirrhus* Richardson
187. *E. volitans* Linnaeus
188. *Hirundichthys coromandelensis* (Hornell)
189. *Parexocoetus mento* (Cuvier)

Family 43 BELONIDAE

190. *Ablennes hians* (Valenciennes)
191. *Strongylura leiura* (Bleeker)
192. *S. strongylura* (van Hasselt)
193. *Tylosurus acus melanotus* (Bleeker)
194. *T. choram* (Ruppell)*
195. *T. crocodilus crocodilus* (Peron & Le Sueur)*

Family 44 HEMIRAMPHIDAE

196. *Hemiramphus archipelagicus* Collette & Perin*
197. *H. far* (Forsskal)*
198. *H. lutkei* (Valenciennes)*
199. *Hyporhamphus dussumieri* (Valenciennes)
200. *H. limbatus* (Valenciennes)*

201. *H. xanthopterus* (Valenciennes)

202. *Rhynchorhamphus georgii* (Valenciennes)*

203. *R. malabaricus* Collette

Order 20 ATHERINIFORMES

Family 45 ATHERINIDAE

204. *Atherinomorus lacunosus* (Forster)*

205. *Hypoatherina temminckii* (Bleeker)

Order 21 BERYCIFORMES

Family 46 HOLOCENTRIDAE

206. *Myripristis botche* Cuvier

207. *M. murdjan* Forsskal

208. *Sargocentron diadema* (Lacepede)

209. *S. rubrum* (Forsskal)

Order 22 ZEIFORMES

Family 47 ZEIDAE

210. *Cyttopsis resea* (Lowe)

211. *Zenopsis conchifera* (Lowe)

Order 23 SYNGNATHIFORMES

Family 48 FISTULARIIDAE

212. *Fistularia petimba* Lacepede

Family 49 CENTRISCIDAE

213. *Centriscus scutatus* Linnaeus

Family 50 SYNGNATHIDAE

214. *Hippichthys spicifer* (Ruppell)

215. *Hippocampus kuda* Bleeker

216. *Microphis cuncalus* (Hamilton)*

217. *Syngnathoides biaculeatus* (Bloch)

218. *Trachyrhamphus serratus* (Schlegel)

Order 24 SCORPAENIFORMES

Family 51 DACTYLOPTERIDAE

219. *Dactyloptena orientalis* (Cuvier)

Family 52 APISTIDAE

220. *Apistus carinatus* (Bloch & Schneider)

Family 53 SCORPAENIDAE

221. *Pterois russelii* Bennett*

222. *P. volitans* (Linnaeus)*

Family 54 SYNENCEIIDAE

223. *Choridactylus multibarbus* Richardson

224. *Minous monodactylus* (Bloch & Schneider)
 225. *Trachicephalus uranoscopus* (Bloch & Schneider)*

Family 55 TRIGLIDAE

226. *Lepidotrigla bispinosa* (Steindachner)
 227. *L. faueri* Gilchrist & Thompson
 228. *L. longipinnis* Alcock
 229. *L. omanensis* Regan

Family 56 PLATYCEPHALIDAE

230. *Cociella crocodila* (Tilesius)
 231. *Grammoplites scaber* (Linnaeus)
 232. *G. suppositus* (Troschel)
 233. *Platycephalus indicus* (Linnaeus)*
 234. *Rogadius asper* (Cuvier)
 235. *Suggrundus macracanthus* (Bleeker)
 236. *S. rodericensis* (Cuvier)*
 237. *Thysanophrys carbunculus* (Valenciennes)

Order 25 PERCIFORMES

Family 57 LATIDAE

238. *Lates calcarifer* (Bloch)

Family 58 AMBASSIDAE

239. *Ambassis ambassis* Lacepede*
 240. *A. gymnocephalus* (Lacepede)*
 241. *Chanda nama* Hamilton
 242. *Parambassis thomasi* (Day)
 243. *Pseudambassis baculis* (Hamilton)
 244. *P. ranga* (Hamilton)

Family 59 ACROPOMATIDAE

245. *Acropoma japonicum* (Gunther)

Family 60 SERRANIDAE

246. *Cephalopholis argus* Bloch and Schneider
 247. *C. boenack* (Bloch)
 248. *C. formosa* (Shaw and Nodder)
 249. *C. leopardus* (Lacepede)
 250. *C. miniata* (Forsskal)
 251. *C. sonnerati* (Valenciennes)
 252. *Diploprion bifasciatum* Cuvier
 253. *Epinephelus areolatus* (Forsskal)

254. *E. bleekeri* (Vaillant)*
 255. *E. chlorostigma* (Valenciennes)
 256. *E. coioides* (Hamilton)*
 257. *E. diacanthus* (Valenciennes)*
 258. *E. epistictus* (Temminck & Schlegel)
 259. *E. erythrurus* (Valenciennes)
 260. *E. fasciatus* (Forsskal)
 261. *E. fuscoguttatus* (Forsskal) (Nearly threatened)
 262. *E. lanceolatus* (Bloch) (Vulnerable)
 263. *E. latifasciatus* (Temminck & Schlegel)
 264. *E. malabaricus* (Bloch & Schneider)
 265. *E. morrhua* (Valenciennes)
 266. *E. polylepis* Randall & Heemstra
 267. *E. stoliczkae* Day
 268. *E. undulosus* (Quoy & Gaimard)
 269. *Grammistes sexlineatus* (Thunberg)

Family 61 TERAPONIDAE

270. *Pelates quadrilineatus* (Bloch)*
 271. *Terapon jarbua* (Forsskal)*
 272. *T. puta* Cuvier*
 273. *T. theraps* Cuvier*

Family 62 KUHLIIDAE

274. *Kuhlia mugil* (Schneider)
 275. *K. rupestris* (Lacepede).

Family 63 PRIACANTHIDAE

276. *Cookeolus japonicus* (Cuvier)*
 277. *Heteropriacanthus cruentatus* (Lacepede).
 278. *Priacanthus hamrur* (Forsskal)*
 279. *P. tayenus* Richardson

Family 64 APOGONIDAE

280. *Apogon ellioti* Day
 281. *A. fasciatus* White*
 282. *A. frenatus* (Valenciennes)*
 283. *A. multitaeniatus* Cuvier*
 284. *A. savayensis* (Gunther)
 285. *A. thermalis* Cuvier*

Family 65 SILLAGINIDAE

286. *Sillago chondropus* Bleeker

287. *S. indica* McKay, Dutt & Sujatha
 288. *S. intermedius* Wongratana*
 289. *S. sihama* (Forsskal)*

Family 66 LACTARIIDAE

290. *Lactarius lactarius* (Schneider)*
 Family 67 RACHYCENTRIDAE
 291. *Rachycentron canadum* (Linnaeus)

Family 68 ECHENEIDAE

292. *Echeneis naucrates* Linnaeus*
 293. *Remorina albescens* (Temminck)

Family 69 CARANGIDAE

294. *Alectis ciliaris* (Bloch)
 295. *A. indicus* (Ruppell)
 296. *Alepes djedaba* (Forsskal)*
 297. *A. kleinii* (Bloch)
 298. *A. melanopterus* Swainson
 299. *A. vari* (Cuvier)
 300. *Atropus atropos* (Schneider)
 301. *Atule mate* (Cuvier)
 302. *Carangoides armatus* (Ruppell)
 303. *C. chrysophrys* (Cuvier)*
 304. *C. coeruleopinnatus* (Ruppell)
 305. *C. ferdau* (Forsskal)
 306. *C. fulvoguttatus* (Forsskal)
 307. *C. gymnostethus* (Cuvier)
 308. *C. malabaricus* (Bloch & Schneider)
 309. *C. oblongus* (Cuvier)
 310. *C. praeustus* (Bennett)
 311. *C. talamparoides* Bleeker
 312. *Caranx carangus* (Bloch)*
 313. *C. heberi* (Bennett)
 314. *C. ignobilis* (Forsskal)*
 315. *C. melampygus* Cuvier
 316. *C. sexfasciatus* Quoy & Gaimard*
 317. *Decapterus macrosoma* Bleeker
 318. *D. russellii* (Ruppell)*
 319. *Elagatis bipinnulata* (Quoy & Gaimard)
 320. *Gnathanodon speciosus* (Forsskal)*

321. *Megalaspis cordyla* (Linnaeus)*
 322. *Naucrates ductor* (Linnaeus)*
 323. *Parastromateus niger* (Bloch)*
 324. *Scomberoides commersonnianus* Lacepede
 325. *S. lysan* (Forsskal)*
 326. *S. tala* (Cuvier)
 327. *S. tol* (Cuvier)*
 328. *Selar boops* (Cuvier)
 329. *S. crumenophthalmus* (Bloch)
 330. *Selaroides leptolepis* (Cuvier)
 331. *Seriolina nigrofasciata* Cuvier*
 332. *Trachinotus baillonii* (Lacepede)
 333. *T. blochii* (Lacepede)
 334. *T. botla* (Shaw)
 335. *T. mookalee* Cuvier
 336. *Trachurus indicus* Nekrasov

Family 70 CORYPHAENIDAE

337. *Coryphaena equiselis* Linnaeus
 338. *C. hippurus* Linnaeus

Family 71 MENIDAE

339. *Mene maculata* (Bloch)*

Family 72 LEIOGNATHIDAE

340. *Gazza minuta* (Bloch)*
 341. *Leiognathus berbis* (Valenciennes)
 342. *L. bindus* (Valenciennes)*
 343. *L. blochii* (Valenciennes)*
 344. *L. brevirostris* (Valenciennes)*
 345. *L. daura* (Cuvier)*
 346. *L. dussumieri* (Valenciennes)*
 347. *L. equulus* (Forsskal)*
 348. *L. fasciatus* (Lacepede)
 349. *L. leuciscus* (Gunther)
 350. *L. lineolatus* (Valenciennes)
 351. *L. splendens* (Cuvier)
 352. *Secutor insidiator* (Bloch)*
 353. *S. ruconius* (Hamilton)*

Family 73 LUTJANIDAE

354. *Apharieus furca* (Lacepede)
 355. *A. rutilans* Cuvier

356. *Aprion virescens* Valenciennes
 357. *Elatis carbunculus* Cuvier
 358. *E. coruscans* Valenciennes
 359. *Liphocheilus carnolabrum* (Chan)
 360. *Lutjanus argentimaculatus* (Forsskal)*
 361. *L. bengalensis* (Bloch)
 362. *L. ehrenbergii* (Peters)
 363. *L. erythropterus* Bloch
 364. *L. fulviflamma* (Forsskal)
 365. *L. gibbus* (Forsskal)
 366. *L. johnii* (Bloch)
 367. *L. kasmira* (Forsskal)
 368. *L. lunulatus* (Park)
 369. *L. lutjanus* Bloch
 370. *L. madras* (Valenciennes)
 371. *L. malabaricus* (Bloch and Schneider)
 372. *L. monostigma* (Cuvier)
 373. *L. quinquelineatus* Bloch
 374. *L. rivulatus* (Cuvier)
 375. *L. russellii* (Bleeker)
 376. *L. sanguineus* (Cuvier)
 377. *L. sebae* (Cuvier)
 378. *L. vitta* (Quoy & Gaimard)
 379. *Macolor niger* (Forsskal)
 380. *Paracaesio xanthura* (Bleeker)
 381. *Pinjalo pinjalo* (Bleeker)
 382. *P. lewisi* Randall, Allen & Anderson
 383. *Pristipomoides filamentosus* (Valenciennes)
 384. *P. multident* (Day)
 385. *P. sieboldii* (Bleeker)
 386. *P. zonatus* (Valenciennes)
- Family 74 CAESIONIDAE
387. *Caesio caerulaurea* Lacepede
 388. *C. lunaris* Cuvier
 389. *C. varilineata* Carpenter
 390. *Gymnocaesio gymnoptera* (Bleeker)
 391. *Pterocaesio chrysozona* (Cuvier)
- Family 75 LOBOTIDAE
392. *Lobotes surinamensis* (Bloch)

Family 76 GERREIDAE

393. *Gerres erythrourus* (Bloch)*
 394. *G. filamentosus* Cuvier*
 395. *G. limbatus* Cuvier*
 396. *G. macracanthus* Bleeker*
 397. *G. oblongus* Cuvier
 398. *G. oyena* (Forsskal)
 399. *G. phaiya* Iwatsuki and Heemstra
 400. *G. setifer* (Hamilton)
 401. *Pentaprion longimanus* (Cantor)

Family 77 HAEMULIDAE

402. *Diagramma pictum* (Thunberg)
 403. *Plectorhinchus gibbosus* (Lacepede)
 404. *P. orientalis* (Bloch)
 405. *P. polytaenia* (Bleeker)
 406. *P. schotaf* (Forsskal)*
 407. *Pamadasys argenteus* (Forsskal)
 408. *P. argyreus* (Valenciennes)
 409. *P. commersonii* (Lacepede)
 410. *P. guoraca* (Ruppell)
 411. *P. furcatus* (Schneider)
 412. *P. kaakan* (Cuvier)
 413. *P. maculatus* (Bloch)*
 414. *P. multimaculatum* (Playfair)
 415. *P. olivaceus* (Day)

Family 78 SPARIDAE

416. *Acanthopagrus berda* (Forsskal)
 417. *A. bifasciatus* (Forsskal)
 418. *A. latus* (Houttuyn)
 419. *Argyrops spinifer* (Forsskal)
 420. *Cheimerius nufar* (Valenciennes)
 421. *Crenidens crenidens* (Forsskal)
 422. *Rhabdosargus sarba* (Forsskal)
 423. *Sparidentex hasta* (Valenciennes)

Family 79 LETHRINIDAE

424. *Gymnocranius elongatus* Setna
 425. *G. grandoculis* (Valenciennes)
 426. *Lethrinus nebulosus* (Forsskal)

Family 80 NEMIPTERIDAE

- 427. *Nemipterus bipunctatus* (Ehrenberg)*
- 428. *N. furcosus* (Valenciennes)*
- 429. *N. japonicus* (Bloch)
- 430. *N. peronii* (Valenciennes)
- 431. *N. randalli* Russell
- 432. *N. zysron* (Bleeker)*
- 433. *Parascolopsis aspinosa* (Rao & Rao)
- 434. *Scolopsis ghanam* (Forsskal)
- 435. *S. vosmeri* (Bloch)

Family 81 SCIAENIDAE

- 436. *Argyrosomus amoyensis* (Bleeker)
- 437. *A. hololepidotus* (Lacepede)
- 438. *Atrobucca alcocki* Talwar
- 439. *Chrysochir aureus* (Richardson)
- 440. *Daysciaena albida* (Cuvier)*
- 441. *Dendrophysa russelli* (Cuvier)
- 442. *Johnieops borneensis* (Bleeker)*
- 443. *J. dorsalis* (Cuvier)
- 444. *J. dussumieri* (Cuvier)*
- 445. *J. macrorhynchus* Mohan*
- 446. *J. osseus* (Day)*
- 447. *Johnius belangerii* (Cuvier)*
- 448. *J. carutta* Bloch*
- 449. *J. dussumieri* (Valenciennes)*
- 450. *J. elongatus* Mohan
- 451. *J. glaucus* (Day)
- 452. *J. macropterus* (Bleeker)
- 453. *Kathala axillaris* (Cuvier)
- 454. *Nibea chui* (Trewavas)
- 455. *N. maculata* (Schneider)
- 456. *N. soldado* (Lacepede)*
- 457. *Otolithes cuvieri* (Trewavas)
- 458. *O. ruber* (Schneider)*
- 459. *Otolithoides biauritus* (Cantor)*
- 460. *Pama pama* (Hamilton)
- 461. *Paranibea semiluctuosa* (Cuvier)*
- 462. *Pennahia anea* (Bloch)*
- 463. *Protonibea diacanthus* (Lacepede)

Family 82 MULLIDAE

- 464. *Mulloidichthys flavolineatus* (Lacepede)
- 465. *M. vanicolensis* (Valenciennes)
- 466. *Parupeneus barberinus* (Lacepede)
- 467. *P. heptacanthus* (Lacepede)
- 468. *P. indicus* (Shaw)
- 469. *P. macronemus* (Lacepede)
- 470. *P. trifasciatus* (Lacepede)
- 471. *Upeneus guttatus* (Day)
- 472. *U. moluccensis* (Bleeker)*
- 473. *U. sulphureus* Cuvier*
- 474. *U. sundaicus* (Bleeker)
- 475. *U. taeniopterus* Cuvier*
- 476. *U. tragula* Richardson
- 477. *U. vittatus* (Forsskal)*

Family 83 MONODACTYLIDAE

- 478. *Monodactylus argenteus* (Linnaeus)*
- 479. *M. falciformis* Lacepede

Family 84 PEMPHERIDIDAE

- 480. *Pempheris vanicolensis* Cuvier*

Family 85 KYPHOSIDAE

- 481. *Kyphosus cinerascens* (Forsskal)

Family 86 DREPANEIDAE

- 482. *Drepane punctata* (Linnaeus)

Family 87 EPHIPPIDAE

- 483. *Ephippus orbis* (Bloch)

Family 88 PLATACIDAE

- 484. *Platax torbicularis* (Forsskal)
- 485. *P. teira* (Forsskal)

Family 89 SCATOPHAGIDAE

- 486. *Scatophagus argus* (Bloch)

Family 90 CHAETODONTIDAE

- 487. *Chaetodon auriga* (Forsskal)
- 488. *C. collare* Bloch
- 489. *C. decussatus* Cuvier
- 490. *C. lineolatus* Cuvier
- 491. *C. lunula* (Lacepede)
- 492. *C. trifasciatus* (Park)

493. *C. vagabundus* Linnaeus
 494. *C. xanthocephalus* Bennett
 495. *Heniochus acuminatus* (Linnaeus)
 Family 91 POMACANTHIDAE
 496. *Pomacanthus imperator* (Bloch)*
 497. *Pygoplites diacanthus* (Boddaert)
 Family 92 CICHLIDAE
 498. *Etroplus suratensis* (Bloch)*
 Family 93 POMACENTRIDAE
 499. *Abudefduf bengalensis* (Bloch)
 500. *A. sexfasciatus* (Lacepede)*
 501. *Neopomacentrus cyanomos* (Bleeker)
 Family 94 PSEUDOCROMIDAE
 502. *Pseudochromis caudalis* Boulenger
 Family 95 CIRRHITIDAE
 503. *Paracirrhites forsteri* (Schneider)
 Family 96 SPHYRAENIDAE
 504. *Sphyraena barracuda* (Walbaum)
 505. *S. forsteri* Cuvier
 506. *S. jello* Cuvier*
 507. *S. obtusata* Cuvier*
 Family 97 POLYNEMIDAE
 508. *Eleutheronema tetradactylum* (Shaw)
 509. *Filimanus similis* Feltes
 510. *F. xanthonema* (Valenciennes)*
 511. *Leptomelanosoma indicum* (Shaw)*
 512. *Polydactylus plebeius* (Broussonet)
 513. *P. mullani* (Hora)*
 514. *P. sexfilis* (Valenciennes)
 515. *P. sextarius* (Schneider)
 516. *Polynemus paradiseus* Linnaeus
 Family 98 LABRIDAE
 517. *Cheilinus trilobatus* Lacepede
 518. *Halichoeres nebulosus* (Valenciennes)
 519. *H. nigriscens* (Bloch & Schneider)
 520. *H. scapularis* (Bennett)*
 521. *Xyrichtys cyanifrons* Valenciennes*
 522. *X. pentadactylus* (Linnaeus)

- Family 99 SCARIDAE
 523. *Chlorurus sordidus* (Forsskal)
 524. *Scarus ghobban* Forsskal
 525. *S. globiceps* Valenciennes
 Family 100 URANOSCOPIDAE
 526. *Ichthyscopus lebeck* (Bloch)
 Family 101 PINGUIPEDIDAE (Mugiloididae)
 527. *Parapercis hexophthalma* (Ehrenberg)
 Family 102 BLENNIIDAE
 528. *Alticus kirkii* Gunther
 529. *Atrosalarias fuscus* (Ruppell)
 530. *Blenniella periophthalmus* (Valenciennes)
 531. *Entomacrodus striatus* (Valenciennes)
 532. *Istiblennius lineatus* (Valenciennes)
 533. *Omobranchus punctatus* (Valenciennes)
 534. *Scartella emarginata* (Gunther)*
 Family 103 CALLIONYMIDAE
 535. *Callionymus sagitta* Pallas
 Family 104 ELEOTRIDIDAE
 536. *Bunaka gyrinoides* (Bleeker)*
 537. *Butis amboinensis* (Bleeker)
 538. *Eleotris fusca* (Schneider)*
 539. *Prionobutis koilomatodon* (Bleeker)
 Family 105 GOBIIDAE
 540. *Acentrogobius griseus* (Day)
 541. *A. masoni* (Day)
 542. *A. viridipunctatus* (Valenciennes)*
 543. *Awaous gutum* (Hamilton)
 544. *Bathygobius fuscus* (Ruppell)
 545. *Boleophthalmus boddarti* (Pallas)*
 546. *B. dussumieri* Valenciennes*
 547. *Brachygobius nunus* (Hamilton)
 548. *Glossogobius giuris* (Hamilton)*
 549. *Gobiopsis macrostoma* Steindachner
 550. *Istigobius ornatus* (Ruppell)
 551. *Oxyurichthys microlepis* (Bleeker)*
 552. *O. tentacularis* (Valenciennes)
 553. *Parachaeturichthys ocellatus* (Day)

554. *P. polynema* (Bleeker)*
555. *Periophthalmodon schlosseri* (Pallas)
556. *Psammogobius biocellatus* (Valenciennes)
557. *Scartelaos histophorus* (Valenciennes)
558. *Stigmatogobius poicilosoma* (Bleeker)*

Family 106 GOBIOIDIDAE

559. *Caragobius urolepis* (Bleeker)*
560. *Odontamblyopus rubicundus* Hamilton*

Family 107 TRYPAUCHENIDAE

561. *Ctenotrypauchen microcephalus* (Bleeker)
562. *Trypauchen vagina* (Bloch & Schneider)*

Family 108 KURTIDAE

563. *Kurtus indicus* Bloch

Family 109 ACANTHURIDAE

564. *Acanthurus lineatus* (Linnaeus)
565. *A. nigrofuscus* (Forsskal)
566. *A. xanthopterus* Valenciennes

Family 110 SIGANIDAE

567. *Siganus canaliculatus* (Park)*
568. *S. javus* (Linnaeus)
569. *S. stellatus* Forsskal*
570. *S. vermiculatus* (Valenciennes)

Family 111 GEMPYLIDAE

571. *Gempylus serpens* Cuvier
572. *Neopinnula orientalis* (Gilchrist & von Bonde)

Family 112 TRICHIURIDAE

573. *Eupleurogrammus glossodon* (Bleeker)
574. *E. muticus* (Gray)
575. *Lepturacanthus pantului* (Gupta)*
576. *L. savala* (Cuvier)*
577. *Trichiurus auriga* Klunzinger
578. *T. lepturus* Linnaeus*

Family 113 SCOMBRIDAE

579. *Acanthocybium solandri* (Cuvier)
580. *Auxis thazard* (Lacepede)
581. *Euthynnus affinis* (Cantor)*
582. *Katsuwonus pelamis* (Linnaeus)

583. *Rastrelliger kanagurta* (Cuvier)*
584. *Sarda orientalis* (Temminck & Schlegel)*
585. *Scomberomorus commerson* (Lacepede)
586. *S. guttatus* (Bloch & Schneider)*
587. *S. koreanus* (Kishinouye)

588. *S. lineolatus* (Cuvier)

589. *Thunnus albacares* (Bonnaterre)

590. *T. tonggol* (Bleeker)

Family 114 XIPHIIDAE

591. *Xiphias gladius* Linnaeus

Family 115 ISTIOPHORIDAE

592. *Istiophorus platypterus* (Shaw & Nodder)
593. *Makaira indica* (Cuvier)
594. *Tetrapturus angustirostris* Tanaka
595. *T. audax* (Philippi)

Family 116 CENTROLOPHIDAE

596. *Psenopsis cynea* (Alcock)

Family 117 NOMEIDAE

597. *Psenes cyanophrys* Valenciennes

Family 118 ARIOMMATIDAE

598. *Ariomma indica* (Day)

Family 119 STROMATEIDAE

599. *Pampus argenteus* (Euphrasen)*
600. *P. chinensis* (Euphrasen)

Order 26 PLEURONECTIFORMES

Family 120 PSETTODIDAE

601. *Psettodes erumei* (Schneider)

Family 121 BOTHIDAE

602. *Bothus myriaster* (Temminck & Schlegel)
603. *B. pantherinus* (Ruppell)
604. *Engyprosopon grandisquama* (Temminck & Schlegel)

Family 122 PARALICHTHYIDAE

605. *Pseudorhombus arsius* (Hamilton)
606. *P. elevatus* Ogilby
607. *P. javanicus* (Bleeker)
608. *P. malayanus* Bleeker
609. *P. triocellatus* (Bloch and Schneider)

Family 123 SOLEIDAE

610. *Aesopia cornuta* Kaup
 611. *Brachirus orientalis* (Bloch)
 612. *Solea elongata* Day
 613. *S. ovata* Richardson*
 614. *Synaptura albomaculata* Kaup*
 615. *S. commersonnii* (Lacepede)
 616. *Zebrias altipinnis* Alcock *
 617. *Z. quaggà* (Kaup)
 618. *Z. synapturoides* (Jenkins)

Family 124 CYNOGLOSSIDAE

619. *Cynoglossus arel* (Schneider)*
 620. *C. bilineatus* (Lacepede)
 621. *C. carpenteri* Alcock
 622. *C. cynoglossus* Hamilton
 623. *C. dispar* Day
 624. *C. dubius* Day
 625. *C. lingua* Hamilton*
 626. *C. macrostomus* Norman*
 627. *C. monopus* (Bleeker)
 628. *C. puncticeps* (Richardson)*
 629. *C. semifasciatus* Day*
 630. *Paraplagusia bilineata* (Bloch)

Order 27 TETRAODONTIFORMES

Family 125 TRIACANTHIDAE

631. *Pseudotriacanthus strigifer* (Cantor)
 632. *Triacanthus biaculeatus* (Bloch)

Family 126 BALISTIDAE

633. *Abalistes stellaris* (Lacepede)
 634. *Balistapus undulatus* (Park)
 635. *Balistes rotundatus* Proce

Family 127 MONACANTHIDAE

636. *Aluterus monoceros* (Linnaeus)
 637. *Paramonacanthus choirocephalus* (Bleeker)

Family 128 OSTRACIIDAE

638. *Lactoria cornuta* (Linnaeus)
 639. *Tetrosomus gibbosus* (Linnaeus)

Family 129 TETRAODONTIDAE

640. *Arothron reticularis* (Bloch & Schneider)

641. *Chelonodon fluviatilis* (Hamilton)

642. *C. patoca* (Hamilton)*

643. *Lagocephalus inermis* (Temminck & Schlegel)*

644. *L. lunaris* (Bloch & Schneider)

645. *L. spadiceus* (Richardson)*

646. *Takifugu oblongus* (Bloch)*

647. *Tetraodon cutcutia* (Hamilton)

648. *Torquigener hypselogeneion* (Bleeker)*

Family 130 DIODONTIDAE

649. *Cyclichthys orbicularis* (Bloch)

650. *Diodon holocanthus* Linnaeus

651. *D. hystrix* Linnaeus

Family 131 MOLIDAE

652. *Masturus lanceolatus* (Lienard)

653. *Ranzania laevis* (Pennant)

The marine and estuarine fish fauna of Maharashtra can be distinguished under two classes : **Chondrichthyes** (Cartilaginous fishes) and **Osteichthyes** (Bony fishes).

Key to the classes

- 1a. Body made up of cartilaginous skeleton. Five to seven pairs of lateral or ventral, nonconfluent gill slits without gill covers ...
 CHONDRICHTHYES
- 1b. Body made up of bony skeleton. One pair of lateral gill slits confluent as a single ventral slit or nonconfluent as lateral gill slits with gill cover OSTEICHTHYES

Class CHONDRICHTHYES
(Cartilaginous fishes)

- 1a. Gill slits present on lateral sides of head. Anal fin present 2
- 1b. Gill slits on ventral sides of head. Anal fin absent 4
- 2a. Mouth anterior to orbit
 ORECTOLOBIFORMES
- 2b. Mouth posterior to front margin of orbit ... 3

- 3a. Eyes with nictitating eyelids. Intestine with spiral or scroll valve
..... CARCHARHINIFORMES
- 3b. Eyes without nictitating eyelids. Intestine without spiral or scroll valve
..... LAMNIFORMES
- 4a. Body shark-like in appearance, somewhat depressed. Pectoral fins barely enlarged. Tail not distinctly marked off from the body
..... 5
- 4b. Body not shark-like, but distinctly depressed. Pectoral fins broadly enlarged. Tail almost marked off from the body 6
- 5a. Snout conspicuously elongate, prolonged into a long, flat plate having a row of large teeth-like structure (saw-like) on each side
..... PRISTIFORMES
- 5b. Snout wedge-shaped and much prolonged, but not as a blade and without lateral teeth
..... RAJIFORMES
- 6a. Caudal fin well-developed. Electric organs in head region present. Skin soft and flabby ...
..... TORPEDINIFORMES
- 6b. Caudal fin and electric organs absent. Skin firm MYLIOBATIFORMES

Order 1 ORECTOLOBIFORMES

Key to the families

- 1a. Caudal fin almost equal to rest of body
..... STEGOSTOMATIDAE
- 1b. Caudal fin considerably shorter than rest of body 2
- 2a. Mouth extremely large, terminal. External gill slits very large, internal gill slits inside mouth cavity with filter screens. Caudal peduncle with strong lateral keels and an upper precaudal pit. Caudal fin with a strong ventral lobe RHINCODONTIDAE
- 2b. Mouth smaller, subterminal. External gill slits small, internal gill slits without filter screens. Caudal peduncle without strong lateral keels and precaudal pit. Caudal fin with a weak

ventral lobe or none, but with a strong terminal lobe 3

- 3a. Nostrils with a lobe and groove around outer borders. Spiracles large, below eyes. Precaudal tail much greater than head length and body depth HEMISCYLLIIDAE
- 3b. Nostrils without a lobe and groove around outer borders. Spiracles small, behind but not below eyes. Precaudal tail short, much shorter than head length and body depth
..... GINGLYMOSTOMATIDAE

Family 1 HEMISCYLLIIDAE

(Bamboo sharks, Long-tailed carpet sharks)

Body cylindrical or slightly depressed, with or without ridges on sides. Mouth small and transverse, anterior to eyes. Eyes dorso-lateral with large spiracles below them. Gill slits small and the fifth slit overlapping the fourth. Two dorsal fins with no spines, the second dorsal fin insertion well ahead of anal fin origin. Anal fin rounded with keel-like apex, separated from the lower caudal origin by a narrow notch. Precaudal tail long, much greater than head length and body depth. Caudal peduncle without lateral keels and precaudal pit.

Species known to occur in Maharashtra

1. *Chiloscyllium griseum* Muller & Henle (Grey bamboo shark)
2. *C. indicum* (Gmelin) (Slender bamboo shark)

Key to the species

- 1a. Anal fin origin considerably posterior to free rear tip of second dorsal fin; length of anal fin from origin to free rear tip subequal to length of hypural caudal lobe from lower caudal origin to subterminal notch. Body with numerous small dark spots and bars
..... *C. indicum*
- 1b. Anal fin origin below or close behind rear tip of second dorsal fin, length of anal fin very shorter than hypural caudal lobe. Adults usually light brown but young with

conspicuous dark transverse bands
 *C. griseum*

Fisheries information : These two bamboo sharks are very commonly occurring species along both the coasts of our country. These fishes are captured in shore fisheries and are utilized for human consumption.

Family 2 STEGOSTOMATIDAE (Zebra shark)

Body cylindrical with conspicuous ridges on sides. Mouth small and transverse, anterior to eyes. Eyes lateral; spiracles subequal in size to eyes. Gill slits small, the fifth overlapping fourth. Caudal peduncle without lateral keels and precaudal pits. First dorsal fin larger than second, its origin well anterior to pelvic fin origin. Immature specimens with dark saddles, which changes into dark spots in adults.

Species known to occur in Maharashtra

Stegostoma fasciatum (Hermann) (Zebra shark)

Fisheries information : Zebra shark is a common species occurring in both the coasts of our country. The flesh is used fresh and dried-salted for human consumption. Its liver is processed for vitamins; fins dried and processed for the oriental shark fin trade and offal used for fishmeal.

Family 3 GINGLYMOSTOMATIDAE (Nurse sharks)

Head without lateral flaps of skin. Body cylindrical, somewhat depressed, without ridges on sides. Eyes dorso-lateral or lateral. Spiracles much smaller than eyes, posterior to eyes. Gill openings small, the fifth practically overlapping fourth. Nostrils with short or moderately long, pointed barbels, but without circumnarial folds or grooves. Mouth small, transverse, anterior to eyes. Caudal peduncle without lateral keels and precaudal pit. Dorsal fins two, without spines; the second dorsal fin insertion well anterior to anal fin insertion. Precaudal tail short, much shorter than head length. Juveniles plain or with dark spots.

Species known to occur in Maharashtra

Nebrius ferrugineus (Lesson) (Tawny nurse shark)

Fisheries information : Tawny nurse shark is a common species occurring in both the coasts of our country. Its flesh is used fresh and dried salted for human consumption. Its liver is utilized for oils and vitamins, fins are utilized in the oriental shark fin trade and offal is used for fishmeal. Its thick, armor-like skin is potentially valuable as leather.

Family 4 RHINCODONTIDAE (Whale sharks)

Head broad and flattened, without lateral flaps of skin. Body cylindrical or more or less depressed, with prominent ridges on sides. Eyes lateral, without subocular pockets. Spiracles smaller than eyes, posterior to them but not below them. Gill openings very large, fifth considerably separated from fourth. Nostrils with very small barbels and without circumnarial folds and grooves. Mouth almost terminal, anterior to eyes. Caudal peduncle with strong lateral keels and an upper precaudal pit. First dorsal fin much larger than second, its origin well anterior to insertion of pelvic fins and opposite to its bases. Body colour light with vertical and horizontal stripes, in the form of a checkerboard.

Species known to occur in Maharashtra

Rhincodon typus Smith (Whale shark)

Fisheries information : Whale shark is a frequently occurring species in both the coasts of our country but its population shows declining trend. Its flesh is consumed fresh or dried salted and also utilized for treating boat hulls.

Order 2 LAMNIFORMES

Key to the families

- 1a. Caudal fin somewhat symmetrical and lunate; with a long ventral lobe and proventral caudal border more or less equal to dorsal caudal border. Caudal peduncle with very strong lateral keels LAMNIDAE

- 1b. Caudal fin asymmetrical, not lunate, ventral caudal lobe short, proventral caudal margin much shorter than dorsal caudal border. Caudal peduncle without lateral keels or with weak ones ODONTASPIDIDAE

Family 5 ODONTASPIDIDAE

(Sand tiger shark)

Mouth large, extending beyond eyes. Snout conical to slightly depressed and pointed. Gill slits not extending onto dorsal surface of head, anterior to pectoral fin bases. Two dorsal fins and an anal fin. Pectoral fins small. Caudal peduncle compressed without keels but with an upper precaudal pit and an asymmetrical caudal fin with a strong and short ventral lobe.

Species known to occur in Maharashtra

Carcharias tricuspidatus Day (Blue nurse sand tiger shark)

Fisheries information : This species is apparently captured along the coasts of India and Pakistan. It is a poorly known species.

Remarks : Since the type specimen of *Carcharias tricuspidatus* Day is lost, Compagno (2001) considered the description and figure provided by Day (1878) are inaccurate and erroneous. So, this species is placed under synonymy of *C. taurus* Rafinesque.

Family 6 LAMNIDAE

(Mackerel white shark)

Body spindle shaped with pointed snouts. Mouth large, extending beyond eyes. Gill slits extending onto dorsal surface of head, anterior to pectoral fin bases. First dorsal fin large; second dorsal and anal fins minute and pivoting. Pectoral fins moderately long and broad, shorter than head length. Caudal fin lunate. Precaudal pits present, caudal peduncle strongly depressed and with strong keels. Ventral side of body white.

Species known to occur in Maharashtra

Isurus oxyrinchus Rafinesque (Short-fin mako)

Fisheries information : Short-fin mako is a

common species occurring in both the coasts of our country. Its flesh is consumed fresh, frozen, smoked and dried salted; its liver is used for oils and vitamins; fins utilized for shark-fin soup; skins processed into leather and the jaws and teeth are used for ornaments.

Order 3 CARCHARINIFORMES

(Ground sharks)

Key to the families

- 1a. Head with lateral, blade-like expansions SPHYRNIDAE
- 1b. Head normal, without lateral expansions ...2
- 2a. First dorsal fin base opposite or behind pelvic fin bases SCYLORHINIDAE
- 2b. First dorsal fin base anterior to pelvic fin bases 3
- 3a. Precaudal pits absent. Dorsal caudal border not undulated TRIAKIDAE
- 3b. Precaudal pits present. Dorsal caudal border undulated 5
- 4a. Intestinal valve of scroll type CARCHARHINIDAE
- 4b. Intestinal valve of spiral type HEMIGALEIDAE

Family 7 SCYLORHINIDAE

(Cat sharks)

Body generally elongated. Head without lateral expansions. Eyes cat-like with nictitating eyelids. Mouth large, maxilla extending to front border of eyes. Two dorsal fins, the first dorsal fin base over or behind pelvic fin bases. Precaudal pits absent. Caudal fin without a strong ventral lobe or lateral undulations on its dorsal border. Body colour generally variegated.

Species known to occur in Maharashtra

Atelomycterus marmoratus (Bennett) (Coral cat shark)

Fisheries information : The coral cat shark is a common species occurring in both the coasts of our country. Its flesh utilized fresh or dried salted

for human consumption or processed for fishmeal and its livers are used for oils.

Family 8 TRIAKIDAE (Hound sharks)

Head without lateral expansions. Mouth large, extending to front border of eyes. Eyes with nictitating eyelids. Two moderate sized spineless dorsal fins and an anal fin, the first dorsal fin well ahead of pelvic fin bases. Caudal fin without a strong ventral lobe or lateral undulations on its dorsal surface. Intestine with a spiral valve of 4 to 11 turns.

Species known to occur in Maharashtra

Mustelus mosis Hemprich & Ehrenberg
(Arabian Smooth-hound)

Fisheries information : Arabian smooth hound is a common species occurring in both the coasts of our country. Its flesh is used for human consumption.

Remarks : Report of *M. manazo* Bleeker from Maharashtra coast is referable to this species.

Family 9 HEMIGALEIDAE (Weasel sharks)

Head without lateral expansions. Mouth large, extending to anterior border of eyes. Eyes with internal nictitating eyelids. Two moderate sized spineless dorsal fins and an anal fin, the first dorsal fin base considerably anterior to pelvic fin bases. Precaudal pits present. Caudal fin with a strong ventral lobe and lateral undulations on its dorsal border. Intestine with a spiral valve.

Species known to occur in Maharashtra

1. *Chaenogaleus macrostoma* (Bleeker)
(Hooktooth shark)
2. *Hemipristis elongata* (Klunzinger)
(Snaggletooth shark) (Vulnerable)

Key to the species

- 1a. Snout obtusely wedge-shaped dorso-laterally. Lower jaw rounded at symphysis. No toothless

space at middle of jaws. Mesial edges of teeth unserrated, sometimes a few cusplets on mesial edges of lower teeth. Fins not falcate, posterior margin of anal and second dorsal moderately concave, those of pectoral and pelvic fins straight or slightly concave

..... *C. macrostoma*

- 1b. Snout bluntly rounded dorso-laterally. Lower jaw truncated at symphysis. A toothless space at middle of both jaws. Mesial edges of upper teeth and most of lower teeth serrated or with a few cusplets (except for young below 55 cm. where they are smooth). Fins strongly falcate, posterior margin of anal, second dorsal, pectoral and pelvic fins deeply concave

..... *H. elongata*

Fisheries information : Hooktooth shark and snaggletooth shark are seen along both the coasts of our country. The flesh of these sharks is utilized for human consumption. The liver of Snaggletooth shark is processed for vitamins, fins used in the oriental shark fin trade and offal for fishmeal.

Family 10 CARCHARHINIDAE (Requiem sharks)

Head without lateral expansions. Mouth extends to front margin of eyes. Eyes with internal nictitating eyelids. Two dorsal fins and an anal fin, the first dorsal fin with its base well anterior to pelvic fin bases. Precaudal pits present. Caudal fin with a strong ventral lobe and lateral undulations on its dorsal border. Intestine with a scroll valve. Body colour variable, usually no colour pattern.

