

Conservation Area Series, 39

Fauna of
Pachmarhi Biosphere Reserve
(Madhya Pradesh)



ZOOLOGICAL SURVEY OF INDIA

Conservation Area Series, 39

Fauna of
PACHMARHI BIOSPHERE RESERVE
(Madhya Pradesh)

Edited by the Director, Zoological Survey of India, Kolkata



Zoological Survey of India
Kolkata

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*Fauna of
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PACHMARHI BIOSPHERE RESERVE : AN OVERVIEW

KAILASH CHANDRA

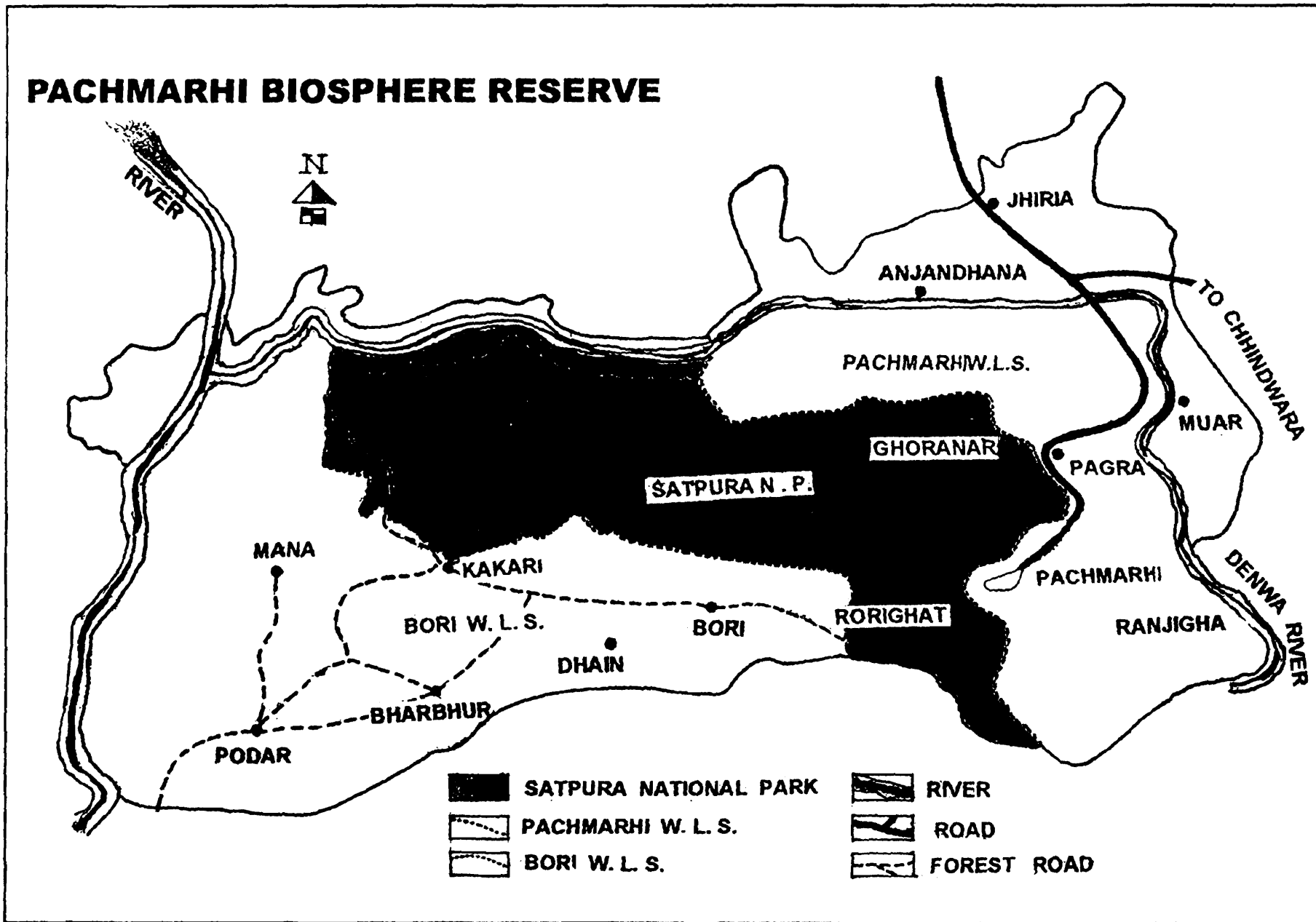
Zoological Survey of India, Central Regional Station, Jabalpur-482 002

INTRODUCTION

The Central Indian Region is inhabited by large tracts of lush green forests and scenic hills, which are populated by numerous species of aquatic and terrestrial plants and animals. The indigenous people living here from time immemorial has always known the important fact that their very own survival depends on the forests they inhabit and hence, they have always revered the nature, the forest, its plants and animals. In this way, man has continued living in tandem with nature without harming the natural resources on which his own survival depends.

In the modern times, with exploding human population, rapid urbanization, environmental pollution, mining, industrialization, emphasis on increasing agricultural production and over-exploitation of natural resources, the situation has dramatically changed. Large tracts of forests have already been cleared for various commercial purposes, large-scale development including construction of highways and dams, making way for agricultural fields, and meeting the burgeoning demand for timber, and the trend continues. As a result of unchecked deforestation over the years, numerous species of plants and animals have become endangered. Magnificent animals like the tiger and leopard have reached the verge of extinction because of shrinking of their natural habitats. Another magnificent big cat, the cheetah has already become extinct in India and other major animals such as lions and elephants, which were once found in Central India in the old times are today, no longer found in this region.

The concept of conserving natural resources is a very important one. All our domestic cattle and poultry have originated from wild ancestors. All our cultivated plants have originated from wild species. The numerous plant species, which are found in the wild, carry genes for resisting pests, diseases, and environmental stress, which could be used through genetic engineering to increase the productivity of cultivated crops. Also, many known and unknown species of medicinal plants are found in the wild, which could be used for making life saving drugs. Today, on account of anthropogenic pressure, if these species become extinct, their benefits will be lost to us forever. This is the situation where the concept of conservation comes in.



Map of Pachmarhi Biosphere Reserve

All over the world and in India, numerous National Parks, Wildlife Sanctuaries, Biosphere Reserves and Protected Forests have been established to conserve representative terrestrial, aquatic or coastal environments, which are recognized for their value in providing habitat to a diversity of indigenous flora and fauna, and providing scientific knowledge, skills and human values to support sustainable development. Among different types of conservation units, a Biosphere Reserve is rather unique. UNESCO first initiated the concept of Biosphere Reserve in 1973-74 with the intention of conserving *in situ* representative ecosystems under natural conditions, and in suitable sizes so as to ensure unaided perpetuation and unhindered evolution of living resources.

In contrast to protective concepts like National Parks and Sanctuaries, a Biosphere Reserve is rather an open type of conservation, where areas of sympathetic and compatible use usually surround undisturbed natural ecosystems. The land use may range from complete protection to intensive but sustainable use. The main feature of a Biosphere Reserve is that it contains a substantial proportion of the indigenous flora and fauna of a region and its main function is to act as a reservoir of genetic material, which could be used to improve the well being of humans.

LOCATION AND AREA

The Pachmarhi Biosphere Reserve lies in the Satpura hill ranges of Madhya Pradesh between latitudes 20°10' N to 22°50' N and longitudes 77°45' E to 78°50' E and is located in the three civil districts of Hoshangabad, Betul and Chhindwara.(Map-1). It derives its name from a tiny hill station Pachmarhi in Hoshangabad district. The total area of Pachmarhi Biosphere Reserve is 4926.20 sq km enveloping three wildlife conservation units, viz., the Bori Sanctuary (518.00 sq. km.), the Satpura National Park (524.37 sq km), and the Pachmarhi Sanctuary (461.85 sq km). The Reserve area also comprises 1709.1-sq km of Reserved and Protected forests and 511 villages with an area of 1364.56 sq. km. of agricultural land; 122.01 sq km wastelands; 204.30 sq km of water bodies and 22.09 sq km built up land.

The district wise break up of the area is as follows :

S. No.	District	Area (sq. km)	Percentage
1.	Hoshangabad	2971.59	60.32 %
2.	Betul	568.13	11.53 %
3.	Chhindwara	1386.56	28.15 %
Total		4926.28	

The maximum area falls under Hoshangabad district followed by Chhindwara and Betul districts.

TOPOGRAPHY

The Satpura hill ranges run east to west, and the Pachmarhi Plateau is practically in the centre of the area having an elevation of around 1050 m. The altitude varies from 320 to 1352 m above msl at different locations. The highest point is the Dhoopgarh peak with an elevation of 1352 m. The lowest and highest elevation varies from 352 to 1352 m above msl in Hoshangabad, 320 to 1005 m in Betul and 380 to 1211 m in Chhindwara district. The general configuration of the area is hilly, undulating terrain and at places precipitous having deep narrow gorges around Mahadev hill in the Pachmarhi plateau. The Tawa reservoir created by a dam on the Tawa river is situated in the northwestern sector of the area, and spreads its backwaters far into the forests comprising the Bori Sanctuary and the Satpura National Park.

CLIMATE

The Biosphere area has a typical monsoon climate with three distinct seasons, summer from March to June, rainy season from July to October and winter from November to February. The climate is varied due to variations in elevation and topography at different places. Pachmarhi being at high elevation, along with the entire plateau region, enjoys a cool climate in summer, heavy rain and cloudy climate in rainy season and cool winters, with minimum temperature nearing frost point, whereas the lowlands in the Narmada basin are very hot in summer with less rain, and warmer winters than Pachmarhi. The intermediate hill slopes and valleys exhibit intermediate range of climate.

Temperature

Depending on season, the mean daily maximum temperature ranges from 26°C to 42°C and mean daily minimum from 9.7°C to 27°C. The diurnal range of temperature is lowest (6-8°C) during rainy season and highest (12-16°C) in summer.

Rainfall

The Bori forest area at the foot of Pachmarhi hills receives the heaviest rain, the average being 2067 mm. for the period 1969-80, the average rainfall is 1135 mm in Chhindwara district and 1172 mm in Betul district. In the Reserve area, 75% to 95% of rainfall is during the monsoon and hardly 0.5% to 1.5% during the summer season.

Humidity

The relative humidity remains quite high during the monsoon period and ranges from 20-25% during summer.

WATER SOURCES

The entire area falls in the catchment of Narmada River having Dudhi, Denwa, Nagduari, Bori, Sonbhadra, Malani and Tawa as its main tributaries. A reservoir with an

area of 204.30 sq km has been created by the construction of a dam over the Tawa River. This reservoir is presently used for fishery and has a good potential for the propagation of aquatic wildlife.

FOREST TYPES

The forests of Pachmarhi Biosphere Reserve are a natural junction of the two most important timber species, viz., teak (*Tectona grandis*) and sal (*Shorea robusta*). The entire forests of the area can be categorized into following seven types.

1. South Indian Moist Teak Forest
2. South Indian Slightly Moist Teak Forest
3. South Indian Moist Mixed Forest
4. Southern Tropical Dry Teak Forest
5. Southern Tropical Dry Mixed Deciduous Forest
6. Northern Dry Peninsular Sal Forest
7. Central Indian Sub Tropical Hill Forest

CONSERVATION EFFORTS

The beginning of conservation in the Reserve area started in 1865 with the establishment of Bori Reserved forests. The slash and burn method of agriculture widely practiced earlier was banned in general and allowed only in specific areas. After the enactment of the Indian Wildlife (Protection) Act, 1972, Bori and Pachmarhi Sanctuaries were established in Hoshangabad division in 1977, and later, the Satpura National Park was carved out of these two units in 1981.

FLORA

The floral diversity of this area is represented by 1381 plant species. A total of 8 species of algae, 22 species of fungi, 83 species of bryophytes, 71 species of pteridophytes, 7 species of gymnosperms and 1190 species of angiosperms are known from this area. The flora is distributed in 180 families of which 54 are represented by two or three genera each. There are few species endemic to this area and many of the thallophytes, bryophytes and pteridophytes are found here exclusively because of the special topographical features of the locality and are not to be found for hundreds of kilometers (Anonymous, 1996).

FAUNAL EXPLORATIONS

In order to draw a faunal profile of the biosphere reserve, seven faunistic surveys were undertaken between 1999 and 2004. Based on the taxonomic studies carried out on the faunal samples collected, animals observed at various places in the reserve and the past records from the areas now falling in the reserve (Appendix) is given in Table-1. Altogether, 825 species of various faunal groups have been documented, which includes 415 species of vertebrates and 410 species of invertebrates.

Table-1. Faunal Diversity Profile of Pachmarhi Biosphere Reserve

S. No.	Group	Number of Species
1.	Annelida	10
2.	Mollusca	12
3.	Solifugae	01
4.	Araneae	32
5.	Scorpionida	03 (Appendix)
6.	Scolopendromorpha	05 (Appendix)
7.	Plant mites	15
5.	Dictyoptera	02 (Appendix)
6.	Mantodea	03 (Appendix)
7.	Odonata	14
8.	Orthoptera	54
9.	Dermaptera	01 (Appendix)
10.	Hemiptera	31 (Appendix- part)
11	Thysanoptera	01 (Appendix)
12.	Lepidoptera- Rhopalocera	79
13.	Lepidoptera- Heterocera	37
14.	Coleoptera	95
15.	Hymenoptera	15 (Appendix)
16.	Fishes	71
17.	Amphibia	08
18.	Reptilia	18
19.	Aves	255
20.	Mammalia	63
	Total	825

ACKNOWLEDGEMENTS

The author is grateful to Dr. Ramakrishna, Director, Zoological Survey of India, Kolkata, for facilities and encouragements. My thanks are also due to all the contributors for their unreserved cooperation without which this task would not have been completed. Last, but not the least am thankful to Dr. R.M. Sharma, Scientist-D for helping me in the process of finalizing the document.

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- Rodgers, W.A. and Panwar, H.S. 1988. *Planning a protected area network in India*, vols. 1 & 2. The Report Wildlife Institute of India, Dehra Dun : 1-341.

PLATE - 1



Pachmarhi Hills



Pandav Gupha, Pachmarhi

PLATE - 2



Kajri Baba Hills in Pachmarhi



Rori Ghat in Pachmarhi

PLATE-3



Tawa River in Pachmarhi Biosphere



Bamboo Forest in Sanctuary

PLATE -4



Langoor
Semnopithecus entellus entellus (Dufrense)



Asiatic Jackal
Canis aureus aureus Linnaeus



Asian Wild Dog
Cuon alpinus dukhuensis (Sykes)



Jungle Cat
Felis chaus kutas Pearson



Tiger
Panthera tigris tigris (Linnaeus)



Wild Boar
Sus scrofa cristatus Wagner

PLATE - 5



Barking Deer
Muntiacus muntjak (Zimmerman)



Cheetal
Axis axis (Erxleben)



Sambar
Cervus unicolor Blainville



Indian Gaur
Bos gaurus gaurus Smith



Black Buck
Antelope cervicapra (Linnaeus)



Indian Giant Squirrel
Ratufa indica centralis (Blanford)

PLATE -6



Darter
Anthinga melangaster Pennant



White-necked Stork
Ciconia episcopus (Boddaert)



Black Ibis
Pseudibis papilosa (Temminck)



Brahminy Shelduck
Tadorna ferruginea (Pallas)



Crested Serpent Eagle
Spilornis cheela (Latham)



Grey Junglefowl
Gallus sonneratii Temminck

PLATE - 7



Indian Peafowl
Pavo cristatus Linnaeus



White Breasted Waterhen
Amaurornis phoenicurus (Pennant)



Little Ringed Plover
Charadrius dubius Scopoli



Redwattled Lapwing
Vanellus indicus (Boddaert)



Spotted Dove
Streptopelia chinensis (Scopoli)



Red Collared Dove
Streptopelia tranquebarica (Hermann)

PLATE - 8



Greater Coucal
Centropus sinensis (Stephens)



Barn Owl
Tyto alba (Scopoli)



Small Blue Kingfisher
Alcedo atthis Linnaeus



White-breasted Kingfisher
Halcyon smyrnensis Linnaeus



Common Hoopoe
Upupa epops Linnaeus



Indian Grey Hornbill
Ocyrceros Birostris (Scopoli)

PLATE-9



Forest Wagtail
Dendronanthus indicus (Gmelin)



Large pied Wagtail
Motacilla maderaspatensis Gmelin



Red vented Bulbul
Pycnonotus cafer (Linnaeus)



Bay-backed Shrike
Lanius vittatus Valenciennes



Magpie-Robin
Copsychus saularis (Linnaeus)



White-browed Fantail Flycatcher
Rhipidura aureola (Lesson)

PLATE - 10



Purple Sunbird
Nectarinia asiatica (Latham)



Spotted Munia
Lonchura punctulata (Linnaeus)



Black Headed Munia
Lonchura malacca (Linnaeus)



Great racket-tailed Drongo
Dicrurus Paradiseus Linnaeus



Indian Treepie
Dendrocitta vagabunda (Latham)



Jungle Crow
Corvus macrorhynchos Wagler

PLATE - 11



Gray East Indian Leopard
Eublepharis hardwickii Gray



Garden Lizard
Calotes versicolor (Doudin)



Garden Lizard
Calotes versicolor (Doudin) - Female



Blankfor'd Rock Agama
Psammophilus blanfordanus (Stoliczka)



Fan Throated Lizard
Sitana ponticerana Cuvier



Keeled Grass Shink
Mabuya carinata (Schneider)

PLATE - 12



Indian Chamaeleon
Chamaeleo zeylanicus Laurenti



Common Indian Monitor
Varanus bengalensis (Daudin)



Indian Rock Python
Python molurus (Linnaeus)



Cobra
Naja naja (Linnaeus)



Russell's Viper
Vipera russelli (Shaw)



Green Pit Viper
Trimeresurus gramineus (Shaw)

PLATE - 13



Common Toad
Bufo melanostictus Schneider



Painted Frog
Kaloula taprobanica Parker



Ornate Microhylid Frog
Microhyla ornata



Indian Bull Frog
Hoplobarrachus tigerinus



Burrowing Frog
Tomopterna breviceps (Schneider)



Common Tree Frog
Polypedates maculatus Gray

PLATE - 14



Holochlora sp.



Trigonidium sp.



Gastrimargus africanus africanus (Saussure)



Catantops pinguis innotabilis (Walker)



Xenocatantrops humilis humilis (Serville)



Euscelimena harpago (Serville)

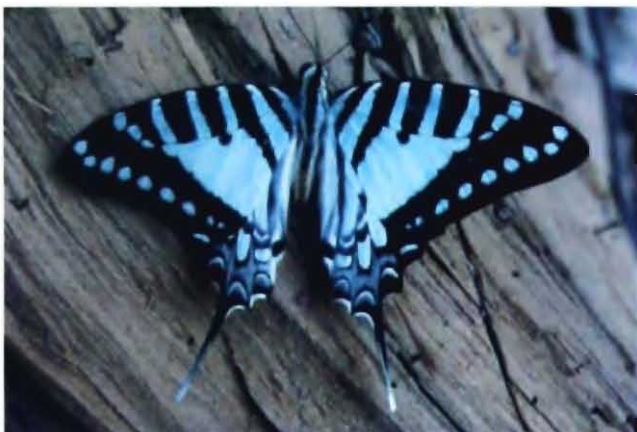
PLATE - 15



The Lime Butterfly
Papilio demoleus demoleus Linnaeus



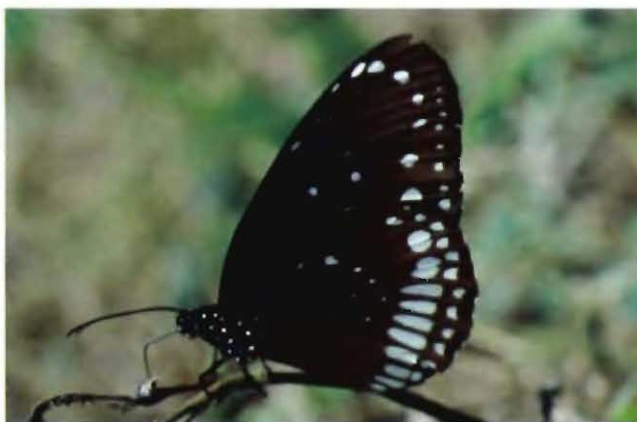
The Common Rose
Pachliopta hector (Linnaeus)



The Spot Swordtail
Pathysa nomius (Esper)



The Blue Tiger
Tirumala limniace leopardus (Linnaeus)



The Common Crow
Euploea core core (Cramer)



The Common Gull
Cepora nerissa phryne (Fabricius)

PLATE - 16



The Twany Coster
Acraea terpsicore (Linnaeus)



The Blue Pency
Junonia orithya swinhoei Butler



The Lemon Pency
Junonia lemonias vaisya (Fruhstorfer)



The Yellow Pency
Junonia hierta hierta (Fabricius)



The Danaid Eggfly
Hypolimnas misippus (Linnaeus)



The Orange Oakleaf
Kallima inachus (Boisduval)

PLATE - 17



The Orange Oakleaf
Kallima inachus (Boisduval) - Ventral view



The Common Pierrot
Castalius rosimon rosimon (Fabricius)



The Dark Palm Dart
Telicota ancilla bambusae (Moore)



The Grass Demon
Udaspes folus (Cramer)



The Indian Skipper
Spialia galba (Fabricius)



The Bright Sunbeam
Caretis bulis (Doubleday & Hewitson)

PLATE - 18



Aganthodes ostentalis Hubner



Diaphania indica (Saunders)



Hymenia recurvalis (Fabricius)



Hyposidra talaca (Walker)



Micronia aculeata Guen'ee



Deilephila nerii (Linnaeus)

PLATE - 19



Hippotion boerhaviae (Fabricius)



Marumba dyras dyras (Walker)



Theretra alecto alecto (Linnaeus)



Achaea janata (Linnaeus)



Sphingomorpha chlorea Cramer



Brevipecten captatus Butler

PLATE - 20



Plusia orichalcea Fabricius



Spodoptera litura (Fabricius)



Trigonodes hyppasia Cramer



Phalera raya Moore



Phissama transiens (Walker)



Argina astrea Drury

MAMMALIA

D.K. HARSHEY AND KAILASH CHANDRA

Zoological Survey of India, Central Regional station, Jabalpur-482002

INTRODUCTION

The present work tries to provide the detailed information about mammals of Pachmarhi Biosphere Reserve. Some information on mammals of this area could be gathered from Agrawal (2000), Blanford (1888,1891), Brander (1923), Brosset (1962), Ellerman & Morrison-Scott (1951), Ghose (1967), Ghose and Chakraborty (1976), Jayson (1990), Ralph (1925), Shrivastav (1995), Kushwaha & Kumar (1999), Harshey & Chandra (2002), Wroughton *et al.* (1913) etc. and in some Project Reports of Forest Department of Madhya Pradesh for the Working Plans for Satpura National Park, Bori and Pachmarhi Sanctuaries and Pachmarhi Biosphere reserve, but comprehensive account on mammals of the Biosphere Reserve is lacking.

This paper enlists 63 species and subspecies of mammals from Pachmarhi Biosphere Reserve belonging to 49 genera of 25 families and 9 orders. The given account is mainly based on the observations/collections made during the field surveys conducted by Central Regional Station, Zoological Survey of India parties from 1999 to 2003, and data available in the literature. Moreover, the material present in National Zoological Collection of Zoological Survey of India has also been utilized in the compilation of the list.

Recent Surveys conducted by Central Regional Station, Zoological Survey India Jabalpur in Pachmarhi Biosphere Reserve

Duration	Districts	Leader of the Party
04.06.1999 to 16.06.1999	Hoshangabad	Dr. Kailash Chandra
21.08.2000 to 10.09.2000	Chhindwara, Hoshangabad	Dr.. Y. N. Gupta
31.03.2001 to 20.04.2001	Hoshangabad	-do-
16.10.2002 to 2.11.2002	Chhindwara, Hoshangabad	-do-
01.02.2002 to 21.02.2002	Hoshangabad, Betul	-do-
11.06.2003 to 20.06.2003	Hoshangabad	Dr. Kailash Chandra

Systematic list of Mammals recorded from Pachmarhi Biosphere Reserve

Classification used here has mainly been adopted after Alfred *et al.* (2002).

Order SCANDENTIA

Family TUPAIIDAE

1. *Anathana ellioti pallida* Lyon

Order INSECTIVORA

Family SORICIDAE

2. *Suncus murinus murinus* (Linnaeus)
3. *Suncus etruscus perrotteti* (Duvernoy)
4. *Suncus stoliczkanus* Anderson

Order CHIROPTERA

Family PTEROPODIDAE

5. *Rousettus leschenaulti leschenaulti* (Desmarest)
6. *Cynopterus sphinx sphinx* (Vahl)
7. *Pteropus giganteus* (Brünnich)

Family RHINOPOMATIDAE

8. *Rhinopoma hardwickii* Gray

Family EMBELLONURIDAE

9. *Taphozous melanopogan* Temminck
10. *Taphozous longimanus* Hardwicke

Family MEGADERMATIDAE

11. *Megaderma lyra lyra* Geoffroy

Family RHINOLOPHIDAE

12. *Rhinolophus lepidus lepidus* Blyth
13. *Hposideros fulvus* Gray

Family VESPERTILIONIDAE

14. *Pipistrellus coromandra coromandra* (Gray)
15. *Pipistrellus mimus* Wroughton
16. *Pipistrellus ceylonicus indicus* (Dobson)
17. *Scotophilus heathi heathi* (Horsfield)

Order PRIMATES

Family CERCOPITHECIDAE

18. *Macaca mulatta mulatta* (Zimmermann)
19. *Semnopithecus entellus entellus* (Dufresne)

Order CARNIVORA

Family CANIDAE

20. *Canis aureus aureus* Linnarus
21. *Canis lupus pallipes* Sykes
22. *Vulpes bengalensis* (Shaw)
23. *Cuon alpinus dukhunensis* (Sykes)

Family FELIDAE

24. *Felis chaus kutas* Pearson
25. *Prionailurus vivverinus* Bennet
26. *Prionailurus bengalensis bengalensis* Kerr
27. *Prionailurus rubiginosus* (Geoffroy)
28. *Panthera pardus fusca* (Meyer)
29. *Panthera tigris tigris* (Linnaeus)

Family HERPESTIDAE

30. *Herpestes edwardsi nyula* (Hodgson)
31. *Herpestes smithi* Charles

Family HYAENIDAE

32. *Hyaena hyaena hyaena* (Linnaeus)

Family MUSTELIDAE

33. *Mellivora capensis indica* (Kerr)34. *Lutra perspicillata* Geoffroy

Family URSIDAE

35. *Melursus ursinus ursinus* (Shaw)

Family VIVERRIDAE

36. *Viverricula indica indica* (Desmarest)37. *Paradoxurus hermaphroditus* (Pallas)

Order ARTIODACTYLA

Family SUIDAE

38. *Sus scrofa cristatus* Wagner

Family CERVIDAE

39. *Muntiacus muntjak* (Zimmermann)40. *Axis axis axis* (Erxleben)

Family BOVIDAE

41. *Cervus unicolor niger* Blainville42. *Bos gaurus gaurus* Smith43. *Tetracerus quadricornis* (Blainville)44. *Boselaphus tragocamelus* (Pallas)45. *Gazella bennettii* (Sykes)46. *Antilope cervicapra* (Linnaeus)

Family TRAGULIDAE

47. *Moschiola mEminna* (Erxleben)

Order PHOLIDOTA

Family MANIDAE

48. *Manis crassicaudata* Gray

Order RODENTIA

Family SCIURIDAE

49. *Petaurista petaurista philippensis* (Elliot)50. *Funambulus palmarum* (Linnaeus)

51. *Funambulus pennanti* Wroughton

52. *Ratufa indica centralis* (Blanford)

Family HYSTRICIDAE

53. *Hystrix indica* Kerr

Family MURIDAE

54. *Tatera indica indica* (Hardwicke)

55. *Millardia meltada* Gray

56. *Rattus rattus* (Linn.)

57. *Golunda ellioti* Gray

58. *Mus booduga booduga* (Gray)

59. *Mus musculus castaneus* Waterhouse

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

61. *Cremomys blanfordi* Thomas

Order LAGOMORPHA

Family LEPORIDAE

62. *Lepus nigricollis mahadeva* Blanford

63. *Lepus nigricollis ruficaudatus* Geoffroy

SYSTEMATIC ACCOUNT

Order SCANDENTIA

Family TUPAIIDAE

Genus *Anathana* Lyon, 1913

1. *Anathana ellioti pallida* Lyon

Madras Tree Shrew (E.)

1913. *Anathana pallida* Lyon, *Proc. U.S. natn. Mus.*, 45 : 124 (Manbhum = Puruliya district, West Bengal, India).

Material : 2 Female, Pachmarhi, Hoshangabad, 10.03.1974. coll. R.K.Ghosh.

Diagnosis : Colour of the body reddish brown dorsally; feet and legs grizzled buffy; tail darker than the back.

Distribution : India : Madhya Pradesh (Hoshangabad), Bihar, Chhattisgarh, Orissa, West Bengal

Remarks : Uncommon.

Order INSECTIVORA

Family SORICIDAE

Only one genus of this family is represented from PBR.

Genus *Suncus* Ehrenberg, 1833

2. *Suncus murinus murinus* (Linnaeus) House Shrew (E.), Chhuchundar (H.)

1776. *Sorex murinus* Linnaeus, *Syst. Nat.*, 12th ed. I : 74 (Java).

Material : 1 Female, Sakot, Hoshangabad, Coll. C.A. Crump. 12.01.1914 Male, Sakot, Hoshangabad, Coll. C.A. Crump, 25.01.1914. 1 Male, Singanama, Hoshangabad, coll. Y.N. Gupta.

Diagnosis : Fur thick and long, over 8 mm in length. Dorsum brown with rusty wash; ventral surface slightly lighter.

Distribution : India : Madhya Pradesh (throughout the state), Arunachal Pradesh, Assam, Manipur, Meghalay, Nagaland, West Bengal, Bhutan

Remarks : Commonly seen in rest houses in PBR.

3. *Suncus etruscus perrotteiti* (Duvernoy) Savi's Pigmy Shrew (E.)

1842. *Sorex perrotteiti* Duvernoy., *Mag. Zool. Paris*, pp. 29 Nilgiri Hills, India

Diagnosis : Small in size. Dorsal surface deep rusty brown; ventral surface brown.

Distribution : Widely distributed in Peninsular India.

Remarks : Found under stones or leaves and known to feed on insects but rarely seen.

4. *Suncus stoliczkanus* Anderson Anderson's Shrew (E.)

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

Diagnosis : Dorsal surface dull brown to reddish brown and ventral surface glossy grey.

Distribution : India : Madhya Pradesh (Gwalior, Khargon, Khandwa, Hoshangabad), Maharashtra, Tamil Nadu.

Elsewhere : Bangladesh.

Remarks : It was once observed in Bori Sanctuary.

Order CHIROPTERA

The second largest and the most distinctive order of mammals, having membranous wings for true flight. Fingers enormously developed to support wings. Nocturnal.

Suborder MEGACHIROPTERA

Family PTEROPODIDAE

Genus *Rousettus* Gray, 1821

5. *Rousettus leschenaulti leschenaulti* (Desmarest)

Indian Fulvous Fruit Bat (E.)

1820. *Pteropus leschenaulti* Desmarest, *Encycl. Meth. Mamm.*, 1 : 110 (Pondicherry, India).

Diagnosis : A medium sized bat, head and body on average 131 mm, with large head and elongated dog-like muzzle; tail vestigial, length-averaging 14 mm. Body fur short, dorsally with refescent tome and ventrally pale brown; a collar of radiating hairs with paler bases present on the lower neck and shoulder region. Second phalanges of third digit less than 40 mm.

Distribution : India : widely distributed throughout the mainland.

Elsewhere : Bhutan, Hong Kong, Laos, Myanmar, Nepal, Pakistan, Southern China, Sri Lanka, Tibet, Thailand, possibly Cambodia and Vietnam.

Remarks : Roosts in caves and man made structures such as wells tunnels and old ruins in colonies of 10 to 2000. Uncommon.

Genus *Cynopterus* F. Cuvier

6. *Cynopterus sphinx sphinx* (Vahl)

Short nosed fruit Bat (E.), Chota Badur (H.)

1797. *Vespertilio sphinx* Vahl, *Skr. Nat. Selsk. Copenhagen*, 4 (1) 123 (Tranquebar, Tanjavar, Tamil nadu).

Material : 2 Male, Pachmarhi, Hoshangabad, 08.03.1974, coll. R.K.Ghose.

Diagnosis : Smallest of the fruit eating bats of the Reserve, head and body length on average 110 mm. Nostril at the tip of slightly bifurcated fleshy projections; upper lip

deeply grooved down the centre. Dorsum gray or grayish brown, venter paler; margin of ears white. Toe vestigial, rod like.

Distribution : India : Widely distributed throughout the mainland.

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

Remarks : A common species roosts singly or in small groups. Sighted at Singanama and Pachmarhi (Mahadev).

Genus *Pteropus* Brisson, 1962

7. *Pteropus giganteus* (Brünnich)

Indian Flying Fox (E.); Gadul, Badur, Pata debli (H.)

1782. *Vespertilio gigantea* Brünnich. *Dyrenes Historie*, 1 : 45 (West Bengal, India).

Diagnosis : Largest bat of the Indian subcontinent, head and body length averaging 265 mm. Brightly coloured, rufous brown around the head and neck, orange or honey coloured band across the upper back; head long with dog like-muzzle; nostrils neither raised nor divided by any internal groove. No tail.

Distribution : India: Throughout Madhya Pradesh in suitable areas; widely distributed in India including Andaman Island.

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

Remarks : Common in the Reserve.

Suborder MICROCHIROPTERA

Second finger without a claw; margin of ears not forming a complete ring. Angular process of mandible long and narrow. Crown of molar teeth with transverse furrow. Bony palate not extending behind the last molars.

Family RHINOPOMATIDAE

Genus *Rhinopoma* E Geoffroy, 1818

8. *Rhinopoma hardwickii* Gray

Lesser Rat-tailed Bat, Lesser Mouse-tailed Bat (E.)

1831. *Rhinopoma hardwickii* Gray. *Zool. Misc.*, 37. (India).

Diagnosis : A small sized bat, similar to *Rhinopoma microphyllum kinneari* but smaller in size; length of forearm 53.3-62.7 mm; tail usually longer than forearm.

Distribution : India : Madhya Pradesh (Hoshangabad, Gwalior, Jabalpur Mandla, Balaghat), Delhi, Jammu & Kashmir, Karnataka, Kerala, Rajasthan, Orissa, Tamil Nadu, Uttar Pradesh & West Bengal.

Remarks : Few specimens were seen near Tawa River Dam, Tawanagar.

Family EMBELLONURIDAE

Genus *Taphozous* Geoffroy, 1918

9. *Taphozous melanopogon* Temminck

Black-bearded Tomb bat (E.)

1841. *Taphozous melanopogon* Temminck, *Mon. Mamm.*, 2 : 387 (Bantam, Western Java, Indonesia).

Diagnosis : Medium-sized, forearm 63-68.5 mm. No gular sac; radio-metacarpal pouch large, Most of the males have black beard. Tail somewhat laterally compressed towards the tip.

Distribution : India : Madhya Pradesh (Betul, Balaghat, Chhindwara, Hoshangabad, Jabalpur, Mandla), Andhra Pradesh; Bihar, Karnataka; Maharashtra; Orissa; Tamil Nadu; West Bengal.

Elsewhere : Sri Lanka, Myanmar, Malaysia, Laos, Vietnam, Southern China, Andalas, Java, Kalimantan, Timor, Savu Isl., Kei Isl., and perhaps Lombok.

Remarks : Uncommon. Colonies have varying number of 150 to 4000. This bat does not hang by hind limbs but cling to the walls and ceiling by all four limbs and could move in all directions with ease when disturbed.

10. *Taphozous longimanus* Hardwicke

Long Armed Sheath-Tailed Bat (E)

1825. *Taphozous longimanus* Hardwicke, *Trans. Linn.Soc. Lond.*, 14 : 525 (Calcutta district, West Bengal, India).

Diagnosis : Medium sized bat having broad tragus. Dark brown in colour but adult male lighter brown. Lower lip scarcely grooved. Ear with smooth inner margin. In male gular sac moderately developed but in female it is represented by a rudimentary fold of skin. Radio-metacarpal pouch moderately developed.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur, Mandla, Balaghat) Gujarat, Rajasthan, Tripura, West Bengal.

Elsewhere : Bangladesh, Cambodia, Myanmar, Nepal, Thailand and Sri Lanka.

Family MEGADERMATIDAE

Genus *Megaderma* E. Geoffroy, 181011. *Megaderma lyra lyra* Geoffroy

Indian false Vampire (Eng.)

1810. *Megaderma Lyra* Geoffroy, *Ann. Mag. nat. Hist. Paris*, 15 : 190 (India, possibly Madras, Tamil Nadu, India),

Material : 2 Male and 2 Female, Sohagpur, Hoshangabad district. 01.01.1912, coll. C.A. Crump; 8 exs. Raisalpur near Itarsi, Hoshangabad district, 08.02.2002, coll. Y.N. Gupta.

Distribution : India : Throughout Indian mainland.

Elsewhere : Afghanistan (Aellen 1959), Pakistan, Sri Lanka and Bangladesh.

Remarks : Fairly common in village areas. Size of colony may vary from 2 to 2000 individuals. A large colony of about 600-800 bats in an old house was seen in a village near Itarasi.

Family RHINOLOPHIDAE

Genus *Rhinolophus* Lacepède, 181812. *Rhinolophus lepidus lepidus* Blyth

Blyth's Horseshoe Bat, Little Indian Horseshoe Bat (E.)

1844. *Rhinolophus lepidus* Blyth. *J. asiat Soc. Bengal*, 13 : 486 (Vicinity of Calcutta, West Bengal, India).

Diagnosis : Small horseshoe bat (forearm around 40.0 mm. on average) with horizontal base of sella arched and equal to vertical part; connecting process triangular in lateral view; tibia shorter less than 18 mm.

Material : 2 Female, Sohagpur, Hoshangabad, 03.04.1912, coll. C.A. Crump; 1 B&, Narsingharh, Hoshangabad, coll. C.A. Crump. 2 Male, 1 Female, Deokhoh, Pachmarhi, Hoshangabad district, coll, Y. N. Gupta, 03.04.2001.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur), Andhra Pradesh, Bihar, Delhi, Karnataka Maharashtra, Meghalaya, Mizoram, Nagaland, Orissa, Rajasthan, Tamil Nadu, West Bengal.

Elsewhere : Afganistan, China, Indonesia, Myanmar, Nepal, Thailand.

Genus *Hipposideros* Gray, 1831.

The genus is represented by two species from the Reserve.

13. *Hipposideros fulvus* Gray
Fulvus leaf nosed Bat (E.)

1838. *Hipposideros fulvus* Gray, *Mag. Zool. Bot.*, 2 : 202

Diagnosis : Ears larger than head, rounded, upper third posterior margin, slightly flattened ; narial margins of anterior nose leaf not expanded; narrow internarial septum; uninflatted broadened at the base, narrow between nostrils.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur), Andaman and Assam, Bihar, Karnataka, Kerala, Maharashtra, Megalaya, Sikkim, Tamil Nadu, Uttar Pradesh.

Elsewhere : Nepal, Sri Lanka, Bangladesh, Burma, Thailand, and Vietnam.

Family VESPERTILIONIDAE

Genus *Pipistrellus* Kaup, 1829

14. *Pipistrellus coromandra coromandra* (Gray)
Indian Pipistrelle (E.)

1838. *Scotophilus coromandra* Gray, *Mag. Zool. Bot.*, 2 : 498 (Pondicherry, India).

Diagnosis : Small-sized, forearm length on average 31 mm, Dorsal fur blackish brown with tips slightly rufescent; venter a little paler. Tragus curving forward and bluntly rounded. A small lobe present below the calcar.

Distribution : India : widely distributed in Peninsular India, north to Jammu and Kashmir, east to northeastern states including Tripura.

Elsewhere : Afganistan, Nepal and Sri Lanka.

Remarks : Common. It was seen roosting in the roofs of Rest houses of Bori, Churna and Singanama.

15. *Pipistrellus mimus* Wroughton
Indian Pigmy Pipstrelle (E.)

1899. *Pipistrellus mimus* Wroughton, *J. Bombay nat. Hist. Soc.*, 12 : 722. Mheskatri, Dangs, Surat district, Gujrat.

Material : 2 Female, Pachmarhi, Hoshangabad district, coll. Y.N. Gupta, 06.02.2002.

Diagnosis : Dorsal surface is brownish black, ventral parts lighter, hairs of ventral surface has silvery tips. Face, ears and wings almost black. The fur is short and dense. The tibia is short. Ears small. Tragus short and curved. Post calcarial lobe is present.

Distribution : India : Widely distributed throughout the mainland.

Elsewhere : Afganistan Myanmar Nepal, Pakistan, Sri Lanka Thailand and Vietnam.

Remarks : It lives in small holes, cracks and crevices in buildings and trees. The colony consists of 5 to 30 individuals often crowded together or at a little distance from each other. It has fluttering and rapid flight with sudden change of direction in pursuit of prey .It feeds on small insects.

16. *Pipistrellus ceylonicus indicus* (Dobson)

Kelaart's Pipistrelle (E.)

1878. *Vesperugo indicus* Dobson, *Cat. Chiroptera Br. Mus.*, : 222 (Manglore, Daskshina Kannada district, Karnataka)

Material : 1 Female, Pachmarhi, Hoshangabad, coll. Y.N. Gupta, 30.8.2000.

Diagnosis : Large pipistrelle having forearm upto 40 mm. Dorsal surface brown or reddish or grayish brown ventral parts paler. ears short, triangular blackish brown. Tragus having triangular lobe at the base, straight inner end and convex outer margin. Post calcarial lobe semicircular. Extreme tip of tail free from membrane.

Distribution : India : Throughout Madhya Pradesh, Andhra Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh.

Elsewhere : Bangladesh and Pakistan.

Genus *Scotophilus* Leach, 1821

17. *Scotophilus heathi heathi* (Horsfield)

Greater yellow Bat (E.)

1831. *Nycticejus heathii* Horsfield, *Proc. Zool. Soc. Lond.*, 113 (Madras=Chennai, Tamil Nadu. India).

Diagnosis Forearm length more than 56 mm. Fur short and sleek; dorsum olive to gray brown, venter lemon yellow to orange yellow and clearly demarcated from dorsum. Muzzle sparsely haired, with swollen glandular pads between the eyes and nostrils.

Distribution : India : widely distributed all over India.

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

Remarks : Common. Spotted in many areas of the Reserve. Found in small colonies in crevices, on roofs, rafters and in holes in ceilings.

Order PRIMATES

Family CERCOPITHECIDAE

Genus *Macaca* Lacepede, 1779

18. *Macaca mulatta mulatta* (Zimmermann)

Rhesus Macaque (E.); Bandar (H.)

1780. *Cercopithecus mulatta* Zimmermann, *Geogr. Gesch. Mensch.*, 2 : 195 (India).

Diagnosis : Medium-sized, head and body length around 54 cm; tail short, two-fifths to one-half of head and body. Hairs straight; crown hairs not radiating from extreme. Face light pink, hindquarter of body brighter with orange-red hue, while upper back olive brown.

Distribution : India : The Reserve : Madhya Pradesh: throughout the state, Andhra Pradesh; Arunachal Pradesh; Assam; Bihar, Delhi; Himachal Pradesh; Jammu & Kashmir; Meghalaya; Orissa; Punjab; Rajasthan; Sikkim; Tripura (Agrawal and Bhattacharya 1977); West Bengal.

Elsewhere : Bhutan, Bangladesh, Myanmar, China, Thailand and Vietnam.

Remarks : Common. Most of the population was observed in high altitude in around Pachmarhi, regarded as most sacred hence, there is no hunting pressure.

Genus *Semnopithecus* 1821

19. *Semnopithecus entellus entellus* (Dufresne)

Langur (E.); Hanuman, Langur (H.)

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

Diagnosis : Large-sized, head and body length around 58 cm; tail longer than head and body. Upper side dark or light sepia brown, paler on the shoulder, nape and crown; hands and feet black or deep brown and colour sharply contrasted with that of arms and legs. Whiskers short, partly covering the ears; crown hairs radiating from a frontal whorl.

Distribution : India : Madhya Pradesh: throughout the state, Bihar; Delhi; Haryana; Orissa; Punjab; Rajasthan; West Bengal.

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

Remarks : Common. Observed plenty in low altitude compared to high areas with average group size of 16 to 25. Young ones were mostly observed from Feb. to May.

Order CARNIVORA

Family CANIDAE

Genus *Canis* Linnaeus, 1758

20. *Canis aureus aureus* Linnaeus

Asiatic Jackal (Eng.); Gidar or Sial, Phial (H.)

1758. *Canis aureus* Linnaeus, *Syst. Nat.*, 10th ed. 1 : 40 (Province of Laristan, S. Persia).

Diagnosis Very similar to wolf but smaller in size and without arching brows and elevated forehead. Dorsal fur coarse, wiry with sandy buff appearance, but mid dorsum predominantly black; back of ear brownish, face and lower flank grayish and tail-tip black; belly, chest and inside of legs creamy white.

Distribution : India : Madhya Pradesh (Hoshangabad, Shivpuri, Betul, Balaghat, Umaria, Chhindwara, Mandla, Jabalpur) Bihar, Haryana, Himachal Pradesh, Punjab, Rajasthan.

Elsewhere : Saudi Arabia, Iraq, and European part of earlier U.S.S.R. to the extreme south.

Remarks : Fairly distributed throughout the Reserve particularly in Churna Sanctuary.

21. *Canis lupus pallipes* (Sykes)

Wolf (E.); Bheria (H.)

1831. *Canis pallipes* Sykes, *Proc-zool. Soc. Lond.*, 101 (Decan. India)

Diagnosis About the size of an Alsatian dog, measuring 90-105 cm in head and body length. Tail bushy, black tipped. Forehead elevated, brows arched, ear pointed and upstanding. A crest of long hairs on neck and shoulder. Dorsum grizzled with fulvous to rufous and black; Venter creamy buff; back of black; legs ochraceous, paler on outside.

Distribution : India : Madhya Pradesh (Balaghat, Betul, Chhindwara, Hoshangabad, Mandla, Rewa Shivpuri, Umaria), Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Karnataka; Maharastra; Orissa; Rajasthan; West Bengal.

Elsewhere : Arabian Peninsula, Iran and Pakistan.

Remarks : Common.

Genus *Vulpes* Oken, 181622. *Vulpes bengalensis* (Shaw)**Common Indian Fox, Bengal Fox (E.). Lumri, Lomri, Lokhri (H.)**

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

Diagnosis : Smaller and grayer than the Desert Fox, with black tail tip. Back of ear sandy brown or dark brown, with black margin. A smudge of black hairs around the upper part of the muzzle in front of eyes.

Distribution : India : Madhya Pradesh - almost throughout the State; almost all over India.

Elsewhere : Pakistan, Nepal, Bangladesh,

Observations : Often seen during evening hours in Bori and Churna villages.

Genus *Cuon* Hodgson, 183023. *Cuon alpinus dukhunensis* (Sykes)**Dhole, Red Dog, Asian wild Dog (E.); Son Kutta, Jangli Kutta (H.)**

1831. *Canis dukhunensis* Sykes, *Proc. Zool. Soc.*, 100 (Deccan, Peninsular India).

Diagnosis Head and body length over 91 cm, hindfoot over 170 dog-like in appearance with bushy tail and almost rounded ears. Hairs long. With woolly under fur, Body colour rusty red to tawny.

Distribution : The forested parts of Peninsular India, south of the Ganges up to an elevation of 2240 m, excepting the western desert.

Remarks : Rare. Once spotted in group of 4 near Madai area.

Family FELIDAE

Genus *Felis* Linnaeus, 175824. *Felis chaus kutas* (Pearson)**Jungle Cat (E.)**

1832. *Felis kutas* Pearson *J.Asiat .Soc Beng.*, 1 : 75 (Medinipur, West Bengal, India)

Diagnosis : Dorsal pelage unspotted, but occasionally speckled buff gray or rusty; black horizontal stripes present on the inner side of fore legs; underside reddish buff with fore throat, azalea and groin white.

Distribution : India : Madhya Pradesh (Betul, Balaghat, Chhindwara, Hoshangabad, Mandla, Shivpuri, Umaria), Bihar; Orissa; Rajasthan; West Bengal.

Remarks : Sighted in PBR but rare.

Genus *Prionailurus* Severtzov

25. *Prionailurus viverrinus* Bennet
Fishing Cat (E.)

1832. *Felis viverrinus* Bennett, *Proc. Zool. Soc. London*, : 68 (India probably Malabar coast)

Diagnosis : A medium sized cat. Head and body length 60-70 cm. Body with black or brown spots throughout, spot longer than broad; ears with round spot in the center and back of ears black; forehead and throat have several cross bands; six to eight lines run from the forehead to the nape, breaking up into shorter lines and spots on the shoulders.

Distribution : India : Madhya Pradesh (Betul, Hoshangabad, Chhindwara) Assam, Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu.

Elsewhere : Bangladesh, Indonesia, Nepal, Pakistan, Sri Lanka, Taiwan and Vietnam.

Remarks : Common in Madai, Churna and Bori areas but rare in other parts. Found singly or sometimes in groups of upto 4.

26. *Prionailurus bengalensis bengalensis* Kerr
Leopard Cat (E.)

1793. *Felis bengalensis* Kerr. *Anim. Kingd.*, 151 (Southern Bengal)

Diagnosis Dorsal pelage pale fulvous, varying from ochraceous to grayish, ornamented throughout with numerous elongated black or rusty spots; under surface white brown spotted; two narrow black stripes over the head from inner corner of eyes; transverse stripes on forelegs.

Distribution : India : Madhya Pradesh (Balaghat, Chhindwara, Hoshangabad, Mandla) Andhra Pradesh, Assam, Karnataka, Kerala, Maharashtra, Manipur, Orissa, Tamil Nadu, Tripura, West Bengal.

Elsewhere : Bangladesh, Myanmar, Thailand, China, Vietnam, Indonesia and Philippines.

Remarks : Nocturnal and rarely seen.

27. *Prionailurus rubiginosus* (Geoffroy)
Rusty Spotted Cat

1831. *Felis rubiginosa* Geoffroy Belangeur *Voy. Ind. Orient. Zool.*, 3 : 140 Pondicherry, India

Diagnosis : Yellowish grey dorsally with sparse dark spots which extend to the tail. White ventrally. Distal half portion of the tail is ringed black. Head and body 50 to 65 cm. Tail 25 to 30 cm.

Distribution : India : Madhya Pradesh (Balaghat, Hoshangabad), Andhra Pradesh, Arunachal Pradesh, Assam, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Karnataka, Kerala, Tamil Nadu, Tripura, West Bengal.

Elsewhere : Bangladesh, Myanmar, Thailand and Unan.

Remarks : Found singly, in pairs or in small groups. Easily climbs trees.

Genus *Panthera* Oken, 1816

28. *Panthera pardus fusca* (Meyer)

Leopard (E.)

1794. *Felis fusca* Meyer, *Zool. Ann.*, 1 : 394 (Bengal).

Diagnosis : Total length 170 to 215 cm., height at shoulder 60 cm. Ground colour variable-pale yellow, warm gray, rich tawny to rufous fawn, with dark spots arranged in rosettes all over the sides of the body.

Distribution : India : throughout India in suitable habitats.

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

Remarks : Diurnal as well as nocturnal. Shy animal and good tree climber. Gestation period 95 days 2 to 4 young born at time. Life span 15 years.

29. *Panthera tigris tigris* (Linnaeus)

Tiger (Eng.)

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

Diagnosis : Size large; total length including tail 260 cm. Color pattern of skin consisting black stripes. Tail relatively thick no black spot on the tip of the tail.

Distribution : India : found almost throughout India in suitable habitats where three essentials of its well being viz., plenty of game, water and shelter from sun are available.

Elsewhere : Nepal, Bangladesh, and Myanmar.

Remarks : Usually found singly but at times in pairs or in small family groups of 2 to 5 animals.

Family HERPESTIDAE

Genus *Herpestes* Illiger, 1881

30. *Herpestes edwardsi nyula* (Hodgson)
Indian gray Mongoose (E.). Mangus, Newla (H.)

1836. *Mangusta (Herpestes) nyula* Hodgson, *J. Asiat. Soc. Beng.*, 5 : 236 (Nepal).

Diagnosis : Very similar to *H. auropunctatus* but considerably larger, with longer contour hairs which form almost a cape over hindquarter of body and flank.

Distribution : India : Madhya Pradesh (almost throughout the state), Assam; Bihar, Orissa, Sikkim, West Bengal.

Elsewhere : Nepal and Bangladesh.

Remarks : Common throughout the Reserve.

31. *Herpestes smithi* Gray
Ruddy Mongoose (E.); Newla (H.)

1837. *Herpestes smithii* Gray, *Charlesw. Mag. NH.*, I : 578 Said to be from Bombay.

Diagnosis : Total length about 90 cm. Tawny yellowish gray in colour with dark and light rings on its hairs. The tail is as long as body tipped with black.

Distribution : India : Madhya Pradesh (Balaghat, Hoshangabad, Mandla), Rajasthan, east to West Bengal, southwards through Eastern Ghats and western Ghats.

Elsewhere : Sri Lanka.

Remarks : It is reported to occur in the Reserve.

Family HYAENIDAE

Genus *Hyaena* Brission, 1762

32. *Hyaena hyaena hyaena* (Linnaeus)
Striped Hyaena (E.); Lakarbagga (H.)

1758. *Canis hyaena* Linnaeus. *Syst. Nat.*, 10th ed., 1 : 40 (Benna mountains, Laristen, Iran)

Diagnosis : Head and body length about 104 cm and height at shoulder 68-76 cm. Dog- like with a conspicuous crest of longer hairs extending like a mane from crown of head to pelvis. Legs relatively long; hindquarters of body weak; high sloping shoulder. Body colour tawny yellow, having indistinct broad vertical stripes along the flank.

Distribution : India : throughout India in forested tracks.

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

Remarks : Mostly nocturnal. Found singly, in pairs or in small groups of upto 6 animals.

Family MUSTELIDAE

Genus *Mellivora* Storr, 1780

33. *Mellivora capensis indica* (Kerr)

Ratel (E.)

1792. *Ursus indicus* Kerr, *Anim Kingd.*, 188 (India).

Diagnosis : Body squat and bear like; stumpy legs and small tail, snout not projecting
Pinna reduced to a thickened rim. Coat grey above and black below.

Material : 1 Female, Hoshangabad, Jan., 1908, coll. A.A. Dunbar Brander.

Distribution : India : Peninsular India and West Bengal except Malabar Coast.

Elsewhere : Iran, Afghanistan and Pakistan.

Remarks : Rare.

Genus *Lutra* Brisson, 1762

34. *Lutra perspicillata* Geoffroy

Smooth-coated Indian Otter (Eng.)

1826. *Lutra perspicillata* Geoffroy, *Dict, Class H.N.*, 9 : 519 (Andalas).

Diagnosis : Thick fusiform body, broad paddle shaped tail with distal portion more or less triangular in outline. Web of skin present between all the digits of fore and hindfoot. Upper border of naked rhinarium smooth and convex in outline, Dorsum brown to olive brown, venter lighter in shade,

Distribution : India : Andhra Pradesh; Arunachal Pradesh; Assam; Orissa; Bihar; Karnataka; Kerala; Madhya Pradesh; Meghalaya.

Elsewhere : China. Vietnam, Malaysia and Indonesia.

Remarks : Recorded in the past.

Family URSIDAE

Genus *Melursus* Meyer, 179335. *Melursus ursinus ursinus* (Shaw)1793. *Bradypus ursinus* Shaw, *Nat. Misc.*, 2 (unpaged), pls. 58-59 (Patna, Bihar, India).

Diagnosis : Large-sized, head and body length 140-170 cm. Coat long, rough, shaggy, black, with or without a V-Shaped breast patch. Face triangular with long muzzle. Claws on forefeet ivory white.

Distribution : India : Forested tracts all over India from Himalayan foot hills to the extreme southernmost parts.

Observations : Common in Bori, Churna Madai and Dhain areas.

Family VIVERRIDAE

Genus *Viverricula* Hodgson. 183836. *Viverricula indica indica* (Desmarest)

Small Indian Civet (E.)

1817. *Viverra indica* Desmarest, *Nouv. Dict. Hist. Nat. Paris*, 7 : 170 (India).

Diagnosis : Small-sized, head and body length 50-62 mm, with tail a little smaller. Muzzle slender and pointed; ears broad and rounded. Small black spots on fore quarters; large spots tending to run into longitudinal lines on the flank and form 6-8 stripes down the back. Naked rhinarium reddish brown.

Distribution : India : Almost throughout Madhya Pradesh; whole of India.

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

Genus *Paradoxurus* Cuvier, 182137. *Paradoxurus hermaphroditus* (Pallas)

Common Palm Civet, toddy Cat (E.)

1777. *Viverra hermaphroditus* Pallas, in Schreber, *Die sauget.*, 3 : 426 (India).

Diagnosis : Head and body length about 60 mm; tail almost equal to head and body. Coat black or blackish brown but new coat with a pattern of longitudinal stripes on back, blackish spots on flank. Thigh and shoulder usually with white patch or spots around eyes and nose.

Distribution : India : almost throughout India.

Elsewhere : Bangladesh, Myanmar, Nepal, Sri Lanka, China, Hainan Island, Malaysia, Philippine, and Indonesia.

Remarks : Very common near human habitations and sometimes enters inside residential complexes.

Order ARTIODACTYLA

Family SUIDAE

Genus *Sus* Linnaeus, 1758

38. *Sus scrofa cristatus* Wagner

Indian Wild Boar (E.).

1839. *Sus cristatus* Wagner, *Munch. Gelehrt. Anz.*, 9 : 435 (probably Malabar Coast, India).

Diagnosis : Head and body length range from 115 cm to 160 cm in adult males. Females smaller. Deep body with short thick neck and slender legs. Head with sloping muzzle terminating in a special flattened disk. Ears large; eyes small. Body dark gray to pinkish brown. Covered with coarse black and brown bristles, which form a crest over neck. Canine in adult males developed into tusk.

Distribution : India : Almost throughout the State; forested or semi-forested tracts of whole of India.

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

Remarks : Common. Found in groups of upto 30 or more.

Family CERVIDAE

Genus *Muntiacus* Rafinesque, 1815

39. *Muntiacus muntjak* (Zimmermann)

Indian Muntjac, Barking Deer (E.).

1780. *Cervus muntjak* Zimmermann, *Geogr. Gesch.*, 2 : 131 (Java.)

Diagnosis : Head and body length varies from 80 cm to 100 cm, height at shoulder from 41 to 60 cm. Heavy-bodied with short dainty legs. Body fur soft, short and glossy; dorsum reddish chestnut; under surface developing from two skin covered pedicels.