Species known to occur in Maharashtra

1. *Carcharhinus amblyrhynchoides* (Whitley)
(Graceful shark)
2. *C. brevipinna* (Muller & Henle) (Spinner shark)
3. *C. dussumieri* (Muller & Henle) (White-cheek shark)
4. *C. hemiodon* (Muller & Henle) (Pondicherry shark) (Critically Endangered)

5. *C. leucas* (Muller & Henle) (Bull shark)
6. *C. limbatus* (Muller & Henle) (Black-tip shark)
7. *C. macroti* (Muller & Henle) (Hard-nose shark)
8. *C. melanopterus* (Quoy & Gaimard) (Black-tip reef shark)
9. *C. sorrah* (Muller & Henle) (Spot-tail shark)
10. *Galeocerdo cuvier* (Peron & Le Sueur) (Tiger shark)
11. *Glyphis gangeticus* (Hamilton) (Gangetic shark) (Endangered)
12. *Lamiopsis temminckii* (Muller & Henle) (Broad-fin shark)
13. *Loxodon macrorhinus* (Muller & Henle) (Slit-eye shark)
14. *Negaprion acutidens* (Ruppell) (Sickle-fin Lemon shark)
15. *Rhizoprionodon acutus* (Ruppell) (Milk shark)
16. *R. oligolinx* Springer (Grey sharp-nose shark)
17. *Scoliodon laticaudus* Muller & Henle (Spade-nose shark)
18. *Triaenodon obesus* (Ruppell) (White-tip reef shark)
- 3a. Second dorsal fin almost or quite equal to first dorsal fin 4
- 3b. Second dorsal fin considerably smaller than first.....5
- 4a. Snout short, preoral length much less than mouth width. Upper and lower teeth with narrow, unserrated cusps *N. acutidens*
- 4b. Snout longer, preoral length almost equal to mouth width. Upper teeth with broad, triangular, serrated cusps; lower with narrow, smooth cusps *L. temminckii*
- 5a. Head greatly depressed and trowel-shaped. Pectoral fins broadly triangular, length from origin to free rear tips almost equal to their anterior margins. Free rear tips of first dorsal fin about over midbases of pelvic fins. Postventral margin of caudal fin usually only shallowly concave *S. laticaudus*
- 5b. Head varying from conical to slightly depressed. Pectoral fins narrow, length 4/5 or less of anterior margin (generally less). Free rear tip of dorsal fin over (or usually anterior to) pelvic fin origins. Post ventral margin of caudal fin deeply incised 6
- 6a. Second dorsal fin origin well posterior to anal fin origin, usually over or slightly ahead of anal fin insertion. Preanal ridges very long and conspicuous, subequal to or greater in length than anal fin base. Posterior border of anal fin straight or slightly concave 7
- 6b. Second dorsal fin origin usually near anal fin origin, or posterior to it, but generally well anterior to anal fin insertion. Preanal ridges variably developed, short and half the anal fin base length or less. Posterior border of anal fin deeply concave or notched 9
- 7a. Eyes with posterior notches. Labial furrows reduced, confined to mouth corners. First dorsal fin base 2 to 3 times in distance between pectoral and pelvic fins *L. macrorhinus*
- 7b. Eyes without notches. Labial furrows generally conspicuous and long, (reduced in *R. oligolinx*). First dorsal fin base generally less

Key to the species

- 1a. Upper labial furrows very long, extending to front of eyes. Spiracles present and relatively large. Caudal peduncle with prominent lateral keels. Vertical black or dusky bars on back, obscure or absent in adults *G. cuvier*
- 1b. Upper labial furrows long to very short, not extending in front of eyes. Spiracles usually absent. Caudal peduncle usually without lateral keels 2
- 2a. High proximal and distal cusplets present on most teeth in both jaws. Expanded anterior nasal and mesonarial flaps forming a tube for the excurrent aperture *T. obesus*
- 2b. Cusplets usually absent on lower teeth, low or absent on uppers. Nasal flaps not forming a tube 3

- than 2 times in distance between pectoral and pelvic fin bases (up to 2 in adult *R. acutus*) 8
- 8a. Upper labial furrows reduced, often inconspicuous, generally less than 1% (rarely up to 1.3%) of the total length; uppers generally shorter than lower furrows. Tooth rows averaging fewer, counts 23 to 25/ 21 to 24 but mostly below 25/24 *R. oligolinx*
- 8b. Upper labial furrows long and rather conspicuous, more than 1% of total length and generally more than 1.3%; uppers generally as long as or longer than lower furrows. Tooth rows more numerous in average, counts 23 to 30 / 21 to 28 but mostly 25 / 24 or higher. *R. acutus*
- 9a. Second dorsal fin about half the height of first dorsal. Cusps of lower teeth prominently protruding when mouth closed. Precaudal pits longitudinal, not crescentic..... *G. gangeticus*
- 9b. Second dorsal fin less than half the height of first dorsal. Cusps of lower teeth not prominently protruding when mouth closed. Precaudal pits transverse, crescentic..... 10
- 10a. Upper anterior teeth with broad triangular cusps, not well delimited from tooth bases *C. leucas*
- 10b. Upper anterior teeth with narrow cusps, well delimited from tooth bases 11
- 11a. Second dorsal fin with a prominent black tip but other fins plain *C. dussumieri*
- 11b. Second dorsal fin plain, dusky or black-tipped but other fins also with conspicuous black markings if second dorsal fin black tipped. 12
- 12a. Second dorsal fin low, with very elongated inner margin over twice fin height..... 13
- 12b. Second dorsal fin higher, with short inner margin less than 2 times in fin height 14
- 13a. Snout very long and narrow. Cusps of upper teeth smooth. Bases of upper teeth with large cusplets. Interdorsal ridge absent..... *C. maclovi*
- 13b. Snout shorter and moderately broad. Cusps of upper teeth serrated. Bases of upper teeth with small cusplets or none. Interdorsal ridge present *C. sorrah*
- 14a. Snout very short and bluntly rounded. First dorsal fin with a prominent black blotch. Black edge to the entire posterior margin of caudal fin..... *C. melanopterus*
- 14b. Snout longer and parabolic to pointed. First dorsal fin varying from plain to black tipped. No black edge to posterior margin of caudal fin 15
- 15a. Upper antero-lateral teeth with strong cusplets, cusps smooth-edged or weakly serrated. Interdorsal ridge present *C. hemiodon*
- 15b. Upper antero-lateral teeth without strong cusplets, cusps usually strongly serrated. Interdorsal ridge absent 16
- 16a. Snout short, internasal distance 1.0 to 1.2 times in snout..... *C. amblyrhynchoides*
- 16b. Snout long, internasal distance 1.3 to 1.8 times in snout 17
- 17a. First dorsal fin lower, its height over 2.2 times in interdorsal space. Origin of first dorsal fin over or just behind free rear tip of pectoral fin *C. bevipinna*
- 17b. First dorsal fin higher, its height less than 2.2 times in interdorsal space. Origin of first dorsal fin over or just behind insertion of pectoral fin *C. limbatus*

Fisheries information : The liver of these sharks are utilized for vitamin oils as a substitute for cod liver-oil; hides are utilized for leathers; fins for shark-fin soup base and carcasses are utilized for fishmeal; the flesh is also used for human consumption. *G. cuvier* has been recognized as big game fish by the International Game Fish Association.

Remarks : *Carcharhinus dussumieri* is the first official record of species (Muller and Henle, 1841) described from Bombay. Report of *Glyphis gangeticus* (Hamilton) from Maharashtra coast (Sorley, 1933) seems to be doubtful. We could

not trace out the specimen from Bombay in the National Zoological Collections for examination.

Family 11 SPHYRNIDAE
(Hammerhead sharks)

Head with laterally expanded blades, like a double-bitted axe. Eyes with internal nictitating eyelids. Spiracles absent. First dorsal fin anterior to pelvic fin bases, varying from equidistant between pectoral and pelvic fin bases to closer to pectoral fin bases; midpoint of first dorsal fin base always anterior to pelvic fin origins. Second dorsal fin much smaller than first. Precaudal pits present. Ventral caudal lobe strong, undulations or ripples present in dorsal caudal border. Intestine with a scroll valve. Colour light grey or brownish above, white below or no colour pattern.

Species known to occur in Maharashtra

1. *Eusphyrna blochii* (Cuvier) (Wing-head shark)
2. *Sphyrna lewini* (Griffith & Smith) (Scalloped hammerhead shark)
3. *S. mokarran* (Ruppell) (Great hammerhead shark)
4. *S. zygaena* (Linnaeus) (Smooth hammerhead shark)

Key to the species

- 1a. Lateral blades of head very narrow and wing-like. Nostrils greatly enlarged, their widths 0.8 to 0.9 times in the internarial width and almost twice the mouth width. Knobs present along anterior border of head, opposite nostrils
.....*E. blochii*
- 1b. Lateral blades of head antero-posteriorly broad, not wing-like. Nostrils short, their widths 7 to 14 times in internarial width and less than half of mouth width. No knobs along anterior border of head 2
- 2a. Anterior border of head almost straight in adults. Prenarial grooves absent or hardly developed. Teeth strongly serrated at all sizes. Pelvic fins high and falcate. First dorsal fin markedly falcate. Second dorsal fin high, with

a short inner margin and deeply concave posterior border *S. mokarran*

- 2b. Anterior border of head moderately convex in adults, strongly so in young. Prenarial grooves well-developed. Teeth smooth-edged in young, weakly serrate in adults. Pelvic fins low and not falcate, with almost straight posterior margins. First dorsal fin generally semifalcate. Second dorsal fin low, with a long inner border and almost straight posterior border 3
- 3a. A conspicuous median indentation on anterior border of head. Free rear tip of second dorsal fin almost reaching upper caudal origin. Anal fin base noticeably larger than that of second dorsal fin *S. lewini*
- 3b. No median indentation on anterior border of head. Free rear tip of second dorsal fin considerably anterior to upper caudal origin. Anal fin base as large as second dorsal fin base *S. zygaena*

Fisheries information : These fishes are frequently occurring in both east and west coast of India. The flesh of the hammerhead sharks is utilized for human consumption, hides are processed for leather, fins are used in the shark-fin soup base, liver are processed for vitamins and carcasses for fishmeal.

Remarks : *Sphyrna lewini* was recorded from Maharashtra coast as *Zygaena tudes* (Valenciennes) (Sorley, 1933) which is not likely to occur along Indian coast.

Order 4 PRISTIFORMES

Family 12 PRISTIDAE
(Sawfishes)

Body shark-like and snout markedly produced into a narrow, flat blade-like extension, armed with teeth-like structures (saw-like). Gill openings on ventral side. Eyes and spiracles on top of head. Two dorsal fins widely separated. Pectoral fins small. Caudal fin well developed. Tail not marked off from the trunk. Body, fins and rostrum covered with small, closely set dermal denticles in adults but juveniles of *Anoxypristis* are completely naked.

Species known to occur in Maharashtra

1. *Anoxypristis cuspidata* (Latham) (Knifetooth sawfish) (Endangered)
2. *Pristis microdon* Latham (Small toothed sawfish) (Endangered)

Key to the species

- 1a. Rostral teeth depressed, broad and blade-like, in shallow broad sockets on the rostrum. Caudal fin with a prominent subterminal notch and long ventral lobe. Rostral teeth 24 to 25 pairs *A. cuspidata*
- 1b. Rostral teeth narrow, not greatly depressed and spike-like, in deep, narrow sockets on the rostrum. Caudal fin without a subterminal notch, with a short ventral lobe or none. Rostral teeth 17 to 22 pairs *P. microdon*

Fisheries information : *A. cuspidata* is a monotypic and euryhaline species. The livers of the sawfishes are used for extraction of oils which contain high percentage of vitamin A and flesh is utilized for human consumption.

Order 5 TORPEDINIFORMES**Key to the families**

- 1a. Disc truncate or emarginate anteriorly. Jaws extremely slender. Labial cartilage absent. Rostrum absent or reduced TORPEDINIDAE
- 1b. Disc roundish anteriorly. Jaws stout, not slender. Labial cartilage strong. Rostrum present NARCINIDAE

Family 13 TORPEDINIDAE

(Electric rays)

Body soft and flabby with powerful electric organs, derived from branchial muscles in the head region. Disc truncate or emarginate anteriorly. Caudal fin well developed. Labial cartilage absent. Rostrum absent or reduced. Two spineless dorsal fins inserted on tail region. Pelvic fins well developed. Anal fin absent.

Species known to occur in Maharashtra

Torpedo sinuspersici (Olfers) (Electric ray)

Fisheries information : Electric ray is a littoral species and its flesh is edible. This species can produce electric current over 100 volts. Its electric nervous energy gets exhausted easily.

Family 14 NARCINIDAE

(Numbfishes)

Body soft and flabby with electric organs derived from branchial muscles present in the head region. Disc roundish to oval anteriorly. Deep or shallow groove present around mouth and lips. Jaws protractile. One or two spineless dorsal fins present on tail region. Dorsal fins, pelvic fins and caudal fin well developed. Anal fin absent.

Species known to occur in Maharashtra

1. *Narcine indica* Henle (Largespotted numbfish)
2. *Narke dipterygia* (Bloch & Schneider) (Spot-tail sleeper ray)

Key to the species

- 1a. A single dorsal fin. Groove around mouth shallow. Jaws short and weakly protractile. Rostrum narrow. Disc colour brown or chocolate *N. dipterygia*
- 1b. Two dorsal fins. Deep groove around mouth and lips. Jaws long and strongly protractile. Rostrum broad. Disc with black blotches *N. indica*

Fisheries information : The fishes of this family have no commercial value and are occasionally captured as by catch.

Remarks : Some authors place *Narke dipterygia* under separate family Narkidae. *Narcine indica* was recorded as *N. maculata* (Shaw) in Misra (1969). There is confusion over identity of spotted *Narcine* of India. *N. indica* is considered as a junior synonym of *N. timlei* (Bloch and Schneider) (Carvalho and Randall, 2003).

Order 6 RAJIFORMES
Family 15 RHINOBATIDAE
(Guitar fishes)

Body more or less intermediate between shark-like and skate-like. Anterior part of trunk varying from more or less flattened to strongly flattened body. Snout elongate and tapering. Hind border of pectoral fins extending rearward as far as or further than origin of pelvic fins. Tail stout and not definitely marked off from body. Two well developed dorsal fins and a caudal fin. Caudal fin may or may not with a distinct lower lobe. Denticles over body constitute a row on middle of back.

Species known to occur in Maharashtra

1. *Rhina ancylostoma* Schneider (Bow-mouth guitarfish)
2. *Rhinobatos granulatus* Cuvier (Sharp-nose guitarfish)
3. *R. obtusus* Muller & Henle (Wide-nose guitarfish)
4. *R. thouniana* (Shaw) (Club-nose guitarfish)
5. *Rhynchobatus djeddensis* (Forsskal) (Giant guitarfish)

Key to the species

- 1a. Caudal fin bilobed. First dorsal fin inserted above pelvic fin bases. Posterior margins of pectoral fin considerably anterior to pelvic fins origin 2
- 1b. Caudal fin not bilobed. First dorsal fin inserted considerably posterior to hind tip of pelvic fins. Posterior margins of pectoral fins extend rearward as far or further than origin of pelvic fins 3
- 2a. Snout long and pointed. Posterior border of spiracles with two continuous folds. Mouth slightly undulated, with median projection of lower jaw fitting into a corresponding depression in upper jaw*R. djeddensis*
- 2b. Snout broad and rounded. Spiracular folds

absent. Mouth deeply undulated, with three forward projections of lower jaw corresponding with three indentations of upper jaw *R. ancylostoma*

- 3a. Length of nostril less than twice width of mouth, greater than the distance between them *R. thouniana*
- 3b. Length of nostril 2 to 3 times width of mouth, almost equal to internarial length 4
- 4a. Snout very long and narrow, the rostral ridges close together throughout their length. Width of mouth 2.6 to 3.25 times in snout length *R. granulatus*
- 4b. Snout short and narrow, the rostral ridges separated by a considerable distance throughout their length. Width of mouth almost 1.9 times in snout length *R. obtusus*

Fisheries information : The guitar fishes are of not much economic value. These fishes are found in good number along with the catches of other batoid fishes. *R. ancylostoma* is a monotypic species, usually found in both the coasts of our country. *R. djeddensis* grows up to 240 kg. The livers of this fish produce a good quality of liver oil. Its flesh is also considered nourishing when consumed salted or fresh.

Order 7 MYLIOBATIFORMES

Key to the families

- 1a. Eyes and spiracles on sides of head. Dorsal fin present MYLIOBATIDAE
- 1b. Eyes and spiracles on top of head. No distinct dorsal fin 2
- 2a. Disc extremely broad, more than 1.5 times broader than long. Tail slender, shorter than disc width. No buccal papillae on floor of mouth GYMNURIDAE
- 2b. Disc at least 1.3 times as broad as long. Tail (if complete) much longer than disc width. Floor of mouth with several papillae DASYATIDAE

Family 16 MYLIOBATIDAE (Eagle rays)

Head elevated and conspicuously marked off from disc. Disc rhomboid, much broader than long, its width in adults of different species up to more than 2.5 m. Head distinct with lateral prominent eyes. Spiracles also lateral on head. Anterior subdivision of pectoral fins form a single subrostral lobe. Floor of mouth with several fleshy papillae. Tail long and whip-like and much longer than disc, a serrated spine (or spines) at its base may present.

Species known to occur in Maharashtra

1. *Aetobatus narinari* (Euphrasen) (Spotted eagle ray)
2. *Aetomylaeus maculatus* (Gray) (Mottled eagle ray)
3. *A. milvus* (Muller and Henle) (Brown eagle ray)
4. *A. nichofii* (Schneider) (Nieuhof's eagle ray)
5. *Mobula eregoodootenkee* (Bleeker) (Pigmy devil ray)
6. *M. mobular* (Bonnaterre) (Devil fish)
7. *Rhinoptera javanica* Muller & Henle (Javanese cownose ray)

Key to the species

- 1a. Head with two widely separated anterior horn-like projections (cephalic fin) resemble ears 2
- 1b. Head with one soft fleshy lobe (subrostral lobe) protruding markedly under the head resemble a duck's beak 3
- 2a. Tail with spine(s) *M. mobular*
- 2b. Tail spineless *M. eregoodootenkee*
- 3a. Subrostral lobe deeply incised in middle, thus forming two basally continuous lobes. Floor of mouth without papillae. Teeth in 7 series in each jaw *R. javanica*
- 3b. Subrostral lobe (snout) undivided. Floor of

mouth with several fleshy papillae. Teeth in 1 to 3 series in each jaw 4

- 4a. A single series of large teeth in each jaw. Tail with spine. Disc with whitish spots or rings on dark background *A. narinari*
- 4b. Three series of teeth in each jaw. Tail without spine 5
- 5a. Origin of dorsal fin behind ends of pelvic fin bases. Brown edged ocelli on hind part of disc *A. maculatus*
- 5b. Origin of dorsal fin opposite ends of pelvic fin bases 6
- 6a. Disc twice wide as long. About five blue cross bands on disc, that disappear with age *A. nichofii*
- 6b. Disc less than twice wide as long. Green brown-edged ocelli on hind part of disc *A. milvus*

Fisheries information : The eagle rays are generally abundantly found in the commercial catches in our country. These fishes are usually processed for fishmeal. The oil extracted from the livers of these fishes is utilized for smearing boats.

Remarks : These fishes were placed under three distinct families, i.e. Mobulidae (*Mobula*), Myliobatidae (*Aetobatus* and *Aetomylaeus*) and Rhinopteridae (*Rhinoptera*) by some authors. *M. mobular* may possibly be misidentified *M. japonicus* (Muller and Henle) in Indian waters. But for want of material conformity we retained the name published earlier. *Mobula eregoodootenkee* was often recorded as *Mobula diabolus* (Shaw), which is currently considered as a junior synonym of *Mobula mobular*.

Family 17 DASYATIDAE (Sting rays, Whiprays)

Disc kite-like, flattened, outer front margin of pectoral fins continuous along side of head. A long tail distinct from disc, with one or more long poisonous spines. Dorsal and caudal fin absent. Spiracles large, close posterior to eyes on top of

head. Pelvic fins small, inserted below pectoral fins.

Species known to occur in Maharashtra

1. *Dasyatis kuhlii* (Muller & Henle) (Blue spotted sting ray)
2. *D. zugei* (Muller & Henle) (Pale-edged sting ray)
3. *Himantura bleekeri* (Blyth) (Whiptail sting ray)
4. *H. imbricata* (Schneider) (Scaly sting ray)
5. *H. uarnak* (Forsskal) (Honeycomb sting ray)
6. *Pastinachus sephen* (Forsskal) (Drab sting ray)
7. *Taeniura meyeni* Muller & Henle (Blotched fantail ray)

Key to the species

- 1a. Tail with cutaneous folds, either upper or lower or both 2
- 1b. Tail without cutaneous folds.....5
- 2a. Disc diamond shaped. Tail thick, with very prominent lower tail fold. No upper tail fold. Teeth hexagonal with thick high crowns *P. sephen*
- 2b. Disc oval or rhomboidal. Tail whip-like, with inconspicuous tail folds either upper or lower or both. Teeth rhomboidal with thin crowns 3
- 3a. Disc oval or rounded. Lower cutaneous folds extends to tip of tail. Mouth straight with 5 buccal processes *T. meyeni*
- 3b. Disc rhomboidal. Tail with both dorsal and ventral cutaneous folds terminating far short of tail-tip. Mouth undulated, with or without buccal process.....4
- 4a. Floor of mouth with two buccal processes (Papillae). Disc brown with reddish margins and blue circular spots *D. kuhlii*
- 4b. Floor of mouth without buccal processes (Papillae). Disc plain dusky brown *D. zugei*
- 5a. Disc diamond shaped, usually with a single

functional sting. Dorsal surface of disc brown to black with honey-comb pattern in adult, leopard pattern in young *H. uarnak*

- 5b. Disc oval shaped, usually with two functional stings. Dorsal surface of disc plain 6
- 6a. Underside of disc whitish with a broad dark margin. Disc width of adults more than one meter *H. bleekeri*
- 6b. Underside of disc entirely white. Disc width of adults under 25 cm *H. imbricata*

Fisheries information : The liver of *H. sephen* is utilized for the preparation of liver oil which contains high vitamin A potency. The flaps of the Sting rays and Whip rays are utilized for the preparation of fishmeal.

Remarks : *Taeniura meyeni* was recorded from Bombay waters as *Taeniura melanospila* Bleeker by Kewalramani and Chhapgar (1957).

Family 18 GYMNURIDAE (Butterfly rays)

Disc rhomboid, at least 1.5 times broader than long. Tail conspicuously marked off, slender and shorter than disc; with longitudinal folds on upper and / or lower surface. Some species have spiracular tentacles and one or longer, saw-edged tail spines. Caudal fin absent.

Species known to occur in Maharashtra

Gymnura poecilura (Shaw) (Longtail butterfly ray)

Fisheries information : The Butterfly fishes are utilized for the preparation of fishmeal. These fishes are common in the commercial catches but are of no commercial value.

Remarks : Mueller (1932) had recorded *Gymnura japonica* (Schlegel) and Sorley (1933) had recorded *Gymnura micrura* (Schneider) from Bombay coast. These two species are probably misidentification of *Gymnura poecilura*, since occurrence of these two species along Indian coast is questionable (Eschmeyer, 2005).

Class OSTEICHTHYES

(Bony fishes)

Key to the orders

- 1a. Body not bilaterally symmetrical, highly flattened. Eyes present on one side of body only. Dorsal and anal fins long
..... PLEURONECTIFORMES
- 1b. Body bilaterally symmetrical. Eyes present on both sides of body 2
- 2a. Gill openings below or posterior to pectoral fins. First spine of dorsal fin modified into a fishing pole. Body globose or depressed
..... LOPHIIFORMES
- 2b. Gill openings anterior to pectoral fins 3
- 3a. Body greatly elongate, cylindrical and eel-like. Gill openings narrow, on sides of head. Fin spines absent ANGUILLIFORMES
- 3b. Body not so elongate and eel-like; if eel-like, then either the gill openings not separate from each other but united on ventral side of body near throat, or pelvic fins present, or spiny rays in dorsal and anal fins, or else gill cavity not enlarged 4
- 4a. Snout considerably elongate, tube-like, with the mouth at the end of tube. Pelvic fins, when present, abdominal. Gill tufted, lobe-like SYNGNATHIFORMES
- 4b. Snout not tubular, but if it resemble a tube then pelvic fins under or not far behind pectoral fins and as a rule with a strong spine 5
- 5a. Snout beak-like with upper and/ or lower jaws greatly prolonged or with enlarged wing-like pectoral fin. Lateral line near ventral profile of body. A single dorsal fin consisting of soft rays. Pelvic fins abdominal
..... BELONIFORMES
- 5b. Snout not beak-like without prolongation of upper or lower jaw. Pectoral fins not greatly elongated, if so not wing-like 6
- 6a. Pelvic fins with 2 rays. Dorsal and anal fins united with caudal fin ...OPHIDIIFORMES
- 6b. Pelvic fins with more than 2 rays. Dorsal and anal fins not united with caudal fin 7
- 7a. Body without scales but a bony head shield often present. Barbels well developed, present around mouth. A strong spine generally present at front of dorsal and pectoral fins. An adipose fin often present
..... SILURIFORMES
- 7b. Body with scales. Barbels usually not present, if present poorly developed. Adipose fin generally absent 8
- 8a. Mouth very small. Gill openings restricted (small). Scales usually modified into spines, shields or plates
..... TETRAODONTIFORMES
- 8b. Mouth moderate. Gill openings normal. Scales not modified as in 8a 9
- 9a. Head generally with well developed spines. Cheeks with a bony strut (posterior extension of suborbital bone to preopercle). Pectoral fins usually rounded SCORPAENIFORMES
- 9b. Head without spines. Cheeks without bony strut. Pectoral fins not rounded 10
- 10a. Head large and depressed, body compressed. Eyes dorso-lateral. Body without scales
..... BATRACHOIDIFORMES
- 10b. Head not depressed. Eyes lateral. Body with scales 11
- 11a. Mesocoracoid present 12
- 11b. Mesocoracoid absent 14
- 12a. Lateral line absent. Body generally compressed CLUPEIFORMES
- 12b. Lateral line present 13
- 13a. Jaws toothless. Branchiostegal rays 3 or 4 .
..... GONORHYNCHIFORMES
- 13b. Jaws with tooth. Branchiostegal rays 6 to 35
..... ELOPIIFORMES
- 14a. Adipose dorsal fin usually present. Premaxillae form the gape of mouth (maxilla extended). Photophores often present
..... AULOPIIFORMES

- 14b. Adipose dorsal fin absent 15
- 15a. Fins without spine. Pelvic fins widely separated. First dorsal fin with a single ray GADIFORMES
- 15b. Fins with spines. Pelvic fins close together 16
- 16a. A silvery stripe present on side. Anal fin generally with one spine ATHERINIFORMES
- 16b. A silvery stripe absent on side. Anal fin generally with more than one spine 17
- 17a. Body usually compressed and deep. Jaws greatly distensible ZEIFORMES
- 17b. Body usually elongate. Jaws not greatly distensible 18
- 18a. Orbitosphenoid present ... BERICIFORMES
- 18b. Orbitosphenoid absent 19
- 19a. Two short dorsal fins, widely separated; first with four spines. Lateral line absent MUGILIFORMES
- 19b. Dorsal fin one or two; if two, with continuous bases; and if separate, inter-space negligible; when widely separated, first with five or more spines. Lateral line usually present PERCIFORMES

Order 8 ELOPIFORMES

Key to the families

- 1a. Lateral line with 30 to 40 scales. Last dorsal fin ray filamentous MEGALOPIDAE
- 1b. Lateral line scales 95 to 120 scales. Last dorsal fin ray not filamentous ELOPIDAE

Family 19 ELOPIDAE (Ladyfish)

Body cylindrical, elongate and fusiform. Mouth terminal, gape of mouth well posterior to hind margin of the orbit. A fairly large bony gular plate present below mouth, between the arms of the lower jaw. Dorsal fin with 20 to 25 unbranched soft rays, last ray not elongated; inserted almost

middle of the body. Anal fin with 18 to 20 rays, inserted considerably posterior to dorsal fin. Lateral line with 95 to 120 scales.

Species known to occur in Maharashtra

Elops machnata (Forsskal) (Lady fish)

Fisheries information : The lady fishes are usually abundant along the east coast of our country, but not uncommon in west coast. These fishes are of minor commercial importance. It grows to a fairly large size, up to 90 cm standard length in sea. Young ones inhabit brackish waters and enter fresh waters.

Family 20 MEGALOPIDAE (Tarpons)

Body more or less compressed and deeper. Mouth terminal or superior, its gape not extending to hind border of the orbit. A bony gular plate present below mouth between the arms of lower jaw. Dorsal fin with 13 to 21 unbranched soft rays, the last ray elongated and filamentous. Anal fin with 22 to 31 soft rays, inserted slightly behind last dorsal fin ray. Lateral line with 30 to 40 scales.

Species known to occur in Maharashtra

Megalops cyprinoides (Broussonet) (Indo-Pacific tarpon)

Fisheries information : *M. cyprinoides* is a carnivorous and fast growing fish. It occurs in both the coasts of our country and can cause serious destruction to the cultivable species if entered into culture ponds.

Order 9 ANGUILLIFORMES (Eels)

Key to the families

- 1a. Body with minute embedded scales ANGUILLIDAE
- 1b. Body without scales 2
- 2a. Large fang-like canine teeth present on vomer (medially on roof of mouth) 3
- 2b. Vomer without large canine teeth 4

- 3a. Well developed pectoral fins present
MURAENESOCIDAE
- 3b. Pectoral fins absent MURAENIDAE
- 4a. Gape of mouth generally extending beyond the orbits. Pectoral fins present or absent. Branchiostegal rays overlapping midventrally. Posterior nostrils open inside mouth, on upper lip or just above mouth
OPHICHTHIDAE
- 4b. Gape of mouth never extending beyond the orbits. Pectoral fins always present, well-developed. Branchiostegal rays not overlapping. Posterior nostrils open at or above mideye level CONGRIDAE

Family 21 ANGUILLIDAE
 (Freshwater eels)

Body eel-like, cylindrical anteriorly with minute embedded scales. Mouth terminal or slightly oblique, gape never extending posterior to much beyond orbits. Gill slits vertical, below origin of pectoral fins. Fins without spines. Dorsal and anal fins confluent with caudal fin. Dorsal fin inserted variously between pectoral fins and vent or over vent, in anterior part of body. Pelvic fins absent. Pectoral fins well developed. Lateral line systems present but not conspicuous, typically a series of minute, white pores. Usually freshwater eels are catadromous fishes.

Species known to occur in Maharashtra

1. *Anguilla bengalensis bengalensis* (Gray and Hardwicke) (Long-finned eel)
2. *A. bicolor bicolor* McClelland (Short-fin eel)

Key to the species

- 1a. Dorsal fin inserted at about middle of gill slits and vent. Bends of teeth on jaws and vomer narrow, with a tooth-free groove between rows of jaw teeth
 *A. bengalensis bengalensis*
- 1a. Dorsal fin inserted above vent or close to it. Bends of teeth on jaws and vomer very broad, without tooth-free groove between rows of jaw teeth *A. bicolor bicolor*

Fisheries information : *A. bengalensis bengalensis* is one of the most important commercial eels and fairly abundant along both the coasts of our country. *A. bicolor bicolor* appears to be not so much commonly occurs like the former. There is a good export market for both live elvers as well as eels.

Family 22 MURAENIDAE
 (Moray eels)

Body cylindrical and eel-like, almost compressed along tail. Body without scales. Mouth wide, maxilla extending well behind the orbits. Teeth usually sharp, mostly raptorial but sometimes molar-like. Teeth on vomer uniserial or in a median multiserial patch. Gill slits restricted to small roundish lateral openings. Fins without spines. Dorsal and anal fins confluent posteriorly with the caudal fin. Pectoral and pelvic fins absent.

Species known to occur in Maharashtra

1. *Echidna nebulosa* (Ahl) (Floral moray)
2. *Gymnothorax favagineus* (Bloch & Schneider) (Honeycomb moray)
3. *G. meleagris* (Shaw and Nodder) (Turkey moray)
4. *G. pseudothyrsoides* (Bleeker) (Highfin moray)
5. *G. punctatofasciatus* (Bleeker) (Banded moray)
6. *G. undulatus* (Lacepede) (Undulated moray)
7. *Siderea picta* (Ahl) (Speckled moray)
8. *Strophiodon sathete* (Hamilton) (Slender giant moray eel)

Key to the species

- 1a. Jaw and vomer mostly with blunt teeth, granular or molar-like. Body cream coloured with 2 rows of 20 to 30 star-like dark blotches with pale centers *E. nebulosa*
- 1b. Jaw and vomer with sharp teeth, some of them fang-like. Colour not as above 2

- 2a. Tail long, more than 1.5 times to twice as long as rest of body. Body uniform brown, lighter below *S. sathete*
- 2b. Tail short, equal to or slightly longer than rest of body. Body variegated 3
- 3a. Vomer with 2 rows of teeth. Median depressible fang-like teeth in upper jaw absent. Body greyish, closely speckled with dark markings *S. picta*
- 3b. Vomer with a single row of teeth. One or more long median depressible fang-like teeth in front of upper jaw present. Colour not as above 4
- 4a. Body with 28 to 35 irregular but distinct cross-bands, about as broad as interspaces
..... *G. punctatofasciatus*
- 4b. Body without distinct cross-bands 5
- 5a. Upper jaw teeth in 2 or 3 series. Body dark purplish-brown, covered with numerous, small yellow spots *G. meleagris*
- 5b. Upper jaw teeth uniserial. No small pale spots on dark background colour 6
- 6a. Body including head with dark brown-black blotches separated by a honeycomb network of yellowish or white lines ... *G. favagineus*
- 6b. Body colour not of honeycomb pattern 7
- 7a. Gill opening surrounded by a black spot. Median fins usually with a white edge. Body covered with fine dark spots with yellow reticulated lines, distinct in caudal region...
..... *G. pseudothyroideus*
- 7b. Gill opening not in a black spot. No white edge to median fins. Body with large brown diffuse blotches arranged more or less regularly, separated by narrow pale lines. Young ones with diffuse vertical bars posteriorly *G. undulatus*

Fisheries information : *S. sathete*, earlier known as *Thyrsoidea macrura*, is the largest known monotypic species, mostly used as fish bait. The moray eels are of no commercial value. *G.*

favagineus is very frequently observed on the Bombay coast. It is considered as poisonous and so, non-consumable. *G. undulatus* is very common in the rocky inshore areas and can be used as a good aquarium fish.

Remarks : *Gymnothorax favagineus* was earlier recorded as *Muraena tessellata* Richardson (Bassett-Smith, 1897). *Thyrsoidea macrura* (Bleeker), as it was reported from Maharashtra coast, is considered to be a junior synonym of *Strophidon sathete* (Hamilton) by recent authors (Bohlke, 1997).

Family 23 OPHICHTHIDAE (Snake or worm eels)

Body cylindrical, snake-like or worm-like. Body without scales. Mouth terminal or inferior, maxilla generally extending posterior to the orbits. Teeth on jaws highly variable, strong and fang-like or small and pointed or blunt and granular; teeth on vomer either in 1 to 3 or in a solid patch. Gill openings small, slit-like or rounded. Fins without spines. Dorsal and anal fins, when present, continuous around the tail externally, or discontinuous, with the caudal fin rays reduced. Pectoral fins either present or absent. Pelvic fins absent.

Species known to occur in Maharashtra

1. *Lamnostoma orientalis* (McClelland) (Oriental worm eel)
2. *Muraenichthys gymnopterus* (Bleeker) (Nil)
3. *Neenchelys buitendijki* Weber and de Beaufort (Spotted worm eel)
4. *Ophichthus apicalis* (Bennett) (Pointed-tail snake eel)
5. *O. cephalozona* Bleeker (Bleeker's snake eel)
6. *Pisodonophis boro* (Hamilton) (Bengal's snake eel)
7. *P. cancrivorus* (Richardson) (Long-fin snake eel)

Key to the species

- 1a. Tail tip flexible, a fringe of fin present around the tip, the dorsal, caudal, anal fins thus forming one continuous external fin 2
- 1b. Tip of tail finless, externally the tail tip hard and pointed 3
- 2a. Posterior nostril labial, bisecting lip and partly inside, partly outside mouth*M. gymnopterus*
- 2b. Posterior nostril lateral, in front of eye, not on lip (labial) *N. buitendijki*
- 3a. Pectoral and median fins much reduced or absent*L. orientalis*
- 3b. Pectoral fins present, usually well developed. Median fins low but well developed 4
- 4a. Vomerine teeth molariform. Pectoral fin broad based 5
- 4b. Vomerine teeth pointed. Pectoral fin base restricted 6
- 5a. Dorsal fin origin above the pectoral fin base or middle of it *P. cancrivorus*
- 5b. Dorsal fin origin about a pectoral fin length behind tip of pectoral fin *P. boro*
- 6a. Head and trunk combined about equal to tail *O. cephalozona*
- 6b. Head and trunk combined 1.5 to more times in tail *O. apicalis*

Fisheries information : The snake eels are of little commercial value. *L. orientalis* is a very common species generally abundant in the East Coast of India. *N. buitendijki* occurs in large numbers among shrimp catches at Sasson Dock and Versova of Bombay during December to May in the year in 5 to 20 m depth and mainly caught in Dol nets.

Remarks : *N. buitendijki* is known to be fairly common along Bombay coast (Talwar and Kacker, 1984), but it is not included in Bal and Mohamed (1957). *M. gymnopterus* was only once reported and authors doubt its identity.

Family 24 CONGRIDAE
(Conger eels)

Body eel-like and cylindrical, generally with a thin, delicate tail region which is readily damaged. Body without scales. Mouth usually slightly inferior but sometimes terminal. Maxilla never extending beyond the orbits. Teeth on vomer typically in a triangular or oval, multiserial patch but may also be uniserial. Nostrils separated, the anterior one is not tubular; the posterior nostril lateral or superior, as a simple aperture anterior to eyes. Gill slits ahead of pectoral fins. Dorsal and anal fins continuous around tail. Dorsal fin inserted almost above gill openings. Pectoral fins present but pelvic fins absent.

Species known to occur in Maharashtra

Uroconger lepturus (Richardson) (Slender conger eel)

Fisheries information : The slender conger eels are of minor commercial values. These fishes are generally locally consumed by poor people.

Family 25 MURAENESOCIDAE
(Pike congers)

Body cylindrical, eel-like with compressed tail and without scales. Mouth terminal, maxilla extending well beyond the orbits. Snout very pointed. Teeth large, prominent especially in front; sharp, multiserial on jaws and typically in 3 rows on vomer; a median row of canines flanked on each side by a row of much smaller teeth. Gill slits large, vertical or oblique anterior to pectoral fins. Dorsal fin inserted almost above gill slits. Dorsal and anal fins united with caudal fin. Pectoral fins present; pelvic fins absent. Fins without spines.

Species known to occur in Maharashtra

1. *Congresox talabon* (Cuvier) (Yellow pike conger)
2. *C. talabonoides* (Bleeker) (Indian pike conger)
3. *Muraenesox bagio* (Hamilton) (Common pike conger)

4. *M. cinereus* (Forsskal) (Dagger-tooth pike conger)

Key to the species

- 1a. Teeth on middle row of lower jaw and of vomer triangular, laterally compressed, sharp, with prominent basal cusps; teeth directed outward 2
- 1b. Teeth on middle row of lower jaw and of vomer needle-like, basal cusps weak in juveniles, absent in adults; teeth erect..... 3
- 2a. Interorbital width 10 to 11 times in head length. Lateral line pores 33 to 39 and dorsal fin rays 47 to 59 before level of anus
.....*M. bagio*
- 2b. Interorbital width 8 times in head length. Lateral line pores 39 to 47 and dorsal fin rays 66 to 78 before level of anus
.....*M. cinereus*
- 3a. Lateral line pores 35 to 40 and dorsal fin rays 70 to 75 before anus. Length of pectoral fins 2.5 to 3 times in head length
.....*C. talabon*
- 3b. Lateral line pores 41 to 42 and dorsal fin rays 57 to 68 before anus. Length of pectoral fins about 4 times in head length
.....*C. talabonoides*

Fisheries information : Indian conger pike and Dagger-tooth pike-conger are two important commercial fishes occur in both the coasts of our country.

Order 10 CLUPEIFORMES

Key to the families

- 1a. Articulation of lower jaw well behind the orbits, lower jaw generally slender. Snout 'pig-like' structure and projecting. Mouth inferior ENGRAULIDIDAE
- 1b. Articulation of lower jaw below the orbit. Lower jaw deep. Mouth terminal 2
- 2a. Abdomen without scutes (including pelvic scutes). Upper jaw with two fang-like teeth,

pointing forward. Body elongate and highly compressed CHIROCENTRIDAE

- 2b. Abdomen usually with scutes (pelvic scutes always present). Canine teeth rare, never pointing, directing forward in upper jaw. Body oval or rounded in cross section 3
- 3a. Anal fin with more than 30 rays. Lower jaw projecting, mouth directed almost upward ..
..... PRISTIGASTERIDAE
- 3b. Anal fin with less than 30 rays. Mouth not turned upward CLUPEIDAE

Family 26 CLUPEIDAE (Herrings, Sardines)

Body fusiform with a complete series of scutes along the abdomen (pelvic scutes always present). Mouth terminal with minute or small jaw teeth. Dorsal fin short, inserted almost near middle of body. Anal fin short, inserted well behind the dorsal fin. Pelvic fins inserted anterior, below or just posterior to dorsal fin. Body with 40 to 50 scales in lateral series.

Species known to occur in Maharashtra

- 1. *Amblygaster clupeioides* Bleeker (Sharp-nose sardinella)
- 2. *Anodontostoma chacunda* (Hamilton) (Chacunda gizzard shad)
- 3. *Dayella malabarica* (Day) (Day's round herring)
- 4. *Dussumieria acuta* Valenciennes (Rainbow sardinella)
- 5. *D. elopsoides* Bleeker (Slender rainbow sardinella)
- 6. *Escualosa thoracata* (Valenciennes) (White sardine)
- 7. *Herklotsichthys quadrimaculatus* (Ruppell) (Blue stripe herring)
- 8. *Hilsa kelee* (Cuvier) (Kelee shad)
- 9. *Nematalosa nasus* (Bloch) (Bloch's gizzard shad)

10. *Sardinella albelli* (Valenciennes) (White sardinella)
11. *S. brachysoma* (Steindachner) (Deepbody sardinella)
12. *S. fimbriata* (Valenciennes) (Fringescale sardinella)
13. *S. gibbosa* (Bleeker) (Goldstripe sardinella)
14. *S. melanura* (Cuvier) (Black stripe sardinella)
15. *S. longiceps* Valenciennes (Indian oil sardine)
16. *S. sindensis* (Day) (Sind sardinella)
17. *Spratelloides delicatulus* (Bennett) (Delicate oil sardinella)
18. *S. gracilis* (Schlegel) (Silver stripe sardinella)
19. *Tenuulosa ilisha* (Hamilton) (Hilsa shad)
20. *T. toli* (Valenciennes) (Toli shad)

Key to the species

- 1a. Abdominal scutes absent. Arms of pelvic scute bending downward 2
- 1b. Abdominal scutes present. Arms of pelvic scute straight and ascending 5
- 2a. Anal fin with 14 to 18 soft rays. Branchiostegal rays 11 to 18 3
- 2b. Anal fin with 8 to 12 soft rays. Branchiostegal rays 6 or 7 4
- 3a. Body deeper, its depth 3.5 to 4.5 times in standard length. Posterior margin of scales with many small striae *D. acuta*
- 3b. Body slender, its depth 4.5 to 6.2 times in standard length. Posterior margin of scales without striae..... *D. elopsoides*
- 4a. Lateral scale series 42 to 48. Vertical striae on scales not meeting at centre. A bright silvery midlateral stripe present..... *S. gracilis*
- 4b. Lateral scale series 35 to 41. Vertical striae on scales continuous, meeting at centre. No bright silvery midlateral stripe.....*S. delicatulus*
- 5a. Mouth sub-terminal or inferior. Lower jaw flared outwards at corners 6
- 5b. Mouth terminal. Lower jaw not flared at corners 7
- 6a. Last dorsal fin ray filamentous. Predorsal scales paired *N. nasus*
- 6b. Last dorsal fin ray not filamentous. Predorsal scales median *A. chacunda*
- 7a. Upper jaw not evenly rounded, with a distinct notch at centre 8
- 7b. Upper jaw evenly rounded, without a notch 10
- 8a. Top of head with 8 to 14 exposed fronto-parietal striae. Gill rakers on inner arch curved outward. Scales with many small pores *H. kelee*
- 8b. Top of head with few weak fronto-parietal striae, hidden under skin. Gill rakers on inner arch straight, not curved. Scales without pores 9
- 9a. Head 3.1 to 3.6 in standard length. Caudal fin as long as head. A series of spots along sides of body *T. ilisha*
- 9b. Head 3.7 to 4.0 in standard length. Caudal fin longer than head. A dark diffuse blotch behind gill opening, no other spots along sides of body*T. toli*
- 10a. Post-pelvic scutes absent, only 1 to 4 pre-pelvic scutes present. Only one supramaxilla present *D. malabarica*
- 10b. Post-pelvic as well as pre-pelvic scutes present. Two supramaxilla present 11
- 11a. Gill opening border smoothly rounded, without dermal outgrowths. Supramaxilla rectangular. Pelvic fin rays 7. A silvery stripe along flank *E. thoracata*
- 11b. Gill opening border with two fleshy dermal outgrowths. Supramaxilla not rectangular. Pelvic fin rays 8 or 9. Sides silvery, but without distinct stripe 12
- 12a. Single row of median predorsal scales. Lower gill rakers 26 to 31 on first arch *A. clupeioides*

- 12b. Double row of median predorsal scales. Lower gill rakers more than 32 on first arch 13
- 13a. An elongate wing-like scale under each paired predorsal scales. Lower gill rakers 33 to 36. Top of head with 3 to 6 fronto-parietal striae. Lower part of second supramaxilla longer than upper part *H. quadrimaculatus*
- 13b. No elongate wing-like scale under paired predorsal scales. Lower gill rakers usually more than 38. Top of head with 7 to 14 fronto-parietal striae. Lower part of second supramaxilla equal to upper part 14
- 14a. Pelvic fin rays 9. Lower gill rakers 150 to 252 *S. longiceps*
- 14b. Pelvic fin rays 8. Lower gill rakers 38 to 82 15
- 15a. Caudal fin tips jet black *S. melanura*
- 15b. Caudal fin tips not black, at most dusky 16
- 16a. Postero-lateral scales with numerous vertical striae, that overlap at centre of scale *S. brachysoma*
- 16b. Postero-lateral scales with 4 to 5 vertical striae, interrupted at centre of scale 17
- 17a. Post-pelvic scutes usually 15 18
- 17b. Post-pelvic scutes usually 12 to 14 19
- 18a. Hind part of scales with widely distributed many perforations. Lower gill rakers 38 to 65 on first arch (at 40 to 170 mm standard length) *S. gibbosa*
- 18b. Hind part of scales with narrowly distributed few perforations. Lower gill rakers 50 to 77 on first arch (at 40 to 140 mm standard length) *S. sindensis*
- 19a. Lower gill rakers 40 to 67 on first arch (at 50 to 130 mm standard length). Posterior part of scales with many perforations, pores widely distributed *S. albela*
- 19b. Lower gill rakers 55 to 82 on first arch (at 50 to 130 mm standard length). Posterior part of

scales with few perforations, pores narrowly distributed *S. fimbriata*

Fisheries information : The herrings and sardines are very important commercial fishes. These fishes are abundantly found all along the coast line of our country. *T. toli* is more abundant along Maharashtra coast and commercially equally important as *T. ilisha*. *T. ilisha* is a well known anadromous migratory fish, entering all the major river systems of India. *H. kelee* is a monotypic species, shows seasonal abundance.

Family 27 PRISTIGASTERIDAE (Pristigasterids)

Body more or less compressed, abdomen with sharp median keel of scutes. Mouth moderate, terminal; lower jaw projecting. Teeth in jaws very small. Dorsal fin short, inserted ahead of middle of body in deep forms, but behind in elongate forms and sometimes missing (in *Raconda*). Anal fin long, with more than 30 rays. Pelvic fin with 6 or 7 rays or entirely absent. Body with 35 to 55 thin and easily shade scales in the lateral series.

Species known to occur in Maharashtra

1. *Ilisha elongata* (Bennett) (Elongate ilisha)
2. *I. filigera* (Valenciennes) (Coromandel ilisha)
3. *I. megaloptera* (Swainson) (Bigeye ilisha)
4. *I. melastoma* (Schneider) (Indian ilisha)
5. *I. obfuscata* Wongratana (Hidden ilisha)
6. *Opisthopterus tardoore* (Cuvier) (Longfinned herring)
7. *Pellona ditchela* Valenciennes (Indian pellona)
8. *Raconda russeliana* Gray (Russell's smoothback herring)

Key to the genera and species

- 1a. Dorsal and pelvic fins absent. Anal fin long, with 81 to 92 rays *R. russeliana*
- 1b. Dorsal fin present. Pelvic fins present or absent. Anal fin short, with 34 to 65 rays 2

- 2a. Anal fin long with 51 to 65 fin rays. Pelvic fins absent *O. tardoore*
- 2b. Anal fin moderate with 34 to 53 fin rays. Pelvic fins present 3
- 3a. Toothed hypo-maxilla present *P. ditchella*
- 3b. No toothed hypo-maxilla 4
- 4a. Swimbladder with two post-coelomic extensions 5
- 4b. Swimbladder with one post-coelomic extension on right side of body 6
- 5a. Lower gill rakers 21 to 25 *I. melastoma*
- 5b. Lower gill rakers 27 or 28 *I. obfuscata*
- 6a. Total scutes 30 to 32 *I. megaloptera*
- 6b. Total scutes 34 to 42 7
- 7a. Body depth 31 to 35% of standard length. Pectoral fin tip reaching pelvic fin base
..... *I. filigera*
- 7b. Body slender, its depth 27 to 31 % of standard length. Pectoral fin tip not reaching pelvic fin base (in adults) *I. elongata*

Fisheries information : The fishes of this family are of little commercial value. *P. ditchella* is a very common species found in both the coasts of our country. *R. russeliana* is a monotypic species, abundantly found in the east coast of our country, but not so common along west coast.

Remarks : *Ilisha obfuscata* Wongratana is known only from two type specimens came from the type series of *filigera* and *micropus*, and was recorded from Bombay and Pondicherry (Wongratana, 1983). Whitehead (1985) does not consider the presence of *I. elongata* along west coast of India although it was reported by Fowler (1928), Kulkarni (1953) and Misra (1976).

Family 28 ENGRAULIDIDAE (Anchovies)

Body cylindrical, usually fusiform and sometimes greatly compressed (body tapering to a point in the Grenadier anchovies, *Coilia*). Abdomen generally with scutes. Snout prominent

and generally 'pig-like' and projecting. Mouth conspicuously inferior. Posterior tip of maxilla extending far back, sometimes projecting beyond operculum. Fins without spines. Pectoral fins inserted low on body, sometimes with free upper rays or filamentous rays. Dorsal fin generally short and inserted at midpoint of body. Caudal fin generally forked but sometimes tapering to a point.

Species known to occur in Maharashtra

1. *Coilia dussumieri* Valenciennes (Gold-spotted grenadier anchovy)
2. *C. neglecta* Whitehead (Neglected grenadier anchovy)
3. *Encrasicholina devisi* (Whitley) (Devis's anchovy)
4. *E. heteroloba* (Ruppell) (Short head anchovy)
5. *E. punctifer* Fowler (Buccaneer anchovy)
6. *Setipinna taty* (Valenciennes) (Hairfin anchovy)
7. *Stolephorus baganensis* Hardenberg (Bagan Anchovy)
8. *S. commersonnii* Lacepede (Commerson's anchovy)
9. *S. indicus* (van Hasselt) (Indian anchovy)
10. *S. insularis* Hardenberg (Hardenberg's anchovy)
11. *S. waitei* Jordan and Seale (Spotty-face anchovy)
12. *Thryssa dayi* Wongratana (Day's thryssa)
13. *T. dussumieri* (Valenciennes) (Dussumier's thryssa)
14. *T. hamiltonii* (Gray) (Hamilton's thryssa)
15. *T. malabarica* (Bloch) (Malabar thryssa)
16. *T. mystax* (Schneider) (Moustached thryssa)
17. *T. polybranchialis* Wongratana (Humphead thryssa)
18. *T. purava* (Hamilton) (Oblique jaw thryssa)
19. *T. setirostris* (Broussonet) (Long jaw thryssa)

20. *T. vitrirostris* (Gilchrist and Thompson)
(Orange mouth thrissa)

Key to the species

- 1a. Body tapering towards tail. Six upper pectoral fin rays unbranched and free from each other. Caudal fin small and pointed. Anal fin long, confluent with caudal fin 2
- 1b. Body normal, not tapered. Upper pectoral fin rays not free from each other. Caudal fin large, forked. Anal fin short or moderate, not confluent with caudal fin 3
- 2a. Flanks and abdomen with longitudinal rows of golden or pearl spots *C. dussumieri*
- 2b. No golden or pearly spots on flanks and abdomen *C. neglecta*
- 3a. Upper most pectoral fin ray produced into a filament. Anal fin long, with 45 to 55 branched rays. Belly scutes 32 to 40. Lower gill rakers 17 to 21 *S. taty*
- 3a. Upper pectoral fin ray not filamentous. Anal fin shorter, with less than 45 branched rays. Belly scutes less than 30 4
- 4a. Only needle-like prepelvic scutes present. Anal fin with less than 25 rays 5
- 4b. Both prepelvic and post pelvic scutes present. Anal fin with more than 25 rays 12
- 5a. Anal fin origin below or behind last ray of dorsal fin. Urohyal plate exposed 6
- 5b. Anal fin origin below dorsal fin base, before last ray. Urohyal plate covered 8
- 6a. Maxilla tip blunt, scarcely projecting beyond second supramaxilla and not reaching to front border of preoperculum. Urohyal plate fleshy *E. punctifer*
- 6b. Maxilla tip pointed, projecting beyond second supramaxilla, reaching to suboperculum. Urohyal plate bony 7
- 7a. Unbranched dorsal and anal fin rays only 2. A dull silvery or grey band on flank, the back beige *E. heteroloba*
- 7b. Unbranched dorsal and anal fin rays only 3. A bright silvery band on flank, with a thin blue line above, the back blue or grey. *E. devisi*
- 8a. Hind border of preoperculum concave, indented near maxilla tip. A small predorsal spine often present 9
- 8b. Hind border of preoperculum convex, rounded near maxilla tip. Small predorsal spine always absent 10
- 9a. Anal fin with iii, 18 or 19 rays. Small spine on pelvic scute present *S. baganensis*
- 9b. Anal fin with iii, 14 to 17 rays. Spine on pelvic scute absent *S. insularis*
- 10a. Pelvic fin tips reaching beyond level of dorsal fin origin. A pair of dark predorsal lines on back *S. commersonii*
- 10b. Pelvic fin tips not reaching to level of dorsal fin origin. No dark lines on back 11
- 11a. Anal fin with 18 to 20 branched rays. Prepelvic scutes 5 to 7. Numerous black spots below eye and tip of lower jaw ... *S. waitei*
- 11b. Anal fin with 16 to 18 branched rays. Prepelvic scutes 3 to 5. No black spot below eye and on lower jaw *S. indicus*
- 12a. Lower jaw with high coronoid process. Maxilla very long, extending to beyond pectoral fin tip. Lower gillrakers on first arch 10 to 12 *T. setirostris*
- 12b. Lower jaw slender. Maxilla not reaching to pectoral fin tip 13
- 13a. Maxilla long, reaching to pectoral fin base or beyond 14
- 13b. Maxilla short, not reaching to pectoral fin base 17
- 14a. Branched anal fin rays 41 to 46. First pectoral fin ray produced, filamentous in some specimens *T. dayi*
- 14b. Branched anal fin rays 29 to 40. First pectoral fin ray not produced 15

- 15a. Gillrakers serrae not clumped, lower gillrakers on first arch 13 to 16 *T. mystax*
- 15b. Gillrakers serrae in distinct clumps, lower gillrakers on first arch 17 to 24 16
- 16a. Maxilla long, reaching to middle of pectoral fin or beyond. First supramaxilla absent. Total belly scutes 21 to 24 *T. dussumieri*
- 16b. Maxilla short, reaching to just beyond base of first pectoral fin ray. First supramaxilla present, minute, oval. Total belly scutes 25 to 30 *T. vitrirostris*
- 17a. Lower gillrakers on first arch 11 to 15
..... *T. hamiltonii*
- 17b. Lower gillrakers on first arch 17 to 27 .. 18
- 18a. Maxilla tip reaching to edge of gill cover, but not projecting beyond. Lower gill rakers 25 to 27 *T. polybranchialis*
- 18b. Maxilla tip projecting beyond edge of gill cover. Lower gill rakers 17 to 21 19
- 19a. Branched anal fin rays 34 to 38. Teeth on jaws small. Small dark spots on cheek, gill cover and maxilla *T. malabarica*
- 19b. Branched anal fin rays 38 to 44 (usually 40 or more). Teeth on lower jaw slightly enlarged. Dark spots on cheek, gill cover and maxilla absent *T. purava*

Fisheries information : The anchovies are important commercial fishes of our country. The fishes of the genus *Stolephorus* are important food fishes. *C. dussumieri* is a common species found in both the coasts of our country.

Remarks : Record of *Stolephorus bataviensis* and *Stolephorus zollingeri* from Ratnagiri coast by Pillai (1991) is referred to *Stolephorus waitei* and *Encrasicholina punctifer* respectively.

Family 29 CHIROCENTRIDAE (Wolf herrings)

Body greatly elongate and compressed, covered with small, cycloid scales. Teeth on jaws enlarged, fang-like. Dorsal fin with 16 to 19 rays, inserted

posterior to middle of body. Anal fin with 32 to 35 rays, inserted below vertical from front of dorsal fin base. Pectoral fins inserted low on body, with 13 to 15 rays. Pelvic fins with 6 to 7 rays, inserted about in the middle of pectoral fin base and origin of anal fin. Fins without spines. Caudal fin deeply forked.

Species known to occur in Maharashtra

1. *Chirocentrus dorab* (Forsskal) (Dorab wolf-herring)
2. *C. nudus* Swainson (Whitefin wolf herring)

Key to the species

- 1a. Upper part of dorsal fin black. Pectoral fin length almost equal to length from center of eye to posterior border of operculum
..... *C. dorab*
- 1b. Dorsal fin white or colourless. Length of pectoral fin longer than length from center of eye to posterior border of operculum
..... *C. nudus*

Fisheries information : *C. dorab* is found in both the coasts but 76% of its catch comes from the east coast of our country. Although *C. nudus* contributes 80% of the total catch of the wolf herrings of our country, its occurrence along west coast is not as common as *C. dorab*.

Order 11 GONORHYNCHIFORMES

Family 30 CHANIDAE (Milkfish)

Body elongate and almost compressed with small cycloid scales. Mouth small and terminal. Maxilla extending middle of the orbit. Gular plate absent in between the arms of the lower jaw. Dorsal fin with 13 to 17 rays, inserted almost in the middle of body. Anal fin with 9 to 11 rays, inserted close to caudal fin. Dorsal fin and anal fins with basal sheath of scales. Pelvic and pectoral bases with large axillary scales. Fins without spines. Caudal fin deeply forked. Lateral line present.

Species known to occur in Maharashtra

Chanos chanos (Forsskal) (Milkfish)

Fisheries information : The milkfish can be cultured in the tanks and ponds where the water is slightly saline. It is an important commercial fish, found in both the coasts of our country.

Order 12 SILURIFORMES

Key to the families

- 1a. Dorsal and anal fins long and united with the caudal fin. Barbels 4 pairs. Adipose dorsal fin absent PLOTOSIDAE
- 1b. Dorsal and anal fins small and not united with the caudal fin. Barbels 1 to 3 pairs, or entirely absent. Adipose fin present ARIIDAE

Family 31 ARIIDAE (Sea catfishes)

Body elongate without scales. Head covered with plates. Teeth on palate villiform or conical, granular or molar-like, arranged in 1 to 3 patches on each side of palate. Barbels generally 3 pairs, nasal barbels absent. Dorsal and pectoral fins with spines. A short adipose dorsal fin present. Caudal fin forked.

Species known to occur in Maharashtra

1. *Arius arius* Hamilton (Threadfin sea catfish)
2. *A. caelatus* Valenciennes (Engraved sea catfish)
3. *A. crossocheiros* Bleeker (Roughback sea catfish)
4. *A. dussumieri* Valenciennes (Blacktip sea catfish)
5. *A. jella* Day (Blackfin sea catfish)
6. *A. macronotacantha* Bleeker (NA)
7. *A. maculatus* (Thunberg) (Spotted sea catfish)
8. *A. nenga* (Hamilton) (NA)
9. *A. platystomus* Day (Flat mouth sea catfish)
10. *A. sagor* (Hamilton) (Sagor sea catfish)

11. *A. sona* (Hamilton) (Sona sea catfish)
12. *A. subrostratus* (Valenciennes) (Shovelnose sea catfish)
13. *A. sumatranus* (Bennett) (Goat sea catfish)
14. *A. tenuispinis* Day (Thinspine sea catfish).
15. *A. thalassinus* (Ruppell) (Giant sea catfish)
16. *Batrachocephalus mino* (Hamilton) (Beardless sea catfish)
17. *Osteogeneiosus militaris* (Linnaeus) (Soldier sea catfish)

Key to the species

- 1a. Maxillary barbels absent or vestigial. Mental barbels 1 or 2 pairs, minute or rudimentary *B. mino*
- 1b. Maxillary barbels present 2
- 2a. Maxillary barbels stiff and semiosseous. Only one pair of barbels *O. militaris*
- 2b. Maxillary barbels soft, non-osseous. Three pairs of barbels 3
- 3a. Teeth on palate in 3 patches on each side, triangular, villiform, close-set *A. thalassinus*
- 3b. Teeth on palate in one or two patches on each side 4
- 4a. Teeth on palate as a single patch on each side 5
- 4b. Teeth on palate as two patches on each side 14
- 5a. Teeth on palate as an elongate, large patch 6
- 5b. Teeth on palate as a small oval or triangular patch 9
- 6a. Median longitudinal groove on top of head long, narrow, running onto supraoccipital process. Palatine tooth patch oval or elliptical, placed far back in buccal cavity. Dorsal fin spine slender *A. tenuispinis*
- 6b. Median longitudinal groove on top of head

- short, not running onto supraoccipital process. Palatine tooth patch placed well forward in buccal cavity. Dorsal fin spine strong 7
- 7a. Pectoral fin spine longer than dorsal fin spine. Anal fin rays 17 or 18 *A. jella*
- 7b. Pectoral fin spine equal to or shorter than dorsal fin spine. Anal fin rays 19 to 22 ... 8
- 8a. Palatine tooth patches elliptical, well formed, with densely packed teeth *A. maculatus*
- 8b. Palatine tooth patches irregularly ovate with a conical horn-like projection anteriorly, not fully formed, with loosely packed teeth *A. arius*
- 9a. Snout long and spatulate. Maxillary barbels short, not extending beyond eyes *A. subrostratus*
- 9b. Snout short, not spatulate. Maxillary barbels long, extending beyond eyes 10
- 10a. Maxillary barbels thick and fleshy. Snout duck-bill shaped *A. platystomus*
- 10b. Maxillary barbels thin, not fleshy. Snout obtusely rounded 11
- 11a. Teeth on palate in oval patch, with loosely packed teeth *A. sumatranus*
- 11b. Teeth on palate in a triangular or pear-shaped patch, with densely packed teeth 12
- 12a. Tooth patch on palate pear-shaped, with globular teeth *A. macronotacantha*
- 12b. Tooth patch on palate triangular, with villiform teeth 13
- 13a. Maxillary barbels reaching posterior third of pectoral fin. Premaxillary band of teeth 5 times as long as broad *A. nenga*
- 13b. Maxillary barbels reaching middle of pectoral fin. Premaxillary band of teeth 6 times as long as broad *A. caelatus*
- 14a. Patches of teeth on palate placed one below the other. Posterior patch longer; teeth globular 15
- 14b. Patches of teeth on palate placed side by side. Outer patch teeth villiform, larger 16
- 15a. Total anal fin rays 14 to 16. Posterior palatine tooth patch elliptical with similar sized teeth. A preorbital oval protuberance of the lateral ethmoid present *A. dussumieri*
- 15b. Total anal fin rays 17 to 18. Posterior palatine tooth patch ovate, with irregular sized teeth. No such preorbital protuberance of lateral ethmoid *A. crossocheilos*
- 16a. Outer palatine tooth patch oval. Basal bone of dorsal fin very large and butterfly shaped *A. sagor*
- 16b. Outer palatine tooth patch triangular. Basal bone of dorsal fin smaller, not butterfly-shaped *A. sona*
- Fisheries information :** The species of the family Ariidae are of important commercial fishes. These fishes are generally esteemed as food for human consumption. The swimbladder of these fishes are utilized for the manufacture of isinglass.
- Remarks :** *Arius nenga* is considered as conspecific with *Arius caelatus* by Jayaram (1999), while Marceniuk and Menezes (2007) recognize it as a valid species. *Arius parvipinnis* Day is considered as junior synonym of *N. macronotacantha* (Bleeker) (Marceniuk and Menezes, 2007). *Arius crossocheilos* Bleeker has been relegated to synonymy of *P. tonggol* (Bleeker) (Ferraris, 2007). In current parlance of nomenclature *A. sona* is placed under genus *Hemiaris* Bleeker; *A. sagor* under genus *Hexanemichthys* Bleeker; *A. caelata*, *A. macronotacantha* and *A. nenga* under genus *Nemapteryx* Obilby; *A. thalassiana* under genus *Netuma* Bleeker; *A. dussumieri*, *A. platystomus*, *A. tenuispinis* and *A. tonggol* under *Plicofolis* Kailola (Marceniuk and Menezes, 2007 and Ferraris, 2007).

Family 32 PLOTOSIDAE (Eel catfishes)

Body elongate, almost eel-like, without scales, tapering to a point posteriorly. Barbels 4 pairs, nasal and maxillary one pair each and mental 2 pairs. Dorsal fin two, first fin with 1 serrated spine and 4 to 6 soft rays and second fin with 69 to 143

soft rays. Pectoral fins with 1 serrated spine and 9 to 16 soft rays. Pelvic fins with 10 to 16 soft rays. Anal fin with 58 to 131 rays. Caudal fin united with second dorsal and anal fins.

Species known to occur in Maharashtra

1. *Plotosus canius* Hamilton (Eel catfish)
2. *P. lineatus* (Thunberg) (Striped eel catfish)

Key to species

- 1a. Nasal barbels extending well behind eyes, almost to nape. Eyes small, 8.5 to 14.0 times in head length. No stripes along sides of body. Total number of rays in confluent median fins more than 240 *P. canius*
- 1b. Nasal barbels extending to middle or slightly beyond posterior border of eyes. Eyes larger, 4.0 to 9.0 times in head length. Two or 3 white or yellow stripes along sides of body often present. Total number of rays in confluent median fins less than 200
..... *P. lineatus*

Fisheries information : The dorsal and pectoral fin spines of the eel catfishes contain venomous glands, therefore, great care has to be taken while handling these fishes. Death may even result during careless handling of these fishes.

Order 13 AULOPIFORMES

Key to families

- 1a. Mouth lizard-like. Upper jaw extending beyond level of middle of orbits. Supramaxilla small or absent SYNODONTIDAE
- 1b. Mouth not lizard-like. Upper jaw not extending beyond level of middle of eyes. Supramaxilla single, elongate
..... CHLOROPHTHALMIDAE

Family 33 CHLOROPHTHALMIDAE
(Greeneyes)

Body elongate, compressed posteriorly, more or less rounded in cross section anteriorly. Eyes large, pupils keyhole shaped. Dorsal fin single, with 9 to 13 segmented rays. A small adipose

dorsal fin present. Anal fin with 7 to 11 segmented rays. Pectoral fins long with 15 to 20 rays, extending beyond the dorsal fin. Fins without spines. Caudal fin bilobed. Body with ctenoid or cycloid scales.

Species known to occur in Maharashtra

Chlorophthalmus agassizi Bonaparte
(Shortnose greeneye)

Fisheries information : The greeneyes are of little commercial importance. These fishes are captured as trash fish along the commercial catches and are found in both the coasts of our country.

Family 34 SYNODONTIDAE
(Lizard fishes)

Head usually lizard-like. Body elongate, generally cylindrical with adipose dorsal fin. Mouth terminal, large with rows of small, slender and pointed teeth, visible even when the mouth is closed. Dorsal fin with 9 to 14 rays. Anal fin with 8 to 16 rays. Caudal fin forked. Body and head with scales. Lizard fishes not only resemble reptiles but also behave like that of reptiles. Most of their time is spent sitting on the bottom with the body at a slight angle, propped up on the front end by the pelvic fins, like a jet fighter ready to take off. *Harpadon* is secondarily pelagic.

Species known to occur in Maharashtra

1. *Harpadon nehereus* (Hamilton) (Bombay duck)
2. *Saurida micropectoralis* Shindo & Yamada (Shortfin lizardfish)
3. *S. tumbil* (Bloch) (Greater lizardfish)
4. *S. undosquamis* (Richardson) (Brushtooth lizardfish)
5. *Synodus englemani* Schultz (Engleman's lizardfish)
6. *S. macrops* Tanaka (Tripplecross lizardfish)
7. *S. variegatus* (Lacepede) (Variegated lizardfish)
8. *Trachinocephalus myops* (Forster) (Bluntnose lizardfish)

Key to species

- 1a. Head and anterior part of body naked, except for scales on lateral line. Caudal fin trilobed. Pectoral fin tip extends to below middle of dorsal fin base.....*H. nehereus*
- 1b. Head and body scaled. Caudal fin forked. Pectoral fin short, reaching at most just beyond origin of dorsal fin 2
- 2a. A single band of teeth on each palate (inner band absent). Pelvic fin consists of 8 rays, inner ray distinctly longer than outer ray ...
.....3
- 2b. Two bands of teeth on each palate. Pelvic fin consists of 9 rays, inner ray not or slightly longer than outer ray 6
- 3a. Dorsal fin base shorter than anal fin base. Snout short, shorter than eye diameter.....
.....*T. myops*
- 3b. Dorsal fin base longer than anal fin base. Snout longer, greater than eye diameter ...4
- 4a. Scales above lateral line 3.5. Posterior pelvic process narrow. Procurrent caudal fin rays 20 to 26. Three X-shaped pigmented area on sides. Peritoneal spots 5 or 6 *S. macrops*
- 4b. Scales above lateral line 5.5. Posterior pelvic process wide. Procurrent caudal fin rays 26 to 37. No X-shaped pigmented area on sides. Peritoneal spots 7 or more 5
- 5a. Dermal flap on anterior nostril short, tubular. Posterior part of cheek scaly. Peritoneal spots 7 to 10..... *S. englemani*
- 5b. Dermal flap on anterior nostril long flagellum, extending well beyond edge of nares. Posterior part of cheek naked. Peritoneal spots 10 to 12 *S. variegatus*
- 6a. Pectoral fin tip not reaching to pelvic fin origin. Spots on flanks and on second ray of dorsal fin present*S. micropectoralis*
- 6b. Pectoral fin tip reaching well beyond pelvic fin origin 7
- 7a. Vomerine teeth present. Anterior outer palatine with 3 or more rows of teeth. No

spots on flanks, 2nd ray of dorsal fin and upper ray of caudal fin *S. tumbil*

- 7b. Vomerine teeth absent. Anterior outer palatine with 2 rows of teeth. Flanks, 2nd ray of dorsal fin and upper ray of caudal fin with about 8 spots *S. undosquamis*

Fisheries information : Lizard fishes are of little commercial value. These fishes are marketed fresh or used for fishmeal. The Bombay duck constitute a major fishery of commercial importance, particularly in the Maharashtra and Gujarat coasts. Although these fishes are found in both the coasts of our country but almost 98% of its catch is obtained from the west coast. Maharashtra stands first in the landing of these fishes followed by Gujarat in the west coast. The remaining 2% of the Bombay duck is captured along the east coast of our country. It is marketed fresh, salted dried or smoked.

Order 14 GADIFORMES**Key to families**

- 1a. Caudal fin present. Head short, less than trunk. Dorsal fin without spinous ray. A single elongate dorsal fin ray on top of head. Pelvic fin inserted under middle of head, outer 3 rays elongate free. filaments
.....BREGMACEROTIDAE
- 1b. Caudal fin absent. Head long, more than trunk length. Dorsal fin with two spinous rays. No separate dorsal fin ray on top of head. pelvic fin inserted behind head, outer rays not free or elongate.....MACROURIDAE

Family 35 BREGMACEROTIDAE
(Codlets, Codlings)

Body elongate, almost cylindrical. Snout short. Head small and more or less compressed. Dorsal fins two, the first dorsal inserted on nape with one elongated ray. Second dorsal fin and anal fins very long with large notch in middle. Pelvic fins inserted under throat with 5 rays, outer 3 rays elongate free filaments, extending backward up to one half length of the fish. Lateral line near to second dorsal fin.

Species known to occur in Maharashtra

Bregmaceros maclellandi Thompson (Spotted codlet)

Fisheries information : The Indian cod is generally abundant in the west coast. It forms a seasonal fishery around Bombay coast. It is marketed fresh.

Family 36 MACROURIDAE (Grenadiers or Rattails)

Head large, trunk short; tail long, tapering to a point. Snout often protruding. Eyes usually large. Caudal fin absent. Two dorsal fins; first dorsal fin short and high, first 2 rays spinous, but true spines absent. Second dorsal fin and anal fin long and continuous with tail. Pelvic fins thoracic to almost jugular, placed before pectoral fin base. Scales small, with spinules in most species.

Species known to occur in Maharashtra

Malacocephalus laevis (Lowe) (Spothead grenadier)

Fisheries information : This is a deep-sea fish, almost benthopelagic in habit. Commercial value of this species is very limited at present. This is mostly caught incidentally by the trawlers fishing in deep waters and used in fishmeal preparation.

Order 15 OPHIDIIFORMES Family 37 OPHIDIIDAE (Cusk eels, Brotulas)

Body elongate with a tapering caudal portion. Barbels present on snout and chin in some species. Dorsal fin rays generally equal to or longer than opposing anal fin rays. Pelvic fins with one or 2 soft rays or absent, inserted close together below preopercle or further anterior. Dorsal and anal fins with long bases, confluent with caudal fin. Fins without spines.

Species known to occur in Maharashtra

Brotula multibarбата Temminck & Schlegel
(Goatbeared brotula)

Fisheries information : The cusk eels are of minor commercial value and are marketed fresh. *B. multibarбата* is occasionally found in the commercial catches.

Order 16 BATRACHOIDIFORMES Family 38 BATRACHOIDIDAE (Toadfishes)

Body cylindrical, compressed posteriorly. Head and anterior part of body usually depressed. Mouth moderate with small conical teeth in jaws and on palate. Gill opening, an oblique slit above pectoral fin base. Operculum with 3 or 4 strong spines. Opercle usually with fleshy tentacles, around mouth and above eyes. Dorsal fin two, first dorsal fin with 3 spines, inserted just behind head. Second dorsal fin and anal fin with long bases. Pelvic fins jugular. Pectoral and caudal fins rounded. Body with three lateral lines along sides represented by a series of small bifid tentacles.

Species known to occur in Maharashtra

1. *Allenbatrachus grunniens* (Bloch) (Gangetic toadfish)
2. *Austrobatrachus dussumieri* (Valenciennes)
(Flat toadfish)

Key to species

- 1a. A pocket-like foramen present on upper portion of pectoral axilla. Gill opening wide, continued to below and anterior to pectoral fin base *A. dussumieri*
- 1b. No pocket-like foramen on upper part of pectoral axilla. Gill opening restricted, confined to pectoral fin base .. *A. grunniens*

Fisheries information : The toadfishes are of no commercial importance. They are found in trawl fisheries. These fishes are utilized for the production of the fishmeal.

Order 17 LOPHIIFORMES Key to families

- 1a. Jaws with large, slender needle-like teeth.

Head depressed; body flattened. Three dorsal spines free and isolated LOPHIIDAE

- 1b. Jaws with numerous, small villiform teeth. Head not depressed; body slightly compressed or globose. Second and third dorsal spine well developed but covered by skin
..... ANTENNARIIDAE

Family 39 LOPHIIDAE
(Goosefishes, Anglerfishes)

Anterior part of body much depressed and very broad, posterior part tapering. Head rounded, with numerous sharp spines and ridges on dorsal and lateral surfaces. Mouth very large and wide, upper jaw protractile and lower jaw projecting; both having numerous long, sharp depressible teeth. Two dorsal fins, the first with 2 or 3 isolated slender spines on head (Cephalic spines) and second with 1 to 3 spines (often connected by a membrane, at least in juveniles) at the level of pectoral fins (post cephalic spines). Pectoral fin rays unbranched, terminating in small fleshy filaments. Anal fin with 6 to 10 rays, inserted below second dorsal fin. Caudal fin with 8 rays, outer 2 rays unbranched.

Species known to occur in Maharashtra

1. *Lophiodes mutilus* (Alcock) (Smooth angler)
2. *Lophiomus setigerus* (Valenciennes) (Blackmouth angler)

Key to species

- 1a. Pectoral fin with 21 to 25 rays. Frontal ridge rugose, bearing spines, knobs and ridges. Gill slits not extending in front of pectoral fin base *L. setigerus*
- 1b. Pectoral fin with 15 to 18 rays. Frontal ridge smooth, no spine, knob or ridges present. Gill slits extending well in front of pectoral fin base *L. mutilus*

Fisheries information : The goosefishes are of no commercial importance. These fishes are found in the bottom trawls as bycatch in the commercial fisheries.

Family 40 ANTENNARIIDAE
(Anglers or frogfishes)

Body globose, short, slightly compressed. Mouth large, oblique to vertical. Teeth small, numerous. Gill opening is a small pore, behind and below pectoral fin base. Illicium slender, esca well developed. Second and third dorsal fin spines free from soft dorsal fin. Pectoral fin base elongate and limb-like. Skin spinulose or naked, often with membranous filaments or flaps.

Species known to occur in Maharashtra

Antennarius hispidus (Bloch and Schneider)
(Shaggy angler)

Fisheries information : This fish is of no economic importance and so, unwanted in commercial catches, but can well utilize in aquarium trade.

Order 18 MUGILIFORMES

Family 41 MUGILIDAE
(Mullet)

Body elongate, cylindrical or slightly compressed. Mouth small, terminal or inferior. Eyes usually covered by fatty tissue (adipose eyelids). Dorsal fin two, well separated, the first with 4 spines and the second with one spine and 8 or 9 soft rays. Pectoral fins set rather high on body. Pelvic fins subabdominal, with one spine and 5 branched rays. Caudal fin moderately forked, emarginate or truncate. Lateral line absent.

Species known to occur in Maharashtra

1. *Liza carinata* (Valenciennes) (Keeled mullet)
2. *L. macrolepis* (Smith) (Largescale mullet)
3. *L. melinoptera* (Valenciennes) (Otonebora mullet)
4. *L. parsia* (Hamilton) (Gold-spot mullet)
5. *L. subviridis* (Valenciennes) (Greenback mullet)
6. *L. tade* (Forsskal) (Tade grey mullet)
7. *L. vaigiensis* (Quoy & Gaimard) (Square-tail mullet)

8. *Mugil cephalus* Linnaeus (Flathead grey mullet)
9. *Valamugil cunnesius* (Valeniennes) (Longarm mullet)
10. *V. seheli* (Forsskal) (Blue-spot mullet)
11. *V. speigleri* (Bleeker) (Speigler's mullet)

Key to species

- 1a. Posterior tip of maxilla not curved below tip of premaxilla. Adipose eye lid well developed and pectoral axillary scale long *M. cephalus*
- 1b. Posterior tip of maxilla curved below tip of premaxilla 2
- 2a. Pectoral axillary scale long. Body scales with a membranous digitated hind margin 3
- 2b. Pectoral axillary scale rudimentary or absent. Body scales without membranous digitated hind margin 5
- 3a. Anal fin origin opposite dorsal fin origin. Adipose eye lids feebly developed. Scales on lateral series 38 to 42 *V. seheli*
- 3b. Anal fin origin slightly before dorsal fin origin. Adipose eye lids well developed ... 4
- 4a. Scales in lateral series 30 to 35. Second dorsal and anal fins moderately scaled *V. cunnesius*
- 4b. Scales in lateral series 37 to 40. Second dorsal and anal fins densely scaled *V. speigleri*
- 5a. Anal fin with 8 rays. Caudal fin slightly emarginate *L. vaigaiensis*
- 5b. Anal fin with 9 rays. Caudal fin forked .. 6
- 6a. A distinct keel or ridge present on back before first dorsal fin *L. carinata*
- 6b. Back without distinct keel or ridge before first dorsal fin 7
- 7a. Preorbital narrow, not filling the space between lip and eye *L. subviridis*
- 7b. Preorbital wide, filling space between lip and eye 8

- 8a. First dorsal fin origin nearer to caudal fin base than to snout tip 9
- 8b. First dorsal fin origin nearer to snout tip than to caudal fin base or midway between them 10
- 9a. Transverse scale rows 12. Scales on lateral series 31 to 34 *L. macrolepis*
- 9b. Transverse scale rows 9 or 10. Scales on lateral series 26 to 31 *L. melinoptera*
- 10a. Second dorsal fin origin over posterior half of anal fin base. Pectoral fin rays 17 *L. tade*
- 10b. Second dorsal fin origin over anterior half of anal fin base. Pectoral fin rays 14 *L. parsia*

Fisheries information : Mulletts are very important commercial fishes. Most of the species are suitable for aquaculture due to their rapid growth and hardness.

Order 19 BELONIFORMES

Key to families

- 1a. Mouth large. Both upper and lower jaw extended into long beak with numerous needle-like teeth BELONIDAE
- 1b. Mouth small. Only lower jaw or none of jaws prolonged, with or without minute teeth ... 2
- 2a. Lower jaw usually prolonged, much longer than upper. Pectoral and pelvic fins short HEMIRAMPHIDAE
- 2b. Both jaws short and normal, not prolonged. Pectoral fins strikingly long, extending beyond origin of dorsal fin. Pelvic fins large in some species EXOCOETIDAE

Family 42 EXOCOETIDAE (Flying fishes)

Body elongate and cylindrical, flattened ventrally. Fins without spines. Dorsal and anal fins inserted far back on body. Pectoral fins considerably long, inserted high on sides, extending beyond dorsal fin origin. Pelvic fins

inserted abdominal in position and greatly enlarged in many species. Caudal fin deeply forked, lower lobe longer than upper. Lateral line low on body.

Species known to occur in Maharashtra

1. *Cheilopogon cyanopterus* (Valenciennes) (Margined flyingfish)
2. *C. furcatus* (Mitchill) (Spotfin flyingfish)
3. *C. nigricans* (Bennett) (African flyingfish)..
4. *C. spilopterus* (Valenciennes) (Manyspotted flyingfish)
5. *Cypselurus poecilopterus* (Valenciennes) (Yellow-wing flyingfish)
6. *Exocoetus monocirrhus* Richardson (Barbeled flyingfish)
7. *E. volitans* Linnaeus (Tropical two-wing flying fish)
8. *Hirundichthys coromandelensis* (Hornell) (Coromandel flying fish)
9. *Paraxocoetus mento* (Cuvier) (African sailfin flyingfish)

Key to species

- 1a. Pelvic fins short, not reaching anal fin origin (barely reaching in juveniles) 2
- 1b. Pelvic fins long, reaching beyond anal fin origin 4
- 2a. Pectoral fins short, not reaching beyond anal fin base, its length about 60% of standard length. Pelvic fin insertion closer to anal fin origin than to pectoral fin base. Lateral line with a branch extending upward to pectoral fin base. Dorsal fin rays 9 to 12 ... *P. mento*
- 2b. Pectoral fins long, reaching beyond anal fin base, its length about 69% of standard length. Pelvic fin insertion nearer to pectoral fin base than to anal fin origin. Lateral line without a branch to pectoral fin base. Dorsal fin rays 13 or 14 3
- 3a. Total gill rakers on first arch 21 to 29. Body depth 3.5 to 5.1 times in standard length.

Usually 7 rows of scales between dorsal fin origin and lateral line *E. monocirrhus*

- 3b. Total gill rakers on first arch 29 to 37. Body depth 5.1 to 6.0 times in standard length. Usually 6 rows of scales between dorsal fin origin and lateral line *E. volitans*
- 4a. Origin of anal fin slightly before, under or not more than 3 rays behind dorsal fin origin. Dorsal fin usually with less or equal number of rays than anal fin (rarely 1 or 2 more). Pectoral fin with a broad pale transverse stripe and a narrow pale margin *H. coromandelensis*
- 4b. Origin of anal fin 3 rays or more behind dorsal fin origin. Dorsal fin usually with 2 to 4 (rarely with 1) rays more than anal fin 5
- 5a. Lower jaw little shorter than upper jaw. Jaw with some tricuspid teeth. Pectoral fin pale, with scattered black spots *C. poecilopterus*
- 5b. Jaws subequal or lower jaw little longer than upper jaw. Jaw teeth mostly unicuspid or with smaller supplementary cusps laterally 6
- 6a. Predorsal scales 33 to 41. Pectoral fin uniformly dark *C. cyanopterus*
- 6b. Predorsal scales 24 to 33. Pectoral fin not uniformly dark 7
- 7a. Pectoral fin with small dark spots scattered on pale background *C. spilopterus*
- 7b. Pectoral fins dark with a pale transverse stripe at middle 8
- 8a. Dorsal fin with a prominent black spot. Palatine teeth present *C. nigricans*
- 8b. Dorsal fin uniformly pale. Palatine teeth absent *C. furcatus*

Fisheries information : The flying fishes are of very much commercial importance. These fishes are marketed fresh. The importance of the fisheries of the flying fishes is increasing due to the rising popularity of the delicately flavoured and highly nutritious fishes.

Family 43 BELONIDAE
(Needlefishes)

Body considerably elongate with both upper and lower jaw extended into long beaks. Fins without spines. Dorsal and anal fins inserted in posterior half of body. Pelvic fins inserted in abdominal position and with 6 soft rays. Pectoral fins short. Lateral line extending down from pectoral fins origin and then pass along ventral margin of sides.

Species known to occur in Maharashtra

1. *Ablennes hians* (Valenciennes) (Flat needlefish)
2. *Strongylura leiura* (Bleeker) (Banded needlefish)
3. *S. strongylura* (van Hasselt) (Spottail needlefish)
4. *Tylosurus acus melanotus* (Bleeker) (Keel-jawed needlefish)
5. *T. choram* (Ruppell) (Red Sea houndfish)
6. *T. crocodilus crocodilus* (Peron and Le Sueur) (Hound needlefish)

Key to species

- 1a. Body strongly laterally compressed and marked with a series of ventral bars. Anal fin with 24 to 28 rays *A. hians*
- 1b. Body rounded or squarish in cross-section. Body without vertical bars. Anal fin with 13 to 23 rays 2
- 2a. Dorsal fin rays 12 to 21. Caudal peduncle without keel 3
- 2b. Dorsal fin rays 20 to 27. A dark lateral keel on each side of caudal peduncle 4
- 3a. Caudal fin rounded or truncate with a prominent black spot near its base. Dorsal fin with 12 to 15 rays and anal fin with 15 to 18 rays *S. strongylura*
- 3b. Caudal fin emarginate without black spot. Dorsal fin with 17 to 21 rays and anal fin with 23 to 25 rays *S. leiura*
- 4a. Dorsal fin rays 24 to 27 and anal fin rays 22

to 24. Upper jaw strongly curved upward at its origin forming a gap between the jaws ..
..... *T. acus melanotus*

- 4b. Dorsal fin rays 20 to 24 and anal fin rays 19 to 22. Upper jaw straight, with no gap between the jaws 5
- 5a. Teeth in upper jaw more or less straight. Head length 2.6 to 3.1 times in body length. Dorsal fin with 20 or 21 rays *T. choram*
- 5b. Teeth in upper jaw usually inclined anteriorly to some extent. Head length 3.0 to 3.6 times in body length. Dorsal fin with 22 or 23 rays *T. crocodilus*

Fisheries information : The needle fishes are of important commercial importance. These fishes are mostly utilized fresh and are very tasty for their excellent flavour.