Distribution : India : Throughout India in thickly wooded hilly tracts up to 1828 meter.

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

Remarks : Rare. Found singly or in groups of 3 to 4

Genus *Axis* H. Smith, 1827

40. *Axis axis axis* (Erxleben)

Axis Deer, Spotted Deer (E.); Chital (H.)

1777. *Cervus axis* Erxleben *Syst. Regn. Anim.*, 312 (Bank of Ganges, India).

Diagnosis : Head and body length varies from 137 to 152 cm., height at shoulder from 91 to 97 cm in males; females slightly smaller, Colour rufous fawn with white spots throughout; a dark dorsal stripe from nape to end of tail, bordered by one or two rows of spots. Horns usually with three tines, brow tine forming almost a right angle to the beam.

Distribution : India : Peninsular India, northwards to Kumaon and Sikkim, east wards to Assam and Meghalaya.

Elsewhere : Bangladesh, Nepal, and Sri Lanka.

Remarks : Common.

Genus *Cervus* Linnaeus, 1758

41. *Cervus unicolor niger* Blainville

Sambar (E.)

1792. *Cervus unicolor* Kerr, *Anim. Kingd.*, : 300

1816. *Cervus niger* Blainville, *Bull. Soc. Philom Paris.*, (Probably somewhere in India. Ellerman and Morison-Scot 1951)

Diagnosis : Largest Indian deer; head and body length 183 to 213 cm., height at shoulder 122 to 150 cm. In males, females a little smaller. Coat coarse and shaggy. Stag with a mane around neck and throat. General colour brown with yellowish or grayish tinge, females lighter in tone. Antlers normally with three tines. Brown tine joins the beam at an acute angle.

Distribution : India : Madhya Pradesh (Balaghat, Betul, Chhindwara, Hoshan- gabad, Mandla, Morena, Raisen, Rajgarh, Shivpuri) Andhra Pradesh, Bihar, Goa, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Nepal and Bangladesh.

Remarks : Common. Found in groups of 2 to 20 animals.

Family BOVIDAE

Genus *Bos* Linnaeus, 175842. *Bos gaurus gaurus* Smith
Indian Bison (E.), Gaur (H.)1826. *Bos gaurus* Smith, *Griffith's Animal Kingd.*, 4 : 399.

Diagnosis : Heavy body with relatively short limbs. A prominent muscular ridge from shoulder to the middle of back. An ashy forehead and white feet. Standing height in male 175-196 cm. at the shoulder, the female slightly smaller. The horns of bull are almost a half circle with a slight posterior bend at the tip and measure 68-76 cm. along the curve. The horn of cow are narrower. The old bull is black and almost hairless, but the cow is dark or reddish brown and possesses short hairs.

Distribution : India : Found in the peninsular India and foothills of the Himalayas upto Assam.

Remarks : Found in good numbers in bamboo forests near Bori village.

Genus *Tetracerus* Leach, 182543. *Tetracerus quadricornis* (Blainville)
Four horned Antelope (E.)1816. *Cerophorus (Cervicapra) quadricornis* Blainville, *Bull. Soc. Philom Paris*, 75 and 78 (Plains of Peninsular India).

Diagnosis : Two pairs of horns posterior pair 80-100 mm, anterior pair 20-30 mm in length. Female hornless. Fur thin, short and harsh. Colour varies from brown to rufous brown above and white below, a dark stripe down the front of each leg.

Distribution : India : Peninsular India except Malabar coast north to Rajasthan and northeast to Bihar and Orissa.

Elsewhere : Nepal.

Remarks : Found in the groups upto 6, sometimes seen singly.

Genus *Boselaphus* Pallas, 176644. *Boselaphus tragocamelus* (Pallas)
Blue Bull (E.), Nilgai (H.)1766. *Antilope tragocamelus* Pallas, *Misc., Zool.*, 5 (Plains of Peninsular India)

Diagnosis : Horse-like in appearance with stout legs, long and narrow head, a coarse mane of black gray and white hairs running down the hindneck and over the wither. Males blue gray in colour with small, smooth and cylindrical horns, females reddish tan.

Distribution : India : Almost throughout Madhya Pradesh , from base of Himalayas to Karnataka, including Maharashtra.

Elsewhere : all across Pakistan border.

Remarks : Mostly seen in herds of 8 to 10.

Genus *Gazella* Blainville, 1816

45. *Gazella bennettii* (Sykes)

Indian Gazelle (E.), Chinkara (H.)

1831. *Antelope bennettii* Sykes, *Proc. Zool. Soc. Lond.*, 1830-31 : 104 (Deccan, India).

Diagnosis Slender bodied, medium sized, height at shoulder about 66 cm. Short tail. Horns present in both sexes but in females much smaller, number of rings in horns, 15-16 but may go up to 25 (Blanford 1888-91). Tuft of long hairs on each knee. Above light chestnut, underside white, tail nearly black, knee tuft usually dark brown, a whitish streak down each side of face.

Distribution : India : Madhya Pradesh, Andhra Pradesh, Gujarat, Karnataka, Punjab, Tamil Nadu, Thar Desert (Rajasthan), Uttar Pradesh.

Elsewhere : E. Iran to Pakistan.

Remarks : Found in groups of 2 to 30 or more.

Genus *Antelope* Pallas, 1766

46. *Antelope cervicapra* (Linnaeus)

Black Buck, Indian Antelope (E.), Harna (Male), Harni (female) (H.)

1758. *Capra cervicapra* Linnaeus, *Syst. Nat.*, 10th ed, 1 : 69 (Inland of Trivandrum, Kerala, India).

Diagnosis : Medium sized, 70-80 cm at shoulder and 120-130 cm in head and body length. Horns long. Slender, twisted spirally and bearing rounded transverse ridges. Females hornless. Males black dorsally, white on throat and venter, females reddish fawn dorsally.

Distribution : India : from Rajasthan and Punjab in the north to Assam in the east and south to Kanyakumari (Tamil Nadu).

Elsewhere : Pakistan and Nepal, also introduced in Texas (U.S.A.)

Remarks : Found in groups of 5 to 10 or more.

Family TRAGULIDAE

Genus *Moschiola* Hodgson

47. *Moschiola meminna* (Erxleben)

Indian spotted Chevrotain, Mouse deer (E.), Pisora (H.)

1777. *Moschus memmina* Erxleben. *Syst. Regn. Anim.*, 1 : 322.

Diagnosis : Dear like but smaller in size. Shoulder height 25-30 cm. Upper parts olive brown, sparkled with yellow, longitudinal rows of buff or white spots on the flanks merge to form stripes. Under parts white. Limbs with four well developed toes. Tusks in both sexes, large in males.

Distribution : India : Madhya Pradesh (Shivpuri, Hoshangabad, Chhindwara, Mandla, Balaghat, Umaria) to Tamil Nadu.

Elsewhere : Nepal, Sri Lanka.

Remarks : Nocturnal. Found singly or in pairs but rarely seen in the Reserve.

Order PHOLIDOTA

Family MANIDAE

Genus *Manis* Linnaeus, 1758

48. *Manis crassicaudata* Gray

Indian Pangolin (E.); Bajra Kit, Bajra Kaptā, Sal Sala, Silu, Suraj Mukhi (H.)

1827. *Manis crassicaudata* Gray, in Griffith *et al.*, *Anim. Kingd.*, 5 : 282 (India).

Diagnosis : Head and body reaches 66 mm, female a little smaller. Hump-backed body, tapering tail without glandular naked area at tip. Muzzle tapers to a narrow, down-curving, trunk-like snout. External pinna like a shallow crescent, vertical fold on the naked skin. Body covered with 11-13 rows of overlapping light yellowish brown, pointed horny scales.

Distribution : India : Madhya Pradesh (Hoshangabad, Mandla, Morena) Andhra Pradesh; Bihar; Dehi, Karnataka, Kerala, Maharashtra, Orissa, Punjab, Rajasthan, West Bengal.

Elsewhere : Bangladesh, China Pakistan and Sri Lanka.

Remarks : It usually moves about only at night, therefore it is rarely seen.

Order RODENTIA

Family SCIURIDAE

Genus *Petaurista* Link, 179549. *Petaurista petaurista philippensis* (Elliot)

Large Brown Flying squirrel (E.)

1840. *Pteromys philippensis* Elliot, *Madras J. Litt. and sci.*, 10 : 217 (South Maharatta Country, Maharashtra.)

Diagnosis : Head and body 45 cm. Tail 60 cm. Dorsum grizzled brown and gray, parachute and forelimb usually brown, underpart whitish to pale gray, tail usually black.

Distribution : India : Madhya Pradesh (Hoshangabad, Balaghat, Mandla and Umaria) Bihar, Gujarat, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu.

Remarks : Nocturnal. Roosts in a hole in tree. Glides from tree to tree with the help of its extended parachute like membrane between limbs. Feeds on fruits, nuts, bark, resins, insects and larvae.

Genus *Funambulus* Lesson, 183550. *Funambulus palmarum* (Linnaeus)

Indian Palm Squirrel (E.); Gilehri (H.)

1766. *Sciurus palmarum* Linnaeus *Syst. Nat. 12th ed.* 1 : 86 (Madras=Chennai, Tamil Nadu, India).

Diagnosis : Similar to *F. pennanti* except the dorsum with three pale coloured stripes instead of five.

Material : 1 Female and 1 Male, 12.02.1941. Pachmarhi, Hoshangabad district, coll. M.L. Roonwal. 1 Female and 1 Male, Pachmarhi, Hoshangabad district, 10.03.1974, coll. R.K. Ghose.

Distribution : India : Madhya Pradesh (throughout the state) Andhra Pradesh, Bihar, Karnataka, Kerala, Orissa, Tamil Nadu, West Bengal.

Elsewhere : Sri Lanka.

Remarks : Diurnal. Arboreal and terrestrial.

51. *Funambulus pennanti* Wroughton

Northern Palm Squirrel, Five-striped Palm Squirrel (E.),

1905. *Funambulus pennanti* Wroughton *J. Bombay nat. Hist. Soc.*, 16 : 411 (Mandvi Taluka. Surat, The Reserve, India).

Diagnosis : Small-sized, ear rounded. Muzzle pointed. Dorsum olive gray, divided by five pale coloured stripes, belly and flanks creamy gray and separated from the dorsum by indistinct creamy buff longitudinal stripe. Bushy tail. creamy or whitish at tip.

Distribution : India : Madhya Pradesh : All districts, Andman Island, Assam, Bihar, Delhi, Haryana, Jammu and Kashimar, Maharashtra, Meghalaya, Orissa, Punjab, Rajashtan, Sikkim, West Bengal.

Elsewhere : Bangladesh,. Iran, Nepal and Pakistan.

Genus *Ratufa* Gray, 1867

52. *Ratufa indica centralis* (Ryley)

Indian Giant Squirrel (E.); Karat , Rasu (H.)

1913. *Retufa indica centralis* Ryley, *J. Bombay nat. Hist. Soc.*, **22** : 436 (Bori, Hoshangabad)

Diagnosis : Head and body 35 to 40cm. Tail 60cm. upperparts black with red head and flanks, under parts whitish.

Material : 1 Male, Hoshangabad 14.09.1912. coll. C.A. Crump.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra.

Remarks : Common. Diurnal. Arboreal moving between trees with ease. Forms several globular nests of leaves and twigs on treetops. Mainly creeper; agile and shy animal. It makes loud rattles and scolds when alarmed. Feeds on fruits, flowers and bark.

Family HYSTRICIDAE

Genus *Hystrix* Linnaeus, 1755

53. *Hystrix indica* Kerr

Indian Crested Porcupine (E.); Sahi, Sayal (H.)

1792. *Hystrix cristata var. indica* Kerr. *Anim. Kingd.*, 213 (India.)

Diagnosis : Body covered with well developed spines, distinct crust of long black quills on crown and neck, quills of tail whitish. Short and hollow.

Distribution : India : Madhya Pradesh, almost throughout India, except north eastern states.

Elsewhere : China, Iraq, Iran, Russian, Pakistan, S. Arabia, Sri Lanka, Syria and Turkistan.

Remarks : Found singly or in groups of up to 4.

Family MURIDAE

Subfamily GERBILLINAE

Genus *Tatera* Lataste, 188254. *Tatera indica indica* (Hardwicke)

Indian Gerbil, Antelope Rat (E.)

1807. *Dipus indicus* Hardwicke, *Trans. Linn. Soc. Lond.*, 8 : 279 (Between Benaras and Hardwar, The Reserve. India)

Diagnosis : Size of a common house rat, tail longer than head and body. Tail well-furred and distal one third bears a dorsal crest of longer, blackish hairs terminating in a tuft, dorsal and ventral surface of tail dark brown, sides paler. Dorsum pale, biscuit to reddish, venter pure white. Upper incisors longitudinally grooved.

Material : 2 Male, Pachmarhi, Hoshangabad, 12.03.1974. coll. R.K. Ghose.

Distribution : India : The Reserve : Throughout the Madhya Pradesh, Andhra Pradesh, Bihar, Delhi, Haryana, Jammu and Kashmir,, Maharashtra, Orissa, Punjab, Rajasthan, West Bengal.

Elsewhere : Afghanistan, Iran, Nepal and Pakistan.

Remarks : Common. Nocturnal and fossorial. Feeds on leaves, seeds grains, flowers, insects, molluscs etc.

Subfamily MURINAE

Genus *Millardia* Thomas, 191155. *Millardia meltada* Gray

Metad, Northern soft furred Field Rat (E.)

1912. *Millardia meltada* Gray, *Ann. mag.nat. Hist.*, (Ser 1), 1 : 586

Diagnosis : A field rat, with large, rounded ear and short bicoloured tail. Hind foot without posterior pad of sole. Fifth toe noticeably short, being roughly equal to hallux. Dorsum pale grayish fawn, venter grayish white.

Distribution : India : Madhya Pradesh Himachal Pradesh, Punjab.

Elsewhere : Nepal and Pakistan.

Remarks : It is a common field rat, mostly occurs in irrigated crop field and grassland forming burrows.

Genus *Rattus* Fischer, 180356. *Rattus rattus* (Linn.)

House Rat (E.), Chuha (H.)

1918. *Rattus rattus* Linn., *J. Bombay nat. Hist. Soc.*, 26 : 77 (Sakot, Hoshangabad, Madhya Pradesh, India).

Diagnosis : White-bellied, tail much longer than head and body Upper molar tooth row less than 6 or less than 16 percent of occipito-nasal length.

Material : 2 Male, Jatashankar.

Distribution : India : Madhya Pradesh; Maharashtra, Karnataka, Kerala, Tamil Nadu.

Remarks : Common.

Genus *Golunda* Gray, 183757. *Golunda ellioti* Gray

Indian Bush Rat (E.)

1923. *Golunda ellioti* Gray, *J. Bombay nat. Hist. Soc.*, 29 : 374 (Lunwa, Palanpur, India).

Diagnosis : Apparently similar to house rat, but much smaller and tail almost always shorter than head and body, covered with short hairs. Ear almost circular in outline and pinna well covered on both sides with short buff hairs. Tail dorsally dark brown, ventrally yellowish gray. Upper incisors prominently grooved.

Material : 1 Female, Hoshangabad, 13.01.1912 coll. C.A. Crump.

Distribution : India : Almost throughout the State, Rajasthan.

Remarks : Diurnal, Found in forests orchards and bushes near cultivation. Feeds on seeds, fruits, berries, shoots and vegetables.

Genus *Mus* Linnaeus, 175858. *Mus booduga booduga* (Gray)

Common Indian Field Mouse (E.), Chuhiya (H.)

1837. *Leggada booduga* Gray, *Charlesworth's Mag. nat. Hist.*, 1 : 586 (South Maharashtra, India).

Diagnosis : Very small, head and body length on average 60 mm, tail usually subequal to head and body, Dorsum brown to light brown, venter perfectly white, tail bicoloured.

Distribution : India : Throughout the State, all over rest of India.

Elsewhere : Pakistan and Bangladesh.

Remarks : Commonly found field mouse during harvesting season.

59. *Mus musculus castaneus* Waterhouse

House mouse (E.); Musti (H.)

1843. *Mus castaneus* Waterhouse, *Ann. Mag. nat. Hist.*, [1], 12 : 134 (Philippines).

Diagnosis : Small sized mouse with head and body 52-116 mm in length and tail little longer than head and body. Dorsal surface sandy brown to dark brown and venter ochraceous brown, tail faintly bicoloured, dark dorsally and white ventrally. Mammae five in pairs.

Distribution : Throughout India.

Elsewhere : Nepal, Sri Lanka, China and SE Asia.

Remarks : Nocturnal. Found in houses, godowns, shops, garden and fields. Feeds mostly on vegetable matters, occasionally eats insects.

Genus *Bandicota* Gray, 1873

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

Indian Mole Rat, Lesser Bandicoot Rat (E.), Chuha (H.)

1933. *Arvicola bengalensis* Gray, and Hardwicke *Illustr. Ind. Zool.*, 2. pl. 21 (Bengal).

Diagnosis : Rat-like, but snout relatively less pointed. Fur coarse, with long black tipped hairs throughout the back. Tail distinctly shorter than head and body. Venter gray to dark gray, ear and tail naked and blackish gray. Mammae 12-20, not always in pairs.

Distribution : India : Throughout India.

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

Remarks : Common. Found in fields, houses and godowns causing considerable damage to grains.

Genus *Cremomys*

61. *Cremomys blanfordi* Thomas

Bandford's Rat (E.)

1881. *Mus blanfordi* Thomas. *Ann. mag. nat. Hist.*, (5), 7 : 24 (Kadapa, Tamil Nadu, India)

Diagnosis : Medium sized rat. Tail bicoloured, dark proximally, white at the end, hairy and may be slightly tufted at the end. Body greyish to reddish brown dorsally and white ventrally. Hindfoot white. Fifth toe long. Mammae 3 pairs.

Distribution : India : Madhya Pradesh (Jabalpur, Mandla and Hoshangabad), Bihar, Goa, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu and West Bengal.

Remarks : Nocturnal. Found in all types of habitats. Feeds on plant matter and insects.

Order LAGOMORPHA

Family LEPORIDAE

Genus *Lepus* Linnaeus, 1758

62. *Lepus nigricollis mahadeva* Blanford Indian Hare, Blacknaped Hare, (E.)

1874. *Lepus dayanus* Blanford, *Proc. zool. Soc.*, 663 (Sskur. Sind, Pakistan).

Diagnosis : Dorsal fur short, harsh. Dorsum pale sandy brown, nape of neck warm buff, lower limbs ochraceous, chest and throat creamy yellow, lower belly and inguinal region whiter. No trace of collar of black hairs in the lower neck.

Material examined : 1 ex. Hoshagabad, 12.07.1961, coll. CRS, ZSI, Jabalpur.

Distribution : India : Madhya Pradesh (Balaghat, Hoshangabad, Mandla, Shahdol)

Remarks : Found singly or in groups upto 4. Feeds on grasses, leaves, flowers, fruits and crops.

63. *Lepus nigricollis ruficaudatus* Geoffroy Rufous tailed Hare (E.), Khargosh (H.)

1826. *Lepus ruficaudatus* Geoffroy, *Dict. Class. Hist. Nat.*, 9 : 381 (Bengal)

Diagnosis : Head and body 40-50 cm in length, grey patch on nape. Coat rufous brown much mixed with black on back and face, breast and limbs rufous, chin, upper throat and lower parts white. Upper surface of tail rufous brown.

Distribution : India : Madhya Pradesh (Jabalpur, Hoshangabad, Gwalior, Narsingpur, Shahdol and Sagar), Orissa, Rajasthan, Sikkim, Uttaranchal, West Bengal.

Elsewhere : Nepal.

Remarks : Similar to *L. n. mahadeva* in habits.

SUMMARY

The present paper contains the systematic account of 63 species of mammals belonging to 49 genera 9 orders and 25 families found in Pachmarhi Biosphere Reserve. Remarks regarding habits and habitats of species and their status in the Reserve are also provided as far as possible.

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AVES

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INTRODUCTION

The Pachmarhi Biosphere Reserve is eco-sensitive and also a bio-diversity rich zone. Birds have been well studied in different regions of Central India including various districts of Madhya Pradesh by Moss (1911), Baker (1922-1930), D' Abreu (1931, 1935), Ali (1939, 1940), Hewetson (1939, 1954 and 1956), Roonwal (1942), Ali & Ripley (1968-1974), Khajuria and Mahabal (1994), Sawarkar *et al.* (1998). Further, the birds of Pachmarhi were first studied by Osmaston (1922) who published the list of 136 species from Pachmarhi and its surrounding area. Bates (1927), Amladi (1973) have also recorded birds from Pachmarhi. Ali (1949) listed about 110 hill birds from Peninsular Indian hills including Mahadeo Hills, *i.e.* Pachmarhi.

In this communication, 255 species of birds have been recorded from Pachmarhi Biosphere Reserve on the basis of earlier records and actual sightings during the surveys undertaken from 2000 to 2003. Birds were observed with the help of 7 x 50 pair of binoculars. Ali & Ripley (1968-1974 and 1995), and Grimmett *et al.* (2000) were used for field identification, residential status and distribution. Manakadan & Pittie (2001) has been followed here for common, scientific names and family sequence.

Table-1. List of Birds of Pachmarhi Biosphere Reserve.

S. No.	Scientific Name	Common Name	Residential Status
	Order PODICIPEDIFORMES		
	Family PODICIPEDIDAE		
1.	<i>Tachybaptus ruficollis</i> (Pallas)	Little Grebe	R
	Order PELECANIFORMES		
	Family PHALACROCORACIDAE		
2.	<i>Phalacrocorax niger</i> (Vieillot)	Little Cormorant	R

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S. No.	Scientific Name	Common Name	Residential Status
3.	<i>Phalacrocorax fuscicollis</i> Stephens	Indian Shag	R
4.	<i>Phalacrocorax carbo sinensis</i> (Linn.)	Great Cormorant	R
Family ANHINGIDAE			
5.	<i>Anhinga melanogaster</i> Pennant	Darter	R
Order CICONIIFORMES			
Family ARDEIDAE			
6.	<i>Egretta garzetta</i> (Linnaeus)	Little Egret	R
7.	<i>Ardea cinerea</i> Linnaeus	Grey Heron	R
8.	<i>Ardea purpurea</i> Linnaeus	Purple Heron	R
9.	<i>Casmerodius albus</i> (Linnaeus)	Large Egret	R
10.	<i>Mesophoyx intermedia</i> (Wagler)	Median Egret	R
11.	<i>Bubulcus ibis</i> (Linnaeus)	Cattle Egret	R
12.	<i>Ardeola grayii</i> (Sykes)	Indian Pond-Heron	R
13.	<i>Butorides striatus</i> (Linnaeus)	Little Green Heron	R
14.	<i>Nycticorax nycticorax</i> (Linnaeus)	Black-crowned Night-Heron	R
Family CICONIIDAE			
15.	<i>Anastomus oscitans</i> (Boddaert)	Asian Openbill-Stork	R
16.	<i>Ciconia nigra</i> (Linnaeus)	Black Stork	WV
17.	<i>Ciconia episcopus</i> (Boddaert)	White-necked Stork	R
18.	<i>Ciconia ciconia</i> (Linnaeus)	European White Stork	WV
Family THRESKIORNITHIDAE			
19.	<i>Plegadis falcinellus</i> (Linnaeus)	Glossy Ibis R/WV	
20.	<i>Threskiornis melanocephalus</i> (Latham)	Oriental White Ibis	R
21.	<i>Pseudibis papillosa</i> (Temminck)	Black Ibis	R
22.	<i>Platalea leucorodia</i> Linnaeus	Eurasian Spoonbill	WV

S. No.	Scientific Name	Common Name	Residential Status
Order ANSERIFORMES			
Family ANATIDAE			
23.	<i>Dendrocygna bicolor</i> (Vieillot)	Large Whistling-Duck	R
24.	<i>Anser indicus</i> (Latham)	Bar-headed Goose	WV
25.	<i>Tadorna ferruginea</i> (Pallas)	Brahminy Shelduck	WV
26.	<i>Anas poecilorhyncha</i> J.R. Forster	Spot-billed Duck	R
27.	<i>Anas acuta</i> Linnaeus	Northern Pintail	WV
28.	<i>Anas crecca</i> Linnaeus	Common Teal	WV
29.	<i>Aythya ferina</i> (Linnaeus)	Common Pochard	WV
Order FALCONIFORMES			
Family ACCIPITRIDAE			
30.	<i>Pernis ptilorhynchus</i> (Temminck)	Oriental Honey-Buzzard	R
31.	<i>Elanus caeruleus</i> (Desfontaines)	Black-shouldered Kite	R
32.	<i>Milvus migrans</i> (Beddaert)	Black Kite	R
33.	<i>Haliastur indus</i> (Boddaert)	Brahminy Kite	R
34.	<i>Neophron percnopterus</i> (Linnaeus)	Egyptian Vulture	R
35.	<i>Gyps bengalensis</i> (Gmelin)	Indian White-backed Vulture	R
36.	<i>Gyps indicus</i> (Scopoli)	Long-billed Vulture	R
37.	<i>Gyps fulvus</i> (Hablizl)	Eurasian Griffon	R
38.	<i>Aegypius monachus</i> (Linnaeus)	Cinereous Vulture	WV
39.	<i>Sarcogyps calvus</i> (Scopoli)	Red-headed Vulture	R
40.	<i>Circaetus gallicus</i> (Gmelin)	Short-toed Snake-Eagle	R
41.	<i>Spilornis cheela</i> (Latham)	Crested Serpent-Eagle	R
42.	<i>Circus macrourus</i> (Gmelin)	Pallid Harrier	WV
43.	<i>Accipiter badius</i> (Gmelin)	Shikra	R

S. No.	Scientific Name	Common Name	Residential Status
44.	<i>Accipiter nisus</i> (Linnaeus)	Eurasian Sparrowhawk	R
45.	<i>Butastur teesa</i> (Franklin)	White-eyed Buzzard	R
46.	<i>Ictinaetus malayensis</i> (Temminck)	Black Eagle	R
47.	<i>Aquila rapax</i> (Temminck)	Tawny Eagle	R
48.	<i>Hieraaetus fasciatus</i> (Vieillot)	Bonelli's Eagle	R
49.	<i>Spizaetus cirrhatus</i> (Gmelin)	Changeable Hawk-Eagle	R
50.	<i>Spizaetus nipalensis</i> (Hodgson)	Mountain Hawk-Eagle	WV
Family PANDIONIDAE			
51.	<i>Pandion haliaetus</i> (Linnaeus)	Osprey	WV
Family FALCONIDAE			
52.	<i>Falco tinnunculus</i> Linnaeus	Common Kestrel	WV
53.	<i>Falco jugger</i> J.E. Gray	Laggar	R
54.	<i>Falco peregrinus</i> Tunstall	Peregrine Falcon	WV
Order GALLIFORMES			
Family PHASIANIDAE			
55.	<i>Francolinus francolinus</i> (Linnaeus)	Black Francolin	R
56.	<i>Francolinus pondicerianus</i> (Gmelin)	Grey Francolin	R
57.	<i>Coturnix coturnix</i> (Linnaeus)	Common Quail	R
58.	<i>Perdica asiatica</i> (Latham)	Jungle Bush-Quail	R
59.	<i>Perdica argoondah</i> (Sykes)	Rock Bush-quail	R
60.	<i>Galloperdix lunulata</i> (Valenciennes)	Painted Spurfowl	R
61.	<i>Galloperdix spadicea spadicea</i> (Gmelin)	Red Spurfowl	R
62.	<i>Gallus gallus</i> Linnaeus	Red Junglefowl	R
63.	<i>Gallus sonneratii</i> Temminck	Grey Junglefowl	R
64.	<i>Pavo cristatus</i> Linnaeus	Indian Peafowl	R

S. No.	Scientific Name	Common Name	Residential Status
Order GRUIFORMES			
Family TURNICIDAE			
65.	<i>Turnix suscitator</i> (Gmelin)	Common Buttonquail	R
Family GRUIDAE			
66.	<i>Grus antigone</i> (Linnaeus)	Sarus Crane	R
Family RALLIDAE			
67.	<i>Amaurornis phoenicurus</i> (Pennant)	White-breasted Waterhen	R
68.	<i>Porphyrio porphyrio</i> (Linnaeus)	Purple Moorhen	R
69.	<i>Fulica atra</i> Linnaeus	Common Coot	R
Order CHARADRIIFORMES			
Family JACANIDAE			
70.	<i>Hydrophasianus chirurgus</i> (Scopoli)	Pheasant-tailed Jacana	R
71.	<i>Metopidius indicus</i> (Latham)	Bronze-winged Jacana	R
Family CHARADRIIDAE			
72.	<i>Charadrius dubius</i> Scopoli	Little Ringed Plover	R
73.	<i>Vanellus duvaucelii</i> (Lesson)	River Lapwing	R
74.	<i>Vanellus indicus</i> (Boddaert)	Red-wattled Lapwing	R
Family SCOLOPACIDAE			
75.	<i>Gallinago stenura</i> (Bonaparte)	Pintail Snipe	WV
76.	<i>Gallinago gallinago</i> (Linnaeus)	Common Snipe	WV
77.	<i>Tringa nebularia</i> (Gunner)	Common Greenshank	WV
78.	<i>Tringa ochropus</i> Linnaeus	Green Sandpiper	WV
79.	<i>Actitis hypoleucos</i> Linnaeus	Common Sandpiper	WV
80.	<i>Calidris minuta</i> (Leisler)	Little Stint	WV
Family RECURVIROSTRIDAE			
81.	<i>Himantopus himantopus</i> (Linnaeus)	Black-winged Stilt	WV/R

S. No.	Scientific Name	Common Name	Residential Status
Family BURHINIDAE			
82.	<i>Esacus recurvirostris</i> (Cuvier)	Great Stone-Plover	R
Family GLAREOLIDAE			
83.	<i>Glareola lactea</i> Temminck	Small Pranticole	R
Family LARIDAE			
84.	<i>Larus brunnicephalus</i> Jerdon	Brown-headed Gull	WV
85.	<i>Sterna aurantia</i> J.E. Gray	River Tern	R
Order COLUMBIFORMES			
Family PTEROCLIDIDAE			
86.	<i>Pterocles indicus</i> (Gmelin)	Painted Sandgrouse	R
Family COLUMBIDAE			
87.	<i>Columba livia</i> Gmelin	Blue Rock Pigeon	R
88.	<i>Streptopelia orientalis</i> (Latham)	Oriental Turtle-Dove	R
89.	<i>Streptopelia senegalensis</i> (Linnaeus)	Little Brown Dove	R
90.	<i>Streptopelia chinensis</i> (Scopoli)	Spotted Dove	R
91.	<i>Streptopelia tranquebarica</i> (Hermann)	Red Collared-Dove	R
92.	<i>Streptopelia decaocto</i> (Frisvaldszky)	Eurasian Collared-Dove	R
93.	<i>Chalcophaps indica</i> (Linnaeus)	Emerald Dove	R
94.	<i>Treron phoenicoptera</i> (Latham)	Yellow-legged Green-Pigeon	R
Order PSITTACIFORMES			
Family PSITTACIDAE			
95.	<i>Psittacula eupatria</i> Linnaeus	Alexandrine Parakeet	R
96.	<i>Psittacula krameri</i> (Scopoli)	Rose-ringed Parakeet	R
97.	<i>Psittacula cyanocephala</i> (Linnaeus)	Plum-headed Parakeet	R
Order CUCULIFORMES			
Family CUCULIDAE			
98.	<i>Clamator jacobinus</i> (Boddaert)	Pied Crested Cuckoo	MV

S. No.	Scientific Name	Common Name	Residential Status
99.	<i>Hierococcyx varius</i> (Vahl)	Brainfever Bird	R
100.	<i>Cuculus micropterus</i> Gould	Indian Cuckoo	R
101.	<i>Cuculus canorus</i> Linnaeus	Common Cuckoo	R
102.	<i>Cuculus poliocephalus</i> Latham	Lesser Cuckoo	R
103.	<i>Cacomantis sonneratii</i> (Latham)	Banded Bay Cuckoo	R
104.	<i>Cacomantis passerinus</i> (Vahl)	Indian Plaintive Cuckoo	R
105.	<i>Eudynamys scolopacea</i> (Linnaeus)	Asian Koel	R
106.	<i>Centropus sinensis</i> (Stephens)	Greater Coucal	R
Order STRIGIFORMES			
Family TYTONIDAE			
107.	<i>Tyto alba</i> (Scopoli)	Barn Owl	R
Family STRIGIDAE			
108.	<i>Otus scops</i> Linnaeus	Eurasian Scops-Owl	R
109.	<i>Otus bakkamoena bakkamoena</i> Pennant	Collared Scops-Owl	R
110.	<i>Bubo bubo</i> Linnaeus	Eurasian Eagle-Owl	R
111.	<i>Ketupa zeylonensis</i> (Gmelin)	Brown Fish-Owl	R
112.	<i>Glaucidium radiatum</i> (Tickell)	Jungle Owlet	R
113.	<i>Athene brama</i> (Temminck)	Spotted Owlet	R
114.	<i>Ninox scutulata</i> (Raffles)	Brown Hawk-Owl	R
115.	<i>Asio flammeus</i> (Pontoppidan)	Short-eared Owl	WV
Order CAPRIMULGIFORMES			
Family CAPRIMULGIDAE			
116.	<i>Caprimulgus indicus</i> Latham	Indian Jungle Nightjar	R
117.	<i>Caprimulgus asiaticus</i> Latham	Common Indian Nightjar	R
118.	<i>Caprimulgus affinis</i> Horsfield	Franklin's Nightjar	R

S. No.	Scientific Name	Common Name	Residential Status
Order APODIFORMES			
Family APODIDAE			
119.	<i>Apus affinis</i> (J.E. Gray)	House Swift	R
Family HEMIPROCNIDAE			
120.	<i>Hemiprocne coronata</i> (Tickell)	Crested Tree-Swift	R
Order CORACIIFORMES			
Family ALCEDINIDAE			
121.	<i>Alcedo atthis</i> Linnaeus	Small Blue Kingfisher	R
122.	<i>Halcyon capensis</i> (Linnaeus)	Stork-billed Kingfisher	R
123.	<i>Halcyon smyrnensis</i> (Linnaeus)	White-breasted Kingfisher	R
124.	<i>Ceryle rudis</i> Linnaeus	Lesser Pied Kingfisher	R
Family MEROPIDAE			
125.	<i>Nyctyornis athertoni</i> (Jardine & Selby)	Blue-bearded Bee-eater	R
126.	<i>Merops orientalis</i> Latham	Small Bee-eater	R
127.	<i>Merops philippinus</i> Linnaeus	Blue-tailed Bee-eater	R
Family CORACIIDAE			
128.	<i>Coracias benghalensis benghalensis</i> (Linnaeus)	Indian Roller	R
Family UPUPIDAE			
129.	<i>Upupa epops</i> Linnaeus	Common Hoopoe	R/WV
Family BUCEROTIDAE			
130.	<i>Ocyrceros birostris</i> (Scopoli)	Indian Grey Hornbill	R
131.	<i>Anthracoceros coronatus</i> (Boddaert)	Malabar Pied Hornbill	R
Order PICIFORMES			
Family CAPITONIDAE			
132.	<i>Megalaima zeylanica</i> (Gmelin)	Brown-headed Barbet	R

S. No.	Scientific Name	Common Name	Residential Status
133.	<i>Megalaima haemacephala</i> (Muller)	Coppersmith Barbet	R
Family PICIDAE			
134.	<i>Jynx torquilla</i> Linnaeus	Eurasian Wryneck	WV
135.	<i>Dendrocopos nanus</i> (Vigors)	Brown-capped Pygmy Woodpecker	R
136.	<i>Dendrocopos mahrattensis</i> (Latham)	Yellow-fronted Pied Woodpecker	R
137.	<i>Celeus brachyurus</i> (Vieillot)	Rufous Woodpecker	R
138.	<i>Dinopium benghalense</i> (Linnaeus)	Lesser Golden-backed Woodpecker	R
139.	<i>Chrysocolaptes festivus</i> (Boddaert)	Black-shouldered Woodpecker	R
140.	<i>Hemicircus canente</i> (Lesson)	Heart-spotted Woodpecker	R
Order PASSERIFORMES			
Family PITTIDAE			
141.	<i>Pitta brachyura</i> (Linnaeus)	Indian Pitta	WV
Family ALAUDIDAE			
142.	<i>Eremopterix grisea</i> (Scopoli)	Ashy-crowned Sparrow-Lark	R
143.	<i>Ammomanes phoenicurus</i> (Franklin)	Rufous-tailed Finch-Lark	R
144.	<i>Alauda gulgula</i> Franklin	Eastern Skylark	R
Family HIRUNDINIDAE			
145.	<i>Hirundo concolor</i> Sykes	Dusky Crag-Martin	R
146.	<i>Hirundo rustica</i> Linnaeus	Common Swallow	WV
147.	<i>Hirundo smithii</i> Leach	Wire-tailed Swallow	R
148.	<i>Hirundo daurica</i> Linnaeus	Red-rumped Swallow	R
Family MOTACILLIDAE			
149.	<i>Dendronanthus indicus</i> (Gmelin)	Forest Wagtail	WV
150.	<i>Motacilla alba</i> Linnaeus	White Wagtail	WV
151.	<i>Motacilla maderaspatensis</i> Gmelin	Large Pied Wagtail	R

S. No.	Scientific Name	Common Name	Residential Status
152.	<i>Motacilla citreola</i> Pallas	Citrine Wagtail	WV
153.	<i>Motacilla flava</i> Linnaeus	Yellow Wagtail	WV
154.	<i>Motacilla cinerea</i> Tunstall	Grey Wagtail	WV
155.	<i>Anthus rufulus</i> Vieillot	Paddyfield Pipit	R
156.	<i>Anthus similis</i> Jerdon	Brown Rock Pipit	WV
157.	<i>Anthus trivialis</i> (Linnaeus)	Eurasian Tree pipit	WV
158.	<i>Anthus hodgsoni</i> Richmond	Oriental Tree Pipit	WV
Family CAMPEPHAGIDAE			
159.	<i>Coracina macei</i> (Lesson)	Large Cuckoo-Shrike	R
160.	<i>Coracina melanoptera</i> (Rüppell)	Black-headed Cuckoo-Shrike	R
161.	<i>Pericrocotus cinnamomeus</i> (Linnaeus)	Small Minivet	R
162.	<i>Pericrocotus erythropygus</i> (Jerdon)	White-bellied Minivet	R
163.	<i>Pericrocotus flammeus</i> (Forster)	Scarlet Minivet	R
164.	<i>Hemipus picatus</i> (Sykes)	Pied Flycatcher-Shrike	R
165.	<i>Tephrodornis pondicerianus</i> (Gmelin)	Common Woodshrike	R
Family PYCNONOTIDAE			
166.	<i>Pycnonotus melanicterus</i> (Gmelin)	Black-crested Bulbul	R
167.	<i>Pycnonotus jocosus</i> (Linnaeus)	Red-whiskered Bulbul	R
168.	<i>Pycnonotus cafer</i> (Linnaeus)	Red-vented Bulbul	R
Family IRENIDAE			
169.	<i>Aegithina tiphia</i> (Linnaeus)	Common Iora	R
170.	<i>Aegithina nigrolutea</i> (Marshall)	Marshall's Iora	R
171.	<i>Chloropsis cochinchinensis</i> (Gmelin)	Jerdon's Chloropsis	R
Family LANIIDAE			
172.	<i>Lanius cristatus</i> Linnaeus	Brown Shrike	WV

S. No.	Scientific Name	Common Name	Residential Status
173.	<i>Lanius vittatus</i> Valenciennes	Bay-backed Shrike	R
174.	<i>Lanius schach</i> Linnaeus	Rufous-backed Shrike	WV
175.	<i>Lanius excubitor</i> Linnaeus	Great Grey Shrike	R
Family MUSCICAPIDAE			
Subfamily TURDINAE			
176.	<i>Monticola solitarius</i> (Linnaeus)	Blue Rock-Thrush	WV
177.	<i>Myiophonus horsfieldii</i> (Vigors)	Malabar Whistling-Thrush	R
178.	<i>Zoothera citrina</i> (Latham)	Orange-headed Thrush	R
179.	<i>Turdus merula</i> Linnaeus	Eurasian Blackbird	R
180.	<i>Luscinia svecica</i> (Linnaeus)	Bluethroat	WV
181.	<i>Copsychus saularis</i> (Linnaeus)	Oriental Magpie-Robin	R
182.	<i>Saxicoloides fulicata</i> Linnaeus	Indian Robin	R
183.	<i>Phoenicurus ochruros</i> (Gmelin)	Black Redstart	R/WV
184.	<i>Saxicola torquata</i> (Linnaeus)	Common Stonechat	WV
185.	<i>Saxicola caprata</i> (Linnaeus)	Pied Bushchat	R
Subfamily TIMALIINAE			
186.	<i>Pellorneum ruficeps</i> Swainson	Spotted Babbler	R
187.	<i>Pomatorhinus schisticeps</i> Hodgson	Hodgson's Scimitar-Babbler	R
188.	<i>Dumetia hyperythra</i> (Franklin)	Rufous-bellied Babbler	R
189.	<i>Chrysomma sinense</i> (Gmelin)	Yellow-eyed Babbler	R
190.	<i>Turdoides caudatus</i> (Dumont)	Common Babbler	R
191.	<i>Turdoides malcolmi</i> (Sykes)	Large Grey Babbler	R
192.	<i>Turdoides striatus</i> (Dumont)	Jungle Babbler	R
193.	<i>Alcippe poioicephala</i> (Jerdon)	Quaker Tit-Babbler	R
Subfamily SYLVIINAE			
194.	<i>Cisticola juncidis</i> (Ratnesque)	Streaked Fantail-Warbler	R

S. No.	Scientific Name	Common Name	Residential Status
195.	<i>Prinia hodgsonii</i> Blyth	Franklin's Prinia	R
196.	<i>Prinia socialis stewarti</i> Blyth	Ashy Prinia	R
197.	<i>Prinia inornata</i> Sykes	Plain Prinia	R
198.	<i>Prinia sylvatica</i> Jerdon	Jungle Prinia	R
199.	<i>Acrocephalus dumetorum</i> Blyth	Blyth's Reed-Warbler	WV
200.	<i>Orthotomus sutorius</i> (Pennant)	Common Tailorbird	R
201.	<i>Phylloscopus collybita</i> (Vieillot)	Common Chiffchaff	WV
202.	<i>Phylloscopus griseolus</i> Blyth	Olivaceous Leaf-Warbler	WV
203.	<i>Phylloscopus trochiloides</i> (Sundevall)	Greenish Leaf-Warbler	WV
204.	<i>Phylloscopus reguloides</i> (Blyth)	Blyth's Leaf Warbler	WV
Subfamily MUSCICAPINAE			
205.	<i>Muscicapa davurica</i> Pallas	Asian Brown Flycatcher	WV
206.	<i>Ficedula parva</i> (Bechstein)	Red-throated Flycatcher	WV
207.	<i>Ficedula superciliaris</i> (Jerdon)	Ultramarine Flycatcher	WV
208.	<i>Eumyias thalassina</i> (Swainson)	Verditer Flycatcher	WV
209.	<i>Cyornis tickelliae</i> Blyth	Tickell's Blue-Flycatcher	R
210.	<i>Culicicapa ceylonensis</i> (Swainson)	Grey-headed Flycatcher	WV
Subfamily MONARCHINAE			
211.	<i>Terpsiphone paradisi</i> (Linnaeus)	Asian Paradise-Flycatcher	R
212.	<i>Hypothymis azurea</i> (Boddaert)	Black-naped Monarch-Flycatcher	R
Subfamily RHIPIDURINAE			
213.	<i>Rhipidura albicollis</i> (Vicillot)	White-throated Fantail-Flycatcher	R
214.	<i>Rhipidura aureola</i> (Lesson)	White-browed Fantail-Flycatcher	R
Family REMIZIDAE			
215.	<i>Cephalopyrus flammiceps</i> (Burton)	Fire-capped Tit	WV

S. No.	Scientific Name	Common Name	Residential Status
Family PARIDAE			
216	<i>Parus major</i> Linnaeus	Great Tit	R
217.	<i>Parus xanthogenys</i> Vigors	Black-lored Yellow Tit	R
Family SITTIDAE			
218.	<i>Sitta castanea</i> Lesson	Chestnut-bellied Nuthatch	R
Family CERTHIIDAE			
219.	<i>Salpornis spilonotus</i> (Franklin)	Spotted Creeper	R
Family DICAERIDAE			
220.	<i>Dicaeum agile</i> (Tickell)	Thick-billed Flowerpecker	R
221.	<i>Dicaeum erythrorhynchus</i> (Latham)	Tickell's Flowerpecker	R
Family NECTARINIIDAE			
222.	<i>Nectarinia zeylonica</i> (Linnaeus)	Purple-rumped Sunbird	R
223.	<i>Nectarinia asiatica asiatica</i> (Latham)	Purple Sunbird	R
Family ZOSTEROPIDAE			
224.	<i>Zosterops palpebrosus</i> (Temminck)	Oriental White-eye	R
Family EMBERIZIDAE			
Subfamily EMBERIZINAE			
225.	<i>Melophus lathami</i> (Gray)	Crested Bunting	R
226.	<i>Emberiza buchanani</i> Blyth	Grey-necked Bunting	WV
227.	<i>Emberiza melanocephala</i> Scopoli	Black-headed Bunting	WV
Family FRINGILLIDAE			
228.	<i>Carpodacus erythrinus</i> (Pallas)	Common Rosefinch	WV
Family ESTRILDIDAE			
229.	<i>Amandava amandava</i> (Linnaeus)	Red Munia	R
230.	<i>Lonchura malabarica</i> (Linnaeus)	White-throated Munia	R

S. No.	Scientific Name	Common Name	Residential Status
231.	<i>Lonchura striata</i> (Linnaeus)	White-rumped Munia	R
232.	<i>Lonchura punctulata</i> (Linnaeus)	Spotted Munia	R
233.	<i>Lonchura malacca</i> (Linnaeus)	Black-headed Munia	R
Family PASSERIDAE			
Subfamily PASSERINAE			
234.	<i>Passer domesticus</i> (Linnaeus)	House Sparrow	R
235.	<i>Petronia xanthocollis</i> (Burton)	Yellow-throated Sparrow	R
Subfamily PLOCEINAE			
236.	<i>Ploceus manyar</i> (Horsfield)	Streaked Weaver	R
237.	<i>Ploceus philippinus</i> (Linnaeus)	Baya Weaver	R
Family STURNIDAE			
238.	<i>Sturnus malabaricus</i> (Gmelin)	Grey-headed Starling	R
239.	<i>Sturnus pagodarum</i> (Gmelin)	Brahminy Starling	R
240.	<i>Sturnus roseus</i> (Linnaeus)	Rosy Starling	WV
241.	<i>Sturnus contra</i> Linnaeus	Asian Pied Starling	R
242.	<i>Acridotheres tristis</i> (Linnaeus)	Common Myna	R
243.	<i>Acridotheres ginginianus</i> (Latham)	Bank Myna	R
244.	<i>Acridotheres fuscus</i> (Wagler)	Jungle Myna	R
Family ORIOLIDAE			
245.	<i>Oriolus oriolus</i> (Linnaeus)	Eurasian Golden Oriole	R
246.	<i>Oriolus chinensis</i> Linnaeus	Black-naped Oriole	WV
247.	<i>Oriolus xanthornus</i> (Linnaeus)	Black-headed Oriole	R
Family DICRURIDAE			
248.	<i>Dicrurus macrocercus</i> Vieillot	Black Drongo	R
249.	<i>Dicrurus caerulescens</i> (Linnaeus)	White-bellied Drongo	R

S. No.	Scientific Name	Common Name	Residential Status
250.	<i>Dicrurus hottentottus</i> (Linnaeus)	Spangled Drongo	R
251.	<i>Dicrurus paradiseus</i> Linnaeus	Greater Racket-tailed Drongo	R
Family ARTAMIDAE			
252.	<i>Artamus fuscus</i> Vieillot	Ashy Woodswallow	R
Family CORVIDAE			
253.	<i>Dendrocitta vagabunda</i> (Latham)	Indian Treepie	R
254.	<i>Corvus splendens</i> Vieillot	House Crow	R
255.	<i>Corvus macrorhynchos</i> (Wagler)	Jungle Crow	R
<p><i>Abbreviations</i> : R- resident subject to some local or seasonal altitudinal movements due to monsoon, drought, breeding/non-breeding activity, availability of food etc. WV=winter visitor; R/WV=partly resident and partly winter visitor; MV=monsoon visitor.</p>			

SYSTEMATIC ACCOUNT

Order PODICIPEDIFORMES

Family PODICIPEDIDAE

1. *Tachybaptus ruficollis* (Pallas)

Little Grebe

1968. *Tachybaptus ruficollis capensis* : Ali & Ripley, *H. B. No. 5, Vol. 1* : 6.

Past record (Sawarkar *et al.*, 1998).

Distribution : Common throughout the Indian subcontinent, east to Assam and Manipur, south into Sri Lanka, from the plains to c. 1800 m altitude (in Kashmir). Absent in the Andaman and Nicobar islands.

Order PELECANIFORMES

Family PHALACROCORACIDAE

2. *Phalacrocorax niger* (Vieillot)

Little Cormorant

1968. *Phalacrocorax niger*: Ali & Ripley, *H. B. No. 28, Vol. 1* : 41.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India. Absent in the Himalayas.

3. *Phalacrocorax fuscicollis* Stephens**Indian Shag**

1968. *Phalacrocorax fuscicollis* : Ali & Ripley, H. B. No. 27, Vol. 1 : 39.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India.

4. *Phalacrocorax carbo sinensis* (Shaw)**Great Cormorant**

1968. *Phalacrocorax carbo sinensis*: Ali & Ripley, H. B. No. 26, Vol. 1 : 37.

Observations : Sighted in PBR.

Distribution : Right across the Gangetic Plain to eastern Assam, south through the Peninsula, and in Kashmir, Ladakh, Nepal and Sri Lanka.

Family ANHINGIDAE**5. *Anhinga rufa melanogaster* Pennant****Darter**

1968. *Anhinga rufa melanogaster*: Ali & Ripley, H. B. No. 29, Vol. 1 : 43.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India.

Order CICONIIFORMES**Family ARDEIDAE****6. *Egretta garzetta* (Linnaeus)****Little Egret**

1968. *Egretta garzetta*: Ali & Ripley, H. B. No. 49, Vol. 1 : 72.

Observations : Sighted in PBR.

Distribution : Throughout India up to 900 m.

7. *Ardea cinerea* Linnaeus**Grey Heron**

1968. *Ardea cinerea* : Ali & Ripley, H. B. No. 36, Vol. 1 : 55.

Observations : Sighted in PBR.

Distribution : Throughout India.

8. *Ardea purpurea* Linnaeus
Purple Heron

1968. *Ardea purpurea* : Ali & Ripley, H. B. No. 36, Vol. 1 : 56.

Observations : Sighted in PBR.

Distribution : Throughout India.

9. *Casmerodius albus* (Linnaeus)
Large Egret

1968. *Casmerodius albus* : Ali & Ripley, H. B. No. 46, Vol. 1 : 69.

Observations : Sighted in PBR.

Distribution : Throughout India.

10. *Mesophoyx intermedia intermedia* (Wagler)
Median Egret

1968. *Mesophoyx intermedia* : Ali & Ripley, H. B. No. 47, 48, Vol. 1 : 71.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout the Indian subcontinent.

11. *Bubulcus ibis* (Linnaeus)
Cattle Egret

1968. *Bubulcus ibis coromandus* : Ali & Ripley, H. B. No. 44, Vol. 1 : 66.

Observations : Sighted in PBR.

Distribution : Throughout the Indian subcontinent.

12. *Ardeola grayii* (Sykes)
Indian Pond-Heron

1968. *Ardeola grayii* : Ali & Ripley, H. B. No. 42, Vol. 1 : 63.

Observations : Sighted in PBR.

Distribution : Throughout India, up to 1500 m. in Himalayas.

13. *Butorides striatus* (Linnaeus)**Little Green Heron**

1968. *Butorides striatus* : Ali & Ripley, H. B. No. 38, Vol. 1 : 59.

Observations : Sighted in PBR.

Distribution : Generally, but thinly distributed throughout the subcontinent from Sindh (Pakistan) to eastern Assam and Manipur.

14. *Nycticorax nycticorax* (Linnaeus)**Black-crowned Night-Heron**

1968. *Nycticorax nycticorax* : Ali & Ripley, H. B. No. 52, Vol. 1 : 78.

Past record (Sawarkar *et al.*, 1998).

Distribution : Found throughout India up to 1700 m.

Family CICONIIDAE

15. *Anastomus oscitans* (Boddaert)**Asian Openbill-Stork**

1968. *Anastomus oscitans* : Ali & Ripley, H. B. No. 61, Vol. 1 : 95.

Observations : Sighted in PBR.

Distribution : Throughout India.

16. *Ciconia nigra* (Linnaeus)**Black Stork**

1968. *Ciconia nigra* : Ali & Ripley, H. B. No. 65, Vol. 1 : 102.

Past record (Sawarkar *et al.*, 1998).

Distribution : Winter visitor to Northern India.

17. *Ciconia episcopus* (Boddaert)**White-necked Stork**

1968. *Ciconia episcopus* : Ali & Ripley, H. B. No. 62, Vol. 1 : 98.

Observations : Sighted in PBR.

Distribution : Sparsely distributed throughout the well-watered parts of India.

18. *Ciconia ciconia* (Linnaeus)
European White Stork

1968. *Ciconia ciconia* : Ali & Ripley, H. B. No. 63, Vol. 1 : 99.

Observations : Sighted in PBR.

Distribution : Fairly common in Northwestern Indian, Gangetic Plain, Madhya Pradesh, Gujarat, and south through the Deccan up to Karnataka and east to Assam.

Family THRESKIORNITHIDAE

19. *Plegadis falcinellus* (Linnaeus)

1968. *Plegadis falcinellus* : Ali & Ripley, H. B. No 71. Vol. 1 : 114.

Past record (Sawarkar *et al.*, 1998).

Distribution : India : Uttar Pradesh, Gangetic Plains, Madhya Pradesh, Deccan, Rajasthan, Kutch, Gujarat, Orissa, W. Bengal, Assam, Manipur.

20. *Threskiornis melanocephalus* (Latham)
Oriental White Ibis

1968. *Threskiornis aethiopica* : Ali & Ripley, H. B. No. 69, Vol. 1 : 110.

Past record (Roonwal, 1942).

Distribution : Generally in plains of India, except Northwest and East India.

21. *Pseudibis papillosa* (Temminck)
Black Ibis

1968. *Pseudibis papillosa* : Ali & Ripley, H. B. No. 70, Vol. 1 : 112.

Observations : Sighted in PBR.

Distribution : Throughout India.

22. *Platalea leucorodia* Linnaeus
Eurasian Spoonbill

1968. *Platalea leucorodia* : Ali & Ripley, H. B. No. 72, Vol. 1 : 116.

Past record (Sawarkar *et al.*, 1998).

Distribution : Found almost all through the plains.

Order ANSERIFORMES

Family ANATIDAE

23. *Dendrocygna bicolor* (Vieillot)**Large Whistling-Duck**

1968. *Dendrocygna bicolor* : Ali & Ripley, H. B. No. 89, Vol. 1 : 139.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India.

24. *Anser indicus* (Latham)**Bar-headed Goose**

1968. *Anser indicus* : Ali & Ripley, H. B. No. 82, Vol. 1 : 131.

Observations : Sighted in PBR.

Distribution : Common throughout North India by October/November and present up to April.

25. *Tadorna ferruginea* (Pallas)**Brahminy Shelduck**

1968. *Tadorna ferruginea* : Ali & Ripley, H. B. No. 90, Vol. 1 : 141.

Observations : Sighted in PBR.

Distribution : Throughout India.

26. *Anas poecilorhyncha* J.R. Forester**Spot-billed Duck**

1968. *Anas poecilorhyncha* : Ali & Ripley, H. B. No. 97, Vol. 1 : 157.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout the Indian subcontinent.

27. *Anas acuta* Linnaeus**Northern Pintail**

1968. *Anas acuta* : Ali & Ripley, H. B. No. 93, Vol. 1 : 149.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India.

28. *Anas crecca* Linnaeus

Common Teal

1968. *Anas crecca* : Ali & Ripley, H. B. No. 94, Vol. 1 : 151.

Past record (Osmaston, 1922).

Distribution : Throughout India.

29. *Aythya ferina* (Linnaeus)

Common Pochard

1968. *Aythya ferina* : Ali & Ripley, H. B. No. 108, Vol. 1 : 180.

Observations : Sighted in PBR.

Distribution : Widespread in India.

Order FALCONIFORMES

Family ACCIPITRIDAE

30. *Pernis ptilorhynchus* (Temminck)

Oriental Honey-Buzzard

1968. *Pernis ptilorhynchus* : Ali & Ripley, H. B. No. 130, Vol. 1 : 222.

Past record (Osmaston, 1922).

Distribution : All India from c. 1800 m in the Himalayas south to Kanyakumari.

31. *Elanus caeruleus* Defontaines

Black-shouldered Kite

1968. *Elanus caeruleus* : Ali & Ripley, H. B. No. 124, Vol. 1 : 212.

Observations : Sighted in PBR.

Distribution : Assam plains and Manipur, and from the Himalayan foothills (from c. 1600 m) and terai south to Kanyakumari; up to c. 1200 m in the peninsular hills.

32. *Milvus migrans* (Boddaert)

Black Kite

1968. *Milvus migrans* : Ali & Ripley, H. B. No. 133, Vol. 1 : 227.

Past record (Roonwal, 1942).

Distribution : Throughout India.

33. *Haliastur indus* (Boddaert)

Brahminy Kite

1968. *Haliastur indus* : Ali & Ripley, H. B. No. 135, Vol. 1 : 230.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India (up to c. 1800 m in the Himalayas).

34. *Neophron percnopterus* (Linneaus)

Egyptian Vulture

1968. *Neophron percnopterus* : Ali & Ripley, H. B. No. 187, Vol. 1 : 312.

Past record (Osmaston, 1922; Roonwal, 1942).

Distribution : All India (except the portions in the NW, occupied by nominate *percnopterus*).

35. *Gyps bengalensis* (Gmelin)

Indian White-backed Vulture

1968. *Gyps bengalensis* : Ali & Ripley, H. B. No. 185, Vol. 1 : 307.

Observations : Sighted in PBR.

Distribution : Common and widespread throughout India.

36. *Gyps indicus* (Scopoli)

Long-billed Vulture

1968. *Gyps indicus indicus* : Ali & Ripley, H. B. No. 182, Vol. 1 : 304.

Past record (Osmaston, 1922).

Distribution : Rajasthan, Gujarat and peninsular India south of the Gangetic Plain. Not in extreme SW India or Sri Lanka.