Family 44 HEMIRAMPHIDAE
(Halfbeaks)

Body greatly elongate. Lower jaw prolonged and a short triangular upper jaw. Fins without spines. Dorsal and anal fins inserted in posterior half of body. Pelvic fins with 6 soft rays, abdominal in position. Pectoral fins generally short. Lateral line originates from pectoral fins origin and then bends downward extending backward along the ventral border of body. Body with cycloid scales.

Species known to occur in Maharashtra

1. *Hemiramphus archipelagicus* Collette & Perin (Jumping halfbeak)
2. *H. far* (Forsskal) (Black-barred halfbeak)
3. *H. lutkei* (Valenciennes) (Lutke's halfbeak) .
4. *Hyporhamphus dussumieri* (Valenciennes) (Dussumieri's halfbeak)
5. *H. limbatus* (Valenciennes) (Keel-jawed halfbeak)
6. *H. xanthopterus* (Valenciennes) (Red-tipped halfbeak)
7. *Rhynchorhamphus georgii* (Valenciennes) (Long-billed halfbeak)

8. *R. malabaricus* Collette (Malabar halfbeak)**Key to species**

- 1a. Scales absent on snout. Preorbital ridge absent 2
- 1b. Scales present on snout. Preorbital ridge well developed 4
- 2a. Pectoral fins relatively long; their length 4.5 to 5.4 times in standard length. Gill rakers 33 to 48 on first arch *H. lutkei*
- 2b. Pectoral fins short, their length 5.2 to 6.8 times in standard length. Gill rakers 25 to 36 on first arch 3
- 3a. Dorsal fin with well developed anterior lobe; pigmented in anterior part; body width 1.3 to 1.8 times its depth; 3 to 9 dark spot on side of body *H. far*
- 3b. Dorsal fin without well developed anterior lobe; pigmented along margin; body width 1.8 to 2.0 times its depth; No dark spot on side of body *H. archipelagicus*
- 4a. Nasal papillae fimbriate; upper jaw arched. Gill rakers on first arch 47 to 78. Lateral line with 2 branches ascending behind opercle and pectoral fin origin 5
- 4b. Nasal papillae not fimbriate; upper jaw flat or almost flat. Gill rakers on first arch 19 to 47. Lateral line with 1 branch ascending behind opercle and pectoral fin origin 6
- 5a. Sum of dorsal and anal fin rays equal to usually 28 or less. Upper jaw less highly domed. Gill rakers usually 60 to 67 on first arch *R. malabaricus*
- 5b. Sum of dorsal and anal fin rays usually 29 or more. Upper jaw more highly domed. Gill rakers usually 50 to 62 on first arch..... *R. georgii*
- 6a. Total gill rakers 46 to 53 on first arch and 40 to 47 on second arch *H. xanthopterus*
- 6b. Total gill rakers 19 to 37 on first arch and 16 to 28 on second arch 7

- 7a. Predorsal scales usually 38; posterior branch of preorbital ridge (bony ridge between nasal opening and eye) canal present. Caudal fin strongly forked with lower lobe longer *H. dussumieri*
- 7b. Predorsal scales usually 32 to 35; posterior branch of preorbital ridge (bony ridge between nasal opening and eye) canal absent. Caudal fin not deeply forked but emarginated *H. limbatus*

Fisheries information : The halfbeaks are important commercial fishes. These fishes are utilized fresh, dried salted and smoked.

Order 20 ATHERINIFORMES**Family 45 ATHERINIDAE**
(Siversides)

Body elongate, almost compressed and silvery. Mouth usually small, terminal or oblique. Dorsal fins two, well separated, first dorsal fin with a variable number of small, flexible spines. Second dorsal fin and anal fins each with one weak spine, one unbranched ray and a variable number of branched rays. Pectoral fins inserted high on body. Pelvic fins with one spine and 5 rays. Caudal fin almost forked. Lateral line absent. A midlateral band generally present, extending from upper angle of pectoral fins to caudal fin base,

Species known to occur in Maharashtra

1. *Atherinomorus lacunosus* (Forster) (Hardyhead silverside)
2. *Hypoatherina temminckii* (Bleeker) (Samoan silverside)

Key to species

- 1a. Ascending premaxillary process short and broad, its length $\frac{1}{4}$ of eye diameter; lateral process of premaxilla broad and flat. Dentary bone sloping gently upward and backward, with or without a slight tubercle-like elevation at distal end. Gill rakers equal to or longer than diameter of pupil. Anus at or slightly in front of pelvic fin tip *A. lacunosus*
- 1b. Ascending premaxillary process moderately

long and narrow, its length $\frac{1}{3}$ to $\frac{1}{2}$ of eye diameter; lateral process of premaxilla broad and short. Dentary bone sloping strongly upward and backward, with posterior ramus high. Gill rakers usually less than diameter of pupil. Anus always behind pelvic fin tip
.....*H. temminckii*

Fisheries information : The silverside fishes are important fishes as forage for commercial use. These fishes are generally used as bait.

Order 21 BERYCIFORMES

Family 46 HOLOCENTRIDAE (Squirrelfishes, Soldierfishes)

Body oblong and compressed. Margins of membrane bones of head serrated or with spines. Mouth terminal or lower jaw projecting. Dorsal fin with 11 or 12 stout spines and 12 to 17 rays, deeply (sometimes completely) notched between spinous and soft rays. The base of spinous part 2 to 3.5 times longer than soft part. Anal fin with 4 spines, the third spine, the stoutest and usually the longest. Pelvic fins with one spine and 7 soft rays. Caudal fin forked, with 17 branched rays. Body with ctenoid scales and complete lateral line.

Species known to occur in Maharashtra

1. *Myripristis botche* Cuvier (Blacktip soldierfish)
2. *M. murdjan* Forsskal (Pinecone soldierfish)
3. *Sargocentron diadema* (Lacepede) (Crown squirrelfish)
4. *S. rubrum* (Forsskal) (Redcoat squirrelfish)

Key to species

- 1a. Anal fin with 8 to 10 rays. Corner of preopercle with a stout spine.....2
- 1b. Anal fin with 11 to 14 rays. Corner of preopercle without spine 3
- 2a. Lateral line scales 34 to 39. Oblique rows of scales on cheek 5. Pelvic fin with dark pigmentation confined to tips between 2nd to 5th ray *S. rubrum*
- 2b. Lateral line scales 46 to 48. Oblique rows of

scales on cheek more than 5. Pelvic fin tip without dark pigmentation *S. diadema*

- 3a. Pectoral axil with small scales on lower $\frac{1}{4}$ to $\frac{3}{4}$ portion. Median fin edges not black
..... *M. murdjan*
- 3b. Pectoral axil with 1 or 2 scales on lower half. Median fins edged with black *M. botche*

Fisheries information : The soldierfishes are of little commercial importance. These fishes are caught as bycatch in the commercial trawls.

Order 22 ZEIFORMES

Family 47 ZEIDAE (Dories)

Body oval, compressed; its depth greater than head length. Mouth large, oblique; upper jaw very protrusible. Narrow bands of small teeth on jaws and vomer. Opercular bone devoid of spines and serrae. Dorsal fin with 7 to 11 spines and 22 to 30 rays. Anal fin with 1 to 4 spines and 20 to 30 rays. Dorsal and anal fin rays unbranched. Pelvic fin with 6 to 10 elements, with or without spine. Scales small, rudimentary or absent. Bony scutes along midventral line of abdomen.

Species known to occur in Maharashtra

1. *Cyttopsis resea* (Lowe) (Rosy dory)
2. *Zenopsis conchifer* (Lowe) (Silvery John dory)

Key to species

- 1a. Anal fin with 3 distinct spines and 24 to 26 rays. Bases of anal and dorsal fins studded with 5 or 6 bony plates. Pelvic fin with 5 to 7 elements *Z. conchifer*
- 1b. Anal fin with 1 or 2 flattened spines and 28 to 30 rays. Bases of anal and dorsal fins not with bony plates. Pelvic fin with 9 or 10 elements *C. rosea*

Fisheries information : The dories are not of commercial importance. These fishes are taken by trawls over 100 to 300 meters depth. These are sold fresh and their flesh is excellent to eat.

Remarks : These two genera are now being

placed under two different families, *i.e.*, parazenidae and Zeidae respectively C. Nelson, 2006).

Order 23 SYNGNATHIFORMES

Key to families

- 1a. Pelvic fins absent. Caudal fin sometimes absent. Gill opening restricted to a small pore. Body covered with dermal plates in form of rings. SYNGNATHIDAE
- 1b. Pelvic fins present. Caudal fin present. Gill opening not restricted. Body armour not in form of rings 2
- 2a. Body depressed, naked. Caudal fin forked, middle rays elongated FISTULARIIDAE
- 2b. Body compressed, covered with smooth, transparent armour with a sharp ventral edge. Caudal fin rounded, deflected to ventral edge of body CENTRISCIDAE

Family 48 FISTULARIIDAE (Flutemouths, Cornet fishes)

Body greatly elongate, fleshy and compressed. Mouth small, at the tip of a long tubular snout. Dorsal and anal fins opposite and with short bases, with 14 to 17 soft rays. Pectoral fins with 13 to 17 rays. Pelvic fins with 6 rays, inserted in the abdominal position. Caudal fin with a long filamentous structure, extending from the middle of the lobes.

Species known to occur in Maharashtra

Fistularia petimba Lacepede (Red cornet fish)

Fisheries information : The cornet fishes are of little commercial importance. These fishes are generally used for fishmeal.

Family 49 CENTRISCIDAE (Razorfish)

Body elongate and strongly compressed. Head anteriorly ending in a long tubular snout having a small terminal mouth. Two dorsal fins, the first one short and having one of its spines strong. Second dorsal fin and anal fins placed ventrally

and of moderate extent. Pelvic fins spineless and rudimentary. Pectoral fins inserted midway between the tip of snout and base of first dorsal spine.

Species known to occur in Maharashtra

Centriscus scutatus Linnaeus (Razor fish)

Fisheries information : The razor fishes are of no commercial value. These fishes are caught as a bycatch in the commercial catches.

Family 50 SYNGNATHIDAE (Sea horses, Pipefishes)

Body elongate, angular or laterally compressed or rounded. Head slender, generally with a produced tube-like snout. Mouth terminal and oblique. Dorsal fin with soft rays only. Pelvic fins absent. Caudal fin sometimes absent. Tail long, prehensile in Sea horses. Body completely armoured by bony scutes, arranged regularly in series and forming rings round the body.

Species known to occur in Maharashtra

1. *Hippichthys spicifer* (Ruppell) (Bellybarred pipefish)
2. *Hippocampus kuda* Bleeker (Spotted sea horse)
3. *Microphis cuncalus* (Hamilton) (Crocodile-tooth pipefish)
4. *Syngnathoides biaculeatus* (Bloch) (Alligator pipefish)
5. *Trachyrhamphus serratus* (Schlegel) (NA)

Key to species

- 1a. Tail prehensile, coiled distally. Caudal fin absent 2
- 1b. Tail not prehensile, not coiled distally. Caudal fin present 3
- 2a. Head angled with longitudinal axis of body. Lateral trunk ridge confluent with lateral tail ridge. Dorsal fin rays 15 to 18. Tail rings 34 to 37 *H. kuda*
- 2b. Head in line with longitudinal axis of body. Lateral trunk ridge confluent with inferior tail

ridge. Dorsal fin rays 38 to 48. Tail rings 40 to 54 *S. biaculeatus*

3a. Lateral trunk ridge confluent with inferior tail ridge. Inferior trunk and tail ridges discontinuous. Anal fin rays 4. Origin of dorsal fin on tail, on or behind 2nd tail ring *H. spicifer*

3b. Lateral trunk ridge deflected ventrad near anal ring. Inferior trunk and tail ridges continuous. Anal fin rays 2 or 3. Origin of dorsal fin on trunk 4

4a. Dorsal fin with 47 to 56 rays. Trunk rings 16 to 18, the first not longer than second; tail rings 24 to 27. Caudal fin well developed .. *M. cuncalus*

4b. Dorsal fin with 25 to 29 rays. Trunk rings 21 to 23, the first longer than second; tail rings 45 to 49. Caudal fin rudimentary *T. serratus*

Fisheries information : The sea horses are of great commercial importance since these fishes are used for medicinal purposes. These fishes are also used in the aquarium trade.

Order 24 SCORPAENIFORMES

Key to the families

1a. Head encased by expanded bones that are firmly attached to each other 2

1b. Head not encased with bony armour 3

2a. Preopercular spine very long. Dorsal fin with 1 or 2 spines on nape DACTYLOPTERIDAE

2b. Preopercular spine short. No separate spine on nape TRIGLIDAE

3a. Two dorsal fins. Head strongly flattened PLATYCEPHALIDAE

3b. One dorsal fin. Head not strongly flattened 4

4a. Body scaleless SYNANCEIIDAE

4b. Body covered with scales 5

5a. Dorsal fin with 15 spines. Ventralmost pectoral

fin ray separate from the rest APISTIDAE

5b. Dorsal fin with 12 to 14 spines. Ventralmost pectoral fin ray not separate SCORPAENIDAE

Family 51 DACTYLOPTERIDAE (Flying gurnard)

Body more or less elongate with heavily armoured large and blunt head. Eyes large with a small movable bone between plate-like bones around eye and preopercle. Preopercle with a prominent spine. Spinous and soft dorsal fins separated by a deep notch with 6 to 7 spines, of which the first or first two anterior ones are separated from the rest of the fin; soft dorsal fin with 8 rays. Anal fin with 6 or 7 soft rays. Pectoral fins divided into 2 parts, a short anterior part with 5 rays and a long posterior part with 25 to 31 rays, extending to base of caudal fin in adults. Lower side of posterior part of trunk with 2 to 4 enlarged keel-like scales. Scale scute-like, forming prominent keels.

Species known to occur in Maharashtra

Dactyloptena orientalis (Cuvier) (Oriental flying gurnard)

Fisheries information : The flying gurnard fishes are of no commercial importance. These fishes are often seen in the commercial catches.

Family 52 APISTIDAE (Waspfish)

Body compressed. Head usually with ridges and spines. Dorsal fin with 14 to 16 spines and 8 to 10 soft rays. Anal fin with 3 to 4 spines and 6 to 8 soft rays. Pectoral fin with 11 to 13 rays, the lowermost ray free. Chin with 3 pairs of barbels. Branchiostegal membrane not fused to isthmus. Caudal fin rounded to square-cut but never forked.

Species known to occur in Maharashtra

Apistus carinatus (Bloch & Schneider) (Ocellated waspfish)

Fisheries information : The Ocellated waspfishes is of minor commercial importance.

Remarks : This fishes were formerly placed under family Scorpaenidae as a subfamily.

Family 53 SCORPAENIDAE (Scorpion fishes)

Body almost compressed to robust, with large spiny head. A bony ridge below eye (suborbital stay) extending posteriorly and firmly attached to preopercle. Preopercular border with 3 to 5 spines, the uppermost 3 better developed. Opercle with 2 divergent spines or a single spine, the other spines scattered on head. A single dorsal fin, generally notched posterior to the spinous part, with 8 to 18 spines and 4 to 14 segmented rays. Anal fin with 2 to 4 spines and 5 to 14 segmented rays. Pectoral fins broad based, large, fan-like with 11 to 23 rays. Pelvic fins inserted in thoracic region, with one spine and 3 to 5 rays. Caudal fin rounded to square-cut.

Species known to occur in Maharashtra

1. *Pterois russelii* Bennett (Plaintail turkeyfish)
2. *P. volitans* (Linnaeus) (Red lionfish)

Key to species

- 1a. Pectoral fin usually with 14 rays. Interorbital space scaleless. Transverse scale rows above lateral line 12 to 14. Median fins with small dark spots *P. volitans*
- 1b. Pectoral fin usually with 13 rays. Interorbital space scally. Transverse scale rows above lateral line 9 or 10. Median fins without spots *P. russelii*

Fisheries information : The scorpion fishes are of little commercial importance. A few species are used as aquarium exhibits.

Remarks : The scorpion fishes known to contain venomous spines, and so, they should be very carefully handled.

Family 54 SYNANCEIIDAE (Rock fishes)

Body smooth, without scales and usually covered with skin glands. Dorsal fin with 11 to

17 spines and 4 to 14 soft rays; anal fin with 2 to 4 spines and 4 to 14 soft rays. Pelvic fin with one spine and 3 to 5 soft rays. Pectoral fin rays 10 or 11. Most fishes with one to three lowermost pectoral fin rays separated from the rest. These fishes usually looking like rock by mimicking colour of the surrounding.

Species known to occur in Maharashtra

1. *Choridactylus multibarbus* Richardson (Orangebanded stingfish)
2. *Minous monodactylus* (Bloch & Schneider) (Grey stingfish)
3. *Trachicephalus uranoscopus* (Bloch and Schneider) (Stargazing stonefish)

Key to species

- 1a. Dorsal fin with 13 spines and 9 rays. First dorsal spine distinctly smaller than second spine. Pectoral fin with 3 free rays *C. multibarbus*
- 1b. Dorsal fin with 9 to 12 spines and 10 to 12 rays. First dorsal spine equal to or longer than second spine. Pectoral fin with one or no free ray 2
- 2a. Pectoral fin with a single detached ray. Anal fin with 10 or 11 elements. Dorsal fin with 9 to 11 spines. Body depth 2.5 to 3.0 times in standard length *M. monodactylus*
- 2b. Pectoral fin without detached ray. Anal fin with 15 elements. Dorsal fin with 12 spines. Body depth 4.2 to 4.6 times in standard length *T. uranoscopus*

Fisheries information : The Rock fishes are of no commercial importance.

Remarks : Since the Rockfishes contain highly venomous spines, these fishes should be very carefully handled.

Family 55 TRIGLIDAE (Searobins, Gurnards)

Body elongate, fusiform, with a row of spines along each side of dorsal fin bases. Scales small,

ctenoid and imbricate or rudimentary and more or less embedded. Head large, encased in bony plates. Maxilla covered by preorbital bone. Pectoral fin with lower 3 rays free and enlarged. Dorsal fin divided in to two separate spinous and soft-rayed parts. Pelvic fins originate below pectoral fin base. Caudal fin with 11 or 12 principal rays and 9 or 10 branched rays. When taken out of water, they produce a bird-like chirping noise by the help of swim bladder, for which they are known as Sea-robins.

Species known to occur in Maharashtra

1. *Lepidotrigla bispinosa* (Steindachner) (Bullhorn gurnard)
2. *L. faueri* Gilchrist & Thompson (Scalybreast gurnard)
3. *L. longipinnis* Alcock (NA)
4. *L. omanensis* Regan (Oman gurnard)

Key to species

- 1a. Rostral process with several prominent spines *L. faueri*
- 1b. Rostral process with a single pair of prominent spine 2
- 2a. Scales very loosely attached, in uneven, indistinct rows *L. longipinnis*
- 2b. Scales firmly attached, in even and distinct rows 3
- 3a. Scale rows below lateral line 10 to 14 *L. omanensis*
- 3b. Scale rows below lateral line 15 to 19 *L. bispinosa*

Fisheries information : Not of any fishery importance.

Family 56 PLATYCEPHALIDAE (Spiny flatheads)

Body elongate with strongly depressed head. Bony ridges of head generally with spines or serrations. Mouth large, lower jaw longer than upper. Two dorsal fins, considerably separated;

spinous dorsal fin with 8 to 10 spines (usually 9 spines), the first spine short and scarcely connected to the second. Soft dorsal and anal fins with 10 to 15 rays. Pelvic fins thoracic in position and set far apart towards sides of body with 1 spine and 5 soft rays. Lateral line complete, anterior scales of lateral line usually with spines.

Species known to occur in Maharashtra

1. *Cociella crocodila* (Tilesius) (Crocodile flathead fish)
2. *Grammoplites scaber* (Linnaeus) (Rough flathead fish)
3. *G. suppositus* (Troschel) (Softfin flathead fish)
4. *Platycephalus indicus* (Linnaeus) (Bartail flathead fish)
5. *Rogadius asper* (Cuvier) (Olivetailed flathead fish)
6. *Suggrundus macracanthus* (Bleeker) (Largespine flathead)
7. *S. rodericensis* (Cuvier) (Spiny flathead fish)
8. *Thysanophrys carbunculus* (Valenciennes) (Papillose flathead fish)

Key to species

- 1a. Pored scales in lateral line 65 or more. Vomerine teeth in 1 transverse patch. Dorsal fin with 13 soft rays *P. indicus*
- 1b. Pored scales in lateral line 60 or fewer. Vomerine teeth in 2 separate patches. Dorsal fin with 11 or 12 soft rays 2
- 2a. Bony ridges above and below eye with very small spines or finely serrated. An antrorse preopercular spine present *R. asper*
- 2b. Bony ridges above and below eye with larger spines. Antrorse preopercular spine absent 3
- 3a. All or most pored scales of lateral line bearing a backwardly directed spine 4
- 3b. Pored scales of lateral line atleast on posterior half of body without spines 5

- 4a. Anal fin usually with 12 soft rays. Gillrakers on first arch 1 plus 5 or 6. Upper preopercular spine not reaching margin of opercular membrane. First dorsal fin with a marginal dark band, without a blotch *G. scaber*
- 4b. Anal fin usually with 13 soft rays. Gillrakers on first arch 1 plus 8. Upper preopercular spine long, reaching beyond margin of opercular membrane. First dorsal fin with a large black blotch posteriorly *G. suppositus*
- 5a. Bony ridges crossing below eye with 3 spines. Number of scale rows slanting downward and backward above lateral line greater (by 4 or more scale rows) than number of pored lateral line scales *C. crocodila*
- 5b. Bony ridges crossing below eye usually with 4 or more spines. Number of scale rows slanting downward and backward above lateral line about the same (may differ by 1 or 2) as the number of pored lateral line scales 6
- 6a. A series of small wart like papillae along upper surface of eye. Gill rakers 1 plus 4 to 6. Iris lappet of eye with finger-like lobes *T. carbunculus*
- 6b. No papillae along upper surface of eye. Gill rakers 1 plus 6 to 7 or 2 plus 7 to 9. Iris lappet lacking lobes 7
- 7a. Second dorsal fin usually with 11 rays. Gill rakers 2 or 3 plus 8 to 10. A pale ocellus on the pectoral fin. Dorsal fin not spotted *S. rodericensis*
- 7b. Second dorsal fin usually with 12 rays. Gill rakers 1 plus 6 or 7. No pale ocellus on pectoral fin. Both parts of dorsal fin spotted *S. macracanthus*

Fisheries information : The spiny flathead fishes are of no commercial importance. These fishes are often found in the commercial catches.

Remarks : *Suggrundus rodericensis* is placed under genus *Kumococius* and *Thysanophrys cantori* is considered as a synonym of *T.*

carbunculus and placed under genus *Eurycephalus* by some authors.

Order 25 PERCIFORMES

Key to families

- 1a. Pectoral fins divided into two parts: the upper part normal with rays attached by membrane, the lower part with 4 to 7 free filamentous rays POLYNEMIDAE
- 1b. Pectoral fins normal, without free rays in lower part of fin, lower rays sometimes separated from each other 2
- 2a. Two short dorsal fins, widely separated from each other 3
- 2b. Dorsal fin mostly one; when two, with continuous bases; when the fins separate, the inner space negligible 5
- 3a. Dorsal fin with 5 spines. Jaws with strong canine teeth SPHYRAENIDAE
- 3b. Dorsal fin with 6 to 10 spines. Jaws with small, feeble teeth 4
- 4a. Dorsal fin with 6 to 8 spines. Anal fin with 2 spines and 8 to 18 rays APOGONIDAE
- 4b. Dorsal fin with 7 to 10 spines. Anal fin with 3 spines and 7 rays ACROPOMATIDAE
- 5a. Head large and cuboid. Eyes dorsolateral or nearly so URANOSCOPIDAE
- 5b. Head not cuboid. Eyes not dorsolateral 6
- 6a. Dorsal and anal fins each with only soft rays, without spines 7
- 6b. Dorsal and anal fins each with spines and soft rays 9
- 7a. Head flattened with a characteristic laminated, oval shaped sucking disc ECHENEIDAE
- 7b. Head without sucking disc 8
- 8a. Body elongate and compressed, not disc-like. Ventral profile of body more or less straight. Dorsal fin originating on nape, very long, continuing to caudal fin. First pelvic fin ray not prolonged CORYPHAENIDAE

- 8b. Body disc-like with sharp abdomen. Ventral profile of body much more convex than dorsal profile. Dorsal fin originating far behind head, not extending to caudal fin. First pelvic fin ray in adult prolonged MENIDAE
- 9a. Dorsal fin short, its base shorter than anal fin base PEMPHERIDAE
- 9b. Dorsal fin long, its base equal to or longer than anal fin base 10
- 10a. Cirri present in the interspinous membrane of dorsal fin CIRRHITIDAE
- 10b. Cirri absent in the interspinous membrane of dorsal fin 11
- 11a. Pelvic fins with 2 strong spines separated by 3 soft rays SIGANIDAE
- 11b. Pelvic fins with at most 1 spine or absent 12
- 12a. Upper jaw prolonged into a long bill 13
- 12b. Upper jaw normal, not prolonged into a long bill 14
- 13a. Pelvic fins absent. First dorsal fin short-based, well separated from the second dorsal fin in adults. Caudal peduncle with a single median keel on each side XIPHIIDAE
- 13b. Pelvic fins present. First dorsal fin with very long base, sometimes sail-like, depressible into groove and not well separated from second dorsal fin. Caudal peduncle in adults with two keels on each side ISTIOPHORIDAE
- 14a. Gill openings reduced to a small opening on upper side of head. Preopercle armed with a strong spine CALLIONYMIDAE
- 14b. Gill openings broad. Preopercle without a strong spine 15
- 15a. Pelvic fins very close together 16
- 15b. Pelvic fins widely separated 19
- 16a. Pelvic fins united only at the bases ELEOTRIDIDAE
- 16b. Pelvic fins united entirely forming a cup-like structure (sucking disc) 17
- 17a. Body not eel-like. Dorsal and anal fins not confluent with caudal fin GOBIIDAE
- 17b. Body eel-like. Dorsal and anal fins confluent with caudal fin 18
- 18a. Opercular region with a pouch-like cavity. Caudal fin lanceolate TRYPAUCHENIDAE
- 18b. Opercular region without a pouch-like cavity. Caudal fin rounded GOBIOIDIDAE
- 19a. Body naked or with modified scales. Head with tentacles BLENNIIDAE
- 19b. Body with scales. Head never with tentacles 20
- 20a. Anal fin with 0 to 1 spine PENGUIPEDIDAE
- 20b. Anal fin with more than 1 spine 21
- 21a. A single folding lancet-like spine on side of caudal peduncle ACANTHURIDAE
- 21b. No folding spine on caudal peduncle 22
- 22a. A single pair of nostrils 23
- 22b. Two pairs of nostrils 25
- 23a. Lateral line complete, not interrupted POMACENTRIDAE
- 23b. Lateral line interrupted 24
- 24a. Dorsal fin with 3 spines PSEUDOCHROMIDAE
- 24b. Dorsal fin with 12 to 22 spines CICHLIDAE
- 25a. Gills 3½, with slit behind, last small or wanting. Lower pharyngeals fused into a characteristic structure which bears a strong molar teeth 26
- 25b. Gills 4, with a long slit behind. Lower pharyngeals not fused into one bone and not bearing molar teeth 27
- 26a. Mouth protractile. Jaw teeth mostly separate, usually projecting outward LABRIDAE
- 26b. Mouth not protractile. Jaw teeth fused to form beak-like dental pates SCARIDAE

- 27a. Close behind last gill arch, lateral pharyngeal sacs with papillae or longitudinal folds bearing teeth present. Small unilateral teeth in jaws 28
- 27b. No toothed pharyngeal sacs 31
- 28a. A continuous dorsal fin or two dorsal fins scarcely separated 29
- 28b. Two dorsal fins distinctly though scarcely separated 30
- 29a. Maxilla scarcely reaching to below eye. Pelvic fins absent..... STROMATEIDE
- 29b. Maxilla reaching below eye. Pelvic fins present CENTROLOPHIDAE
- 30a. Dorsal and anal fins with 13 to 16 rays. Caudal peduncle with two fleshy keels on each side at base of caudal fin ARIOMMATIDAE
- 30b. Dorsal and anal fins with 23 to 28 rays. No fleshy keels on caudal peduncle NOMEIDAE
- 31a. Premaxillae fixed (non protrusible upper jaw), upper jaw often form a long, forward projecting sword-like structure 32
- 31b. Maxillary bones not very firmly attached to premaxillae and are free to move forward 34
- 32a. Caudal fin always present, well developed, lunate or strongly notched. Body spindle-shaped. Keels present on caudal peduncle. SCOMBRIDAE
- 32b. Caudal fin often absent, but if present then not large or lunate-shaped. Body oblong or elongate, often ribbon-like. No keel on caudal peduncle 33
- 33a. Body ribbon-like. Single dorsal fin, very long and extending almost entire length of body. No finlets behind dorsal and anal fins. Body silvery TRICHIURIDAE
- 33b. Body elongate and compressed or somewhat fusiform. Two dorsal fins. Isolated finlets behind dorsal and anal fins usually present. Back usually brown GEMPYLIDAE
- 34a. Two long barbels on chin (which can be folded into a median groove on throat). Two widely separated dorsal fins... MULLIDAE
- 34b. No barbels on chin 35
- 35a. Dorsal fin with 6 to 9 isolated (not connected by membrane) spines, each depressible in a groove. Two silvery stripes on sides of body RACHYCENTRIDAE
- 35b. Dorsal fin without free spines 36
- 36a. First two anal spines detached from rest of fin (partially or completely embedded in large specimens). Scutes on straight part of lateral line usually present CARANGIDAE
- 36b. First two anal spines not detached from rest of fin. No scutes on caudal peduncle.....37
- 37a. Anterior rays of soft dorsal and anal fins markedly elongated, giving both fins a sickle shape. Pelvic fins usually small or vestigial MONODACTYLIDAE
- 37b. Anterior rays of soft dorsal and anal fins not elongated, when elongate they do not give either fin a sickle shape. Pelvic fins not small or vestigial 38
- 38a. Body very deep, its maximum depth more than half the total length. Single dorsal fin, spines clearly distinguishable 39
- 38b. Body oblong or fairly deep, its depth less than half the total length. When deep-bodied and with single dorsal fin, there are no spines or the spiny rays hard to distinguish from soft rays 44
- 39a. No precumbent spine in dorsal fin 40
- 39b. Precumbent spine in dorsal fin present ..41
- 40a. Preopercular spine present. Pelvic axillary process not developed POMACANTHIDAE
- 40b. No spine at angle of preopercle. Pelvic axillary process well developed CHAETODONTIDAE
- 41a. Anal fin with 4 spines. Gill membranes narrowly united to isthmus SCATOPHAGIDAE

- 41b. Anal fin with 3 spines. Gill membranes broadly united to isthmus 42
- 42a. Spinous dorsal fin confluent with soft dorsal portion. Spines of dorsal fin increasing in length posteriorly PLATACIDAE
- 42b. Spinous dorsal fin separated from soft rayed dorsal fin by a notch. Spines of dorsal fin not increasing in length posteriorly 43
- 43a. Mouth protracile. Pectoral fins falcate, longer than head length. Maxillae distally exposed DREPANIDAE
- 43b. Mouth not protractile or scarcely so. Pectoral fins short, rounded, shorter than head length. Maxillae distally hidden EPHIPPIDAE
- 44a. Two dorsal fins well separated but if close together then not joined by membrane ..45
- 44b. Single dorsal fin, sometimes deeply notched between spinous and soft parts of fin but in such cases, the membrane joining the parts intact 48
- 45a. Anal fin base considerably longer than second dorsal fin bases. Mouth large, oblique, with small canine teeth at front LACTARIIDAE
- 45b. Anal fin base as long as or shorter than second dorsal fin base 46
- 46a. Mouth small, upper jaw (maxilla) ending far short of eye and even before nostrils SILLAGINIDAE
- 46b. Mouth moderate in size or large. Upper jaw (maxilla) reaching nostrils, but often anterior margin of eye 47
- 47a. Caudal fin forked. Preopercle with a double edge (edge and ridge) AMBASSIDAE
- 47b. Caudal fin rounded. Preopercle with a single edge (no ridge) LATIDAE
- 48a. Pelvic fins usually with an axillary scale ..49
- 48b. Pelvic fins without an axillary scale 60
- 49a. Anal fin with 2 spines 50
- 49b. Anal fin with 3 spines 51
- 50a. A peculiar hook in males. Lateral line short or very small KURTIDAE
- 50b. No hook in males. Lateral line prominent and extends up to hind margin of caudal fin SCIAENIDAE
- 51a. Dorsal and anal fins rounded and symmetrical so that with the tail they appear as a single three lobed fin LOBOTIDAE
- 51b. Dorsal and anal fins not as above 52
- 52a. Mouth strongly protractile 53
- 52b. Mouth moderately protractile 54
- 53a. Head usually naked (but small scales on cheek in few species), upper surface with bony ridges with a nuchal spine on nape. Gill membrane united with isthmus LEIOGNATHIDAE
- 53b. Head entirely covered with clearly visible scales, upper surface smooth. Gill membranes free from isthmus GERREIDAE
- 54a. Distal end of premaxillae overlapping maxillae externally. Molar-like teeth present at sides of jaws. No tooth on roof of mouth SPARIDAE
- 54b. Maxillae not overlapping by hind tip of premaxillae 55
- 55a. Outer row of teeth in jaws of a peculiar hockey-stick shape (scalpiform), with their bases set horizontally, resembling a radially striated bony plate inside mouth KYPHOSIDAE
- 55b. Typical scalpiform teeth absent 56
- 56a. Suborbital process well developed, sometimes forming a spine posteriorly ..57
- 56b. Suborbital process either absent or weakly developed 59
- 57a. Dorsal and anal fin spines weak. Roof of mouth without teeth NEMIPTERIDAE
- 57b. Dorsal and anal fin spines moderately strong. Teeth usually present on roof of mouth 58

- 58a. Caudal fin deeply forked CAESIONIDAE
- 58b. Caudal fin slightly forked, often truncate or lunate LUTJANIDAE
- 59a. Dorsal fin with 12 to 16 soft rays. Lips not soft and fleshy HAEMULIDAE
- 59b. Dorsal fin with 9 to 10 soft rays. Lips soft and fleshy LETHRINIDAE
- 60a. Inner ray(s) of pelvic fins attached to abdomen by membrane PRIACANTHIDAE
- 60b. Inner ray(s) of pelvic fins not confluent to abdomen by membrane 61
- 61a. Dorsal and anal fins each with well developed basal scaly sheath. Dorsal fin with 10 spines KUHLIDAE
- 61b. Dorsal and anal fins each without or low basal scaly sheath 62
- 62a. Mouth large, the upper jaw usually extended to below hind margin of eye. Dorsal fin with 7 to 12 spines. Operculum with 1 to 3 spines SERRANIDAE
- 62b. Mouth small or moderate, the upper jaw not reaching beyond eye center. Dorsal fin with 11 to 14 spines. Operculum with 1 to 2 strong spines TERAPONIDAE

Family 57 LATIDAE
(Sea perches)

Body elongate or oblong and almost compressed. Mouth large, lower jaw extending to hind border of the orbit. Preopercle with a serrated hind margin or with 2 ridges. Opercle with a spine. Dorsal fin deeply notched or separated into two parts, the first part with 7 to 8 strong spines and second part with 1 spine and 10 to 15 rays. Anal fin with 3 spines and 8 to 13 soft rays. Caudal fin rounded. Lateral line complete.

Species known to occur in Maharashtra

Lates calcarifer (Bloch) (Baramundi)

Fisheries information : The giant sea perch is

one of the very important commercial fishes of our country. Its flesh is considered to be most delicious. Its swimbladder is used for making isinglass.

Remarks : These fishes were earlier placed under family centropomidae. Mooi and (1995) gave family status to former subfamily Latinae and otero (2004) redefined the family.

Family 58 AMBASSIDAE
(Glassfishes)

Body more or less translucent and compressed. Mouth large, with fine teeth in jaws and roof of mouth; the upper outer row sometimes enlarge and canine-like. Opercle with an ill-developed spine. Preoperculum with double margin having an edge and ridge. Dorsal fin of two continuous parts defined by a notch. First dorsal fin with 7 spines and a precumbent spine. Second dorsal fin with one spine and 9 to 17 rays. Anal fin with 3 spines and 9 to 16 rays. Caudal fin forked. Lateral line complete, interrupted or very prominently broken.

Species known to occur in Maharashtra

1. *Ambassis ambassis* Lacepede (Commerson's glassy perchlet)
2. *A. gymnocephalus* (Lacepede) (Bald glassy perchlet)
3. *Chanda nama* Hamilton (Elongate glassy perchlet)
4. *Parambassis thomasi* (Day) (Western Ghat glassey perchlet)
5. *Pseudambassis baculis* (Hamilton) (Himalayan glassey perchlet)
6. *P. ranga* (Hamilton) (Indian glassey fish)

Key to species

- 1a. Cheek with one or two transverse rows of scales. Longitudinal scale series 24 to 30. A patch of teeth on tongue 2
- 1b. Cheek with 4 to 7 transverse rows of scales. Longitudinal scale series 30 to 107. No teeth on tongue 3

- 2a. Predorsal scales 16 to 21. Lateral line complete. Supra orbital ridge smooth, with one spine at the posterior end
..... *A. ambassis*
- 2b. Predorsal scales 12 to 15. Lateral line interrupted. Supraorbital ridge serrated, with 2 to 4 spines posteriorly
..... *A. gymnocephalus*
- 3a. Transverse scale rows on cheek 4. Lateral line scales 35 to 43 *P. thomassi*
- 3b. Transverse scale rows on cheek 7. Lateral line scales 47 to 107 4
- 4a. Supraorbital ridge smooth. Few canines on lower jaw. Scales minute, 100 or more scales along lateral line *C. nama*
- 4b. Suborbital ridge dentate. No canine on lower jaw. Scales moderate, about 90 or less scales along lateral line 5
- 5a. Lower gill rakers 11 or 12 on first arch. Lateral line with about 90 scales
..... *P. baculis*
- 5b. Lower gillrakers 15 to 16 on first arch. Lateral line with 47 to 63 scales *P. ranga*

Fisheries information : The glassfishes are of little commercial importance. These fishes are marketed fresh or dried and generally utilized as bait.

Remarks : *A. ambassis* was reported as *A. commersoni* curier, which is now considered as a junior synonym of the former (Anderson and Heemstra, 2003).

Family 59 ACROPOMATIDAE (Lanternbellyfishes)

Body oblong, more or less compressed. Opercle with 2 or 3 spines. Gill membrane separate, free from isthmus. Gill rakers well developed. Dorsal fin divided to base or completely separated into spinous and soft-rayed parts; 1st part with 7 to 10 spines and 2nd part with 1 spine and 9 or 10 rays. Anal fin with 2 or 3 spines and 6 to 9 rays.

Species known to occur in Maharashtra

Acropoma japonicum (Gunther)

Fisheries information : These fishes are too small to have any commercial value but can be utilised as food fish.

Remarks : These fishes, assigned to this ill-defined 'family', are placed by some recent authors in the family Percichthyidae (Heemstra, 1986). But Nelson (2006) recognizes this family after removing several other genera to different families.

Family 60 SERRANIDAE (Groupers, Seabassess)

Body robust or almost compressed, oblong-oval to elongate. Mouth large, maxilla exposed, with or without supramaxilla. Border of preopercle serrate, opercle with 2 or 3 flat spines. Dorsal fin with 7 to 12 spines and 10 to 19 rays. Anal fin with 3 spines and 7 to 10 rays. Caudal fin usually rounded or truncate, with 15 branched rays. Pelvic fins with 1 spine and 5 rays. Pectoral fins broadly rounded, with the base scaly. Body with variable colour patterns of light or dark stripes, spots, vertical or diagonal bars or almost plain.