37. *Gyps fulvus* (Hablizl)

Eurasian Griffon

1968. *Gyps fulvus* : Ali & Ripley, H. B. No. 180, Vol. 1 : 301.

Observations : Sighted in PBR.

Distribution : Northern India (including Nepal lowlands). Commoner in the semi-desert area of N. Gujarat, straggling east to W. Assam plains, south roughly to latitude 20°N.

38. *Aegyptius monachus* (Linnaeus)

Cinereous Vulture

1968. *Aegyptius monachus* : Ali & Ripley, H. B. No. 179, Vol. 1 : 298.

Past record (Sawarkar *et al.*, 1998).

Distribution : Rare and sparse winter visitor to Sind. NW and northern India (including Nepal), Kutch, N. Gujarat and Central India. South to about the latitude 21°N.

39. *Sarcogyps calvus* (Scopoli)

Red-headed Vulture

1968. *Sarcogyps calvus* : Ali & Ripley, H. B. No. 178, Vol. 1 : 296.

Past record (Osmaston, 1922).

Distribution : Widespread but rare in Northwest and Northeast India.

40. *Circaetus gallicus* (Gmelin)

Short-toed Snake-Eagle

1968. *Circaetus gallicus* : Ali & Ripley, H. B. No. 195, Vol. 1 : 327.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India.

41. *Spilornis cheela* (Latham)

Crested Serpent-Eagle

1968. *Spilornis cheela* : Ali & Ripley, H. B. No. 197, Vol. 1 : 331.

Observations : Sighted in PBR.

Distribution : Widespread in Peninsular India south of Gangetic Plain.

42. *Circus macrourus* (S.G. Gmelin)

Pallid Harrier

1968. *Circus macrourus* : Ali & Ripley, H. B. No. 190, Vol. 1 : 319.

Past record (Osmaston, 1922).

Distribution : Throughout India.

43. *Accipiter badius* (Gmelin)

Shikra

1968. *Accipiter badius* : Ali & Ripley, H. B. No. 138, Vol. 1 : 235.

Observations : Sighted in PBR.

Distribution : All India except Kerala and Assam.

44. *Accipiter nisus* (Linnaeus)

Eurasian Sparrowhawk

1968. *Accipiter nisus* : Ali & Ripley, H. B. No. 147, Vol. 1 : 243.

Past record (Sawarkar *et al.*, 1998).

Distribution : All India including Andaman Is.

45. *Butastur teesa* (Franklin)

White-eyed Buzzard

1968. *Butastur teesa* : Ali & Ripley, H. B. No. 157, Vol. 1 : 257.

Past record (Osmaston, 1922).

Distribution : Resident practically throughout India from about 1200 m. in the Himalayas to Kanyakumari.

46. *Ictinaetus malayensis* (Temminck)

Black Eagle

1968. *Ictinaetus malayensis* : Ali & Ripley, H. B. No. 172, Vol. 1 : 283.

Past record (Ali & Ripley, 1968).

Distribution : Foothills and up to c. 2700 m. altitude in the Himalayas, and c. 2000 m. in the peninsular hills.

47. *Aquila rapax* (Temminck)

Tawny Eagle

1968. *Aquila rapax* : Ali & Ripley, H. B. No. 168, Vol. 1 : 276.

Past record (Osmaston, 1922).

Distribution : Widespread, locally common in Northwest India.

48. *Hieraaetus fasciatus* (Vieillot)

Bonelli's Eagle

1968. *Hieraaetus fasciatus fasciatus*: Ali & Ripley, H. B. No. 163, Vol. 1 : 266.

Past record (Osmaston, 1922).

Distribution : From Kashmir and Punjab to W. Bengal, and from c. 2400 m in the Himalayas south to Kanyakumari.

49. *Spizaetus cirrhatus* (Gmelin)

Changeable Hawk-Eagle

1968. *Spizaetus cirrhatus* : Ali & Ripley, H. B. No. 161, Vol. 1 : 262.

Past record (Osmaston, 1922).

Distribution : Fairly common in well-wooded tracts throughout peninsular India.

50. *Spizaetus nipalensis* (Hodgson)

Mountain Hawk-Eagle

1968. *Spizaetus nipalensis* : Ali & Ripley, H. B. No. 158, Vol. 1 : 259.

Past record (Ali & Ripley, 1968).

Distribution : Resident in the Himalayas between 600 and 2400 m altitude from Kashmir to eastern Assam, north and south of Brahmaputra river. In winter wanders into the Gangetic Plain.

Family Pandionidae

51. *Pandion haliaetus* (Linnaeus)

Osprey

1968. *Pandion haliaetus* : Ali & Ripley, H. B. No. 203, Vol. 1 : 336.

Past record (Sawarkar *et al.*, 1998).

Distribution : Widespread in India and uncommon winter visitor below 1800 m.

Family FALCONIDAE

52. *Falco tinnunculus* Linnaeus**Common Kestrel**

1968. *Falco tinnunculus* : Ali & Ripley, H. B. No. 222, Vol. 1 : 365.

Past record (Osmaston, 1922).

Distribution : Winters throughout India. Breeds in the W. Himalayas between c. 700 and 3300 m altitude.

53. *Falco jugger* J.E. Gray**Laggar**

1968. *Falco jugger* : Ali & Ripley, H. B. No. 208, Vol. 1 : 344.

Past record (Osmaston, 1922).

Distribution : Practically throughout the subcontinent, rare in S. India.

54. *Falco peregrinus* Tunstall**Peregrine Falcon**

1968. *Falco peregrinus* : Ali & Ripley, H. B. No. 210, Vol. 1 : 349.

Past record (Osmaston, 1922).

Distribution : Throughout the Indian Union.

Order GALLIFORMES

Family PHASIANIDAE

55. *Francolinus francolinus* (Linnaeus)**Black Francolin**

1969. *Francolinus francolinus* : Ali & Ripley, H. B. No. 238, Vol. 2 : 22.

Past record (Sawarkar *et al.*, 1998).

Distribution : Northwest India east to Arunachal Pradesh.

56. *Francolinus pondicerianus* (Gmelin)**Grey Francolin**

1969. *Francolinus pondicerianus* : Ali & Ripley, H. B. No. 246, Vol. 2 : 31.

Observations : Sighted in PBR.

Distribution : Southern peninsular India.

57. *Coturnix coturnix* (Linnaeus)

Common Quail

1969. *Coturnix coturnix coturnix* : Ali & Ripley, H. B. No. 250, Vol. 2 : 37.

Observations : Sighted in PBR.

Distribution : Breeds in Pakistan, Kashmir east through Bihar and W. Bengal, south at least to Madhya Pradesh and southern Maharashtra.

58. *Perdica asiatica* (Latham)

Jungle Bush-Quail

1969. *Perdica asiatica* : Ali & Ripley, H. B. No. 255, Vol. 2 : 45.

Observations : Sighted in PBR.

Distribution : From Gujarat east to Orissa, north to Himachal Pradesh and south throughout the peninsula.

59. *Perdica argoondah* (Sykes)

Rock Bush-Quail

1969. *Perdica argoondah argoondah* : Ali & Ripley, H. B. No. 260, Vol. 2 : 49.

Past record (Sawarkar *et al.*, 1998).

Distribution : From Haryana south to N. Kerala and from Gujarat east to Central Madhya Pradesh and Central Andhra Pradesh.

60. *Galloperdix lunulata* (Valenciennes)

Painted Spurfowl

1969. *Galloperdix lunulata* : Ali & Ripley, H. B. No. 278, Vol. 2 : 70.

Past record (Osmaston, 1922; Roonwal, 1942).

Distribution : Continental and peninsular India south of the Gangetic Plain.

61. *Galloperdix spadicea* (Gmelin)

Red Spurfowl

1969. *Galloperdix spadicea spadicea* : Ali & Ripley, H. B. No. 275, Vol. 2 : 67.

Observations: Sighted in PBR.

Distribution : Widespread and locally common from Uttar Pradesh south to the peninsula; foothills up to 1250 m.

62. *Gallus gallus* (Linnaeus)

Red Junglefowl

1969. *Galloperdix gallus* : Ali & Ripley, H. B. No. 299, Vol. 2 : 102.

Observations : Sighted in PBR.

Distribution : Outer Himalayas up to c. 2000 m elevation, Kashmir, Assam, Uttar Pradesh, Madhya Pradesh, Maharashtra, Bihar, Orissa, West Bengal.

63. *Gallus sonneratii* Temminck

Grey Junglefowl

1969. *Gallus sonneratii* : Ali & Ripley, H. B. No. 301, Vol. 2 : 106.

Observations : Sighted in PBR.

Distribution : Species peculiar to peninsular India almost to the extreme south.

64. *Pavo cristatus* Linnaeus

Indian Peafowl

1969. *Pavo cristatus* : Ali & Ripley, H. B. No. 311, Vol. 2 : 123.

Observations : Sighted in PBR.

Distribution : Throughout India.

Order GRUIFORMES

Family TURNICIDAE

65. *Turnix suscitator* (Gmelin)

Common Buttonquail

1969. *Turnix suscitator* : Ali & Ripley, H. B. No. 318, Vol. 2 : 133.

Past record (Sawarkar *et al.*, 1998).

Distribution : From Punjab in the west, the whole of continental and peninsular India roughly south of 23°N. lat.

Family GRUIDAE

66. *Grus antigone* (Linnaeus)
Sarus Crane

1969. *Grus antigone antigone* : Ali & Ripley, H. B. No. 323, Vol. 2 : 141.

Past record (Hewetson, 1956).

Distribution : Recently recorded mainly from Gujarat and Rajasthan east to E. Uttar Pradesh and S. Madhya Pradesh. Formerly ranged from Pakistan and North India east to Assam and south to N. Andhra Pradesh.

Family RALLIDAE

67. *Amaurornis phoenicurus* (Pennart)
White-breasted Waterhen

1969. *Amaurornis phoenicurus* : Ali & Ripley, H. B. No. 343, Vol. 2 : 168.

Observations : Sighted in PBR.

Distribution : Throughout northern India, Sikkim, Assam.

68. *Porphyrio porphyrio* (Linnaeus)
Purple Moorhen

1969. *Porphyrio porphyrio* : Ali & Ripley, H. B. No. 349, Vol. 2 : 178.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout Indian Subcontinent, except parts of the north-west, north-east and Himalaya.

69. *Fulica atra* Linnaeus
Common Coot

1969. *Fulica atra* : Ali & Ripley, H. B. No. 350, Vol. 2 : 180.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout Indian Subcontinent, except parts of the north-west, north-east and Himalaya.

Order CHARADRIIFORMES

Family JACANIDAE

70. *Hydrophasianus chirurgus* (Scopoli)
Pheasant-tailed Jacana

1969. *Hydrophasianus chirurgus* : Ali & Ripley, H. B. No. 358, Vol. 2 : 199.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India, except most of Himalayas.

71. *Metopidius indicus* (Latham)

Bronze-winged Jacana

1969. *Metopidius indicus* : Ali & Ripley, H. B. No. 359, Vol. 2 : 201.

Past record (Sawarkar *et al.*, 1998).

Distribution : Mainly from Gujarat and NW Uttar Pradesh east through the Nepal lowlands to NE India and south throughout the peninsula.

Family CHARADRIIDAE

72. *Charadrius dubius* Scopoli

Little Ringed Plover

1969. *Charadrius dubius* : Ali & Ripley, H. B. No. 380, Vol. 2 : 231.

Observations : Sighted in PBR.

Distribution : Resident throughout the subcontinent from the Himalayan foothills to Kanyakumari, and from Sindh to Assam.

73. *Vanellus duvaucelii* (Lesson)

River Lapwing

1969. *Vanellus duvaucelii* : Ali & Ripley, H. B. No. 369, Vol. 2 : 216.

Observations : Sighted in PBR.

Distribution : From Himachal Pradesh east through N. India and the Himalayan foothills to NE India.

74. *Vanellus indicus* (Boddaert)

Red-wattled Lapwing

1969. *Vanellus indicus* : Ali & Ripley, H. B. No. 366, Vol. 2 : 212.

Observations : Sighted in PBR.

Distribution : Throughout India.

Family SCOLOPACIDAE

75. *Gallinago stenura* (Bonaparte)

Pintail Snipe

1969. *Gallinago stenura* : Ali & Ripley, H. B. No. 406, Vol. 2 : 282.

Observations : Sighted in PBR.

Distribution : Winter visitor found all over India.

76. *Gallinago gallinago* (Linnaeus)

Common Snipe

1969. *Gallinago gallinago* : Ali & Ripley, H. B. No. 409, Vol. 2 : 287.

Past record (Osmaston, 1922).

Distribution : Throughout India.

77. *Tringa nebularia* (Gunner)

Common Greenshank

1969. *Tringa nebularia* : Ali & Ripley, H. B. No. 396, Vol. 2 : 261.

Past record (Sawarkar *et al.*, 1998).

Distribution : Winter visitor all over India.

78. *Tringa ochropus* Linnaeus

Green Sandpiper

1969. *Tringa ochropus* : Ali & Ripley, H. B. No. 397, Vol. 2 : 263.

Past record (Sawarkar *et al.*, 1998).

Distribution : All India including Assam, Sikkim and Manipur, Andaman Islands. Elsewhere: Pakistan, Nepal, Bhutan, and Sri Lanka.

79. *Actitis hypoleucos* Linnaeus

Common Sandpiper

1969. *Actitis hypoleucos* : Ali & Ripley, H. B. No. 401, Vol. 2 : 271.

Past record (Roonwal, 1942).

Distribution : Throughout India.

80. *Calidris minuta* (Leisler)**Little Stint**

1969. *Calidris minuta* : Ali & Ripley, H. B. No. 416, Vol. 2 : 301.

Observations : Sighted in PBR.

Distribution : Much of the Indian subcontinent, except parts of the northwest and northeast and most of Himalayas.

Family RECURVIROSTRIDAE

81. *Himantopus himantopus* (Linnaeus)**Black-winged Stilt**

1969. *Himantopus himantopus* : Ali & Ripley, H. B. No. 430, Vol. 2 : 329.

Observations : Sighted in PBR.

Distribution : Throughout India.

Family BURHINIDAE

82. *Esacus recurvirostris* (Cuvier)**Great Stone-Plover**

1969. *Esacus recurvirostris* : Ali & Ripley, H. B. No. 437, Vol. 3 : 5.

Past record (Hewetson, 1956).

Distribution : All over India.

Family GLAREOLIDAE

83. *Glareola lactea* Temminck**Small Pranticole**

1969. *Glareola lactea* : Ali & Ripley, H. B. No. 444, Vol. 3 : 15.

Past record (Hewetson, 1956).

Distribution : All over India.

Family LARIDAE

84. *Larus brunnicephalus* Jerdon**Brown-headed Gull**

1969. *Larus brunnicephalus* : Ali & Ripley, H. B. No. 454, Vol. 3 : 31.

Past record (Sawarkar *et al.*, 1998).

Distribution : Common winter visitor to the sea coasts in India.

85. *Sterna aurantia* J.E. Gray

River Tern

1969. *Sterna aurantia* : Ali & Ripley, H. B. No. 463, Vol. 3 : 48.

Observations : Sighted in PBR.

Distribution : Throughout the Indian subcontinent except the Himalayas, parts of Northwest and Northeast.

Order COLUMBIFORMES

Family PTEROCLIDIDAE

86. *Pterocles indicus* (Gmelin)

Painted Sandgrouse

1969. *Pterocles indicus indicus* : Ali & Ripley, H. B. No. 492, Vol. 3 : 92.

Observations : Sighted in PBR.

Distribution : Peninsular India from Rajasthan and Gujarat east to Bihar and Orissa, south to Mysore and Tamil Nadu.

Family COLUMBIDAE

87. *Columba livia* Gmelin

Blue Rock Pigeon

1969. *Columba livia intermedia* : Ali & Ripley, H. B. No. 517, Vol. 3 : 125.

Observations : Sighted in PBR.

Distribution : Throughout India.

88. *Streptopelia orientalis* (Sykes)

Oriental Turtle-Dove

1969. *Streptopelia orientalis* : Ali & Ripley, H. B. No. 531, Vol. 3 : 143.

Past record (Roonwal, 1942).

Distribution : Resident and breeds in the western Himalayas up to c. 4000 m. Migrates south in winter, spreads widely over northern and peninsular India, chiefly on the western side, south to Mysore.

89. *Streptopelia senegalensis* (Linnaeus)**Little Brown Dove**

1969. *Streptopelia senegalensis cambayensis* : Ali & Ripley, H. B. No. 541, Vol. 3 : 155.

Past record (Roonwal, 1942).

Distribution : Throughout India.

90. *Streptopelia chinensis* (Scopoli)**Spotted Dove**

1969. *Streptopelia chinensis suratensis* : Ali & Ripley, H. B. No. 537, Vol. 3 : 152.

Observations : Sighted in PBR.

Distribution : In India, east to Assam and Sikkim, south through the Peninsula to Kanyakumari. Normally to c. 2400 m. altitude in the Himalayas and up to c. 1500 m in the peninsular hills.

91. *Streptopelia tranquebarica* (Hermann)**Red Collared-Dove**

1969. *Streptopelia tranquebarica* : Ali & Ripley, H. B. No. 535, Vol. 3 : 149.

Observations : Sighted in PBR.

Distribution : Throughout India.

92. *Streptopelia decaocto* (Frisvaldszky)**Eurasian Collared-Dove**

1969. *Streptopelia decaocto* : Ali & Ripley, H. B. No. 534, Vol. 3 : 147.

Observations : Sighted in PBR.

Distribution : Throughout India.

93. *Chalcophaps indica* (Linnaeus)**Emerald Dove**

1969. *Chalcophaps indica* : Ali & Ripley, H. B. No. 542, Vol. 3 : 157.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout the India subcontinent, most of Himalaya and Southwest India.

94. *Treron phoenicoptera* (Latham)

Yellow-legged Green-Pigeon

1969. *Treron phoenicoptera* : Ali & Ripley, H. B. No. 503, Vol. 3 : 106.

Observations : Sighted in PBR.

Distribution : Throughout peninsular India except much of the northwest, Himalayas and extreme of E. India.

Remarks : The subspecies *Treron phoenicoptera chlorigaster* (Blyth) has also been reported as common around Pachmarhi (Osmaston, 1922)

Order PSITTACIFORMES

Family PSITTACIDAE

95. *Psittacula eupatria* (Linnaeus)

Alexandrine Parakeet

1969. *Psittacula eupatria nipalensis* : Ali & Ripley, H. B. No. 545, Vol. 3 : 164.

Past record (Osmaston, 1922).

Distribution : Throughout India.

96. *Psittacula krameri* (Scopoli)

Rose-ringed Parakeet

1969. *Psittacula krameri* : Ali & Ripley, H. B. No. 549, Vol. 3 : 169.

Past record (Osmaston, 1922) and also sighted in PBR

Distribution : Peninsular India south of lat. 20°N.

97. *Psittacula cyanocephala* (Linnaeus)

Plum-headed Parakeet

1969. *Psittacula cyanocephala* : Ali & Ripley, H. B. No. 557, Vol. 3 : 178.

Observations: Sighted in PBR.

Distribution : Himalayas from W. Pakistan east West Bengal, Gangetic Plain through Gujarat, Madhya Pradesh to 20°N lat.

Order CUCULIFORMES

Family CUCULIDAE

98. *Clamator jacobinus* (Boddaert)**Pied-crested Cuckoo**

1969. *Clamator jacobinus jacobinus* : Ali & Ripley, H. B. No. 571, Vol. 3 : 197.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout much of the Indian subcontinent, except parts of the northwest and Himalayas.

99. *Hierococcyx varius* Vahl**Brainfever Bird**

1969. *Hierococcyx varius* : Ali & Ripley, H. B. No. 573, Vol. 3 : 200.

Observations : Sighted in PBR.

Distribution : Throughout much of the Indian subcontinent, except parts of the northwest.

100. *Cuculus micropterus* Gould**Indian Cuckoo**

1969. *Cuculus micropterus micropterus* : Ali & Ripley, H. B. No. 576, Vol. 3 : 204.

Past record (Osmaston, 1922).

Distribution : Breeds in Himalayas and eastern subcontinent and southward throughout the subcontinent.

101. *Cuculus canorus* Linnaeus**Common Cuckoo**

1969. *Cuculus canorus* : Ali & Ripley, H. B. No. 578, Vol. 3 : 208.

Observations : Sighted in PBR.

Distribution : Breeds in hills of Pakistan, Himalayas, and North, Northeast; breeds also in the peninsula (Madhya Pradesh, Maharashtra, Gujarat).

102. *Cuculus poliocephalus* Latham**Lesser Cuckoo**

1969. *Cuculus poliocephalus* : Ali & Ripley, H. B. No. 581, Vol. 3 : 213.

Past record (Sawarkar *et al.*, 1998).

Distribution : Himalayas, Kashmir, Sikkim, Arunachal Pradesh, Assam, Nagaland, Kerala, Madhya Pradesh, Gujarat, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, and Andaman Is.

103. *Cacomantis sonneratii* (Latham)
Banded Bay Cuckoo

1969. *Cacomantis sonneratii sonneratii* : Ali & Ripley, H. B. No. 582, Vol. 3 : 215.

Past record (Sawarkar *et al.*, 1998).

Distribution : Widely scattered in the monsoon season practically throughout India, sparse in the north, fairly common in the Deccan and southern India.

104. *Cacomantis passerinus* (Vahl)
Indian Plaintive Cuckoo

1969. *Cacomantis passerinus* : Ali & Ripley, H. B. No. 584, Vol. 3 : 218.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout the subcontinent. Summers in Himalayas and from Himachal Pradesh east to Bhutan.

Distribution : Northeast India, wintering in eastern peninsular India west to Madhya Pradesh and south to Andhra Pradesh.

105. *Eudynamys scolopacea* (Linnaeus)
Asian Koel

1969. *Eudynamys scolopacea* : Ali & Ripley, H. B. No. 590, Vol. 3 : 227.

Observations : Sighted in PBR.

Distribution : Throughout India.

106. *Centropus sinensis* (Stephens)
Greater Coucal

1969. *Centropus sinensis parroti* : Ali & Ripley, H. B. No. 602, Vol. 3 : 243.

Observations : Sighted in PBR.

Distribution : Peninsular India from N. Gujarat, Kutch, and Saurashtra east through Madhya Pradesh, Andhra and Orissa, south through Maharashtra, Karnataka, Tamil Nadu, and Kerala.

Order STRIGIFORMES

Family TYTONIDAE

107. *Tyto alba stertens* Hartert**Barn Owl**

1969. *Tyto alba stertens* : Ali & Ripley, H. B. No. 606, Vol. 3 : 250.

Past record (Sawarkar *et al.*, 1998).

Distribution : All India from Jammu eastward through the Gangetic Plain to Bengal, Assam, Nagaland and Manipur, south throughout the peninsula to Kanyakumari.

Family STRIGIDAE

108. *Otus scops sunia* (Hodgson)**Eurasian Scops-Owl**

1969. *Otus scops sunia* : Ali & Ripley, H. B. No. 616, Vol. 3 : 262.

Past record (Osmaston, 1922).

Distribution : The lower Himalayas, Kashmir, Himachal Pradesh, Uttaranchal, Sikkim, the Gangetic Plain south to Madhya Pradesh and eastern Maharashtra east to Assam north and south of Brahmaputra river.

109. *Otus bakkamoena* Pennant**Collared Scops-Owl**

1969. *Otus bakkamoena bakkamoena* : Ali & Ripley, H. B. No. 623, Vol. 3 : 269.

Past record (Osmaston, 1922).

Distribution : Peninsular India from *c.* 20°N. lat., Maharashtra, Madhya Pradesh, Andhra Pradesh, Tamil Nadu, Karnataka, and Kerala.

110. *Bubo bubo* (Linnaeus)**Eurasian Eagle-Owl**

1969. *Bubo bubo bengalensis* : Ali & Ripley, H. B. No. 627, Vol. 3 : 273.

Past record (Osmaston, 1922).

Distribution : Throughout India.

111. *Ketupa zeylonensis* (Gmelin)
Brown Fish-Owl

1969. *Ketupa zeylonensis* : Ali & Ripley, *H. B. No. 631, Vol. 3* : 280.

Past record (Osmaston, 1922).

Distribution : The entire Indian Union.

112. *Glaucidium radiatum* (Tickell)
Jungle Owlet

1969. *Glaucidium radiatum* : Ali & Ripley, *H. B. No. 636, Vol. 3* : 286.

Observations : Sighted in PBR.

Distribution : All India. Common in plains and hills below 2000 m.

113. *Athene brama* (Temminck)
Spotted Owlet

1969. *Athene brama* : Ali & Ripley, *H. B. No. 650, Vol. 3* : 299.

Past record (Osmaston, 1922).

Distribution : Throughout India except parts of the northeast and Himalayas.

114. *Ninox scutulata* (Raffles)
Brown Hawk-Owl

1969. *Ninox scutulata* : Ali & Ripley, *H. B. No. 642, Vol. 3* : 292.

Past record (Sawarkar et al., 1998).

Distribution : Sikkim, Arunachal Pradesh, Assam, Rajasthan, N. Gujarat, widely but locally distributed through northern and central India, east to Bengal, Orissa and N. Andhra.

115. *Asio flammeus* (Pontoppidan)
Short-eared Owl

1969. *Asio flammeus* : Ali & Ripley, *H. B. No. 664, Vol. 3* : 314.

Past record (Osmaston, 1922).

Distribution : Practically throughout the subcontinent.

Order CAPRIMULGIFORMES

Family CAPRIMULGIDAE

116. *Caprimulgus indicus* Latham
Indian Jungle Nightjar

1970. *Caprimulgus indicus* : Ali & Ripley, H. B. No. 671, Vol. 4 : 10.

Pasr record (Osmaston, 1922).

Distribution : Practically all India south of the Himalayas including Kerala. Absent in W. Rajasthan and Kutch.

117. *Caprimulgus asiaticus* Latham
Common Indian Nightjar

1970. *Caprimulgus asiaticus* : Ali & Ripley, H. B. No. 680, Vol. 4 : 21.

Pasr record (Sawarkar et al., 1998).

Distribution : Widespread in India, foothills up to 1500 m.

118. *Caprimulgus affinis* Horsfield
Franklin's Nightjar

1970. *Caprimulgus affinis* : Ali & Ripley, H. B. No. 682, Vol. 4 : 23.

Pasr record (Sawarkar et al., 1998).

Distribution : Throughout India.

Order Apodiformes

Family APODIDAE

119. *Apus affinis affinis* (J.E. Gray)
House Swift

1970. *Apus affinis* : Ali & Ripley, H. B. No. 703, Vol. 4 : 51.

Observations : Sighted in PBR.

Distribution : Throughout the Indian subcontinent except parts of the Northeast.

Family HEMIPROCNIDAE

120. *Hemiprocne coronata* (Tickell)
Crested Tree-Swift

1970. *Hemiprocne coronata* : Ali & Ripley, H. B. No. 709, Vol. 4 : 58.

Pass record (Osmaston, 1922).

Distribution : Throughout the Indian Union.

Order CORACIIFORMES

Family ALCEDINIDAE

121. *Alcedo atthis* (Linnaeus)
Small Blue Kingfisher

1970. *Alcedo atthis* : Ali & Ripley, H. B. No. 722, Vol. 4 : 75.

Observations : Sighted in PBR.

Distribution : Punjab, Kashmir, Himachal Pradesh, northern Uttar Pradesh, Rajasthan, northern Madhya Pradesh, northern Bihar.

122. *Halcyon capensis* (Linnaeus)
Stork-billed Kingfisher

1970. *Halcyon capensis* : Ali & Ripley, H. B. No. 730, Vol. 4 : 84.

Pass record (Sawarkar *et al.*, 1998).

Distribution : From Uttar Pradesh and Gujarat east through much of the subcontinent.

123. *Halcyon smyrnensis* (Linnaeus)
White-breasted Kingfisher

1970. *Halcyon smyrnensis smyrnensis* : Ali & Ripley, H. B. No. 735, Vol. 4 : 89.

Observations : Sighted in PBR.

Distribution : Throughout India.

124. *Ceryle rudis* Linnaeus
Lesser Pied Kingfisher

1970. *Ceryle rudis* : Ali & Ripley, H. B. No. 719, Vol. 4 : 71.

Observations : Sighted in PBR.

Distribution : Practically throughout the India Union.

Family MEROPIDAE

125. *Nyctyornis athertoni* (Jardine & Selby)

Blue-bearded Bee-eater

1970. *Nyctyornis athertoni athertoni* : Ali & Ripley, H. B. No. 753, Vol. 4 : 112.

Past record (Osmaston, 1922).

Distribution : The lower Himalayas, Uttaranchal, Uttar Pradesh, Sikkim, Assam, Nagaland, Manipur, Mizoram, Gujarat, Maharashtra, Karnataka, western Tamil Nadu, Kerala, Andhra Pradesh, Madhya Pradesh, Orissa, Bihar and W. Bengal.

126. *Merops orientalis* Latham

Small Bee-eater

1970. *Merops orientalis* : Ali & Ripley, H. B. No. 750, Vol. 4 : 109.

Observations : Sighted in PBR.

Distribution : Throughout India.

127. *Merops philippinus* Linnaeus

Blue-tailed Bee-eater

1970. *Merops philippinus* : Ali & Ripley, H. B. No. 748, Vol. 4 : 106.

Past record (Hewetson, 1956)

Distribution : Most of India, except parts of the northwest, northeast and Himalayas.

Family CORACIIDAE

128. *Coracias benghalensis* (Linnaeus)

Indian Roller

1970. *Coracias b. benghalensis* : Ali & Ripley, H. B. No. 755, Vol. 4 : 116.

Observations : Sighted in PBR.

Distribution : Throughout India.

Family UPUPIDAE

129. *Upupa epops* Linnaeus**Common Hoopoe**

1970. *Upupa epops* : Ali & Ripley, H. B. No. 765, Vol. 4 : 128.

Observations : Sighted in PBR.

Distribution : Bihar, northern West Bengal, Sikkim; south through western Uttar Pradesh, central India, western Madhya Pradesh, Gujarat, Maharashtra, Andhra Pradesh, Tamil Nadu, Mysore and Kerala.

Family BUCEROTIDAE

130. *Ocyrceros birostris* (Scopoli)**Indian Grey Hornbill**

1970. *Tockus birostris* : Ali & Ripley, H. B. No. 767, Vol. 4 : 130.

Observations : Sighted in PBR.

Distribution : Widespread in India and locally common up to 1000 m.

131. *Anthracosceros coronatus* (Boddaert)**Malabar Pied Hornbill**

1970. *Anthracosceros coronatus* : Ali & Ripley, H. B. No. 775, Vol. 4 : 142.

Observations : Sighted in PBR.

Distribution : Andhra Pradesh and Madhya Pradesh; Western ghats, E. India and Sri Lanka.

Order PICIFORMES

Family CAPITONIDAE

132. *Megalaima zeylanica* (Gmelin)**Brown-headed Barbet**

1970. *Megalaima zeylanica* : Ali & Ripley, H. B. No. 780, Vol. 4 : 150.

Observations : Sighted in PBR.

Distribution : Lower Himalayas; continental India east through Madhya Pradesh, Orissa south to Godavari River.

133. *Megalaima haemacephala* (P.L.S. Müller)**Coppersmith Barbet**

1970. *Megalaima haemacephala* : Ali & Ripley, H. B. No. 792, Vol. 4 : 163.

Observations : Sighted in PBR.

Distribution : Practically throughout the Indian Union.

Family PICIDAE

134. *Jynx torquilla* Linnaeus**Eurasian Wryneck**

1970. *Jynx torquilla* : Ali & Ripley, H. B. No. 796, Vol. 4 : 168

Past record (Sawarkar *et al.*, 1998)

Distribution : Through Uttar Pradesh, Rajasthan, Gujarat, Maharashtra and Western Central India south to Kerala.

135. *Dendrocopos nanus* (Vigors)**Brown-capped Pygmy Woodpecker**

1970. *Dendrocopos nanus* : Ali & Ripley, H. B. No. 852, Vol. 4 : 231.

Observations : Sighted in PBR.

Distribution : All peninsular India to Gujarat through Madhya Pradesh and east to Orissa.

136. *Dendrocopos mahrattensis* (Latham)**Yellow-fronted Pied Woodpecker**

1970. *Dendrocopos mahrattensis* : Ali & Ripley, H. B. No. 847, Vol. 4: 226.

Past record (Osmaston, 1922; Roonwal, 1942).

Distribution : Throughout India except Himalayas and most of Northeast India.

137. *Celeus brachyurus* (Vieillot)**Rufous Woodpecker**

1970. *Celeus brachyurus* : Ali & Ripley, H. B. No. 803, Vol. 4 : 178.

Past record (Sawarkar *et al.*, 1998).

Distribution : West to Orissa, Madhya Pradesh, northern Andhra to 18° N Latitude.

138. *Dinopium benghalense* (Linnaeus)**Lesser Golden-backed Woodpecker**

1970. *Dinopium benghalense benghalense* : Ali & Ripley, H. B. No. 819, Vol. 4 : 197.

Observations : Sighted in PBR.

Distribution : Subcontinent up to Orissa and Madhya Pradesh, N. Maharashtra, Gujarat, Rajasthan.

139. *Chrysocolaptes festivus* (Boddaert)**Black-shouldered Woodpecker**

1970. *Chrysocolaptes festivus* : Ali & Ripley, H. B. No. 858, Vol. 4 : 239.

Past record (Sawarkar *et al.*, 1998)

Distribution : Practically all peninsular India except for western and eastern India.

140. *Hemicircus canente* (Lesson)**Heart-spotted Woodpecker**

1970. *Hemicircus canente* : Ali & Ripley, H. B. No. 856, Vol. 4 : 236.

Observations : Sighted in PBR.

Distribution : The Western Ghats complex from Kerala northward through Mysore, Goa and Maharashtra to the Tapti river. Thence eastward across the forested hill tracts of Madhya Pradesh, Chhattisgarh, Orissa, West Bengal, Assam, Manipur.

Order PASSERIFORMES

Family PITTIDAE

141. *Pitta brachyura* (Linnaeus)**Indian Pitta**

1970. *Pitta brachyura*: Ali & Ripley, H. B. No. 867, Vol. 4 : 252.

Observations : Sighted in PBR.

Distribution : Throughout India.

Family ALAUDIDAE

142. *Eremopterix grisea* (Scopoli)**Ashy-crowned Sparrow-Lark**

1972. *Eremopterix grisea* : Ali & Ripley, H. B. No. 878, Vol. 5 : 9.

Past record (Sawarkar *et al.*, 1998)

Distribution : Widespread throughout India but apparently absent from Himalaya.

143. *Ammomanes phoenicurus* (Franklin)
Rufous-tailed Finch-Lark

1972. *Ammomanes p. phoenicurus* : Ali & Ripley, H. B. No. 882, Vol. 5 : 14.

Past record (Roonwal, 1942).

Distribution : The greater part of peninsular and continental India, north to the Ganga River and south to a line from Hugli through Bellary (parallel to 15° N Latitude).

144. *Alauda gulgula* Franklin
Eastern Skylark

1972. *Alauda gulgula* : Ali & Ripley, H. B. No. 907, Vol. 5 : 46.

Past record (Sawarkar *et al.*, 1998)

Distribution : Throughout India, except parts of the northwest and northeast.

Family HIRUNDINIDAE

145. *Hirundo concolor* Sykes
Dusky Crag-Martin

1972. *Hirundo concolor* : Ali & Ripley, H. B. No. 914, Vol. 5 : 55.

Observations: Sighted in PBR.

Distribution : From N. Haryana, E. Rajasthan, Gujarat and extreme SE Pakistan east to W. Bihar and south through the peninsula, patchily distributed.

146. *Hirundo rustica* Linnaeus
Common Swallow

1972. *Hirundo rustica* : Ali & Ripley, H. B. No. 916, Vol. 5 : 57.

Observations : Sighted in PBR.

Distribution : In winter, throughout the Indian union.

147. *Hirundo smithii* Leach
Wire-tailed Swallow

1972. *Hirundo smithii* : Ali & Ripley, H. B. No. 921, Vol. 5 : 63.

Observations : Sighted in PBR.

Distribution : Summer visitor to northern India, resident elsewhere in the peninsula.

148. *Hirundo daurica* Linnaeus

Red-rumped Swallow

1972. *Hirundo daurica* : Ali & Ripley, H. B. No. 927, Vol. 5 : 70.

Observations : Sighted in PBR.

Distribution : Throughout the subcontinent.

Family MOTACILLIDAE

149. *Dendronanthus indicus* (Gmelin)

Forest Wagtail

1973. *Motacilla indica* : Ali & Ripley, H. B. No. 1874, Vol. 9 : 273.

Observations : Sighted in PBR.

Distribution : Northeast and Southwest India, to southernmost part of peninsula. Recorded as passage migrant through Madhya Pradesh.

150. *Motacilla alba* Linnaeus

White Wagtail

1973. *Motacilla alba* : Ali & Ripley, H. B. No. 1886, Vol. 9 : 291.

Past record (Osmaston, 1922).

Distribution : Winters in most parts of India.

151. *Motacilla maderaspatensis* Gmelin

Large Pied Wagtail

1973. *Motacilla maderaspatensis* : Ali & Ripley, H. B. No. 1891, Vol. 9 : 296.

Observations : Sighted in PBR.

Distribution : Throughout India, except parts of the northwest, northeast and Himalaya.

152. *Motacilla citreola* Pallas

Citrine Wagtail

1973. *Motacilla citreola* : Ali & Ripley, H. B. No. 1883, Vol. 9 : 284.

Past record (Sawarkar *et al.*, 1998)

Distribution : Throughout northern India, south to Kutch, Madhya Pradesh and east to Bengal, Assam.

153. *Motacilla flava* Linnaeus
Yellow Wagtail

1973. *Motacilla flava* : Ali & Ripley, H. B. No. 1875, 1876, Vol. 9 : 276, 278.

Observations : Sighted in PBR.

Distribution : Widespread in India.

154. *Motacilla cinerea* Tunstall
Grey Wagtail

1973. *Motacilla cinerea* : Ali & Ripley, H. B. No. 1884, Vol. 9 : 285.

Observations : Sighted in PBR.

Distribution : Throughout India.

155. *Anthus rufulus* Vieillot
Paddyfield Pipit

1973. *Anthus rufulus* : Ali & Ripley, H. B. No. 1859, Vol. 9 : 253.

Past record (Osmaston, 1922).

Distribution : Throughout most of the subcontinent, except parts of the northwest, northeast and Himalayas.

156. *Anthus similis* Jerdon
Brown Rock Pipit

1973. *Anthus similis* : Ali & Ripley, H. B. No. 1867, Vol. 9 : 265.

Observations : Sighted in PBR.

Distribution : Winter visitor to Gujarat, Madhya Pradesh, east to North Bengal.

157. *Anthus trivialis* (Linnaeus)
Eurasian Tree Pipit

1973. *Anthus trivialis* : Ali & Ripley, H. B. No. 1855, Vol. 9 : 248.

Past record (Sawarkar *et al.*, 1998)

Distribution : Winters mostly in Central India, south to northern Andhra Pradesh.

158. *Anthus hodgsoni* Richmond
Oriental Tree Pipit

1973. *Anthus hodgsoni* : Ali & Ripley, H. B. No. 1852, Vol. 9 : 243.

Past record (Roonwal, 1942).

Distribution : Winters in the most of the Indian Peninsula.

Family CAMPEPHAGIDAE

159. *Coracina macei* (Lesson)
Large Cuckoo-Shrike

1971. *Coracina macei* : Ali & Ripley, H. B. No. 1072, Vol. 6 : 14.

Observations : Sighted in PBR.

Distribution : Throughout peninsular India except northwest a line from Kutch to Kumaon.

160. *Coracina melanoptera* (Rüppell)
Black-headed Cuckoo-Shrike

1971. *Coracina melanoptera* : Ali & Ripley, H. B. No. 1079, Vol. 6 : 22.

Past record (Sawarkar *et al.*, 1998).

Distribution : Mainly Himalayan foothills from Himachal Pradesh east to W. Bengal and south throughout much of the Peninsula.

161. *Pericrocotus cinnamomeus* (Linnaeus)
Small Minivet

1971. *Pericrocotus c. peregrinus* : Ali & Ripley, H. B. No. 1091, Vol. 6 : 41.

Past record (Osmaston, 1922; Roonwal, 1942).

Distribution : From east Punjab, east to Bihar and south to northern Madhya Pradesh and northern Orissa.

162. *Pericrocotus erythropygus* (Jerdon)**White-bellied Minivet**

1971. *Pericrocotus e. erythropygus* : Ali & Ripley, H. B. No. 1096, Vol. 6 : 45.

Past record (Sawarkar *et al.*, 1998).

Distribution : Locally distributed in peninsular India southeast of a line from Ambala, Jodhpur and Kutch, south and east to Belgaum, Hyderabad, the Chhota Nagpur plateau, southwest Bihar and southeast Uttar Pradesh.

163. *Pericrocotus flammeus* (Forster)**Scarlet Minivet**

1971. *Pericrocotus flammeus flammeus* : Ali & Ripley, H. B. No. 1081, Vol. 6 : 27.

Past record (Osmaston, 1922).

Distribution : From western Madhya Pradesh to Orissa, Bihar, West Bengal and northern Andhra Pradesh.

164. *Hemipus picatus* (Sykes)**Pied Flycatcher-Shrike**

1971. *Hemipus picatus picatus* : Ali & Ripley, H. B. No. 1065, Vol. 6 : 3.

Past record (Hewetson, 1956).

Distribution : Central and peninsular India from Narmada river and northern Madhya Pradesh, lower Bengal.

165. *Tephrodornis pondicerianus* (Gmelin)**Common Woodshrike**

1971. *Tephrodornis p. pondicerianus* : Ali & Ripley, H. B. No. 1070, Vol. 6 : 11.

Observations: Sighted in PBR.

Distribution : Throughout India except parts of the northwest, northeast and Himalayas.

Family PYCNONOTIDAE

166. *Pycnonotus melanicterus* (Gmelin)**Black-crested Bulbul**

1971. *Pycnonotus melanicterus flaviventris* : Ali & Ripley, H. B. No. 1115, Vol. 6 : 72.

Past record (Osmaston, 1922; Ali & Ripley, 1971).

Distribution : Lower Himalayas from Shimla through Sikkim, Assam hills, Nagaland, Manipur, extending to Uttar Pradesh, N. Bihar and forests of Chhattisgarh and Madhya Pradesh.

167. *Pycnonotus jocosus* (Linnaeus)

Red-whiskered Bulbul

1971. *Pycnonotus jocosus fuscicaudatus* : Ali & Ripley, H. B. No. 1120, Vol. 6 : 77.

Observations : Sighted in PBR.

Distribution : Western India from the Tapti river and Madhya Pradesh, south to Cape Camorin, including Maharashtra, Karnataka, Kerala, western Tamil Nadu and the western half of Andhra Pradesh.

168. *Pycnonotus cafer* Linnaeus

Red-vented Bulbul

1971. *Pycnonotus cafer humayuni* : Ali & Ripley, H. B. No. 1127, Vol. 6 : 86.

Observations : Sighted in PBR.

Distribution : West Punjab east to and along the Yamuna river to eastern Madhya Pradesh and south to a line running from Jagdalpur in Chhattisgarh to Mumbai.

Family IRENIDAE

169. *Aegithina tiphia* Linnaeus

Common Iora

1971. *Pycnonotus tiphia humei* : Ali & Ripley, H. B. No. 1099, Vol. 6 : 50.

Observations : Sighted in PBR.

Distribution : From Saurashtra, Mt. Abu, the plains of Uttar Pradesh and Bihar south to lat. 20°N. and east to northern Orissa and southwestern West Bengal.

170. *Aegithina nigrolutea* (Marshall)

Marshall's Iora

1971. *Aegithina nigrolutea* : Ali & Ripley, H. B. No. 1102, Vol. 6 : 53.

Past record (Osmaston, 1922; Ali & Ripley, 1971).

Distribution : Northwestern India, Punjab, southern Uttar Pradesh south through western Madhya Pradesh including the Satpuras, west to Kutch and Rajasthan.

171. *Chloropsis cochinchinensis* (Gmelin)

Jerdon's Chloropsis

1971. *Chloropsis cochinchinensis* : Ali & Ripley, H. B. No. 1107, Vol. 6 : 60.

Past record (Osmaston, 1922; Roonwal, 1942).

Distribution : From S. Gujarat north to C. Uttar Pradesh, east to W. Bengal and south through the peninsula.

Family Laniidae

172. *Lanius cristatus* Linnaeus

Brown Shrike

1972. *Lanius cristatus cristatus* : Ali & Ripley, H. B. No. 949, Vol. 5 : 98.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout India.

173. *Lanius vittatus* Valenciennes

Bay-backed Shrike

1972. *Lanius vittatus vittatus* : Ali & Ripley, H. B. No. 940, Vol. 5 : 85.

Past record (Osmaston, 1922).

Distribution : Mainly from NW India east to W. Bengal and south throughout most of the peninsula.

174. *Lanius schach* Linnaeus

Rufous-backed Shrike

1972. *Lanius schach erythronotus* : Ali & Ripley, H. B. No. 946, Vol. 5 : 93.

Observations : Sighted in PBR.

Distribution : Punjab, Kashmir, W. Himalayas eastward to Uttaranchal, Uttar Pradesh, E. Maharashtra, Rajasthan and southward through Gujarat and W. Maharashtra to N. Karnataka.

175. *Lanius excubitor* (Linnaeus)

Great Grey Shrike

1972. *Lanius excubitor* : Ali & Ripley, H. B. No. 933, Vol. 5 : 79.

Past record (Sawarkar *et al.*, 1998).

Distribution : Punjab, Rajasthan, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu and Andhra Pradesh to Bihar and southern W. Bengal.

Family MUSCICAPIDAE

Subfamily TURDINAE

176. *Monticola solitarius* (Linnaeus)

Blue Rock-Thrush

1973. *Monticola solitarius pandoo* : Ali & Ripley, H. B. No. 1726, Vol. 9 : 73.

Past record (Roonwal, 1942).

Distribution : Throughout India.

177. *Myiophonus horsfieldii* (Vigors)

Malabar Whistling-Thrush

1973. *Myiophonus horsfieldii* : Ali & Ripley, H. B. No. 1728, Vol. 9 : 77.

Past record (Osmaston, 1922; Roonwal, 1942; Ali & Ripley, 1973).

Distribution : Western Gujarat, Satpura Range, Jharkhand, northwestern Orissa, Western Ghats, Karnataka, and Tamil Nadu.

178. *Zoothera citrina* (Latham)

Orange-headed Thrush

1973. *Zoothera citrina cyanotus* : Ali & Ripley, H. B. No. 1734, Vol. 9 : 89.

Observations : Sighted in PBR.

Distribution : Peninsular India from southern Gujarat east to W. Bengal and south through much of the subcontinent.

179. *Turdus merula* (Linnaeus)

Eurasian Blackbird

1973. *Turdus merula nigropileus* : Ali & Ripley, H. B. No. 1753, Vol. 9 : 117.

Observations : Sighted in PBR.

Distribution : Southern Rajasthan and eastern Gujarat, western Vindhya Range, the Satpuras, and south along the Western Ghats.

180. *Luscinia svecica* (Linnaeus)

Bluethroat

1973. *Erithacus svecicus svecicus* : Ali & Ripley, H. B. No. 1644, Vol. 8 : 217.

Past record (Osmaston, 1922).

Distribution : Winters in India from Himalayan foothills to S. India. Scarce south of Lat. 20° N.

181. *Copsychus saularis* (Linnaeus)

Oriental Magpie-Robin

1973. *Copsychus saularis saularis* : Ali & Ripley, H. B. No. 1661, Vol. 8 : 239.

Observations : Sighted in PBR.

Distribution : Most of India, except parts of northwest, northeast and Himalayas.

182. *Saxicoloides fulicata* (Linnaeus)

Indian Robin

1973. *Saxicoloides fulicata cambaiensis* : Ali & Ripley, H. B. No. 1717, Vol. 9 : 60.

Observations : Sighted in PBR.

Distribution : Northwestern India through Rajasthan, Gujarat, Uttar Pradesh, Bihar and Madhya Pradesh south to the Tapti river. In the Himalayan foothills up to c. 1000 m.

183. *Phoenicurus ochruros* (Gmelin)

Black Redstart

1973. *Phoenicurus ochruros rufiventris* : Ali & Ripley, H. B. No. 1672, Vol. 8 : 255.

Observations : Sighted in PBR.

Distribution : Winters in foothills of Himalayas and Assam, south through much of India.

184. *Saxicola torquata* (Linnaeus)

Common Stonechat

1973. *Saxicola torquata indica* : Ali & Ripley, H. B. No. 1697, Vol. 9 : 28.

Observations : Sighted in PBR.

Distribution : Himalayas from Kashmir east to Nagaland. Winters from c. 2200 m down to the foothills and south through the peninsula to southern Karnataka, W. Bengal and Assam.

185. *Saxicola caprata* (Linnaeus)

Pied Bushchat

1973. *Saxicola caprata bicolor* : Ali & Ripley, H. B. No. 1700. 9 : 32

Past record (Osmaston, 1922; Roonwal, 1942).

Distribution : Northern India, Kashmir east through Punjab, Uttar Pradesh, Bihar to northern Bengal, Gujarat, Madhya Pradesh, Maharashtra, northern Karnataka and Andhra Pradesh.

Subfamily TIMALIINAE

186. *Pellorneum ruficeps* Swainson

Spotted Babbler

1971. *Pellorneum ruficeps ruficeps* : Ali & Ripley, H. B. No. 1154, Vol. 6 : 117.

Past record (Osmaston, 1922).

Distribution : The hills of Indian Peninsula, Narmada River to Bihar, south through Western Ghats up to Palghat Gap.

187. *Pomatorhinus schisticeps* Hodgson

Hodgson's Scimitar-Babbler

1971. *Pomatorhinus schisticeps obscurus* : Ali & Ripley, H. B. No. 1172, Vol. 6 : 133

Past record (Osmaston, 1922; Ali & Ripley, 1971).

Distribution : Southwestern Rajasthan, northern Gujarat, Madhya Pradesh in the Vindhya and Satpura ranges east to Balaghat.

188. *Dumetia hyperythra* (Franklin)

Rufous-bellied Babbler

1971. *Dumetia hyperythra hyperythra* : Ali & Ripley, H. B. No. 1222, Vol. 6 : 181.

Observations : Sighted in PBR.

Distribution : Himalayan foothills through Uttar Pradesh to W. Bengal, south to a line Hyderabad-Jalna-Mhow-Jhansi.

189. *Chrysomma sinense* (Gmelin)

Yellow-eyed Babbler

1971. *Chrysomma sinense sinense* : Ali & Ripley, H. B. No. 1231, Vol. 6 : 190.

Past record (Osmaston, 1922).

Distribution : Most of India, except parts of far northeast, northwest and Himalayas.

190. *Turdoides caudatus* (Dumont)

Common Babbler

1971. *Turdoides caudatus caudatus* : Ali & Ripley, H. B. No. 1254, Vol. 6 : 215.

Past record (Roonwal, 1942).

Distribution : Most of India except the northeast, Himalaya

191. *Turdoides malcolmi* (Sykes)

Large Grey Babbler

1971. *Turdoides malcolmi* : Ali & Ripley, H. B. No. 1258, Vol. 6 : 220.

Observations : Sighted in PBR.

Distribution : Central, northwest, west and south India.

192. *Turdoides striatus* (Dumont)

Jungle Babbler

1971. *Turdoides striatus orientalis* : Ali & Ripley, H. B. No. 1262, Vol. 6 : 226.

Observations : Sighted in PBR.

Distribution : Gujarat and the western half of Madhya Pradesh south through the Peninsula to the Nilgiris and Palnis.

193. *Alcippe poiocephala* (Jerdon)

Quaker Tit-Babbler

1972. *Alcippe poiocephala brucei* : Ali & Ripley, H. B. No. 1389, Vol. 7 : 122.

Past record (Osmaston, 1922; Ali & Ripley, 1972).

Distribution : The hills of the Indian peninsula south of a line running from Kathiawar and Mt. Abu across southern Madhya Pradesh to southern Bihar.

Subfamily Sylviinae

194. *Cisticola juncidis* (Rafinesque)

Streaked Fantail-Warbler

1973. *Cisticola juncidis cursitans* : Ali & Ripley, H. B. No. 1498, Vol. 8 : 33.

Past record (Osmaston, 1922).

Distribution : From the Himalayan foothills south to Kanyakumari.

195. *Prinia hodgsonii* Blyth

Franklin's Prinia

1973. *Prinia hodgsonii hodgsonii* : Ali & Ripley, H. B. No. 1503, Vol. 8 : 42.

Past record (Osmaston, 1922).

Distribution : The Indian peninsula between Pakistan and Bangladesh. Occurs commonly in the plains of Madhya Pradesh during winter.

196. *Prinia socialis* Sykes

Ashy Prinia

1973. *Prinia socialis stewarti* : Ali & Ripley, H. B. No. 1515, Vol. 8 : 57.

Observations : Sighted in PBR.

Distribution : Northern India from the Himalayan foothills south through the Gangetic Plain, northern Madhya Pradesh and eastern Rajasthan to the Kathiawar peninsula, the Narmada River and southern Bihar.

197. *Prinia inornata* Sykes

Plain Prinia

1973. *Prinia subflava* : Ali & Ripley, H. B. No. 1511, Vol. 8 : 53.

Past record (Osmaston, 1922).

Distribution : Central India from Gangetic plain to W. Bengal and south to Tamil Nadu through Madhya Pradesh, Andhra Pradesh.

198. *Prinia sylvatica* Jerdon
Jungle Prinia

1973. *Prinia sylvatica* : Ali, Ali & Ripley, H. B. No. 1521, Vol. 8 : 64.

Past record (Osmaston, 1922).

Distribution : Indian peninsula from Maharashtra and Madhya Pradesh south to Kanyakumari.

199. *Acrocephalus dumetorum* Blyth
Blyth's Reed-Warbler

1973. *Acrocephalus dumetorum* : Ali, Ali & Ripley, H. B. No. 1556, Vol. 8 : 109.

Past record (Sawarkar *et al.*, 1998).

Distribution : India: wintering in Madhya Pradesh, Bihar through the Peninsula to Kanyakumari, east through the Jalpaiguri, lower Bengal, Assam, Nagaland, Manipur, north-western India.

200. *Orthotomus sutorius* (Pennant)
Common Tailorbird

1973. *Orthotomus sutorius guzuratus* : Ali & Ripley, H. B. No. 1535, Vol. 8 : 81.

Observations : Sighted in PBR.

Distribution : From the Himalayan foothills south to Kanyakumari.

201. *Phylloscopus collybita* (Vieillot)
Common Chiffchaff

1973. *Phylloscopus collybita* : Ali & Ripley, H. B. No. 1575, Vol. 8 : 137.

Past record (Sawarkar *et al.*, 1998).

Distribution : The lower Himalayas through Nepal, Sikkim, northern Bengal and the Bhutan foothills, south through the western half of Bangladesh, southern Bengal, Bihar, Madhya Pradesh, western Maharashtra south to north Kanara, Gujarat, Sind, and the Makran coast.

202. *Phylloscopus griseolus* Blyth
Olivaceous Leaf-Warbler

1973. *Phylloscopus griseolus* : Ali & Ripley, H. B. No. 1581, Vol. 8 : 145.

Past record (Sawarkar *et al.*, 1998).

Distribution : Winters in the northern Peninsula from Rajasthan and Gujarat through Madhya Pradesh to lower Bengal, south to Maharashtra and Andhra Pradesh.

203. *Phylloscopus trochiloides* (Sundevall)

Greenish Leaf-Warbler

1973. *Phylloscopus trochiloides* : Ali & Ripley, H. B. No. 1602, Vol. 8 : 166.

Past record (Sawarkar *et al.*, 1998).

Distribution : Winters from the Nepal and Sikkim foothills south throughout the Peninsula, west to central Uttar Pradesh and western Madhya Pradesh, south to southern Kerala.

204. *Phylloscopus reguloides* (Blyth)

Blyth's Leaf Warbler

1973. *Phylloscopus reguloides* : Ali & Ripley, H. B. No. 1609, Vol. 8 : 177.

Past record (Sawarkar *et al.*, 1998).

Distribution : Northeast India.

Subfamily MUSCICAPINAE

205. *Muscicapa davurica* Pallas

Asian Brown Flycatcher

1972. *Muscicapa latirostris* : Ali & Ripley, H. B. No. 1407, Vol. 7 : 145.

Past record (Sawarkar *et al.*, 1998).

Distribution : Uttaranchal, Himachal Pradesh, West Bengal, Madhya Pradesh, Western Ghats, Manipur, Punjab, Gujarat, Ladakh.

206. *Ficedula parva* (Bechstein)

Red-throated Flycatcher

1972. *Ficedula parva parva* : Ali & Ripley, H. B. No. 1411, Vol. 7 : 154.

Observations : Sighted in PBR.

Distribution : Breeds in Himalayas, winters mainly in SW India and NE India, Orissa, eastern Madhya Pradesh and Andhra Pradesh, becoming scarcer farther south.

207. *Ficedula superciliaris* (Jerdon)**Ultramarine Flycatcher**

1972. *Ficedula superciliaris* : Ali & Ripley, H. B. No. 1421, Vol. 7 : 168.

Past record (Sawarkar *et al.*, 1998).

Distribution : Central India from Delhi to northern Maharashtra, Madhya Pradesh, northwestern Andhra to Orissa to W. Bengal and SE Karnataka.

208. *Eumyias thalassina* (Swainson)**Verditer Flycatcher**

1972. *Muscicapa thalassina thalassina* : Ali & Ripley, H. B. No. 1445, Vol. 7 : 198.

Observations : Sighted in PBR.

Distribution : Himalayan foothills south throughout peninsula.

209. *Cyornis tickelliae* Blyth**Tickell's Blue-Flycatcher**

1972. *Muscicapa tickelliae tickelliae* : Ali & Ripley, H. B. No. 1442, Vol. 7 : 193.

Observations : Sighted in PBR.

Distribution : Mainly from Gujarat and N. Uttar Pradesh east to W. Bengal and south through the peninsula.

210. *Culicicapa ceylonensis* (Swainson)**Grey-headed Flycatcher**

1972. *Culicicapa ceylonensis ceylonensis* : Ali & Ripley, H. B. No. 1449, Vol. 7 : 204.

Observations : Sighted in PBR.

Distribution : Foothills of Himalayas south to most of peninsula west to Kutch and south about the Krishna River.

Subfamily MONARCHINAE**211. *Terpsiphone paradisi* (Linnaeus)****Asian Paradise-Flycatcher**

1972. *Terpsiphone paradisi paradisi* : Ali & Ripley, H. B. No. 1461, Vol. 7 : 218.

Observations : Sighted in PBR.