Species known to occur in Maharashtra

1. *Cephalopholis argus* Bloch and Schneider (Peacock hind)
2. *C. boenack* (Bloch) (Chocolate hind) (Chocolate hind)
3. *C. formosa* (Shaw and Nodder) (Bluelined hind)
4. *C. leopardus* (Lacepede) (Leopard hind)
5. *C. miniata* (Forsskal) (Coral hind)
6. *C. sonnerati* (Valenciennes) (Tomato hind)
7. *Diploprion bifasciatum* Cuvier (Barred soapfish)
8. *Epinephelus areolatus* (Forsskal) (Areolate grouper)
9. *E. bleekeri* (Vaillant) (Duskytail grouper)
10. *E. chlorostigma* (Valenciennes) (Brown spotted grouper)

11. *E. coioides* (Hamilton) (Orange spotted grouper)
12. *E. diacanthus* (Valenceinnes) (Spiny cheek grouper)
13. *E. epistictus* (Temminck & Schlegel) (Dotted grouper)
14. *E. erythrurus* (Valenciennes) (Cloudy grouper)
15. *E. fasciatus* (Forsskal) (Blacktip grouper)
16. *E. fuscoguttatus* (Forsskal) (Brown marbled grouper) (Nearly threatened species)
17. *E. lanceolatus* (Bloch) (Giant grouper) (Vulnerable species)
18. *E. latifasciatus* (Temminck & Schlegel) (Striped grouper)
19. *E. malabaricus* (Bloch & Schneider) (Malabar grouper)
20. *E. morrhu* (Valenciennes) (Comet grouper)
21. *E. polylepis* Randall & Heemstra (Smallscaled grouper)
22. *E. stoliczkae* Day (Epaulet grouper)
23. *E. undulosus* (Quoy & Gaimard) (Wavy lined grouper)
24. *Grammistes sexlineatus* (Thunberg) (Sixstripe soapfish)
- 5a. Second anal spine reaching past tip of third spine. Preorbital depth 2.5 to 3.6% of standard length. About 8 dark bars on body *C. boenak*
- 5b. Second anal spine not reaching past tip of third spine. Preorbital depth 3.6 to 4.3% of standard length. Dark blue lines on head and body *C. formosa*
- 6a. Transverse scale rows 11 to 15 between dorsal fin origin and lateral line. Lateral line scales 67 to 78. Lateral scale series 120 to 135. Body reddish with scattered whitish or purple spots; purple network on head, maxilla and lips *C. sonnerati*
- 6b. Transverse scale rows 6 to 10 between dorsal fin origin and lateral line. Lateral line scales 40 to 56. Lateral scale series 80 to 115. Colour not as above 7
- 7a. Second anal spine strong, equal to third spine length. Lateral scale series 80 to 88. Scale rows 6 or 7 between dorsal fin origin and lateral line. A dark brown saddle on caudal peduncle. Head and body mottled reddish brown with orange or pinkish-red spots *C. leopardus*
- 7b. Second anal spine weak, shorter than third spine length. Lateral scale series 94 to 115. Scale rows 9 or 10 between dorsal fin origin and lateral line. Body covered with many small dark-edged blue ocelli 8
- 8a. Lower gill rakers 17 to 19. Median fins with narrow white edge *C. argus*
- 8b. Lower gill rakers 14 to 16. Median fins with a narrow blue margin and blackish submarginal line *C. miniata*
- 9a. Caudal fin truncate or emarginate 10
- 9b. Caudal fin rounded 13
- 10a. Gill rakers on first arch 12 to 16 on upper arm and 20 to 23 on lower arm. Longitudinal brown lines on upper part of body *E. undulosus*
- 10b. Gill rakers on first arch 8 to 11 on upper

Key to species

- 1a. Last ray of pelvic fins attached to abdomen by membrane. Anal fin with 2 spines 2
- 1b. Last ray of pelvic fin not attached to abdomen. Anal fin with 3 spines 3
- 2a. Preoperculum margin coarsely serrate. Dorsal fin with 8 spines. Pelvic fins long, its tip reaching to anal fin base *D. bifasciatum*
- 2b. Preoperculum margin smooth except for 1 to 4 spines on upper limb. Dorsal fin with 7 spines. Pelvic fins short, its tip not reaching to anal fin *G. sexlineatus*
- 3a. Dorsal fin with 9 spines 4
- 3b. Dorsal fin with 8 spines 9
- 4a. Anal fin with 8 soft rays 5
- 4b. Anal fin with 9 soft rays 6

- arm and 14 to 18 on lower arm. Numerous spots on head, body and fins 11
- 11a. Lateral line scales 65 to 72. Lateral scale series 126 to 137 *E. polylepis*
- 11b. Lateral line scales 48 to 53. Lateral scale series 96 to 122 12
- 12a. Anal fin of adults angular or pointed. Pyloric caeca 26 to 52. Largest dark spot on body distinctly smaller than pupil
..... *E. chlorostigma*
- 12b. Anal fin of adults rounded. Pyloric caeca 11 to 17. Dark spots on body almost equal to size of pupil *E. areolatus*
- 13a. Dorsal fin rays 12 or 13 (rarely 14). Juveniles with 2 black-edged white longitudinal bands, that disappear in adults, the dark edges breaking into dashes and spots
..... *E. latifasciatus*
- 13b. Dorsal fin rays 14 to 18. Colour not as above 14
- 14a. Lateral line scales with branched tubules. Eyes small, its diameter about 8 to 13 times in standard length. Juveniles yellow with irregular broad black bands on body. Small adults with white or yellow spots on back and irregular black spots on fins
..... *E. lanceolatus*
- 14b. Lateral line scales with single tubule. Eyes large, its diameter 7 to 8 times in standard length. Colour not as above 15
- 15a. Most part of head and body with dark spots, sometimes red or orange spots 16
- 15b. Head and body not covered with distinct dark spots 20
- 16a. Lateral line scales 48 to 53 17
- 16b. Lateral line scales 53 to 65 18
- 17a. Total gill rakers on first arch 25 to 28. Lower two-third of caudal fin dusky. Median fins without pale margin. No black saddle on caudal peduncle. Juveniles with 7 faint dark bars dorsally *E. bleekeri*
- 17b. Total gill rakers on first arch 20 to 23. Upper and lower part of caudal fin without colour differentiation. Median fins with yellowish margin posteriorly. A black saddle on caudal peduncle dorsally. Rear half of body with 4 dark bars *E. stoliczkae*
- 18a. Midlateral body scales smooth. Total gill rakers 29 to 31 on first arch. No bony platelets on sides of first gill arch. Fins covered with small close-set brown spots..
..... *E. fuscoguttatus*
- 18b. Midlateral body scales rough. Total gill rakers 23 to 27 on first arch. Small bony platelets on sides of first gill arch. Fins with scattered small black spots 19
- 19a. Numerous small well separated black spots with irregular white or pale spots or blotches on head and body. Largest spot about twice the rear nostril *E. malabarica*
- 19b. Numerous orange, brownish or reddish-brown spots on head and body. Largest spots about 4 to 5 times of the rear nostril. No white or pale spot present *E. coioides*
- 20a. Body usually with vertical or slightly oblique broad dark bands 21
- 20b. Body without dark vertical bands 22
- 21a. Angle of preopercle with 1 to 5 spines. Margin of dorsal fin membrane not black .
..... *E. diacanthus*
- 21b. Serrae at angle of preopercle only slightly enlarged. Margin of interspinous dorsal fin membrane black *E. fasciatus*
- 22a. Preoperculum angle produced with 3 to 5 distinctly enlarged serrae. Head and body with conspicuous small brownish black spots on dorsolateral part, in juveniles that arranged in 3 longitudinal rows *E. epistictus*
- 22b. Preoperculum angle not produced or at most with a shallow indentation just above the enlarged serrae. Colour not as above 23
- 23a. Lateral scale series 108 to 125. Dorsal fin rays 14 or 15, the longest spine about equal

to longest ray. Body with long curved dark brown bands or series of spots
*E. morrhua*

- 23b. Lateral scale series 92 to 107. Dorsal fin rays 15 to 17, the longest spine distinctly shorter than longest ray. Body with irregular pale spots and blotches that join to form an irregular dark reticulum*E. erythrurus*

Fisheries information : Groupers and seabasses are usually very important commercial fishes. *E. malabaricus* is utilized in the aquaculture.

Remarks : Identification of *E. coioides* is mostly confused with *E. tauvina* (Forsskal) and often misidentified as *E. tauvina* or as *E. malabarica*. *E. tauvina* differs from the former in having 17 to 20 gill rakers on lower limb of first arch (cf. 14 to 17 in *E. coioides*) and absence of bony platelets on lateral side of first gill arch (present in *E. coioides*) (Heemstra and Randall, 1993). Moreover, *E. coioides* is known from coastal waters and estuaries, while *E. tauvina* prefers clear waters on coral reefs. Prior to Randall and Heemstra (1991), *E. polylepis* was misidentified as *E. chlorostigma*. Hence, records of *E. chlorostigma* from Maharashtra coast need confirmation.

Family 61 TERAPONIDAE (Terapon-perches, terapons)

Body oblong or ovate, almost compressed. Opercle with one or two spines, preopercle serrate. Dorsal fin with 11 to 14 spines and 8 to 14 rays, almost separated by a deep notch in some species. Anal fin with 3 spines and 7 to 12 rays. Caudal fin rounded, truncate or emarginate. Body usually with longitudinal dark stripes on sides and caudal fin with dark stripes.

Species known to occur in Maharashtra

1. *Pelates quadrilineatus* (Bloch) (Fourlined terapon)
2. *Terapon jarbua* (Forsskal) (Jarbua terapon)
3. *T. puta* Cuvier (Smallscaled terapon)
4. *T. theraps* Cuvier (Largescaled terapon)

Key to species

- 1a. Post-temporal covered with skin and scales, not extended posteriorly, not with a serrate edge. Gill membranes united with isthmus ..
 *P. quadrilineatus*
- 1b. Post-temporal extended and serrate posteriorly, exposed, skin and scale covering reduced. Gill membranes free from isthmus 2
- 2a. Lateral line with 46 to 56 scales, 6 to 8 scales above lateral line *T. theraps*
- 2b. Lateral line with 70 or more scales, 10 to 17 scales above lateral line 3
- 3a. Three or 4 straight longitudinal stripes present on lateral side of body. Gillrakers 18 to 24 on lower arm of first gill arch *T. puta*
- 3b. Three or 4 curved stripes present on lateral side of body. Gill rakers 12 to 15 on lower arm of first arch..... *T. jarbua*

Fisheries information : The terapons are important commercial food fishes. *T. jarbua* is a very common species and can be well used as an aquarium fish.

Remarks : *P. quadrilineatus* is known for its croaking noise it invariably makes when taken out of water. *T. jarbua* is very common all along Indian coast.

Family 62 KUHLIDAE (Flagtail)

Body oblong and compressed with ctenoid scales. Upper jaw slightly protrusible, maxilla mostly exposed and without supramaxilla. Opercle with 2 exposed flat spines. Dorsal fin with 10 spines and 9 to 16 rays. Anal fin with 3 spines and 10 to 16 rays. Pelvic fins with 1 spine and 5 rays. Caudal fin emarginate or forked.

Species known to occur in Maharashtra

1. *Kuhlia mugil* (Schneider) (Barred flagtail)
2. *K. rupestris* (Lacepede) (Rock flagtail)

Key to species

- 1a. Lateral line scales 48 to 53. Gillrakers 10 to 12 on upper limb and 23 to 26 on lower limb of first arch. Caudal fin with 5 prominent dark bands *K. mugil*
- 1b. Lateral line scales 38 to 43. Gillrakers 6 to 7 on upper limb and 16 to 18 on lower limb of first arch. Caudal fin without dark bands, but juveniles with a blackish blotch on each lobe forming a broad submarginal black band in adults *K. rupestris*

Fisheries information : The flagtail fishes are important food fishes. These fishes are generally used as bait for large fishes.

Family 63 PRIACANTHIDAE (Bigeyes, Bulleyes)

Body oblong, relatively deep and compressed. Eyes very large, in the upper profile of head. Mouth large, with lower jaw projecting. Dorsal fin with 10 spines and 10 to 15 rays. Anal fin with 3 spines and 9 to 16 rays. Pelvic fins with 1 spine and 5 rays, inserted anterior to pectoral fins and broadly united with body by a membrane. Caudal fin slightly emarginate to rounded.

Species known to occur in Maharashtra

1. *Cookeolus japonicus* (Cuvier) (Longfinned bullseye)
2. *Heteropriacanthus cruentatus* (Lacepede) (Glasseye)
3. *Priacanthus hamrur* (Forsskal) (Moontail bulleye)
4. *P. tayenus* Richardson (Purple spotted bigeye)

Key to species

- 1a. Pelvic fins very long, more than head length. Last spine of dorsal fin twice the length of the 2nd spine. Scale rows between lateral line and midbase of dorsal fin 16 to 20 *C. japonicus*
- 1b. Pelvic fins short, less than or equal to head length. Last spine of dorsal fin less than 2

times of the 2nd spine length. Scale rows between lateral line and midbase of dorsal fin less than 16 2

- 2a. Hind part of opercle, above and below preopercular spine without scale and striated. Membrane of median fins with small dark spots *H. cruentatus*
- 2b. Hind part of opercle, above and below preopercular spine scaled and not striated. Membrane of median fins without small dark spots 3
- 3a. Dorsal fin with 13 to 15 soft rays. Fins dusky to blackish, being darker near borders; a black basal spot on the dorsal surface of pelvic fin bases *P. hamrur*
- 3b. Dorsal fin with 11 or 12 soft rays. Fins not dusky or blackish; pelvic fin and membrane with purplish-black spots *P. tayenus*

Fisheries information : The Bulleyes fishes are of important commercial fishes. These fishes are marketed fresh.

Remarks : In all earlier literature pertaining to Indian coast, *Cookeolus japonicus* was misidentified as *Priacanthus boops* or *Cookeolus boops* (Bloch and Schneider). Starness (1988) considered *C. boops* as a junior synonym of *H. cruentatus*.

Family 64 APOGONIDAE (Cardinal fishes)

Body elongate, oblong and slightly compressed with ctenoid scales. Mouth usually large with teeth generally in villiform bands in jaws, on vomer. Posterior margin of preopercle serrated. Dorsal fin two, the first with 6 to 8 spines and the second with one spine and 8 to 14 branched rays. Anal fin with 2 spines and 8 to 18 branched rays. Pelvic fins with one spine and 5 branched rays. Lateral line complete.

Species known to occur in Maharashtra

1. *Apogon ellioti* Day (Flag-in cardinal-fish)
2. *A. fasciatus* White (Broad-banded cardinal-fish)

3. *A. frenatus* (Valenciennes) (Bridled cardinal-fish)
4. *A. multitaeniatus* Cuvier (Many-lined cardinal-fish)
5. *A. savayensis* (Gunther) (Samoan cardinal-fish)
6. *A. thermalis* Cuvier (Half-barred cardinal)..

Key to species

- 1a. Dark longitudinal lines or bands on sides 2
- 1b. No dark longitudinal lines or bands on sides 4
- 2a. Lateral line scales 43 to 45. More than 11 dark lines along scale rows.....*A. multitaeniatus*
- 2b. Lateral line scales 25 to 28. Fewer bands along sides 3
- 3a. Suborbital rim with strong denticulation. A single lateral band and a dark stripe each along base of soft dorsal and anal fins*A. frenatus*
- 3b. Suborbital rim smooth, without spines. Four dark lateral bands*A. fasciatus*
- 4a. First dorsal fin with 6 spines. A black spot or stripe at end of base of anal and soft dorsal fins*A. thermalis*
- 4b. First dorsal fin with 7 spines. Spot at end of base of anal and dorsal fin absent.....5
- 5a. Body slender, depth 3.1 to 3.3 times in standard length. First dorsal fin black. Soft dorsal and anal fin with black median bands*A. ellioti*
- 5b. Body deeper, depth 2.2 to 2.4 times in standard length. Distal half of first dorsal fin black. No median black bands on soft dorsal and anal fin.....*A. savayensis*

Fisheries information : The cardinal fishes are of minor commercial importance. These fishes play an important role in the food chain of carnivorous fishes.

Family 65 SILLAGINIDAE (Whitings)

Body elongate and tapering. Operculum with a small, sharp spine. Mouth small, terminal, maxillary end slides below preorbital bone. Dorsal fin two, first dorsal fin with 10 to 13 spines, the second dorsal fin with one spine and 16 to 27 soft rays. Anal fin with 2 spines and 14 to 26 soft rays. Caudal fin emarginate.

Species known to occur in Maharashtra

1. *Sillago chondropus* Bleeker (Club-foot sillago)
2. *S. indica* McKay, Dutt & Sujatha (Indian sillago)
3. *S. intermedius* Wongratana (Intermediate sillago)
4. *S. sihama* (Forsskal) (Silver sillago)

Key to species

- 1a. Pelvic fin spine almost hidden by the much thickened club-like first pelvic fin ray. Swimbladder without postcoelomic projections into the tail section*S. chondropus*
- 1b. Pelvic fins without a thickened club-like first ray. Swimbladder with 1 or 2 postcoelomic extensions 2
- 2a. Swimbladder with a single posterior extension. A dark stripe on sides below lateral line, sometimes broken into blotches*S. indica*
- 2b. Swimbladder with 2 posterior extensions projecting into tail region 3
- 3a. A longitudinal row of dusky black spots on sides below lateral line and a series of saddle-like dusky black blotches along back*S. intermedius*
- 3b. Body uniform sandy brown, without any blotch or saddle*S. sihama*

Fisheries information : The whittings are important commercial food fishes. *S. sihama* is a very common species found in both the coasts of our country.

Remarks : *S. intermedius* was often misidentified as *S. maculata* Quoy and Gaimard, which have a restricted distribution along east coast of Australia (McKay, 1992).

Family 66 LACTARIIDAE
(False trevallies, Whitefish)

Body oblong and greatly compressed. Mouth large and oblique. Dorsal fin two, the first with 7 or 8 spines and the second with 1 spine and 20 to 22 soft rays. Anal fin with 3 spines and 25 to 28 soft rays. Pelvic fins inserted just below pectoral fins. Caudal fin forked.

Species known to occur in Maharashtra

Lactarius lactarius (Schneider) (False trevally)

Fisheries information : *L. lactarius* is an important commercial fish and very common in occurrence along both the coasts of our country. It is marketed fresh or dried salted.

Family 67 RACHYCENTRIDAE
(Cobias)

Body elongate, subcylindrical with broad and depressed head. Scales embedded in thick skin. Lateral line slightly wavy in anterior half. Mouth large, terminal; lower jaw projecting. Dorsal fin two, the first with 7 to 9 (generally 8) isolated spines, not connected by membrane; the second with one to 3 spines and 26 to 33 soft rays, anterior rays somewhat elevated in adult specimens. Anal fin long, with 2 weak spines and 22 to 28 soft rays. Pectoral fins pointed, becoming more falcate with the maturity of the fish. Caudal fin lunate in adult specimens, upper lobe longer than lower. Juveniles are with caudal fin rounded, the central rays much enlarged. Body with 2 sharply defined narrow light bands.

Species known to occur in Maharashtra

Rachycentron canadum (Linnaeus) (Cobia)

Fisheries information : The cobias are very delicate fishes of commercial importance. These fishes are marketed generally fresh or dried salted.

Family 68 ECHENEIDAE
(Sharksuckers, Remoras)

Body elongate with a transverse laminated, oval-shaped cephalic disc. Head wide, depressed to support disc. Dorsal fin with 18 to 45 rays. Anal fin with 18 to 41 rays. Pectoral fins inserted high on body with 18 to 32 rays. Pelvic fins with one spine and 5 rays, far forward, close together and narrowly or broadly united to underside of body. Caudal fin slightly forked, emarginate or slightly rounded. Body with cycloid scales, generally hidden in skin.

Species known to occur in Maharashtra

1. *Echeneis naucrates* Linnaeus (Live sharksucker)
2. *Remorina albescens* (Temminck) (White suckerfish)

Key to species

- 1a. Adhesive disc with 21 to 28 laminae. Body slender, depth 10 to 14 times in standard length. Dorsal fin with 34 to 42 rays
..... *E. naucrates*
- 1b. Adhesive disc with 12 to 14 laminae. Body slender, depth 5 to 8 times in standard length. Dorsal fin with 17 to 22 rays .. *R. albescens*

Fisheries information : The sharksuckers are of minor commercial importance. These fishes are sometimes found in the commercial catches.

Family 69 CARANGIDAE
(Jacks, trevallies, scads, queenfishes, pampanos)

Body shape and size varies from species to species, from elongate and fusiform to deep, and highly compressed. Gillrakers moderate to long and their number decreasing with the age in some species. Dorsal fins two, the first with 4 to 8 spines (spines obsolete or embedded in adult specimens of some species), the second dorsal fin with one spine and 18 to 44 rays. Anal fin with 2 anterior spines separated from rest of the fin by a gap (becoming embedded in adult specimens in some species) followed by one spine and 15 to 39 rays.

Caudal fin widely forked with slender peduncle. Lateral line arched anteriorly, becoming straight posteriorly. Scutes on straight part of lateral line present and prominent, or reduced in some species and absent in some genera.

Species known to occur in Maharashtra

1. *Alectis ciliaris* (Bloch) (African pompano)
2. *A. indicus* (Ruppell) (Indian threadfin)
3. *Alepes djedaba* (Forsskal) (Shrimp scad)
4. *A. kleinii* (Bloch) (Razorbelly scad)
5. *A. melanoptera* Swainson (Blackfin scad)
6. *A. vari* (Cuvier) (Herring scad)
7. *Atropus atropus* (Schneider) (Cleftbelly trevally)
8. *Atule mate* (Cuvier) (Yellowtail scad)
9. *Carangoides armatus* (Ruppell) (Longfin trevally)
10. *C. chrysophrys* (Cuvier) (Longfin trevally)
11. *C. coeruleopinnatus* (Ruppell) (Coastal trevally)
12. *C. ferdau* (Forsskal) (Blue trevally)
13. *C. fulvoguttatus* (Forsskal) (Yellow-spotted trevally)
14. *C. gymnotethus* (Cuvier) (Bludger trevally)
15. *C. malabaricus* (Bloch & Schneider) (Malabar trevally)
16. *C. oblongus* (Cuvier) (Coachwhip trevally)
17. *C. praeustus* (Bennett) (Brown back trevally)
18. *C. talamparoides* Bleeker (Imposter trevally)
19. *Caranx carangus* (Bloch) (Blacktailed trevally)
20. *C. heberi* (Bennet) (Blacktip trevally)
21. *C. ignobilis* (Forsskal) (Giant trevally)
22. *C. melampygus* Cuvier (Bluefin trevally)
23. *C. sexfasciatus* Quoy & Gaimard (Bigeye trevally)
24. *Decapterus macrosoma* Bleeker (Short fin scad)
25. *D. russellii* (Ruppell) (Indian scad)
26. *Elagatis bipinnulata* (Quoy & Gaimard) (Rainbow runner)
27. *Gnathanodon speciosus* (Forsskal) (Golden trevally)
28. *Megalaspis cordyla* (Linnaeus) (Torpedo scad)
29. *Naucrates ductor* (Linnaeus) (Pilot fish)
30. *Parastromateus niger* (Bloch) (Black pomfret)
31. *Scomberoides commersonnianus* Lacepede (Talangqueen fish)
32. *S. lysan* (Forsskal) (Double spotted queenfish)
33. *S. tala* (Cuiver) (Battered queenfish)
34. *S. tol* (Cuvier) (Needle scaled queenfish)
35. *Selar boops* (Cuvier) (Oxeye scad)
36. *S. crumenophthalmus* (Bloch) (Big eye scad)
37. *Selaroides leptolepis* (Cuvier) (Yellow stripe scad)
38. *Seriolina nigrofasciata* Cuvier (Blackbanded trevally)
39. *Trachinotus bailloni* (Lacepede) (Small spotted dart)
40. *T. blochii* (Lacepede) (Snubnose pompano)
41. *T. botla* (Shaw) (Largespotted dart)
42. *T. mookalee* Cuvier (Indian pompano)
43. *Trachurus indicus* Nekrasov (Arabian scad)

Key to species

- 1a. Body very deep, about 2/3 of fork length. Pelvic fins absent, or if present (in juveniles) positioned distinctly anterior to vertical line through pectoral fin base. Dorsal fin and anal fins completely covered with scales.....*P. niger*
- 1b. Body slender to moderate, less than or about half of fork length. Pelvic fins always present, not positioned distinctly anterior to vertical through pectoral fin base. Dorsal fin and anal fins not covered by scales, if scaled, basal half only 2
- 2a. Pectoral fins shorter than head length. Posterior straight part of lateral line with no hardened scutes (only pored scale, not enlarged) 3
- 2b. Pectoral fins equal to or longer than head length Posterior straight part of lateral line with hardened scutes 13

- 3a. Dorsal and anal fin bases of unequal length, anal fin shorter. Caudal peduncle with grooves dorsally as well as ventrally 4
- 3b. Dorsal and anal fin bases of almost equal length. Grooves on caudal peduncle absent 6
- 4a. Dorsal fin spines 4 or 5, not connected by membranes. Adipose tissue around eye not covering eye opening*N. ductor*
- 4b. Dorsal fin spines 6 to 8, connected by membranes. Adipose tissue around eye more or less well developed 5
- 5a. Two-rayed fin-lets present behind dorsal and anal fins. Upper jaw short of anterior margin of orbit. Dorsal fin with 24 to 30 soft rays *E. bipinnulata*
- 5b. Fin-lets absent behind dorsal and anal fins. Upper jaw extends to below posterior margin of orbit. Dorsal fin with 30 to 37 soft rays*S. nigrofasciata*
- 6a. Body high, more than 1/3 fork length. Soft dorsal and anal fins high, sickle-shaped ...7
- 6b. Body low, less than 1/4 fork length. Soft dorsal and anal fins short, not sickle-shaped 10
- 7a. Dorsal fin rays 21 to 25. Anal fin rays 19 to 24. Lower gill rakers 11 to 19. One to 5 spots in a row along lateral line 8
- 7b. Dorsal fin rays 18 to 20. Anal fin rays 16 to 18. Lower gill rakers 8 to 10. No spots on sides of body 9
- 8a. Lower gill rakers 11 to 15. Anterior 2 spots larger than eye diameter, atleast 2/3 portion of the spots above lateral line*T. botla*
- 8b. Lower gill rakers 15 to 19. All spots along sides equal to or less than eye diameter, about half portion of the spots below lateral line *T. baillonii*
- 9a. A narrow band of teeth on tongue. Dorsal fin height 24 to 34% of fork length (10 to 40 cm fork length size). Anal fin lobe yellow without a brownish anterior margin. First predorsal bone inverted 'L'-shaped *T. mookalee*
- 9b. No teeth on tongue. Dorsal fin height 35 to 60% of fork length (10 to 40 cm fork length size). Anal fin lobe usually orange-yellow with a brownish anterior margin. First predorsal bone oval or inverted tear-drop shaped *T. blochii*
- 10a. Total gill rakers on first arch 8 to 15. Dorsal fin lobe uniformly pigmented 11
- 10b. Total gill rakers on first arch 21 to 27. Distal half of dorsal fin lobe heavily pigmented with a white basal band 12
- 11a. Upper jaw extends well beyond posterior margin of eye, especially in adults. Teeth of inner and outer rows in lower jaw almost equal in size. Sides with large oval blotches above or touching lateral line *S. commersonianus*
- 11b. Upper jaw extends slightly beyond posterior margin of eye. Teeth of inner row in lower jaw distinctly larger than those of outer row. Sides with vertically elongate blotches intersecting lateral line*S. tala*
- 12a. A double series of 6 to 8 dusky, roundish blotches above and below lateral line. Scales on midbody below lateral line laceolate *S. lysan*
- 12b. Oval or vertically oblong dark blotches along sides of body, the first 4 to 5 intersecting lateral line. Scales on midbody below lateral line needle-like*S. tol*
- 13a. Dorsal and anal fins followed by distinctly separate finlet(s) 14
- 13b. Dorsal and anal fins with none or at most one semidetached finlet 16
- 14a. Lower gillrakers 18 to 22. Straight part of lateral line with 51 to 59 broad scutes. Several finlets behind dorsal and anal fins. Shoulder girdle margin smooth *M. cordyla*
- 14b. Lower gillrakers 30 to 39. Straight part of lateral line with 24 to 40 scutes. Single finlet behind dorsal and anal fins. Shoulder girdle margin with two papillae 15

- 15a. Tip of pectoral fin reaching to below origin of second dorsal fin. Straight part of lateral line with 0 to 4 scales followed by scutes. Posterior end of upper jaw not concave above *D. russelli*
- 15b. Tip of pectoral fin not reaching to below origin of second dorsal fin. Straight part of lateral line with 14 to 29 scales followed by scutes. Posterior end of upper jaw concave above *D. macrosoma*
- 16a. Body deeper, body depth more than $\frac{1}{2}$ of standard length. Some rays of the dorsal and anal fins filamentous 17
- 16b. Body slender, body depth less than $\frac{1}{2}$ of standard length. Dorsal and anal fin rays not filamentous 19
- 17a. Dorsal spines small, but distinct. Scutes usually strong. Pelvic fins black and folded in a ventral groove *A. atropos*
- 17b. Dorsal spines vestigial, embedded in skin and not visible. Scutes weak. Pelvic fins not black; no ventral groove developed 18
- 18a. Lower gill rakers 21 to 26 on first arch *A. indicus*
- 18b. Lower gill rakers 12 to 17 on first arch *A. ciliaris*
- 19a. Shoulder girdle margin with a furrow ventrally (cleithral furrow), a large fleshy papilla immediately above it 20
- 19b. Shoulder girdle margin smooth, without cleithral furrow or papilla 21
- 20a. Lateral line becoming straight below origin of soft dorsal fin, with 44 to 46 scutes; the largest scute about 4 times of body depth. *S. boops*
- 20b. Lateral line becoming straight below middle of soft dorsal fin, with 32 to 38 scutes; the largest scute 9 to 10 times of body depth. *S. crumenophthalmus*
- 21a. Terminal ray of dorsal and anal fins semidetached, finlet-like, 2 times in penultimate ray. Fleshy adipose eyelid completely covering eye except for a central slit *A. mate*
- 21b. Terminal ray of dorsal and anal fins not finlet-like, not distinctly longer than penultimate ray. Fleshy adipose eyelid open in a wide slit 22
- 22a. Enlarged scute like scales on curved part of lateral line *T. indicus*
- 22b. No enlarged scute-like scales on curved part of lateral line 23
- 23a. Dorsal fin spines longer than soft dorsal fin rays 24
- 23b. Dorsal fin spines shorter than soft dorsal fin rays 28
- 24a. A bright yellow band on lateral line. Eyes about 3 times in head length. Lateral line scutes less developed *S. leptolepis*
- 24b. No yellow band on lateral line. Eyes about 4 times in head length. Lateral line scutes well developed 25
- 25a. Ventral profile of body more or less convex than its dorsal profile. A large black blotch on upper margin of opercle and adjacent areas of shoulder *A. kleinii*
- 25b. Dorsal and ventral profiles of body evenly convex. Black spot on upper margin of opercle absent or if present, not covering adjacent areas of shoulder 26
- 26a. Total gill rakers 24 to 30 on first arch. First dorsal fin jet black *A. melanoptera*
- 26b. Total gill rakers 32 to 47 on first arch. First dorsal fin not black 27
- 27a. Last ray of dorsal and anal fins distinctly longer than penultimate ray. Lateral line with 31 to 36 scales and 39 to 51 scutes. Lower gill rakers 27 to 33 *A. djedaba*
- 27b. Last ray of dorsal and anal fins almost equal to penultimate ray. Lateral line with 42 to 50 scales and 48 to 69 scutes. Lower gill rakers 23 to 26 *A. vari*
- 28a. Length of straight portion of lateral line about

- equal to that of arched portion. Teeth absent from jaws *G. speciosus*
- 28b. Length of straight portion of lateral line not equal to that of arched portion. Teeth present on jaws 29
- 29a. Straight portion of lateral line longer than arched portion; scutes strong. Lower jaw teeth in a single row, outer teeth enlarged in both jaws. Adipose tissue well developed, covers posterior part of eye (*Caranx*).... 30
- 29b. Straight portion of lateral line shorter than arched portion; scutes weak. Lower jaw teeth in villiform band, no enlarged teeth in jaws. Adipose tissue weakly developed, not covering eye opening (*Carangoides*)..... 34
- 30a. Total gill rakers 25 to 29 on first arch 31
- 30b. Total gill rakers 20 to 25 on first arch 32
- 31a. Total soft rays in dorsal and anal fins 39 to 44. Small black spots on head and body. Upper lobe of caudal fin no black *C. melampygus*
- 31b. Total soft rays in dorsal and anal fins 34 to 38. No small black spots on head and body. Upper lobe of caudal fin distinctly black distally *C. heberi*
- 32a. Breast completely scaled. A small black spot on upper margin of opercle *C. sexfasciatus*
- 32b. Breast naked ventrally, often with a small patch of scale in front of pelvic fins. No black spot on upper margin of opercle .. 33
- 33a. Lateral line with 28 to 30 scutes. Dorsal fin with 18 to 20 soft rays *C. ignobilis*
- 33b. Lateral line with 33 to 37 scutes. Dorsal fin with 20 to 22 soft rays *C. carangus*
- 34a. Anterior part of second dorsal fin with a conspicuous black blotch. Breast often completely scaled, sometimes naked *C. praeustus*
- 34b. Second dorsal fin without black spot. Breast naked 35
- 35a. A small area anteriorly just above pectoral fin base naked 36
- 35b. Area anteriorly just above pectoral fin base completely scaled 37
- 36a. Lower gill rakers on first arch 21 to 27, total 32 to 38 *C. malabarica*
- 36b. Lower gill rakers on first arch 19 to 22, total 27 to 31 *C. talamparoides*
- 37a. Branched rays on second dorsal fin 25 to 34 38
- 37b. Branched rays on second dorsal fin 18 to 23 40
- 38a. Naked area of breast not extending beyond origin of pelvic fins. Sides of body with yellow or orange spots and in adults, 5 or 6 distinct dusky bands *C. ferdau*
- 38b. Naked area of breast extends posteroventrally well beyond origin of pelvic fins. Sides of body without spots or bars 39
- 39a. Horizontal line from tip of snout to midbase of caudal fin distinctly below level of eye. Total gill rakers on first arch 22 to 27 *C. fulvoguttatus*
- 39b. Horizontal line from tip of snout to midbase of caudal fin passes at or through level of eye. Total gill rakers on first arch 27 to 31 *C. gymnostethus*
- 40a. Central rays of dorsal and anal fins produced into filaments. Total gill rakers 31 to 37 on first arch *C. armatus*
- 40a. Central rays of dorsal and anal fins not produced into filaments. Total gill rakers 21 to 30 on first arch 41
- 41a. Total gill rakers 26 to 30 on first arch. Naked area on breast not extending beyond origin of pelvic fins. Small dark spots between bases of second dorsal fin rays *C. oblongus*
- 41b. Total gill rakers 21 to 26 on first arch. Naked area on breast extends beyond origin of pelvic

fins. No dark spots between bases of second dorsal fin rays 42

42a. Soft dorsal fin rays 20 to 23 and soft anal fin rays 16 to 20. Dorsal profile of snout stiff before eye..... *C. coeruleopinnatus*

42b. Soft dorsal fin rays 18 to 20 and soft anal fin rays 14 to 16. Dorsal profile of snout gently sloped *C. chrysophrys*

Fisheries information : The carangids are very important commercial fishes. These fishes are marketed fresh and utilized as food fishes.

Remarks : *Caranx carangus* (Bloch) has been considered as a junior synonym of *Caranx hippos* (Linnaeus) (Smith-Vaniz, Quéro and Desoutter, 1990). Froese and Pauly (2009) stated that Indian Ocean records of *Caranx carangus* are probably misidentifications of *Caranx ignobilis*. The distinction given above is following Talwar and Jhingran (1991) seems to be erroneous since the lateral line scute counts for *C. carangus* comes within the range of *C. ignobilis* described from other parts of Indian Ocean (Smith-Vaniz, 1984). Further, in literature, *Caranx heberi* has been record as *Caranx sem*, a junior synonym of the former (Fischer *et al.*, 1009).

Family 70 CORYPHAENIDAE (Dolphinfishes)

Body very elongate and compressed. with cycloid scales. Mouth large with fine teeth in bands. Adult males have bony crest on front of head. Dorsal and anal fins very long, extending from nape to almost caudal fin, with 52 to 66 rays. Anal fin inserted in thoracic region, fitting into a groove on body. Caudal fin deeply forked, with keels on fin or caudal peduncle. Lateral line curved upward above pectoral fins.

Species known to occur in Maharashtra

1. *Coryphaena equiselis* Linnaeus (Dolphin fish)
2. *C. hippurus* Linnaeus (Dolphin fish)

Key to species

- 1a. Dorsal fin rays 48 to 55. A broad and square

tooth patch on tongue. Greatest depth of body more than 25% of standard length

..... *C. equiselis*

- 1b. Dorsal fin rays 55 to 65. An oval tooth patch on tongue. Greatest body depth less than 25% of standard length *C. hippurus*

Fisheries information : The dolphin fishes are of highly flavoured food fish. These fishes are of important commercial value.

Family 71 MENIDAE (Moonfishes)

Body greatly compressed and discoid shaped and dorsal profile almost horizontal. Mouth protrudes and having villiform teeth in jaws. Dorsal fin very long and low, anterior rays slightly elevated, with 43 to 46 rays, the first 3 to 19 not branched, spine-like in juveniles. Anal fin also very long and low, with 30 to 33 rays. Pelvic fins with first 2 rays fused and greatly elongated. Pectoral fins with 15 rays, shorter than head. Caudal fin forked. Lateral line extending up to end of dorsal fin base. Body with numerous small round spots on dorsal part.

Species known to occur in Maharashtra

Mene maculata (Bloch)

Fisheries information : The moonfishes are of little commercial value. These fishes are marketed fresh or dried.

Family 72 LEIOGNATHIDAE (Ponyfishes, Slipmouths)

Body round or oblong, to somewhat greatly compressed. Dorsal surface of head with bony ridges and well developed nuchal crest or spine. Mouth small and extremely protrusible which form a tube when extended. Single dorsal fin, with 8 (rarely 7 or 9) spines and 16 to 17 rays. Anal fin with 3 spines and 13 to 15 rays. Body with minute scales but head without scales. Caudal fin deeply forked or emarginate. Body silvery often with various markings on body.

Species known to occur in Maharashtra

1. *Gazza minuta* (Bloch) (Tooth ponyfish)
2. *Leiognathus berbis* (Valenciennes) (Lined ponyfish).
3. *L. bindus* (Valenciennes) (Rangefin ponyfish)
4. *L. blochii* (Valenciennes) (Bloch's ponyfish)
5. *L. brevirostris* (Valenciennes) (Shortnose ponyfish)
6. *L. daura* (Cuvier) (Goldstripe ponyfish)
7. *L. dussumieri* (Valenciennes) (Dussumier's ponyfish)
8. *L. equulus* (Forsskal) (Common ponyfish)
9. *L. fasciatus* (Lacepede) (Striped ponyfish)
10. *L. leuciscus* (Gunther) (Whipfin ponyfish)
11. *L. lineolatus* (Valenciennes) (Ornate ponyfish)
12. *L. splendens* (Cuvier) (Splendid ponyfish)
13. *Secutor insidiator* (Bloch) (Pugnose ponyfish)
14. *S. ruconius* (Hamilton) (Deep pugnose ponyfish)

Key to species

- 1a. Distinct canine teeth present anteriorly on each jaws. Mouth pointing forward when protracted *G. minuta*
- 1b. No distinct canine teeth in jaws; teeth small and weak. Mouth parts protract forward or upward or downward 2
- 2a. Mouth parts, protract upward. Lower jaw ascends at angle of about 85 to 90° when mouth closed. Upper half of body with pearly blue marking when fresh 3
- 2b. Mouth parts protract forward to downward. Lower jaw ascends at angle of about 40 to 70° when mouth closed. Upper half of body with dusky marking when fresh 4
- 3a. Body very deep, its greatest depth 1.4 to 1.74 times in standerd length. Lateral line ending below about middle of soft portion of dorsal fin. Scales present on cheek *S. ruconius*
- 3b. Body more slender, its greatest depth 1.6 to 2.6 times in standerd length. Lateral line ending backward nearly to below end of dorsal fin. Cheek scaleless *S. insidiator*
- 4a. Breast scaleless 5
- 4b. Breast scaly 8
- 5a. Body depth 1.67 to 1.97 times in standard length 6
- 5b. Body depth 2.02 to 2.47 times in standard length 7
- 6a. Only second dorsal spine distinctly elongate and filiform. About 11 widely spaced dark vertical lines on back superimposed by a few yellow bloches *L. fasciatus*
- 6b. Second dorsal fin spine not elongate. A dark brown saddles on caudal peduncle present *L. equulus*
- 7a. A distinct dark brown blotch on nape. Dorsal profile showing a distinct notch at the commencement of nuchal crest *L. brevirostris*
- 7b. Upper half of spinous dorsal fin with a black blotch between second and sixth spine. No distinct notch on dorsal profile *L. daura*
- 8a. Dark saddle-shaped blotch on nape. Black blotch on upper half of spinous dorsal fin *L. blochii*
- 8b. No dark saddle-shaped blotch on nape. No black blotch on upper half of spinous dorsal fin 9
- 9a. Body depth less than 2.0 times in standerd length. Upper half of dorsal fin with a black or orange blotch 10
- 9b. Body depth more than 2.0 times in standerd length. Upper half of dorsal fin without a black or orange blotch 11
- 10a. Mouth slightly downward when protracted. Faint grey wavy vertical lines above lateral lines. A black spot on upper third of dorsal fin *L. splendens*
- 10b. Mouth pointing forward when protracted. Dark vermiculation on back above lateral line. Spinous dorsal fin black at half height

above which a bright orange blotch between second and fifth spine. *L. bindus*

- 11a. Second dorsal fin spine distinctly and second anal fin spine slightly elongated. A row of oval yellow blotches below lateral line present *L. leuciscus*
- 11b. Second dorsal and second anal fin spines not elongated. No yellow blotches below lateral line 12
- 12a. Body depth 2.02 to 2.28 times in standard length. Side of body with grey wavy vertical lines descending from back to little beyond lateral line. An elongated yellow spot on belly below pectoral fin present *L. dussumeiri*
- 12b. Body depth 2.32 to 2.98 times in standard length. Back grayish to brownish with light grey, irregular vermiculations extending on side to slightly below lateral line 13
- 13a. Both dorsal and ventral profiles almost equally convex. A distinct notch present at nape, more vermiculations on back
..... *L. berbis*
- 13b. Dorsal profile more evenly curved than ventral profile. No distinct notch at nape, comparatively less vermiculation on back .
..... *L. lineolatus*

Fisheries information : The ponyfishes are of commercial importance since they provide a small amount of low cost protein. These fishes are also used for preparation of fishmeal. The ponyfishes are found in both the east and west coasts of our country.

Remarks : In current parlance of nomenclature, *L. bindus* is placed under genus *Photopectoralis* Sparks *et al.*; *L. blochi* under *Nuchequula* Whitley; *L. leuciscus* under *Equulites* Fowler and *L. splendens* under *Eubleekeria* Fowler (Sparks *et al.*, 2005; Kimura, Motomura and Iwatsuki, 2008; Kimura, Ikejima and Iwatsuki, 2008 and Kimura, Kimura and Ikejima, 2008). *Leiognathus brevirostris* (Valenciennes) (Chakrabaty and Sparks, 2007), and Indian records of this species and that of *L. decorus* are referable to *Nuchequula gerreoides* (Bleeker).

Family 73 LUTJANIDAE (Snappers)

Body more or less oblong to deep, with ctenoid scales. Cheek and preopercle with scales, but scales absent between mouth and eye. Mouth terminal, moderate to large. Maxilla slips below preorbital when mouth closed. Preopercle generally serrate, often finely. Dorsal fin continuous or with a shallow notch, with 10 to 12 spines and 10 to 17 rays. Anal fin with 3 spines and 7 to 11 rays. Caudal fin of various shapes ranging from lunate, emarginate, truncate to slightly forked.

Species known to occur in Maharashtra

1. *Aphareus furca* (Lacepede) (Small toothed jobfish)
2. *A. rutilans* Cuvier (Rusty jobfish)
3. *Aprion virescens* Valenciennes (Green jobfish)
4. *Elatis carbunculus* Cuvier (Ruby snapper)
5. *E. coruscans* Valenciennes (Flame snapper)
6. *Lipocheilus carnolabrum* (Chan) (Tang's snapper)
7. *Lutjanus argentimaculatus* (Forsskal) (Mangroove red snapper)
8. *L. bengalensis* (Bloch) (Bengal snapper)
9. *L. ehrenbergii* (Peters) (Black spot snapper)
10. *L. erythropterus* Bloch (Crimson snapper)
11. *L. fulviflamma* (Forsskal) (Black spot snapper)
12. *L. gibbus* (Forsskal) (Hunback red snapper)
13. *L. johnii* (Bloch) (John's snapper)
14. *L. kasmira* (Forsskal) (Common blue stripe snapper)
15. *L. lunulatus* (Park) (Lunartail snapper)
16. *L. lutjanus* Bloch (Bigeye snapper)
17. *L. madras* (Valenciennes) (Indian snapper)
18. *L. malabaricus* (Bloch & Schneider) (Malabar blood snapper)
19. *L. monostigma* (Cuvier) (One spot snapper)
20. *L. quinquelineatus* Bloch (Five-lined snapper)
21. *L. rivulatus* (Cuvier) (Blubbler lip snapper)

22. *L. russelli* (Bleeker) (Russell's snapper)
23. *L. sanguineus* (Cuvier) (Humphead snapper)
24. *L. sebae* (Cuvier) (Emperor red snapper)
25. *L. vitta* (Quoy & Gaimard) (Brown striped red snapper)
26. *Macolor niger* (Forsskal) (Black and white snapper)
27. *Paracaesio xanthura* (Bleeker) (Yellowtail snapper)
28. *Pinjalo pinjalo* (Bleeker) (Pinjao)
29. *P. lewisi* Randall, Allen & Anderson (Slender pinjalo)
30. *Pristipomoides filamentosus* (Valenciennes) (Crimson jobfish)
31. *P. multident* (Day) (Goldbanded jobfish)
32. *P. sieboldii* (Bleeker) (Lavender jobfish)
33. *P. zonatus* (Valenciennes) (Oblique-banded snapper)

Key to species

- 1a. Scales absent from base of soft part of dorsal and anal fins 2
- 1b. Small scales covering base of soft parts of dorsal and anal fins 12
- 2a. Soft and spinous part of dorsal fin separated by a deep notch. Scales present on maxilla 3
- 2b. Soft and spinous part of dorsal fin almost of similar height, not notched. Maxilla scaleless 4
- 3a. Upper and lower lobe of caudal fin almost of equal size at all age, its length 26 to 31% of standard length. Total gill rakers on first arch 17 to 22, developed gill rakers 10 to 13
.....*E. carbunculus*
- 3b. Upper caudal lobe longer than lower lobe, produced with age, its length 33 to 61% of standard length; lower lobe 32 to 41% of standard length. Total gill rakers on first arch 23 to 27, developed gill rakers 19 to 22
.....*E. coruscans*
- 4a. Teeth on jaws minute, enlarged canines absent. Vomerine teeth absent 5
- 4b. Teeth on jaws enlarged, with enlarged canines at front. Vomerine teeth present 6
- 5a. Lower gill rakers 16 to 18 on first arch
.....*A. furca*
- 5b. Lower gill rakers 30 to 34 on first arch
.....*A. rutilans*
- 6a. Snout with a distinct longitudinal groove before eyes. Pectoral fin length about equal to snout length*A. virescens*
- 6b. Longitudinal groove on snout absent. Pectoral fins distinctly longer than snout 7
- 7a. Dorsal and anal fin with the last ray either shorter or slightly longer than preceding ray 8
- 7b. Dorsal and anal fins with the last ray considerably longer than preceding ray, usually produced and filament-like 9
- 8a. Lower one-third of the eye below the line joining snout tip and upper base of pectoral fin. Upper and lower profiles of head evenly rounded. Lateral line scales 70 to 72. A broad yellow area from head to caudal fin dorsally on back*P. xanthura*
- 8b. Eyes above the line joining snout tip and upper base of pectoral fin. Upper and lower profiles of head uneven, almost flattened ventrally. Lateral line scales 48 to 49. No yellow area dorsally on back
.....*L. carnolabrum*
- 9a. Lateral line scales 70 to 72. Gill rakers including rudiments 19 to 22. Vomerine tooth patch roughly diamond shaped
.....*P. sieboldii*
- 9b. Lateral line scales 48 to 66. Gill rakers including rudiments 11 to 16. Vomerine tooth patch triangular or V-shaped 10
- 10a. Scales larger, 48 to 52 scales in lateral line. Sides of snout with 2 orange stripes (as 4 brown stripes on preservation)
.....*P. multident*

- 10b. Scales smaller, 60 to 66 scales in lateral line. Snout without stripes 11
- 11a. Depth 2.6 to 2.8 times in standard length. Gill rakers 12 or 13 on first arch.....
..... *P. zonatus*
- 11b. Depth 3.3 to 3.8 times in standard length. Gill rakers 14 to 16 on first arch
..... *P. filamentosus*
- 12a. Lower gill rakers 60 to 70, long and slender *M. niger*
- 12b. Lower gill rakers 7 to 20, short and stout. 13
- 13a. Mouth small. No canine teeth on jaws. Lower profile of head equally rounded as upper profile. Lower edge of eye below line from snout tip to caudal fin base 14
- 13b. Mouth larger. Some canine teeth on jaws. Lower profile of head flattened, not equally rounded or sloped as upper profile. Lower edge of eye usually above the line from snout tip to caudal fin base 15
- 14a. Anal fin usually with 10 soft rays. Dorsal fin usually with 11 spines and 14 soft rays. No white spot on caudal peduncle .. *P. pinjalo*
- 14b. Anal fin usually with 9 soft rays. Dorsal fin usually with 12 spines and 13 soft rays. A white spot often present dorsally on caudal peduncle *P. lewisi*
- 15a. Total gill rakers (including rudiments) 24 to 30 on first arch 16
- 15b. Total gill rakers (including rudiments) 13 to 23 on first arch 18
- 16a. Body deep, its depth 2.2 to 2.5 times in standard length. Preorbital space wide, more than eye diameter. Body uniform red or grey, darker above; soft part of median fins with narrow white margin. Juveniles with a large, round black spot on caudal fin base
..... *L. gibbus*
- 16b. Body slender, its depth 2.5 to 3.3 times in standard length. Preorbital space narrow, less than eye diameter. Colour not as above.....17
- 17a. Tongue with a patch of granular teeth. Preopercular notch and knob poorly developed. Preorbital space 3.3 to 8.9 times in head length. Four bright blue stripes present on sides of body *L. bengalensis*
- 17b. Tongue smooth, without teeth. Preopercular notch and knob well developed. Preorbital space 9.2 to 16.2 times in head length. A broad yellow to brownish stripe from eye to caudal fin base present *L. lutjanus*
- 18a. Longitudinal scale rows above lateral line parallel to it or rising obliquely only on posterior part below soft dorsal fin 19
- 18b. Longitudinal scale rows above lateral line rising obliquely to dorsal profile 21
- 19a. Lower gill rakers 14 or 15. Teeth on vomer in a triangular patch with a medial posterior extension. A prominent black spot below junction of spinous and soft dorsal fin bisected by lateral line *L. eherenbergii*
- 19b. Lower gill rakers 9 to 12. Teeth on vomer in a crescentic patch, without medial posterior extension. Black spot absent, if present, entirely below soft dorsal fin 20
- 20a. Scale rows on back entirely parallel to lateral line. Colour pale. Centre of each scale often with a reddish brown spot. A black spot below anterior soft dorsal fin base, mainly above lateral line, absent in large adults ...
..... *L. johnii*
- 20b. Scale rows on back appear to rise obliquely below soft dorsal fin. Colour dark. Centre of each scale often with a silvery spot. No black spot on sides. Juveniles often with 8 whitish cross-bars *L. argentimaculatus*
- 21a. Body colour pale, mostly yellow, with 4 or 5 blue longitudinal stripes (brown on preservation) on sides 22
- 21b. Body colour darker 23
- 22a. Cheek with 5 or 6 scale rows. Four longitudinal stripes on sides of body. Upper pectoral fin rays dark *L. kasmira*

- 22b. Cheek with 10 or 11 scale rows. Five longitudinal stripes on sides of body. Upper pectoral fin rays pale *L. quinquelineatus*
- 23a. Tooth patch on vomer triangular, with a medial posterior extension 24
- 23b. Tooth patch on vomer crescentic or triangular, without medial posterior extension 27
- 24a. Scales on head beginning from above posterior edge of eye. A black spot on sides below soft dorsal fin usually present 25
- 24b. Scales on head beginning from above middle of eye. Black spot on sides below soft dorsal fin absent 26
- 25a. Temporal scale bands on head with a wide gap at midline. Soft dorsal fin rays usually 14. Sides with 5 to 8 golden-brown slanting stripes *L. russellii*
- 25b. Temporal scale bands on head with little or no gap at midline. Soft dorsal fin rays usually 13. Sides with 6 or 7 yellow horizontal stripes *L. fulviflamma*
- 26a. Lower gill rakers 9 to 12 (including rudiments). A dark mid-lateral stripe from eye to upper caudal peduncle *L. vitta*
- 26b. Lower gill rakers 12 to 15 (including rudiments). Sides with a series of fine yellow horizontal lines *L. madras*
- 27a. Anal fin with 10 or 11 soft rays. Three dark red or brown transverse bands on head and body, indistinct in large adults *L. sebae*
- 27b. Anal fin with 8 or 9 soft rays. No dark transverse bands, if present, on head only. 28
- 28a. Caudal fin with a distinct crescentic black band *L. lunulatus*
- 28b. Caudal fin uniform in colour, no dark band 29
- 29a. Dorsal fin with 15 to 16 soft rays. Preopercular notch and knob distinct, moderately developed. Juveniles with 3 to 6 brown bars on sides and a chalky-white spot *L. rivulatus*
- 29b. Dorsal fin with 12 or 14 soft rays. Preopercular notch and knob indistinct, poorly developed. Juvenile colouration not as above 30
- 30a. Gill rakers, including rudiments, 10 or 11 on lower arm of first arch. A black spot on lateral line below soft dorsal fin often present *L. monostigma*
- 30b. Gill rakers, including rudiments, 12 to 14 on lower arm of first arch. No black spot on lateral line below soft dorsal fin 31
- 31a. Nostrils widely separated, the distance between them much greater than length of posterior nostril. A prominent hump above orbit and few shallow horizontal groove behind eye present in specimens above 20 cm standard length *L. sanguineus*
- 31b. Nostrils close-set, the distance between them about equal to or less than length of posterior nostril opening. Hump and groove behind eye absent at all sizes 32
- 32a. Maxilla length distinctly less than distance between base of last dorsal and anal fin rays. Dorsal fin spines usually 10. Interorbital with 3.5 to 4.8 times in head length (above 15 cm standard length). Juveniles with a black spot at the base of caudal fin, preceded by a pearly-white spot (not band) behind dorsal fin, both the spots never touching lower edge of caudal peduncle *L. erythropterus*
- 32b. Maxilla length about equal to distance between base of last dorsal and anal fin rays. Dorsal fin spines usually 11. Interorbital with 5.1 to 6.6 times in head length (above 12 cm standard length). Juveniles with a black band on caudal peduncle, with a pearly-white anterior border, both touching lower edge of caudal peduncle *L. malabaricus*

Fisheries information : Snappers are very important commercial fishes. But some species are known to be responsible for ciguatera (the tropical human fish poisoning disease).

Family 74 CAESIONIDAE
(Fusiliar fishes)

Body oblong to fusiform and almost compressed, with ctenoid scales. Mouth small, oblique and highly protrusible; ascending premaxillary process as a separate ossification from premaxilla. Dorsal fin with 10 to 15 slender weak spines and 8 to 22 rays. Anal fin with 3 spines and 9 to 13 rays. Pelvic fins with 1 spine and 5 rays. Pectoral fins with 16 to 24 rays. Caudal fin deeply forked. Lateral line with 45 to 88 scales. Body with or without longitudinal stripes. Caudal fin with a blackish blotch on tips of lobes or with a longitudinal blackish streak in middle of each lobe or without any markings.

Species known to occur in Maharashtra

1. *Caesio caerulaurea* Lacepede (Blue and gold fusiliar)
2. *C. lunaris* Cuvier (Lunar fusilier)
3. *C. varilineata* Carpenter (Variable-lined fusilier)
4. *Gymnoaesio gymnoptera* (Bleeker) (Slender fusiliar)
5. *Pterocaesio chrysozona* (Cuvier) (Gold band fusiliar)

Key to species

- 1a. Body depth about 4.0 or more in standard length. Maxilla tapered at its posterior end. Postmaxillary process two. Supratemporal band of scales confluent at dorsal midline .
.....2
- 1b. Body depth about 3.5 in standard length. Maxilla blunt at its posterior end. Postmaxillary process only one. Supratemporal band of scales interrupted at dorsal midline 3
- 2a. Scale rows below lateral line to origin of anal fin usually 13 or 14. Dorsal and anal fins without scales. Premaxilla and palatines without teeth. A yellow or brown stripe of

one scale wide along but above lateral line; often a narrow bright blue band below it ...

..... *G. gymnoptera*

- 2b. Scale rows below lateral line to origin of anal fin usually 15 or 16. Dorsal and anal fins scaled upto half height. Premaxilla and palatines toothed. A bright yellow band of 2 or 3 scale wide anteriorly, runs below lateral line *P. chrysozona*
- 3a. Lateral line scales 45 to 53. Dorsal fin usually with 10 spines and 14 softrays; anal fin usually with 3 spines and 11 softrays. Sides without distinct stripes *C. lunaris*
- 3b. Lateral line scales 57 to 67. Dorsal fin usually with 10 spines and 15 softrays; anal fin usually with 3 spines and 12 softrays. Sides with one or more distinct stripes 4
- 4a. Eye diameter 3.4 to 4.2 in head length. A single yellow longitudinal stripe above lateral line in life. Caudal lobes with a black median streak, the tips not markedly darker than the streak *C. caerulaurea*
- 4b. Eye diameter 4.3 to 5.0 in head length. Four to six longitudinal yellow stripes on sides in life. Caudal lobes with indistinct bluish or dark streak, the tips with a distinct large black blotch *C. varilineata*

Fisheries information : The caesionids are of little commercial value although these fishes are usually considered good for eating. These fishes are also used as tuna baitfish.

Family 75 LOBOTIDAE
(Tripletail fishes)

Body deep, oblong more or less compressed with ctenoid scales. Body depth much greater than head length. Upper jaw slightly protrusible. Preopercle coarsely serrated and opercle with 1 to 2 flat spines. Dorsal fin very long and broadly rounded, with 11 to 13 spines and 13 to 16 rays. Anal fin very long and broadly rounded, with 3 spines and 9 to 12 rays. Caudal fin rounded. Round soft dorsal and anal fins reaching past caudal fin base, resembling the fish with three tails.

Species known to occur in Maharashtra

Lobotes surinamensis (Bloch) (Trippletail fish)

Fisheries information : The tripletail fish is a valuable commercial fish on account of its quality flesh. It is marketed fresh.

Family 76 GERREIDAE (Mojarras, Silver-biddis)

Body compressed and dorsal profile more or less elevated, with shiny scales. Mouth greatly protrusible, extending downwards when protracted. Dorsal fin with 9 to 10 spines and 9 to 15 rays. Anal fin with 3 to 5 spines and 7 to 13 rays. Dorsal and anal fin bases with an elevated scaly sheath. Pelvic fins with 1 spine and 5 rays, a scaly flap present at the base of spine. Pectoral fins long and pointed. Caudal fin forked. Lateral line complete, with 33 to 48 scales.

Species known to occur in Maharashtra

1. *Gerres erythrourus* (Bloch) (Deepbodied mojarrah)
2. *G. filamentosus* Cuvier (Whipfin silverbidy)
3. *G. limbatus* Cuvier (Saddleback silver-biddy)
4. *G. macracanthus* Bleeker (Longfin mojarrah)
5. *G. oblongus* Cuvier (Slender silver-biddy)
6. *G. oyena* (Forsskal) (Common silver biddy)
7. *G. phaiya* Iwatsuki & Heemstra (Strong spined silver-biddy)
8. *G. setifer* (Hamilton) (Small Bengal silver-biddy)
9. *Pentaprion longimanus* (Cantor) (Longfin mojarra)

Key to species

- 1a. Anal fin long, with 5 spines and 12 to 14 soft rays *P. longimanus*
- 1b. Anal fin short with 3 spines and 7 soft rays 2
- 2a. Dorsal fin with 10 spines *G. setifer*
- 2b. Dorsal fin with 9 spines 3
- 3a. Second spine of dorsal fin greatly elongated

forming a long filament, longer than head length 4

- 3b. Second dorsal fin spine not greatly elongated and filamentous structure, usually much less than head length 5
- 4a. Predorsal distance equal to or less than body depth. Lateral line scales 44 to 48. A series of vertical or horizontal rows of dusky blotches on dorsal surface of body *G. filamentosus*
- 4b. Predorsal distance distinctly greater than body depth. Lateral line scales 40 to 44. A series of vertical bars on back and sides of body *G. macracanthus*
- 5a. Body elongate, its depth at least 3 times in standard length 6
- 5b. Body relatively deep, its depth less than 3 times (1.9 to 2.8) in standard length 7
- 6a. 3.5 rows of scales between lateral line and base of 5th dorsal spine. Lateral line scales 35 to 39 *G. oyena*
- 6b. 4.5 to 5.5 rows of scales between lateral line and base of 5th dorsal spine. Lateral line scales 44 to 48 *G. oblongus*
- 7a. Pectoral fin short, not extending up to origin of anal fin *G. limbatus*
- 7b. Pectoral fin relatively longer, extending up to origin of anal fin 8
- 8a. Body deep, its depth 2.0 to 2.3 times in standard length, forming sharp angles at dorsal fin origin. Lateral line scales 38 to 41 *G. erythrourus*
- 8b. Body oblong, its depth 2.2 to 2.8 times in standard length. Lateral line scales 34 to 38 *G. phaiya*

Fisheries information : The mojarra are important commercial fishes.

Remarks : *G. abbreviatus* Bleeker is considered to be a junior synonym of *G. erythrourus* (Bloch) (Iwatsuki *et al.*, 1998). Iwatsuki *et al.* (2001a) has relegated *G. lucidus* Curvier to the synonymy

of *G. limbatus*. Since *G. poeti* Cuvier, 1829 was found to be a junior synonym of *G. longirostris* (Lacepede) (Iwatsuki *et al.*, 2001b) and for our specimens referred as *G. poeti* Cuvier, 1830, being a preoccupied name, a replacement name *G. phayia* is considered (Iwatsuki and Heemstra, 2001).

Family 77 HAEMULIDAE
(Grunts, Sweetlips, Hotlips)

Body oblong and compressed with ctenoid scales. Mouth with thick lips, tips of upper jaw hidden when mouth closed. Chin with 2 pores and a pit or 6 pores and no pit in the genus *Plectorhinchus*. Preopercle with a slightly concave and serrated margin, opercle with one indistinct spine. Dorsal fin with 9 to 15 spines and 12 to 26 rays. Pectoral fins long, its first ray sometimes forming a short filament. Pelvic fins inserted below pectoral fin base, with 1 spine and 5 rays. Anal fin with 3 spines, the second often very strong and 7 to 9 rays. Caudal fin truncate or emarginate (rounded in juveniles).

Species known to occur in Maharashtra

1. *Diagramma pictum* (Thunberg) (Painted sweetlips)
2. *Plectorhinchus gibbosus* (Lacepede) (Harry hoplips)
3. *P. orientalis* (Bloch) (Oriental sweetlips)
4. *P. polytaenia* (Bleeker) (Ribbioned sweetlips)
5. *P. schotaf* (Forssakal) (Ministreal sweetlips)
6. *Pamadasys argenteus* (Forsskal) (Silver grunt)
7. *P. argyreus* (Valenciennes) (Bluecheek silver grunt)
8. *P. commersonni* (Lacepede) (Small spotted grunt)
9. *P. guoraca* (Ruppell) (Silvery grunt)
10. *P. furcatus* (Schneider) (Banded grunt)
11. *P. kaakan* (Cuvier) (Javelin grunt)
12. *P. maculatus* (Bloch) (Saddle grunt)
13. *P. multimaculatum* (Playfair)
14. *P. olivaceus* (Day) (Olive grunt)

Key to species

- 1a. Dorsal and anal fin spines strong. Chin with 2 pores and a groove 2
- 1b. Dorsal and anal fin spines weak. Chin with 6 pores and no groove 10
- 2a. Spinous dorsal fin with a large black blotch. Nape and back with a series of incomplete wide blackish cross-bars *P. maculatus*
- 2b. Spinous dorsal fin without large blotch. No wide cross-bars on back 3
- 3a. Anal fin with 11 to 13 soft rays. Second anal spine as long as third spine. A black blotch at upper corner of operculum *P. olivaceus*
- 3b. Anal fin with 10 or less soft rays. Second anal spine distinctly longer than third spine. Blotch on operculum absent or present 4
- 4a. Transverse scales between lateral line and first dorsal spine base 5 or 6 5
- 4b. Transverse scales between lateral line and first dorsal spine base 7 7
- 5a. Body and dorsal fin with scattered dark brown to black spots in adults. Back of juveniles with irregular longitudinal lines on alternate scale rows *P. argenteus*
- 5b. Body and dorsal fin without spots, except for opercular blotch. Uniform silvery at all stage 6
- 6a. Lips fairly thick *P. guoraca*
- 6b. Lips normal *P. argyreus*
- 7a. Body with about 6 distinct longitudinal stripes on sides. A row of interrational fine scales behind dorsal and anal fins *P. olivaceus*
- 7b. Body without distinct longitudinal stripes on sides. No fine interrational scales behind dorsal and anal fins 8
- 8a. Body with about 7 to 11 interrupted double dark spots, forming transverse bars in juveniles, gradually becoming indistinct with age. Dorsal fin membrane always with 2 or 3

rows of spots close to base of fin
..... *P. kaakan*

8b. Colour pattern not as above, but with scattered rounded spots on body 9

9a. Spots only on body, absent from head and snout. Anal fin rays 8 to 10
..... *P. commersonni*

9b. Spots present also on head and snout. Anal fin rays 7 *P. multimaculatum*

10a. Dorsal fin with 9 or 10 spines
..... *D. pictum*

10b. Dorsal fin with 11 to 14 spines 11

11a. Dorsal fin with 14 spines and 15 or 16 rays *P. gibbosus*

11b. Dorsal fin with 12 or 13 spines and 17 to 22 rays 12

12a. Body uniform greyish in colour. Lower gill rakers 15 or 16 *P. schotaf*

12b. Body with longitudinal stripes 13

13a. Dorsal fin rays 17 to 20. Lower gill rakers 20 to 23. Median fins with blotches
..... *P. orientalis*

13b. Dorsal fin rays 20 to 22. Lower gill rakers 15 to 20. Median fins with pale bands with dark outline borders *P. polytaenia*

Fisheries information : The sweetlips and grunts are of most important commercial fishes. These fishes are marketed fresh.

Remarks : *Pomadour hasta* (Bloch) and *Plectorhynchus nigrus* (Cuvier) are also reported from Maharashtra coast. But in Indian literature, the identity of these two species is very much confusing and so, to which species the authors exactly referred can not be concluded unless the specimens are examined thoroughly. *P. nigrus* is confused with *P. gibbosus* and *P. hasta*, with *P. argenteus* and *P. kaakan*. As we could not examine the specimens, they are not included here. The specimen described as *P. jubelini* from Bombay coast by Dorairaj (1970) refers to *P. kaakan*.

Family 78 SPARIDAE (Seabreams)

Body oblong, almost deep and compressed with cycloid or ctenoid scales. Head usually with a steep dorsal profile. Snout without scales but cheeks with scales. Opercle with or without scales. Mouth subhorizontal and slightly protrusible. Maxilla not extending beyond the middle of the orbit. Posterior tip of premaxilla overlapping maxilla. Teeth conical or incisiform, some with molars; no teeth on vomer and palatine. Dorsal fin with 10 to 13 spines.

Species known to occur in Maharashtra

1. *Acanthopagrus berda* (Forsskal) (Picnic seabream)
2. *A. bifasciatus* (Forsskal) (Twobar seabream)
3. *A. latus* (Houttuyn) (Yellowfin seabream)
4. *Argyrops spinifer* (Forsskal) (King soldierbream)
5. *Cheimarius nufar* (Valenciennes) (Santer seabream)
6. *Crenidens crenidens* (Forsskal) (Karenteen seabream)
7. *Rhabdosargus sarba* (Forsskal) (Goldlined seabream)
8. *Sparidentex hasta* (Valenciennes) (Sobaity seabream)

Key to species

- 1a. Jaw teeth usually incisiform or caniniform molarlike teeth absent 2
- 1b. Posterior jaw teeth usually molar-like or granular 4
- 2a. Outer teeth incisiform, compressed, with crenulated cutting edge *C. crenidens*
- 2b. Outer teeth caniniform, some enlarged in front of jaws 3
- 3a. First two dorsal spines short, 3rd to 7th elongated, filamentous *C. nufar*
- 3b. Dorsal spines normally graduated, not filamentous *S. hasta*

- 4a. Interorbital space scally, head scaled from above anterior margin of eye. First two dorsal spines very short, following spines elongate *A. spinifer*
- 4b. Interorbital space naked, head scaled from behind posterior margin of eye. Dorsal spines normally graduated, not prolonged 5
- 5a. More than 5 scales between lateral line and 4th dorsal spine. Usually dorsal spines slender, not alternately broad and narrow. A single enlarged molar posteriorly on each side *R. sarba*
- 5b. Less than 5 scales between lateral line and 4th dorsal spine. Dorsal spines strong, appearing alternately broad and narrow on each side. No enlarged molar posteriorly on each side 6
- 6a. Head with two black bars across head, the first through eye and second from nape to opercle to its inferior edge *A. bifasciatus*
- 6b. Head without black cross bars, or at most with a dark band between eyes 7
- 7a. Six series of preopercular scales. Lateral line scales 43 to 45. No silvery margin to scales. No dark spot at origin of lateral line. Soft dorsal, anal and caudal fins blackish *A. berda*
- 7b. Four or 5 series of preopercular scales. Lateral line scales 48 to 50. Scales with dark bases and silvery margins (especially above lateral line). A dark spot at the origin of lateral line. Soft dorsal fin grayish hyaline, anal fin whitish and caudal fin yellow *A. latus*

Fisheries information : The sea breams are of much commercial importance. These fishes are marketed fresh and are of excellent and highly esteemed.

Family 79 LETHRINIDAE (Emperor Fishes)

Body generally oblong and compressed. Mouth terminal, lips usually soft and fleshy; upper jaw protrusible. Hind margin of preopercle smooth.

Cheek without scales. Dorsal fin with 10 spines and 9 to 10 soft rays. Anal fin with 3 spines and 6 to 10 soft rays. Caudal fin emarginate or forked, with 7 to 9 procurent caudal rays. Lateral line complete.

Species known to occur in Maharashtra

1. *Gymnocranius elongatus* Senta (Forked tail large-eye bream)
2. *G. grandoculis* (Valenciennes) (Blue-lined large-eye bream)
3. *Lethrinus nebulosus* (Forsskal) (Spangled emperor)

Key to species

- 1a. Cheek naked. Dorsal fin with 9 and anal fin with 8 soft rays. Inner surface of pectoral fin axil densely scaled. Three blue streaks radiating forward and ventrally from eye on snout; centres of many scales with a white or light blue spot *L. nebulosus*
- 1b. Cheek with 3 to 5 transverse rows of scales. Dorsal fin and anal fin with 10 soft rays each. Inner surface of pectoral fin axil scaleless. Colour not as above 2
- 2a. Median rays of caudal fin shorter than eye diameter. No lines or markings on cheek and snout. About 8 transverse brown bars on sides *G. elongatus*
- 2b. Median rays of caudal fin longer than eye diameter. A series of narrow undulating, longitudinal lines on cheek and sides of snout. Juveniles with 5 or 6 irregular dark bars on sides *G. grandoculis*

Fisheries information : The emperor fishes and large eye breams are important commercial fishes. These fishes are generally marketed fresh.

Family 80 NEMIPTERIDAE (Threadfin breams, Monocle breams)

Body elongate to almost deep and compressed. Mouth terminal, small to moderate; premaxillaries more or less protrusible. Dorsal fin continuous

with 10 spines and 9 rays. Anal fin with 3 spines and 7 rays. Pectoral fins with 2 unbranched and 12 to 17 branched rays. Pelvic fins inserted in thoracic region, with 1 spine and 5 rays. Caudal fin emarginate, forked, lunate or falcate; the upper and / or lower tips of the fin with or without elongated or filamentous extensions.

Species known to occur in Maharashtra

1. *Nemipterus bipunctatus* (Ehrenberg) (Delagon threadfin bream)
2. *N. furcosus* (Valenceinnes) (Fork-tailed threadfin bream)
3. *N. japonicus* (Bloch) (Japanese threadfin bream)
4. *N. peronii* (Valenciennes) (Notchedfin threadfin bream)
5. *N. randalli* Russell (Randall's threadfin bream)
6. *N. zysron* (Bleeker) (Slender threadfin bream)
7. *Parascolopsis aspinosa* (Rao & Rao) (Smooth dwarf monocle bream)
8. *Scolopsis ghanam* (Forsskal) (Arabian monocle bream)
9. *S. vosmeri* (Bloch) (Whitecheek monocle bream)

Key to species

- 1a. Preopercle with 4 to 7 rows of scales. Second spine of anal fin strong and longer than third. No canine teeth on jaws 2
- 1b. Preopercle with 3 rows of scales. Second spine of anal fin weak, shorter than third. Three to four pairs of canine teeth present atleast in upper jaw 4
- 2a. Suborbital spine weak. Posterior margin of preopercle finely serrate. A black blotch at base of 7th to 10th dorsal spine base
..... *P. aspinosa*
- 2b. Suborbital spine strong. Posterior margin of preopercle denticulate. No black blotch at base of dorsal fin 3
- 3a. A small antrorse spine below eye present. Scales on top of head begin from between

snout tip and anterior nostrils. Body depth 2.0 to 2.6 times in standard length. Lateral line scales usually 40 to 44 *S. vosmeri*

- 3b. Small antrorse spine below eye absent. Scales on top of head begin from eyes. Body depth 2.9 to 3.3 times in standard length. Lateral line scales usually 45 to 47 *S. ghanam*
- 4a. Intraspinous membrane of dorsal fin deeply incised. Back with 7 or 8 indistinct darker pink saddles reaching to lateral line
..... *N. peronii*
- 4b. Intraspinous membrane of dorsal fin continuous. No darker saddles on back 5
- 5a. Upper lobe of caudal fin pointed, not produced 6
- 5b. Upper lobe of caudal fin produced or extend into a filament 7
- 6a. Pelvic fins reaching to anal fin origin or beyond. Scales below lateral line in ascending rows anteriorly. Gill rakers usually 12 to 14
..... *N. bipunctatus*
- 6b. Pelvic fins reaching to anus, not to anal fin origin. Scales below lateral line in more or less horizontal rows anteriorly. Gill rakers usually 9 to 12 *N. furcosus*
- 7a. Body depth 3.8 to 4.6 times in standard length. Pectoral fins short, not reaching to level of anal fin origin *N. zysron*
- 7b. Body depth 2.7 to 3.5 times in standard length. Pectoral fins long, reaching to or beyond level of anal fin origin 8
- 8a. Pelvic fins very long, reaching to or beyond level of anal fin origin. Suborbital depth 1.7 to 4.0 in eye diameter *N. randalli*
- 8b. Pelvic fins short, not reaching to level of anal fin origin. Suborbital depth 1.0 to 1.9 in eye diameter *N. japonicus*

Fisheries information : The threadfin breams are of considerable commercial importance. *N. japonicus*, *N. zysron*, and *S. vosmeri* are very common species found in both the coasts of our country.

Remarks : *Parascolopsis eriomma* (Jordan and Richardson), characterised with higher gill raker count (17 to 19 on first arch), and *Parascolopsis townsendi* Boulenger, distinguished in having scales on suborbital and maxilla, may possibly occur along Maharashtra coast. But for want of material confirmation these were not included here. Another two species those are likely to occur along this coast are *Scolopsis bimaculatus* Ruppell and *Scolopsis taeniatus* (Ehrenberg). Although earlier reports including Russell (1990) do not indicate the availability of *N. bipunctatus*, *N. furcosus* and *N. peronii* along Maharashtra coast, these fishes were included here based on the materials examined by us.

Family 81 SCIAENIDAE (Croakers)

Body elongate and moderately compressed with cycloid scales on head and ctenoid scales on body. Sensory pores usually conspicuous on tip of snout (rostral pores), on lower margin of snout (marginal pores) and on chin (mental pores). Chin sometimes with 1 or 2 mental barbels. Dorsal fin usually long, continuous, with a deep notch between anterior (spinous) and posterior (soft) parts. The spinous portion with 8 to 10 spines (usually 10) and posterior part with 1 spine and 21 to 34 rays. Anal fin with 2 spines, the second spine may be greatly enlarged and strong. Caudal fin emarginate to pointed, but never deeply forked.

Species known to occur in Maharashtra

1. *Argyrosomus amoyensis* (Bleeker) (Amoy croaker)
2. *A. hololepidotus* (Lacepede) (Southern meagre)
3. *Atrobucca alcocki* Talwar (Bombay blackmouth croaker)
4. *Chrysochir aureus* (Richardson) (Reeve's croaker)
5. *Daysciaena albida* (Cuvier) (Two-beard croaker)
6. *Dedrophysa russelli* (Cuvier) (Goatee croaker)
7. *Johnieops borneensis* (Bleeker) (Sharptooth hammer croaker)

8. *J. dorsalis* (Cuvier) (Small kob)
9. *J. dussumieri* (Cuvier) (Sin croaker)
10. *J. macrorhynchus* Mohan (Bigsnout croaker)
11. *J. osseus* (Day) (Greyfin croaker)
12. *Johnius belangerii* (Cuvier) (Belanger's croaker)
13. *J. carutta* Bloch (Karut croaker)
14. *J. dussumieri* (Valenciennes) (Bearded croaker)
15. *J. elongatus* Mohan (Spindle croaker)
16. *J. glaucus* (Day) (Pale spotfin croaker)
17. *J. macropterus* (Bleeker) (Largefin croaker)
18. *Kathala axillaris* (Cuvier) (Kathala croaker)
19. *Nibea chui* Trewavas (Chu's croaker)
20. *N. maculata* (Schneider) (Blotched croaker)
21. *N. soldado* (Lacepede) (Soldier croaker)
22. *Otolithes cuvieri* (Trewavas) (Lesser tigertooth croaker)
23. *O. ruber* (Schneider) (Tigertooth croaker)
24. *Otolithoides biauritus* (Cantor) (Bronze croaker)
25. *Pama pama* (Hamilton) (Pama croaker)
26. *Paranibea semiluctuosa* (Cuvier) (Half-mourning croaker)
27. *Pennahia anea* (Bloch) (Bigeye croaker)
28. *Protonibea diacanthus* (Lacepede) (Spotted croaker)

Key to species

- 1a. Gasbladder with one or two pairs of simple or branched appendages 2
- 1b. Gasbladder with more than two pairs of diverticula, almost all arborescent 4
- 2a. Gasbladder appendages wholly directed from anterior end of bladder *K. axillaris*
- 2b. Gasbladder appendages with at least the main part lying parallel to bladder and that arising from posterior end of bladder 3
- 3a. Second dorsal fin base long, with 40 to 45 soft rays *P. pama*

- 3b. Second dorsal fin base short, with 27 to 29 soft rays *O. biauritus*
- 4a. Gasbladder carrot shaped 5
- 4b. Gasbladder hammer shaped 18
- 5a. Anterior pair of arborescent appendages of gasbladder branching on posterior surface of transverse septum, but not entering the head 6
- 5b. Anterior pair of arborescent appendages of gasbladder extending into the head and branching under the skull 13
- 6a. Outer row of teeth in upper jaw enlarged and spaced, but no outstanding canines 7
- 6b. One or two pairs of outstanding canine teeth (near symphysis) in both jaws 11
- 7a. Pores on chin of the "false five" pattern, those of first pair close together behind tip of jaw and united by a groove. Many small black spots on body *P. diacanthus*
- 7b. First pair of pores, on front of chin, one on each side of tip of jaw, not united by a groove, one or two pairs behind them. Body without spots 8
- 8a. Gasbladder appendages without a well developed dorsal limb *P. anea*
- 8b. Gasbladder appendages with a short or long dorsal limb 9
- 9a. Pectoral fin about 30% and head about 37 to 39% of standard length. Tail of tadpole shaped impression of otolith slightly curved *A. alcocki*
- 9b. Pectoral fin about 17 to 21% and head about 31 to 34% of standard length. Tail of tadpole shaped impression of otolith strongly curved 10
- 10a. Pectoral fins short, about 17% of standard length. Caudal fin rhomboid . *A. amoyensis*
- 10b. Pectoral fin longer, 19 to 21% of standard length. Caudal fin S-shaped *A. hololepidotus*
- 11a. Mouth inferior. Canine teeth in upper jaw only *C. aureus*
- 11b. Mouth terminal. Canine teeth in both jaws 12
- 12a. Gillrakers 8 to 11 on lower arm of first arch. Distance between sphenotic ridge and angle of lower jaw less than length of lower jaw. Gasbladder with 30 to 38 pairs of arborescent appendages *O. rubber*
- 12b. Gillrakers 12 to 17 on lower arm of first arch. Distance between sphenotic ridge and angle of lower jaw as long as or longer than lower jaw. Gasbladder with 25 to 28 pairs of arborescent appendages *O. cuvieri*
- 13a. Lower jaw teeth uniformly small in size 14
- 13b. Lower jaw teeth well differentiated in size, inner row enlarged 15
- 14a. Chin with a single mental barbel *D. russelli*
- 14b. Chin without barbel *P. semiluctuosa*
- 15a. A pair of minute mental barbel on chin *D. albida*
- 15b. No mental barbel on chin 16
- 16a. Distinct colour pattern of 4 or 5 broad, dark, broken oblique bands extending from back to lower part of flanks, and a blotch on top of caudal peduncle *N. maculatua*
- 16b. No distinctive colour pattern on body 17
- 17a. Dorsal fin with 24 soft rays *N. chui*
- 17b. Dorsal fin with 28 to 31 soft rays *N. soldado*
- 18a. Teeth of lower jaw differentiated in size, the inner lateral row enlarged. Outer row of teeth of upper jaw enlarged and widely spaced. Mouth usually subterminal. (*Johnieops*) 19
- 18b. Teeth of lower jaw subequal. Outer row of teeth of upper jaw enlarged but not widely spaced. Mouth inferior. (*Johnius*) 23

- 19a. Inner row of teeth in lower jaw well developed and spaced. Mouth terminal. Gill rakers 9 to 12 on lower arm of first arch .
.....*J. borneensis*
- 19b. Inner row of teeth in lower jaw slightly enlarged. Mouth subterminal to inferior.....
.....20
- 20a. Lower gill rakers 5 to 8 on first arch. Outer row of teeth of upper jaw slightly enlarged, not widely spaced*J. macrorhynchus*
- 20b. Lower gill rakers 10 to 15 on first arch. Outer row of teeth of upper jaw clearly enlarged, widely spaced.....21
- 21a. Snout and preorbital inflated. Teeth not well differentiated in size in jaws.....*J. dorsalis*
- 21b. Snout curved but not inflated 22
- 22a. Teeth well differentiated in size in both jaws
.....*J. dussumieri*
- 22b. Teeth slightly differentiated in size in both jaws.....*J. osseus*
- 23a. A mental barbel present on chin 24
- 23b. No mental barbel on chin 25
- 24a. Scales on body ctenoid. Soft dorsal fin rays 30 to 33*J. macropterus*
- 24b. Scales on body cycloid. Soft dorsal fin rays 22 to 26*J. dussumieri*
- 25a. Scales on head and breast cycloid, and most of body scales either cycloid or have a feebly ctenoid zone. Lateral line with a conspicuous silvery or yellow streak. Interorbital width 8.9 to 9.3 percent of standard length.....
.....*J. carutta*
- 25b. Scales on occiput and whole body (except breast) ctenoid. Lateral line without a distinct silvery streak. Interorbital width narrower, less than 8.5 percent of standard length 26
- 26a. Mental pores surrounded by thickened skin, produced into two short, irregular tags (barbel-like). Lower gillrakers 6 to 7.....
.....*J. elongatus*

26b. No thickened skin produced into tags. Lower gillrakers 8 to 13 27

27a. Dorsal fin usually with 9 spines. Second anal spine about $\frac{1}{2}$ of head length. Lower gill rakers 8 or 9 on first arch*J. belangerii*

27b. Dorsal fin with 10 spines. Second anal spine about $\frac{1}{3}$ of head length. Lower gill rakers 11 to 13 on first arch*J. glaucus*

Fisheries information : The croakers are very important commercial fishes. The large fishes are usually esteemed as food fishes. The swimbladder of these fishes are used in the preparation of isinglass, a product used in the gelatin in confectionary and for the preparation of certain cements.

Remarks : *Argyrosomus amoyensis* was earlier recorded as *Sciaena bleekeri* Day (1876: 185) from Bombay coast. *Johnieops sina* (Cuvier) is considered under synonymy of *Johnieops dussumieri* (Cuvier) (Heemstra, 1986). *Johnius dussumieri* (Valenciennes) is usually recorded as *J. amblycephalus* (Bleeker) as a replacement name when the generic status of *Johnieops* Mohan is not considered and all *Johnieops* species are placed under genus *Johnius* Bloch. *Johnius aneus* (Bloch) and *Pennahia macropthalmus* (Bleeker) have been synonymised with *Pennahia anea* (Bloch) (Sasaki, 1994). *Johnieops osseus* (Day) is here considered, following De Bruin *et al.* (1995), for the species described from Indian coast as *Johnieops aneus* which is not a *Pennahia* species. Based on Mohan (1984) and Talwar (1995), the specimens determined as *Johniops dussumieri* (Cuvier) is considered as *J. dorsalis* as per descriptions available with Sasaki (1997). *J. borneensis* was earlier recorded as *J. vogleri* (Bleeker), which is a junior synonym of the former (Sasaki, 2001). *Pama pama* is considered as *Otolithoides pama* by recent authors. Report of *Nibea chui* from Bombay coast by Jayaprakash (1977) was the only and single record from Indian waters. It is probably a misapplied name and referable to *Nibea coibor* (Hamilton).

Family 82 MULLIDAE (Goat fishes)

Body elongate and almost compressed, with ctenoid scales. Chin with 2 long barbels. Mouth inferior, gape slightly diagonal. Eyes situated near dorsal profile on head. Dorsal fin two, well separated, the first with 7 to 8 (usually 8) slender spines (first spine often very small) and the second with 9 rays (first unbranched). Anal fin with 1 spine and 6 rays. Caudal fin deeply forked, with 13 branched rays.