Distribution : Most of India, except parts of North and northwest.

212. *Hypothymis azurea* (Boddart)
Black-naped Monarch-Flycatcher

1972. *Hypothymis azurea styani* : Ali & Ripley, H. B. No. 1465, Vol. 7 : 223.

Past record (Osmaston, 1922).

Distribution : Uttar Pradesh, Kerala, Tamil Nadu, Gulf of Kutch, Assam, Manipur, Himalayan foothills, W. Bengal, Sikkim, Arunachal Pradesh, Maharashtra.

Subfamily RHIPIDURINAE

213. *Rhipidura albicollis* (Vieillot)
White-throated Fantail-Flycatcher

1972. *Rhipidura albicollis* : Ali & Ripley, H. B. No. 1458, Vol. 7 : 214.

Observations : Sighted in PBR.

Distribution : The Indian Peninsula from Mt. Abu and the Vindhya Range southward to Kerala-coastal plain, central plateau, Western and Eastern Ghats and their associated hills up to c. 2000 m.

214. *Rhipidura aureola* (Lesson)
White-browed Fantail-Flycatcher

1972. *Rhipidura aureola aureola* : Ali & Ripley, H. B. No. 1451, Vol. 7 : 207.

Past record (Osmaston, 1922; Roonwal, 1942).

Distribution : Throughout India.

Family REMIZIDAE

215. *Cephalopyrus flammiceps* (Burton)
Fire-capped Tit

1973. *Cephalopyrus flammiceps* : Ali & Ripley, H. B. No. 1815, Vol. 9 : 195.

Past record (Sawarkar *et al.*, 1998).

Distribution : Winters in Central India from Etawah and Kanpur to Raipur, Nagpur and Sehore.

Family PARIDAE

216. *Parus major* Linnaeus.**Great Tit**

1973. *Parus major stupae* : Ali & Ripley, H. B. No. 1794, Vol. 9 : 169.

Observations : Sighted in PBR.

Distribution : Peninsular India from central Rajasthan and Gujarat east through Madhya Pradesh to Orissa and south through Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu.

217. *Parus xanthogenys* Vigors**Black-lored Yellow Tit**

1973. *Parus xanthogenys aplonotus* : Ali & Ripley, H. B. No. 1810, Vol. 9 : 188.

Observations : Sighted in PBR.

Distribution : Common resident in the Peninsula, eastern Gujarat, southern Rajasthan, the whole of Madhya Pradesh, southern Bihar, Orissa, south in the Eastern Ghats to the Krishna river and in the Western Ghats to Mahabaleshwar.

Family SITTIDAE

218. *Sitta castanea* Lesson**Chestnut-bellied Nuthatch**

1973. *Sitta castanea castanea* : Ali & Ripley, H. B. No. 1830, Vol. 9 : 215.

Observations : Sighted in PBR.

Distribution : Practically all India.

Family CERTHIIDAE

219. *Salpornis spilonotus* (Franklin)**Spotted Creeper**

1973. *Salpornis spilonotus spilonotus* : Ali & Ripley, H. B. No. 1841, Vol. 9 : 229.

Past record (Sawarkar *et al.*, 1998).

Distribution : The Central India Peninsula from Haryana, Uttar Pradesh and the Bihar terai east to Manbhum, south through Chhattisgarh roughly to the Godavari river and west to Maharashtra.

Family DICAIEIDAE

220. *Dicaeum agile* (Tickell)**Thick-billed Flowerpecker**

1974. *Dicaeum agile agile* : Ali & Ripley, H. B. No. 1892, Vol. 10 : 2.

Past record (Osmaston, 1922).

Distribution : The Indian Peninsula from the outer Himalayas to Assam north and south of the Brahmaputra with Meghalaya and Nagaland south through Gujarat to Kerala and on the eastern side through Bengal, Orissa, Andhra Pradesh and Tamil Nadu.

221. *Dicaeum erythrorhynchos* (Latham)**Tickell's Flowerpecker**

1974. *Dicaeum e. erythrorhynchos* : Ali & Ripley, H. B. No. 1899, Vol. 10 : 10.

Past record (Sawarkar *et al.*, 1998).

Distribution : From Dharmasala and Kangra east along the Himalayan foothills and adjacent plains of Uttar Pradesh to the Jalpaiguri duars and Bhutan foothills and through Assam to Dibrugarh and North Cachar, south to Bengal, Bihar and the Indian Peninsula from Jabalpur and Baroda south to Kanyakumari.

Family NECTARINIIDAE

222. *Nectarinia zeylonica* (Vieillot)**Purple-rumped Sunbird**

1974. *Nectarinia zeylonica sola* : Ali & Ripley, H. B. No. 1907, Vol. 10 : 22.

Past record (Sawarkar *et al.*, 1998).

Distribution : Peninsular India south of a line from Maharashtra, Madhya Pradesh and Bihar, southern Bengal and Bangladesh.

223. *Nectarinia asiatica* (Latham)**Purple Sunbird**

1974. *Nectarinia asiatica asiatica* : Ali & Ripley, H. B. No. 1917, Vol. 10 : 35.

Observations : Sighted in PBR.

Distribution : Throughout the Indian Union; Bangladesh; Pakistan; Sri Lanka; Myanmar.

Family ZOSTEROPIDAE

224. *Zosterops palpebrosus* (Temminck)**Oriental White-eye**

1974. *Zosterops palpebrosa palpebrosa* : Ali & Ripley, H. B. No. 1933, Vol. 10 : 57.

Past record (Osmaston, 1922).

Distribution : All India south of the Himalayan foothills from Kashmir to Arunachal Pradesh, south to central Karnataka and eastern side of Peninsula excluding western Rajasthan.

Family EMBERIZIDAE

225. *Melophus lathami* (Gray)**Crested Bunting**

1974. *Melophus lathami* : Ali & Ripley, H. B. No. 2060, Vol. 10 : 232.

Past record (Osmaston, 1922).

Distribution : Northeast and Central India, Madhya Pradesh, Maharashtra, Orissa, Bihar and Andhra Pradesh.

226. *Emberiza buchanani* Blyth**Grey-necked Bunting**

1974. *Emberiza buchanani* : Ali & Ripley, H. B. No. 2050, Vol. 10 : 219.

Past record (Sawarkar *et al.*, 1998).

Distribution : Mostly winter visitor to western and central India, from northern Gujarat, east and south to central Uttar Pradesh, eastern Maharashtra, northern Andhra Pradesh and central Karnataka.

227. *Emberiza melanocephala* Scopoli**Black-headed Bunting**

1974. *Emberiza melanocephala* : Ali & Ripley, H. B. No. 2043, Vol. 10 : 207.

Past record (Sawarkar *et al.*, 1998).

Distribution : Winter visitor. In India, mainly from Gujarat east to C. Madhya Pradesh and E. Maharashtra and south to C. Karnataka.

Family FRINGILLIDAE

228. *Carpodacus erythrinus* Pallas**Common Rosefinch**

1974. *Carpodacus erythrinus roseatus* : Ali & Ripley, H. B. No. 2011, Vol. 10 : 164.

Past record (Roonwal, 1942).

Distribution : The Himalayas through Kashmir. Winters from c. 1500 m. down to the foothills and in the plains and northwestern India south to Londa.

Family ESTRILDIDAE

229. *Amandava amandava* (Linnaeus)**Red Munia**

1974. *Amandava amandava* : Ali & Ripley, H. B. No. 1964, Vol. 10 : 101.

Past record (Sawarkar *et al.*, 1998).

Distribution : Throughout the Indian peninsula, south to Madurai.

230. *Lonchura malabarica* (Linnaeus)**White-throated Munia**

1974. *Lonchura malabarica* : Ali & Ripley, H. B. No. 1966, Vol. 10 : 105.

Past record (Osmaston, 1922).

Distribution : Throughout India.

231. *Lonchura striata* (Linnaeus)**White-rumped Munia**

1974. *Lonchura striata* : Ali & Ripley, H. B. No. 1968, Vol. 10 : 108.

Past record (Sawarkar *et al.*, 1998).

Distribution : The Indian Peninsula from southern Bihar, southern Madhya Pradesh and southeastern Gujarat south through Kerala and Tamil Nadu.

232. *Lonchura punctulata* (Linnaeus)**Spotted Munia**

1974. *Lonchura punctulata* : Ali & Ripley, H. B. No. 1974, Vol. 10 : 113.

Past record (Sawarkar *et al.*, 1998).

Distribution : The whole of India eastwards along the lower Himalayas to Bhutan and Bangladesh and south to Kanyakumari and Sri Lanka.

233. *Lonchura malacca* (Linnaeus)

Black-headed Munia

1974. *Lonchura malacca malacca* : Ali & Ripley, H. B. No. 1978, Vol. 10 : 118.

Observations: Sighted in PBR.

Distribution : Central India from Raipur, Pachmarhi, Mumbai and south to Kanyakumari.

Family PASSERIDAE

Subfamily PASSERINAE

234. *Passer domesticus* Linnaeus

House Sparrow

1974. *Passer domesticus indicus*: Ali & Ripley, H. B. No. 1938, Vol. 10 : 63.

Observations : Sighted in PBR.

Distribution : Most of India, except parts of the northeast and northwest.

235. *Petronia xanthocollis* (Burton)

Yellow-throated Sparrow

1974. *Petronia xanthocollis xanthocollis* : Ali & Ripley, H. B. No. 1949, Vol. 10 : 80.

Observations : Sighted in PBR.

Distribution : Throughout India.

Subfamily PLOCEINAE

236. *Ploceus manyar* (Horsfield)

Streaked Weaver

1974. *Ploceus manyar* : Ali & Ripley, H. B. No. 1962, Vol. 10 : 98.

Past record (Sawarkar *et al.*, 1998).

Distribution : Mainly Pakistan, SE Nepal, Assam, Gujarat, Bangladesh, Sri Lanka.

237. *Ploceus philippinus* (Linnaeus)**Baya Weaver**

1974. *Ploceus philippinus* : Ali & Ripley, H. B. No. 1957, Vol. 10 : 88.

Past record (Sawarkar *et al.*, 1998).

Distribution : Most of India, except parts of the northwest, northeast and Himalayas.

Family STURNIDAE

238. *Sturnus malabaricus* (Gmelin)**Grey-headed Starling**

1972. *Sturnus malabaricus* : Ali & Ripley, H. B. No. 987, Vol. 5 : 152.

Past record (Sawarkar *et al.*, 1998).

Distribution : Practically throughout the Indian Union.

239. *Sturnus pagodarum* (Gmelin)**Brahminy Starling**

1972. *Sturnus pagodarum* : Ali & Ripley, H. B. No. 994, Vol. 5 : 160.

Observations : Sighted in PBR.

Distribution : Most of India, except parts of northwest and northeast.

240. *Sturnus roseus* (Linnaeus)**Rosy Starling**

1972. *Sturnus roseus* : Ali & Ripley, H. B. No. 996, Vol. 5 : 163.

Past record (Osmaston, 1922).

Distribution : India eastward to Bihar, straggling into W. Bengal and Assam. Southward throughout the Peninsula: abundant in Gujarat and the Deccan, decreasingly through Karnataka, Kerala and southern Tamil Nadu.

241. *Sturnus contra* Linnaeus**Asian Pied Starling**

1972. *Sturnus contra contra* : Ali & Ripley, H. B. No. 1002, Vol. 5 : 172.

Past record (Ali & Ripley, 1972).

Distribution : Northeast, central and southeast India.

242. *Acridotheres tristis* (Linnaeus)**Common Myna**

1972. *Acridotheres tristis tristis* : Ali & Ripley, H. B. No. 1006, Vol. 5 : 177.

Observations : Sighted in PBR.

Distribution : Most of India, except parts of northeast and northwest.

243. *Acridotheres ginginianus* (Latham)**Bank Myna**

1972. *Acridotheres ginginianus* : Ali & Ripley, H. B. No. 1008, Vol. 5 : 181.

Observations : Sighted in PBR.

Distribution : Pakistan east to Assam and Bangladesh and south to C. Maharashtra and N. Orissa.

244. *Acridotheres fuscus* (Wagler)**Jungle Myna**

1972. *Acridotheres fuscus fuscus* : Ali & Ripley, H. B. No. 1009, Vol. 5 : 183.

Past record (Sawarkar *et al.*, 1998).

Distribution : Mainly Himalayas from N. Pakistan east to Arunachal Pradesh south to Bangladesh and N. Orissa, W. India.

Family ORIOLIDAE**245. *Oriolus oriolus* Linnaeus****Eurasian Golden Oriole**

1972. *Oriolus oriolus kundoo* : Ali & Ripley, H. B. No. 953, Vol. 5 : 103.

Observations : Sighted in PBR.

Distribution : Himalayas east to Nepal migrating south into the Peninsula in winter. Also Rajasthan, Punjab and Gangetic plains east to Bihar, W. Bengal and Assam. South through Kutch and Gujarat at least to Maharashtra, Karnataka and Kerala.

246. *Oriolus chinensis* Linnaeus**Black-naped Oriole**

1972. *Oriolus chinensis* : Ali & Ripley, H. B. No. 954, Vol. 5 : 105.

Observations : Sighted in PBR.

Distribution : Occasional winter visitor to the Peninsula, NE Indian states.

247. *Oriolus xanthornus* (Linnaeus)

Black-headed Oriole

1972. *Oriolus xanthornus maderaspatensis* : Ali & Ripley, H. B. No. 958, 959, Vol. 5 : 108, 110.

Observations : Sighted in PBR.

Distribution : Peninsular India south of the Gangetic Plain, from Gujarat and Madhya Pradesh east to southern Bihar, Orissa and Andhra Pradesh.

Family DICRURIDAE

248. *Dicrurus macrocercus* Vieillot

Black Drongo

1972. *Dicrurus macrocercus* : Ali & Ripley, H. B. No. 963, Vol. 5 : 117.

Observations : Sighted in PBR.

Distribution : Most of India, except parts of the northwest, northeast and Himalayas.

249. *Dicrurus caerulescens* (Linnaeus)

White-bellied Drongo

1972. *Dicrurus caerulescens caerulescens* : Ali & Ripley, H. B. No. 967, Vol. 5 : 122.

Observations : Sighted in PBR.

Distribution : All India eastward to Bihar, West Bengal and south through the subcontinent.

250. *Dicrurus hottentottus* (Linnaeus)

Spangled Drongo

1972. *Dicrurus hottentottus hottentottus* : Ali & Ripley, H. B. No. 973, Vol. 5 : 131.

Past record (Sawarkar *et al.*, 1998).

Distribution : Himalayan foothills from Punjab east to Arunachal Pradesh, south through the Northeast Indian hills, eastern Madhya Pradesh, Eastern and Western Ghats, Kerala.

251. *Dicrurus paradiseus* Linnaeus
Greater Racket-tailed Drongo

1972. *Dicrurus paradiseus* : Ali & Ripley, H. B. No. 977, Vol. 5 : 137.

Observations : Sighted in PBR.

Distribution : Northern India from lower Himalayas to Manipur-Mizo, southeast to 17° N Latitude.

Family ARTAMIDAE

252. *Artamus fuscus* Vieillot
Ashy Woodswallow

1972. *Artamus fuscus* : Ali & Ripley, H. B. No. 982, Vol. 5 : 143.

Past record (Sawarkar *et al.*, 1998).

Distribution : Gujarat, Himachal Pradesh, Sikkim, Arunachal Pradesh. Throughout peninsular India south to Kerala, rare in Madhya Pradesh, Assam, Nagaland, and Manipur.

Family CORVIDAE

253. *Dendrocitta vagabunda* (Latham)
Indian Treepie

1972. *Dendrocitta vagabunda vagabunda* : Ali & Ripley, H. B. No. 1032, Vol. 5 : 218.

Observations : Sighted in PBR.

Distribution : The Himalayan submontane tract eastward to NEFA, southward through Assam, W. Bengal, Uttar Pradesh, Madhya Pradesh, Andhra Pradesh to 17° N Latitude.

254. *Corvus splendens* Vieillot
House Crow

1972. *Corvus splendens splendens* : Ali & Ripley, H. B. No. 1049, Vol. 5 : 244.

Observations : Sighted in PBR.

Distribution : Throughout India except parts of northwest, northeast and Himalayas.

255. *Corvus macrorhynchos* Wagler
Jungle Crow

1972. *Corvus macrorhynchos culminatus* : Ali & Ripley, H. B. No. 1057, Vol. 5 : 256.

Observations : Sighted in PBR.

Distribution : The Gangetic Plain, all peninsular India south to Kanyakumari.

RESULTS AND DISCUSSION

The inventory of birds of Pachmarhi Biosphere Reserve comprises 255 species belonging to 170 genera under 62 families which are grouped into 17 orders (Table-2).

This clearly indicates that this reserve possesses a fairly good bird diversity as compared to the avian diversity of Indian subcontinent. Further, it can be pointed out that at generic and species level, orders like Ciconiiformes, Falconiformes, Charadriiformes and Passeriformes are well represented in forested areas of Pachmarhi.

CONSERVATION STATUS

The analysis of conservation status of birds of Pachmarhi Biosphere Reserve reveals that the birds like *Platalea leucorodia* Linnaeus (Family : Threskiornithidae); *Dendrocygna bicolor* (Vieillot) (Family : Anatidae); and all the bird species belonging to families Accipitridae, Pandionidae and Falconidae; *Pavo cristatus* Linnaeus (Family : Phasianidae); *Anthracoceros coronatus* (Boddaert) (Fam : Bucerotidae) are included under Schedule I, Part III (Birds). The *Gallus sonneratii* Temminck (Family : Phasianidae) is included under Schedule II, Part II (Birds) of Indian Wildlife (Protection) Act, 1972 (as amended upto 2002). The Red Data Book on Indian Animals, Part 1 : Vertebrata, of Zoological Survey of India (1994) includes *Platalea leucorodia* Linnaeus (Family : Threskiornithidae) as Endangered and *Dendrocygna bicolor* (Vieillot) Family : Anatidae), *Pandion haliaetus* (Linnaeus), (Family : Pandionidae), *Pavo cristatus* (Linnaeus) (Family : Phasianidae) and *Anthracoceros coronatus* (Boddaert) (Family : Bucerotidae) are vulnerable.

Further, IUCN Red List of Threatened species (2002) lists *Gyps bengalensis* (Gmelin), *Gyps indicus* (Scopoli) (Fam: Accipitridae) as critically Endangered and *Grus antigone* (Linnaeus) (Family : Gruidae) as vulnerable. While *Anhinga melanogaster* Pennant (Family : Anhingidae), *Threskiornis melanocephalus* (Latham) (Family : Threskiornithidae), *Aegypius monachus* (Linnaeus), *Sarcogyps calvus* (Scopoli), *Circus macrourus* (S.G. Gmelin) (Family : Accipitridae), and *Anthracoceros coronatus* (Boddaert) (Family : Bucerotidae) are included under Lower Risk/near threatened category.

Similarly, *Falco jugger* J.E. Gray, *Falco peregrinus* Tunstall (Family : Falconidae); and *Ciconia nigra* (Linnaeus) (Family : Ciconiidae), *Platalea leucorodia* (Linnaeus) (Family : Threskiornithidae) find their place in Appendices I and Appendices II of CITES (Convention on International Trade in Endangered Species of Flora and Fauna) respectively.

Table-2. Avian Diversity in Pachmarhi Biosphere Reserve

Sl. No.	Order	Family	Subfamily	Genera	Species
1.	PODICIPEDIFORMES	1	-	1	1
2.	PELECANIFORMES	2	-	2	4
3.	CICONIIFORMES	3	-	14	17
4.	ANSERIFORMES	1	-	5	7
5.	FALCONIFORMES	3	-	19	25
6.	GALLIFORMES	1	-	6	10
7.	GRUIFORMES	3	-	5	5
8.	CHARADRIIFORMES	7	-	13	16
9.	COLUMBIFORMES	2	-	5	9
10.	PSITTACIFORMES	1	-	1	3
11.	CUCULIFORMES	1	-	6	9
12.	STRIGIFORMES	2	-	8	9
13.	CAPRIMULGIFORMES	1	-	1	3
14.	APODIFORMES	2	-	2	2
15.	CORACIIFORMES	5	-	9	11
16.	PICIFORMES	2	-	7	9
17.	PASSERIFORMES	25	9	66	115
	17 Orders	62	9	170	255
	* (21)	(88)	(11)	(432)	(1342)
*(Bird diversity in Indian Subcontinent is given in parenthesis)					

SUMMARY

An inventory of 255 species of birds from the Pachmarhi Biosphere Reserve belonging to 170 genera 62 families and 17 orders is presented with a note on their conservation status

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REPTILIA

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INTRODUCTION

While check listing the Herpetofauna of Madhya Pradesh and Chhattisgarh, Chandra and Gajbe (2005) have enumerated 76 species of reptiles under 49 genera of 17 families from Madhya Pradesh State. The present account provides the information on reptilian fauna of Pachmarhi Biosphere Reserve which is represented by 18 species of 17 genera under 13 families.

LIST OF REPTILES OF PACHMARHI BIOSPHERE RESERVE

Order CROCODYLIA

Family CROCODYLIDAE

1. *Crocodylus palustris* Lesson

Order SQUAMATA

Suborder SAURIA

Family GEKKONIDAE

2. *Hemidactylus brooki* Gray

Family EUBLEPHARIDAE

3. *Eublepharis hardwickii* Gray

Family AGAMIDAE

4. *Calotes versicolor* (Daudin)

5. *Psammophilus blanfordanus* (Stoliczka)

6. *Sitana ponticeriana* Cuvier

7. *Uromastix hardwicki* Gray

Family SCINCIDAE

8. *Mabuya carinata* (Schneider)

Family CHAMAELEONIDAE

9. *Chamaeleo zeylanicus* Laurenti

Family VARANIDAE

10. *Varanus bengalensis* Daudin

Suborder SERPENTES

Family TYPHLOPIDAE

11. *Ramphotyphlops braminus* (Daudin)

Family UROPELTIDAE

12. *Uropeltis ocellatus* (Beddome)

Family BOIDAE

13. *Python molurus* (Linnaeus)

Family COLUBRIDAE

14. *Ptyas mucosus* (Linnaeus)

15. *Xenochrophis piscator* (Schneider)

Family ELAPIDAE

16. *Naja naja* (Linnaeus)

Family VIPERIDAE

17. *Vipera russelli* (Shaw)

18. *Trimeresurus gramineus* (Shaw)

SYSTEMATIC ACCOUNT

Order CROCODYLIA

Family CROCODYLIDAE

Genus *Crocodylus* Gronovius1. *Crocodylus palustris* Lesson
Mugger Crocodile1834. *Crocodylus palustris* Lesson, in *Belang. Voy. Ind. Or.*, : 305.1931. *Crocodylus palustris* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 1 : 47.2000. *Crocodylus palustris* : Sharma, *Fauna of Gujarat*, 1 : 257.

This species is known from the fauna of PBR.

Diagnosis : Body length 3-5 m. The snout is short and broad. The adult is dark olive and the juvenile pale, with black spots. An overall armature of closely set, horn-sheathed, bony plates shields the body, with saw-toothed fringes along the upper border of the tail. The upper jaw has 19 teeth and the lower jaw 14-15 on each side.

Distribution : Throughout India except Jammu & Kashmir, Himachal Pradesh, Punjab and the North-western Desert Region.

Elsewhere : South Asia.

Order SQUAMATA

Suborder SAURIA

Family GEKKONIDAE

Genus *Hemidactylus* Oken2. *Hemidactylus brooki* Gray
Brook's Gecko1845. *Hemidactylus brookii* Gray, *Cat. Liz. Brit. Mus.*, : 153.1935. *Hemidactylus brooki* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 2 : 89.2000. *Hemidactylus brooki* : Sharma, *Fauna of Gujarat*, 1 : 259.

Material examined : Chhindwara, Sita Dongri, Delakhari, 18.x.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Head moderately large, snout obtusely pointed, 8 to 10 upper and 7 to 9 lower labials. Back with conical tubercles arranged in regular rows, colour brown or

varying shades of grey with brown spots, whitish below. Femoral and preanal pores vary from 15 to 27.

Distribution : Throughout the Indian subregion.

Elsewhere : From Borneo and South China through much of tropical Asia and the northern half of Africa.

Family EUBLEPHARIDAE

3. *Eublepharis hardwickii* Gray

East Indian Leopard Gecko

1827. *Eublepharis hardwickii* Gray, *Phil Mag.*, (2) 2 : 56.

2002. *Eublepharis hardwickii* Sharma, *The Fauna of India and adjacent countries-Reptilia (Sauria)* vol., 2 : 149.

Material examined : Mahadev Hills, Pachmarhi Biosphere Reserve, 08.iv.2001 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Reddish brown or tobacco brown above with broad cream coloured transverse spots; first U shaped mark across the neck which extends to the tip of the snout through the upper labials; the second much broader than the first across the mid body; tail with four or five such bands; belly whitish. Preanal pores 13-18; enlarged dorsal tubercles larger than their inter spaces.

Remarks : Chandra and Gupta (2005) reported this species from PBR.

Distribution : North central and Eastern India including Madhya Pradesh.

Elsewhere: Bangladesh.

Family AGAMIDAE

Genus *Calotes* Rafinesque

4. *Calotes versicolor* (Daudin)

Common Garden Lizard

1802. *Agama versicolor* Daudin, *Hist. Nat. Rep.*, 3 : 395.

1935. *Calotes versicolor* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 2 : 189.

1991. *Calotes versicolor* : Sanyal, *Fauna of Orissa*, 4 : 58.

This species was sighted in PBR and very common.

Diagnosis : Light brown or greyish above, uniform or with more or less distinct dark brown transverse spots or bars upon the back and sides; or variegated with dark brown; dark streaks radiating from the eye. Tail with light and dark annuli. Dirty whitish below, often streaked with dark brown or black. The throat may have a black transverse bar; nuchal and dorsal crest continuous.

Distribution : India : Eastern Rajasthan, Madhya Pradesh, Northern Maharashtra, Western Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan, Maldives, Nepal, and Sri Lanka.

5. *Psammophilus blanfordanus* (Stoliczka)

Blanford's Rock Agama

1871. *Charasia blanfordanus* Stoliczka, P. *Asiat. Soc. Beng.*, : 194.

1935. *Psammophilus blanfordanus*, Smith, *Fauna Brit. India, Reptilia & Amphibia*, 2 : 210.

2002. *Psammophilus blanfordanus*, Sharma, *Fauna of India, Reptilia, Sauria*, II, p. 224.

Observation : The species is common in dense forests

Diagnostic : This species closely resembles with *Psammophilus dorsalis* in general body shape and pholidostic characters except that it is olive-bronze or dark-brown in dorsal colouration, spotted profusely with brown and usually with a series of large, boat shaped dark-brown spots with light brown or pale centres on the complete back and tail. In the adult male these markings of back and tail merge out and giving the lizard somewhat brownish appearance.

Distribution : India : Madhya Pradesh, Andhra Pradesh, Bihar, Orissa, Eastern and Western Ghats.

Genus *Sitana* Cuvier

6. *Sitana ponticeriana* Cuvier

Fan-throated Lizard

1844. *Sitana ponticeriana* Cuvier, *Guerin Icon. Reg. Anima. Rep.*, : pl. 10, fig. 2.

1935. *Sitana ponticeriana* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 2 : 144.

1991. *Sitana ponticeriana* : Sanyal, *Fauna of Orissa*, 4 : 57.

Material examined : Chhindwara, Chhota Mahadeo, Tamia, 23.x.2002 (2 exs.), Coll. Y.N. Gupta; Chhindwara, Sita Dongri, Delakhari, 18.x.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Light or dark brown above, with a series of dark brown, black-edged, rhomboidal spots along the middle of the back; a more or less distinct light line along each side of the spots and sometimes a light vertebral line dividing them. Flanks, top of head and upper surfaces of limbs with or without dark markings. Whitish below.

Distribution : Throughout India except wet areas (with heavy rainfall). In Madhya Pradesh (Balaghat, Hoshangabad, Jabalpur, Seoni, Shahdol).

Elsewhere : Nepal, Pakistan, Sri Lanka.

Genus *Uromastix* Merrem

7. *Uromastix hardwicki* Gray

Spiny-tailed Lizard

1827. *Uromastix hardwickii* Gray, *Zool. Journ.*, 3 : 219.

1935. *Uromastix hardwickii* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 2 : 244.

2000. *Uromastix hardwicki* : Sharma, *Fauna of Gujarat*, 1 : 263.

This species is known to occur in PBR.

Diagnosis : Dorsum is sandy-brown or yellowish-brown, with dark brown reticulation, throat white, with dark brown spots; belly is white, a dark blue spot in the groin region. Standard length 168-240 mm, tail length 143-207 mm.

Distribution : India : Andhra Pradesh, Madhya Pradesh, Gujarat, Uttar Pradesh, Rajasthan.

Elsewhere : Pakistan.

Family SCINCIDAE

Genus *Mabuya* Fitzinger

8. *Mabuya carinata* (Schneider)

Common Keeled Grass Skink

1807. *Scincus carinata* Schneider, *Hist. Amphib.*, 2 : 183.

1935. *Mabuya carinata* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 2 : 266.

1991. *Mabuya carinata* : Sanyal, *Fauna of Orissa*, 4 : 61.

Material examined : Chhindwara, Chhota Mahadeo, Tamia, 23.x.2002 (2 exs.), Coll. Y.N. Gupta; Chhindwara, Mohgaon, 18.viii.2001 (4 exs.), Coll. Y.N. Gupta.

Diagnosis : Brown to olive or bronzy above, uniform or with dark brown or black spots, or longitudinal streaks along the lateral margins of the scales. Side darker brown or chestnut, with or without light spots. A light dorso-lateral line starting from above the eye and continued to the base of the tail. Lower parts whitish or yellow.

Distribution : Throughout India except North-western India and West Bengal.

Elsewhere : Nepal.

Family CHAMAELEONIDAE

Genus *Chamaeleo* Laurenti

9. *Chamaeleo zeylanicus* Laurenti
Indian Chamaeleon

1768. *Chamaeleo zeylanicus* Laurenti, *Syn. Rept.*, : 46.

1935. *Chamaeleo zeylanicus* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 2 : 251.

1991. *Chamaeleo zeylanicus* : Sanyal, *Fauna of Orissa*, 4 : 60.

This species is known to occur in PBR.

Diagnosis : The length from snout to vent is about 175 mm, tail prehensile, about 200 mm long. Dorsal side green, varying from very pale green to almost black, rarely yellow; casque much elevated posteriorly; with strong, curved parietal crest. A series of conical tubercles forming a very distinct crest along the throat and belly, tail often banded.

Distribution : Peninsular India south of the Gangetic Plain.

Elsewhere: Sri Lanka.

Family VARANIDAE

Genus *Varanus* Merrem

10. *Varanus bengalensis* Daudin
Common Indian Monitor

1802. *Varanus bengalensis* Daudin, *Hist. Nat. Rept.*, 3 : 67.

1935. *Varanus monitor* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 2 : 402.

1991. *Varanus bengalensis* : Sanyal, *Fauna of Orissa*, 4 : 63.

This species was sighted in PBR.

Diagnosis : It is a medium-sized, dark brown monitor, about 72-75 cm. in head and body length. The tail is very strong, long, compressed and measures about 100 cm. in length. The snout is convex terminally. The nostrils are oblique slits lying midway

between the eye and the end of the muzzle. The tongue is very long, forked and protrusible.

Distribution : Central India, Rajasthan, Uttar Pradesh. Indian subcontinent.

Suborder SERPENTES

Family TYPHLOPIDAE

Genus *Ramphotyphlops* Stimson

11. *Ramphotyphlops braminus* (Daudin)

Common Worm Snake

1803. *Eryx braminus* Daudin, *Hist. Nat. Rept.*, 7 : 279.

1943. *Typhlops braminus* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 3 : 46.

1991. *Ramphotyphlops braminus* : Sanyal, *Fauna of Orissa*, 4 : 64.

Material examined : Hoshangabad, Pachmarhi, 13.ii.2003 (2 exs.), Coll. M.L. Koshta.

Diagnosis : Length about 170 mm; colouration brown or blackish above, lighter below, snout, anal region and end of tail usually whitish. Snout rounded, strongly projecting; nostrils lateral; eye distinct, in the ocular shield or at its junction with the supraocular; 290-320 transverse rows of scales.

Distribution : Throughout India.

Elsewhere : Sri Lanka, Indo-China, and Southeast Asia.

Family UROPELTIDAE

Genus *Uropeltis* Cuvier

12. *Uropeltis ocellata* (Beddome)

Ocellate Shield Tail

1863. *Uropeltis ocellata* Beddome, *P.Z.S.* : 225.

1943. *Uropeltis ocellatus* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 3 : 76.

2002. *Uropeltis ocellata* : Daniel, *Book of Indian reptiles and amphibians* : 78.

Material examined : Hoshangabad, Pachmarhi, 13.ii.2003 (1 ex.), Coll. M.L. Koshta.

Diagnosis : Distinguished by the obliquely truncated tail with the terminal scute ending in two points. 17 costal (body scale), rows and ventral scale rows 185 to 234. A small compact snake with the head smaller in girth than the body and tapering to an obtuse

point. Scales olivaceous brown or olivaceous green at edges, with paler centre. Whole body with numerous bright canary yellow spots grouped to form irregular chains across the back.

Distribution : Western Ghats south of the Goa Gap; common in the Nilgiri and Anaimalai Hills.

Remarks : This is a new record from Madhya Pradesh.

Family BOIDAE

Genus *Python* Daudin

13. *Python molurus* (Linnaeus)

Indian Rock Python

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

1943. *Python molurus*: Smith, *Fauna Brit. India, Reptilia & Amphibia*, 3 : 106.

1991. *Python molurus molurus* : Sanyal, *Fauna of Orissa*, 4 : 65

This species is known to occur in PBR.

Diagnosis : Body length ranges from 2.5-4.5 m. The head is distinct from the neck and has symmetrical shields. The eyes have vertical pupils. The scales on the body are smooth and are arranged in 60-75 rows. The tail is rather short. The colour of the body varies from pale grey to yellow above, and is yellow below. A dorsal series of large walnut coloured crown saddlers alternate with pinkish laterals.

Distribution : India : Gangetic Plains, Peninsular India.

Elsewhere : Nepal, Pakistan, Sri Lanka.

Family COLUBRIDAE

Genus *Ptyas* Fitzinger

14. *Ptyas mucosus* (Linnaeus)

Rat Snake, Dhaman

1758. *Coluber mucosus* Linn., *Mus. Ad. Frid.*, 1 : 37.

1943. *Ptyas mucosus* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 3 : 159.

1991. *Ptyas mucosus* : Sanyal, *Fauna of Orissa*, 4 : 67.

This species was sighted in PBR.

Diagnosis : Body olive-green, brown, yellowish or greyish above, with irregular but

strongly marked black crossbars on the posterior half of the body. Yellowish-white below, the posterior ventrals and subcaudals edged with black. Maxillary teeth 20-25. Scales in 16 or 17 rows at mid-body; V. 190-213, C. 100-146, A. 2.

Distribution : India : Madhya Pradesh, North Maharashtra, Part of Rajasthan, Uttar Pradesh.

Elsewhere : Bangladesh, Nepal, and Pakistan.

Genus *Xenochrophis* Günther

15. *Xenochrophis piscator* (Schneider)

Checkered Keelback

1799. *Hydrus piscator* Schneider, *Hist. Amph.*, 1 : 247.

1943. *Natrix piscator* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 3 : 293.

1991. *Xenochrophis piscator* : Sanyal, *Fauna of Orissa*, 4 : 68.

This species was sighted in PBR.

Diagnosis : Body olivaceous or yellowish above, whitish or yellowish below. Maxillary teeth 22-28, gradually enlarged posteriorly, nostrils directed slightly upwards. Scales in 19 rows, more or less distinctly keeled, except the outer one or two rows, which are smooth.

Distribution : Throughout India.

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

Family ELAPIDAE

Genus *Naja* Laurenti

16. *Naja naja* (Linnaeus)

Cobra

1758. *Coluber naja* Linn., *Syst. Nat.*, 10th ed. : 221.

1943. *Naja naja* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 3 : 427.

1991. *Naja naja* : Sanyal, *Fauna of Orissa*, 4 : 72.

This species is known to occur in PBR.

Diagnosis : Colour variable, generally brownish to blackish. Head not very distinct from the neck, dilatible into a hood, the anterior ribs being elongate. A monocle or spectacle mark or no mark present on the hood. Eyes moderate, pupil round. Scales smooth, in 19-25 rows, no occipital shields.

Distribution : Throughout India.

Elsewhere : Africa, Malaysia, Southern Asia.

Family VIPERIDAE

Genus *Vipera* Laurenti

17. *Vipera russelli* (Shaw)

Russell's Viper

1797. *Coluber russelli* Shaw, *Nat. Misc.*, 8, pl. 291.

1943. *Vipera russelli* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 3 : 483.

2000. *Vipera russelli* : Sharma, *Fauna of Gujarat*, 1 : 294.

This species is known to occur in PBR.

Diagnosis : Body length 3-4 feet but occasionally can reach 6 feet. Scales in 27-33 rows, supranasal strongly crescentic. Snout obtuse, with distinct canthus, nostrils very large. Light brown above, with 3 longitudinal series of large rounded or oval spots, which are usually brown in the centre, have a black margin and are edged again with white.

Distribution : Throughout India.

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

Genus *Trimeresurus* Lacépède

18. *Trimeresurus gramineus* (Shaw)

Green Pit Viper

1802. *Coluber gramineus* Shaw, *Gen. Zool.*, 3 : 420.

1943. *Trimeresurus gramineus* : Smith, *Fauna Brit. India, Reptilia & Amphibia*, 3 : 515.

2000. *Trimeresurus gramineus* : Sharma, *Fauna of Gujarat*, 1 : 295.

Material examined : Hoshangabad, Badi Anthoni, 29.x.2002 (1 ex.), Coll. Y.N. Gupta; Hoshangabad, Kajra Baba, 16.vi.2003 (1 ex.), Coll. K. Chandra.

Diagnosis : Length up to 745 mm. in males and 935 mm. in females. Dorsal colouration yellowish green, ventrum whitish with a green tinge. Head quite distinct from the neck, snout two times as long as the diameter of the eye; upper head scales small, subequal, subimbricate.

Distribution: India : Madhya Pradesh, Gujarat.

SUMMARY

The reptilian fauna of the Pachmarhi Biosphere Reserve includes 18 species of 17 genera under 13 families.

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AMPHIBIA

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INTRODUCTION

The identification of Amphibia collections made from Pachmarhi Biosphere Reserve revealed the presence of 8 species including 1 species of toad and 7 species of frogs. All species reported herein are commonly found throughout India.

LIST OF AMPHIBIA OF PACHMARHI BIOSPHERE RESERVE

Order ANURA

Family BUFONIDAE

1. *Bufo melanostictus* Schneider **Common Toad**

Family MICROHYLIDAE

2. *Kaloula taprobanica* Parker **Painted Frog**
3. *Microhyla ornata* (Duméril & Bibron) **Ornate Microhylid Frog**

Family RANIDAE

4. *Hoplobatrachus tigerinus* (Daudin)
5. *Rana cyanophlyctis* Schneider
6. *Rana limnocharis* Boie
7. *Tomopterna breviceps* (Schneider) **Burrowing Frog**

Family RHACOPHORIDAE

8. *Polypedates maculatus* (Gray) **Common Tree Frog**

SYSTEMATIC ACCOUNT

Order ANURA

Family BUFONIDAE

Genus *Bufo* Laurenti

1. *Bufo melanostictus* Schneider

Common Toad

1799. *Bufo melanostictus* Schneider, *Hist. Amph.*, 1 : 216.

1991. *Bufo melanostictus* : Sarkar, *Fauna of Orissa*, 4 : 40.

Material examined : Chhindwara, Deokhedi, 3.iv.2001 (1 ex.), Coll. Y.N. Gupta; Hoshangabad, Trishulnala, Bori, 13.iv.2001 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Dorsally brown or yellowish-brown, sometimes with black spots. Tips of warts and ridges of head usually deep brown to black. Ventrally yellowish, more or less spotted with brown. Dorsal skin rough with more or less prominent spiny warts and tubercles of various sizes. Ventral surface smooth. Tympanum large and distinct, nearly two-thirds of eye; tibio-tarsal articulation reaching eyes. Fingers free, toes half to two-third webbed.

Distribution : Throughout India.

Elsewhere : South Asia, South-east Asia and West Asia.

Family MICROHYLIDAE

Genus *Kaloula* Gray

2. *Kaloula taprobanica* Parker

Painted Frog

1831. *Kaloula pulchra* Gray, *Zool. Misc.*, 1 : 38.

1984. *Kaloula pulchra taprobanica* : Sarkar, *Rec. zool. Surv. India*, 81(3-4) : 221.

2002. *Kaloula taprobanica* : Daniel, *Book of Indian reptiles & amphibians* : 181.

Material examined : Chhindwara, Tamia, Chhota Mahadeo, 23.x.2002 (1 ex.), Coll. Y.N. Gupta; Chhindwara, Parasia, Shivpuri, 27.x.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Head broader than long; snout rounded, as long as the diameter of the eye; nostril nearer to the tip of snout than the eye; inter-orbital width much broader than that of upper eyelid; tympanum hidden. Fingers free, first shorter than second, tips bearing

well-developed truncate discs; sub-articular tubercles of fingers and toes distinct. Toes one-third webbed, tips obtusely swollen. Dorsum rough with scattered warts, and greyish with reddish-brown patches on throat and under surface of thighs and light brownish.

Distribution : India : Madhya Pradesh (Chhindwara, Seoni, Jabalpur, Shahdol), Assam, Bihar, Karnataka, Orissa, West Bengal, Tamil Nadu.

Elsewhere : Sri Lanka.

Genus *Microhyla* Tschudi

3. *Microhyla ornata* (Duméril & Bibron)

Ornate Microhylid Frog

1841. *Engystoma ornatum* Dum. & Bib., *Erpet. Gen.*, 8 : 745.

1991. *Microhyla ornata* : Sarkar, *Fauna of Orissa*, 4 : 42.

Material examined : Hoshangabad, Bori, Kajri road, 12.iv.2001 (1 ex.), Coll. Y.N. Gupta; Chhindwara, Parasia, Shivpuri, 27.x.2002 (1 ex.), Coll. Y.N. Gupta; Hoshangabad, Pachmarhi road, 30.x.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Head broader than long; snout obtusely pointed, a little longer than the diameter of the eye; nostril nearer to the tip of snout than the eye; interorbital width a little broader than that of upper eyelid; tympanum not so distinct. Fingers free, first shorter than second, tips flattened. Toes with a rudiment of web, tips blunt. Dorsum smooth, brownish with broad darker markings. Venter smooth, dull whitish, little darker on throat.

Distribution : Throughout India.

Elsewhere : South and South-east Asia.

Family Ranidae

Genus *Rana* Linnaeus

4. *Hoplobatrachus tigerinus* (Daudin)

Indian Bull Frog

1803. *Rana tigerina* Daudin, *Hist. Rain. Gern. Crap.*, : 64.

2002. *Hoplobatrachus tigerinus* : Daniel, *Book of Ind. Rept. and Amphi.*, : 200.

Material examined : Hoshangabad, Tekapar, Pachmarhi, 1.xi.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Head as long as broad, slightly depressed; snout pointed, projecting much beyond lower jaw. Dorsally yellowish to olive-green, marked with large irregular blackish

spots which may be disposed in longitudinal series on the back or forming two or three cross bands. A dark band running anteriorly from eye to snout over the nostril. Fore limbs much shorter in comparison to hind limbs; fingers free, long with rounded tips.

Distribution : All over India up to 1100 m.

Elsewhere : South Asia and Myanmar.

5. *Rana cyanophlyctis* Schneider

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

2000. *Rana cyanophlyctis* : Alfred, *Fauna of Gujarat, Vertebrates*, 1 : 304.

Material examined : Hoshangabad, Tawa River Bridge, Pipariya road, 12.i.1990 (11 exs.), Coll. U.A. Gajbe.

Diagnosis : Head broader than long; nostril equidistant from the tip of the snout and the eye; inter orbital width much smaller than that of the upper eyelid. Tympanum distinct nearly equal to the diameter of the eye. Fingers free, first equals second, tips pointed. Toes fully webbed, tips swollen. Tibio-tarsal articulation reaches in between tympanum and nostril. Venter whitish and smooth.

Distribution : India : Madhya Pradesh (Jabalpur, Hoshangabad), Gujarat, throughout the plains of India and up to 1846 m. in the Himalaya.

Elsewhere : Pakistan, Afghanistan, Baluchistan, Iran, South Arabia, Bangladesh, Thailand and Sri Lanka.

6. *Rana limnocharis* Boie

Cricket Frog

1835. *Rana limnocharis* Boie, *Wiegmann, N. Acta. Ac. Leop. Carol.*, 17 (1) : 255.

1991. *Rana limnocharis* : Sarkar, *Fauna of Orissa*, 4 : 46.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 11.vi.1999 (1 ex.), Coll. K. Chandra; Hoshangabad, Bori, Kajri road, 12.iv.2001 (6 exs.), Coll. Y.N. Gupta; Hoshangabad, Tawa River Bridge, Pipariya road, 12.i.1990 (11 exs.), Coll. U.A. Gajbe.

Diagnosis : Head generally as long as broad; snout generally pointed, projecting beyond the mouth, as long as or a little longer than the diameter of the eye, nostril nearer to the tip of snout than the eye; tympanum distinct, nearly two-third the diameter of the eye. Fingers free, first longer than second, tips swollen, subarticular tubercles of fingers and toes distinct. Toes half-webbed, normally three phalanges of fourth toe free. Dorsum greyish and warty. Venter whitish and smooth.

Distribution : Widely distributed in India.

Elsewhere : Eastern Asia from Pakistan, Nepal, Sri Lanka and China to Japan.

Genus *Tomopterna* Duméril & Bibron

7. *Tomopterna breviceps* (Schneider)

Burrowing Frog

1799. *Rana breviceps* Schneider, *Hist. Amph.*, 1 : 140.

1991. *Tomopterna breviceps* : Sarkar, *Fauna of Orissa*, 4 : 47.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 11.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Snout to vent length 13-52 mm. Head broader than long; snout rounded, not projecting beyond the mouth. Fingers free, first much longer than second, tips swollen, subarticular tubercles of fingers and toes well developed. Toes minutely webbed, more than three phalanges of the fourth toe free, a highly developed, large shovel-shaped inner metatarsal tubercle present, outer metatarsal tubercle absent. Tibiotarsal articulation reaches axil or shoulder. Dorsum greyish and warty. Venter whitish and granular.

Distribution : All over the plains of India.

Elsewhere : Myanmar, Nepal and Sri Lanka.

Family RHACOPHORIDAE

Genus *Polypedates* Tschudi

8. *Polypedates maculatus* (Gray)

Common Tree Frog

1832. *Hyla maculata* Gray, III. *Indian zool.*, 1, pl. 82, fig. 1.

1991. *Polypedates maculatus* : Sarkar, *Fauna of Orissa*, 4: 47.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 8.vi.1999 (2 exs.), Coll. K. Chandra; Hoshangabad, near Tawa dam, Tawa Nagar, 13.ii.2001 (3 exs.), Coll. Y.N. Gupta; Chhindwara, Tamia, Chhota Mahadeo, 23.x.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Head broader than long, skin on head free, pointed, projecting a little beyond the mouth; nostril nearer to the tip of snout than eye. Tympanum distinct, about three-fourth diameter of the eye. Fingers with rudimentary web, tips of fingers and toes bear horseshoe shaped distinct discs. Toes nearly three-fourth webbed, two phalanges of fourth toe free. Dorsum brownish with light darker spots and smooth. Venter dull whitish and granular, skin on head free.

Distribution : Plains of India in general. *Elsewhere* : South Asia.

SUMMARY

An account of 8 species of amphibians from the Pachmarhi Biosphere Reserve is provided.

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FRESHWATER FISHES

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INTRODUCTION

The freshwater fish fauna of the Pachmarhi Biosphere Reserve is known by 71 species belonging to 36 genera spread over 17 families and seven orders based on the actual collections and the past records from the published literature and unpublished account of the document on the Biosphere.

List of Freshwater fishes of Pachmarhi Biosphere Reserve

Cohart ARCHAEOPHYLACES

Superorder OSTEOGLOSSOMORPHA

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

1. *Notopterus notopterus* (Pallas)

Cohart EUTELEOSTEI

Superorder OSTARIOPHYSI

Order CYPRINIFORMES

Family CYPRINIDAE

Subfamily CULTRINAE

2. *Chela (Chela) cachius* (Hamilton)

3. *Chela (Chela) laubuca* (Hamilton)

4. *Salmostoma clupeoides* (Bloch)

Subfamily RASBORINAE

5. *Barilius bendelisis bendelisis* (Hamilton)

6. *Barilius shacra* (Hamilton)

7. *Danio aequipinnatus* (McClelland)
8. *Danio devario* (Hamilton)
9. *Danio neilgherriensis* (Day)
10. *Danio rerio* (Hamilton)
11. *Esomus danricus* (Hamilton)
12. *Rasbora daniconius daniconius* (Hamilton)

Subfamily CYPRININAE

13. *Catla catla* (Hamilton)
14. *Cirrhinus mrigala* (Hamilton)
15. *Cirrhinus reba* (Hamilton)
16. *Labeo bata* (Hamilton)
17. *Labeo boga* (Hamilton)
18. *Labeo boggut* (Sykes)
19. *Labeo calbasu* (Hamilton)
20. *Labeo fimbriatus* (Bloch)
21. *Labeo rohita* (Hamilton)
22. *Oreochthys cosuatis* (Hamilton)
23. *Osteobrama cotio cotio* (Hamilton)
24. *Puntius amphibius* (Valenciennes)
25. *Puntius chola* (Hamilton)
26. *Puntius conchonius* (Hamilton)
27. *Puntius curmuca* (Hamilton)
28. *Puntius dorsalis* (Jerdon)
29. *Puntius guganio* (Hamilton)
30. *Puntius sarana sarana* (Hamilton)
31. *Puntius sophore* (Hamilton)
32. *Puntius ticto* (Hamilton)
33. *Tor khudree* (Sykes)

Subfamily GARRINAE

34. *Garra gotyla gotyla* (Gray)

35. *Garra lamta* (Hamilton)

36. *Garra mullya* (Sykes)

Family HOMALOPTERIDAE

Subfamily NOEMACHEILINAE

37. *Noemacheilus botia* (Hamilton)

38. *Noemacheilus denisoni dayi* Hora

39. *Noemacheilus evezardi* Day

40. *Noemacheilus savona* (Hamilton)

Family COBITIDAE

Subfamily COBITINAE

41. *Lepidocephalus (Lepidocephalichthys) guntea* (Hamilton)

Order SILURIFORMES

Family BAGRIDAE

42. *Aorichthys seenghala* (Sykes)

43. *Aorichthys aor* (Hamilton)

44. *Mystus bleekeri* Day

45. *Mystus cavasius* (Hamilton)

46. *Mystus montanus* (Jerdon)

47. *Mystus vittatus* (Bloch)

48. *Rita gogra* (Sykes)

49. *Rita rita* (Hamilton)

Family SILURIDAE

50. *Ompok bimaculatus* (Bloch)

51. *Ompok pabda* (Hamilton)

52. *Wallago attu* (Schneider)

Family SCHILBEIDAE

53. *Clupisoma garua* (Hamilton)

Family AMBLYCIPITIDAE

54. *Amblyceps mangois* (Hamilton)

Family SISORIDAE

55. *Laguvia ribeiroi ribeiroi* Hora

Family CLARIIDAE

56. *Clarias batrachus* (Linnaeus)

Family HETEROPNEUSTIDAE

57. *Heteropneustes fossilis* (Bloch)

Superorder ATHERINOMORPHA

Order ATHERINIFORMES

Family BELONIDAE

58. *Xenentodon cancila* (Hamilton)

Family CYPRINODONTIDAE

59. *Aplocheilichthys panchax* (Hamilton)

Superorder ACANTHOPTERYGII

Order CHANNIFORMES

Family CHANNIDAE

60. *Channa marulius* (Hamilton)61. *Channa orientalis* (Schneider)62. *Channa punctatus* (Bloch)63. *Channa striatus* (Bloch)

Order PERCIFORMES

Family CHANDIDAE

64. *Chanda nama* (Hamilton)65. *Chanda ranga* (Hamilton)

Family NANDIDAE

66. *Badis badis* (Hamilton)67. *Nandus nandus* (Hamilton)

Family GOBIIDAE

Subfamily GOBINAE

68. *Glossogobius giuris* (Hamilton)

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

69. *Macrognathus aculeatus* (Bloch)70. *Mastacembelus armatus armatus* (Lacépède)71. *Mastacembelus pancalus* (Hamilton)

SYSTEMATIC ACCOUNT

Cohart ARCHAEOPHYLACES

Superorder OSTEOGLOSSOMORPHA

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

Genus *Notopterus* Lacépède1. *Notopterus notopterus* (Pallas)**Feather Back**1769. *Gymnotus notopterus* Pallas, *Spicil. Zool.*, 1(7) : 40.1981. *Notopterus notopterus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 53.

Material examined : Hoshangabad, Panarpani, 4.iv.2001 (3 exs.), Y.N. Gupta and party; Hoshangabad, Banglapura (Bori), 18.iv.2001 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 5.00 to 5.50 and body depth 3.50 to 4.00 in total length. Diameter of eye 4.50 to 5.00 in head length. Maxilla extending to below middle of the orbit. Dorsal profile is not so convex as ventral profile. Preorbital serrated. Dorsal fin small, situated midway between tip of snout and the end of caudal fin. Anal fin united with the caudal fin. Pelvic fin very short. Scales on opercle larger than those on body. Body greyish on dorsal surface, silvery on sides. Golden-yellow tinge on head. Eyes golden.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Raisen, Rewa, Satna districts, Chambal river). Andhra Pradesh, Assam, Bihar, Chilka Lake, Maharashtra, Malabar, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal. *Elsewhere* : Bangladesh, Indonesia, Malaya, Myanmar, Nepal, Philippines, and Thailand.

Cohart EUTELEOSTEI

Superorder OSTARIOPHYSI

Order CYPRINIFORMES

Family CYPRINIDAE

Subfamily CULTRINAE

Genus *Chela* Hamilton2. *Chela (Chela) cachi* (Hamilton)**Chela**1822. *Cyprinus cachi* Hamilton, *Fish. Ganges*, p. 258, 384.

1958. *Chela (Chela) cachius* : Silas, *J. Bombay nat. Hist. Soc.*, **55**(1) : 667.

1981. *Chela (Chela) cachius* : Jayaram, *Handbk. Freshw. Fish. India*, p. 72-73.

Material examined : Hoshangabad, Denwa river near Matkuli, 9.ix.2000 (5 exs.), Y.N. Gupta and party; Hoshangabad, Singanama (west), 7.ix.2000 (2 exs.), Y.N. Gupta and party; Hoshangabad, Panarpani, 4.iv.2001 (3 exs.), Y.N. Gupta and party.

Diagnosis : Head length 5.50 to 6.00 and body depth 4.00 to 4.25 in total length. Cleft of mouth moderately oblique, directed upwards. Dorsal fin inserted opposite to the second third of anal fin. Pectoral fin elongate, not reaching anal fin. Four rows of scales between lateral line and base of pelvic fin. Caudal fin forked. Body silvery with a burnished lateral band. Dorsal and caudal fin yellow.

Distribution : Throughout India : in Madhya Pradesh (Jabalpur, Narsinghpur, Raisen, Rajgarh, Rewa, Satna, Ujjain).

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

3. *Chela (Chela) laubuca* (Hamilton)

Winged Rasbora

1822. *Cyprinus laubuca* Hamilton, *Fish. Ganges*, p. 260, 384.

1958. *Chela (Chela) laubuca* : Silas, *J. Bombay nat. Hist. Soc.*, **55**(1) : 70-85.

1981. *Chela (Chela) laubuca* : Jayaram, *Handbk. Freshw. Fish. India*, p. 72-73.

Diagnosis : Head length 5.00 to 6.00 and body depth 3.50 to 4.25 in total length. Cleft of mouth very much oblique, abruptly directed upwards. 3½ rows of scales between lateral line and pelvic fin base. Caudal fin deeply forked. Body silvery, with golden vertical stripes when alive. A black mark above the base of pectoral fin and another at the base of caudal fin. Fine dots over body.

Distribution : Throughout India : in Madhya Pradesh (Jabalpur, Hoshangabad, Raisen, Satna districts, Chambal river).

Elsewhere : Bangladesh, Myanmar, Malaya Peninsula, Nepal, Pakistan, Peninsular Thailand, Sri Lanka, and Sumatra.

Genus *Salmostoma* Swainson

4. *Salmostoma clupeioides* (Bloch)

1782. *Cyprinus clupeioides* Bloch, *Naturg. Ausland. Fische*, **12** : 49, pl. 408, fig. 2.

1889. *Chela clupeioides* : Day, *Fauna British India, Fishes*, **1** : 366.

1981. *Salmostoma clupeioides* : Jayaram, *Handbk. Freshw. Fish. India*, p. 74, 75.

Diagnosis : Head length 5.50 to 5.75 and body depth 5.50 to 7.50 in total length. Eye diameter 4.00 in head length. Snout equal to eye diameter. Cleft of mouth nearly reaches to below first fourth of eye. A well-developed knob on the symphysis. Gill rakers 24-29. Keeled portion of ventral profile originates opposite pectoral fin. 3 or 4 rows of scales between lateral line and base of pelvic fin. Body uniformly silvery.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Rewa districts, Chambal river), Cauvery, Godavari, Krishna, Narmada and Tapi river systems, Deolali, Maharashtra, Tripura.

Elsewhere : Myanmar.

Subfamily RASBORINAE

Genus *Barilius* Hamilton

5. *Barilius bendelisis bendelisis* (Hamilton)

Hill Trout

1807. *Cyprinus bendelisis* Hamilton, *Journ. Mysore*, 3 : 345.

1981. *Barilius bendelisis bendelisis* : Jayaram, *Handbk. Freshw. Fish. India*, p. 88, 89.

Material examined : Hoshangabad, Singnama (west), 7.ix.2000 (22 exs.), Y.N. Gupta and party; Hoshangabad, Trishulnala (Bori), 13.iv.2001 (25 exs.), Y.N. Gupta and party; Hoshangabad, Singnama (west), 7.ix.2000 (1 ex.), Y.N. Gupta and party; Hoshangabad, Bhaisanala (Bori), 12.vi.1999 (6 exs.), K. Chandra and party; Hoshangabad, Panarpani, 4.iv.2001 (1 ex.), Y.N. Gupta and party

Diagnosis : Head length 4.60 to 5.25 and body depth 4.25 to 5.25 in total length. Barbels 2 pairs, short rostral pair sometimes absent. Dorsal fin inserted nearer to caudal fin base than to tip of snout. Caudal fin forked, lower lobe slightly longer. 2½ to 3½ rows of scales between lateral line and pelvic fin base. Predorsal scales 20. Body slaty-grey above, purplish-silvery below.

Distribution : Throughout India except Kerala. In Chhattisgarh (Bastar), Madhya Pradesh (Betul, Chhindwara, Hoshangabad, Jabalpur, Mandla, Narsinghpur, Rewa, Shahdol districts, Chambal river).

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

6. *Barilius shacra* (Hamilton)

1822. *Cyprinus shacra* Hamilton, *Fish. Ganges*, p. 271, 385.

1981. *Barilius shacra* : Jayaram, *Handbk. Freshw. Fish. India*, p. 89.

Diagnosis : Head length 5.00 to 5.25 and body depth 5.00 in total length. Eye diameter 3.50 to 4.00 in head length. Barbels 2 pairs, rostral pair slightly longer than the maxillary pair. Last dorsal fin ray above the first anal fin ray. 7 rows of scales between lateral line and base of pelvic fin. Predorsal scales 25. Body olive on dorsal surface, pinkish-silvery below. About 12 incomplete bars from the back towards the lateral line. Upper third of the dorsal fin with a dark bar.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur districts), Brahmaputra, Ganga, Narmada, Yamuna rivers.

Elsewhere : Bangladesh, Nepal.

Genus *Danio* Hamilton

7. *Danio aequipinnatus* (McClelland)

Giant Danio

1839. *Perilampus aequipinnatus* McClelland, *Asiat. Res.*, 19 (2) : 393, pl. 60, fig. 1.

1981. *Danio aequipinnatus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 80, 81.

Material examined : Hoshangabad, Trishulnala (Bori), 13.iv.2001 (3 exs.), Y.N. Gupta and party; Hoshangabad, Panarpani, 4.iv.2001 (3 exs.), Y.N. Gupta and party; Hoshangabad, Singnama (west), 7.ix.2000 (1 ex.), Y.N. Gupta and party

narrow band; two other lighter bands above the central one. Dorsal and anal fins with a broad bluish band along their outer half.

Distribution : Throughout India : in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Raisen, Shahdol districts, Kanha Tiger Reserve).

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

8. *Danio devario* (Hamilton)

Danio

1822. *Cyprinus devario* Hamilton, *Fish. Ganges*, p. 341, 393.

1981. *Danio devario* : Jayaram, *Handbk. Freshw. Fish. India*, p. 80.

1991. *Danio devario* : Barman, *Rec. zool. Surv. India, Occ. Pap.* 137 : 41-44.

Material examined : Hoshangabad, Singnama (west), 7.ix.2000 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 5.00 to 5.25 and body depth 3.25 to 4.00 in total length. Lower jaw longer. Maxilla extending below front margin of eye. Third suborbital bone

broad. Barbels 1 pair, maxillary pair, very short or totally absent. 2 ½ rows of scales between lateral line and base of pelvic fin. Body greenish on dorsal surface and silvery on sides. Three blue narrow bands divided by yellow bands extending backwards to base of caudal fin.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Betul, Chhindwara, Jabalpur, Mandla, Raisen, Narsinghpur, Rewa, Satna, Shahdol districts, Chambal river).

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

9. *Danio neilgherriensis* (Day)

1867. *Paradanio neilgherriensis* Day, *Proc. Zool. Soc. Lond.*, p. 296.

1981. *Danio (Danio) neilgherriensis* : Jayaram, *Handbk. Freshw. Fish. India* : 80-81.

1991. *Danio neilgherriensis* : Barman, *Rec. zool. Surv. India, Occ. Paper No., 137* : 54-55.

Material examined : Hoshangabad, Bhaisanala (Bori), 12.vi.1999 (11 exs.), K. Chandra and party.

Diagnosis : Head length 4.50 to 5.00 and body depth 4.00 to 4.25 in total length. Eye diameter 3.00 to 3.50 in head length. Ventral profile more convex than dorsal profile. Barbels 2 pairs, rostral pair shorter than eye diameter and maxillary pair very short. Dorsal fin reaches to above fourth or fifth anal fin ray. Predorsal scales 15 to 18. Lateral line complete. 2½ rows of scales between lateral line and base of pelvic fin. Body greenish on dorsal surface, silvery on sides and purplish tinge along abdomen. A lateral longitudinal dark narrow band extending from behind head to base of caudal fin.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad), Arunachal Pradesh, Tamil Nadu.

10. *Danio rerio* (Hamilton)

1822. *Cyprinus rerio* Hamilton, *Fish. Ganges*, p. 323.

1981. *Danio (Brachydanio) rerio*: Jayaram, *Handbk. Freshw. Fish. India* : 80-82.

1991. *Danio rerio* : Barman, *Rec. zool. Surv. India, Occ. Pap., 137* : 57-60.

Diagnosis : Head length 5.00 to 5.25 and body depth 4.70 to 5.00 in total length. Eye diameter 3.00 to 3.50 in head length. Lower jaw longer. Maxilla extends before anterior margin of eye. Barbels 2 pairs, rostral pair longer than the diameter of eye and maxillary pair reaching end of opercle. Dorsal fin inserted opposite to anal fin. Lateral line incomplete extending up to base of pelvic fin or totally absent. Predorsal scales 15 to 16. Body with four metallic blue bands separated by three narrow silvery ones along sides, forming three bands on caudal fin. Anal fin with three bands across their rays.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad, Jabalpur, Mandla, Raisen, Rajgarh, Rewa, Satna, Shahdol districts, Chambal river, Kanha Tiger Reserve), Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala (W. Ghats), Meghalaya, Nagaland, Orissa, Punjab, Rajashtan, Sikkim, Tripura, Uttar Pradesh, West Bengal.

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

Genus *Esomus* Swainson

11. *Esomus danricus* (Hamilton)

Flying Barb

1822. *Esomus danrica* Hamilton, *Fish. Ganges*, p. 325, 390.

1981. *Esomus danricus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 77, 78.

Diagnosis : Head length 5.20 to 5.50 and body depth 5.50 in total length. Eye diameter 3.20 to 3.50 in head length. Mouth obliquely directed upwards. Barbels 2 pairs, maxillary pair reaching to base of pelvic fin or even up to caudal fin. Dorsal fin inserted nearer to caudal fin base than to pectoral fin base. Lateral line absent or nearly so, piercing only up to 4 to 6 anterior scales. 2 rows of scales between lateral line and base of pelvic fin. Body pale olive above, silvery below, with a broad black lateral band, which sometimes may be absent.

Distribution : India : Madhya Pradesh (Khandwa, Raisen, Hoshangabad, Jabalpur, Chhindwara, Seoni, Balaghat, Rewa, Satna, Shahdol), Andhra Pradesh, Assam, Bihar, Gujarat, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal.

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

Genus *Rasbora* Bleeker

12. *Rasbora daniconius daniconius* (Hamilton)

Common Rasbora

1822. *Cyprinus daniconius* Hamilton, *Fish. Ganges*, p. 327.

1878. *Rasbora daniconius*: Day, *Fish. India*, p. 584.

1981. *Rasbora daniconius*: Jayaram, *Handbk. Freshw. Fish. India*, p. 84-85.

Material examined : Hoshangabad, Denwa river near Matkuli, 9.ix.2000 (9 exs.), Y.N. Gupta and party; Hoshangabad, Singanama (west), 7.ix.2000 (4 exs.), Y.N. Gupta and party; Hoshangabad, Trishulnala (Bori), 13.iv.2001 (15 exs.), Y.N. Gupta and party; Hoshangabad, Panarpani, 4.iv.2001 (7 exs.), Y.N. Gupta and party; Hoshangabad, Bhaisanala (Bori), 12.vi.1999 (11 exs.), K. Chandra and party.

Diagnosis : Head length 4.50 to 5.00 and body depth 4.50 to 6.00 in total length. Three prominences on lower jaw well defined. 2 rows of scales between lateral line and base of pelvic fin. Predorsal scales 12 to 14. Body greenish-yellow above, silvery on sides with a blue-black lateral band more or less distinct, extending from posterior margin of eye to base of caudal fin. Caudal fin lobes often tipped grey.

Distribution : Throughout India : Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Betul, Bhopal, Chhindwara, Damoh, Gwalior, Hoshangabad, Jabalpur, Mandla, Narsinghpur, Rajgarh, Raisen, Rewa, Satna, Shahdol districts, Chambal river, Kanha Tiger Reserve).

Elsewhere : Bangladesh, Malaya-Archipelago, Myanmar, Nepal, Sri Lanka, Pakistan, Zanzibar.

Subfamily CYPRININAE

Genus *Catla* Valenciennes

13. *Catla catla* (Hamilton)

Catla

1822. *Cyprinus catla* Hamilton, *Fish. Ganges*, p. 287, 387.

1878. *Catla buchanani* : Day, *Fish. India*, p. 553.

1981. *Catla catla* : Jayaram, *Handbk. Freshw. Fish. India*, p. 131.

Material examined : Past Record.

Diagnosis : Head length 4.25 to 4.75 and body depth 3.00 to 3.50 in total length. Eye diameter 6.00 to 7.00 in head length. Dorsal profile more convex than ventral profile. Barbels absent. Dorsal fin inserted in advance of pelvic fin. Pectoral fin extending to pelvic fin. 5 ½ to 6 ½ rows of scales between lateral line and base of pelvic fin. Body greyish on dorsal surface, silvery on sides and below. Fins dark coloured.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Rewa districts, Chambal river).

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

Genus *Cirrhinus* Oken

14. *Cirrhinus mrigala* (Hamilton)

Mrigal

1822. *Cyprinus mrigala* Hamilton, *Fish. Ganges*, p. 279.

1878. *Cirrhina mrigala* : Day, *Fish. India*, p. 457.

1981. *Cirrhinus mrigala* : Jayaram, *Handbk. Freshw. Fish. India*, p. 127.

Material examined : Past Record.

Diagnosis : Head length 5.00 to 5.25 and body depth 4.00 to 5.50 in total length. Eye diameter 3.50 to 4.00 in head length. Dorsal profile slightly more convex than ventral profile. Barbels 1 pair, rostral pair. Dorsal fin inserted much in advance of pelvic fin insertion, nearer to tip of snout than to base of caudal fin. Dorsal fin nearly as high as body. Body grey with a coppery tinge above, silvery below. Pectoral, pelvic and anal fins orange; eyes golden.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Rewa district, Chambal river).

Elsewhere : Bangladesh, Myanmar, Nepal, and Pakistan.

15. *Cirrhinus reba* (Hamilton)

Reba

1822. *Cyprinus reba* Hamilton, *Fish. Ganges*, p. 280, 386.

1878. *Cirrhina reba* : Day, *Fish. India*, p. : 549.

1981. *Cirrhinus reba* : Jayaram, *Handbk. Freshw. Fish. India*, p. 127.

Material examined : Past record.

Diagnosis : Head length 6.00 to 6.50 and body depth 4.00 to 4.50 in total length. A thin cartilaginous layer covering inside of lower jaw. Barbels 1 pair, rostral pair. Dorsal fin inserted anterior to pelvic fin insertion, nearer to tip of snout than to base of caudal fin, less than height of body. Body silvery. Scales generally darkest at their edges, forming bluish longitudinal bands above lateral line.

Distribution : Throughout India : Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Bhopal, Jabalpur, Rewa districts, Chambal river).

Elsewhere : Bangladesh, Nepal, Pakistan.

Genus *Labeo* Cuvier

16. *Labeo bata* (Hamilton)

Bata

1822. *Cyprinus bata* Hamilton, *Fish. Ganges*, p. 283, 386.

1878. *Labeo bata* : Day, *Fish. India*, p. 542.

1981. *Labeo bata* : Jayaram, *Handbk. Freshw. Fish. India*, p. 117, 119.

Material examined : Past record.

Diagnosis : Head length 5.50 to 5.75 and body depth 4.30 to 4.70 in total length. Eye diameter 4.00 to 4.30 in head length. Lips continuous. A tubercle inside lower jaw above symphysis. No horny covering inside jaws. Barbels 1 pair, very short, maxillary pair. Dorsal fin inserted nearer to tip of snout than to caudal fin base, as high as head length. Pectoral fin reaching pelvic fin. Body grey on the dorsal surface, silvery below. Lower fins tinted orange.

Distribution : Throughout India : Madhya Pradesh (Jabalpur, Rewa districts, Chambal river).

Elsewhere : Bangladesh, Nepal, Pakistan.

17. *Labeo boga* (Hamilton) Burmese Fish, Jamuna Fish

1822. *Cyprinus boga* Hamilton, *Fish. Ganges*, p. 286, 386, pl. 28, fig. 80.

1889. *Labeo boga* : Day, *Fauna British India, Fishes*, 1 : 269.

1981. *Labeo boga* : Jayaram, *Handbk. Freshw. Fish. India*, p. 117, 120.

Diagnosis : Head length 5.25 to 5.50 and body depth 5.50 to 5.70 in total length. Eye diameter 3.70 to 4.00 in head length. Lips somewhat thick. A thin layer of cartilage inside lower jaw. Snout without any lateral lobe but with tubercles. Barbels 1 pair, very short, maxillary pair. Dorsal fin inserted above tip or slightly anterior to tip of pectoral fin, nearer to tip of snout than to caudal fin base. Pectoral fin not reaching pelvic fin. 5 rows of scales between lateral line and base of pelvic fin. Body orange. A dark spot on the shoulder often present. Fins with a reddish tinge.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Jabalpur district, Chambal river), Andhra Pradesh, Assam, Bihar, Deccan, Gangetic provinces, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

18. *Labeo boggut* (Sykes)

1841. *Chondrostoma boggut* Sykes, *Trans. Zool. Soc. Lond.*, 2 : 359.

1889. *Labeo boggut* : Day, *Fauna British India, Fish.*, 1 : 269.

Diagnosis : Head length 5.50 to 6.00 and body depth 5.50 to 6.20 in total length. Eye diameter 4.50 to 5.00 in head length. Lower lip fimbriated with a horny covering inside. Snout without any lateral lobe but with a few pores and tubercles. Barbels 1 pair, short. Dorsal fin inserted nearer to tip of snout than to caudal fin base, as high as body. Pectoral fin not reaching pelvic fin, as long as head length. Body silvery, darkest along back, a dark spot near caudal fin base. Fins orange often with few lateral lines or a bluish band.

Distribution : Throughout North India up to Cauvery river system, in Chhattisgarh (Bastar district, Indravati Tiger Reserve), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Rewa districts, Chambal river).

Elsewhere : Bangladesh, Malaya, Pakistan.

19. *Labeo calbasu* (Hamilton)

Calbasu, Orange Fin Labeo

1822. *Cyprinus calbasu* Hamilton, *Fish. Ganges*, p. 297, 387, pl. 2, fig. 83.

1889. *Labeo calbasu* : Day, *Fauna British India, Fishes*, 1 : 259.

1981. *Labeo calbasu* : Jayaram, *Handbk. Freshw. Fish. India*, p. 117, 121.

Diagnosis : Head length 5.00 to 6.00 and body depth 4.00 in total length. Eye diameter 4.00 to 5.00 in head length. Lips thick, fringed and each having a distinct inner fold. Snout with pores, not truncated and without any lateral lobe. Barbels 2 pairs; rostral pair equal to eye, longer than maxillary pair. Dorsal fin inserted ahead of pelvic fin insertion, midway between tip of snout and caudal fin base. 5½ to 6 rows of scales between lateral line and base of pelvic fin. Body blackish green above, lighter below. Fins black, upper tip of caudal fin usually edged white.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Rewa district, Chambal river), throughout.

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

20. *Labeo fimbriatus* (Bloch)

Fringe-lipped Carp

1797. *Cyprinus fimbriatus* Bloch, *Ichth., Hist. Nat. Poiss.* 12 : 50, pl. 409.

1889. *Labeo fimbriatus* : Day, *Fauna British India, Fish.*, 1 : 258.

Material examined : Past record.

Diagnosis : Head length 6.20 to 6.50 and body depth 4.00 to 4.50 in total length. Eye diameter 3.70 to 4.50 in head length. Lips thick, continuous and fringed. Lower jaw with a horny covering inside. Barbels 2 pairs, short. 6 or 7 rows of scales between the lateral line and base of pelvic fin. Body silvery above, lighter on sides and beneath. A diffused dark blotch on caudal fin base sometimes present. Fins stained black.

Distribution: India : Chhattisgarh (Bastar), Madhya Pradesh (Rewa), Gujarat, Maharashtra, Orissa, Punjab, Uttar Pradesh, West Bengal, South India.

Elsewhere : Myanmar, Nepal, Pakistan.

21. *Labeo rohita* (Hamilton)**Rohu**

1822. *Cyprinus rohita* Hamilton, *Fish. Ganges*, p. 301, 388.

1878. *Labeo rohita* : Day, *Fish. India*, p. 538.

1981. *Labeo rohita* : Jayaram, *Handbk. Freshw. Fish. India*, p. 118, 120.

Material examined : Past record.

Diagnosis : Head length 4.50 to 5.00 and body depth 4.50 in total length. Eye diameter 4.00 to 6.00 in head length. Snout not truncated, without any lateral lobe. Lips thick, fringed with a distinct inner fold above and below. Barbels 2 pairs. Dorsal fin inserted midway between tip of snout and base of caudal fin. Pectoral fin as long as head, without snout. 6 to 6 ½ rows of scales between lateral line and base of pelvic fin. Body bluish or brownish on dorsal surface, silvery on sides and beneath. Fins sometimes black.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Jabalpur, Rewa districts).

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

Genus *Oreichthys* Smith22. *Oreichthys cosuatis* (Hamilton)

1822. *Cyprinus cosuatis* Hamilton, *Fish. Ganges*, p. 338, 392.

1981. *Oreichthys cosuatis* : Jayaram, *Handbk. Freshw. Fish. India*, p. 97.

Diagnosis : Head length 4.00 to 4.50 and body depth 3.30 in total length. Eye diameter 2.50 to 2.75 in head length. Head is provided with numerous sensory folds. Lateral line incomplete. 2 rows of scales between lateral line and pelvic fin base. Predorsal scales 8 to 9. Scales with dark bases. Dorsal fin with a black band along the top and another across its middle. A black band on anterior anal fin rays.

Distribution : India : Madhya Pradesh (Hoshangabad), Andhra Pradesh, Karnataka, Kerala, Maharashtra, West Bengal.

Elsewhere : Bangladesh, Pakistan, Thailand.

Genus *Osteobrama* Heckel23. *Osteobrama cotio cotio* (Hamilton)

1822. *Cyprinus cotio* Hamilton, *Fish. Ganges*, p. 339, pl. 39, fig. 93.

1981. *Osteobrama cotio cotio* : Jayaram, *Handbk. Freshw. Fish. India*, p. 113.

Diagnosis : Head length 5.50 to 6.00 and body depth 3.00 to 3.50 in total length. Eye diameter 2.50 to 3.00 in head length. Profile over nape concave. Upper jaw slightly longer. Barbels absent. 12 to 13 rows of scales between lateral line and base of pelvic fin. Predorsal scales 24-28. Caudal fin deeply forked. Body silvery black on dorsal surface and often with a silvery lateral band. Generally, with a black blotch before the base of dorsal fin and another on the nape.

Distribution : Throughout India except Malabar and South of Krishna River. Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Narsinghpur, Rewa, Satna districts, Chambal river).

Elsewhere : Bangladesh, China, Myanmar, Nepal, Pakistan.

Genus *Puntius* Hamilton

24. *Puntius amphibius* (Valenciennes)

Scarlet Banded Barb

1842. *Capoeta amphibia* Valenciennes, *Hist. Nat. Poiss*, 16 : 282.

1878. *Barbus amphibious* : Day, *Fish. India*, p. 574.

1991. *Puntius amphibius* : Jayaram, *Rec. zool. Surv. India, Occ. Pap.*, 135 : 61-64.

Material examined : Hoshangabad, Trishulnala (Bori), 13.iv.2001 (5 exs.), Y.N. Gupta and party; Hoshangabad, Panarpani, 9.xi.2001 (1 ex.), Y.N. Gupta and party; Hoshangabad, Bhaisanala (Bori), 12.vi.1999 (1 ex.), K. Chandra and party.

Diagnosis : Head length 4.00 to 5.00 and body depth 4.20 to 5.00 in total length. Barbels 1 pair. 2 to 2½ rows of scales between lateral line and base of pelvic fin. Predorsal scales 7 to 9. Circumpeduncular scales 10 or 11. Body steel blue above, white shot with gold on sides and below. A dark spot at base of caudal fin. Dorsal fin edged black.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Chhindwara, Jabalpur, Mandla, Narsinghpur, Raisen, Rajgarh, Satna districts).

Elsewhere : Sri Lanka.

25. *Puntius chola* (Hamilton)

Green Barb

1822. *Cyprinus chola* Hamilton, *Fish. Ganges*, p. 312, 389.

1878. *Barbus chola* : Day, *Fish. India*, p. 571.

1991. *Puntius chola* : Jayaram, *Rec. zool. Surv. India, Occ. Pap.*, 135 : 52-56.

Material examined : Hoshangabad, Singnama (West), 7.ix.2000 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 4.50 to 4.75 and body depth 3.25 to 3.75 in total length. Barbels 1 pair. Dorsal fin inserted midway between tip of snout and caudal fin base. Last unbranched dorsal ray ossified into a strong smooth spine. 3 to 3½ rows of scales between lateral line and base of pelvic fin. Predorsal scales 7 to 9. Body silvery, opercles shot with purple and gold. A dark mark at base of anterior dorsal fin rays also present.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Jabalpur, Raisen, Rajgarh, Rewa, Satna).

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

26. *Puntius conchoni* (Hamilton)

Stigma Barb

1822. *Cyprinus conchoni* Hamilton, *Fish. Ganges*, p. 317, 389.

1878. *Barbus conchoni* : Day, *Fish. India*, p. 576.

1991. *Puntius conchoni* : Jayaram, *Rec. zool. Surv. India, Occ. Pap.* 135 : 27-29.

Material examined : Hoshangabad, Singnama (West), 7.ix.2000 (13 exs.), Y.N. Gupta and party; Hoshangabad, Trishulnala (Bori), 14.iv.2001 (5 exs.), Y.N. Gupta and party; Hoshangabad, Panarpani, 4.iv.2001 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 5.00 and body depth 2.40 to 2.67 in total length. Barbels absent. Dorsal fin inserted midway between tip of snout and caudal fin base. Last unbranched dorsal fin ray ossified, strong and serrated. Lateral line incomplete, ceasing after 9-10 scales. 3 ½ to 4 ½ rows of scales between lateral line and base of pelvic fin. Body yellowish-brown on dorsal surface and sides, yellowish-white below. Fins orange, a large black spot on lateral line just above anal fin.

Distribution : Throughout India : in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Betul, Bhopal, Chhindwara, Hoshangabad, Jabalpur, Khandwa, Narsinghpur, Rajgarh, Raisen, Rewa, Satna, Shahdol districts, Chambal river).

Elsewhere : Bangladesh, Nepal, Pakistan.

27. *Puntius curmuca* (Hamilton)

1807. *Cyprinus curmuca* Hamilton, *Journey in Mysore*, 3: 344, pl. 30.

1981. *Puntius curmuca* : Jayaram, *Handbk. Freshw. Fish. India*, p. 100, 105.

Diagnosis : Head length 5.00 and body depth 5.00 in total length. Eye diameter 4.30 in head length. Snout conical. Barbels two pairs. Lateral line complete. 3½ rows of scales between lateral line and base of pelvic fin. Predorsal scales 10. body silvery-grey, lighter on sides and beneath. Tips of the caudal fin black.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Jabalpur), Andhra Pradesh, Kerala, Western Ghats.

28. *Puntius dorsalis* (Jerdon)

1849. *Systemus dorsalis* Jerdon, *Madras J. Lit. and Sci.*, **15** : 314.

1991. *Puntius dorsalis* : Jayaram, *Rec. zool. Surv. India, Occ. Pap.*, **135** : 64.

This species known from PBR.

Diagnosis : Head length 4.50 and body depth 4.00 to 4.25 in total length. Eye diameter 4.00 to 4.50 in head length. Lateral line complete. 2½ rows of scales between lateral line and base of pelvic fin. Predorsal scales 8 or 9. Circumpeduncular scales 9 or 10. Body uniformly dull brown, pale beneath. Often the scales in the upper two thirds of the body with dark bases.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Jabalpur, Narsinghpur), Andhra Pradesh, Karnataka, Kerala, Orissa, Tamil Nadu, Cauvery and Krishna river systems.

Elsewhere : Sri Lanka.

29. *Puntius guganio* (Hamilton)

1822. *Cyprinus guganio* Hamilton, *Fish Ganges*, p. 338, 339, 392.

1991. *Puntius guganio* : Jayaram, *Rec. zool. Surv. India, Occ. Pap.*, **135** : 32.

Diagnosis : Head length 5.00 to 5.50 and body depth 3.50 in total length. Barbels absent. Lateral line incomplete ceasing after 5 or 6 scales. 5½ to 6 rows of scales between lateral line and base of pelvic fin. 8 or 9 rows of scales between lateral line and dorsal fin base. Predorsal scales 15. Preanal scales 21. Body olive-green with a white streak along the middle of it.

Distribution : India : Madhya Pradesh (Hoshangabad, Raipur, Raisen), Andhra Pradesh, Assam, Orissa, Tamil Nadu, West Bengal; Brahmaputra, Ganga, Krishna, Yamuna river systems.

Elsewhere : Bangladesh.

30. *Puntius sarana sarana* (Hamilton)

Olive Carp/ Kunda

1822. *Cyprinus sarana* Hamilton, *Fish. Ganges*, p. 307, 388.

1878. *Barbus sarana* : Day, *Fish. India*, p. 560.

1991. *Puntius sarana sarana* : Jayaram, *Rec. zool. Surv. India, Occ. Pap.*, 135 : 113-118.

Material examined : Hoshangabad, Banglapara (Bori), 18.iv.2001 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 5.00 to 5.25 and body depth 3.50 to 3.67 in total length. Eye diameter 4.25 to 4.75 in head length. Barbels 2 pairs, rostral pair as long as eye and maxillary pair longer than the rostral pair. 3½ to 4½ rows of scales between lateral line and base of pelvic fin. Predorsal scales 10 or 11. Body dark brown above and sides, light brown below. A prominent finger-like black spot on caudal peduncle. Fins yellowish-white.

Distribution : Throughout India : in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Hoshangabad, Jabalpur, Mandla, Rajgarh, Raisen, Rewa, Satna, Ujjain districts, Chambal river).

Elsewhere : Bangladesh, Bhutan, China, Myanmar, Nepal, and Pakistan.

31. *Puntius sophore* (Hamilton)

Stigma Barb

1822. *Cyprinus sophore* Hamilton, *Fish. Ganges*, p. 310, 389.

1878. *Barbus sophore* : Day, *Fish. India*, p. 566.

1991. *Puntius sophore* : Jayaram, *Rec. zool. Surv. India, Occ. Pap.*, 135 : 15-20.

Diagnosis : Head length 4.50 to 5.00 and body depth 3.50 to 3.75 in total length. Barbels absent. 3 to 4½ rows of scales between lateral line and base of pelvic fin. Body medium brown on dorsal and upper half of lateral sides, ventral and lower half yellowish-brown. A black spot at base of caudal fin on 22nd to 24th scale, another at the base of 4-6th ray of dorsal fin. Fins light yellow and black tipped.

Distribution : Throughout India : in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Bhopal, Gwalior, Hoshangabad, Jabalpur, Khandwa, Narsinghpur, Rewa, Satna, Shahdol districts, Chambal river, Kanha Tiger Reserve).

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

32. *Puntius ticto* (Hamilton)

Fire Fin Barb

1822. *Cyprinus ticto* Hamilton, *Fish. Ganges*, p. 314, 398.

1878. *Barbus ticto* : Day, *Fish. India*, p. 576.

1991. *Puntius ticto* : Jayaram, *Rec. zool. Surv. India, Occ. Pap.*, 135 : 22-26.

Material examined : Hoshangabad, Denwa river near Matkuli, 9.ix.2000 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 4.00 to 5.00 and body depth 3.00 to 3.50 in total length. Predorsal scales 8 to 11. Preanal scales 11 to 14. Circumpeduncular scales 10 to 12. Body silvery with two black blotches along the lateral line. Last unbranched dorsal fin ray osseous, posterior margin serrated with 12 to 18 teeth. 3 to 4½ rows of scales between lateral line and base of pelvic fin.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Chhindwara, Gwalior, Hoshangabad, Indore, Jabalpur, Narsinghpur, Rewa, Satna, Shahdol districts, Chambal river).

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

Genus *Tor* Gray

33. *Tor khudree* (Sykes)

Khudree Mahaseer

1838. *Barbus khudree* Sykes, *Proc. zool. Soc. London*, p. 159.

1982. *Tor khudree* : Sen and Jayaram, *Rec. zool. Surv. India, Occ. Pap. No.*, 39 : 7.

Diagnosis : Head length 4.50 to 4.70 and body depth 4.30 to 4.60 in total length. Eye diameter 5.50 to 7.00 in head length. Snout without tubercles. Barbels 2 pairs, longer than eye. 2½ rows of scales between lateral line and base of pelvic fin. Caudal fin deeply forked. Body dark olive on dorsal surface becoming creamy, yellowish-white below. Fins bluish grey, often tipped yellowish pin.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad), Andhra Pradesh, Arunachal Pradesh, Orissa, Peninsular India, Uttar Pradesh, rivers of Western Ghats.

Elsewhere : Sri Lanka.

Subfamily GARRINAE

Genus *Garra* (Hamilton)

34. *Garra gotyla gotyla* (Gray)

Stone Sucker

1832. *Cyprinus gotyla* Gray, *Ill. Ind. Zool., London*, 1, pl. 88, figs. 3, 3a.

1981. *Garra gotyla gotyla* : Jayaram, *Handbk. Freshw. Fish. India*, p. 136, 137.

Diagnosis : Head length 3.52 to 4.20 and body depth 3.70 to 5.00 in standard length. Eye diameter 3.00 to 6.28 in head length. Barbels 2 pairs. Caudal fin deeply forked. Body bluish-grey above and pale yellow below. A black spot behind the upper angle of gill openings and a row of dark spots along dorsal fin base. An obscure mid-lateral band in young specimens.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Raisen, Rajgarh, Rewa), Andhra Pradesh, Assam, Bihar, Chhota Nagpur Plateau, Himachal Pradesh, Himalayas, Punjab, Uttar Pradesh, Vindhya Satpura mountains of the peninsula, West Bengal.

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

35. *Garra lamta* (Hamilton)

Stone Sucker

1822. *Cyprinus lamta* Hamilton, *Fish. Ganges*, p. 343, 393.

1964. *Garra lamta* : Menon, *Mem. Ind. Mus.*, 14 : 208-212.

1981. *Garra lamta* : Jayaram, *Handbk. Freshw. Fish. India*, p. 136, 138.

Material examined : Hoshangabad, Trishulnala (Bori), 13.iv.2001 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 3.58 to 4.33 and body depth 3.56 to 4.48 in standard length. Proboscis absent. Tip of snout marked off by a transverse groove. Pupil of eye at or slightly behind the middle of head length. Barbels 2 pairs, maxillary pair shorter than rostral pair. Caudal fin forked. Body dark grey above and paler beneath. A broad lateral band from gill openings to caudal fin base bordered above and below by incomplete dark narrow lateral stripes. A black spot on upper angle of gill openings and a black blotch at caudal fin base.

Distribution : India : Madhya Pradesh, Andhra Pradesh, Assam, Himalayas, Sikkim, West Bengal.

Elsewhere : Nepal, Pakistan.

36. *Garra mullya* (Sykes)

Stone Sucker

1841. *Chondrostoma mullya* Sykes, *Trans. Zool. Soc. Lond.*, 2 : 359.

1964. *Garra mullya* : Menon, *Mem. Ind. Mus.*, 14: 212-216.

1981. *Garra mullya* : Jayaram, *Handbk. Freshw. Fish. India*, p. 136, 137.

Diagnosis : Head length 3.71 to 5.00 and body depth 3.82 to 4.32 in standard length. Tip of snout marked off by a transverse groove. Barbels 2 pairs, maxillary pair shorter

than rostral pair. Caudal fin almost truncate. Body dark grey above and paler beneath. A black spot on the upper angle of gill openings and a black blotch at caudal fin base.

Distribution : Throughout India except Assam and the Himalayas; in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Indore, Hoshangabad, Jabalpur, Mandla, Narsinghpur, Rewa districts).

Family HOMALOPTERIDAE

Subfamily NOEMACHEILINAE

Genus *Noemacheilus* van Hasselt

37. *Noemacheilus botia* (Hamilton)

Striped Loach

1822. *Cobitis botia* Hamilton, *Fish. Ganges*, p. 350, 394.

1987. *Noemacheilus botia* : Menon, *Fauna of India, Pisces*, 4(1) : 141.

Diagnosis : Head length 4.50 to 5.50 and body depth 4.70 in total length. Eye diameter 3.75 to 4.00 in head length. Snout rounded, not elongated. Barbels 3 pairs. Body greyish with 10 to 14 short, vertical bars on lateral line and a number of irregular blotches above it, often forming bands over back. A black ocellus on upper part of the caudal fin base. Caudal fin bears 5-7 posteriorly directed V-shaped dark bands. Dorsal fin orange, with rows of black spots.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Indore, Jabalpur, Mandla, Rewa, Satna districts, Chambal river), Andhra Pradesh, Assam, throughout North India.

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

38. *Noemacheilus denisoni dayi* Hora

1935. *Nemachilus dayi* Hora, *Rec. Ind. Mus.*, 37 : 57.

1987. *Noemacheilus denisoni dayi* : Menon, *Fauna of India, Pisces*, 4(1) : 99-101.

Diagnosis : Head length 5.25 to 5.50 and body depth 6.00 in total length. Barbels 3 pairs, well developed, all almost equal to diameter of eye. 12 to 13 broad vertical bands with an equal number of narrow pale interspaces on body, very characteristic of this species. A black band at base of caudal fin and a blackish spot at base of dorsal fin origin. Dorsal fin with two rows and caudal fin with four rows of well-marked spots.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Seoni), Andhra Pradesh, Chhota Nagpur.

39. *Noemacheilus evezardi* Day

1878. *Nemachilus evezardi* Day, *Fish. India*, p. 613, pl. 153, fig. 11.

1987. *Noemacheilus evezardi* : Menon, *Fauna of India, Pisces*, 4(1) : 191.

Diagnosis : Head length 5.30 in total length. Barbels 4 pairs, well developed, nasal pair reaching to opposite posterior margin of eye, two pairs of rostral and one pair maxillary. Body greenish or yellowish with 9 to 18 brown vertical stripes from back to ventral side. Big round spots on head. A vertical dark stripe at base of caudal fin. A small black spot at base of dorsal fin origin. Dorsal fin with 2 to 3 rows of spots and caudal fin with 3 to 4 rows of spots.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Indore), Andhra Pradesh, Western Ghats (Krishna and Godavari basins).

40. *Noemacheilus savona* (Hamilton)

1822. *Cobitis savona* Hamilton, *Fish. Ganges*, p. 357, 394.

1889. *Nemachilus savona* : Day, *Fauna British India, Fishes*, 1 : 234.

1987. *Noemacheilus savona* : Menon, *Fauna of India, Pisces*, 4(1) : 91-93.

Material examined : Hoshangabad, Trishulnala (Bori), 13.iv.2001 (3 exs.), Y.N. Gupta and party.

Diagnosis : Head length 4.50 to 4.75 in total length. Barbels 3 pairs. Dorsal fin inserted before the insertion of pelvic fin. Caudal fin emarginate with rounded lobes. Scales small. Lateral line complete. Body purplish, becoming lighter on the abdomen, marked with 9-10 narrow, yellowish vertical bands. A vertical black band at base of caudal fin.

Distribution : India : Chhattisgarh (Indravati Tiger Reserve), Madhya Pradesh (Hoshangabad), Eastern Himalayas, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh, Nepal.

Family COBITIDAE

Subfamily COBITINAE

Genus *Lepidocephalus* Bleeker

41. *Lepidocephalus (Lepidocephalichthys) guntea* (Hamilton)

Loach

1822. *Cobitis guntea* Hamilton, *Fish. Ganges*, p. 353, 394.

1878. *Lepidocephalichthys guntea* : Day, *Fish. India*, p. 609.

1981. *Lepidocephalus (Lepidocephalichthys) guntea* : Jayaram, *Hbk. Fish. Ind.* p. 181, 182.

Material examined : Hoshangabad, Trishulnala (Bori), 13.iv.2001 (4 exs.), Y.N. Gupta and party; Hoshangabad, Panarpani, 4.iv.2001 (6 exs.), Y.N. Gupta and party

Diagnosis : Head length 6.00 to 6.80 and body depth 5.65 to 7.00 in total length. Barbels 3 pairs, 2 rostral pairs and 1 maxillary pair. 25 to 30 rows of scales between the back of body and base of anal fin. Body generally dirty yellowish with a series of about 10 to 12 dark spots, connected with one another through a dark spot on the upper part of caudal fin base. Dorsal and caudal fins with rows of dark spots.

Distribution : Throughout India except Karnataka, Kerala and South of Krishna; in Madhya Pradesh (Bhopal, Raisen, Betul, Rajgarh, Hoshangabad, Jabalpur, Narsinghpur, Seoni, Balaghat, Mandla, Rewa, Satna, Shahdol).

Elsewhere : Bangladesh, Myanmar, Nepal, and Pakistan.

Order SILURIFORMES

Family BAGRIDAE

Genus *Aorichthys* Wu

42. *Aorichthys seenghala* (Sykes)

Giant River Catfish

1839. *Platystoma seenghala* Sykes, *Trans. Zool. Soc. London*, 2 : 371, pl. 65, fig. 2.

1981. *Aorichthys seenghala* : Jayaram, *Handbk. Freshw. Fish. India*, p. 205.

Material examined : Past record.

Diagnosis : Head length 4.50 and body depth 7.50 to 8.00 in total length. Eye diameter 6.50 to 8.00 in head length. Snout spatulate. Barbels 4 pairs. Body brownish on the dorsal surface, silvery on sides below lateral line and beneath. A round black spot less than ½ eye diameter at the posterior end of the base of adipose dorsal fin.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshargabad, Rewa districts, Chambal river); Brahmaputra, Cauveri, Ganga, Godavari, Indus, Krishna, Mahanadi, Narmada, Tapti and Yamuna river systems.

Elsewhere : Bangladesh, Myanmar, and Pakistan.

43. *Aorichthys aor* (Hamilton)

1822. *Pimelodus aor* Hamilton, *Fish. Ganges*, p. 205, 379, pl. 20, fig. 68.

1981. *Aorichthys aor* : Jayaram, *Handbk. Freshw. Fish. India*, p. 205.

Material examined : Past record.

Diagnosis : Head length 4.50 to 5.00 and body depth 6.50 to 7.50 in total length. Eye diameter 4.50 to 8.00 in head length. Barbels 4 pairs. Body bluish leaden above, white below. A black spot of the size of the eye on posterior and inferior portion of adipose dorsal fin present. A black tinge on posterior lower end of rayed dorsal fin may be present.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Jabalpur, Rewa districts, Chambal river), Andhra Pradesh, Assam, Bihar, Orissa, Punjab, Uttar Pradesh, West Bengal; Brahmaputra, Cauvery, Ganga, Godavari, Krishna, Mahanadi, Narmada, Tapti, Yamuna river systems.

Elsewhere : Bangladesh, Myanmar, Pakistan.

Genus *Mystus* Scopoli

44. *Mystus bleekeri* Day

1878. *Macrones bleekeri* Day, *Fish. India*, p. 451.

1981. *Mystus bleekeri* : Jayaram, *Handbk. Freshw. Fish. India*, p. 196, 199.

Material examined : Past record.

Diagnosis : Head length 5.20 to 5.50 and body depth 5.00 to 6.00 in total length. Barbels 4 pairs, maxillary pair reaching anal fin. Rayed dorsal fin rounded, not higher than the body. Body brownish-grey above, lighter below. Two light longitudinal bands, one above the other, below lateral line present. A dark shoulder spot sometimes present. A dark band along the middle of anal fin.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Jabalpur, Rewa, Satna districts, Chambal river).

Elsewhere : Bangladesh, Malaya, Myanmar, Nepal, Pakistan.

45. *Mystus cavasius* (Hamilton)

Dwarf Catfish

1822. *Pimelodus cavasius* Hamilton, *Fish. Ganges*, p. 203, 379, pl. 11, fig. 67.

1981. *Mystus cavasius* : Jayaram, *Handbk. Freshw. Fish. India*, p. 196, 199.

Diagnosis : Head length 6.00 to 6.25 and body depth 5.50 to 6.00 in total length. Eye diameter 3.20 to 3.50 in head length. Barbels 4 pairs. Body leaden above, yellowish on abdomen and cheeks. A dark spot at base of dorsal fin present. A bluish band along lateral line sometimes present. Pectoral, pelvic and anal fins dull white.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Rewa districts).

Elsewhere : Bangladesh, Borneo, China, Java, Malaysia, Myanmar, Pakistan, Sumatra, Thailand.

46. *Mystus montanus* (Jerdon)

1849. *Bagrus montanus* Jerdon, *Madras J. Lit. Sci.*, 15(2) : 338.

1878. *Macrones montanus* : Day, *Fish. India*, p. 449.

1981. *Mystus montanus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 197, 201.

Diagnosis : Head length 5.00 and body depth 6.00 in total length. Barbels 4 pairs, maxillary pair reaching to anal fin, nasal pair extends behind posterior margin of eye. Body silvery above with a tinge of yellow on ventral surface of head and along abdomen. A bluish shoulder spot present. A silvery line along the side ending in a dark spot at base of caudal fin. One or two light bands along sides above lateral line.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad), Andhra Pradesh, Assam, Kerala, Wynaad range of hills, Cauvery headwaters.

47. *Mystus vittatus* (Bloch)

Striped Dwarf Catfish

1796. *Silurus vittatus* Bloch, *Ichth. Hist. Nat.*, 11 : 40.

1878. *Macrones vittatus* : Day, *Fish. India*, p. 448.

1981. *Mystus vittatus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 197, 201.

Diagnosis : Head length 4.70 to 5.00 and body depth 5.00 in total length. Barbels 4 pairs, maxillary pair reaching to pelvic fin, nasal pair extends to opercle. Rayed dorsal fin spine finely serrated posteriorly. Pectoral fin spine finely serrated posteriorly. Pectoral fin spine strong, denticulated internally with 16 coarse teeth. Body silvery or golden. 3 or 4 longitudinal colour bands above and below lateral line. A dark shoulder spot present. Fin tips usually dark.

Distribution : Throughout India : in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Hoshangabad, Jabalpur, Raisen, Rewa, Satna, Seoni districts, Chambal river).

Elsewhere : Bangladesh, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand.

Genus *Rita* Bleeker

48. *Rita gogra* (Sykes)

Rita

1841. *Phractocephalus gogra* Sykes, *Trans. Zool. Soc. London*, 2: 374, pl. 66, fig. 1.

1981. *Rita gogra* : Jayaram, *Handbk. Freshw. Fish. India*, p. 190, 191.

Diagnosis : Head length 3.75 to 4.00 and body depth 6.00 in total length. Eye diameter 5.50 to 6.00 in head length. Barbels 3 pairs. Pectoral fin spine denticulated on both sides, stronger and longer than dorsal spine. Body uniformly ash-grey. Eyes bright violet and barbels black.

Distribution : India : Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur districts), Andhra Pradesh, Gujarat, Maharashtra, and Rivers of Deccan up to Krishna river systems.

49. *Rita rita* (Hamilton)

1822. *Pimelodus rita* Hamilton, *Fish. Ganges*, p. 165, 376, pls. 24, 25, fig. 53.

1981. *Rita rita* : Jayaram, *Handbk. Freshw. Fish. India*, p. 190, 191.

Material examined : Past record.

Diagnosis : Head length 4.00 to 4.34 and body depth 5.50 to 6.00 in total length. Eye diameter 8.00 to 10.00 in head length. Barbels 3 pairs. Dorsal fin spine very strong, serrated posteriorly, as long as or 1/3 longer than head. Pectoral fin spine denticulated on both sides, shorter than dorsal spine. Body pale brown above and on sides, dull beneath.

Distribution : India : Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Hoshangabad, Jabalpur, Khandwa, Rewa districts, Chambal river), Bihar, Uttar Pradesh, West Bengal, most rivers of North India.

Elsewhere : Myanmar, Nepal, Pakistan, Yunnan.

Family SILURIDAE

Genus *Ompok* Lacépède

50. *Ompok bimaculatus* (Bloch)

Butter Catfish

1797. *Silurus bimaculatus* Bloch, *Syst. Ichth.*, 11 : 17.

1878. *Callichrous bimaculatus* : Day, *Fish. India*, p. 476.

1981. *Ompok bimaculatus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 208, 209.

Diagnosis : Head length 5.00 to 7.00 and body depth 5.00 to 5.50 in total length. Barbels 2 pairs, maxillary pair extending to middle of pectoral fin or the commencement of anal fin. Dorsal fin short, without any spine. Pectoral fin with a moderately strong spine, serrated or entire. Anal fin very long. Body silvery, shot with purple. A black spot on shoulder behind gill openings and above middle of pectoral fin. Occasionally the caudal fin tips, black.

Distribution : Throughout India : in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Hoshangabad, Jabalpur, Rewa, Seoni districts, Chambal river).

Elsewhere : Bangladesh, Borneo, China, East Indies, Java, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatra, Thailand, Vietnam, Yunnan.

51. *Ompok pabda* (Hamilton)

1822. *Silurus pabda* Hamilton, *Fish. Ganges*, p. 150, pl. 25, fig. 47.

1981. *Ompok pabda* : Jayaram, *Handbk. Freshw. Fish. India*, p. 208, 209.

Material examined : Past record.

Diagnosis : Head length 5.00 to 5.25 and body depth 5.00 to 5.25 in total length. Eye diameter 5.00 in head length. Barbels 2 pairs. Body silvery, glossed with gold. A dark shoulder spot present above middle of pectoral fin. Generally with a dark spot close to caudal fin base.

Distribution : India : Madhya Pradesh (Jabalpur, Raisen, Rajgarh, Rewa districts); the Brahmaputra, Ganga, Godavari, Indus and Krishna river systems.

Elsewhere : Bangladesh, Myanmar, and Pakistan.

Genus *Wallago* Bleeker

52. *Wallago attu* (Schneider)

Freshwater Shark

1801. *Silurus attu* Schneider, *Syst. Ichth.* : 378.

1878. *Wallago attu* : Day, *Fish. India*, p. 479.

1981. *Wallago attu* : Jayaram, *Handbk. Freshw. Fish. India* : 210.

Diagnosis : Head length 5.00 to 5.50 and body depth 6.50 in total length. Eye diameter about 7.00 to 8.00 in head length. Eye small, above level of corner of mouth. Dorsal profile nearly straight. Snout spatulate, rather produced. Gape of mouth wide, extending to or beyond anterior border of eye. Lower jaw more prominent. Barbels 2 pairs, maxillary pair twice as long as head and mandibular pair equal to snout. Dorsal fin short, spineless, inserted above

Distribution : Throughout India : in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Narsinghpur, Rewa districts, Chambal river).

Elsewhere : Bangladesh, Borneo, China, Indonesia, Malaya Archipelago, Myanmar, Pakistan, Sri Lanka, Sumatra, Thailand, Yunnan.

Family SCHILBEIDAE

Genus *Clupisoma* Swainson53. *Clupisoma garua* (Hamilton)

1822. *Silurus garua* Hamilton, *Fish. Ganges*, p. 156, 375, pl. 21, fig. 50.

1937. *Clupisoma garua* : Hora, *J. Bombay. nat. Hist. Soc.*, 39 (4) : 606.

1981. *Clupisoma garua* : Jayaram, *Handbk. Freshw. Fish. India*, p. 219, 222.

Material examined : Past record.

Diagnosis : Head length 4.80 to 5.60 and body depth 4.60 to 5.60 in standard length. Eye diameter 3.00 to 3.80 in head length. Barbels 4 pairs. Pectoral spine longer and stronger than dorsal spine, roughened externally and denticulated internally. Abdominal edge keeled between bases of pelvics and vent. Body silvery with green on the back. Fins stained grey. Head and shoulder with a golden gloss, in fresh condition.

Distribution : India : Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Jabalpur, Rewa districts, Chambal river), Assam, Bihar, North India, Orissa, Punjab, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

Family AMBLYCIPITIDAE

Genus *Amblyceps* Blyth54. *Amblyceps mangois* (Hamilton)

1822. *Pimelodus mangois* Hamilton, *Fish. Ganges*, p. 199, 379.

1981. *Amblyceps mangois* : Jayaram, *Handbk. Freshw. Fish. India*, p. 228.

Diagnosis : Head length 6.25 and body depth 7.00 to 9.00 in total length. Eyes small, superior. Mouth wide. Lower jaw longer. Barbels 4 pairs. Caudal fin truncate or emarginated. Lateral line absent. Body dark grey on back and sides, lighter below.

Distribution : India : Madhya Pradesh (Hoshangabad, Mandla, Rewa districts), along the foothills of the Himalayas from Kangra valley in Punjab to Assam, Krishna river system, S. India.

Elsewhere : Bangladesh, Laos, Myanmar, Nepal, Pakistan, Thailand.

Family SISORIDAE

Genus *Laguvia* Hora55. *Laguvia ribeiroi ribeiroi* Hora

1921. *Laguvia ribeiroi* Hora, *Rec. Indian Mus.*, 22 : 741, pl. 29, fig. 3.

1981. *Laguvia ribeiroi ribeiroi* : Jayaram, *Handbk. Freshw. Fish. India*, p. 249, 250.

Diagnosis : Head length 4.20 and body depth 5.40 in total length. Eye diameter 7.50 in head length. Body dark grey above, dull white below, speckled with black dots. Two broad yellowish transverse bands on body, one between rayed dorsal fin and adipose dorsal fin and another below posterior half of base of adipose dorsal fin. Fins distinctly banded excepting adipose dorsal fin. Skin tuberculated.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur, Rewa, Satna), Bihar, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh, Nepal.

Family CLARIIDAE

Genus *Clarias* Scopoli56. *Clarias batrachus* (Linnaeus)**Air Breathing Catfish**

1758. *Silurus batrachus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 305.

1878. *Clarias magur* : Day, *Fish. India*, p. 485.

1981. *Clarias batrachus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 270.

Diagnosis : Head length 5.60 and body depth 6.50 to 7.50 in total length. Upper jaw longer. Vomerine teeth villiform, in an uninterrupted band. Barbels 4 pairs, maxillary pair reaching base or middle of pectoral fin. Dorsal fin long, spineless and not confluent with caudal fin. Pectoral fin spine serrated and covered with skin. Body dingy green or dark brown on dorsal surface, lighter below. Vertical fins usually with reddish margins.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Jabalpur, Narsinghpur, Rewa, Seoni).

Elsewhere : Bali, Bangladesh, Borneo, China, Java, Lombok, Malacca, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Sumatra, Thailand, Vietnam.

Family HETEROPNEUSTIDAE

Genus *Heteropneustes* Müller57. *Heteropneustes fossilis* (Bloch)**Stinging Catfish**

1794. *Silurus fossilis* Bloch, *Naturges Ausland. Fische*, 8 : 46.

1878. *Saccobranchus fossilis* : Day, *Fish. India*, p. 486.

1981. *Heteropneustes fossilis* : Jayaram, *Handbk. Freshw. Fish. India*, p. 273, 274.

Diagnosis : Head length 5.50 to 7.00 and body depth 5.00 to 8.00 in total length. Barbels 4 pairs. Dorsal fin short, spineless and inserted above tip of pectoral fin. Caudal fin almost rounded. Lateral line complete. Body leaden, sometimes with two lateral, yellowish bands. Anal fin separated from the caudal fin by a deep notch.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Betul, Bhopal, Hoshangabad, Jabalpur, Raisen, Rewa, Satna districts, Chambal river).

Elsewhere: Bangladesh, Borneo, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatra, Thailand.

Superorder ATHERINOMORPHA

Order ATHERINIFORMES

Family BELONIDAE

Genus *Xenentodon* Regan58. *Xenentodon cancila* (Hamilton)**Freshwater Garfish**

1822. *Esox cancila* Hamilton, *Fish. Ganges*, p.: 213, 380.

1878. *Belone cancila* : Day, *Fish. India*, p. 511.

1981. *Xenentodon cancila* : Jayaram, *Handbk. Freshw. Fish. India*, p. 292.

Diagnosis : Head length 2.60 to 2.75 and body depth 8.00 to 12.00 in total length. A deep median, longitudinal groove on upper surface of head. 20 to 30 rows of scales between lateral line and base of dorsal fin. Caudal fin truncate. Body greenish-grey above and lighter below with abdomen whitish. A dark edged silvery stripe from opposite eye to middle of caudal fin base. Often 4 or 5 lateral blotches between pectoral and anal fin bases.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Betul, Bhopal, Hoshangabad, Jabalpur, Raisen, Rewa, Satna districts, Chambal river).

Elsewhere : Bangladesh, Borneo, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatra, Thailand.

Family CYPRINODONTIDAE

Genus *Aplocheilus* McClelland59. *Aplocheilus panchax* (Hamilton)**Lesser Top Minnow**

1822. *Esox panchax* Hamilton, *Fish. Ganges*, p. 211, 380, pl. 3, fig. 69.

1981. *Aplocheilus panchax* : Jayaram, *Handbk. Freshw. Fish. India*, p. 295.

Diagnosis : Head length 4.00 to 4.30 and body depth 4.75 to 5.00 in total length. Eye diameter 3.30 in head length. Lower jaw longer. Maxilla reaching to below first third of eye. No teeth on vomer. Dorsal fin originates above the last anal fin rays. Pelvic fin small, without any prolonged ray. Caudal fin rounded. Body greenish above, dull white beneath. Fins yellow, lower third of dorsal fin with a large black spot, dorsal, caudal and anal edged with orange.

Distribution : India : Madhya Pradesh (Hoshangabad), Andhra Pradesh, Andamans, Assam, Bihar, Gujarat, Orissa, Punjab, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh, Myanmar, Pakistan, Sri Lanka, Thailand to Malay Archipelago.

Superorder ACANTHOPTERYGII

Order CHANNIFORMES

Family CHANNIDAE

Genus *Channa* Scopoli60. *Channa marulius* (Hamilton)**Giant Snake-head Murrel**

1822. *Ophiocephalus marulius* Hamilton, *Fish. Ganges*, p. 65, 367.

1981. *Channa marulius* : Jayaram, *Handbk. Freshw. Fish. India*, p. 306, 307.

Material examined : Past record.

Diagnosis : Head length 4.00 to 5.00 and body depth 7.00 to 7.50 in total length. Eye diameter 5.00 to 7.00 in head length. Maxilla extending below half of the orbit. Teeth villiform. Pelvic fin two-third as long as pectoral fin. 10 rows of scales between the orbit and angle of preopercle. Predorsal scales 16. Cephalic pits multiple. Generally the body greyish-green on dorsal surface and lighter below.

Distribution : Throughout India : in Chhattisgarh (Bastar, Indravati Tiger Reserve), Madhya Pradesh (Bhopal, Jabalpur, Rewa districts, Chambal river).

Elsewhere : Bangladesh, China, Myanmar, Pakistan, Sri Lanka, Thailand.

61. *Channa orientalis* (Bloch & Schneider)
Brown Snake-head Murrel

1801. *Channa orientalis* Bloch & Schneider, *Syst. Ichth.* : 496.

1822. *Ophiocephalus gachua*: Hamilton, *Fish. Ganges*, p. 68, 367.

1981. *Channa orientalis* : Jayaram, *Handbk. Freshw. Fish. India*, p. 306, 307.

Material examined : Hoshangabad, Anthoni (Jhirpa), 28.viii.2000 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 3.50 to 4.35 and body depth 6.50 to 8.00 in total length. Eye diameter 5.00 to 6.00 in head length. Teeth conical. Cephalic pits simple. 5 to 6 rows of scales between the orbit and angle of preopercle. Predorsal scales 12 to 13. Pelvic fins less than half the length of pectoral fin. Body dirty greenish on dorsal surface and dull white or brown on sides and below. Some darkish spots on body and fins. Pectoral fin with vertical bars on its rays.

Distribution : Throughout India, in Madhya /Pradesh (Bhopal, Rajgarh, Betul, Hoshangabad, Damoh, Jabalpur, Seoni, Mandla, Rewa, Shahdol).

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

62. *Channa punctatus* (Bloch)
Green Snake-head Murrel

1793. *Ophiocephalus punctatus* Bloch, *Naturg. Ausland. Fische*, 7: 139.

1878. *Ophiocephalus punctatus* : Day, *Fish. India*, p. 367.

1981. *Channa punctatus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 306, 307.

Material examined : Past record.

Diagnosis : Head length 3.30 to 3.60 and body depth 5.50 to 7.00 in total length. Eye diameter 7.00 to 8.50 in head length. Lower jaw longer. Maxilla reaching to below or behind posterior margin of eye. Cephalic pits simple. Teeth conical. Pelvic fin three-fourth as long as pectoral fin. 5 rows of scales between the orbit and angle of preopercle. Predorsal scales 12. Generally the body greenish on dorsal surface, becoming yellow on sides and abdomen. A dark stripe along side of head and several short cross bands from back to middle of body. Fins spotted, pelvic fin white or grey, not spotted.

Distribution : Throughout India : in Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Khandwa, Rajgarh, Raisen, Rewa, Satna, Seoni districts, Chambal river, Kanha Tiger Reserve).

Elsewhere : Bangladesh, China, Malaya, Myanmar, Nepal, Pakistan, Polynesia, Sri Lanka, Tahiti.

63. *Channa striatus* (Bloch)
Striped Snake-head Murrel

1793. *Ophiocephalus striatus* Bloch, *Naturg. Ausland. Fische*, 2 : 141.

1878. *Ophiocephalus striatus* : Day, *Fish. India*, p. 366.

1981. *Channa striatus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 307.

Material examined : Past record.

Diagnosis : Head length 3.30 to 4.00 and body depth 6.00 to 8.00 in total length. Eye diameter 6.00 to 7.00 in head length. Lower jaw longer. Maxilla reaching to below posterior margin of eye. Teeth conical in jaws, cardiform on palatines. Cephalic pits multiple. 9 rows of scales between the orbit and angle of preopercle. Predorsal scales 18-20. Body dark greenish or blackish on dorsal surface, dirty white or yellowish-white below. Bands of grey or black from sides to abdomen.

Distribution : Throughout India : Madhya Pradesh (Bhopal, Indore, Jabalpur, Rewa districts, Chambal river).

Elsewhere : Bangladesh, China, Malaya, Myanmar, Pakistan, Philippines, Sri Lanka, Thailand.