Species known to occur in Maharashtra

1. *Mulloidichthys flavolineatus* (Lacepede) (Yellowstripe goatfish)
2. *M. vanicolensis* (Valenciennes) (Yellowfin goatfish)
3. *Parupeneus barberinus* (Lacepede) (Dash-and-dot goatfish)
4. *P. heptacanthus* (Lacepede) (Cinnabar goatfish)
5. *P. indicus* (Shaw) (Indian goatfish)
6. *P. macronemus* (Lacepede) (Longbarbel goatfish)
7. *P. trifasciatus* (Lacepede) (Doublebar goatfish)
8. *Upeneus guttatus* Day (Day's goatfish)
9. *U. moluccensis* (Bleeker) (Goldband goatfish)
10. *U. sulphureus* Cuvier (Sulphur goatfish)
11. *U. sundaicus* (Bleeker) (Ochreband goatfish)
12. *U. taeniopterus* Cuvier (Finstripe goatfish)
13. *U. tragula* Richardson (Freckled goatfish)
14. *U. vittatus* (Forsskal) (Striped goatfish)

Key to species

- 1a. Teeth present on vomer and palatines. Both dorsal fins with stripes. Most species with oblique bands on caudal lobes 2
- 1b. No teeth on vomer and palatines. Stripes sometimes present on second dorsal fin. Caudal fin lobes without black bands 8
- 2a. Five and half vertical scale rows along space between dorsal fins. Vertical scale rows along upper part of caudal peduncle 12.....3
- 2b. Four and half vertical scale rows along space between dorsal fins. Vertical scale rows along upper part of caudal peduncle 10 6
- 3a. No cross-bars on caudal fin*U. sulphureus*
- 3b. Dusky cross-bar on caudal fin 4
- 4a. Caudal fin with 5 to 6 dusky cross-bars on upper lobe only, no bars on lower lobe*U. moluccensis*
- 4b. Caudal fin with black cross bars on both lobes 5
- 5a. Gill rakers 21 to 24. Lower lobe of caudal fin with 4 to 5 blackish cross bars. Pelvic fins almost equal to pectoral fin length*U. taeniopterus*
- 5b. Gill rakers 26 to 31. Lower lobe of caudal fin with 3 to 4 blackish cross bars. Pelvic fins almost two third of pectoral fins*U. vittatus*
- 6a. Dorsal fin with 7 spines, the first spine longest*U. guttatus*
- 6b. Dorsal fin with 8 spines, the first spine very small 7
- 7a. Lateral line scales 30 to 32. Caudal fin with a characteristic dark brown triangular stripe prolonging the lateral band along lower fin lobe*U. sundaicus*
- 7b. Lateral line scales 33 to 34. Caudal fin with brown or red cross bars (4 to 6 on upper lobe and 5 to 8 on lower lobe)*U. tragula*
- 8a. Teeth in jaws small, in villiform band anteriorly. Five rows of scales between dorsal fins; 11 to 12 scale rows along upper part of caudal peduncle. Lateral line scales 33 to 38 9
- 8b. Teeth in jaws moderately large, blunt, in a single row. Two or 3 rows of scales between dorsal fins; 8 or 9 scale rows along upper part of caudal peduncle. Lateral line scales 26 to 31 10
- 9a. Gillrakers 25 to 30 on first arch. Body depth 3.6 to 4.7 in standard length. A black spot

often present in lateral yellow stripe on body.
Fins whitish *M. flavolineatus*

- 9b. Gillrakers 32 to 36 on first arch. Body depth 3.3 to 3.6 times standard length. No blackish spot in lateral yellow stripe on body. Fins yellow *M. vanicolensis*

- 10a. Caudal peduncle with a roundish black spot 11

- 10b. Caudal peduncle without a roundish black spot 13

- 11a. Barbels very long, reaching or almost reaching to base of pelvic fins. Last ray of second dorsal and anal fins elongate. Gillrakers on first arch 33 to 39
..... *P. macronemus*

- 11b. Barbels short, not reaching to base of pelvic fins. Last ray of second dorsal and anal fins normal, not elongate. Gillrakers on first arch 24 to 30 12

- 12a. A dark stripe on snout, preorbital head and upper side of body. No large yellow blotch on lateral line *P. barberinus*

- 12b. No dark stripe on body. A large, horizontally elongate yellowish blotch on lateral line below posterior part of dorsal fin and interdorsal space *P. indicus*

- 13a. Body with 2 or 3 blackish vertical broad saddle-like dark bars. Gillrakers on first arch 35 to 41 *P. trifasciatus*

- 13b. Body without dark vertical bars. Gillrakers on first arch 24 to 27 *P. heptacanthus*

Fisheries information : The goatfishes are of important commercial fishes. These fishes are highly esteemed as food fish.

Family 83 MONODACTYLIDAE (Silverbat fish, Moon fish)

Body deep and oval, strongly compressed. Mouth small, jaws with feeble teeth; vomer and palate with granulated teeth, maxilla exposed. Upper jaw slightly protrusible. Dorsal fin with 7 to 8 spines and 25 to 31 rays. Anal fin with 3

spines and 25 to 30 rays. Pelvic fins rudimentary or absent. Scales fine, cycloid or ctenoid, deciduous; extending on to median fin and head.

Species known to occur in Maharashtra

1. *Monodactylus argenteus* (Linnaeus) (Silver moony)
2. *M. falciformis* Lacepede (Full moonfish)

Key to species

- 1a. Body depth 1.5 to 2.0 times in standard length. Lower gillrakers 22 to 24 *M. falciformis*
- 1b. Body depth 1.2 to 1.5 times in standard length. Lower gillrakers 16 to 21 *M. argenteus*

Fisheries information : The silverbat fishes are usually found in the costal waters on the west coast of our country. *M. argenteus* is a very good aquarium fish since it thrives well in captivity.

Family 84 PEMPHERIDIDAE (Sweepers)

Body strongly compressed and deep. Eyes relatively large, greater than interorbital width. Mouth generally oblique, upper not reaching beyond center of eyes. Dorsal fin single, short, with 4 to 7 graduated spines and 7 to 12 soft rays. Anal fin with 3 (very rarely 2) spines and 17 to 45 soft rays. Lateral line with 45 to 70 scales. Some species with luminescent organs.

Species known to occur in Maharashtra

Pempheris vanicolensis Cuvier

Fisheries information : The sweeper fishes are of minor fisheries importance. These fishes are sometimes found in the commercial catches.

Family 85 KYPHOSIDAE (Rudderfishes, Sea chubs)

Body oblong to ovate and compressed, with ctenoid scales. Mouth small, horizontal with an almost exposed maxilla; upper jaw slightly protrusible. Dorsal fin with 6 to 12 spines and 11 to 22 rays, depressible in a sheath. Anal fin with 3 spines and 11 to 26 rays. Pectoral fins short.

Pelvic fins with one spine and 5 rays and with a scally axillary process. Caudal fin forked or emarginate.

Species known to occur in Maharashtra

Kyphosus cinerascens (Forsskal) (Blue sea chub)

Fisheries information : The blue sea chub is of minor commercial value. It is captured along commercial catches.

Family 86 DREPANIDAE (Sicklefishes)

Body highly deep and greatly compressed, with finely ctenoid scales. Head with a parabolic dorsal profile. Mouth terminal and protrusible, forming a downward projecting tube when protracted. Dorsal fin with 8 to 10 spines (the first small, procumbent, visible only in juveniles), the spinous part separated from soft part of dorsal fin by a deep notch and expressible in a high basal scaly sheath. Anal fin with 3 spines. Pectoral fins long and falcate, extending to caudal base of caudal fin. Caudal fin rounded. Lateral line highly arched.

Species known to occur in Maharashtra

Drepane punctata (Linnaeus) (Spotted sicklefish)

Fisheries information : The sicklefishes form seasonal fishery along the coasts of our country. These fishes are marketed fresh only. Their flesh are said to be of excellent quality.

Family 87 EPHIPPIDAE (Spadefishes)

Body greatly deep to more or less orbicular and highly compressed with scales. Head short, its profile either steep or considerably convex. Mouth small, horizontal; tip of maxilla concealed. Dorsal fin with 9 spines, interspinous membranes deeply incised, sometimes filamentous; spinous part separated from soft part by a deep notch. Anal fin with 3 spines. Pectoral fins short and rounded. Pelvic fins thoracic, pointed, with an axillary process. Caudal fin distally almost sigmoid

shaped, with an obtuse median angular process. Body with 4 or 5 vertical black bands which fade with the maturity of the fish.

Species known to occur in Maharashtra

Ephippus orbis (Bloch) (Orbfish)

Fisheries information : The spadefish is of little commercial importance. It is sometimes found in the commercial catches.

Family 88 PLATACIDAE (Batfishes)

Body deep, rhomboid and greatly compressed. Eyes on both sides of flattened body. Dorsal profile of head almost angular, its length much shorter than height. Mouth, terminal, horizontal and scarcely protractile. Teeth slender, usually tricuspid. Dorsal fin with 5 hidden spines and 35 to 39 rays, increasing in size posteriorly. Anal fin with 3 spines and 25 to 28 rays. Pectoral fins short and almost rounded. Pelvic fins produced, the first soft ray extending to at least anal fin origin. Caudal fin truncate. Lateral line arched with 50 to 55 scales. Scales finely ciliated, small, becoming minute on fins which are densely covered.

Species known to occur in Maharashtra

1. *Platax orbicularis* (Forsskal) (Orbicular batfish)
2. *P. teira* (Forsskal) (Longfin batfish)

Key to species

- 1a. Dorsal fin with 28 to 34 rays. Scale rows from lateral line origin to base of 1st dorsal spine 40 to 45. All 3 cusps of teeth subequal.....
..... *P. teira*
- 1b. Dorsal fin with 35 to 37 rays. Scale rows from lateral line origin to base of 1st dorsal spine 25 to 30. Middle cusp of teeth longer and stronger than lateral cusps..... *P. orbicularis*

Fisheries information : The batfishes are of not much commercial importance. These fishes are edible and palatable but not much esteemed as food on account of their foul feeding habits.

Remarks : These fishes are placed in family Ephippidae by recent authors. Reports of *P. pinnatus* (Linnaeus) from Indian coast are questionable and need material confirmation. It differs from *P. orbicularis* in having snout concave before eyes (cf. convex before eyes) and 3 or 4 mandibular pores on each side (cf. 5 pores).

Family 89 SCATOPHAGIDAE (Scats)

Body quadrangular and greatly compressed. Head profile steep. Mouth small, horizontal with brush-like teeth. Dorsal fin with 11 to 12 strong spines and 16 to 18 rays, the first spine procumbent; middle of dorsal fin with a deep notch. Anal fin with 4 strong spines and 13 to 16 rays. Pectoral fins, relatively small, with 16 to 17 rays. Caudal fin truncate or slightly emarginate. Lateral line arched and complete. Body silvery or greenish with numerous dark spots.

Species known to occur in Maharashtra

Scatophagus argus (Bloch) (Spotted scat)

Fisheries information : The scats are of not much commercial importance. These fishes are popular aquarium fishes due to their attractiveness for their colour pattern of dark spots or bars on their body and orange-red colour on the dorsal profile.

Family 90 CHAETODONTIDAE (Butterflyfishes)

Body oval to orbicular or subrhomboid and highly compressed. Mouth small, terminal and protractile; maxilla not extending to anterior border of eye. Snout slightly produced to highly elongate. Dorsal fin with 6 to 16 spines and 15 to 31 rays, sometimes with a slight notch between spinous and soft rays. Anal fin with 3 spines (rarely 4) and 14 to 27 rays. Lateral line extending either up to base of soft part of dorsal fin or caudal fin base. An axillary scaly process at base of pelvic fin spine.

Species known to occur in Maharashtra

1. *Chaetodon auriga* (Forsskal) (Thredfin butterflyfish)

2. *C. collare* Bloch (Redtail butterflyfish)
3. *C. decussatus* Cuvier (Indian vagabond butterflyfish)
4. *C. lineolatus* Cuvier (Lined butterflyfish)
5. *C. lunula* (Lacepede) (Racoon butterflyfish)
6. *C. trifasciatus* (Park) (Melon butterflyfish)
7. *C. vagabundus* Linnaeus (Vagabond butterfly fish)
8. *C. xanthocephalus* Bennett (Yellowhead butterflyfish)
9. *Heniochus acuminatus* (Linnaeus) (Pennant coral fish)

Key to species

- 1a. Lateral line complete, reaching up to caudal fin base, with 49 to 56 scales. Fourth dorsal spine elongate, longer than body depth. Two vertical but curved dark bands on body, first band includes pectoral fin, pelvic fin and first 3 spines of dorsal fin *H. acuminatus*
- 1b. Lateral line incomplete, reaching up to end of dorsal fin base, with 27 to 45 scales. Fourth dorsal spine normal, not elongate. Colour not as above 2
- 2a. All scales on body similar in size and shape, small to moderate and evenly rounded; arranged more or less regularly in horizontal rows 3
- 2b. Two types of scales on body, longer rhombic scales anteriorly and smaller rounded scales posteriorly; longitudinal rows of large scales indistinct and transverse rows of small scales prominent 5
- 3a. Length of spinous dorsal fin base less than 1.5 times of that of soft dorsal fin base. A white collar band present behind a broad ocular band *C. collare*
- 3b. Length of spinous dorsal fin base about 2.0 times of that of soft dorsal fin base. No collar band present; ocular band present or absent 4
- 4a. Dorsal profile of head convex. Dark ocular band present *C. trifasciatus*

- 4b. Dorsal profile of head concave. Ocular band absent *C. xanthocephalus*
- 5a. Snout length (without upper lip) distinctly longer than eye diameter. Body with about 16 narrow vertical black lines *C. lineolatus*
- 5b. Snout length (without upper lip) subequal to or less than eye diameter. Body with oblique or diagonal lines 6
- 6a. Body with oblique narrow dark lines or reddish brown bands. A dark ocellus on soft dorsal fin often present 7
- 6b. Body with six diagonal lines from head to spinous dorsal fin and from lowest of these 11 to 12 similar lines run obliquely backwards 8
- 7a. Soft dorsal fin with prolonged filament. Anal fin with 20 or 21 rays. Lateral line with 27 to 32 scales *C. auriga*
- 7b. Soft dorsal fin ray not prolonged. Anal fin with 17 to 19 rays. Lateral line with 35 to 43 scales *C. lunula*
- 8a. Snout length 3.0 to 4.0 times in head length. Dorsal fin, anal fin and caudal peduncle and adjacent areas black *C. decussatus*
- 8b. Snout length 2.5 to 3.2 times in head length. A black band from spinous dorsal fin to caudal peduncle, that extending a short distance into anal fin *C. vagabundus*

Fisheries information : The juveniles of the butterfly fishes are used in the aquarium trade. These fishes are of the most colourful of the coral fishes.

Family 91 POMACANTHIDAE (Angelfishes)

Body oval to orbicular and highly compressed with ctenoid scales. Mouth small, terminal, protrusible; maxilla not extending to anterior border of orbit. Preopercle with a strong spine. Dorsal fin with 9 to 15 spines and 15 to 33 rays. Anal fin with 3 spines and 14 to 25 soft rays.

Species known to occur in Maharashtra

1. *Pomacanthus imperator* (Bloch) (Emperor angelfish)
2. *Pygoplites diacanthus* (Boddaert) (Royal angelfish)

Key to species

- 1a. Lateral line scales about 80. Lateral transverse scales about 90. Pectoral fin rays 19 or 20. Subopercle smooth. Juveniles with concentric circles on body *P. imperator*
- 1b. Lateral line scales about 50. Lateral transverse scales about 50. Pectoral fin rays 16 or 17. Subopercle with spines. Juveniles with a black ocellus on soft dorsal fin *P. diacanthus*

Fisheries information : The juveniles of the Angelfishes are popular aquarium fishes. These fishes are of little commercial importance.

Family 92 CICHLIDAE (Cichlids)

Body deep and compressed. Single nostril on each side of snout. Jaws toothed; palatine and vomer edentulous. Dorsal fin with 12 to 22 spines and 8 to 23 soft rays; anal fin with 3 to 16 spines and 6 to 24 soft rays. Scales weakly ctenoid. Lateral line interrupted, usually with 30 to 40 scales.

Species known to occur in Maharashtra

Etroplus suratensis (Bloch) (Green chromide)

Fisheries information : Very common in brackish waters and attains a length of 40 cm. It is an excellent delicious fish. It is also used for aquaculture and as aquarium fish.

Family 93 POMACENTRIDAE (Damselfishes)

Body orbiculate to almost elongate and compressed. Mouth relatively small and oblique. Dorsal fin with 9 to 17 spines and 10 to 20 rays. Pectoral fins with 14 to 24 rays. Anal fin with 2 spines and 10 to 17 rays. Caudal fin forked to rounded.

Species known to occur in Maharashtra

1. *Abudefduf bengalensis* (Bloch) (Bengal sergeant)
2. *A. sexfasciatus* (Lacepede) (Scissortail sergeant)
3. *Neopomacentrus cyanomos* (Bleeker) (Crescent damselfish)

Key to species

- 1a. Tips of teeth on jaws flattened or notched. Caudal fin lunate to strongly emarginate. Posterior tips of dorsal and anal fin and outer rays of caudal fin produced into filament. Edge of suborbital hidden by scales. Depth 2.2 to 2.6 in standard length. Body without alternate bands; with a blotch each on lateral line origin and pectoral fin base *N. cyanomos*
- 1b. Tips of teeth on jaws rounded or conical. Caudal fin forked, lobes pointed. Posterior tips of dorsal, anal and caudal fin not filamentous. Edge of suborbital exposed. Depth 1.8 to 2.0 in standard length. Body with dark and light transverse bands 2
- 2a. Lobes of caudal fin with longitudinal dark bands along outer margin. Body with 5 dark bars, 1st just in front of dorsal fin, 3 under dorsal fin *A. sexfasciatus*
- 2b. Lobes of caudal fin without longitudinal bands. Body with 7 dark bars, 1st on head, 2nd before dorsal fin and 4 under dorsal fin *A. bengalensis*

Fisheries information : The damselfishes are of little commercial importance. A few species of these fishes are used in the aquarium trade.

Family 94 PSEUDOCROMIDAE
(Dottybacks)

Body fairly elongate. Upper jaw with 2 series of sharp, slightly recurved conical teeth at sides, outer row enlarged. Both the jaws with 2 to 7 canines in front. Vomer and palatine toothed. Dorsal fin with 1 to 3 spines and 21 to 37 rays.

One ray of pelvic fin often produced. Scales cycloid anteriorly and ctenoid posteriorly. Lateral line interrupted, with a curved anterior part and a straight posterior part.

Species known to occur in Maharashtra

Pseudochromis caudalis Boulenger

Fisheries information : These fishes are of little commercial importance, but being brightly coloured specimens they can well be used as aquarium fishes.

Family 95 CIRRHITIDAE
(Hawkfishes)

Body elongate or oblong. Mouth terminal; jaws with an outer row of canine teeth, a band of villiform teeth inside the canines. Two indistinct flattened spines on opercle. A fringe of cirri on posterior edge of anterior nostril. One or more cirri projecting from interspinous membranes near tips of dorsal fin spines. Dorsal fin continuous, with 10 spines and 11 to 17 rays. Anal fin with 3 spines and 5 to 7 rays. Pectoral fin with 14 rays, lower 5 to 7 rays unbranched and usually enlarged with deeply incised membranes. Scales cycloid.

Species known to occur in Maharashtra

Paracirrhites forsteri (Schneider) (Freckled hawkfish)

Fisheries information : These are small sized fishes, often encountered in shallow waters, but of no commercial importance.

Family 96 SPHYRAENIDAE
(Barracudas)

Body elongate with long pointed snout. Mouth large with lower jaw projecting beyond upper, with large fang-like teeth. Dorsal fin two, considerably separated, the first with 5 spines and second with one spine and 9 rays. Pectoral fins inserted low on body. Caudal fin forked.

Species known to occur in Maharashtra

1. *Sphyraena barracuda* (Walbaum) (Great barracuda)

2. *S. forsteri* Cuvier (Bigeye barracuda)
3. *S. jello* Cuvier (Pickhandle barracuda)
4. *S. obtusata* Cuvier (Obtuse barracuda)

Key to species

- 1a. First gill arch with platelets, each bearing several small spines. No gill rakers on first arch. A well defined dusky blotch underneath base of pectoral fins *S. forsteri*
- 1b. First gill arch without spine-covered platelets as above. Either 1 or 2 (rarely 3) gill rakers or none on first arch 2
- 2a. Two gill rakers present on first arch. Pectoral fin tips reaching to level of midbase of dorsal fin. Lateral line pores 80 to 96.....*S. obtusata*
- 2b. Gill rakers absent on first arch. Pectoral fin tips just reaching to or short of level of dorsal fin origin 3
- 3a. Lateral line pores 75 to 90. Sides with several inky blotches below lateral line. No cross bars on flanks *S. barracuda*
- 3b. Lateral line pores 130 to 140. No black blotches on lower sides of body. About 20 serpentine cross bars on flanks reaching slightly below lateral line *S. jello*

Fisheries information : The barracudas are of not much commercial importance. These fishes are marketed fresh, frozen, dried, salted or smoked.

Family 97 POLYNEMIDAE (Threadfins)

Body almost elongate and compressed. Mouth subterminal. Dorsal fins two, well separated from each other, the first with 7 to 8 flexible spines. Anal fin with 2 or 3 spines. Pectoral fins divided into two parts, the upper part normal, the lower part with 3 to 15 free filamentous rays. Pelvic fins with one spine and 5 branched rays, subabdominal in position. Caudal fin deeply forked.

Species known to occur in Maharashtra

1. *Eleutheronema tatradyctylum* (Shaw) (Four-finger threadfin)

2. *Filimanus similis* Feltes (Indian seven-finger threadfin)
3. *F. xanthonema* (Valenciennes) (Yellowthread threadfin)
4. *Leptomelanosoma indicum* (Shaw) (Indian threadfin)
5. *Polydactylus plebius* (Broussonet) (Striped threadfin)
6. *P. mullani* (Hora) (Arabian black-spot threadfin)
7. *P. sexfilis* (Valenciennes) (Sixfinger threadfin)
8. *P. sextarius* (Schneider) (Blackspot threadfin)
9. *Polynemus paradiseus* Linnaeus (Paradise threadfin)

Key to species

- 1a. Lower lip restricted to corner of mouth. Teeth extending to outer edges of jaws. Free pectoral filaments 4 *E. tetradyctylum*
- 1b. Lower lip fully developed. No external teeth. Free pectoral filaments 5 or more 2
- 2a. Pectoral fins positioned high on body near mid-lateral line. Free pectoral filaments 7, extending beyond tip of caudal fin
..... *P. paradiseus*
- 2b. Pectoral fins positioned low on body, well below mid-lateral line. Free pectoral filaments 5 to 7, not extending to caudal fin base ... 3
- 3a. Caudal fin lobes produced into filaments. Eyes small, about 7 times in head length. Top of head with sphenotics exposed between parietal and pterotic bones. Swimbladder with several appendages *L. indicum*
- 3b. Caudal fin lobes not produced. Eyes large, less than 5 times in head length. Sphenotic bones not exposed. Swimbladder, if present, without appendages 4
- 4a. Premaxillary teeth bands narrow, separated by a wider gap; the gap two or more times the width of each band. Basisphenoid not in contact with prootic bone. Longest pectoral filament reaching almost to anal fin origin 5

- 4b. Premaxillary teeth bands wide, separated by a narrow gap; the gap less than the width of each band. Basisphenoid in contact with prootic bone. Longest pectoral filament not reaching to anal fin origin 6
- 5a. Free pectoral filaments symmetrically 7. Gill rakers 40 to 49 (modaly 43) on first arch ..
..... *F. similis*
- 5b. Free pectoral filaments 6 (rarely 5), asymmetrically 5 and 6, or 6 and 7. Gill rakers 36 to 45 (modaly 41) on first arch
..... *F. xanthonema*
- 6a. Lateral line with 45 to 51 scales. A large black shoulder spot on lateral line 7
- 6b. Lateral line with 60 to 68 scales. No black shoulder spot on lateral line.....8
- 7a. Total gill rakers 31 to 35 on first arch. First dorsal fin with the second spine more robust than other spines. Pectoral filaments 7 or asymmetrically 6 and 7 *P. mullani*
- 7b. Total gill rakers 25 to 30 on first arch. First dorsal fin with spines of similar thickness. Pectoral filaments symmetrically 6
..... *P. sextarius*
- 8b. Free pectoral filaments 6, the longest filament (6th) not reaching to posterior tip of pelvic fin*P. sexfilis*
- 8a. Free pectoral filaments 5, the longest filament (5th) reaching to or extending beyond posterior tip of pelvic fin..... *P. plebeius*

Fisheries information : The threadfin fishes are important commercial fishes. The Indian threadfin fish constitutes one of the important threadfin fisheries in our country.

Remarks : *Leptomelanosoma indicum* was earlier recorded as *Polynemus indicus* or *Polydactylus indicus*. Earlier records of *P. sexfilis* from this coast seems to be erroneous probably misidentification of *F. xanthonemus*. Several studies on *Polynemus heptadactylus* or *Polydactylus heptadactylus* from this region are referable to *Polydactylus mullani*. The former species is currently placed under genus *Filimanus*

and *Filimanus heptadactyla* does not occur in Indian coast. Earlier records of *P. heptadactylus* are in fact including two other distinct species, i.e., *F. similis* and *P. mullani*, along west coast of India (Barman and Mishra, in press).

Family 98 LABRIDAE (Tuskfishes, Hogfishes)

Body almost compressed and oblong. Mouth terminal, generally with conspicuous lips. Jaws slightly to extremely protrusible. Dorsal fin with 8 to 21 spines and 7 to 14 soft rays. Anal fin with 3 spines and 7 to 18 rays. Lateral line smoothly curved, complete or interrupted.

Species known to occur in Maharashtra

1. *Cheilinus trilobatus* Lacepede (Tripletail wrasses)
2. *Halichoeres nebulosus* (Valenciennes) (Nebulous wrasse)
3. *H. nigriscens* (Bloch & Schneider) (Bubblefin wrasse)
4. *H. scapularis* (Bennett) (Zigzag wrasse)
5. *Xyrichtys cyanifrons* Valenciennes (Nil)
6. *X. pentadactylus* (Linnaeus) (Five finger wrasse)

Key to species

- 1a. Lateral line interrupted 2
- 1b. Lateral line continuous 4
- 2a. Segmented anal fin rays 8 to 9. Dorsal fin with 10 rays. Head with short red lines and spots. Four cross bars on sides
..... *C. trilobatus*
- 2b. Segmented anal fin rays 12. Dorsal fin with 12 rays. Colour not as above.....3
- 3a. Cheeks with two rows of minute scales below and behind eyes. Caudal fin with reticulated grey lines. No bright red spots on and below lateral line*X. cyanifrons*
- 3b. Cheeks with several rows of scales reaching downward to behind corner of mouth. Caudal fin with horizontal stripes, not reticulated.

Several prominent bright red spots on and below lateral line *X. pentadactylus*

- 4a. A bluish ocellus between fifth and seventh dorsal spines. A black spot at base of pectoral fin. Bluish green, scales chequered with dull purplish red *H. nigriscens*
- 4b. No ocellus between fifth and seventh dorsal spines. No black spot at base of pectoral fin. Body colour not as above 5
- 5a. Body with light and dark blotches and spots. Two black spots on dorsal fin *H. nebulosus*
- 5b. Body with a broad red band, with blue edges from shoulder to upper edge of caudal peduncle. No spot on dorsal fin *H. scapularis*

Fisheries information : The hogfishes are of important commercial value. These fishes have a considerable fishery importance in our country.

Family 99 SCARIDAE (Parrotfishes)

Body oblong, almost compressed. Head usually bluntly rounded anteriorly. Mouth small, with jaws fused into beak-like dental plates. Some species with posterior canine teeth. Dorsal fin with 9 spines and 10 to 11 rays. Anal fin with 3 spines and 9 rays. Pelvic fins with one spine and 5 rays. Caudal fin rounded in juvenile specimens but lobes usually extended in adults. Lateral line interrupted below posterior margin of dorsal fin, with 22 to 24 cycloid scales.

Species known to occur in Maharashtra

1. *Chlorurus sordidus* (Forsskal) (Daisy parrot-fish)
2. *Scarus ghobban* Forsskal (Blue-barred parrot-fish)
3. *S. globiceps* Valenciennes (Globehead parrot-fish)

Key to species

- 1a. Lips cover less than half of dental plates.

Median predorsal scales 4. Cheek with 2 rows of scales. Caudal fin rounded. Initial phase dark brown, red around mouth, often with 2 rows of whitish spots on sides; terminal males green with green cheek and pink chin *C. sordidus*

- 1b. Lips cover at least half or more of dental plates. Median predorsal scales 5 to 7. Cheek with 3 rows of scales. Caudal fin emarginate. Colour not as above 2
- 2a. Median predorsal scales usually 5. Three whitish stripes on abdomen following centers of scale rows. Initial phase brown to grayish brown; terminal males green with an orange bar on each scale except on abdomen, 3 green stripes on abdomen; a salmon pink stripe edged with blue from snout through eyes .. *S. globiceps*
- 2b. Median predorsal scales usually 6. No stripe on abdomen. Initial phase yellow, the centers of scales blue, often with 5 blue bars on body; terminal males light green, the scales edged with salmon pink; a broad irregular green band across lower cheek *S. ghobban*

Fisheries information : The parrot fishes are of minor commercial value. These fishes are one of the important groups of coral fishes associated with artisanal fisheries.

Family 100 URANOSCOPIDAE (Stargazers)

Body elongate, thick, compressed posteriorly, naked or with small scales. Head large and cuboid with eyes on dorsal profile of it. Mouth large and oblique with fringed lips and small teeth in jaws. Lower jaw heavy and projecting, upper jaw protrusible; maxillaries exposed with supramaxilla. Lateral line on upper side of body. Pelvic fins narrowly separated, with one spine and 5 rays and inserted under throat. Spinous dorsal fin small or absent, or continuous with soft part of it; soft dorsal and anal fins similar, inserted in opposite position.

Species known to occur in Maharashtra

Ichthyoscopus lebeck (Bloch) (Longnose Stargazer)

Fisheries information : The stargazers are of no commercial importance. These fishes are sometimes seen in the commercial catches.

Family 101 PINGIUPEDIDAE
(Sandmelts, Sandperches)

Body elongate, subcylindrical and posteriorly compressed. Mouth large. Opercle with one stout spine. Dorsal fin with 4 to 5 spines and 19 to 24 rays, the last spine attached by a membrane to the first soft ray. Anal fin with one weak spine and 16 to 19 branched soft rays. Pelvic fins with one short spine concealed in the skin and 5 rays. Caudal fin rounded or truncate to emarginate. Body with ctenoid scales but opercle and cheek with cycloid scales.

Species known to occur in Maharashtra

Parapercis hexophthalma (Ehrenberg) (Spotted sandmelt)

Fisheries information : The sandperches are of little commercial importance. These fishes are sometimes found in the bottom trawls.

Remarks : This family was earlier known as Mugiloididae.

Family 102 BLENNIIDAE
(Combtooth blennies)

Body elongate without scales. Head always with cirri on eye, on nape and on posterior rim of anterior nostril. Mouth ventral, upper jaw not protractile. Eyes high on sides of head. Dorsal and anal fins long, their spines flexible. Dorsal fin with fewer spines than soft rays. Anal fin with 2 spines, usually rugose bulbous swellings on these spines, hardly separated from soft rays. Pelvic fins inserted ahead of pectoral fins, with one spine (not visible outwardly) and 2 to 4 soft rays. Pelvic fins sometimes deformed or absent. Caudal fin rounded.

Species known to occur in Maharashtra

1. *Alticus kirkii* Gunther (Kirk's blenny)
2. *Atrosalarias fuscus* (Ruppell) (Nil)
3. *Blenniella periophthalmus* (Valenciennes) (Blue dashed rockskipper)
4. *Entomacrodus striatus* (Valenciennes) (Reef margin blenny)
5. *Istiblennius lineatus* (Valenciennes) (Lined rockskipper)
6. *Omobranchus punctatus* (Valenciennes) (Muzzlidd blenny)
7. *Scartella emarginata* (Gunther) (Maned blenny)

Key to species

- 1a. Upper jaw teeth almost fixed, usually fewer than 50.....2
- 1b. Upper jaw teeth freely movable, about 100 or more 3
- 2a. Gill opening unrestricted, forms a free fold across ventral surface of head. Branched dorsal fin rays 12 to 16. Several cirri on top of head. No canine posteriorly on upper jaw. Orbital and nasal cirri present. Sides with 6 indistinct bands spots and lines absent*S. emarginata*
- 2b. Gill opening restricted, a small pore above pectoral fin base. Branched dorsal fin rays 19 to 22. No cirri or crest on top of head. A curved canine posteriorly on upper jaw. Orbital and nasal cirri absent. Sides with about 7 spots and 4 dark horizontal lines*O. punctatus*
- 3a. All rays of caudal fin unbranched 4
- 3b. Middle 9 rays of caudal fin branched 5
- 4a. Dorsal fin not distinctly notched, continued on to base of caudal fin. Dorsal fin elements 30 or 31, with 10 spines. No crest on head*A. fuscus*
- 4b. Dorsal fin distinctly notched, not continued on to base of caudal fin. Dorsal fin elements 37 to 40, with 17 spines. A well-developed crest on head*A. kirkii*

- 5a. Branched dorsal fin rays 14 to 16. No crest on head *E. striatus*
- 5b. Branched dorsal fin rays 19 to 23. Fleshy crest on head usually present 6
- 6a. Canines present posteriorly on lower jaw. Supraorbital cirri simple. Dorsal fin not continued on to caudal fin base. No black lines along body *B. periophthalmus*
- 6b. No canines on lower jaw. Supraorbital cirri fringed. Dorsal fin continued on to caudal fin base. Narrow horizontal black lines along body *I. lineatus*

Fisheries information : The blennies are of little commercial importance. These fishes are generally used for preparation of fishmeal.

Family 103 CALLIONYMIDAE (Dragonets)

Body elongate and more or less compressed. Jaws with villiform teeth and upper jaw very protrusible. Preopercle armed with stout spine. Gill openings restricted to a small dorsal or sublateral pores. Eyes generally directed upwards. Dorsal fin two, the first with 4 flexible spines and the second with 7 to 11 rays. Anal fin with 6 to 12 rays. Pelvic fins with one spine and 5 rays, jugular in position, well separated from each other. Body without scales. Lateral line consists of pores.

Species known to occur in Maharashtra

Callionymus sagitta Pallas (Arrow headed dragonet)

Fisheries information : The Dragonets are of no commercial importance. These fishes are caught as bycatch in shrimp trawls.

Family 104 ELEOTRIDIDAE (Sleepers)

Body elongate with ctenoid or cycloid scales, sometimes partially or completely naked. Dorsal fin two, the first with 6 flexible spines and the second with 1 spine and 8 to 19 rays. Anal fin with one spine and 6 to 19 rays. Pelvic fins separated with sucking disc, bases close together

or united, with one spine and 5 rays. Caudal fin with 15 to 17 rays. Lateral line absent.

Species known to occur in Maharashtra

1. *Bunaka gyrinoides* (Bleeker) (Nil)
2. *Butis amboinensis* (Bleeker) (Olive flathead gudgeon)
3. *Eleotris fusca* (Schneider) (Dusky sleeper)
4. *Prionobutis koilomatodon* (Bleeker)

Key to species

- 1a. Scales small, 60 or more on lateral series. Lateral transverse scales 16 to 19. No bony ridge above eye in interorbital space 2
- 1b. Scales larger, about 30 on lateral series. Lateral transverse scales 7 to 10. A bony ridge above eye in interorbital space 3
- 2a. Angle of preopercle with a single curved spine. Predorsal scales about 50 *E. fusca*
- 2b. Angle of preopercle without spine. Predorsal scales about 40 *B. gyrinoides*
- 3a. Snout flat, about twice eye diameter. Lower jaw projecting. Head flat. Head scaled on snout, preorbital and on cheek, no scales between eye and orbital ridge
..... *B. amboinensis*
- 3b. Snout rounded, subequal to eye. Jaws subequal. Head obtuse or rounded. Head naked on snout, interorbital, preorbital and lower part of cheek *P. koilomatodon*

Fisheries information : The sleeper fishes are of no commercial importance. These fishes are generally used for the preparation of fishmeal.

Family 105 GOBIIDAE (Gobias)

Body elongate, eel-like or oval and compressed, with ctenoid or cycloid scales. Head with or without pores, but typically having sensory pore canals. Dorsal fin usually two, spinous dorsal fin when present, separated from soft dorsal fin and with 2 to 17 spines. The second dorsal fin or soft rayed dorsal fin and the anal fins are similar in shape and size. Pelvic fins united, sometimes

entirely or posteriorly incised, usually forming an adhesive or sucking disc.

Species known to occur in Maharashtra

1. *Acentrogobius griseus* (Day) (Grey goby)
2. *A. masoni* (Day) (Nil)
3. *A. viridipunctatus* (Valenciennes) (Spotted green goby)
4. *Awaous gutum* (Hamilton) (Nil)
5. *Bathygobius fuscus* (Ruppell) (Dusky frill goby)
6. *Boleophthalmus boddarti* (Pallas) (Boddart's goggle-eyed goby)
7. *B. dussumieri* Valenciennes (Nil)
8. *Brachygobius nusus* (Hamilton) (Bumblebee goby)
9. *Glossogobius giuris* (Hamilton) (Tank goby)
10. *Gobiopsis macrostoma* Steindachner (Longjaw goby)
11. *Istigobius ornatus* (Ruppell) (Ornate goby)
12. *Oxyurichthys microlepis* (Bleeker) (Maned goby)
13. *O. tentacularis* (Valenciennes) (Nil)
14. *Parachaeturichthys ocellatus* (Day) (Nil)
15. *P. polynema* (Bleeker) (Taileyed goby)
16. *Periophthalmodon schlosseri* (Pallas) (Giant mudskipper)
17. *Psammogobius biocellatus* (Valenciennes) (Sleepy goby)
18. *Scartelaos histophorus* (Valenciennes) (Walking goby)
19. *Stigmatogobius poecilosoma* (Bleeker) (Nil)

Key to species

- 1a. Teeth on lower jaw in a single row 2
- 1b. Teeth on lower jaw in several rows 5
- 2a. Upper jaw with two rows of teeth. Second dorsal fin short, with 12 to 14 rays*P. schlosseri*
- 2b. Upper jaw with a single row of teeth. Second dorsal fin long, with 23 to 27 rays 3

- 3a. Teeth on lower jaw pointed. A row of short barbels ventrally on head. Last ray of second dorsal fin connected by membrane to caudal fin *S. histophorus*
- 3b. Teeth on lower jaw obliquely notched. No barbels ventrally on head. Second dorsal fin not connected by membrane to caudal fin.. 4
- 4a. Eyes small, 6.2 to 7.1 times in head length. Body depth 6.8 to 7.2 times in standard length. Sides of body devoid of bands *B. dussumieri*
- 4b. Eyes moderate, 4.2 to 6.2 times in head length. Body depth 4.7 to 5.8 times in standard length. Sides of body with oblique bands *B. boddarti*
- 5a. Head with barbels on ventral surface 6
- 5b. Head without barbels 8
- 6a. Head depressed. Barbels on lower surface and sides of head *G. macrostoma*
- 6b. Head rounded. Barbels restricted to chin
.....7
- 7a. Predorsal scales about 25. A pair of short barbels only under chin *P. ocellatus*
- 7b. Predorsal scales 12 or 13. Numerous short barbels under chin and head ... *P. polynema*
- 8a. Finger-like flaps on shoulder girdle. Head depressed. Predorsal scales 17 to 24
.....*A. gutum*
- 8b. No finger-like flap on shoulder girdle 9
- 9a. Upper pectoral fin rays free and silk-like. Tongue bilobate or emarginate*B. fuscus*
- 9b. Upper pectoral fin rays not free or silk-like 10
- 10a. Teeth on upper jaw in one row. A membranous crest on nape 11
- 10b. Teeth on upper jaw in several rows. No crest on nape 12
- 11a. An elongate tentacle over eye. An oblong spot below eye *O. tentacularis*

- 11b. No tentacle over eye. No spot or streak below eye *O. microlepis*
- 12a. Tongue rounded. Cheek naked and opercle scaled with large ctenoid scales. Body with few well defined black and yellow vertical bands *B. nusus*
- 12b. Tongue truncate, emarginate or bilobate. Cheek and opercle, if scaled, not with ctenoid scales. No vertical bands on body 13
- 13a. Tongue bilobate 14
- 13b. Tongue truncate 15
- 14a. Gill membranes fused to a free fold across isthmus *P. biocellatus*
- 14b. Gill membranes not fused to form a free fold *G. giuris*
- 15a. Predorsal scales 6 to 12 16
- 15b. Predorsal scales about 20 to 30 17
- 16a. Foremost median predorsal scale behind eye enlarged and unpaired. Predorsal scales 6 to 9. Teeth on inner row of lower jaw laterally enlarged *S. poecilosoma*
- 16b. Foremost predorsal scale paired and not enlarged. Predorsal scales 10 to 12. Teeth on inner row of lower jaw not enlarged *I. ornatus*
- 17a. A broad papilla on each side of chin *A. masoni*
- 17b. No papilla on chin 18
- 18a. Lateral scale series 40 to 42. Predorsal scales about 20 *A. griseus*
- 18b. Lateral scale series 35 or 36. Predorsal scales about 30 *A. viridipunctatus*

Fisheries information : The gobiids are most commonly sighted in estuaries, but of minor commercial importance.

Remarks : *Psammogobius biocellatus* is previously recorded as *Glossogobius biocellatus*. *Stigmatogobius poecilosoma* is known as *Pseudogobius poecilosomus* in recent literature. *Boleophthalmus sculptus* Gunther, described from Bombay (= Mumbai) is relegated to synonymy of

B. boddarti (Pallas) (Murdy, 1989) and *Barbatogobius asani* Koumans, to *Gobiopsis macrostoma* Steindachner (Talwal and Jhingran, 1991).

Family 106 GOBIOIDIDAE (Eel-like gobies)

Body eel-like and compressed, naked or with cycloid scales. Eyes very small or practically absent. Opercular margin without pouch-like cavity. Dorsal fin single, very long, generally united or almost so with the caudal fin. Pelvic fins united. Anal fin long, with 31 to 65.

Species known to occur in Maharashtra

1. *Caragobius urolepis* (Bleeker) (Sumatra eelgoby)
2. *Odontamblyopus rubicundus* Hamilton (Rubicundus eelgoby)

Key to species

- 1a. Pectoral fin with about 30 rays, its length about 2/3 of head length. Jaws with 4 or 5 canine teeth. Two rows of barbels ventrally on head. Dorsal fin with 35 to 40 rays *O. rubicundus*
- 1b. Pectoral fin with about 18 rays, its length about 1/2 of head length. No canine teeth on jaws. No barbels ventrally on head. Dorsal fin with 32 or 33 rays *C. urolepis*

Fisheries information : The eel-like gobies are of minor commercial importance. These fishes are generally used for preparation of fishmeal.

Remarks : This family is considered to be a subfamily under family Gobiidae by some authors.

Family 107 TRYPACHENIDAE (Burrowing gobies)

Body very elongate and eel-like. Eyes very small or indistinct. A pit opening into a pouch-like cavity at the superior margin of the opercular region. Dorsal fin single, very long with a distinct spinous portion. Pelvic fins usually form an adhesive disc.

Species known to occur in Maharashtra

1. *Ctenotrypauchen microcephalus* (Bleeker)
(Comb goby)
2. *Trypauchen vagina* (Bloch & Schneider)
(Burrowing goby)

Key to species

- 1a. Dorsal fin with 39 to 47 rays. Outer row teeth on jaws strongly enlarged, caninoid. Pelvic fins completely united, forming a funnel like disc *T. vagina*
- 1b. Dorsal fin with 48 to 51 rays. No canine teeth on jaws. Pelvic fins not completely united, connected basally and emarginate posteriorly *C. microcephalus*

Fisheries information : The borrowing goby is of no commercial value. It is rather used for the preparation of the fishmeal.

Remarks : This family is considered to be a subfamily under family Gobiidae by some authors.

Family 108 KURTIDAE
(Nursery fishes, Humpheads)

Body oblong and highly compressed with cycloid scales. Mouth large. Opercular bones thin and paper-like. Dorsal fin with very small 5 spines preceded by a recumbent spine directed anteriorly, and 12 or 13 rays. Anal fin with 2 spines and 31 to 47 rays. Pelvic fins with one spine and 5 rays. Caudal fin deeply forked. Males with occipital hook, used for carrying eggs.

Species known to occur in Maharashtra

Kurtus indicus Bloch (Indian humphead)

Fisheries information : The Indian humphead fishes are of little commercial importance. These fishes are often caught as bycatch in the commercial catches.

Family 109 ACANTHURIDAE
(Surgeon fishes)

Body almost elongate or deep, compressed with a single folding lancet-like spine or one or two

body plates generally bearing sharp keels on sides of caudal peduncle. Mouth small, teeth in a single row, variable in shape with genus, but never caniniform or molariform. Dorsal fin with 4 to 9 spines and 19 to 31 soft rays. Anal fin with 2 to 3 spines and 19 to 36 soft rays. Pelvic fins with one spine and 3 to 5 soft rays. Caudal fin lunate or truncate.