Order PERCIFORMES

Family CHANDIDAE

Genus *Chanda* Hamilton

64. *Chanda nama* (Hamilton)
Indian Glass Fish

1822. *Chanda nama* Hamilton, *Fish. Ganges*, p. 109, 371.

1878. *Ambassis nama* : Day, *Fish. India*, p. 50.

1981. *Chanda nama* : Jayaram, *Handbk. Freshw. Fish. India*, p. 318.

Material examined : Hoshangabad, Banglapara (Bori), 18.iv.2001 (2 exs.), Y.N. Gupta and party.

Diagnosis : Head length 4.00 to 4.50 and body depth 2.75 to 3.00 in total length. Lower jaw longer than upper. 2 or 3 large, crooked canines, on either side of the lower jaw. Two dorsal fins, united at their base. Body yellowish-olive, covered with minute black dots. The dots on the shoulders form an oblong vertical patch. Fins orange, upper half of first dorsal fin deep black, second dorsal fin with a dark upper edge. Anal fin with a black mark over the bases of spines.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Chhindwara, Gwalior, Hoshangabad, Jabalpur, Narsinghpur, Raisen, Rajgarh, Rewa, Satna districts, Chambal river).

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

65. *Chanda ranga* (Hamilton)

Indian Glass Fish

1822. *Chanda ranga* Hamilton, *Fish. Ganges*, p. 113, 371, pl. 16, fig. 38.

1889. *Ambassis ranga* : Day, *Fauna Br. India, Fish.*, 1 : 485.

1981. *Chanda ranga* : Jayaram, *Handbk. Freshw. Fish. India*, p. 318.

Diagnosis : Head length 3.25 to 4.00 and body depth 2.25 to 2.50 in total length. Eye diameter 2.50 in head length. First dorsal fin with 7 spines and a recumbent dorsal spine. Lateral line present, complete. Body olive, with a dark mark composed of closely set dots on the shoulder being the remains of a band present in the young stage. The margins of the vertical fins usually grey.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Raisen, Rewa districts, Chambal river).

Elsewhere : Bangladesh, Malaya, Myanmar, Nepal, Pakistan, Thailand.

Family NANDIDAE

Genus *Badis* Bleeker

66. *Badis badis* (Hamilton)

1822. *Labrus badis* Hamilton, *Fish. Ganges*, p. 70, 368, pl. 25, fig. 23.

1889. *Badis buchmanani* : Day, *Fauna British India, Fish.*, 2 : 80, 81, fig. 38.

1981. *Badis badis* : Jayaram, *Handbk. Freshw. Fish. India*, p. 335.

Diagnosis : Head length 4.50 to 5.00 and body depth 2.75 to 4.50 in total length. Eye diameter 3.60 in head length. Ctenoid scales extending over body and head. Lateral line present but interrupted below posterior extremity of dorsal fin. Body dark brown or dark green with a series of transverse bands. Bluish-black spots or blotches on the body, on opercle, caudal fin base, shoulder.

Distribution : Throughout India : in Chhattisgarh (Bastar district, Indravati Tiger Reserve), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Mandla, Rewa districts, Chambal river, Kanha Tiger Reserve).

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan.

Genus *Nandus* Valenciennes67. *Nandus nandus* (Hamilton)

1822. *Coius nandus* Hamilton, *Fish. India*, p. 129, pl. 32, fig. 1.

1889. *Nandus marmoratus* : Day, *Fauna Br. India, Fish.*, 2 : 82.

1981. *Nandus nandus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 336.

Diagnosis : Head length 3.00 and body depth 3.00 to 3.35 in total length. Eye diameter 5.00 to 6.00 in head length. Body compressed. Mouth terminal, very protractile, its cleft very wide, extending to below posterior margin of eye or slightly beyond. Body greenish-brown with brassy reflection. 3 broad patchy marbled bands over body and a fourth one across free portion of tail. Narrow bands of spots across soft parts of dorsal, anal and caudal fins.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Narsinghpur, Rewa, Satna districts, Chambal river).

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

Family GOBIIDAE

Subfamily GOBINAЕ

Genus *Glossogobius* Gill68. *Glossogobius giuris* (Hamilton)

Bar-eyed Goby

1822. *Gobius giuris* Hamilton, *Fish. Ganges*, p. 51, 366.

1878. *Gobius giuris* : Day, *Fish. India*, p. 294.

1981. *Glossogobius giuris* : Jayaram, *Handbk. Freshw. Fish. India*, p. 358.

Diagnosis : Head length 3.50 to 4.25 and body depth 5.00 to 6.50 in total length. Head depressed and pointed. Iris of eye without process in pupil. Tongue bilobate. Two dorsal fins separated by a short interspace. Pelvic fins united forming a disc. Caudal fin oblong to rounded. 9-14 scales in a transverse line. Body olive to dusky green on dorsal surface and lighter below. Two alternating rows of 4 to 6 blotches on body. A dark blotch on first dorsal fin may be present.

Distribution : Throughout India, in Madhya Pradesh (Bhopal, Rajgarh, Hoshangabad, Jabalpur, Seoni, Rewa).

Elsewhere : Australia, Bangladesh, China, East and South Coasts of Africa, Indo-Australian Archipelago, Japan, Malaya, Mauritius, Myanmar, Nepal, Pakistan, Philippines, South Pacific Islands, Sri Lanka, Thailand.

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

Genus *Macrognathus* Lacépède69. *Macrognathus aculeatus* (Bloch)

Lesser Spiny Eel

1795. *Ophidium aculeatum* Bloch, *Ichthyologie*, 5: 60, pl. 159, fig. 2.

1889. *Rhynchobdella aculeata* : Day, *Fauna British India, Fish.*, 2 : 331.

1981. *Macrognathus aculeatus* : Jayaram, *Handb. Freshw. Fish. India*, p. 387, 389, fig. 199.

Diagnosis : Head length 5.00 to 6.00 and body depth 8.00 to 10.00 in total length. Body elongate, cylindrical and eel-like. Body brownish or olive, marbled on dorsal surface and yellowish below. A light band above lateral line. 3 to 9 large white or buff-edged ocelli along base of soft dorsal fin. Caudal fin vertically barred.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Jabalpur, Shahdol).

Elsewhere : Bangladesh, Borneo, China, Java, Laos, Malaya, Malaya Archipelago, Moluccas, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatra, Thailand, Vietnam.

Genus *Mastacembelus* Scopoli70. *Mastacembelus armatus armatus* (Lacépède)

Spiny Eel

1800. *Macrognathus armatus* Lacépède, *Hist. Nat. Poiss.*, 2 : 283, 286.

1878. *Mastacembelus armatus* : Day, *Fish. India*, p. 340.

1981. *Mastacembelus armatus armatus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 388.

Material examined : Hoshangabad, Trishulnala (Bori), 13.iv.2001 (1 ex.), Y.N. Gupta and party.

Diagnosis : Head length 6.50 to 7.50 and body depth 11.00 to 12.00 in total length. Eye one diameter apart. Body elongated, cylindrical and eel-like. Cleft of mouth narrow. A long fleshy appendage to snout, not transversely striated inferiorly. Snout trilobed. A preorbital spine present. A single, long dorsal fin with 32-39 stumpy free spines. Anal fin with 3 spines. Body brownish on dorsal surface and lighter below. A row of black spots along base of soft dorsal fin.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Chhindwara, Hoshangabad, Jabalpur, Mandla, Narsinghpur, Raisen, Rajgarh, Rewa, Satna districts, Chambal river).

Elsewhere : Bangladesh, Cambodia, China, Java, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatra, Thailand, Tonkin, Vietnam.

71. *Mastacembelus pancalus* (Hamilton)

Spiny Eel

1822. *Macrogathus pancalus* Hamilton, *Fish. Ganges*, p. 30, 364.

1878. *Mastacembelus pancalus* : Day, *Fish. India*, p. 340.

1981. *Mastacembelus pancalus* : Jayaram, *Handbk. Freshw. Fish. India*, p. 389.

Diagnosis : Head length 5.00 to 5.50 and body depth 6.50 to 7.00 in total length. A long fleshy appendage to snout. A preorbital spine. Teeth in jaws minute. A single, long dorsal fin with 24-26 stumpy free spines. Anal fins with 3 spines. 18 rows of scales between lateral line and base of first dorsal fin ray. Body greenish-olive on dorsal surface and yellowish below. Yellowish-white spots on scales.

Distribution : Throughout India : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Rewa districts, Chambal river).

Elsewhere : Bangladesh, Pakistan.

SUMMARY

The freshwater fish fauna of the Pachmarhi Biosphere Reserve includes 71 species of 36 genera under 17 families.

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PLANT MITES

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INTRODUCTION

Two species of Tetranychid mites, *Eutetranychus orientalis* (Klein) and *Oligonychus mangiferus* (Rahman & Sapro) reported by Gupta and Gupta (1978) and three species of Phytoseiid mites *Typhlodromus (Orientiseius) rickeri* Chant, *Amblyseius (Euseius) coccineae* Gupta and *Amblyseius (Typhlodromalus) kalimpongensis* Gupta reported by Gupta (1982 and 1987) are so far known from Pachmarhi Biosphere Reserve, Hoshangabad district, Madhya Pradesh. During the course of Pachmarhi Biosphere Reserve Survey from 2000 to 2002, the author collected some plant mites from Pachmarhi Biosphere Reserve.

Altogether a total of 15 species belonging to 2 families under 7 genera are treated here. Out of 15 species, 10 species are reported for the first time from Pachmarhi Biosphere Reserve. The entire material treated here is deposited in the Central Regional Station, Zoological Survey of India, Jabalpur.

List of Plant Mites recorded from Pachmarhi Biosphere Reserve

Family TETRANYCHIDAE

1. *Eutetranychus africanus* (Tucker)
2. *Eutetranychus orientalis* (Klein)
3. *Eotetranychus frosti* (McGregor)
4. *Schizotetranychus andropogoni* (Hirst)
5. *Schizotetranychus baltazari* Rimando
6. *Oligonychus coffeae* (Neitner)
7. *Oligonychus indicus* (Hirst)
8. *Oligonychus iseilemae* (Hirst)

9. *Oligonychus mangiferus* (Rahman & Sapra)
10. *Tetranychus macfarlanei* Baker & Pritchard
11. *Tetranychus neocaledonicus* Andre
12. *Tetranychus urticae* Koch

Family PHYTOSEIIDAE

13. *Amblyseius (Euseius) coccineae* Gupta
14. *Amblyseius (Typhlodromalus) kalimpongensis* Gupta
15. *Typhlodromus (Orientiseius) rickeri* Chant

SYSTEMATIC ACCOUNT

PHYTOPHAGOUS MITES

Family TETRANYCHIDAE

Genus *Eutetranychus* Banks

1. *Eutetranychus africanus* (Tucker)

1926. *Anychus africanus* Tucker, *Union S. Afri. Dept. Agri. Div. Ent. Mem.*, 5 : 5.
1963. *Eutetranychus africanus* : Manson, *Acarologia*, 5 : 332.
1994. *Eutetranychus africanus* : Gupta & Gupta, *Mem. zool. Surv. India*, 18(1) : 28-30.

Material examined : Hoshangabad, on the way to Babai, 14.ii.2002 (citrus, 15 exs.).

Diagnosis : Body with dorsal setae subspatulate and long striae longitudinal between second and third pairs of dorsocentral hysterosomal setae. Palp tarsus of female three and half times as long as broad. Distal bend of aedeagus relatively shorter than dorsal margin of shaft.

Distribution : India : Madhya Pradesh (Hoshangabad), Delhi, Assam, Karnataka.

Elsewhere : Durban, Mauritius, Natal.

Remarks : New record from Hoshangabad. Not much is known about its bionomics.

2. *Eutetranychus orientalis* (Klein)

1936. *Anychus orientalis* Klein, *Bull. agric. Res. Stn. Rehovoth*, 21 : 3.
1940. *Anychus ricini* : Rahman & Sapra, *Proc. Indian Acad. Sci.*, 11 : 184.
1985. *Eutetranychus orientalis* : Gupta, *Handbook: Plant mites of India*; 66-67.

Material examined : Hoshangabad, Pipariya, Madhuvan, 24.viii.2000 (sem, 15 exs.); Hoshangabad, Pachmarhi, Mahadeo, 8.iv.2001 (unidentified plant, 10 exs.); Hoshangabad, Madai, 17.iv.2001 (grass, 25 exs.); Hoshangabad, Semari, Sohagpur, 4.ii.2002 (papaya, 15 exs.); Hoshangabad, Dokarikhera, 5.ii.2002 (neem, 10 exs.); Hoshangabad, Raisulpur, 8.ii.2002 (neem, 15 exs.); Hoshangabad, Rampura, 16.ii.2002 (neem, 10 exs.); Hoshangabad, Shahpur, Kantawadi, 20.ii.2002 (neem, 8 exs.).

Diagnosis : Dorsal striae on propodosoma parallel and lobed. Dorsal setae short, broad and set on small tubercles. Lateral setae longer than dorsomedian setae, slightly spatulate. In case of male tarsus I with 1 sensory and 2 tactile; tarsus II with 1 sensory and 2 tactile setae, whereas tibia I with 2 sensory and 3 tactile setae; tarsus I with 1 sensory and 14 tactile setae; tibia II with 1 sensory and 5 tactile setae in the case of female. Aedeagus hook like with distal bent longer than dorsal margin of shaft, which is slightly concave.

Distribution : India : Chhattisgarh (Bastar, Raigarh, Sarguja), Madhya Pradesh (Betul, Bhind, Chhindwara, Damoh, Dhar, Gwalior, Hoshangabad, Jabalpur, Khandwa, Khargone, Mandsaur, Raisen, Rajgarh, Ratlam, Sagar, Shivpuri, Ujjain), Maharashtra, Punjab, West Bengal, Gujarat, Haryana, Uttar Pradesh.

Elsewhere : Israel, Turkey, Jordan, Iran, Egypt, Cyprus, Sudan, South Africa, Afghanistan, Pakistan, Taiwan, Thailand, East Transvaal.

Remarks : This is a serious pest of a large variety of fruit trees including citrus and neem in India. It occurs on both surfaces of leaves almost throughout the year and turns the affected leaves yellowish-brown.

Genus *Eotetranychus* Oudemans

3. *Eotetranychus frosti* (McGregor)

1952. *Tetranychus frosti* McGregor, *Proc. Soc. Wash.*, 54 : 142.

1955. *Eotetranychus frosti* : Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 199.

1994. *Eotetranychus frosti* : Gupta & Gupta, *Mem. zool. Surv. India*, 18(1) : 63-64.

Material examined : Hoshangabad, Dokarikhera, 16.ii.2002 (semal, 8 exs.).

Diagnosis : Dorso idiosomal setae long, gradually tapering posteriorly and twice as long as interval between their longitudinal bases. Aedeagus slender, sharply bent dorsal to become slightly sigmoid at the distal end. Striations on body very prominent. Medio ventral setae of moderate size.

Distribution : India : Chhattisgarh (Raipur), Madhya Pradesh (Hoshangabad), Gujarat, Himachal Pradesh, Jammu & Kashmir.

Elsewhere : U.S.A.

Remarks : New record from Hoshangabad. It causes no damage to its host and no information is available on its bionomics.

Genus *Schizotetranychus* Tragarth

4. *Schizotetranychus andropogoni* (Hirst)

1926. *Tetranychus* (*Schizotetranychus*) *andropogoni* Hirst, *Proc. zool. Soc. Lond.* : 829.

1955. *Schizotetranychus andropogoni* : Prit. & Bak., *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 240.

1985. *Schizotetranychus andropogoni* : Gupta, *Handbook : Plant mites of India*; 96-97.

Material examined : Hoshangabad, Pipariya, Anthoni, 23.viii.2000 (grass, 15 exs.); Hoshangabad, Singanama, 7.ix.2002 (paddy, 15 exs.).

Diagnosis : Dorsal body setae as long as interval between their bases. Aedeagus of male forms dorsally directed sigmoid curve that is not acutely angulated. Propodosomal striae longitudinal, hysterosomal striae transverse.

Distribution : India : Chhattisgarh (Raigarh), Madhya Pradesh (Hoshangabad), Bihar, Delhi, Orissa, Punjab, Tamil Nadu, West Bengal.

Elsewhere : Pakistan, Thailand, and Mexico.

Remarks : New record from Hoshangabad. This is a serious pest of sugarcane. It causes the appearance of whitish spots on either side of the midrib of leaves, which turn yellow.

5. *Schizotetranychus baltazari* Rimando

1962. *Schizotetranychus baltazari* Rimando, *Philipp. Agr.*, 45 : 534-535.

1963. *Schizotetranychus baltazari* : Manson, *Acarologia*, 5 : 360-362.

1994. *Schizotetranychus baltazari* : Gupta & Gupta, *Mem. zool. Surv. India*, 18(1): 89-90.

Material examined : Hoshangabad, Singanama, 7.ix.2002 (citrus, 10 males, 8 females).

Diagnosis : Distal end of aedeagus forms a dorsally directed sigmoid curve.

Distribution : India : Madhya Pradesh (Hoshangabad), Assam, Karnataka, Punjab.

Elsewhere : Myanmar, Hong Kong, Thailand, and Taiwan.

Remarks : New record from Hoshangabad. This mite occasionally infests citrus but causes no serious damage to the plants except stipplings on the leaves.

Genus *Oligonychus* Berlese6. *Oligonychus coffeae* (Neitner)

1861. *Acarus coffeae* Neitner, *Observ. Enem. Coffeae tree, Ceylon*; 31.

1955. *Oligonychus coffeae* : Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 315-316.

1994. *Oligonychus coffeae* : Gupta & Gupta, *Mem. zool. Surv. India*, 18(1) : 102-104.

Material examined : Hoshangabad, Bahai, Tawa Dam, 14.ii.2002 (guava, 12 exs.).

Diagnosis : Dorsal idiosomal setae serrate and longer than the distance between consecutive setae. Aedeagus at distal end bends ventral at a right angle to the axis of the shaft. The striae are devoid of lobes.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Bhind, Damoh, Hoshangabad), Assam, Himachal Pradesh, Meghalaya, Tamil Nadu, West Bengal.

Elsewhere : Indonesia, Australia, Thailand, Hawaii, Japan, Philippines, Sri Lanka, Taiwan, U.S.A., South and East Africa, Russia, Mauritius, Middle East, Egypt.

Remarks : New record from Hoshangabad. This mite is a serious pest of tea in both North East and Northern India causing copperish-bronze appearance of leaves. The period of occurrence is during April-June. The life cycle is completed in 9-12 days.

7. *Oligonychus indicus* (Hirst)

1923. *Paratetranychus indicus* Hirst, *Proc. zool. Soc. Lond.* : 990.

1955. *Oligonychus indicus* : Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, 2 : 354-355.

1994. *Oligonychus indicus* : Gupta & Gupta, *Mem. zool. Surv. India*, 18(1) : 104-105.

Material examined : Hoshangabad, Shahpur, Kantawadi, 20.ii.2002 (grass, 2 exs.); Hoshangabad, Semari, 4.iii.2002 (grass, 23 exs.).

Diagnosis : Body greyish-green with black blotches scattered over dorsum. Dorsal body setae longer than the interval between their longitudinal bases. Aedeagus is distinctive in having the distal knob very small. The bend of aedeagus forms an acute angle with axis of the shaft.

Distribution : India : Madhya Pradesh (Chhindwara, Damoh, Hoshangabad, Raisen, Sagar), Andhra Pradesh, Bihar, Delhi, Haryana, Karnataka, Meghalaya, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere: Pakistan.

Remarks : New record from Hoshangabad. This is a serious pest of sugarcane including maize and sorghum causing reddening of leaves. The leaves of severely infested spots turn red, as if burnt, which dry up and fall off.

8. *Oligonychus iseilemae* (Hirst)

1924. *Paratetranychus iseilemae* Hirst, *Ann. Mag. Nat. Hist.*, **14** (9) : 524.

1955. *Oligonychus iseilemae* : Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, **2** : 358.

1994. *Oligonychus iseilemae* : Gupta & Gupta, *Mem. zool. Surv. India*, **18**(1) : 106-107.

Material examined : Hoshangabad, Tawa Dam near Itarsi, 13.ii.2002 (jamun, 1 male, 5 females).

Diagnosis : Dorsal idiosomal setae not set on tubercles, simple, tapering gradually and twice longer than the interval between their longitudinal bases. Aedeagus with small sigmoid tip, directed upward, peritreme at the distal end V-shaped and anastomosing at the distal end.

Distribution : India : Chhattisgarh (Bastar, Rajnandgaon), Madhya Pradesh (Betul, Chhindwara, Hoshangabad, Raisen), Tamil Nadu, Andaman & Nicobar Isls.

Remarks : New record from Hoshangabad. This mite is not known to have any economic importance.

9. *Oligonychus mangiferus* (Rahman & Sapro)

1940. *Paratetranychus mangiferus* Rahman & Sapro, *Proc. Indian Acad. Sci.*, **11**(B) : 192.

1955. *Oligonychus mangiferus* : Pritchard & Baker, *Pacific Coast Ent. Soc. Mem. Ser.*, **2** : 330.

1994. *Oligonychus mangiferus* : Gupta & Gupta, *Mem. zool. Surv. India*, **18**(1) : 108-110.

Material examined : Hoshangabad, Pachmarhi, Mahadeo, 9.iv.2001 (mango, 10 exs.); Hoshangabad, Semari, Sohagpur, 4.i.2002 (mango, 15 exs.); Hoshangabad, 6.ii.2002 (mango, 4 exs.).

Diagnosis : Dark red dorsolaterally and pale red mediodorsally. Male with bent portion of aedeagus triangularly tapering to an acute angle with the shaft. Peritreme at the distal end anastomosing. Medioventral setae slightly longer in size.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Bhind, Chhindwara, Dhar, Guna, Gwalior, Hoshangabad, Jabalpur, Khandwa, Khargone, Raisen, Sagar, Shadhol, Shivpuri), Bihar, Haryana, Himachal Pradesh, Delhi, Karnataka, Kerala, Orissa, Punjab, West Bengal.

Elsewhere : Egypt, Hawaii, Mauritius and Peru.

Remarks : This is an important pest of mango and grape vine in India and occasionally occurs on litchi also. The infested parts become yellowish in mango and brownish in litchi.

Genus *Tetranychus* Dufour10. *Tetranychus macfarlanei* Baker & Pritchard

1960. *Tetranychus macfarlanei* Baker & Pritchard, *Hilgardia*, **29** : 537.

1961. *Tetranychus macfarlanei* : Bindra & Kittur, *Indian J. Ent.*, **23** : 71.

1994. *Tetranychus macfarlanei* : Gupta & Gupta, *Mem. zool. Surv. India*, **18**(1) : 131-132.

Material examined : Hoshangabad, Kalmeshra, 9.ii.2002 (cucumber, 1 male, 7 females).

Diagnosis : Idiosomal setae long and pubescent. Tibia I of male with 4 sensory and 9 tactile setae, tarsus I with 4 tactile setae, proximal to duplex setae; tibia II with 7 tactile setae, tarsus II with 1 sensory and 5 tactile setae, proximal to duplex setae. Aedeagal knob tiny with anterior and posterior angulation. Tibia I of female with 1 sensory and 9 tactile setae, tarsus I with 4 tactile setae in line with proximal pair of duplex setae; tibia II with 1 sensory and 6 tactile setae, tarsus II with 1 sensory and 4 tactile setae proximal to duplex setae.

Distribution : India : Chhattisgarh (Rajnandgaon), Madhya Pradesh (Dhar, Hoshangabad, Shahdol), Rajasthan, Gujarat, Tamil Nadu, Karnataka, Uttar Pradesh, West Bengal, Andaman & Nicobar Islands.

Elsewhere : Mauritius.

Remarks : New record from Hoshangabad. The infestation is more on mature crops than on the young ones. It disappears with rain.

11. *Tetranychus neocaledonicus* Andre

1933. *Tetranychus neocaledonicus* Andre, *Bull. Mus. Nat. Hist. Paris*, **5**(2) : 302.

1940. *Tetranychus neocaledonicus* : Rahman & Sapro, *Proc. India Acad. Sci.*, **11 B** : 79.

1985. *Tetranychus neocaledonicus* : Gupta, *Handbook : Plant Mites of India*; 125-126.

Material examined : Hoshangabad, Rani Pipariya, 6.ii.2002 (brinjal, 17 exs.).

Diagnosis: In male, tibia I with 3 sensory and 8 tactile setae, tarsus I with 2 sensory and 4 tactile setae proximal to duplex setae, tibia II with 7 tactile setae. Aedeagal knob in male berry like and the anterior rounded projection is better developed than the rounded posterior projection.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Betul, Chhindwara, Damoh, Hoshangabad, Jabalpur, Raisen, Rajgarh, Sagar, Shahdol, Ujjain), Assam, Bihar, Delhi, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Uttar Pradesh, West Bengal.

Elsewhere : Africa, Fiji, Bahamas, Hawaii, Venezuela, Puerto Rico, U.S.A.

Remarks : New record from Hoshangabad. This species has been found to be a major pest of crops in India and infest mostly vegetable plants.

12. *Tetranychus urticae* Koch

1936. *Tetranychus urticae* Koch, *Deutsche, Crustacea, Myriapoda, Arachnida, Fasc.*, 1 : 10.

1985. *Tetranychus urticae* : Gupta, *Handbook: Plant Mites of India*; 115.

1994. *Tetranychus urticae* : Gupta & Gupta, *Mem. zool. Surv. India*, 18(1) : 139-142.

Material examined : Hoshangabad, Kalmeshra, 9.ii.2002 (bhindi, 8 exs.).

Diagnosis : Greenish or yellowish mite with large spots on either side of the body. Axis of the aedeagal knob parallel with axis of shaft. Female's striae bears dorsal lobes, which are large, rounded and some being oblong.

Distribution : India : Madhya Pradesh (Hoshangabad, Raisen, Shahdol), Meghalaya, Kerala, Karnataka, Uttar Pradesh, West Bengal.

Elsewhere : Cosmopolitan.

Remarks : New record from Hoshangabad.

PREDATORY MITES

Family PHYTOSEIIDAE

Genus *Amblyseius* Berlese

Subgenus *Euseius* Wainstein

13. *Amblyseius (Euseius) coccineae* Gupta

1975. *Amblyseius coccineae* Gupta, *Internat. J. Acarol.*, 1(2): 33.

1987. *Amblyseius (Euseius) coccineae* : Gupta, *Rec. zool. Surv. India, Occ. Pap. No.*, 95 : 22-23.

1995. *Amblyseius (Euseius) coccineae* : Gupta, *Fauna of Meghalaya, State Fauna Ser.*, 4(Part-2) : 32.

This species has been recorded here on the basis of literature review.

Diagnosis : Dorsal shield reticulate, with 17 pairs of setae. Ventrianal shield vase-shaped with 3 pairs of preanal setae. Chelicera with 2 teeth on fixed digit and none on movable light.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad), Andhra Pradesh, Bihar, Jammu & Kashmir, Meghalaya, Orissa, Pondicherry, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Remarks : Gupta (1987) reported that this mite attacked the eggs of *Oligonychus mangiferus* and sucked the egg contents.

Subgenus *Typhlodromalus* Muma

14. *Amblyseius (Typhlodromalus) kalimpongensis* Gupta

1970. *Amblyseius kalimpongensis* Gupta, *Bull. Ent.*, **10** : 128-129.

1982. *Amblyseius kalimpongensis* : Gupta, *Rec. zool. Surv. India*, **79** : 367-371.

1985. *Amblyseius (Typhlodromalus) kalimpongensis* : Gupta, *Handbook : Plant Mites of India*; 362.

This species has been recorded here on the basis of literature review.

Diagnosis : Dorsal shield smooth with 17 pairs of setae and 5 pairs of pores. Sternal and genital shields normal, metasternal plates absent, only seta present. Ventrianal shield vase shaped, strongly concave laterally, with 3 pairs of preanal setae and a pair of pores. Leg IV with macroseta only on basitarsus IV: 31 long.

Distribution : India : Madhya Pradesh (Chhindwara, Dhar, Hoshangabad), Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Meghalaya, Orissa, Tamil Nadu, Uttar Pradesh, West Bengal.

Remarks : This species was reported in association with *Tetranychus* sp. (Gupta, 1987).

Genus *Typhlodromus* Scheuten

Subgenus *Orientiseius* Muma & Denmark

15. *Typhlodromus (Orientiseius) rickeri* Chant

1960. *Typhlodromus (Typhlodromus) rickeri* Chant, *Can. Ent.*, **92** : 62-64.

1974. *Typhlodromus (Orientiseius) rickeri* : *A catalogue of mites of India* : 175.

1987. *Typhlodromus (Orientiseius) rickeri* : Gupta, *Rec. zool. Surv. India, Occ. Pap. No.* **95** : 126.

This species has been recorded here on the basis of literature review.

Diagnosis : Dorsal shield 380 long, 214 wide, smooth, with 3-4 pairs of minute pores. Peritreme extends anteriorly up to J1 J2. Genital shield 78 wide with a pair of setae, 2 pairs of matapodal plates present, primary one 30 long. Dentition of chelicera not discernible.

Distribution : India : Madhya Pradesh (Hoshangabad), Karnataka, Meghalaya, Nagaland, Uttar Pradesh.

Elsewhere : Florida.

Remarks : This mite readily feeds on citrus red mite.

SUMMARY

Alltogether 15 species of 7 genera under 2 families are recorded from the Pachmarhi Biosphere Reserve.

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SOLIFUGAE

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INTRODUCTION

Order Solifugae includes curious arachnids, which are commonly known as false spiders or wind scorpions. This is one of the least known animal groups from India and there is no earlier record of this group from Pachmarhi Biosphere Reserve. In this communication, a species of false spider, viz., *Galeodes indicus* Pocock is being recorded for the first time.

SYSTEMATIC ACCOUNT

Family GALEODIDAE

Genus *Galeodes* Olivier

1. *Galeodes indicus* Pocock

1900. *Galeodes indicus* Pocock, *Fauna British India, Arachnida* : 142.

Material examined : Hoshangabad, Bhimkund, Bori Sanctuary, 16.iv.2001 (2 exs.), Coll. Y.N. Gupta.

Diagnosis : Female. Head infusate, paler in the middle line; mandible yellower than the head and marked with fuscous lines; upper side of abdomen infusate, the dorsal plates darker; legs and palpi uniform yellowish brown. Male. Like the female in colour, spine-armature of tarsi, dentition of lower mandibular fang.

Distribution : India : Madhya Pradesh (Hoshangabad, Gwalior), Chhattisgarh (Bilaspur), Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka.

REFERENCE

Pocock, R.I. 1900. *The Fauna of British India including Ceylon and Burma, Arachnida*. 279 pp.

ARANEAE

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INTRODUCTION

Spiders are diverse organisms, which are among the dominant predators of insects in terrestrial ecosystems. Being exclusively carnivorous, their food consists mainly of insects and other arthropods. The preliminary study on spider fauna of Pachmarhi Biosphere Reserve was conducted by the author and recorded 16 species (Gajbe, 2004). Further explorations in the reserve resulted in the enumeration of 32 species belonging to 25 genera under 13 families.

List of Spiders of Pachmarhi Biosphere Reserve

Suborder LABIDOGNATHA

Family FILISTATIDAE

1. *Pritha poonaensis* (Tikader)

Family MIMETIDAE

2. *Mimetus* sp.

Family ERESIDAE

3. *Stegodyphus pacificus* Pocock

4. *Stegodyphus sarasinorum* Karsch

5. *Stegodyphus socialis* Pocock

Family OECOBIIDAE

6. *Oecobius putus* O.P. Cambridge

Family UROCTEIDAE

7. *Uroctea indica* Pocock

Family HERSILIIDAE

8. *Hersilia savignyi* Lucas

Family TETRAGNATHIDAE

9. *Eucta* sp.
10. *Tetragnatha geniculata* Karsch
11. *Tetragnatha* sp.

Family ARANEIDAE

12. *Argiope aemula* (Walckenaer)
13. *Leucauge decorata* (Blackwall)
14. *Neoscona muckerjei* Tikader
15. *Neoscona platnicki* Gajbe & Gajbe
16. *Neoscona theis* (Walckenaer)
17. *Nephila maculata* (Fabricius)

Family LYCOSIDAE

18. *Hippasa hansae* Gajbe & Gajbe
19. *Hippasa partita* (Cambridge)
20. *Lycosa nigrotibialis* Simon
21. *Pardosa* sp.

Family OXYOPIDAE

22. *Oxyopes pankaji* Gajbe & Gajbe

Family CITHAERONIDAE

23. *Cithaeron indicus* Platnick & Gajbe

Family GNAPHOSIDAE

24. *Drassodes pashanensis* Tikader & Gajbe
25. *Geodrassus sirmourensis* Tikader & Gajbe
26. *Gnaphosa pauriensis* Tikader & Gajbe
27. *Haplodrassus sataraensis* Tikader & Gajbe
28. *Scopodes maitraiae* Tikader & Gajbe
29. *Scotophaeus poonaensis* Tikader
30. *Zelotes ashae* Tikader & Gajbe
31. *Zelotes mandlaensis* Tikader & Gajbe

Family THOMISIDAE

32. *Xysticus jayantius* Tikader

SYSTEMATIC ACCOUNT

Suborder LABIDOGNATHA

Family FILISTATIDAE

Genus *Pritha* Lehtinen1. *Pritha poonaensis* (Tikader)1963. *Filistata poonaensis* Tikader, *J. Univ. Poona Sci. & Tech.*, **24** : 35.1978. *Pritha poonaensis* : Patel, *J. Bombay nat. Hist. Soc.*, **75**(1) : 184.*Material examined* : Hoshangabad, Shelter cave, 10.i.1990 (2 females), Coll. U.A. Gajbe.*Distribution* : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad), Maharashtra, Gujarat.

Family MIMETIDAE

Genus *Mimetus* Simon2. *Mimetus* sp.1978. *Mimetus* : Kaston, *How to know the spiders* : 175.*Material examined* : Chhindwara, Jamai, 26.x.2002 (1 male), Coll. Y.N. Gupta.*Diagnosis* : Height of clypeus from one-third to one-half that of median ocular area. Leg I one and half times as long as leg IV. Chelicera with a conspicuous heavy bristle on the inner margin about two-thirds the distance from base to fang-groove.*Distribution* : India, Asia, Europe, N. America.

Family ERESIDAE

Genus *Stegodyphus* Simon3. *Stegodyphus pacificus* Pocock1900. *Stegodyphus pacificus* Pocock, *Fauna British India, Arachnida* : 209.*Material examined* : Hoshangabad, Pachmarhi road, 30.x.2002 (5 females), Coll. Y.N. Gupta; Hoshangabad, Pipariya road, 31.x.2002 (13 females), Coll. Y.N. Gupta.*Diagnosis* : *Female* : Integument yellowish-red, clothed with greyish hairs; legs banded with black; abdomen with a pair of irregular longitudinal blackish bands above and the sides, black below, with a yellow band on each side; mandibles black at tip.

Male : Less strongly banded; abdomen pale below, ornamented laterally with short transverse reddish stripes.

Distribution : Madhya Pradesh (Hoshangabad, Chhattarpur, Sagar, Morena, Chhindwara), Western India, Maharashtra.

4. *Stegodyphus sarasinorum* Karsch

1891. *Stegodyphus sarasinorum* Karsch, *Ent. Z. Berlin*, 36 : 275.

1981. *Stegodyphus sarasinorum* : Tik. & Bis., *Rec. zool. Surv. India, Occ. Pap.* 30 : 14.

Material examined : Hoshangabad, Tekapar, 1.xi.2002 (1 female), Coll. Y.N. Gupta; Hoshangabad, Pipariya road, 31.x.2002 (1 female), Coll. Y.N. Gupta.

Diagnosis : About 10 cm. in length; mandibles darker, clothed with olive-black hairs. Dorsum of abdomen with a distinct folium.

Distribution : India : Chhattisgarh (Raigarh, Sarguja), Madhya Pradesh (Bhind, Chhattarpur, Chhindwara, Hoshangabad, Jabalpur, Mandsaur, Morena, Ratlam, Tikamgarh), Maharashtra, Karnataka, Punjab, West Bengal.

Elsewhere : Nepal, Sri Lanka.

5. *Stegodyphus socialis* Pocock

1900. *Stegodyphus socialis* Pocock, *Fauna British India, Arachnida* : 209.

Material examined : Hoshangabad, Forest Rest House, 13.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Carapace black, with lateral border and cephalic region clothed with grey hairs; mandibles black, with a transverse band of yellowish-grey hairs in the upper half; legs olive-brown, indistinctly banded with grey; abdomen golden yellow above and at sides, thickly mottled with black below

Distribution : India : Madhya Pradesh (Chhindwara, Chhattarpur, Hoshangabad), Karnataka.

Family OECOBIIDAE

Genus *Oecobius* Lucas

6. *Oecobius putus* O.P. Cambridge

1876. *Oecobius putus* Cambridge, *Proc. zool. Soc. London* : 544.

1981. *Oecobius putus* : Tikader & Biswas, *Rec. zool. Surv. India, Occ. Pap.*, 30 : 12.

Material examined : Hoshangabad, P.W.D. Rest House, Pipariya, 7.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and abdomen light deep to brown, legs pale green. Dorsum of abdomen ornamented by irregular dark and chalk-white patches.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur), Tamil Nadu, Maharashtra, West Bengal.

Elsewhere : Egypt, Libya, Yemen, Tanzania, and Pakistan.

Family UROCTEIDAE

Genus *Uroctea* Dufour

7. *Uroctea indica* Pocock

1900. *Uroctea indica* Pocock, *Fauna British India, Arachnida* : 243.

1978. *Uroctea indica* Gajbe & Bhadra, *J. Bombay nat. Hist. Soc.*, 75(3) : 933.

Material examined: Hoshangabad, Shelter caves, 10.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Carapace and legs darker or pale yellowish-brown, with blackish markings; abdomen blackish above, sometimes marked with seven pale spots, six lateral and one posterior median.

Distribution : India : Madhya Pradesh (Jabalpur, Hoshangabad), Maharashtra, Rajasthan.

Family HERSILIIDAE

Genus *Hersilia* Audouin

8. *Hersilia savignyi* Lucas

1836. *Hersilia savignyi* Lucas, *Mag. Zool. Guèrin* 6 (8) : 10.

1981. *Hersilia savignyi* : Tikader & Biswas, *Rec. zool. Surv. India, Occ. Pap.* 30 : 47.

Material examined : Hoshangabad, Bori, 12.vi.2003 (1 female), Coll. K. Chandra.

Diagnosis : Cephalothorax and legs brown, abdomen brownish-black. Cephalothorax longer than wide, slightly narrowing in front, clothed with pubescence. Cephalic area very high. Both eyes rows recurved, anterior median eyes black, larger than other eyes; laterals small, oval and equally spaced. Sternum heart-shaped, pointed behind, clothed with long black setae. Legs long, clothed with hairs and few spines; protarsi I, II

and IV bisegmented. Abdomen longer than wide, sub-pentagonal, narrowing behind with black rim, transverse stripes, three pairs of sigilla. Spinnerets widely separated, posterior spinnerets very long.

Distribution : India : Chhattisgarh (Bastar, Rajnandgaon), Madhya Pradesh (Balaghat, Mandla, Jabalpur, Seoni), Karnataka, Maharashtra, Uttar Pradesh, Tamil Nadu, Orissa, West Bengal, Jharkhand, Bihar, Assam.

Elsewhere : Sri Lanka, Philippines.

Family TETRAGNATHIDAE

Genus *Eucta* Simon

9. *Eucta* sp.

1881. *Eucta* Simon, *Ar. Fr.*, 5 : 5.

1972. *Eucta*: Tikader, *Rec. zool. Surv. India*, 64(1-4) : 37.

Material examined : Chhindwara, Jamai, 26.x.2002 (1 male, 1 female), Coll. Y.N. Gupta.

Diagnosis : Body long and narrow; chelicerae elongated; differs from *Tetragnatha* only in having the abdomen produced beyond the spinnerets into a pointed tail.

Distribution : India, Japan, Malaysia, and Europe.

Genus *Tetragnatha* Latreille

10. *Tetragnatha geniculata* Karsch

1892. *Tetragnatha geniculata* Karsch, *Berl. Ent. Zeits.* 36, p. 286.

1900. *Tetragnatha geniculata* : Pocock, *Fauna British India, Arachnida* : 215.

Material examined : Chhindwara, Jamai, 26.x.2002 (1 male, 1 female), Coll. Y.N. Gupta.

Diagnosis : Carapace with posterior lateral eyes not prominent; ocular quadrangle only slightly narrower in front. Mandibles long; fang strongly geniculate in its distal half, armed near the base with two strong teeth, one inferior, the other external, more basal and projecting forwards.

Distribution : India : Madhya Pradesh (Chhindwara), Maharashtra.

Elsewhere : Sri Lanka.

11. *Tetragnatha* sp.

1804. *Tetragnatha* Latreille, *Nouv. Dict. d' Hist. Nat.* 24, p. 135.

1900. *Tetragnatha* : Pocock, *Fauna British India, Arachnida* : 214.

Material examined : Chhindwara, Jamai, 26.x.2002 (1 male), Coll. Y.N. Gupta.

Diagnosis : Mandibles and maxillae very long, projecting, the former armed with many teeth, fang long. Legs very long and slender. Abdomen long, sub-cylindrical, the genital aperture behind the stigmata. No epigyne in female.

Distribution : Tropical, temperate and subarctic countries.

Family ARANEIDAE

Genus *Argiope* Audouin12. *Argiope aemula* (Walckenaer)

1841. *Epeira aemula* Walckenaer, *Hist. Nat. Ins. Apt.*, 2 : 118.

1982a. *Argiope aemula* : Tikader, *Fauna of India, Spiders*, 2(1) : 119.

Material examined : Hoshangabad, Pachmarhi road, 30.x.2002 (1 female), Coll. Y.N. Gupta.

Diagnosis : Carapace thickly covered with white hairs. Abdomen oval, whitish-yellow in colour and covered with transverse blackish stripes.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Jabalpur, Mandla, Seoni), Tamil Nadu, Maharashtra, West Bengal, Gujarat, Andaman & Nicobar Islands.

Elsewhere : Sri Lanka, Myanmar, Indo and Austro-Malaysia.

Genus *Leucauge* White13. *Leucauge decorata* (Blackwall)

1864. *Tetragnatha decorata* Blackwall, *Ann. Mag. Nat. Hist.*, 14(3) : 44.

1982a. *Leucauge decorata* : Tikader, *Fauna of India, Spiders*, 2(1) : 78.

Material examined : Chhindwara, Sitadongri, 18.x.2002 (1 female), Coll. Y.N. Gupta; Hoshangabad, Tekapar, 1.xi.2002 (1 female), Coll. Y.N. Gupta; Chhindwara, Jamai, 26.x.2002 (3 exs.), Coll. Y.N. Gupta.

Diagnosis : Anterior extremity of abdomen low and furnished with two low shoulder tubercles; posterior end of abdomen produced into a conical caudal process. Abdomen decorated with silvery bands.

Distribution : India : Madhya Pradesh (Bhind, Chhindwara, Damoh, Hoshangabad, Jabalpur, Morena), Karnataka, Kerala, Tamil Nadu, Uttar Pradesh, Uttaranchal, West Bengal, Meghalaya, Sikkim, Assam, Bihar, Orissa, Gujarat, Pondicherry.

Elsewhere : Sri Lanka, Myanmar, and Pakistan.

Genus *Neoscona* Simon

14. *Neoscona mukerjei* Tikader

1980. *Neoscona mukerjei* Tikader, *Proc. Indian Acad. Sci.*, **89**(3) : 247.

1982a. *Neoscona mukerjei* : Tikader, *Fauna of India, Spiders*, **2**(1) : 248.

Material examined : Chhindwara, Jamai, 26.x.2002 (2 exs.), Coll. Y.N. Gupta.

Diagnosis : Cephalothorax and legs yellowish, abdomen dark brown with greyish patches. Cephalic region provided with a conspicuous dark brown 'V' shaped patch; epigynal scape with a deep constriction.

Distribution : India : Madhya Pradesh (Bhind, Chhindwara, Jabalpur, Mandasaur, Ratlam, Sagar), Maharashtra, West Bengal.

15. *Neoscona platnicki* Gajbe & Gajbe

2000a. *Neoscona platnicki* Gajbe & Gajbe, *Rec. zool. Surv. India*, **98**(2) : 119.

Material examined : Chhindwara, Jamai, 26.x.2002 (2 females, 4 males), Coll. Y.N. Gupta.

Diagnosis : Cephalothorax and legs brown, abdomen greyish-brown. Cephalothorax longer than wide, narrowing in front, clothed with pubescence and hairs, provided with two dark brown bands laterally, two lines starting just below the median eyes and ending before the thoracic groove. Abdomen longer than wide, oval, clothed with pubescence and hairs, overlapping the posterior end of cephalothorax, provided with a mid-dorsal greyish-yellow band running the entire length of dorsum; lateral region brownish, with blackish lines and spots

Distribution : India : Madhya Pradesh (Chhindwara, Jabalpur).

16. *Neoscona theis* (Walckenaer)

1842. *Epiera theis* Walckenaer, *Hist. Nat. Ins. Apt.*, **2** : 53.

1982a. *Neoscona theis* : Tikader, *Fauna of India, Spiders*, **2**(1) : 269.

Material examined : Chhindwara, Jamai, 26.x.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Cephalothorax and legs yellowish-brown, abdomen brownish-white. Sternum dark brown with longitudinal white band; epigynal scape with no prominent rim, constriction present behind the lateral lobe.

Distribution : India : Madhya Pradesh (Bhind, Chhattarpur, Chhindwara, Jabalpur, Mandsaur, Tikamgarh, Ujjain) Maharashtra, Orissa, Gujarat, West Bengal.

Elsewhere : Guam, Mariana Island, and South New Guinea.

Genus *Nephila* Leach

17. *Nephila maculata* (Fabricius)

1793. *Aranea maculata* Fabricius, *Ent. Syst.*, 2 : 425.

1982a. *Nephila maculata* : Tikader, *Fauna of India, Spiders*, 2(1) : 97.

Material examined : Hoshangabad, Pandri nala, Bori, 27.xi.2001 (5 females), Coll. Y.N. Gupta; Chhindwara, Bahmani, 19.x.2002 (2 females), Coll. Y.N. Gupta.

Diagnosis : Cephalothorax and its appendages black, coxae of legs and proximal half of palpus yellow; carapace covered with silky yellow pubescence; abdomen olive-brown, ornamented below with yellow spots and above with a pair of longitudinal yellow lines and a transverse yellow band in front.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad, Jabalpur, Mandla, Seoni), Tamil Nadu, Karnataka, Uttar Pradesh, Uttaranchal, Assam, Sikkim, West Bengal, Maharashtra, Gujarat, Andaman & Nicobar Islands.

Elsewhere : Sri Lanka, Myanmar, China, Australia, Malaysia, Japan, and New Guinea.

Family LYCOSIDAE

Genus *Hippasa* Simon

18. *Hippasa hansae* Gajbe & Gajbe

1999. *Hippasa hansae* Gajbe & Gajbe, *Rec. zool. Surv. India*, 97(4) : 23.

Material examined : Chhindwara, Patalkot, near Tamia, 22.x.2002 (2 females), Coll. Y.N. Gupta.

Diagnosis : Cephalothorax and legs brown, abdomen brown with blackish patches. Cephalothorax longer than wide, clothed with pubescence, cephalic region tapered and narrow. Abdomen longer than wide, elliptical, clothed with pubescence, the antero-mid-dorsal half provided with a pale spear-shaped marking, rest of dorsum provided with blackish and brownish patches.

Distribution : India : Madhya Pradesh (Chhindwara, Jabalpur).

19. *Hippasa partita* (Cambridge)

1876. *Trochosa partita* Cambridge, *Proc. zool. Soc. Lon.*, : 541-630.

1980. *Hippasa partita* : Tikader & Malhotra, *Fauna of India, Spiders*, 1 (2) : 291.

Material examined : Hoshangabad, Narmada Railway Bridge, 9.i.1990 (9 females, 3 males), Coll. U.A. Gajbe; Hoshangabad, Shelter caves, 10.i.1990 (5 females), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and legs pale brown, abdomen with greenish-brown and pale patches. Abdomen pale ventrally with three longitudinal dark bands extending from the epigastric fold to the base of spinnerets.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad, Jabalpur, Mandla, Shahdol), probably Rajasthan and Gujarat according to Tikader & Malhotra (1980).

Elsewhere : Alexandria, Egypt, Arabia, Central Asia, and Pakistan.

Genus *Lycosa* Latreille**20. *Lycosa nigrotibialis* Simon**

1884. *Lycosa nigrotibialis* Simon, *Ann. Mus. Stor. Nat. Genova*, 20 : 330.

1980. *Lycosa nigrotibialis* : Tikader & Malhotra, *Fauna of India, Spiders*, 1(2) : 405.

Material examined : Hoshangabad, Narmada Railway Bridge, 9.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Total length about 25 mm. Carapace with a broad mid-longitudinal pale band. Sternum reddish-brown. Coxae of all legs dark brown ventrally and extremities of ventral side of IV tibiae provided with broad dark brown bands. Ventral side of abdomen black in colour.

Distribution : India : Madhya Pradesh (Betul, Chhindwara, Hoshangabad, Jabalpur), Maharashtra, Gujarat, Himachal Pradesh, West Bengal, Bihar, Sikkim, Assam.

Elsewhere : Afghanistan, Pakistan, and Myanmar.

Genus *Pardosa* Koch**21. *Pardosa* sp.**

1980. *Pardosa* : Tikader & Malhotra, *Fauna of India, Spiders*, 1(2) : 315.

Material examined : Chhindwara, Patalkot, near Tamia, 22.x.2002 (1 female), Coll. Y.N. Gupta.

Diagnosis : Cephalic region not much elevated from thoracic region. Superior claws not long and slender and toothed all over the length of the claw.

Distribution : Europe, America, Asia.

Family OXYOPIDAE

Genus *Oxyopes* Latreille

22. *Oxyopes pankaji* Gajbe & Gajbe

2000b. *Oxyopes pankaji* Gajbe & Gajbe, *Rec. zool. Surv. India*, 98 (2) : 123.

Material examined : Hoshangabad, Pachmarhi road, 30.x.2002 (1 female), Coll. Y.N. Gupta; Chhindwara, Jamai, 26.x.2002 (4 females, 2 males), Coll. Y.N. Gupta; Chhindwara, Bahmani, 19.x.2002 (3 females, 2 males), Coll. Y.N. Gupta

Diagnosis : Cephalothorax, legs and abdomen reddish-green. Cephalothorax longer than wide, cephalic region high and broad, clothed with fine hairs and some deep brown blunt hairs mainly on the lateral sides and mid-thoracic region. Abdomen long, narrowing behind, clothed with fine hairs, anterior mid-dorsal region with a lens-shaped light green patch, bordered by brownish, whitish and light green stripes; laterally blackish with three pairs of silvery-white stripes.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad, Jabalpur).

Family CITHAERONIDAE

Genus *Cithaeron* O.P. Cambridge

23. *Cithaeron indicus* Platnick & Gajbe

1993. *Cithaeron indicus* Platnick & Gajbe, *J. arachnol.*, 22 : 83.

Material examined : Hoshangabad, Keshala village, 1.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and legs brownish-black, abdomen brownish-green. Clypeus provided with two short spines. Posterior end of abdomen and anal tubercle provided with white band.

Distribution : India : Madhya Pradesh (Hoshangabad), Chhattisgarh (Rajnandgaon).

Family GNAPHOSIDAE

Genus *Drassodes* Westring

24. *Drassodes pashanensis* Tikader & Gajbe

1977. *Drassodes pashanensis* Tikader & Gajbe, *Rec. zool. Surv. India*, 73 (1-4) : 64.

1982b. *Drassodes pashanensis* : Tikader, *Fauna of India, Spiders*, 2 (2) : 429.

Material examined : Hoshangabad, on the bank of Tawa River on Hoshangabad-Pipariya road, 12.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and legs light reddish-green, abdomen brownish-green. Antero-lateral portion of abdomen rounded; anterior median eyes larger than anterior laterals; labium with notch at the base.

Distribution : India : Madhya Pradesh (Betul, Hoshangabad, Shivpuri), Maharashtra.

Genus *Geodrassus* Chamberlin

25. *Geodrassus sirmourensis* Tikader & Gajbe

1977. *Geodrassus sirmourensis* Tikader & Gajbe, *Rec. zool. Surv. India*, 73 (1-4) : 71.

1982b. *Geodrassus sirmourensis* : Tikader, *Fauna of India, Spiders*, 2 (2) : 389.

Material examined : Hoshangabad, Keshala village, 11.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and legs reddish-green, abdomen brown. Abdomen nearly elliptical, clothed with thick hairs, provided with three pairs of sigilla and U-shaped white marking at the posterior end.

Distribution : India : Madhya Pradesh (Hoshangabad), Himachal Pradesh.

Genus *Gnaphosa* Latreille

26. *Gnaphosa pauriensis* Tikader & Gajbe

1977. *Gnaphosa pauriensis* Tikader & Gajbe, *Rec. zool. Surv. India*, 73 (1-4) : 44.

1982b. *Gnaphosa pauriensis* : Tikader, *Fauna of India, Spiders*, 2 (2) : 334.

Material examined : Hoshangabad, Gupt Mahadeo, Pipariya tehsil, 5.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and legs deep brown; abdomen brownish-black. Abdomen nearly elliptical, clothed with hairs and provided with some rounded chalk-white spots.

Distribution : India : Madhya Pradesh (Gwalior, Hoshangabad), Chhattisgarh (Sarguja), Uttar Pradesh.

Genus *Haplodrassus* Chamberlin

27. *Haplodrassus sataraensis* Tikader & Gajbe

1977. *Haplodrassus sataraensis* Tikader & Gajbe, *Rec. zool. Surv. India*, 73 (1-4) : 70.

1982b. *Haplodrassus satarraensis* : Tikader, *Fauna of India, Spiders*, 2 (2) : 466.

Material examined : Hoshangabad, Gupt Mahadeo, Pipariya tehsil, 5.i.1990 (1 female), Coll. U.A. Gajbe; Hoshangabad, Keshala village, 11.i.1990 (2 males, 2 females), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax reddish-green, legs light reddish-green. Abdomen nearly elliptical, provided with chalk-white chevrons; ventral side same as dorsal.

Distribution : India : Madhya Pradesh (Balaghat, Hoshangabad, Mandla), Maharashtra.

Genus *Scopodes* Chamberlin

28. *Scopodes maitraiae* Tikader & Gajbe

1977. *Scopodes maitraiae* Tikader & Gajbe, *Rec. zool. Surv. India*, 73 (1-4) : 14.

1982b. *Scopodes maitraiae* : Tikader, *Fauna of India, Spiders*, 2 (2) : 365.

Material examined : Hoshangabad, Shelter caves, 10.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and legs reddish-green, abdomen brown. Abdomen oval, clothed with fine and some long hairs and provided with small whitish spots.

Distribution : India : Madhya Pradesh (Betul, Chhindwara, Hoshangabad, Jabalpur, Mandla, Seoni), Maharashtra, Gujarat, Orissa.

Genus *Scotophaeus* Simon

29. *Scotophaeus poonaensis* Tikader

1982b. *Scotophaeus poonaensis* Tikader, *Fauna of India, Spiders*, 2 (2) : 380.

Material examined : Hoshangabad, Dokarikhera, Pipariya tehsil, 11.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax reddish-brown, legs reddish-green, abdomen light brownish-green. Abdomen more or less elliptical, slightly narrowing behind, clothed with mousy hairs.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur), Maharashtra.

Genus *Zelotes* Gistel

30. *Zelotes ashae* Tikader & Gajbe

1976. *Zelotes ashae* Tikader & Gajbe, *Proc. Indian Acad. Sci.*, 83 (3) : 111.

1982b. *Zelotes ashae* : Tikader, *Fauna of India, Spiders, 2* (2) : 502.

Material examined : Hoshangabad, Gupt Mahadev, Pipariya tehsil, 5.i.1990 (3 females), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and legs reddish-brown, abdomen uniform deep brown. Abdomen longer than wide, oval, clothed with fine hairs and three pairs of light spots.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra, Rajasthan.

31. *Zelotes mandlaensis* Tikader & Gajbe

1976. *Zelotes mandlaensis* Tikader & Gajbe, *Proc. Indian Acad. Sci.*, **83** (3) : 112.

1982b. *Zelotes mandlaensis* : Tikader, *Fauna of India, Spiders, 2* (2) : 500.

Material examined : Hoshangabad, Pachmarhi, 15.xii.1927 (1 female), Coll. H.S. Prithi.

Diagnosis : Cephalothorax and legs deep brown, abdomen brown. Abdomen oval, clothed with fine hairs and three pairs of light spots. Spinnerets very prominent, anterior spinnerets cylindrical, larger and darker in colour than others.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad, Mandla).

Family THOMISIDAE

Genus *Xysticus* Koch

32. *Xysticus jayantius* Tikader

1966. *Xysticus jayantius* Tikader, *J. Asiat. Soc. Bengal*, **8** (4) : 250.

1980. *Xysticus jayantius* : Tikader, *Fauna of India, Spiders, 1* (1) : 124.

Material examined : Hoshangabad, Gupt Mahadeo, 5.i.1990 (1 female), Coll. U.A. Gajbe.

Diagnosis : Cephalothorax and legs light brownish-green, abdomen brown. Cephalothorax with two conspicuous lateral longitudinal dark brown bands. Abdomen nearly ovate, clothed with spines, dorsum provided with symmetrically arranged longitudinal deep brown patches.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad), Meghalaya.

SUMMARY

The enumeration of 32 species of 25 genera under 13 families of spiders is rendered in the present account recorded from the Pachmarhi Biosphere Reserve.

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INSECTA : ODONATA

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INTRODUCTION

Odonata include damselflies and dragonflies, which are well admired for their bright metallic colours and flying prowess. They are commonly found in the vicinity of fresh waterbodies like ponds and streams etc. There is a scarcity of information on the Odonata of Pachmarhi Biosphere Reserve (PBR). Identification of the collections made from PBR has revealed 14 species of Odonata belonging to 11 genera under 5 families. These include 4 species of damselflies (Zygoptera) and 10 species of dragonflies (Anisoptera).

List of Odonata recorded from Pachmarhi Biosphere Reserve

Suborder ZYGOPTERA
(Damselflies)

Superfamily COENAGRIONOIDEA

Family COENAGRIONIDAE

Subfamily PSEUDAGRINAE

1. *Pseudagrion microcephalum* (Rambur)

Subfamily DISPARONEURINAE

2. *Disparoneura quadrimaculata* Rambur

Family PLATYCNEMIDIDAE

Subfamily PLATYCNEMININAE

3. *Copera marginipes* (Rambur)

Superfamily CALOPTERYGOIDEA

Family CHLOROCYPHIDAE

4. *Rhinocypha (Heliocypha) bisignata* Selys

Suborder ANISOPTERA

(Dragonflies)

Superfamily AESHNOIDEA

Family AESHNIDAE

Subfamily AESHNINAE

5. *Anax guttatus* (Burmeister)

Superfamily LIBELLULOIDEA

Family LIBELLULIDAE

Subfamily LIBELLULINAE

6. *Orthetrum glaucum* (Brauer)7. *Orthetrum sabina sabina* (Drury)

Subfamily SYMPETRINAE

8. *Brachythemis contaminata* (Fabricius)9. *Neurothemis intermedia intermedia* (Rambur)

Subfamily TRITHEMISTINAE

10. *Trithemis aurora* (Burmeister)11. *Trithemis festiva* (Rambur)12. *Trithemis pallidinervis* (Kirby)

Subfamily TRAMEINAE

13. *Pantala flavescens* (Fabricius)14. *Tramea basilaris burmeisteri* Kirby

Suborder ZYGOPTERA

Superfamily COENAGRIONOIDEA

Family COENAGRIONIDAE

Subfamily PSEUDAGRINAE

Genus *Pseudagrion* Selys1. *Pseudagrion microcephalum* (Rambur)

1842. *Agrion microcephalum* Rambur, *Ins. Neurop.*, 259.

1876. *Pseudagrion microcephalum* : Selys, *Bull. Acad. Belg.*, 13 (2) : 504.

1933. *Pseudagrion microcephalum* : Fraser, *Fauna Brit. India Odon.*, 1 : 278-280.

Material examined : Chhindwara, Gayni river near Raghu Raja Cave, Patakot, 26.ii.1994 (1 male), Coll. H.S. Sharma.

Diagnosis : Prothorax and thorax azure blue, abdomen 2 with a goblet shaped dorsal black mark, its stem very short confluent with a narrow apical black ring, a fine mid-dorsal stripe from middle of cup of goblet extending up to and confluent with a narrow basal ring. Anal appendage expanded on the inner side, 2 to 3 small spines on the inner basal border.

Distribution : India : Chhattisgarh (Ambikapur), Madhya Pradesh (Chhindwara), Bihar, Maharashtra, Uttar Pradesh and West Bengal.

Elsewhere : Australia, Indonesia, Myanmar and Sri Lanka.

Subfamily DISPARONEURINAE

Genus *Disparoneura* Selys2. *Disparoneura quadrimaculata* Rambur

1842. *Disparoneura quadrimaculata* Rambur, *Ins. Neurop. Paris*, 16 : 255.

1995. *Disparoneura quadrimaculata* : Prasad & Varshney, *Oriental Ins.*, 29 : 394.

Material examined : Hoshangabad, Gupt Mahadev, 5.vi.1999 (1 male), Coll. K. Chandra.

Diagnosis : Labium pale whitish-brown; labrum, clypeus, vertex, and occiput dull brick-red, genae and under surface of head pale ochreous; prothorax dull brick-red; thorax bright brick red on dorsum, paler at the sides, marked with black; legs pale brown, femora speckled outwardly with black; abdomen brick red, marked with white, brown and black.

Distribution : India : Madhya Pradesh (Hoshangabad), Delhi, Uttar Pradesh and Western Ghats.

Family PLATYCNEMIDIDAE

Subfamily PLATYCNEMININAE

Genus *Copera* Kirby3. *Copera marginipes* (Rambur)

1842. *Platycnemis marginipes* Rambur, *Ins. Nevrop.*, : 240.

1933. *Copera marginipes* : Fraser, *Fauna Brit. India, Odon.*, 1 : 192.

Material examined : Hoshangabad, Gupt Mahadev, 5.vi.1999 (2 males), Coll. K. Chandra.

Diagnosis : Inferior anal appendages at least four times in length as superior, broad at base, tapering but a slight to a rounded obtuse apex. Superior vestigial, tiny rounded tubercles, apex pointed, hooked strongly inwards.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur), Assam, Bihar, Chandigarh, Himachal Pradesh, Maharashtra, Meghalaya, Rajasthan, Tamil Nadu, South Andaman Isl., Uttar Pradesh, West Bengal, Western Ghats and Western Himalaya.

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

Superfamily CALOPTERYGOIDEA

Family CHLOROCYPHIDAE

Genus *Rhinocypha* Rambur4. *Rhinocypha (Heliocypha) bisignata* Selys

1853. *Rhinocypha bisignata* Selys, *Syn. Cat.*, p. 62.

1934. *Rhinocypha bisignata* : Fraser, *Fauna Brit. India, Odon.*, 2 : 49-52.

1997. *Rhinocypha bisignata* : Shrivastava & Suri Babu, *Fraseria (N.S.)* 4(1/2) : 13-15.

Material examined : Hoshangabad, Gupt Mahadev, 5.vi.1999 (1 male), Coll. K. Chandra.

Diagnosis : Prothorax black with large yellow spot on each side of middle lobe. Thorax black. Legs black, pterostigma black in all wings. Abdomen black, marked with yellow. The inferior anal appendages minutely spined above.

Distribution : India : Madhya Pradesh (Hoshangabad, Sagar), Maharashtra and South India.

Suborder ANISOPTERA
 Superfamily AESHNOIDEA
 Family AESHNIDAE
 Subfamily AESHNINAE
 Genus *Anax* Leach

5. *Anax guttatus* (Burmeister)

1839. *Aeschna guttata* Burmeister, *Handb. Ent.*, 2 : 840.

1936. *Anax guttatus* : Fraser, *Fauna Brit. India, Odon.*, 3 : 140.

Material examined : Hoshangabad, Gupt Mahadev, 5.vi.1999 (1 male), Coll. K. Chandra.

Diagnosis : Prothorax reddish-brown, bordered with yellow and with anterior collar yellow; thorax pale green. Legs black, proximal ends of femora turning dark reddish-brown. Wings hyaline, anal appendages reddish-brown.

Distribution : India : Madhya Pradesh (Hoshangabad), Assam, Andhra Pradesh, Karnataka, Kerala, Orissa, Punjab, Tamil Nadu, West Bengal.

Elsewhere : Indonesia, Malaysia, Myanmar, Taiwan, Thailand, and Sumatra.

Superfamily LIBELLULOIDEA
 Family LIBELLULIDAE
 Subfamily LIBELLULINAE
 Genus *Orthetrum* Newman

6. *Orthetrum glaucum* (Brauer)

1865. *Libellula glauca* Brauer, *Verh. Zool. Bot. Ges. Wien.*, 15 : 1012.

1890. *Orthetrum glaucum* : Kirby, *Cat. Odon.* : 39.

1936. *Orthetrum glaucum* : Fraser, *Fauna Brit. India, Odonata*, 3 : 307-309.

Material examined : Hoshangabad, Pachmarhi, 2.iii.2000 (1 ex.), Coll. R.K. Singh.

Diagnosis : Moderately large species, face and frons olivaceous or blackish-brown. Abdomen ventro-dorsally dilated at segment 1-3 then very thin of even width to the end triquentral in cross-section pruned pale dirty blue abdomen. 1 to 8 and 9 and 10 black, anal appendage black.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad), Andhra Pradesh, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Tamil Nadu, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : China, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand and Timor.

7. *Orthetrum sabina sabina* (Drury)

1770. *Libellula sabina* Drury, III, *Exot. Ins.*, 1 : 114-115.

1889. *Orthetrum sabina* : Kirby, *Trans. Zool. Soc. Lond.*, 12 : 302.

1936. *Orthetrum sabina* : Fraser, *Fauna Brit. India, Odonata*, 3 : 300-302.

1987. *Orthetrum sabina sabina* : Lahiri, *Rec. zool. Surv. India, Occ. Pap.*, 99 : 183.

Material examined : Hoshangabad, Singnama P.W.D. Rest House, 28.x.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Abdomen greenish-yellow, marked with black; it is distinctly identified in the field due to enormously swollen abdominal segments 1 to 3, both dorso-ventrally and laterally; segments 4 to 6 very narrow, cylindrical, segments 7 to 9 all dilated, but compressed laterally, both male and female almost similar in appearance.

Distribution : India : Chhattisgarh (Sarguja, Raigarh), Madhya Pradesh (Jabalpur, Datia, Gwalior, Hoshangabad, Chhindwara), Assam, Bihar, Delhi, Himachal Pradesh, Manipur, Punjab, Uttar Pradesh and West Bengal.

Elsewhere : African continent, Angola Siam, Australia, Egypt, Indonesia, Iran, Iraq, Myanmar, Nepal, New Guinea, Samoa, Sri Lanka, Taiwan, Thailand, Timor and Turkey.

Subfamily SYMPETRINAE

Genus *Brachythemis* Brauer

8. *Brachythemis contaminata* (Fabricius)

1793. *Libellula contaminata* Fabricius, *Ent. Syst.*, 2 : 382.

1836. *Brachythemis contaminata* : Brauer, *Verh. Zool. bot. Ges. Wien*, 18 : 736.

1936. *Brachythemis contaminata* : Fraser, *Fauna Brit. India, Odonata*, 3 : 365-366.

Material examined : Hoshangabad, Singnama, 7.ix.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Small built but robust dragonflies. The males can be easily identified by reddish reticulations in wings, with a broad bright orange markings extending from base to within 2 to 3 cells of pterostigma in fore wing and as for as that organ in the hind wing

intensifying in colour distally. Abdomen reddish ochreous marked with dorsal and sub dorsal brown stripe, anal appendages ferrugineous.

Distribution : India : Chhattisgarh (Raigarh), Madhya Pradesh (Jabalpur, Shivpuri, Chhindwara, Gwalior, Hoshangabad, Datia), Assam, Bihar, Himachal Pradesh, Punjab, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, China, Indonesia, Japan, Malaysia, Myanmar, Nepal, Sri Lanka, Philippines, Thailand, Taiwan and Sumatra.

Genus *Neurothemis* Brauer

9. *Neurothemis intermedia intermedia* (Rambur)

1842. *Libellula intermedia* Rambur, *Ins. Neurop.*, : 91.

1911. *Neurothemis intermedia intermedia* : Ris., *Cat. Coll. Selys. fasc.*, 13 : 551-563, 564.

Material examined : Hoshangabad, Gupt Mahadev, 5.vi.1999 (1 female), Coll. K. Chandra.

Diagnosis : Labrum, face, frons pale yellow, occiput and upper surface of eye reddish brown, eye below golden yellow. Prothorax reddish-brown, thorax pale greenish-yellow, dorsum tinged with ferrugineous and with a distinct humeral reddish-brown stripe, well defined on inner side, diffuse at outer border and darkening below. Wings hyaline, very palely tinted with yellow and with a broad basal amber-yellow marking at base of all wings. Abdomen bright reddish-ochreous with sutures on segments 2 and 3, finely darker and a more or less well defined ventro-lateral brownish stripe interrupted at apical end of segments 3 to 8; few small dark points at base of segment 10, anal appendages reddish.

Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad), Assam, Arunachal Pradesh, Bihar, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Mizoram, Punjab, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Indo-China, Malacca, Malaya, Myanmar, Nepal, Penang, Sri Lanka, and Thailand.

Genus *Trithemis* Brauer

10. *Trithemis aurora* (Burmeister)

1839. *Libellula aurora* Burmeister, *II and b, Ent.*, (2) : 859.

1868. *Trithemis aurora* : Brauer, *Verh. Zool. bot. Ges. Wien.*, (18) : 177.

1936. *Trithemis aurora* : Fraser, *Fauna Brit. India, Odonata*, 3 : 383-385.

Material examined : Hoshangabad, Thiropa forest, Pachmarhi, 28.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Thorax and abdomen violaceous-crimson; base of hind wing with reddish brown spot; neuration crimson; abdomen violaceous throughout; anal appendages red. Female differs considerably from the male both in colour and shape.

Distribution : India : Chhattisgarh (Sarguja), Madhya Pradesh (Betul, Hoshangabad, Mandsaur, Jabalpur, Chhindwara, Ujjain), Assam, Meghalaya, Uttar Pradesh, Sikkim and West Bengal.

Elsewhere : Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Tibet, Vietnam, Timor and Taiwan.

11. *Trithemis festiva* (Rambur)

1842. *Libellula festiva* Rambur, *Ins. Neurop.*, : 92.

1868. *Trithemis festiva* : Brauer, *Verh. Zool. bot. Gest. Wien*, (18) : 736.

1936. *Trithemis festiva* : Fraser, *Fauna Brit. India, Odonata*, 3 : 387-389.

Material examined : Hoshangabad, Bee Fall, Pachmarhi, 5.ix.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Frons and vesicle dark brown in front, metallic violet above, occiput dark brown; eyes dark brown above with purple reflex, bluish-grey laterally and beneath. Prothorax dark blue; thorax black, coated with a thin purplish pruinescence. Legs black. Neuration and pterostigma black. Anal appendages black.

Distribution : India : Chhattisgarh (Sarguja), Madhya Pradesh, (Chhindwara, Hoshangabad), Assam, Arunachal Pradesh, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Punjab, Uttar Pradesh and West Bengal.

Elsewhere : Indonesia, Nepal, Pakistan, Malaysia, Myanmar, Indonesia, Philippines, New Guinea, Sri Lanka, Taiwan and Turkey.

12. *Trithemis pallidinervis* (Kirby)

1889. *Sympetrum pallidinervis* Kirby, *Trans. Zool. Soc. London*, 12 : 327.

1907. *Trithemis pallidinervis* : Morton, *Trans. ent. Soc. Lond.*, : 304.

1936. *Trithemis pallidinervis* : Fraser, *Fauna Brit. India Odonata*, 3 : 389-391.

Material examined : Hoshangabad, Bori River, Pachmarhi, 4.ii.2000 (1 ex.), Coll. R.K. Singh.

Diagnosis : Labrum black, with two large basal citron yellow spot; frons, vesicle metallic purple, prothorax dull brown or black; thorax olivaceous brown, wing hyaline with reddish reticulation a bright amber yellow basal marking at extreme base in fore

wing, but extending distally to first antenodal nervure in the hind wing. Pterostigma-black with creamy white ends; abdomen long and slender, black with bright yellow.

Distribution : India : Madhya Pradesh (Hoshangabad), Chhattisgarh (Sarguja), Andhra Pradesh, Assam, Bihar, Gujrat, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Meghalaya, Nagaland, Orissa, Punjab, Uttar Pradesh, West Bengal.

Elsewhere : Formosa, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Sri Lanka, Taiwan and Thailand.

Subfamily TRAMEINAE

Genus *Pantala* Hagen

13. *Pantala flavescens* (Fabricius)

1798. *Libellula flavescens* Fabricius, *Ent. Syst. Suppl.*, : 285.

1861. *Pantala flavescens* : Hagen, *Syn. Neur. N. Amer.*, : 142.

1936. *Pantala flavescens* : Fraser, *Fauna Brit. India, Odonata*, 3 : 414-416.

Material examined : Hoshangabad, Apsara Vihar, Pachmarhi, 30.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Large and robust species (Abd. 29-35 mm.), coloured ochreous or reddish; prothorax rich ochreous, with a transverse belt of dark reddish-brown between anterior and middle lobes; legs black, bases and extensor surface of all femora yellowish. Wings hyaline, base of hind wing pale golden yellow as for distal as anal loop, pterostigma bright ochreous or reddish-brown, abdomen bright ochreous, dorsum tinted with bright brick-red. Sides of segments 1 to 4 pale yellow; segments 8 to 10 with sharply defined black mid-dorsal pyriform spots with narrow end of spot at base of segments. Anal appendages ochreous.

Distribution : India : Madhya Pradesh (Gwalior, Hoshangabad, Datia), Himachal Pradesh, Uttar Pradesh, Punjab, Rajasthan and West Bengal.

Elsewhere : Malaysia, Myanmar, Sri Lanka, and Tibet.

Genus *Tramea* Hagen

14. *Tramea basilaris burmeisteri* Kirby

1839. *Libellula chinensis* Burmeister, *Handb. Ent.*, 2 : 852.

1889. *Tramea burmeisteri* Kirby, *Trans. Zool. Soc. Lond.*, 12 : 316.

1936. *Tramea basilaris burmeisteri* : Fraser, *Fauna Brit. India, Odonata*, 3 : 432-434.

Material examined : Hoshangabad, Madhuvan, 24.viii. 2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Dragonflies of large size and robust build; head with post clypeus and frons bright vermilion red with a fine basal black line, two large black spots at base of hind wing surrounded by a golden-yellow areola, one in the cubital space, the other lying obliquely in anal area of wing; two narrowly confluent near base of discoidal cell in the male, abdomen bright reddish-brown with black markings, apical joint of segments 7 to 9 bright yellow; anal appendage very long, thrice the length of abdomen.

Distribution : India : Chhattisgarh (Raigarh), Madhya Pradesh (Gwalior, Datia), Assam, Bihar, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : China, Malaysia, Myanmar, Nepal, Sri Lanka, Tibet, Thailand and Vietnam.

SUMMARY

The present account enumerates 14 species of 11 genera under 5 families of Odonata from the Pachmarhi Biosphere Reserve.

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INSECTA : ORTHOPTERA

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INTRODUCTION

The present study deals with 54 species under 48 genera belonging to 09 families, viz. Tettigoniidae (07), Gryllotalpidae (01), Gryllidae (07), Oecanthidae (01), Trigonidiidae (02), Acrididae (28), Pyrgomorphidae (03), Tetrigidae (04) and Tridactylidae (1) from the Pachmarhi Biosphere Reserve.

The notable work on Orthoptera of Madhya Pradesh by Tandon *et al.*, 1995 recorded 23 species of Orthoptera from Kanha Tiger Reserve, Mandla. Shishodia 1999 recorded 22 species of Orthoptera from Patalkot, Chhindwara. Shishodia, 2006 reported 21 species of Orthoptera from Rewa estate (M.P.). Recently, Chandra *et al.*, 2007 reported 139 species of Orthoptera from Madhya Pradesh and Chhattisgarh. The species marked with asterisk (*) are studied by Shishodia (1999) and included here.

List of Orthoptera from Pachmarhi Biosphere Reserve

Superfamily TETTIGONIOIDEA

Family TETTIGONIIDAE

1. *Conocephalus maculatus* (Le Guillou)
2. *Euconocephalus incertus* (Walker)
3. *Letana* sp.
4. **Letana infurcata* Ingrisch
5. **Letana pyrifer* Bey-Bienko
6. *Holochlora* sp.
7. *Mecopoda elongata* (Linnaeus)
8. *Phaneroptera* sp.

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9. *Phaneroptera gracilis* Burmeister

10. *Elimaea (Orthelimaea) securigera* Brunner

Superfamily GRYLLOTALPOIDEA

Family GRYLLOTALPIDAE

11. *Gryllotalpa africana* Beauvois

Superfamily GRYLLOIDEA

Family GRYLLIDAE

Subfamily GRYLLINAE

12. *Gryllus bimaculatus* De Geer

13. **Gryllodes sigillatus* (Walker)

14. *Modicogryllus confirmatus* (Walker)

15. *Plebeiogryllus guttiventris* (Walker)

16. *Teleogryllus* sp.

17. *Teleogryllus mitratus* (Burmeister)

Subfamily NEMOBIINAE

18. *Paranemobius pictus* (Saussure)

19. *Pteronemobius fascipes* (Walker)

Family OECANTHIDAE

20. *Oecanthus indicus* Saussure

Family TRIGONIDIIDAE

21. *Trigonidium* sp.

22. **Trigonidium humbertianum* (Saussure)

23. **Trigonidium cicindeloides* Rambur

24. *Anaxipha* sp.

Superfamily ACRIDOIDEA

Family ACRIDIDAE

Subfamily ACRIDINAE

25. *Acrida exaltata* (Walker)

26. *Phlaeoba panteli* Bolivar

Subfamily OEDIPODINAE

27. *Aiolopus thalassinus tamulus* (Fabricius)
28. *Dittopternis venusta* (Walker)
29. *Chloebora crassa* (Walker)
30. *Gelastorrhinus laticornis* (Serville)
31. *Gastrimargus africanus africanus* (Saussure)
32. *Oedaleus abruptus* (Thunberg)
33. *Morphacris fasciata sulcata* (Thunberg)
34. *Pternoscirta cinctifemur* (Walker)
35. *Trilophidia annulata* (Thunberg)
36. *Dnopherula (Aulacobothrus) sp.*
37. *Dnopherula (Aulacobothrus) luteipes luteipes* (Walker)
38. *Dnopherula (Aulacobothrus) decisus* (Walker)
39. *Leva cruciata* Bolivar
40. **Leva indica* (Bolivar)
41. *Spathosternum prasiniferum prasiniferum* (Walker)
42. *Parahieroglyphus bilineatus* (Bolivar)

Subfamily OXYINAE

43. *Oxya* sp.
44. *Oxya hyla hyla* Serville

Subfamily TROPIDOPOLINAE

45. *Trustria pulvinata* (Uvarov)

Subfamily CYRTACANTHACRIDINAE

46. *Cyrtacanthacris tatarica* (Linn.)

Subfamily COPTACRIDINAE

47. *Coptacra punctaria* (Walker)
48. *Eucoptacra saturata* (Walker)

Subfamily EYPREPOCNEMIDINAE

49. *Choroedocus illustris* (Walker)
50. **Eyprepocnemis rosea* Uvarov
51. *Tyloptropidius varicornis* (Walker)

Subfamily CATANTOPINAE

52. *Catantops pinguis innotabilis* (Walker)
 53. *Stenocatantops splendens* (Thunberg)
 54. *Xenocatantops humilis humilis* (Serville)

Family PYRGOMORPHIDAE

55. *Atractomorpha crenulata* (Fabricius)
 56. *Chrotogonus (Ch.) trachypterus trachypterus* (Blanchard)
 57. *Chrotogonus oxypterus* Blanchard

Superfamily TETRIGOIDEA

Family TETRIGIDAE

Subfamily SCELIMENINAE

58. *Eusclimena harpago* (Serville)
 59. *Eucriotettix* sp.

Subfamily TETRIGINAE

60. *Hedotettix gracilis* (De Haan)
 61. *Ergatettix dorsifera* (Walker)

Superfamily TRIDACTYLOIDEA

Family TRIDACTYLIDAE

62. *Tridactylus thoracius* Guerin

SYSTEMATIC ACCOUNT

Order ORTHOPTERA

Suborder ENSIFERA

Infraorder ONIIDEA

Superfamily TETTIGONIOIDEA

Family TETTIGONIIDAE

Genus *Conocephalus* Thunberg, 18151. *Conocephalus maculatus* (Le Guillou)

1841. *Xiphidon maculatum* Le Guillou, *Revue suisse Zool.*, 4 : 294.

1980. *Conocephalus maculatus* Pitkin, *Bull. Br. Mus. nat. hist. (Ent.)*, 41 (5) : 344.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Female); Mahadev forest gest house, 06.vi.99 (3 Male); Madai Satpura, 14.vi.99 (1 Male) coll. K. Chandra. Chhindwara: Patakot, 22.x.02 (1 Female) coll. Y. N. Gupta & party. Hoshangabad: Forest rest house Madai, 25.ii.03 (1 Male) coll. M. L. Koshta & party.

Diagnostic characters : Fastigium of vertex wide, pronotum bispinose, tegmina pigmented with comparatively large dark spots, hind femora unarmed ventrally, ovipositor very short.

Distribution : India : Andaman & Nicobar Islands, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Manipur, Sikkim, Tripura, Tamil Nadu.

Elsewhere : Australia, Africa, Hong-Kong, Indonesia, Java, New Guinae, Nepal, Philippines, Papua, Sulawesi and West malaysia.

Genus *Euconocephalus* Karny, 1907

2. *Euconocephalus incertus* (Walker)

1869. *Conocephalus incertus* Walker, *Cat. Derm. Salt. Brit. Mus.*, 2 : 320.

1912. *Euconocephalus incertus* : Karny, *Gen. Insect.*, 2 (139) : 35.

Material examined : Hoshangabad: Mahadev forest gest house, 07.vi.99 (1 Male) coll. K. Chandra; Inklama river 05.iii.2000 (1 Female) coll. R.K. Singh; Dhootgarh, 31.viii.2000 (2 Female); Forest rest house Mahadev, 01.ix.2000 (1 Female); PWD rest house Hoshangabad, 08.ix.2000 (1 Female); Singanama, 03.iv.01 (1 Female); Pachmarhi road, 30.x.02 (1 Male) coll. Y.N. Gupta & party; Forest rest house Pachmarhi, 12.ii.03 (2 Male); Sonbhadra, 27.ii.03 (1 Female) coll. M.L. Koshta & party.

Diagnostic characters : Fastigium of vertex produced conically in front; radius sector 2 arise much before the middle of wing; ovipositor subequal to the length of body.

Distribution : India : Andaman & Nicobar Islands, Madhya Pradesh, Meghalaya, Orissa, Rajasthan, Sikkim, Tripura and West Bengal.

Elsewhere : Australia, Borneo, China, Myanmar, Pinang, Java, Sri Lanka and Sumatra.

Genus *Letana* Walker, 1969

3. *Letana* sp.

1869. *Letana* Walker, *Cat. Derm. Salt. Br. Mus.*, : 277.

Material examined : Hoshangabad: Churna guha, 01.xi.2000 (1 Male); Jatasankar, 03.xi.2000 (2 Male). Chhindwara: Satdhara Tamia, 24.x.02 (1 Male); Pandupani, 25.x.02

(1 Male); Jamuai, 26.x.02 (2 Male, 2 Female); Pench river, 27.x.02 (1 Male); Shivpuri Parasai, (1 Male). Hoshangabad : Singanama rest house 29.x.02 (1 Female); Singanama PWD, rest house 30.x.02 (1 Female); Singanama rest house 31.x.02 (1FeMale); Ink around 25.xi.07 (1 Female) coll. Y.N.Gupta & party; Forest rest house Pachmarhi, 12.ii.03 (1 Male) coll. M. L. Koshta & party.

Diagnostic characters : Body with dark-brown or chocolate colour spots, antennae, annulated with dark-brown rings, tegmina surpass the tip of hind femora, radial sector forked.

Distribution : Indian, Indo-China.

Genus *Holochlora* Stål, 1873

4. *Holochlora* sp.

1873. *Holochlora* Stål, *Ofv.Vet. Akad. Forh.* 30 (4) : 42.

Material examined : Chhindwara : Forest rest house Jhiri, 25.viii.2000 (1FeMale). Hoshangabad: PWD rest house Hoshangabad, 07.xi.2000 (1 Male); Jarnai, 26.x.02 (1FeMale); Pench river, 27.x.02 (1FeMale); Singanama rest house, 31.x.02 (1FeMale) coll. Y.N. Gupta & party.

Diagnostic characters : Greenish colour, antennae long, yellowish, eyes big, oval. Fastigium conically produced with round apex. Anterior margin of pronotum concave and posterior margin concave. Male subgenital plate at the region of bifurcation forms a circle, style foot shaped.

Distribution : India : Andaman & Nicobar Islands, Madhya Pradesh (Chindwara and Seoni), Meghalaya, Orissa, Rajasthan, Sikkim, Tripura, Tamil Nadu West Bengal.

Elsewhere : Bhutan, Java and Sri Lanka.

Genus *Mecopoda* Serville, 1831

5. *Mecopoda elongata* (Linnaeus)

1758. *Gryllus (Tettigonia) elongatus* Linne, *Syst. Nat.* (10th ed.) 1 : 429

1966. *Mecopoda elongata* Beier, *Orthopt. Catlog.*, Part 9 : 298.

Material examined : Hoshangabad: Tekapara, 01.xi.02 (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Body very large, brown to dry leaf colour, head more or less rounded, antennae slightly margined, pronotum wide at posterior margin, lateral lobes of pronotum dark brown at least on upper margin, prosternum with a pair of long spines,

wings fully developed, hind femora and tibiae very large, Male subgenital plate bifurcated, apex pointed and tegmina with 4-6 white spots in the middle.

Distribution : India : Andaman and Nicobar Islands, Assam, Karnataka, Maharashtra, Meghalaya, Madhya Pradesh, Manipur, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Australia, Borneo, China, Japan, Malacca, New Guinea, Philippines, Singapore, Sunda Islands, Sulawesi, Taiwan and Tonkin.

Genus *Phaneroptera* Serville, 1831

6. *Phaneroptera* sp.

1831. *Phaneroptera* Serville, *Ann. Sci. nat.*, 22 : 158.

1956. *Phaneroptera* : Ragge, *Proc. Zool. Soc. Lond.*, 127 : 211.

Material examined : Hoshangabad : Sonbhadra, 27.ii.03 (1 Female) coll. M.L. Koshta & party.

Diagnostic characters : Fastigium of vertex sulcated dorsally; fore coxae with well developed spine; fore tibiae with oval tympanum, opening on both sides, middle tibiae swollen in basal half; hind tibiae with 3 apical spines on both sides; abdominal tergite without median carina.

Distribution : Africa, Australia, Celebes, China, Europe, India, Indo-China, Malaysia, Myanmar, Solomon Islands, Sumatra and Thailand.

7. *Phaneroptera gracilis* Burmeister

1838. *Phaneroptera gracilis* Burmeister, *Handb. Entomol.*, : 690.

1956. *Phaneroptera gracilis* : Ragge, *Proc. Zool. Soc. Lond.*, 127 : 250.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Female) coll. K. Chandra. Chhindwara: Patalkot, 22.x.02 (1 Male) coll. Y. N. Gupta & party; Apsara vihar, 12.ii.03 (1 Female). Hoshangabad : Forest rest house Pachmarhi, 13.ii.03 (1 Male) coll. M. L. Koshta & party.

Diagnostic characters : Lateral pronotal lobes longer than deep; hind femora very slender; cerci very long, widen subapically before suddenly tapering to a point; supra-anal plate longer than broad and obtusely rounded at apex; subgenital plate elongate, bifurcated at apical part

Distribution : India : Arunchal Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Manipur, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Australian, Ethiopian and Oriental regions.

Infraorder GRYLLIDEA

Superfamily GRYLLOTALPOIDEA

Family GRYLLOTALPIDAE

8. *Grylotalpa africana* Beauvois

1905. *Grylotalpa africana* Beauvois *Ins. Afr. Amer.*, 229.

1967. *Grylotalpa africana* Chopard *Orthopt. Cat.*, part 12 : 449.

Material examined : Hoshangabad : Forest rest house Jhirpa, 26.viii.2000 (1 Male); Churna forest rest House, 18.iv.01 (1 Male) coll. Y. N. Gupta & party.

Diagnostic characters : Colour light brown, shape stout, mirror Male of wider, anterior tibiae armed with four dactylus and pseudepiphallus is narrowly cordiform and the hooks rather short, acute.

Distribution : India : Andaman Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Orissa, Pondicherry, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Australia, Bhutan, Iran, Madagascar, Malaya, Myanmar, Pakistan, S. Spain, Singapore and Sri Lanka.

Superfamily GRYLLOIDEA

Family GRYLLIDAE

Subfamily GRYLLINAE

Genus *Gryllus* Linne, 1758

9. *Gryllus bimaculatus* De Geer

1773. *Gryllus bimaculatus* De Geer, *Mem. Ins.*, 3 : 531.

1936. *Gryllus bimaculatus* Chopard, *Ceylon J. Sci.*, (B) 20 : 22.

Material examined : Hoshangabad : Forest rest house Pachmarhi, 02.ix.2000 (1 Female); Defenceland, 08.ix.2000 (1 Female); Banglapurva Bori, 18.iv.01 (1 Male) coll. Y. N. Gupta & party; Ink around, 25.ii.02(1 Female); Forest rest house Pachmarhi, 12.ii.03 (1 Female) coll. M.L. Koshta & party. Chhindwara: Patalkot, 22.x.02 (3 Female) coll. Y.N. Gupta & party.

Diagnostic characters : Body and legs glabrous, body typically black with a yellow spot at base of each tegmen, frontal rostrum wide, femora not longer than tibiae and metatarsus.

Distribution : India : Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Maharashtra, Madhya Pradesh (Mandla), Meghalaya, Punjab, Pondicherry, Tamil Nadu, Rajasthan, Sikkim, S. Andaman & Nicobar Islands, Uttar Pradesh and West Bengal.

Elsewhere : Malaysia, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Singapore and Tropical Africa.

Genus *Modicogryllus* Chopard, 1961

10. *Modicogryllus confirmatus* (Walker)

1869. *Gryllus confirmatus* Walker *Cat. Derm. Salt. Brit. Mus.*, 1 : 37

1964. *Modicogryllus confirmatus* Randell *Can. Ent.*, 96 (12) : 1584.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Male); Madai Satpura, 13.vi.99 (1 Female); Madai Satpura, 14.vi.99 (1 Female) coll. K. Chandra; Forest rest house Jhinpa, 25.viii.2000 (1 Male, 1 Female); PWD rest house Hoshangabad, 06.ix.2000 (2 Male); Bori rest house 12.iv.01 (1 Female); Churna forest rest house, 18.iv.01 (2 Female); Sitadongri, 18.x.02 (1 Female); Chhindwara :Lalgaon, 20.x.02 (1 Female) coll. Y. N. Gupta & party; Delakhani, 19.x.02 (2 Male, 8 Female); Umneth Parasia, 26.x.02 (1 Female). Hoshangabad: Singanama, 29.x.02 (1 Male); Singanama rest house, 31.x.02 (1 Male, 2 Female) coll. Y. N. Gupta & party; Forest rest house Hoshangabad, 18.ii.03 (1 Male, 10 Female); 2 Km. from Madai, 24.ii.03 (1 Male, 1 Female); Forest Rest House Madai, 25.ii.03 (1 Male, 1 Female); Forest rest house Madai, 26.ii.03 (1 Male, 1 Female) coll. M.L. Koshta & party.

Diagnostic characters : Head brown with narrow yellow band connecting the lateral ocelli, occiput with 6 short yellowish lines, mirror longer than wide, divided by a curved vein; 2 oblique veins, lateral field transparent, two anterior veins strongly curved and separated from other posterior veins.

Distribution : India : Assam, Andaman Islands, Arunachal Pradesh, Bihar, Chhattisgarh, Haryana, Karnataka, Kerala, Meghalaya, Manipur, Maharashtra, Madhya Pradesh (Mandla), Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, China, Iran, Israel Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka and Thailand.

Genus *Plebeiogryllus* Randell, 1954

11. *Plebeiogryllus guttiventris* (Walker)

1871. *Gryllus guttiventris* Walker, *Cat. Derm. Salt. Brit. Mus.*, Suppl., : 6

1964. *Plebeigryllus guttiventris* Randell, *Can. Ent.*, 96 (12) : 1598.

Material examined : Hoshangabad: Bori rest house 14.iv.01(1 Female) coll.Y.N. Gupta & party.

Diagnostic characters : Body size medium. Colour brown, finely pubescent; head with light lines on occiput: posterior femora short and thick, feebly striated with brown, elytra extend almost upto the apex of abdomen.

Distribution : India : Bihar, Goa, Karnataka, Kerala, Kashmir, Maharashtra, Manipur, Madhya Pradesh, Orissa, Pondicherry, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar and Sri Lanka.

Genus *Teleogryllus* Chopard, 1961

12. *Teleogryllus* sp.

1961. *Teleogryllus* Chopard, *Eos*, 37 : 277.

1964. *Teleogryllus*, Randell, *Canad. Ent.*, 96 : 1595.

1967. *Teleogryllus*, Chopard, *Orth. Cat.*, 10 : 95.

Material examined : Hoshangabad : Delkhani, 19.x.02 (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Body size large. Pubescent body, long legs, well developed tegmina. Epiphallus posteriorly trilobed, virga with a transverse parameral muscle insertion crest and without the broadly expanded, endoparamerea C -shaped.

Distribution : India : Throuout.

Elsewhere : Africa, Australia, Bangladesh, Formosa, Japan, Myanmar, New Zealand, New Caledonia, Norkfolk Island, Philippines and Tropical Asia.

13. *Teleogryllus mitratus* (Burmeister)

1838. *Gryllus mitratus* Burmeister, *Hanb. Ent.*, 2 : 724.

1967. *Teleogryllus mitratus* Chopard, *Orth. cat.*, 10 : 98.

Material examined : Chhindwara: Forest rest house Jhirpa, 25.viii.2000 (1 Female). Hoshangabad : PWD, rest house 07.ix.2000 (1 Female) coll. Y.N. Gupta & party.

Diagnostic characters : Male : Colour reddish-brown, tegmina and legs often paler. Head with a faint yellowish band long internal margin of eyes; lateral ocelli round. Pronotum wider than long, posterior metatarsi with 5-6 internal and 7-9 external, more or less blunt, denticles. Tegmina reaching upto apex of abdomen; first chord connected to diagonal by 3 -5 veinlets; mirror greater than 3.2 mm wide; 3-4 oblique veins and rarely,

1-2 smaller ones. Female : Tegmina : dorsal field with regular oblique veins and numerous transverse veinlets forming elongate cells.

Distribution : India : Andaman & Nicobar Islands, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Borneo, China, Indonesia, Indo-China, Japan, Jahore, Kualalumpur, Malaysia, Malaya Archipelago, Myanmar, Nepal, Pinang, Philippines, Singapore, Sri Lanka, Thailand, Tibet, Tenasserim and Vietnam.

Subfamily NEMOBIINAE

Genus *Paranemobius* Saussure, 1877

14. *Paranemobius pictus* (Saussure)

1877. *Pseudonemobius pictus* Saussure, *Mem. Soc. Phys. Geneva*, 25 : 67.

1925. *Paranemobius pictus*, Chopard, *Ann. Mag. nat. Hist.*, 15(9) : 506.

Material examined : Hoshangabad : Singanama rest house, 29.x.02 (1 Male) coll. Y. N. Gupta & party.

Diagnostic characters : Body size medium. Colouration strongly variegated with blackish and yellowish; Head short; vertex deeply excavated. Pronotum transverse; lateral lobes with inferior margin ascending posteriorly. Abdomen black above, yellow beneath; tergites adorned in the middle with a transverse yellow line. Legs very long. Anterior and median femora adorned with black longitudinal lines; tibiae and tarsi annulated with blacklines and a longitudinal band of the same colour; Elytra very short, covering only first abdominal segment, blackish with thick, whitish veins.

Distribution : India : Bihar, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa and Tamil Nadu.

Elsewhere : Sri Lanka.

Genus *Pteronemobius* Jacobson & Bianchi, 1905

15. *Pteronemobius fascipes* (Walker)

1869. *Eneoptera fascipes* Walker, *Cat. Derm. salt. Brit. Mus.*, 1 : 67.

1931. *Pteronemobius fascipes*, Chopard *Bull. Raffles Mus.*, 6 : 134.

Material examined : Hoshangabad: Bori rest house, 14.iv.01 (1 Male); Singanama rest house, 29.x.02 (1 Female) coll. Y.N. Gupta & party; Forest rest house Madai, 25.ii.03 (1 Female); Forest rest house Madai, 26-ii-03 (1 Male, 1 Female) coll. M.L. Koshta & party;

Sitadongri Delkhani, 18.x.02 (1 Female) coll. Y.N. Gupta & party. Chhindwara : Delkhani, 19.x.02 (4 Male, 3 Female) coll. Y.N. Gupta & party.

Diagnostic characters : Head blackish with four pale lines on the occiput, palpi blackish at base, with 4th and 5th joints white, pronotum brownish above, posterior tibiae with 3 external and 4 internal spines in Male.

Distribution : India : Assam, Arunachal Pradesh, Bihar, Goa, Himachal Pradesh, Haryana, Jammu & Kashmir, Karnataka, Kerala, Manipur, Maharashtra, Meghalaya, Madhya Pradesh (Chhindwara, Mandla), Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : China, Indonesia (Java), Malaya, Malaysia, Myanmar, Philippines, Sri Lanka, Singapore and Taiwan.

Family OECANTHIDAE

Genus *Oecanthus* Serville, 1831

16. *Oecanthus indicus* Saussure

1878. *Oecanthus indicus* Saussure, *Mem. Soc. Phys. Geneva*, **25** : 454.

1969. *Oecanthus indicus* Chopard, *Fauna of India, Orthopt.*, **2** : 267.

Material examined : Hoshangabad: Umneth parasia, 1.xi.02 (2 Female) coll. Y.N. Gupta & party; Forest rest house Hoshangabad, 24.ii.03 (1 Female); Forest rest house Madai, 26.ii.03 (1 Male, 1 Female) coll. M. L. Koshta & party; Umneth Parasia, 26.x.02 (1 Female) coll. Y.N. Gupta & party.

Diagnostic characters : First two antennal joints without black markings; anterior tibiae more strongly dilated at base, tympanum not narrow, posterior tibiae serrulated and armed with spines.

Distribution : India : Andaman Islands, Arunachal Pradesh, Assam, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Malya, Pinang, Philippines and Sri Lanka.

Family TRIGONIDIIDAE

Genus *Trigonidium* Rambur, 1839

17. *Trigonidium* sp.

1839. *Trigonidium* Rambur, *Faune Andal.*, **2** : 31.

1969. *Trigonidium* : Chopard, *Fauna of India, Grylloid*, 2 : 303.

Material examined : Chhindwara: Sitadongri Delkahni, 18.x.02 (1 Female).
Hoshangabad : Singanama rest house, 31.x.02 (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Colouration black, shining, with posterior legs yellowish. Head black tegmina convex, same venation in male and female (both sexes), with straight and parallel veins; between the principle veins, there are false veins which give to the elytra a striated aspect. Wings of variable length.

Distribution : India : Throuout.

Elsewhere : Africa, Australia, Madagascar, New Zealand, S. Europe and S. Asia.

Genus *Anaxipha* Saussure, 1874

18. *Anaxipha* sp.

1874. *Anaxipha* Saussure, *Miss. Mexique, Orth.*, : 370.

1969. *Anaxipha* : Chopard, *Fauna of India, Grylloid*, 2 : 277.

Material examined : Hoshangabad : Forest Rest House Madai, 26.ii.03 (1 Female) coll. M. L. Koshta & party.

Diagnostic characters : Size small, body rather long and slender. Head wider than the pronotum, eyes vertically lengthened, fifth joint of maxillary palpi long, triangular. Anterior tibiae perforated on one or both side. Elytra membranaceous, extending to the apex of abdomen. Wings usually caudate.

Distribution : Cosmopolitan.

Suborder CAELIFERA

Infraorder ACRIDIDEA

Superfamily ACRIDOIDEA

Family ACRIDIDAE

Subfamily ACRIDINAE

Genus *Acrida* Linnaeus, 1758

19. *Acrida exaltata* (Walker)

1859. *Truxalis exalatata* Walker, *Ann. Mag. nat. Hist.*, 4(3) : 222.

1893. *Truxalis bravicollis* Bolivar, *Feuille Jeunes Nat.*, 27 : 162 , no.8.

1902. *Acrida lugubris* Burr, *Trans. R. ent. Soc. Lond.*, 2 : 170, p.13.

1936. *Acrida curta*, Uvarov, *Linn. Journ. Zool.*, 39 : 536.

1914. *Acrida exaltata*, Kirby, *Fauna British India, Orth.*, 1 : 99, fig. 80.

Material examined : Hoshangabad : Sonbhadra, 08.iii.2000 (1 Female) coll. R. K. Singh & party; Denula river, 09.ix.2000 (1 Female) coll. K. Chandra; Matkuli, 27.viii.2000 (1 Female) coll. Y.N. Gupta & party; Mahadev rest house, 05.iv.01 (1 Male) coll. Y. N. Gupta & party; Satdhara Tamia, 20.x.02 (2 Female). Chhinwara: Jamai, 26.x.02 (1 Male, 2 Female); Parasia Shivpuri, 27.x.02 (1 Female); Badihunhai, 29.x.02(1 Female). Hoshangabad : Tekapara, 01.xi.02 (2 Female); Inkaround, 25.xi.02 (1 Male, 2 Female) coll. Y. N. Gupta & party; Rajendragram, 15.ii.03 (1 Male); Bee fall, 16.ii.03 (1 Male); 5 Km. to Bori, 20.ii.03 (2 Female); Nagdurai river, 25.ii.03 (1 Female); Tekapara, 26.ii.03(1 Female) coll. M.L. Koshta & party.

Diagnostic characters : Male : Moderate in size. Body slender, strongly elongate and laterally compressed, head elongate, conical and equal in length with pronotum; face strongly bent downwards. Fastigium of vertex longer than broad, its apex obtuse, and broadly rounded, antennae shorter than head and pronotum together. Pronotum disc weakly tectiform and tricarinate; Prozona longer than metazona; median carina of prozona crossed by only posterior sulci. Tegmen long and narrow apex acute pointed. Supra anal plate triangular. Cercus narrow, conical. Epiphallus with broad bridge, ancorae large, lophi small and bilobate.

Female : Body larger, Anterior ovipositor valves short, subgenital plate short and broad.

Colour : Green, Dried specimens appear yellowish or yellowish brown.

Distribution : India : Andhra Pradesh, Assam, Arunachal Pradesh, Bihar, Chhattisgarh, Goa, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh (Mandla, Sahdol), Maharashtra, Manipur, Orissa, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Afghanistan, Bangladesh, Iran, Pakistan, Sri Lanka, Saudi Arabia, Yemen and West Eden.

Genus *Phlaeoba* Stål 1860

20. *Phlaeoba panteli* Bolivar

1902. *Phlaeoba pantelei* Bolivar, *Annals. Soc. ent. Fr.* , 70 : 589.

1910. *Phlaeoba walthousei* Kirby, *Syn. Cat. Orth.*, 3 : 138.

1914. *Phlaeoba panteli* Kirby, *Fauna British India, Orth.*, 1 : 104-105.

Material examined : Hoshangabad: Panarpani, 04.iv.01(1 Female); 13.ii.03 (2 Male, 2 Female); Sonbhadra, 21.ii.03 (1 Male) coll. M.L. Koshta & party; 27.ii.03 (1 Male, 1 Female) coll. Y.N. Gupta & party.

Diagnostic characters : Body size medium, antennae narrow and ensiform, fastigium of vertex broad, concave and rounded. Pronotum tricarinated, rugulose and with irregular striated callosities. Male supra anal plate triangular, subgenital plate pointed and acute, cercus small conical with sub acute apex. Epiphallus-bridge undivided. Female supra anal plate tongue shaped with median depressions, posterior margin of subgenital plate produced in medial apex. Valve of ovipositor of moderately curved.

Distribution : India : Andhra Pradesh, Bihar, Himachal Pradesh, Meghalaya, Manipur, Madhya Pradesh, Tamil Nadu, Tripura and West Bengal.

Subfamily OEDIPODINAE

Genus *Aiolopus* Fieber, 1853

21. *Aiolopus thalassinus tamulus* (Fabricius)

1798. *Gryllus tamulus* Fabricius, *Entomologia Systematica Suppl.*, : 195.

1838. *Gomphocerus tricoloripes* Burmeister., *Hand. Der Entomologis*, 2 : 649.

1888. *Epacromia rufostriata* Kirby, *Proc. Zool. Soc. Lond.*, 550.

1968. *Aiolopus thalassinus tamulus* (Hollis) *Bull. Br. Mus. Nat. Hist. (Ent.)* 22(7) : 347-350.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Male) coll. K. Chandra; Bamhani, 19.x.02 (2 Female); coll. Y.N. Gupta & party; Satdhara Tamia, 24.x.02 (1 Female) coll. Y. N. Gupta & party; Umneth Parasia, 26.x.02 (2 Male, 3 Female); Shivpuri Parasia, 27.x.02 (1 Female); Delkhani, 31.x.02 (2 Female) coll. Y. N. Gupta & party; Tekapara, 01.xi.02 (1 Female) coll. Y. N. Gupta & party; Beefall, 16.ii.03 (1 Female); Forest rest house Bori, 18.ii.03 (1 Male); 5 Km. to Bori, 20. ii.03 (1 Female); Forest rest house Hoshangabad, 24.ii.03 (1 Male); Forest rest house Madai, 25.ii.03 (2 Female) coll. M.L. Koshta & party.

Diagnostic characters : Medium size : antenna as long as head and pronotum, filiform; fastigium of vertex pentagonal; Frontal ridge almost flat and gradually narrowing upwards. Pronotum slightly constricted between prozona and metazona; metazona longer than prozona. Presence of two brown stripes from both middle part of the eyes and running laterally up to the upper part of metazona. Cerci rounded and conical; supra anal plate short, triangular, epiphallus medium size, bridge short and broad, ancorae bilobed and oval shaped, bent in the inner side.

Distribution : India : Andaman and Nicobar Islands, Bihar, Himachal Pradesh, Madhya Pradesh (Mandla, Sahdol), Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Australia, Bangladesh, Borneo, Brunei, China, Celebes, Hainan, Hong-Kong, Java, Lombok, Malaya, Myanmar, New Guinea, Pakistan, Philippines, Papua, Singapore, Sri Lanka, Sumatra, Timar and Thailand.

Genus *Dittopternis* Saussure, 1884

22. *Dittopternis venusta* (Walker)

1870. *Oedipoda venusta* Walker, *Cat. Derm. Salt. B.M.* IV, 740.

1888. *Dittopternis venusta* Saussure, *Mem. Soc. Phya. Hist. Geneve*, 30 (1), 40.

1914. *Dittopternis venusta* : Kirby, *Fauna Brit. India, Orthopt.*, : 140.

Material examined : Hoshangabad : Pachmarhi Nermuda survey, 03.vi.1927 (1ex.) coll. B. Uvarov; Defenceland, 08.ix.2000 (1 Female); Guptmahadev, 06.iv.01 (1 Male) coll. Y. N. Gupta & party; 2 Km. from Bori, 14.ii.03 (1 Male); 5 Km. to Bori, 20.ii.03 (1 Male) coll. M. L. Koshta & party.

Diagnostic characters : Male : Size medium; body pilose, head and pronotum granulate. Antenna filiform, longer than head and pronotum. Fastigium of vertex five sided, foveolae small, triangular, frontal ridge moderately sulcate, parallel side. Pronotum rugose granulated and strongly carinated, cut by the principle sulcus before the middle, obtusely angulated behind. Tegmina long and narrow; apex obliquely, meso and metasternal lobes punctured. Posterior femur stout, dentate. Supra anal plate tongue shaped ; subgenital plate navicular; cercus short, conical.

Female : Size large, very similar to Males except slightly larger in size.

Distribution : India : Andhra Pradesh, Karnataka, Madhya Pradesh, Chhattisgarh, Meghalaya, Manipur, Orissa, Tamil Nadu, Tripura and West Bengal.

Elsewhere: Sri Lanka.

Genus *Chloebora* Saussure, 1884

23. *Chloebora crassa* Walker

1870. *Oedipoda crassa* Walker, *Cat. Derm. Salt. B.M.* 4 : 741.

1888. *Chloebora crassa*, Saussure, *Mem soc. Geneve*, 30(1) : 33.

1914. *Chloebora crassa* : Kirby, *Fauna Brit. India, Orth.*, : 131.

Material examined : Hoshangabad: Defence land, 08.ix.2000 (1 Female). Chhindwara: Chotamahadev, 23.x.02 (1 Female). Hoshangabad: Pipariya rest house, 31.x.02 (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Body colour brown, stout, pubescent, head and pronotum sides more or less varied with whitish. Head large, rounded, Scutelum of vertex obsolete,

slightly carinulated at the base, and slightly arched at the tip. Pronotum with black marking. Abdomen dark red. Tegmina opaque and covered with brown blotches on the basal half; terminal half subhyaline. Wings red in the basal half and hyaline beyond.

Distribution : India : Maharashtra and Tamil Nadu.

Genus *Gelastorrhinus* Brunner, 1893

24. *Gelastorrhinus* (?) *laticornis* (Serville)

1839. *Opomala laticornis* Serville, *Ins. Orth.* : 590.

1914. *Gelastorrhinus* (?) *laticornis* : Kirby, *Fauna Brit. India, Orth.* : 217.

Material examined : Hoshangabad : Dhoopgarh, 31.viii.2000 (1 Male) coll. Y. N. Gupta & party; Bee fall, 16.ii.03 (1 Female) coll. M.L. Koshta & party.

Diagnostic characters : Head large, conical antennae thickened and flattened at base. Pronotum tricarinate; a dark lateral stripe runs behind each antenna, interrupted by the eye, but beyond to the pronotum, and below the lateral carinae. Tegmina longer than the abdomen, narrow linear, subhyaline, and obtusely pointed at the tips. Wings hyaline, as long as the tegmina.

Distribution : India: Maharashtra and West Bengal (Koch Bihar).

Genus *Gastrimargus* Saussure, 1884

25. *Gastrimargus africanus africanus* (Saussure)

1888. *Oedaleus* (*Gastrimargus*) *marmoratus* var. *africanus*. Saussure, *Mem. Soc. Phys. Hist. Mat. Geneve*, 30 (1) : 39

1922. *Gastrimargus marmoratus* (nec. Thunb.) Boliver *Afrique Orientale Anglaise* : 174

1925. *Gastrimargus africanus* Uvarov, *Ann. Mag. nat. Hist.* (9) 15 : 622.

1926. *Gastrimargus africanus* Uvarov, *Trabs. Ent. Soc. Lond.* P. 436

1982. *Gastrimargus africanus africanus* Ritchie, *Bull. Br. Mus. nat. Hist. (Ent.)* 44(4) : 248-250.

Material examined : Hoshangabad: Anhor, 23.viii.2000 (1 Male); Inklana river, 11.iv.01 (1 Male) coll. Y.N. Gupta & party; Bori rest house, 12.iv.01 (1 Female); Panhat Bori, 14.iv.01 (1 Male, 1 Female); Bhimkund, 16.iv.01 (1 Female). Chhindwara: Jalgaon, 20.x.02 (1 Female); Prasia Shivpuri, 27.x.02 (1 Female) ; Badi Parhani, 29.x.02 (1 Male). Hoshangabad : Piparia range, 31.x.02 (1 Female). Chhindwara : Ink around, 25.xi.02 (1 Female) coll. Y. N. Gupta & party. Hoshangabad: Apsara Vihar, 12.ii.03 (1 Female); Panarpani, 13.ii.03 (1 Female); 2 Km. from Bori, 14.ii.03 (1 Male); Bee fall, 16.ii.03 (1 Male, 2 Female); Inklana river, 18.ii.03 (1 Male, 1 Female); 5 km. to Bori, 20.ii.03 (1

Male, 2 Female); Naydwari Madai, 25.ii.03 (1 Male, 2 Female); Sonbhadra, 27.ii.03 (1 Male, 1 Female) coll. M. L. Koshta & party.

Diagnostic characters : Male : Medium size. Antennae filiform; head globular; fastigium of vertex narrowing forwards, with truncated apex and well developed lateral and weak median carinule. Pronotum tectiform with high median carina. Prozona a little shorter than metazona, posterior margin of metazona acutangular. Mesosternal interspace much wider than its length. Tegmina and wings usually fully developed. Cerci conical, inner portion slightly blunt. Epiphallus-bridge undivided, ancorae long.

Female : Larger than Male.

Colour : Greenish, pale yellow (after dried specimens)

Distribution : India : Andhra Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh (Chhindwara, Mandla, Sahdol), Orissa, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Africa, Myanmar, Nepal, Pakistan, Saudi Arabia, Sri Lanka, Thailand, Tibet and Yemen.

Genus *Oedaleus* Fieber, 1853

26. *Oedaleus abruptus* (Thunb.)

1815. *Gryllus abruptus* Thunberg, *Mem. Acad. Sci. St. Petersb.*, 5 : 233.

1981. *Oedaleus abruptus* Thunberg: Ritchie, *Bull. Br. Mus. Nat. Hist. (Ent.)* 42(3) : 104-107.

Material examined : Hoshangabad : Pachmarhi Nermuda survey, 15.xii.1927 (1 ex.) coll. B. Uvarov.

Diagnostic characters : Pronotum low tectiform, median carina low arcuate, hind margin obtusely angular, pronotal X-marking always with anterior and posterior arms separate, hind tibiae with 13 inner and 12 outer spines.

Distribution : India : Andhra Pradesh, Bihar, Goa, Himachal Pradesh, Haryana, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Meghalaya, Madhya Pradesh, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

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

Genus *Morphacris* Walker, 1870

27. *Morphacris fasciata sulcata* (Thunberg)

1815. *Gryllus fasciatus* Thunberg, *Mem. Acad. Sci. St. - Petersb.* 5 : 230.

1839. *Oedipoda strigata* Serville, *Ins. Orth.*, 7 : 726.
1863. *Oedipoda venusta* Fieber, *Lotos*, 3 : 123.
1870. *Morphacris adusta* walker, *Cat. Derm. Salt. Br. Mus.* 4 : 790
1910. *Morphacris citrina* Kirby, *Syst. Cat. Orth.*, 3(4) : 219.
1914. *Morphacris citrina* Kirby, *Fauna Brit. India, Orth.*, : 137.
1921. *Morphacris fasciata sulcata* Uvarov, *Ann. Mag. Nat. Hist.*, 7(9) : 488-489.
1927. *Morphacris fasciata sulcata*, Uvarov, *Rec. Indian Mus.*, 29(4) : 235.

Material examined : Hoshangabad: Churna forest rest house, 18.iv.01 (1 Female) coll. Y.N. Gupta & party.

Diagnostic characters : Antennae filiform, longer than head and pronotum together, pronotum tectiform, without lateral carinae, median carina of pronotum sharp and high, dorsum covered with parallel sharp longitudinal ridges, wings light yellow at base, and with dark transverse fascia.

Distribution : India : Andhra Pradesh, Bihar, Chhattisgarh, Goa, Kerala, Madhya Pradesh, Maharashtra and Tamil Nadu.

Elsewhere : Africa and Asia.

Genus *Pternoscirta* Saussure, 1884

28. *Pternoscirta cinctifemur* (Walker)

1859. *Acridium cinctifemur* Walker, *Ann. Mag. Nat. Hist.*, 4 (3) : 223.
1914. *Pternoscirta cinctifemur* : Kirby, *Fauna British India, Orthoptera*, 1 : 134.

Material examined : Hoshangabad : Panhat Bori, 14.iv.2001 (1 Male), coll. Y.N. Gupta & party.

Diagnostic characters : Medium-sized, head and pronotum granular with small sparse tubercles. Pronotum with sharp median carina; wing red at base; tegmina narrow with transverse veins in apical part oblique and arranged in zig-zag pattern. Hind femora buff or bluish-grey outside and with black spots; hind tibiae black, banded with yellow at the base and blue beyond.

Distribution : India : Assam, Goa, Madhya Pradesh, Orissa, Tamil Nadu and West Bengal.

Elsewhere : Nepal and Sri Lanka.

Genus *Trilophidia* Stål, 187329. *Trilophidia annulata* (Thunberg)

1815. *Gryllus annulatus* Thunberg, *Mem. Acad. Sci. St. Petersb.*, 5 : 234.

1910. *Trilophidia annulata* Kirby, *Syn. Cat. Orth.*, 3 : 244.

1914. *Trilophidia annulata* Kirby, *Fauna British India, Orthoptera : Acrididae.*, 149

1965. *Trilophidia annulata*, Hollis, *Trans. R. ent. Soc. Lond.*, 117(8) : 251-253.