Species known to occur in Maharashtra

1. *Acanthurus lineatus* (Linnaeus) (Lined surgeonfish)
2. *A. nigrofuscus* (Forsskal) (Dusky surgeonfish)
3. *A. xanthopterus* Valenciennes (Yellowfin surgeonfish)

Key to species

- 1a. Body with alternating black-edged blue and yellow longitudinal stripes along upper $\frac{3}{4}$ portion, lower $\frac{1}{4}$ portion uniform light grayish brown. Caudal spine long, its length 1.9 to 2.0 times in head length *A. lineatus*
- 1b. No longitudinal blue and yellow stripes on body; usually uniform in colour, often with fine bluish grey lines. Caudal spine short, its length 4.0 to 7.0 times in head length 2
- 2a. A black spot present at the base of last few rays of the dorsal as well as anal fin. Caudal fin not yellow nor with white base. Head and chest with many orange dots *A. nigrofuscus*
- 2b. No black spot at the base of few rays of dorsal and anal fin. Caudal fin yellow in young, often with a white base. Head and chest devoid of orange dots *A. xanthopterus*

Fisheries information : The surgeonfishes are of little commercial importance. These fishes are generally found on or near the coral reefs.

Family 110 SIGANIDAE
(Rabbitfishes)

Body oval, compressed with very small and thin cycloid scales. Mouth small with a single row of fine, close-set teeth in each jaw. Dorsal fin

with 13 strong spines and 10 rays, preceded by a forward projecting spines (sometimes covered by skin). Anal fin with 7 strong spines and 9 rays. Pelvic fins with 2 strong spines separated by 3 rays.

Species known to occur in Maharashtra

1. *Siganus canaliculatus* (Park) (Whitespotted spinefoot)
2. *S. javus* (Linnaeus) (Streaked spinefoot)
3. *S. stellatus* Forsskal (Brown spotted spinefoot)
4. *S. vermiculatus* (Valenciennes) (Vermiculated spinefoot)

Key to species

- 1a. Scale rows between lateral line and first dorsal spine base 30 to 35. Numerous bluish spots on head and upper sides of body and silvery undulating lines on lower sides*S. javus*
- 1b. Scale rows between lateral line and first dorsal spine base 17 to 28. Combination of spots and lines on body absent 2
- 2a. Body depth 2.4 to 2.8 times in standard length. Last dorsal fin spine equal to or shorter than first spine. Numerous small oval pearly blue spots on body*S. canaliculatus*
- 2b. Body depth 1.8 to 2.3 times in standard length. Last dorsal fin spine distinctly longer than first spine. No blue spots on body 3
- 3a. Caudal fin deeply forked in adults. Head and body with small brown spots all over. A dark spot at origin of lateral line*S. stellatus*
- 3b. Caudal fin emarginate at all stage. Head and body with dark and pale vermicular bands. No dark spot at origin of lateral line
..... *S. vermiculatus*

Fisheries information : The rabbitfishes are generally found in the reef areas and among inshore commercial fishes of our country.

Remarks : The siganids are generally known as rabbitfishes due to their similarity with the mouth of rabbits. The spines of these fishes have the side grooves containing venom glands. The

slightest contact with one of these spine tips may produce a very painful puncture wound.

Family 111 GEMPYLIDAE (Snake mackerel)

Body elongate and compressed or semifusiform. Mouth large with strong teeth in jaws, those at front of upper jaw generally fang-like. Two nostrils on each side of snout. Dorsal fin two, base of second dorsal fin (excluding finlets) shorter than the first. Pelvic fins usually small, often reduced to a single spine with only a few or without soft rays, or entirely absent in adults. Anal fin like second dorsal fin, with 1 or 2 free or comprised spines. Caudal fin forked, the rays attached only to distal border of hypurals. Lateral line single or double. Caudal peduncle without keels. Scales variously modified or absent.

Species known to occur in Maharashtra

1. *Gempylus serpens* Cuvier (Snake mackerel)
2. *Neopinnula orientalis* (Gilchrist & von Bonde)

Key to species

- 1a. Pelvic fins reduced with 1 spine and 3 or 4 soft rays. Dorsal and anal fins with 5 to 7 finlets*G. serpens*
- 1b. Pelvic fins well developed with 1 spine and 5 soft rays. No finlets after dorsal and anal fins*N. orientalis*

Fisheries information : The snake mackerels are of no commercial importance. These fishes are found in the commercial catch as bycatch.

Family 112 TRICHIURIDAE (Ribbonfishes)

Body very elongate, compressed, ribbon-like with a small forked or hair-like caudal fin. Mouth large, with strong teeth in jaws; those at front of upper jaw fang-like. A single dorsal fin, extending almost the entire length of body, the spinous part either short and continuous with a very short soft part, or the spinous part somewhat long and separated from soft part by a notch. Anal fin

preceded by 2 free spines posterior to anus (first inconspicuous and second variously enlarged as leaf-like or keeled scutes, or as a stout spine), without or reduced soft rays. Pelvic fins absent, or reduced to one scale-like spine and 0 to 2 rudimentary soft rays. Pectoral fins rather small. Lateral line single. Body without scales.

Species known to occur in Maharashtra

1. *Eupleurogrammus glossodon* (Bleeker) (Longtooth hairtail)
2. *E. muticus* (Gray) (Smallhead hairtail)
3. *Lepturacanthus pantului* (Gupta) (Coromandel hairtail)
4. *Lapturacanthus savala* (Cuvier) (Savalani hairtail)
5. *Trichiurus auriga* Klunzinger (Pearly hairtail)
6. *T. lepturus* Linnaeus (Largehead hairtail)

Key to species

- 1a. Pelvic fins scale-like. Free margin of subopercle convex 2
- 1b. Pelvic fins absent. Free margin of subopercle concave 3
- 2a. A pair of fangs on tips of lower jaw. Dorsal fin membrane slightly tinged with black along spines. Dorsal side of posterior part of body slightly black. A black spot just behind dermal process of lower jaw. Pelvic fins inserted below 11th to 14th dorsal fin rays *E. glossodon*
- 2b. No fangs on tip of lower jaw. Dorsal fin membrane pale. Both dorsal and ventral sides of posterior part of body black. No black spot behind dermal process of ventral side of lower jaw. Pelvic fins inserted below 15th to 18th dorsal fin rays *E. muticus*
- 3a. First anal fin spine large, its length half of eye diameter. Soft anal fin rays pungent spinules breaking through vertical skin. Two small canine teeth on upper jaw projects forward. A small slit present on ventral side of lower jaw for receiving anteriormost fang of upper jaw 4

- 3b. First anal fin spine small, its length less than pupil of eye. Soft anal fin rays slightly breaking through ventral skin in smaller specimens. No canine teeth on upper jaw projects forward. No slit on ventral side of lower jaw 5
- 4a. Snout length about 3 times in head length. Eye diameter 3 to 5 times in head length. Distance between eye and upper jaw about half of eye diameter. Dorsal fin elements 123 to 133 *L. pantului*
- 4b. Snout length about 2.0 to 2.5 times in head length. Eye diameter 7 to 9 times in head length. Distance between eye and upper jaw slightly smaller than eye diameter. Dorsal fin elements 113 to 123 *L. savala*
- 5a. Fangs on jaws with barbs. Dorsal fin elements more than 130 *T. lepturus*
- 5b. Fangs on jaws without barbs. Dorsal fin elements less than 120 *T. auriga*

Fisheries information : The ribbonfishes are of poor quality food fishes These fishes constitute one of the important commercial fisheries especially in Kerala, Andhra Pradesh and Tamil Nadu. In many parts of the country these fishes are sold dried-salted.

Family 113 SCOMBRIDAE (Mackerels and Tunas)

Body torpedo-like strongly built with generally metallic blue or blue green back. Dorsal fin two (depressible into groove) with finlets posterior to second dorsal fin and anal fin in some species. Lateral line simple or branched. Caudal fin rays deeply divided covering completely the hypural plate. Caudal peduncle slender with a pair of oblique keels close to the end of caudal fin. Body uniformly covered with small cycloid scales or restricted to a corselet around anterior part of body.

Species known to occur in Maharashtra

1. *Acanthocybium solandri* (Cuvier) (Wahoo)
2. *Auxis thazard* (Lacepede) (Frigate tuna)
3. *Euthynnus affinis* (Cantor) (Kawakawa)

4. *Katsuwonus pelamis* (Linnaeus) (Skipjack tuna)
5. *Rastrelliger kanagurta* (Cuvier) (Indian mackerel)
6. *Sarda orientalis* (Temminck & Schlegel) (Striped bonto)
7. *Scomberomorus commerson* (Lacepede) (Narrow Spanish mackerel)
8. *S. guttatus* (Bloch & Schneider) (Indo-Pacific king mackerel)
9. *S. koreanus* (Kishinouye) (Korean seer fish)
10. *S. lineolatus* (Cuvier) (Streak seer fish)
11. *Thunnus albacares* (Bonnaterre) (Yellowfin tuna)
12. *T. tonggol* (Bleeker) (Longtail tuna)
- 4b. Lateral line straight or descending gradually backwards. Body marked with irregular horizontal bars, spots 5
- 5a. Lateral line without auxillary branches or with only few anteriorly. Upper part of body marked with a series of irregular horizontal, narrow black lines *S. lineolatus*
- 5b. Lateral line with many auxillary branches anteriorly. Body marked with irregular rows of dark round spots 6
- 6a. Body depth equal to or less than head length. Head longer, 20.2 to 21.5% of fork length. Intestine with 2 loops and 3 limbs *S. guttatus*
- 6b. Body depth much greater than head length. Head shorter, 19.7 to 20.4% of fork length. Intestine with 4 loops and 5 limbs *S. koreanus*

Key to species

- 1a. Two small keels on either side of caudal peduncle. Dorsal and anal finlets 5 each. Adipose eyelids cover front and rear end of eyes *R. kanagurta*
- 1b. Two small keels and a large median keel between them on either side of caudal peduncle. Seven to 10 dorsal and 6 to 10 anal finlets. Adipose eyelids absent 2
- 2a. Jaw teeth strong, compressed, almost triangular or knife-like. Corselet of scales obscure 3
- 2b. Jaw teeth slender, conical, hardly compressed. Corselet of scales well developed 7
- 3a. Snout as long as rest of head. No gillrakers. First dorsal fin with 23 to 27 spine. Posterior end of maxilla concealed under preorbital bone *A. solandri*
- 3b. Snout much shorter than rest of head. Gillrakers on first arch 1 to 27. First dorsal fin 12 to 22 spines. Posterior end of maxilla exposed 4
- 4a. Lateral line abruptly bent downward below end of second dorsal fin. Body marked with numerous thin, wavy vertical bands *S. commerson*
- 7a. Upper surface of tongue without cartilaginous longitudinal stripes. Five to 10 narrow, dark longitudinal stripes on upper part of body *S. orientalis*
- 7b. Upper surface of tongue with two longitudinal ridges. Stripes on body not like above, if present, either above lateral line or on lower part also 8
- 8a. First and second dorsal fins widely separated, the space between them at least equal to length of first dorsal fin base. First dorsal fin with 10 to 12 spines. Interpelvic process single and long, at least as long as longest pelvic fin ray *A. thazard*
- 8b. First and second dorsal fins barely separated, at most by a space equal to eye diameter. First dorsal fin with 12 to 16 spines. Interpelvic process bifid and short, much shorter than pelvic fin rays 9
- 9a. Three to 5 conspicuous dark longitudinal stripes on belly. Total gillrakers on first arch 53 to 63 *K. pelamis*
- 9b. No dark longitudinal stripes on belly. Total gillrakers on first arch 19 to 45 10

10a. Body naked behind corselet of enlarged and thickened scales. Several black spots usually present between pectoral and pelvic fin bases. Back blue green with a complex striped pattern under dorsal fin bases. Pectoral fin rays with 25 to 29 *E. affinis*

10b. Body covered with very small scales behind corselet. No black spots on body. Back dark blue without any striped pattern. Pectoral fin rays 30 to 36 11

11a. Total gillrakers on first arch 26 to 34, usually 27 or more. Second dorsal and anal fins of large specimens (120 cm fork length or longer) elongate, more than 20% of fork length. Belly frequently crossed by broken, nearly vertical lines *T. albacares*

11b. Total gillrakers on first arch 19 to 28, usually 26 or fewer. Second dorsal and anal fin never greatly elongate, less than 20% of fork length at all sizes. Belly with colourless, elongated oval spots arranged in horizontal rows *T. tonggol*

Fisheries information : The tunas and mackerels are very important commercial fishes. These fishes constitute important economical, recreational and artisanal fisheries. The monotypic species, viz, *A. solandri* and *K. pelamis* form a very important fishery in both the coasts of our country.

Family 114 XIPHIIDAE (Swordfishes)

Body elongate and cylindrical without scales in adults, but scales with spines present in specimens of almost one meter total length. Upper jaw enlarged into a long bill (both jaws enlarged into long bills in juveniles). Dorsal fin two, well separated in adults (united in juveniles), first with 34 to 49 and second with 4 to 6 rays. Anal fin two, separated in adults (united in juveniles), first anal fin with 13 to 14 and second anal fin with 3 to 4 rays. Pectoral fins falcate with 16 to 18 rays. Pelvic fins and pelvic girdles absent. Caudal fin large and lunate. Caudal peduncle with a single median keel on each side and a deep notch on both the dorsal and ventral surfaces:

Species known to occur in Maharashtra

Xiphias gladius Linnaeus (Swordfish)

Fisheries information : The liver oil of the Swordfish contains vitamin A. Its flesh is greatly esteemed.

Family 115 ISTIOPHORIDAE (Sailfishes, Marlins)

Body elongate and cylindrical with ossified and elongate scales, each with one to several points. Premaxillaries prolonged forming a long bill. Dorsal fin two, close together, the first much larger than second. Anal fin two, separated, the first longer than the second. The dorsal fin and anal fins can be folded into groove. Pectoral fins falcate, inserted low on lateral sides of body. Pelvic fins with 1 spine and 2 rays fused together, depressible into a groove. Caudal fin large and forked. Caudal peduncle with a pair of keels on each side and a shallow notch on the both dorsal and ventral surfaces.

Species known to occur in Maharashtra

1. *Istiophorus platypterus* (Shaw & Nodder) (Indo-Pacific sailfish)
2. *Makaira indica* (Cuvier) (Black marlin)
3. *Tetrapturus angustirostris* Tanaka (Shortfin spearfish)
4. *T. audax* (Philippi) (Striped marlin)

Key to species

- 1a. First dorsal fin extremely high, sail-like; anterior rays shorter than middle rays. Pelvic fins very long, almost reaching to origin of anal fin *I. platypterus*
- 1b. First dorsal fin not sail-like, slightly higher than body depth; anterior rays longer than middle rays. Pelvic fin rays short, considerably separated from origin of anal fin 2
- 2a. Pectoral fins rigid. Height of anterior part of first dorsal fin lower than body depth. Nape greatly elevated. Body not much compressed laterally *M. indica*

2b. Pectoral fins flexible. Height of anterior part of first dorsal fin slightly higher than, or almost equal to body depth. Nape slightly or not elevated. Body considerably compressed 3

3a. Upper jaw long. First dorsal fin low posteriorly. Anus close to origin of first anal fin. Pectoral fins long, larger than pelvic fins *T. audax*

3b. Upper jaw short. First dorsal fin rather high throughout. Pectoral fins short. Anus far apart from origin of first anal fin *T. angustirostris*

Fisheries information : Indo-Pacific sailfish is very common species of all sailfishes occurring in both the coasts of our country. The liver oil of these fishes are probably the richest of all containing vitamin A.

Family 116 CENTROLOPHIDAE (Medusafish)

Body oblong, compressed. Body depth 1.8 to 3.0 times in standard length. Preopercle margin denticulate. Dorsal fin continuous, its base longer than anal fin base. Dorsal fin with 5 to 7 stout, short spines and 25 to 40 rays. Dorsal fin origin over or before pectoral fin base. Anal fin with 2 or 3 spines and 18 to 30 rays. A band of oblique rows of 8 to 10 pores along dorsal and anal fin bases. Lateral line follow contour of dorsal profile.

Species known to occur in Maharashtra

Psenopsis cynea (Alcock)

Fisheries information : Of no interest to fisheries.

Family 117 NOMEIDAE (Driftfishes)

Body slender to deep, laterally compressed. Adipose tissues around eyes well developed. Opercle very thin, with two weak and flat spines. Mouth terminal and small. Two dorsal fins, separated by a narrow space. Pectoral fins becoming long and wing-like with growth. Caudal

fin forked, the lobes often folded to overlap one another. Lateral line high, close to dorsal profile. Subdermal mucus canal system well-developed along mid-lateral position. These are small to medium sized pelagic fishes, often associated with jellyfishes.

Species known to occur in Maharashtra

Psenes cyanophrys Valenciennes

Fisheries information : Of no interest to fisheries, occur as bycatch.

Family 118 ARIOMMATIDAE (Ariommatids)

Body oval and almost deep, compressed with cycloid and easily detachable scales. Mouth small with minute teeth in jaws. Dorsal fin two, first with 10 to 13 spines and second with one spine and 14 to 18 rays. Anal fin with 3 spines and 13 to 16 rays. Pectoral fins with 20 to 24 rays. Pelvic fins thoracic, attached to the abdomen with a membrane and folding into a long pronounced groove. Caudal fin stiff and deeply forked. Caudal peduncle with 2 low fleshy keels on each side.

Species known to occur in Maharashtra

Ariomma indica (Day) (Indian arioma)

Fisheries information : The ariommatids are of limited commercial importance. These fishes are mostly captured off Kerala, Andhra Pradesh and Tamil nadu. These fishes contain high amount of fat.

Family 119 STROMATEIDAE (Pomfrets)

Body very deep and compressed. Mouth small with immovable maxilla. Eyes with adipose eyelid. Single dorsal fin and anal fins, long-based and slightly to deeply falcate, preceded by none or 5 to 10 flat, blade-like spines (mostly in juveniles). Pectoral fins long and wing-like. Pelvic fins absent. Caudal fin generally forked.

Species known to occur in Maharashtra

1. *Pampus argenteus* (Euphrasen) (Silver pomfret)
2. *P. chinensis* (Euphrasen) (Chinese pomfret)

Key to species

- 1a. Dorsal and anal fins falcate, proceeded by 5 to 10 flat, blade-like spines. Caudal fin deeply forked *P. argenteus*
- 1b. Dorsal and anal fins not falcate but fin rays gradually diminish in length posteriorly, no spines preceding the median fins. Caudal fin emarginated *P. chinensis*

Fisheries information : Silver pomfret is one of the very important commercial fishes. It has a great demand and marketed fresh.

Order 26 PLEURONECTIFORMES**Key to families**

- 1a. Dorsal fin with spinous rays, its origin considerably posterior to eyes PSETTODIDAE
- 1b. Dorsal fin with soft rays only, its origin above or anterior to lower eyes 2
- 2a. Preopercular margin not free, concealed under the skin or scales 3
- 2b. Preopercular margin free and visible, not concealed by skin or scales 4
- 3a. Eyes on right side of head SOLEIDAE
- 3b. Eyes on left side of head CYNOGLOSSIDAE
- 4a. Pelvic fin on eyed side generally much longer than that of blind side BOTHIDAE
- 4b. Pelvic fin bases short, that of blind side almost as long as eyed side PARALICHTHYIDAE

Family 120 PSETTODIDAE
(Indian Halibuts)

Body oval, flat and highly thick with eyes on either left or right side. The upper eye very close to dorsal margin of body. Mouth large, maxilla extends considerably beyond posterior border of lower eye. Single dorsal fin, long; its origin well behind eyes; anterior fin rays spinous. Lateral line almost straight, with 70 to 75 scales.

Species known to occur in Maharashtra

Psettodes erumei (Schneider) (Indian Halibut)

Fisheries information : The Indian halibut constitute an important fishery in the Chennai and Mumbai coasts. It is found in both coasts of our country.

Family 121 BOTHIDAE
(Lefteye flounders)

Body flat with eyes on left side. Mouth asymmetrical with teeth in jaws. Preopercle exposed, its hind margin free and visible. Pectoral and pelvic fins present; fin rays not branched. Pelvic fin base on blind side shorter than eyed side. Dorsal fin long, inserted above or anterior to eyes continued up to base of caudal fin. Anal fin also long, originating below pectoral fins and continued up to caudal fin base. Caudal fin separate, free from dorsal and anal fins. Fins without spines. Lateral line single.

Species known to occur in Maharashtra

1. *Bothus myriaster* (Temminck & Schlegel) (Oval flounder)
2. *B. pantherinus* (Ruppell) (Leopard flounder)
3. *Engyprosopon grandisquama* (Temminck & Schlegel) (Large scale flounder)

Key to species

- 1a. Lateral line without a forked branch behind upper eye *E. grandisquama*
- 1b. Lateral line with a forked branch behind upper eye 2
- 2a. Scales mostly cycloid on ocular side, ctenoid at edges of body *B. myriaster*
- 2b. Scales all ctenoid on ocular side *B. pantherinus*

Fisheries information : The left-eye flounders are of little commercial importance. These fishes are caught as bycatch in the commercial catches.

Family 122 PARALICHTHYIDAE (Large-tooth flounders)

Body flat with eyes on left side. Mouth asymmetrical; jaws with teeth, well developed on blind side. Preopercle exposed, its hind margin free and visible. Pectoral and pelvic fin rays branched. Pelvic fin bases short and nearly symmetrical. Dorsal fin long, inserted above or anterior to eyes. Anal fin long, originating below pectoral fins. Caudal fin free from dorsal and anal fins. Fins without spines. Lateral line single.

Species known to occur in Maharashtra

1. *Pseudorhombus arsius* (Hamilton) (Large toothed flounder)
2. *P. elevatus* Ogilby (Deep flounder)
3. *P. javanicus* (Bleeker) (Javan flounder)
4. *P. malayanus* Bleeker (Malayan flounder)
5. *P. triocellatus* (Bloch & Schneider) (Three spotted flounder)

Key to species

- 1a. Lower gill rakers 23 to 25 on first arch. Anterior rays of dorsal fin longer than that follow *P. triocellatus*
- 1b. Lower gill rakers 8 to 15 on first arch. Anterior rays of dorsal fin not prolonged... 2
- 2a. Scales on blind side of body ctenoid *P. malayanus*
- 2b. Scales on blind side of body cycloid 3
- 3a. Teeth strong, widely set, canines large; 6 to 13 teeth on blind side of lower jaw *P. arsius*
- 3b. Teeth smaller, more close set, not enlarged anteriorly, more than 24 teeth on blind side 4
- 4a. Scales ctenoid on ocular side. Upper profile on head notched *P. elevatus*
- 4b. Scales on ocular side more or less ctenoid anteriorly, mostly cycloid posteriorly. Upper profile of head scarcely notched, usually evenly curved *P. javanicus*

Fisheries information : The large-tooth flounders are of little commercial importance. These fishes are caught as bycatch in the commercial catches. *P. arsius* is known to be consumed fresh.

Remarks : These fishes were earlier treated under family Bothidae.

Family 123 SOLEIDAE (Soles)

Body oval or almost elongate and highly compressed flat fish with eyes dextral (on right side of body) in position. Mouth small and asymmetrical, terminal or slightly inferior. Snout sometimes hook-shaped. Preopercle without a free border, embedded in skin. Dorsal fin extends on head to above eye or forward; dorsal and anal fins free or confluent with caudal fin. Pectoral fins generally absent in adults. Pelvic fins sometimes asymmetrical, either free or joined to anal fin. Lateral line single and straight on body, sometimes branched on head. Scales moderately large, cycloid or ctenoid; sometimes modified into skin flaps fringed with sensory filaments.

Species known to occur in Maharashtra

1. *Aesopia cornuta* Kaup (Horned sole)
2. *Brachirus orientalis* (Bloch) (Oriental sole)
3. *Solea elongata* Day (Elongate sole)
4. *S. ovata* Richardson (Ovate sole)
5. *Synaptura albomaculata* Kaup (Kaup's sole)
6. *S. commersonii* (Lacepede) (Commerson's sole)
7. *Zebrias altipinnis* Alcock (Nil)
8. *Z. quagga* (Kaup) (Quagga sole)
9. *Z. synapturoides* (Jenkins) (Jenkins sole)

Key to species

- 1a. Gill opening on ocular side ending opposite lower edge or lower part of pectoral fin base. Pectoral fins on both side generally well developed, rounded or obtusely pointed, not connected with opercular membrane 2

- 1b. Gill opening on ocular side ending opposite upper part of pectoral fin base. Pectoral fins small, especially on blind side. Opercular membrane joined to upper portion of pectoral fin 4
- 2a. Posterior rays of dorsal and anal fins more or less elongate and confluent to caudal fin. Urinogenital papilla situated between the pelvic fins and close to anus .. *B. orientalis*
- 2b. Posterior rays of dorsal and anal fins short and not confluent with caudal fin. Urinogenital papilla situated on right side of body at some distance from the anus 3
- 3a. Body ovate, its depth 2.0 to 2.2 times in total length. Dorsal fin with 58 to 67 rays. Anal fin with 41 to 51 rays *S. ovata*
- 3b. Body elongate, its depth 2.5 to 3.0 times in total length. Dorsal fin with 72 to 77 rays. Anal fin with 59 to 63 rays *S. elongata*
- 4a. Opercular membrane not joined to pectoral fins. Ocular side without bands 5
- 4b. Opercular membranes of both sides of body joined to upper rays of pectoral fins. Ocular side with bands 6
- 5a. Scales on head and body on ocular side similar in size. A tentacle present between nostrils. Body with 2 or 3 rows of white spots on ocular side *S. albomaculata*
- 5b. Scales on head and nape of ocular side larger than those on body. No tentacle between nostrils. Body without spots *S. commersonii*
- 6a. First rays of dorsal fin enlarged and free
..... *A. cornuta*
- 6b. First ray of dorsal fin not enlarged and free 7
- 7a. Posterior rays of dorsal and anal fins partly confluent with caudal fin, joined only to basal half of caudal fin, leaving the latter distinct, outline of fins not around caudal fin. Eyes without tentacles. Body with 13 dark cross bands on ocular side *Z. synapturoides*

- 7b. Posterior rays of dorsal and anal fins completely confluent to caudal fin, outline of this continuous around caudal fin 8
- 8a. Eyes with a short tentacle. Body with 10 to 12 paired cross-bars on ocular side
..... *Z. quagga*
- 8b. Eyes without tentacle. Body with 14 unpaired cross-bars on ocular side *Z. altipinnis*

Fisheries information : The soles are of little commercial importance. A few species are of some commercial importance. These fishes are marketed fresh and dried salted.

Family 124 CYNOGLOSSIDAE (Tongue soles)

Tongue-shaped flat fishes with eyes sinistral (left side of head) in position. Mouth asymmetrical, lips fringed in some; snout extends below mouth forming rostral hook. Preopercle margin not free, covered with skin and scales. Dorsal fin inserted on head, both dorsal and anal fins united with caudal fin. Pectoral fins absent. Only left pelvic fins present. Dorsal and pelvic fins without spiny rays. Lateral line variable 0 to 3 on ocular side and 0 to 2 on blind side.

Species known to occur in Maharashtra

1. *Cynoglossus arel* (Schneider) (Largescale tongue sole)
2. *C. bilineatus* (Lacepede) (Four lined tongue sole)
3. *C. carpenteri* Alcock (Hooked tongue sole)
4. *C. cynoglossus* Hamilton (Gangetic tongue sole)
5. *C. dispar* Day (Round head tongue sole)
6. *C. dubius* Day (Carrot tongue sole)
7. *C. lingua* Hamilton (Long tongue sole)
8. *C. macrostomus* Norman (Malabar tongue sole)
9. *C. monopus* (Bleeker) (NA)
10. *C. puncticeps* (Richardson) (Speckled tongue sole)
11. *C. semifasciatus* Day (Bengal tongue-sole)

12. *Paraplagusia bilineata* (Bloch) (Doublelined tongue sole)

Key to species

- 1a. Lips with rows of fringed tentacles. Rostral hooks long, reaching beyond vertical from posterior border of lower eye. Scales between upper and middle lateral lines 16 to 19
..... *P. bilineata*
- 1b. Lips not fringed. Rostral hooks short, not reaching to below posterior border of lower eye 2
- 2a. Scales on blind side of the body ctenoid....
.....3
- 2b. Scales on blind side of body cycloid 7
- 3a. Eyes pedunculate. Both nostrils situated close together in front of eyes *C. monopus*
- 3b. Eyes non-pedunculate. Nostrils separated by a gap, posterior nostril situated in interorbital space or between anterior part of eyes 4
- 4a. Maxillary extending to middle or posterior half of fixed eye. Scale rows between upper and middle lateral line 15 to 19
..... *C. puncticeps*
- 4b. Maxillary extending to posterior border of fixed eye or beyond 5
- 5a. Angle of mouth extending to below vertical from rear half of fixed eye. Snout obtusely pointed and longer *C. cynoglossus*
- 5b. Angle of mouth extending to below vertical from posterior border of fixed eye or beyond. Snout rounded and shorter 6
- 6a. Midlateral scale rows 80 to 92. Scale rows between upper and middle lateral line 14 to 16. Fins blackish *C. macrostomus*
- 6b. Midlateral scale rows 70 to 78. Scale rows between upper and middle lateral line 11 to 14. Fins pale *C. semifasciatus*
- 7a. Lateral lines developed on blind side 8
- 7b. No lateral line on blind side 10

- 8a. One lateral line on blind side. Scales cycloid on eyed side *C. dubius*
- 8b. Two lateral lines on blind side. Scales ctenoid on eyed side 9
- 9a. Interlinear scale rows 13 to 16. Caudal fin with 12 rays *C. bilineatus*
- 9b. Interlinear scale rows 18 to 20. Caudal fin with 10 rays *C. dispar*
- 10a. Three lateral line on ocular side. Interlinear scale rows more than 14 *C. carpenteri*
- 10b. Two lateral lines on ocular side. Interlinear scale rows less than 14 11
- 11a. Less than 10 scales (7 to 9) between upper and middle lateral lines *C. arel*
- 11b. More than 10 scales (11 to 12) between upper and middle lateral lines *C. lingua*

Fisheries information : The tongue soles are of minor commercial importance. *C. macrostomus* forms an important fishery in the south-west of our country.

Order 27 Tetraodontiformes

Key to families

- 1a. Teeth fused forming a parrot-like beak. Pelvic fins and dorsal fins without spines 2
- 1b. Teeth not fused to form a parrot-like beak as above 4
- 2a. Caudal fin reduced to a thick leathery fold, without visible fin rays. Body truncate posteriorly. Caudal peduncle absent
..... MOLIDAE
- 2b. Caudal fin normal, not a leathery fold. Body not truncate posteriorly 3
- 3a. Body covered with spines, capable of great inflation, fused into a single beak-like structure in each jaw, without a median suture dividing upper and lower jaw into right and left halves DIODONTIDAE
- 3b. Body naked or with only small scattered prickles. Teeth fused to form a beak-like structure, but separated by a median suture

forming 'four toothed' appearance
 TETRAODONTIDAE

- 4a. Body almost completely encased in a bony shell or carapace formed of enlarged, thickened scale plates, generally hexagonal in shape. Spinous dorsal fin absent
 OSTRACIIDAE

- 4b. Body not encased in a bony shell or carapace. Spinous dorsal fin present 5

- 5a. Pelvic fins represented by a pair of strong spines. Dorsal fin with 6 spines (generally only 5 visible, the 6th being very small)
 TRIACANTHIDAE

- 5b. Pelvic fins and spines very small or absent. Dorsal fin with 2 or 3 spines 6

- 6a. Dorsal fin with 2 spines, only first spine large and prominent. Body covered by smooth to rough shagreen like skin consisting of small scales armed with 1 to many fine spinules
 MONACANTHIDAE

- 6b. Dorsal fin with 3 visible spines. Body covered with very thick, tough skin with large rectilinear scale plates easily discernible as individual units BALISTIDAE

Family 125 TRIACANTHIDAE (Tripodfishes)

Body compressed and deep with numerous scales that normally not visible individually. Each scale with upright spinules. Mouth small and generally terminal. Dorsal fin with 6 spines (generally 5 visible only, 6th being very small) and 20 to 26 rays. Anal fin rays 13 to 22. Pelvic fins represented by a large spine which is movably articulated with anterior end of pelvis and capable of being locked. Caudal peduncle distinctly tapered. Caudal fin deeply forked.

Species known to occur in Maharashtra

1. *Pseudotriacanthus strigilifer* (Cantor) (Long spines tripodfish)
2. *Triacanthus biaculeatus* (Bloch) (Short-nosed tripodfish)

Key to species

- 1a. Tips of dorsal and ventral spines naked. Second dorsal spine more than half the length of first. Spinous dorsal with high scaly sheath
 *P. strigilifer*
- 1b. Tips of dorsal and ventral spines covered with integument. Second dorsal spine not more than half of first. Spinous dorsal without scaly sheath *T. biaculeatus*

Fisheries information : The tripodfishes are of no commercial importance. These fishes are sometimes found in the commercial fish catches.

Family 126 BALISTIDAE (Trigerfishes)

Body usually deep and compressed, covered with thick, tough skin with large rectilinear scale plates. Scales above pectoral fin base usually enlarged and slightly separated, forming a flexible tympanum. Mouth small and terminal. Dorsal fin two; the first with 3 spines, the first spine capable of being locked in an upright position of erection by the second and the second spine more than one half the length of the first. Most dorsal, anal and pectoral rays branched. Pelvic fins and spines very small or absent, represented by a series of 4 pairs of enlarged scales encasing the end of pelvis.

Species known to occur in Maharashtra

1. *Abalistes stellaris* (Lacepede) (Starry triggerfish)
2. *Balistapus undulatus* (Park) (Orange-lined triggerfish)
3. *Balistes rotundatus* Proce (N.A.)

Key to species

- 1a. Caudal peduncle distinctly depressed, its width greater than its depth. Numerous small blue spots on body and 3 or 4 yellow lines from mouth to pectoral fin base
 *A. stellaris*
- 1b. Caudal peduncle not depressed, its width less than its depth. Colour not as above 2

- 2a. A prominent groove on snout before eyes. No spine on caudal peduncle. Undulating brown lines and fine bluish spots on sides. *B. rotundatus*
- 2b. No groove on snout before eyes. Spines present on caudal peduncle. Numerous curved yellow lines from eye and back to anal and caudal fin..... *B. undulatus*

Fisheries information : The trigger or filefishes are of no commercial importance. These fishes are caught as bycatch in the commercial catches.

Family 127 MONACANTHIDAE (Leatherjackets)

Body fusiform, deep and compressed covered by smooth to rough shagreen like skin consisting of minute to small scales armed with one to many fine spinules. Mouth small, terminal with pointed teeth not fused together. Gill openings a small opening.

Species known to occur in Maharashtra

1. *Aluterus monoceros* (Linnaeus) (Unicorn leather jacket)
2. *Paramonacanthus choirocephalus* (Bleeker) (Pig faced leather jacket)

Key to species

- 1a. Second dorsal and anal fin with 45 to 52 rays. Pelvic fin rudiment minute, not movable, plate-like, often lost with age. Dorsal fin spine weak, without barbs *A. monoceros*
- 1b. Second dorsal and anal fin with 25 to 33 rays. Pelvic fin rudiment movably articulated with pelvis. Dorsal fin spine strong, with 2 rows of barbs posteriorly *P. choirocephalus*

Fisheries information : The unicorn leather jacket is of no commercial value. This species is caught as bycatch in the commercial catches.

Family 128 OSTRACIIDAE (Boxfish, Cowfish)

Body elongate, almost completely covered by a

bony shell or carapace formed of enlarged, usually hexagonal thickened scale/plates that firmly sutured to one another. The carapace has opening for mouth, eyes, gill slits, pectoral, dorsal and anal fins and for the flexible caudal peduncle. Scale plates sometimes have surface granulations and in some species these are enlarged into carapace spine above eye or long ventrolateral or dorsal angles of body. Mouth small, terminal with fleshy lips. Spinous dorsal and pelvic fins absent. Caudal fin long.

Species known to occur in Maharashtra

1. *Lactoria cornuta* (Linnaeus) (Longhorn cowfish)
2. *Tetrosomus gibbosus* (Linnaeus) (Hunchback boxfish)

Key to species

- 1a. Carapace 3 or 5 angled, roughly triangular in cross section. A large triangular, flat spine on dorsal ridge generally with an acute tip *T. gibbosus*
- 1b. Carapace 5 angled, not triangular in cross section. Spines present on carapace projecting anteriorly from eye and posteriorly from rear end of ventrolateral ridge *L. cornuta*

Fisheries information : The boxfishes and cowfishes are of no commercial importance. These fishes are caught in the commercial catches as bycatch.

Family 129 TETRAODONTIDAE (Pufferfishes)

Body naked or with only short prickles. Body heavy and blunt, capable of rapid inflation by intake of water (or air). Jaws modified to form a beak of heavy, powerful teeth, 2 above and 2 below. Gill openings simple slits anterior to pectoral fins. Pelvic fins absent. Dorsal and anal fins inserted far posteriorly, without spines, but each with 7 to 15 rays. Caudal fin truncate, rounded or emarginate to almost lunate.

Species known to occur in Maharashtra

1. *Arothron reticularis* (Bloch & Schneider)
(Reticulated pufferfish)
2. *Chelonodon fluviatilis* (Hamilton) (Estuarine blowfish)
3. *C. patoca* (Hamilton) (Gangetic blowfish)
4. *Lagocephalus inermis* (Temminck & Schlegel)
(Smooth backed blowfish)
5. *L. lunaris* (Bloch & Schneider) (Green rough-backed blowfish)
6. *L. spadiceus* (Richardson) (Chinese blaasop)
7. *Takifugu oblongus* (Bloch) (Oblong blowfish)
8. *Tetraodon cutcutia* (Hamilton) (Ocellated puffer fish)
9. *Torquigener hypselogeneion* (Bleeker)
(Orange-spotted toadfish)

Key to species

- 1a. Nostrils in form of a rounded tube with a terminal opening, margins sometimes slightly two-lipped. Dorsal and anal fin with 10 to 13 rays *T. cutcutia*
- 1b. Nostrils variable in form, but not an elevated tube 2
- 2a. Nostrils on a small upright sac with two openings 3
- 2b. Nostrils not an upright sac with two openings 7
- 3a. Dorsal fin with 8 or 9 rays. Anal fin with 7 or 8 rays *T. hypselogeneion*
- 3b. Dorsal fin with 11 to 13 rays. Anal fin with 10 to 12 rays 4
- 4a. Snout short; interorbital space longer than snout length. Caudal peduncle depth almost equal to its length *T. oblongus*
- 4b. Snout longer; interorbital space shorter than snout length. Caudal peduncle depth twice or more in its length 5

- 5a. No spinules on back and top of head. Dorsal fin with 12 or 13 rays *L. inermis*
- 5b. Spinules present on back and top of head 6
- 6a. Spinules on dorsal surface of body extend to base of dorsal fin *L. lunaris*
- 6b. Spinules on dorsal surface of body extend only about halfway from interorbital region to origin of dorsal fin *L. spadiceus*
- 7a. Nasal organ a bifid tentacle, with apposing surface of each tentacle with minute pits. Single lateral line. Dark longitudinal bands on belly ascending to cheeks and snout *A. reticularis*
- 7b. Nasal organ a depression with slightly raised margin, expand anteriorly and posteriorly into a pair of elongate or broadly rounded flaps. Two lateral lines. No bands on belly 8
- 8a. Dorsal fin rays 14 to 16. Anal fin rays 12 to 15. Pectoral fin rays 20 to 22 *C. fluviatilis*
- 8b. Dorsal fin rays 9 or 10. Anal fin rays 8 to 10. Pectoral fin rays 15 or 16 *C. patoca*

Fisheries information : The puffer fishes are of no commercial importance. These fishes are sometimes found in the commercial catches.

Family 130 DIODONTIDAE
(Porcupinefish)

Body fusiform, capable of inflation, and covered with well developed sharp spines. Long spines are generally erectile and two rooted, while short spines are fixed in an erect position by three rooted bases. Head broad and blunt. Mouth terminal with two fused teeth in jaws to form a beak-like structure without a median suture dividing upper and lower jaws into right and left halves. Dorsal and anal fins without spines, inserted far back on body. Pelvic fins absent. Caudal fin rounded.

Species known to occur in Maharashtra

1. *Cyclichthys orbicularis* (Bloch) (Birdbeak burrfish)

2. *Diodon holocanthus* Linnaeus (Long-spine porcupine fish)
3. *D. hystrix* Linnaeus (Spotted porcupine fish)

Key to species

- 1a. All spines three or four rooted and fixed except one or two immediately behind the pectoral fin base or near the corner of the mouth *C. orbicularis*
- 1b. All spines two rooted, long and erectile, except for a few around gill openings, dorsal fin base and on caudal peduncle 2
- 2a. One or more small spines wholly on the dorsal surface of caudal peduncle. Body without large dorsal blotches. All fins heavily spotted *D. hystrix*
- 2b. None of the spines wholly on caudal peduncle. Body with several large dark blotches. No small dark spots on fins *D. holocanthus*

Fisheries information : The porcupine or balloon-fishes are of no commercial value. These fishes are caught along with the commercial catches as bycatch.

Family 131 MOLIDAE (Molas or sunfishes)

Body compressed and deep. Typically marked by the absence of caudal peduncle. Mouth terminal, small; teeth united and beak-like. Gill opening small, pore-like, placed at middle of sides just before pectoral fin base. Dorsal and anal fins high and located far posteriorly on body. Both the fins without spines and constitute of 15 to 19 rays and more or less continuous with caudal fin. Pelvic fin absent. Caudal fin reduced to a leathery fold. Skin leathery and thick. Scales small, rounded or hexagonal; basal plates in contact and close-fitting.

Species known to occur in Maharashtra

1. *Masturus lanceolatus* (Lienard) (Nil)
2. *Ranzania laevis* (Pennant) (Trunkfish)

Key to species

- 1a. Body depth about 2.0 times in its length. Caudal fin convex but not produced. Pectoral fins elongate. Scales often hexagonal *R. laevis*
- 1b. Body depth about 1.5 times in its length. Caudal fin centrally produced into a pointed projection. Pectoral fins short, rounded. Scales rounded *M. lanceolatus*

Fisheries information : Large pelagic fishes, but not generally used as food since flesh usually considered tough and unpalatable.

Remarks : These fishes are rare in occurrence and only occasionally found. These two species are recorded by Chhapgar (1964) and Kulkarni (1953a).

SUMMARY

This study has recorded 653 species belonging to 131 families and 27 orders. A brief description of all the families has been furnished. Fishery information of all the species has been provided in this work. The systematic key to the orders, families, genera and species have been incorporated in this study for easy segregation of the species in order to identify them to ascertain their taxonomic and biodiversity significance. The common English names of the species are given within parentheses wherever it is known. The status of the marine fishes of this state have been marked as per IUCN Red List.

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*Not seen originally.