Material examined : Chhindwara: Kamadi Piparia, 22.viii.2000 (1 Male); Satdhara, 24.x.02 (1 Female); Inkaround, 25.xi.02 (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Male : Size medium; vertex behind eyes with a pair of tubercles; fastigium of vertex elongate-trapezoid, antennae filiform, longer than head and pronotum together. Pronotum tectiform with well marked crest; prozona shorter than metazona, tooth like projections present on median carina on the dorsum of prozona; metazona with weak median carina; circus narrow and conical. Epiphallus with large and pointed ancorae, lophi large, jointed with a bridge by a narrow projection presents.

Female : Large and more robust than male. Apex of sub-genital plate obtuse-angular.

Distribution : India : Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Delhi, Goa, Karnataka, Kerala, Himachal Pradesh, Madhya Pradesh (Chhindwara, Mandla), Orissa, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Afghanistan, Bangladesh, Borneo, Hong-Kong, Japan, Java, Korea, Malaya, Mongolia, Myanmar, Nepal, Pakistan, Thailand and Vietnam.

Subfamily GOMPHOCERINAE

Genus *Dnopherula* Karsch, 1896Subgenus *Aulacobothrus* Bolivar, 190230. *Dnopherula (Aulacobothrus)* sp.

1896. *Dnopherula* Karsch, *Stettin. Ent. Ztg.*, 57 : 259.

1902. *Aulacobothrus* Bolivar, *Anns Soc. Ent. Fr.*, 70 : 57.

1971. *Dnopherula (Aulacobothrus)* : Jago *Proc. Acad. Nat. Sci. Philad.* 123 : 245.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Male, 6 Female); Nandiya village, 07.vi.99 (3 Female) coll. K. Chandra; Apsara vihar, 30.viii.2000 (1 Female); Dhoopgarh, 31.viii.2000 (2 Female); Brijala river, 07.iv.01 (1 Female); Sitadongri, 18.x.02 (1 Male, 8 Female). Chhindwara : Delkhani forest rest house, 20.x.02 (3 Female); Chotamahadev, 23.x.02 (3 Female); Parasia, 27.x.02 (1 Female); Ink around,

25.xi.02 (4 Female) coll. Y.N. Gupta & party. Hoshangabad : Apsara vihar, 12.ii.03 (1 Female); Rajaendra Giri, 15.ii.03 (3 Female); Dhain, 19.ii.03 (1 Female); Nagdwari majhi, 25.ii.03 (2 Female); Sonbhadra, 27.ii.03(4 Female) coll. M. L. Koshta & party.

Diagnostic characters : Size medium. Antennae filiform with segments compressed in basal third or basal half, sub cylindrical in remaining apical part. Foveolae visible from above, longer than broad. Tegmina complete, wings fully developed; hind femora above distinctly spotted, with outer area convex; hind tibiae red, two inner spurs of the tibiae distinctly marginal, apical spur straight. Cerci short, conical. Ovipositor short, simple, subgenital plate long, apex transverse, obtuse triangular or sinuate.

Distribution : India : Himachal Pradesh, Jammu and Kashmir, Madhya Pradesh, Meghalaya, Sikkim, Tamil Nadu and Uttar Pradesh.

Elsewhere : Indonesia, Nepal and Sri Lanka.

31. *Dnopherula (Aulacobothrus) luteipes* (Walker)

1871. *Stenobothrus luteipes* Walker, *Cat. Derm. Salt. Brit. Mus.*, 5 Suppl. : 82.

1971. *Dnopherula (Aulacobothrus) luteipes* : Jago, *Proc. Acad. Sci. nat. Philad.*, 23 (8) : 243.

Material examined : Hoshangabad : Pachmarhi Nermuda survey, 15.xii.1927(1ex.) coll. B. Uvarov.

Diagnostic characters : Size small, antennae filiform, fastigium of vertex trapezoidal, with truncate apex, fastigial foveolae not visible from above, hind femora with three black bands on the dorsal surface and with a black one at distal end, pronotum with nearly parallel, lateral carinae which weakly concave in the middle.

Distribution : India : Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Sikkim, Tamil Nadu and West Bengal.

Elsewhere : Bangladesh, Balistan, China, Europe, Japan, Myanmar, North America, Nepal, Pakistan, Sri Lanka, Taiwan and Thailand.

32. *Dnopherula (Aulacobothrus) decisis* (Walker)

1871. *Stenobothrus decisis* Walker, *Cat. Derm. Salt. Br. Mus.*, 5 : 80.

1921. *Aulacobothrus decisis* : Uvarov, *Ann. Mag. Nat. Hist.*, 7 (9) : 482.

1985. *Dnopherula(Aulacobothrus) decisis* : Bhowmik, *Rec. zool., Surv., India*, occ. no. 78 : 21.

Material examined : Hoshangabad : Pachmarhi Nermuda survey, 15.xii.1927 (1ex.) coll. B. Uvarov.

Diagnostic characters : Size small. Colouration brownish, a pale stripe runs starting from fastigium of vertex to end of pronotum. Tegmen rufo-testaceous. Wings hyaline,

with the veins of costal area reddish. Fastigium of vertex subtriangular. Abdomen carinated above.

Distribution : India : Arunachal Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal.

Genus *Leva* Bolivar, 1909

33. *Leva cruciata* Bolivar

1914. *Leva cruciata* Bolivar, *Trab. Mus. Cienc. Nat. Madr.*, 20 : 66.

1921. *Leva cruciata* :Uvarov, *Ann. Mag. nat. Hist.*, 7(9) : 485.

Material examined : Hoshangabad: Delkhani, 31.x.02 (1 Male) coll. Y. N. Gupta & party.

Diagnostic characters : Colour pale-yellowish or dull reddish brown, fastigium angularly produced, inferior foveolae indistinct, dorsum of pronotum constricted, median carina of pronotum distinct, lateral carina excurved in prozona and metazona to form x-shaped marking.

Distribution : India : Bihar, Karnataka, Madhya Pradesh, Orissa, Tamil Nadu and W. Bengal.

Elsewhere : Oriental region.

Subfamily HEMIACRIDINAE

Genus *Spathosternum* Karsch, 1877

34. *Spathosternum prasiniferum prasiniferum* (Walker)

1914. *Spathosternum prasiniferum* :Kirby, *Fauna Brit. India, Orth.*, : 208.

1936. *Spathosternum prasiniferum prasiniferum* :Tinkham, *Lingnan, Sci. J.*, 15 : 51.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Female) coll. K. Chandra; Anthoni, 23.viii.2000 (1 Male, 1 Female); Madhuvan, 24.viii.2000 (1 Male). Chhindwara : Jamuai, 26.x.02 (1 Female); Prasia Shivpuri, 27.x.02 (1 Male). Hoshangabad : Pachmarhi road 30.x.02 (1 Female); Tekapara, 01.xi.02 (1 Female) coll. Y.N. Gupta & party; Guptmahadev, 14.ii.03 (1 Female); Inklama river, 18.ii.03 (1 Female); Jhainea, 19.ii.03 (1 Female); Forest rest house Hoshangabad, 24.ii.03 (1 Female); Forest rest house Hoshangabad, 25.ii.03 (1 Male) coll. M.L. Koshta & party.

Diagnostic characters : Body size small, rufos testaceus or green colour. Broad blackish or dark-green stripe runs behind the lower part of the eyes and below the lateral carina of the pronotum; prosternal tubercle spatulate. Tegmina and wings well developed;

central area of tegmen with a longitudinal black streak which is well marked in female and almost obsolete in Male.

Distribution : India : Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Chhindwara, Mandla, Sahdol) Meghalaya, Maharashtra, Orissa, Rajasthan, Tamil Nadu and West Bengal.

Elsewhere : Bangladesh, China, Hainan, Myanmar, Sri Lanka, Thailand, Vietnam and West Malaysia.

Genus *Parahieroglyphus* Carl, 1916

35. *Parahieroglyphus bilineatus* (Bolivar)

1912. *Hieroceryx bilineatus* Bolivar, *Trab. Mus. Nac. Cienc. nat. Madr.*, (Ser. Zool.) 6 : 60.

1916. *Parahieroglyphus bilineatus* : Carl, *Revue suisse Zool.*, 24 : 483.

Material examined : Chhindwara : Rater village, 19.x.92.(1ex.) coll. R. K. Singh.

Diagnostic characters : Medium size, frontal ridge parallel-sided or may diverge just below median ocellus, circus very large, divided into 3 lobes, general body colour is buff with black markings.

Distribution : Himachal Pradesh, Maharashtra, Madhya Pradesh, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh.

Subfamily OXYINAE

Genus *Oxya* Serville, 1831

36. *Oxya* sp.

1831. *Oxya* Serville, *Ann. Sci. nat. (Zool.)* 22 : 286.

1985. *Oxya* : Usmani & Shafee, *Oriental Insc.*, 19 : 311.

Material examined : Hoshangabad : Guptmahadev, 14.ii.03 (1 Male) coll. M. L. Koshta & party.

Diagnostic characters : Body of medium size. Antennae filiform, fastigium of vertex short, without median longitudinal carinula; frontal ridge sulcate; dorsum of pronotum slightly flattened, crossed by three transverse sulci. Prosternal tubercle conical with rounded or subacute apex, often slightly bent backwards; mesosternal interspace open. tegmen fully developed or shortened.

Distribution : Afrotropical, Australian, Oriental and Palearctic regions.

37. *Oxya hyla hyla* Serville

1831. *Oxya hyla* Serville, *Annl. Sci. nat.*, **22** : 287.
 1871. *Oxya serrulata* Krauss, *Zool. jb. Syst.*, **5**(1890) ; 662.
 1925. *Oxya acuminata* Willemse, *Tidjschr. Ent.*, **68** ; 42.
 1956. *Oxya hyla* Audinet-Serville : Johnston. *Annotated catalogue of African grasshoppers* : 252.
 1958. *Oxya viridivitta* (Walker) : Chopard, *Mem. Inst. Fr. Afr. noire.*, **53**: 128.
 1962. *Oxya humeralis* (Walker) Dirsh, *Bull. Br. Mus. nat. Hist. (Ent.)*, **12** : 309.
 1962. *Oxya hyla hyla*, Hollis, *Bull. Br. Mus. nat. Hist. (Ent.)*, **26** : 282.

Material examined : Chhindwara: Chotamahadev, 23.x.02 (3 Male, 2 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Body finely rugose; supra-anal plate trapezoidal with triangular apical projection and a tubercle on each side of a median apical process; cercus conical or compressed rounded with acute or subacute apex. Epiphallus with narrow bridge, without ancorae and well developed tooth like inner lophi.

Distribution : India : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Goa, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Sahdol), Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Afghanistan, Africa, Angola, Bangladesh, Ethiopia, Gambia, Ghana, Guinea, Iran, Kenya, Korea, Madagascar, Maldives, Mali, Malawi, Nepal, Niger, Pakistan, Persia, Tanzania, Uganda and Zambia.

Subfamily TROPIDOPOLINAE

Genus *Trustria* Stål 187338. *Trustria pulvinata* (Uvarov)

1921. *Tapinophyma pulvinata* Uvarov, *Ann. Mug. nat. Hist.*, **7** (9) : 497.
 1929. *Trustria pulvinata* : Uvarov, *Revue suisse Zool.*, **29** : 559.

Material examined : Chhindwara: Bamahani Delkhani, 19.x.02 (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Fastigium of vertex parabolic, moderately narrow; prosternal tubercle curved backwards, almost square in section, strongly widened apically, with slightly concave apical surface. Tegmina and wings extending upto the apex of subgenital plate or shorter.

Distribution : India : Assam, Bihar, Karnataka, Maharashtra, Meghalaya, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Sri Lanka.

Subfamily CYRTACANTHACRIDINAE

Genus *Cyrtacanthacris* Walker, 187039. *Cyrtacanthacris tatarica* (Linn.)

1758. *Gryllus locusta tataricus* Linnaeus, *Syst. Nat.*, 10th ed. : 432.

1914. *Cyrtacanthacris ranacea*, Kirby, *Fauna Brit. India, Acrid.*, p. 231.

1920. *Cyrtacanthacris tatarica* Bainbrigge Flechter, *Proc. Third Entom. meeting at Pusa*, 1 : 310.

1933. *Cyrtacanthacris tatarica* Uvarov, *Proc. Zoolog. Soc. London* : 227.

1941. *Cyrtacanthacris tatarica* Rehn. *Trans. Amer. Ent. Soc.*, 67 : 266.

Material examined : Chhindwara: Jhirpa rest house Pachmarhi, (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Body size large; Antennae filiform, fastigium of vertex rounded, concave. Pronotum without lateral carina and presents three transverse sulci. Prozona and metazona equal in length, lateral lobe punctured and dark brown with large whitish or yellowish spots in the upper part of the prozona, metazona, yellowish brown or light brown. Prosternal tubercle bent and touches mesosternum. Tegmina strong irregular reticulation. Supra-anal plate triangular. Posterior femur long strongly, stout with dark denticles at upper carina. The area between superior carina and inferior carina is whitish. Posterior tibia with 8 internal and 6 external red-tipped spines. Subgenital plate conical, Supra-anal plate triangular with deep median groove. Cercus broad at base gradually tapering at apex. Epiphallus with weakly developed ancorae, lophi tooth-like.

Distribution : India : Assam, Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Delhi, Himachal Pradesh, Haryana, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere: Africa, Bangladesh, Hainon, Madagascar, Nepal, Philippines, Myanmar, Pakistan, Red-Sea, Sahara, Saudia Arabia, Sokotra, Seychelles & Comore Islands, Sri Lanka, Sumatra and Thailand.

Subfamily COPTACRIDINAE

Genus *Coptacra* Stål, 187340. *Coptacra punctaria* (Walker)

1870. *Acridium punctarium* Walker, *Cat. Derm. Salt. Brit. Mus.*, 4 : 630.

1929. *Coptacra punctaria* : Uvarov, *Revue suisse Zool.*, 36 : 561.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Male); Nandiya village, 07.vi.99 (1 Female); Churnagarh, 01.ix.2000 (1 Male); Handikoh, 04.ix.2000 (1 Female); Handikoh 05.ix.2000 (1 Female) coll. Y.N. Gupta & party.

Diagnostic characters : Head rugosely punctuate, antennae brown at base, dark at apex, basal segments flattened, pronotum rugosely punctuate with raised granulose, tegmen equal or longer than abdomen.

Distribution : India : Madhya Pradesh and Tamil Nadu.

Genus *Eucoptacra* Bolivar, 1902

41. *Eucoptacra saturata* (Walker)

1870. *Acridium saturatum* Walker, *Cat Derm Salt. Br. Mus.*, 4 : 628.

1921. *Eucoptacra saturata* : Uvarov, *Ann. Mag. Nat. Hist.*, (9)7 : 503.

Material examined : Hoshangabad : Panarpani, 13.ii.03 (1, Female) coll. M.L. Koshta; Nandiya village, 07.vi.99 (2 Female) coll. K. Chandra; Lalgaoon, 20.x.02 (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Medium size body; filiform with multisegmented antennae, generally longer than head and pronotum. Fastigium of vertex narrow, concave in middle sloping with sharp lateral carinulae. Front straight almost vertical, slightly inclined backwards. Frontal ridge wide, flat, expanded between antennae, narrowed apically. Pronotum weakly tectiform with linear median carinulae, cut by 3 sulci, posterior margin of metazona angular. Prosternal tubercle obtusely conical. Tegmen fully developed, apex obliquely truncated.

Distribution : India : Assam, Maharashtra, Madhya Pradesh, Manipur, Meghalaya, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Subfamily EYPREPOCNEMIDINAE

Genus *Choroedocus* Bolivar 1914

42. *Choroedocus illustris* (Walker)

1870. *Heteracris illustris* Walker, *Cat. Derm. Salt. Br. Mus.*, 4 : 662, 663.

1921. *Choroedocus illustris* : Uvarov, *Trans. ent. Soc. Lond.*, 69 : 109.

Material examined : Hoshangabad: Madai Satpura, 13. vi. 99 (1 Female) coll. K. Chandra; Panhat Bori, 14.iv.01 (1 Female) coll. Y.N. Gupta & party.

Diagnostic characters : Size large; robust, antennae filiform, vertex and disk of pronotum with darker median portion, rest uniform brown and bordered with narrow yellow stripe. Eyes bordered yellow posteriorly and beneath. Median carina of pronotum entire, with narrow markings of transverse sulci. Hind tibiae with reddish brown. Tegmina with narrow sparse brown spots in radial sector. Supra anal plate well developed, tongue shaped.

Distribution : India : Himachal Pradesh, Maharashtra and Uttar Pradesh.

Genus *Tylotropidius* Stål, 1873

43. *Tylotropidius varicornis* (Walker)

1870. *Heteracris varicornis* Walker, *Cat. Derm. Salt. Br. Mus.*, 4 : 667.

1914. *Tylotropidius varicornis* : Kirby, *Fauna Brit. India Orth.*, : 265.

Material examined : Hoshangabad: Nandiya village, 07.vi.99 (1 Female) coll. K. Chandra; Churnagarh, 09.iv.01 (1 Female); Badi Anhor, 29.x.02 (1 Female) coll. Y. N. Gupta & party; Apsara vihar, 12.ii.03 (2 Female) coll. M. L. Koshta & party.

Diagnostic characters : Pronotum brown with lateral carinae of pale colour, prosternal tubercle compressed, bituberculate at apex, hind femora thickened at the base, very slender towards the tip, hind tibiae and tarsi dull blue, supra anal plate of male sulcated and elongate triangular, cerci straight, acuminate and slightly compressed.

Distribution : India : Andhra Pradesh, Goa, Himachal Pradesh, Haryana and Karnataka, Maharashtra, Meghalaya, Madhya Pradesh, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar and Sri Lanka.

Subfamily CATANTOPINAE

Genus *Catantops* Schaum, 1853

44. *Catantops pinguis innotabilis* (Walker)

1870. *Acridium innotabile* Walker, *Cat Derm Salt. Br. Mus.* 4 : 629.

1902. *Catantops indicus* I. Bolivar *Ann. Soc. ent. France*, 70 : 626.

1925. *Catantops innotabilis* Uvarov *Mission Babault Inde. Acrididae Paris* 30.

1943. *Catantops innotabilis* Uvarov *Ann. Mag. nat. Hist.* 10 (11) : 127.

1956. *Catantops pinguis innotabilis* : Dirsh *Publcoes cult co. Diam. Angola*, 28 : 105.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Female) coll. K. Chandra; Inklama river, 11.iv.01 (1 Female); Trishul Nala, 13.iv.01 (2 Female); Sitadongri, 18.x.02 (3 Female); Bamhani Delkhani, 19.x.02 (1 Male, 8 Female); Satdhara Tamia, 20.x.02 (1 Male, 12 Female). Chhindwara : Chotamahadev, 23.x.02 (6 Female); Lalagaon, 24.x.02 (2 Female); Satadhara Tamia, 24.x.02 (6 Female); Jamui, 26.x.02 (4 Female); Shivpuri Parasia, 27.x.02 (5 Male, 3 Female) coll. Y. N. Gupta & party. Hashangabad : Badi Anhor, 29.x.02 (8 Female); Pachmarhi road, 30.x.02 (6 Male, 5 Female); Delkhani, 31.x.02 (2 Male, 2 Female); Pipariya road, (4 Male, 2 Female);

Tekapara, 01.xi.02 (3 Male); Ink around, 25.xi.02 (2 Male, 3 Female); Panarpani, 13.ii.03 (1 Female); Dhain, 19.ii.03 (1 Male, 1 Female); Nagdwari, 25.ii.03 (2 Female) coll.Y.N. Gupta & party.

Diagnostic characters : Size medium; antennae filiform, shorter than head and pronotum together; basal disc of wing from colourless to weakly greenish; the external disc of the hind femur with a small black median spot, the size of which varies sometimes. Prosternal tubercle short, subcylindrical, rounded at apex; lateral lobe of pronotum without pattern; hind femur broad and thick, external disc without black median spot below upper carinula, internal disc with four small black, irregular spots; hind tibia light red; Tegmina and hind wings extend beyond the hind knees.

Male : Cercus compressed, up curved, expanded at apex, slender, bifurcated, upper one blunt and the lower one pointed. Epiphallus bridge shaped, with small in curved, subgenital plate laterally compressed navicular, ancorae pointed, lophi small lobiform.

Female : Very similar to Males except longer. Cercus short, conical. Valve of ovipositor moderately curved. Subgenital plate with truncated apex.

Distribution : India : Assam, Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Kerala, Lakshadweep Island, Madhya Pradesh (Chhindwara, Sahdol), Meghalaya, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Afghanistan, Bangladesh, Borneo, Hong Kong, Indo-China, Java, Japan, Kambodia, Korea, Myanmar; Malaysia, Malaya, Maldives Island, New Guinea, Pakistan, Philippines, Sri Lanka, Sumatra, South Tibet, Thailand and Yunnan.

Genus *Stenocatantops* Dirsh & Uvarov, 1953

45. *Stenocatantops splendens* (Thunberg)

1815. *Gryllus splendens* Thunberg, *Mem. Acad. Sci. St. Petersb.*, 5 : 236.

1953. *Stenocatantops splendens* : Dirsh & Uvarov, *Tijdschr. Ent.*, 96 (3) : 237.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (1 Male); Nandia villege, 07.vi.99 (1 Male) coll. K. Chandra; Bamhani Delkhani, 19.x.02 (1 Male, 2 Female); Forest rest house Delkhani, 20.x.02 (1 Male, 1 Female); Patakot, 22.x.02 (1 Female); Satdhara Tamia, 24.x.02 (1 Female) coll. Y. N. Gupta & party; Singanama rest house, 28.x.02 (1 Female); Pachmarhi road, 30.x.02 (1 Male, 1 Female); Delkhani, 31.x.02 (1 Female) coll. Y.N. Gupta & party; Panarpani, 13.ii.03 (1 Male); 5 Km. to Bori, 20.ii.03 (1 Female) coll. M.L. Koshta & party.

Diagnostic characters : Body colour brown or brownish testaceous, size medium, slender and elongated, middle joints of antennae about twice or three times as long as broad, prosternal tubercle strongly curved and inclined backwards in profile.

Distribution : India : Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Madhya Pradesh (Mandla), Meghalaya, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Borneo, Celebes, China, Hainan, Java, Korea, Malaya, Maluccas Island, Myanmar, Philippines, Sri Lanka, Sumatra and Thailand.

Genus *Xenocatantops* Dirsh & Uvarov, 1953

46. *Xenocatantops humilis humilis* (Serville)

1939. *Acridium humile* Serville *Ins, Orth.* : 662.

1953. *Xenocatantops humilis humilis* : Dirsh and Uvarov, *Tijdschr. Ent.*, 96 : 237.

Material examined : Hoshangabad : Guptmahadev, 05.vi.99 (2 Male, 1 Female); Nandiya village, 07.vi.99 (2 Male, 1 Female) coll. K. Chandra; Deokhli, 03.iv.01 (1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Body medium size, slender, frons in profile straight, moderately sloping backwards; pronotum constricted in middle.

Distribution : India : Andaman Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Borneo, Indo-China, Java, Lombok, Malaya, Myanmar, New Guinea, Philippines, Sri Lanka, Sumatra, Thailand, S. Tibet, Vietnam and Yunnan.

Family PYRGOMORPHIDAE

Genus *Atractomorpha* Saussure, 1861

47. *Atractomorpha crenulata* (Fabricius)

1793. *Truxalis crenulata* Fabricius, *Ent. Syst.*, 2 : 28.

1969. *Atractomorpha crenulata*, Kevan and Chen, *Zool. J. Lin. Soc.*, 48 : 187.

Material examined : Hoshangabad : Churna Bori, 10.vi.99 (1 Female) coll. K. Chandra; Singanama, 07.xi.2000 (1 Female); Shivpuri Parasia, 27.x.02 (1 Female); Singanama rest house, 31.x.02 (1 Female) coll. Y.N. Gupta & party; Inklama river, 18.ii.03 (1 Male, 1 Female); 5 Km. to Bori 20.ii.03 (1 Female); Forest rest house Hoshangabad, 24.ii.03 (1 Female); Sonbhadra, 27.ii.03 (1 Male) M. L. Koshta & party.

Diagnostic characters : Body medium, narrow and slender; antennae sub-filiform; head conical fastigium of vertex shorter; eyes oval and long; cheeks with a row of granules extending to the middle coxae; pronotum submarginate in front, and angulated behind slightly tricarinate; metazona shorter than prozona; tegmina pointed, extending for

one-fourth of their length beyond the hind femora; hind wings normally tyrian pink to light mallow purple at base.

Distribution : India : Andaman and Nicobar Islands, Andhra Pradesh, Bihar, Chhattisgarh, Goa, Jammu & Kashmir, Madhya Pradesh (Chhindwara, Mandla, Sahdol), Rajasthan, Tamil Nadu and West Bengal.

Elsewhere : Bangladesh, Lower Myanmar, Malaysia, South Vietnam, Sri Lanka and Thailand.

Genus *Chrotogonus* Serville, 1839

48. *Chrotogonus (Chrotogonus) trachypterus trachypterus* (Blanchard)

1836. *Ommexycha trachypterus* Blanchard. *Ann. Soc. Ent. France*, 5 : 618, pl. 22, fig. 6.

1914. *Chrotogonus trachypterus* Kirby *Fauna Brit. India, Orth.*, : 165.

1959. *Chrotogonus trachypterus trachypterus* Blanchard *Publ. cult. Diamang.*, 43 : 224-225.

Material examined : Hoshangabad: Guptmahadev, 05.vi.99 (4 Female); Bori village, 09.vi.99 (1 Female); Churnabori, 10.vi.99 (1 Male, 1 Female); Churnabori, 12.vi.99 (1 Female) coll. K. Chandra; Inklama river, 05.ii.2000 (1 Female) coll. R. K. Singh & party. Chhindwara : Lalgaoon, 20.x.02 (1 Female). Hoshangabad : Satdhara Tamia, 20.x.02 (1 Male); Pachmarhi road, 30.x.02 (1 Male, 1 Female); Delkhani, 31.x.02 (2 Female); Tekapara, 01.xi.02 (5 Female); Ink around, 25.xi.02 (1 Female) coll. Y.N.Gupta & party; Guptmahadev, 14.ii.03 (1 Female); 5 km. to Bori, 20.ii.03 (1 Male, 1 Female) coll. M. L. Koshta & party.

Diagnostic characters : Colour brown. Body small, rugose and tuberculate. Head short, broad, rugose fastigial furrow present, antennae fulvous, with black, eyes rounded, pronotum short, broad with small tubercle, sternum yellowish, with black spot. Tegmina shorter than the abdomen. Hind wings are clearly hyaline. Epiphallus without ancorae with curved lophi and dorsolateral appendices.

Distribution : India : Andhra Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh (Mandla, Sahdol), Maharashtra, Orissa, Punjab, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Nepal and Pakistan.

49. *Chrotogonus oxypterus* Blanchard

1836. *Ommexecha oxypterus* Blanchard, *Annl. Soc. Ent. Fr.*, 5 : 622.

1959. *Chrotogonus (Chrotogonus) oxypterus* : Keven, *Publsoes cult Co. Diam. Angola*, no. 43 : 48.

Material examined : Hoshangabad : Pachmarhi, 15.xii.1927 (1ex.) coll. H. S. Pruthi.

Diagnostic characters : Size small but broader; head small, narrowed towards the front; foveolae of the vertex contiguous, superior, and forming the extremity of the fastigium; antennae filiform, shorter than the body; pronotum rugose and much widened behind; anterior margin of prosternum strongly reflexed and dilated; elytra shorter or extend upto the apex of abdomen, surface nodulose; wings often shorter than elytra and darker in colour. Hind wings infumated at basal part and extend nearly two-third as long as tegmina.

Distribution : India : Andhra Pradesh, Bihar, Goa, Karnataka, Kerala, South east Maharashtra, South Madhya Pradesh, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh and Sri Lanka.

Infraorder TETRIGIDEA

Superfamily TETRIGOIDEA

Family TETRIGIDAE

Subfamily SCELIMENINAE

Genus *Euscelimena* Gunther, 1938

50. *Euscelimena harpago* (Serville)

1839. *Tetrix harpago* Serville, *Ins. Orth.* : 763.

1929. *Euscelimena harpago*, Hebard, *Rev. suisse Zool.*, 36 : 572.

Material examined : Hoshangabad : 5 km. to Bori, 20.ii.03 (1 Female) coll. M. L. Koshta & party.

Diagnostic characters : Vertex narrower than one of the eyes, more narrowed forward, antennae filiform, anterior femora carinated above, frontal costa furcillate, but the rami diverge moderately, spine triangular acute and straight, apex sharp, not curvate, first joint of posterior tarsi longer than third, posterior tibial margins distinctly membraneous expanded.

Distribution : India : Bihar, Gujarat, Karnataka, Maharashtra, Madhya Pradesh, Orissa, Tamil Nadu and Uttar Pradesh.

Elsewhere : Sri Lanka.

Genus *Eucriotettix* Hebard, 1929

51. *Eucriotettix* sp.

1929. *Eucriotettix* Hebard, *Revue Suisse Zool.*, 36 : 537.

1991. *Eucriotettix* : Shishodia, *Rec. zool. Surv. India, Occ. Paper No.*, 140 : 38-39.

Material examined : Hoshangabad : Satdhara Tamia, 24.x. 02 (1 Female) coll. Y. N. Gupta & party; Inklama river, 18.ii.03 (1 Male) coll. M.L. Koshta & party.

Diagnostic characters : Body elongated and slender. Colour brown or dark brown. Head a little elevated; vertex narrower than an eye, a little narrowed in front, extends upto the level of eyes in front, median carinula well developed ; frontal costa bifurcated behind the paired ocelli, arcuate between antennae. Pronotum smooth or granulose; median carina normal; prozonal carinae parallel; humeral angle obtuse; paranota with two projections. Elytra normal, rounded at apex.

Distribution : India.

Elsewhere : Borneo, Greater and Smaller Sunda Islands, Java, Myanmar, New Guinea, Sri Lanka, South China, Sumatra and Tonkin.

Subfamily TETRIGINAE

Genus *Hedotettix* Bolivar, 1887

52. *Hedotettix gracilis* (De Haan)

1842. *Acridium (Tetrix) gracile* De Haan, *Temminck. Verhandl., Orthoptera*, : 167- 169.

1914. *Hedotettix gracilis* : Kirby, *Fauna Brit. India, Orth.*, : 72.

Material examined : Hoshangabad : Forest rest house Panarpani, 16.ii.03 (1 Male); Forest rest house Bori, 18.ii.03 (1 Male, 2 Female); Forest rest house Madai, 26.ii.03 (2 Male, 1 Female) coll. M.L. Koshta & party.

Diagnostic characters : Body small to large, head not exserted above the pronotum, vertex equal to or narrower than an eye, front margin rounded, frontalcosta widely sulcate, the rami widened between the antennae, antennae inserted below the middle of eyes, pronotum angulate anteriorly, extended behind upto the apex of hind femora or beyond it, dorsum finely granulose, tectiform between shoulders, wings extending upto the pronotum or surpass a little.

Distribution : India : Arunachal Pradesh, Assam, Madhya Pradesh, Manipur, Meghalaya, Maharashtra, Sikkim, Tripura, Orissa and West Bengal.

Elsewhere : Celebes, Java, Myanmar, Sumatra, Sri Lanka, Taiwan, Thailand and Vietnam.

Genus *Ergatettix* Kirby, 1914

53. *Ergatettix dorsifera* (Walker)

1871. *Tettix dorsifera* Walker, *Cat. Derm. Salt. Brit. Mus.*, 5 Suppl. : 825.

1929. *Ergatettix dorsifera* : Hebard, *Revue suisse Zool.*, 36 : 588.

Material examined : Hoshangabad: Sitadongri Delkhani, 18.x.02 (1 Male, 1 Female) coll. Y. N. Gupta & party.

Diagnostic characters : Size medium, head distinctly exerted above the surface of pronotum, vertex narrower than an eye, antennae situated below the inferior margin of eyes, pronotum and wings extend beyond the apex of hind femora, dorsum wide between shoulders, rugulose, median carina depressed in front, undulate behind the shoulders, lateral carinae wavy, posterior femora elongate.

Distribution : India : Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Chhindwara), Maharashtra, Manipur, Meghalaya, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Central Asia, Greater Sunda Islands, Java, Myanmar, Nepal, South China, Sumatra, Sumba, Taiwan and Turkmenia.

Infraorder TRIDACTYLIDEA

Superfamily TRIDACTYLOIDEA

Family TRIDACTYLIDAE

Genus *Tridactylus* Olivier, 1789

54. *Tridactylus thoracicus* Guerin

1844. *Tridactylus thoracicus* Guerin, *Icon. R. An.*, 3 : 336.

1877. *Tridactylus thoracicus* Saussure, *Mem Soc. Geneve*, 25 : 50.

1896. *Tridactylus thoracicus* Saussure, *Rev. Suisse Zool.*, 4 : 412.

1906. *Tridactylus thoracicus* : Kirby, *Syn. Cat. Orth.*, 2 : 8.

1925. *Tridactylus thoracicus* : Chopard, *Ann. Mag. Nat. Hist.*, (9) 15 : 506.

1954. *Tridactylus thoracicus* : Sandrasagara, *J. Bombay nat. Hist. Soc.*, 52 : 542.

Material examined : Hoshangabad : Bori sanctuary, 09.vi.99 (6 ex.) coll. K. Chanadra; Singanama rest house, 29.x.02 (1ex.) coll. Y. N. Gupta & party.

Diagnostic characters : Body size small, glabrous, colour black to bronze, antennae short with 12 or fewer segments; fore legs normal; hind legs with enlarged femora; hind tibiae modified for burrowing and moving on sandy and watery surfaces; posterior metatarsi articulated, longer than the superior apical spurs.

Distribution : India : Bihar, Chhattisgarh, Madhya Pradesh and Orissa.

Elsewhere : Malay Archipelago and Sri Lanka.

SUMMARY

The present study deals with 54 species belonging to 48 genera under 9 families of Orthoptera from the Pachmarhi Biosphere Reserve.

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INSECTA : HEMIPTERA

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INTRODUCTION

Order Hemiptera comprising 'true bugs' is the largest order of hemimetabolous insects, a large number of which are of economic importance. The Hemipteran fauna of Pachmarhi Biosphere Reserve is represented by 20 species belonging to 19 genera spread over nine families, of which 4 species belong to suborder Homoptera and 16 species to suborder Heteroptera.

List of Hemiptera recorded from Pachmarhi Biosphere Reserve

Suborder HOMOPTERA

Family CICADELLIDAE

1. *Haphsa nicomache* (Walker)

Family FULGORIDAE

2. *Dichoptera hyalinata* (Fabricius)
3. *Dictyophara lineata* (Don.)

Family CERCOPIDAE

4. *Callitettix versicolor* (Fabricius)

Suborder HETEROPTERA

Family ARADIDAE

5. *Neuroctenus* sp.

Family COREIDAE

6. *Anoplocnemis phasiana* (Fabricius)
7. *Riptortus linearis* (Fabricius)

Family LYGAEIDAE

8. *Dieuches uniguttatus* (Thunberg)9. *Graptostethus dispar* (Reuter)

Family PENTATOMIDAE

10. *Antestia cruciata* (Fabricius)11. *Aspongopus janus* (Fabricius)12. *Bagrada picta* (Fabricius)13. *Canthecona furcellata* (Wolff)14. *Halys dentatus* (Fabricius)15. *Nezara viridula* (Linnaeus)16. *Menida* sp.

Family PHYRRHOCORIDAE

17. *Antilochus coqueberti* (Fabricius)18. *Scantius* sp.

Family REDUVIIDAE

19. *Ectrychotes dispar* (Reut.)20. *Tribelocephala orientalis* Distant

SYSTEMATIC ACCOUNT

Suborder HOMOPTERA

Family CICADELLIDAE

Genus *Haphsa* Distant1. *Haphsa nicomache* (Walker)1850. *Dundubia nicomache* Walker, *List Hom.*, i : 67.1906. *Haphsa nicomache* : Distant, *Fauna Brit. India, Rhynchota*, 3 : 99.

Material examined : Hoshangabad, Pachmarhi Biosphere Reserve (PBR), Nijala River, 7.iv.2001 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Head, pronotum, and mesonotum ochraceous; head with lateral striae to front, two large transverse spots on lateral margins of vertex, and the area of the ocelli

black; pronotum with two central longitudinal black lines united posteriorly; abdomen black, the segmental margins, some lateral spots, tympanal coverings more or less ochraceous.

Distribution : India : Assam, Madhya Pradesh (Hoshangabad), Nagaland, Sikkim, Uttaranchal.

Family FULGORIDAE

Genus *Dichoptera* Spin.

2. *Dichoptera hyalinata* (Fabricius)

1781. *Fulgora hyalinata* Fabricius, *Spec. Ins.*, ii : 315.

1906. *Dichoptera hyalinata*: Distant, *Fauna Brit. India, Rhynchota*, 3 : 238.

Material examined : Hoshangabad, PBR, Pachmarhi Rest House, 4.ix.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Length excl. tegmina 19-20 mm; expanded tegmina. 50 mm. Body and legs pale brownish-ochraceous, head and thorax above and beneath with numerous black punctures; edges and ridges to head and lateral edges to pronotum black; tegmina hyaline, venation fuscous irrotated with ochraceous, and with a piceous transverse fascia at apices of ulnar veins; wings hyaline, with an apical piceous spot. In some specimens, the abdomen is marked with a double discal segmental series of black spots.

Distribution : India : Andaman Islands, Madhya Pradesh (Hoshangabad, Seoni), Maharashtra, Karnataka, West Bengal.

Elsewhere : Sri Lanka.

Genus *Dictyophara* Germ.

3. *Dictyophara lineata* (Don.)

1800. *Fulgora lineata*, Don., *Ins. Ind.* t. viii, f. 1.

1906. *Dictyophara lineata*: Distant, *Fauna Brit. India, Rhynchota*, 3 : 245.

Material examined : Hoshangabad, PBR, Madhuvan, 24.viii. 2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Body and legs ochraceous; head with the longitudinal ridges either fuscous or spotted with that colour, its extreme apex piceous, the ridges between the eyes green; thorax above rather reddish-ochraceous; tegmina with two longitudinal fuscous fasciae commencing at a short distance from base, the uppermost sub-marginal and extending to apex, where it is broadest.

Distribution : India : Assam, Madhya Pradesh (Hoshangabad, Jabalpur), Maharashtra, West Bengal.

Elsewhere : Sri Lanka.

Family CERCOPIDAE

4. *Callitettix versicolor* (Fabricius)

1794. *Callitettix versicolor* Fabricius, *Ent.Syst.* iv : 50.

1908. *Callitettix versicolor* Distant, *Fauna Br. India, Rhynchota*, 4 : 113.

Material examined : Pachmarhi Biosphere Reserve (PBR), Hoshangabad, Anthoni, 30.08.2000 (1 ex), Coll. Y.N. Gupta.

Diagnosis : Body shining black; tegmina with a spot before middle of clavus and a transverse spot between middle of upper claval margin and costal margin whit; two spots beyond the middle of tegmen, external large and internal small and apex of clavus sanguineous.

Distribution : India : Bihar, Madhya Pradesh (Jabalpur, Shivpuri), Maharashtra, Jammu & Kashmir, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : China, Myanmar, Malaya, Siam, South Eastern Asia.

Suborder HETEROPTERA

Family ARADIDAE

Genus *Neuroctenus* Fieber

5. *Neuroctenus* sp.

1861. *Neuroctenus* Fieber, *Eur. Hem.*, p. 34.

1902. *Neuroctenus*: Distant, *Fauna Brit. India, Rhynchota*, 2 : 164.

Material examined : Hoshangabad, PBR, Paraspani, 26.xii.1964 (1 ex.), Coll. H. Khajuria.

Diagnosis : Body flattened, abdomen greatly depressed beneath; scutellum triangular; fourth joint of the antennae rarely longer than third.

Distribution : India. Nearctic, Neotropical, Ethiopian, Oriental, and Australasian Regions.

Family COREIDAE

Genus *Anoplocnemis* Stål6. *Anoplocnemis phasiana* (Fabricius)

1781. *Lygaeus phasiana* Fabricius, *Spec. Ins.*, ii : 361.

1904. *Anoplocnemis phasiana*: Distant, *Fauna Brit. India, Rhynchota*, 1 : 346.

Material examined : Hoshangabad, PBR, Madai, 14.vi.1999 (2 exs.), Coll. K. Chandra.

Diagnosis : Variable in colour- ochraceous, castaneous, or piceous with the corium castaneous; abdomen beneath in male with the second and third segments gibbous, and lobately tuberculate at their junction; in the female gibbous but not tuberculate; in both sexes the segmental margins are more or less distinctly ochraceous.

Distribution : India : Assam, Karnataka, Kerala, Madhya Pradesh (Hoshangabad, Sidhi), Maharashtra, Nagaland and Sikkim

Elsewhere: Sri Lanka, Myanmar, Malaya Peninsula.

Genus *Riptortus* Stål7. *Riptortus linearis* (Fabricius)

1775. *Lygaeus linearis* Fabricius, *Syst. Ent.*, p. 710.

1904. *Riptortus linearis*: Distant, *Fauna Brit. India, Rhynchota*, 1 : 415.

Material examined: Hoshangabad, Pachmarhi, Mahadeo Forest Rest House, 5.vi. 1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Dark cinnamon-brown; pronotum, scutellum, corium, and lateral areas of sternum distinctly punctate; first, second, and third joints of antennae, fascia at base of head between eyes, central fascia to head beneath, lateral angular spines to pronotum, disk of sternum and abdomen black.

Distribution : India : Karnataka, Madhya Pradesh (Hoshangabad, Jabalpur), Maharashtra, Sikkim and West Bengal.

Elsewhere : Sri Lanka, Myanmar, Malayan Archipelago.

Family LYGAEIDAE

Genus *Dieuches* Dohrn8. *Dieuches uniguttatus* (Thunberg)

1822. *Pendulinus uniguttatus* Thunberge, *Hem. rostr. Cap.*, iv : 6.

1902. *Dieuches uniguttatus*: Distant, *Fauna Brit. India, Rhynchota*, 2 : 82.

Material examined : Hoshangabad, PBR; Paraspani, 26.xii.1964 (1 ex.), Coll. H. Khajuria.

Diagnosis : Body colour piceous; antennae, second and third joints of rostrum, tibiae and tarsi brownish-ochraceous, apical joint of antenna piceous, broadly annulated with luteous near base; corium ochraceous, broadly punctate, lateral margins impunctate, a broad irregular transverse fascia near inner angle and the apical margin black.

Distribution : India : Andaman, Assam, Madhya Pradesh (Hoshangabad, Jabalpur), Karnataka.

Elsewhere : Myanmar, Sri Lanka, China, and Malay Archipelago.

9. *Graptostethus servus* Fabricius

1787. *Cimex servus* Fabricius, *Mant.*, ii : 300.

1902. *Graptostethus servus*, Distant, *Fauna Brit. India, Rhynchota*, 2 : 8.

Material examined : Hosangabad, PBR, Gupt Mahadeo, 5.vi.99 (1 ex.), Coll. K. Chandra.

Diagnosis : Pale obscure sanguineous, pilose. Apex and sometimes the whole central area of head, a small spot at inner margins of eyes, a transverse anterior fascia and two angulated sub-basal fasciae to pronotum, scutellum, a large oblique subclaval spot to corium, membrane, a large irregular spot on the lateral area of each sternal segment, apical margins of the corium often pale ochraceous.

Distribution : Assam, Karnataka, Kerala, Maharashtra, Tamil Nadu and West Bengal.

Elsewhere : Myanmar, Sri Lanka, China, and Malay Archipelago to Australasia. Also in South Palaearctic Region and South Africa.

Family PENTATOMIDAE

Genus *Antestia* Stål

10. *Antestia cruciata* (Fabricius)

1775. *Cimex cruciata* Fabr., *Syst. Ent.*, p. 714.

1904. *Antestia cruciata*: Distant, *Fauna Brit. India, Rhynchota*, 1 : 185.

Material examined : Hoshangabad, Mahadeo Forest Rest House, 5.vi. 1999 (1 ex.), K. Chandra; Hoshangabad, PBR, Madai, 13.vi. 1999 (1 ex.), Coll. K. Chandra; 6.iv.2001, (12 exs.), Coll. Y.N. Gupta.

Diagnosis : Body above varying in colour from pale greenish to orange-yellow; head with two central lines and a spot before each eye black; pronotum with ten black spots-four (smallest) on anterior margin and six across disk; scutellum with four black spots.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra, Sikkim, West Bengal, Tamil Nadu.

Elsewhere : Sri Lanka, Malayan Archipelago.

Genus *Aspongopus* Laporte

11. *Aspongopus janus* (Fabricius)

1775. *Cimex janus* Fabr., *Syst. Ent.*, p. 714.

1904. *Aspongopus janus* : Distant, *Fauna Brit. India, Rhynchota*, 1 : 281.

Material examined : Chindwara, PBR, Delakari Forest, 20.x. 2002 (2exs.), Coll, Y.N.Gupta.

Diagnosis : Ochraceous or sanguineous; head, antennae, sub-anterior transverse fascia (sometimes centrally broken) to pronotum, a little more than basal half of scutellum, and membrane, black; body beneath and legs black or greenish black, lateral margins of sternum and abdomen ochraceous or sanguineous.

Distribution : India : Assam, Karnataka, Kerala, Madhya Pradesh (Hoshangabad, Jabalpur), Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Sri Lanka, Myanmar.

Genus *Bagrada* Stål

12. *Bagrada picta* (Fabricius)

1775. *Cimex picta* Fabricius, *Syst. Ent.*, : 715.

1902. *Bagrada picta* Distant, *Fauna Brit. India, Rhynchota*, 1 : 193.

Material examined : Hoshangabad, PBR, Banglapuria, 18.iv. 2001 (8 exs.); Churna FRH, 18.xi. 2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Black, lateral lobes of head from before eyes, and lateral margin and a central fascia to pronotum, a central fascia, a spot near each basal angle and a spot on each margin before apex of scutellum. Body beneath ochraceous streak to head, marginal line to coxae. Legs ochraceous, spotted and streaked with black.

Distribution : Madhya Pradesh, Maharashtra, Manipur, Uttaranchal, West Bengal.

Elsewhere : Sri Lanka.

Genus *Canthecona* Amy.13. *Canthecona furcellata* (Wolf.)

1801. *Cimex furcellata* Wolf, *Icones Insectorum* : 182, pl. xviii, f.176.

1904. *Canthecona furcellata* Distant, *Fauna Brit. India, Rhynchota*, 1 : 248.

Material examined : Chindwada, PBR, Delakari Forest, 20.x. 2002 (2 exs.), Coll. Y.N. Gupta.

Diagnosis : Ochraceous, thick and darkly punctate, the punctures bronzy. Head with the punctures somewhat confluent, and with a central pale fascia. Antennae ochraceous about apical halves of the third, fourth and fifth joints fuscous; lateral areas of head sternum and abdomen blackly punctate. Lateral pronotal margin finely dentate anteriorly, pronotal angles bifid, the anterior spine much longer.

Distribution : Bihar, Madhya Pradesh (Chhindwara) Maharashtra, Tamil Nadu and West Bengal.

Elsewhere : Sri Lanka, Myanmar and Java.

Genus *Halys* Fabricius14. *Halys dentatus* (Fabricius)

1775. *Halys dentatus* Fabricius, *Syst. Ent.*, : 702.

1904. *Halys dentatus* Fabricius, *Fauna Brit. India, Rhynchota*, 1 : 119.

Material examined : Hoshangabad, PBR, Bori, 10.vi.1999 (2 exs.), Coll. K. Chandra; Sonbhadra River, 8.iii. 2000 (1 ex), Coll. R.K. Singh; Chhindwada, Jhirpa RH, 25.viii. 2000 (2ex.), Coll. Y.N. Gupta; PBR, Pandpani, Parasia, 25.x. 2002 (1 ex), Coll.Y. N. Gupta.

Diagnosis : Dull ochraceous, coarsely and darkly punctate. Head with the margins of the central lobe, pronotum with obscure oblique fasciae, scutelum with short basal and obscure central discal fasciae and two marginal spots before apex, and corium with some obscure discal patches black. Antennae piceous, apices of second and third joints and base of fifth joint luteous.

Distribution : India; Andaman, Assam, Madhya Pradesh (Hoshangabad, Chhindwara) Maharashtra, Kerala, Sikkim, Tamil Nadu, Uttaranchal, Uttar Pradesh.

Elsewhere : Sri Lanka.

Genus *Menida* Motsch.15. *Menida* sp.

1861. *Menida* Motsch., *El Ent.* x : 23.

1904. *Menida*: Distant, *Fauna Brit. India, Rhynchota*, 1 : 226.

Material examined : Hoshangabad, Mahadeo Forest Rest House, 5.vi. 1999 (1 ex.), 7.vi. 1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Head broad, not much narrowed anteriorly, lateral margins scarcely sinuate; basal joint of antennae not reaching apex of head; rostrum about extending to posterior coxae; pronotum with the lateral margins nearly straight, the anterior and posterior margins very slightly sinuate; scutellum broad and subtriangular.

Distribution : Widely distributed.

Genus *Nezara* Amy. & Serv.16. *Nezara viridula* (Linnaeus)

1758. *Cimex viridula* Linnaeus, *Syst. Nat. ed.*, 10 : 444.

1904. *Nezara viridula* Distant, *Fauna Brit. India, Rhynchota*, 1 : 220.

Material examined : Hoshangabad, PBR, Mahadeo Forest Guest House, 4.vi. 1999 (1 ex.), 5.vi. 1999 (3 exs.), 7.vi. 1999 (2 exs.); Coll. K. Chandra ; Hoshangabad, Singanama, 28.x. 2002 (1 ex.), 01.xi. 2002 (4 exs.), Pachmarhi Road, 30.x. 2002 (1 ex.), Chhindwara, PBR, Parasia, 26.x. 2002 (2exs.); Coll. Y.N.Gupta.

Diagnosis : Pale or dark green, sometimes greenish-ochraceous, densely punctate; antennae green, apices of the third and apical area of the fourth and fifth joints purplish brown; extremity of segmental angles to abdomen black.

Distribution : Whole Oriental Region, Palaeactic, Nearctic and Ethiopian region.

Family PHYRRHOCORIDAE

Genus *Antilochus* Stal17. *Antilochus coqueberti* (Fabricius)

1803. *Lygaeus coqueberti* Fabricius, *Syst. Rhyng.*, : 222.

1902. *Antilochus coqueberti* Fabricius, *Fauna Brit. India, Rhynchota* 2 : 101.

Material examined : Hoshangabad, PBR, Banglapura, 18.iv. 19 (1 ex.), Coll. Y. N. Gupta.

Diagnosis : Sanguineous; antennae, eyes, membrane and sternal and ventral incisures black. Base of first joint of antennae sanguineous; interior angle and apical margin of membrane pale brownish-ochraceous; pronotum with the posterior margin twice as broad as anterior margin, sparingly obscurely punctate, excepting anterior discal area, margined with black punctures.

Distribution : India : Andhra Pradesh, Assam, Madhya Pradesh (Hoshangabad), Kashmir and West Bengal.

Elsewhere : Sri Lanka and Myanmar.

Genus *Scantius* Stål

18. *Scantius* sp.

1865. *Scantius* Stål, *Hem. Afr.*, iii : 10.

1902. *Menida* : Distant, *Fauna Brit. India, Rhynchota*, 2 : 117.

Material examined : Hoshangabad, Joga, 14. xii. 1965 (2 ex.).

Diagnosis : Body oblong; eyes sessile; antennae short and incrassate; rostrum with the joints of nearly equal length, first joint shorter than the head; pronotum with the lateral margins moderately acutely laminate; hemelytra either complete or incomplete, in the latter case with the membrane absent and the apex of the corium truncate.

Distribution : Palaearctic, Ethiopian, and Oriental Regions.

Family REDUVIIDAE

Genus *Ectrychotes* Burmeister

19. *Ectrychotes dispar* Reuter

1881. *Ectrychotes dispar* Reuter, *Act. Soc. Sc. Fenn.*, xii : 304.

1902. *Ectrychotes dispar* Distant, *Fauna Brit. India, Rhynchota*, 2 : 315.

Material examined : Hoshangabad, PBR, Madai, 13.06.99 (2 exs.) Coll. K. Chandra.

Diagnosis : Shining violaceous, antennae and hemelytra piceous, lateral areas of the posterior lobe of pronotum, scutellum, base of clavus and corium, lateral margins of corium connexivum, apices of coxae, trochanters, basal half of posterior femora, bases of tarsi, and abdomen coral red.

Distribution : India : Andhra Pradesh, Karnataka, Madhya Pradesh (Hoshangabad) Maharashtra and West Bengal.

Genus *Tribelocephala* Stål20. *Tribelocephala orientalis* Distant

1910. *Tribelocephala orientalis* Distant, *Fauna British India, Rhynchota*, 5 : 182.

Material examined : Hoshangabad, PBR, Bori, 10.vi. 1999 (2 exs.); Mahadeo FGH, 5.vi. 1999 (3exs.), Coll. K. Chandra.

Diagnosis : Body colour brownish-ochraceous; membrane with the veins distinctly darker; rostrum, body beneath and legs a little paler in hue; head a little longer than the pronotum; head and pronotum moderately granulate; antennae pilose.

Distribution : India : Madhya Pradesh (Hoshangabad, Seoni), Maharashtra.

Elsewhere : Sri Lanka.

SUMMARY

The Hemipteran fauna of the Pachmarhi Biosphere Reserve is represented by 20 species of 19 genera under nine families.

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INSECTA COLEOPTERA

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INTRODUCTION

These insects are commonly known as 'beetles' characterized by the forewings much thickened, veinless and meeting in a mid-dorsal straight line. Earlier, Chandra & Singh (2000) reported three species of family Paussidae; Chandra and Gupta (2002) reported three species of Scarabaeidae from Pachmarhi Biosphere Reserve constituting new records to the fauna of PBR. Later on Chandra and Singh (2004) studied 18 species of scarabaeid beetles belonging to 11 genera from PBR. The present account includes 95 species pertaining to 56 genera under 12 families, so far reported from Pachmarhi Biosphere Reserve.

List of Coleoptera recorded from Pachmarhi Biosphere Reserve

Suborder ADEPHAGA

Family PAUSSIDAE

1. *Paussus hearseyanus* Westwood
2. *Platyrhopalus denticornis* (Donovan)

Family CICINDELIDAE

3. *Cicindela cancellata* Dejean
4. *Cicindela catena* (Fabricius)
5. *Cicindela funerea* var. *assimilis* Hope
6. *Cicindela haemorroidalis* Wiedemann

Family CARABIDAE

7. *Bembidion xanthacrum* Chaudoir
8. *Clivina semicarinata* Putzeys
9. *Luperca laevigata* (Fabricius)

10. *Tachys babaulti* Andrewes
11. *Tachys blandus* Andrewes
12. *Tachys ornatus* (Apetz)

Family DYTISCIDAE

13. *Hydaticus* (*Guignoties*) *luczonicus* Aube
14. *Sandracottus dejeani* (Aube)

Family GYRINIDAE

15. *Orectochilus* (*Patrus*) *cardoni* Régimbart
16. *Orectochilus* (*Patrus*) *discifer* (Walker)
17. *Orectochilus* (*Patrus*) *fletcheri* Ochs
18. *Orectochilus* (*Patrus*) *haemorrhous* Régimbart
19. *Orectochilus* (*Patrus*) *limbatus* Régimbart
20. *Orectochilus* (*Patrus*) *ritsemai* Régimbart

Suborder POLYPHAGA

Family STAPHYLINIDAE

21. *Stenus nigripes* Cameron
22. *Trogophloeus* (*Boopinus*) *chatterjeei* Cameron
23. *Trogophloeus* (*Boopinus*) *congruus* Cameron
24. *Trogophloeus piceicollis* Cameron
25. *Trogophloeus trivialis* Cameron

Family SCARABAEIDAE

Subfamily HYBOSORINAE

26. *Hybosorus orientalis* (Westwood)
27. *Phaeochrous* sp.

Subfamily APHODIINAE

28. *Aphodius* (*Calaphodius*) *moestus* (Fabricius)
29. *Aphodius* (*Pharaphodius*) *crenatus* Harold
30. *Termitopisthes* (*Chaetopisthes*) *laticollis* Wasman

Subfamily SCARABAEINAE

31. *Catharsius molossus* (Linnaeus)

32. *Catharsius pithecius* (Fabricius)
33. *Chrironitis indicus* Lanseberg
34. *Copris imitans* Felsche
35. *Drepanocerus setosus* (Wiedman)
36. *Gymnopleurus cyaneus* (Fabricius)
37. *Gymnopleurus miliaris* (Fabricius)
38. *Gymnopleurus mundus* Wied.
39. *Gymnopleurus opacus* Redt.
40. *Gymnopleurus parvus* (Macl.)
41. *Liatongus rhadamistus* (Fabricius)
42. *Oniticellus cinctus* (Fabricius)
43. *Oniticellus pallens* Olivier
44. *Onitis brahma* Lansberg
45. *Onitis philemon* Fabricius
46. *Onthophagus bonasus* (Fabricius)
47. *Onthophagus catta* (Fabricius)
48. *Onthophagus cervus* (Fabricius)
49. *Onthophagus pactolus* (Fabricius)
50. *Onthophagus ramosellus* Bates
51. *Onthophagus ramosus* (Wiedman)
52. *Onthophagus sagittarius* (Fabricius)
53. *Phalops divisus* (Wied.)
54. *Scarabaeus sanctus* (Fabricius)

Subfamily MELOLONTHINAE

55. *Holotrichia fissa* Brenske
56. *Holotrichia rustica* Burmeister
57. *Schizonycha ruficollis* (Fabricius)

Subfamily RUTELINAE

58. *Adoretus bicaudatus* Arrow
59. *Adoretus bicolor* Brenske

60. *Adoretus bimarginatus* Ohaus
61. *Adoretus lasiopygus* (Burm.)
62. *Anomala bengalensis* Blanchard
63. *Anomala biharensis* Arrow
64. *Anomala dorsalis* (Fabricius)
65. *Anomala ruficapilla* Burmeister
66. *Anomala varicolor* (Gyll.)
67. *Mimela macleayana* Vigors
68. *Mimela xanthorrhina* Hope

Subfamily DYNASTINAE

69. *Eophileurus platypterus* (Wied.)
70. *Phyllognathus dionysius* (Fabricius)
71. *Xylotrupes gideon* (Linnaeus)

Subfamily CETONIINAE

72. *Anatona stillata* (Newman)
73. *Chiloloba acuta* G.& P.
74. *Clinteria hearseiana* Westwood
75. *Clinteria klugi* (Hope)
76. *Oxycetonia versicolor* (Fabricius)
77. *Protaetia aurichalcea* (Fabricius)

Family COCCINELLIDAE

78. *Brumus suturalis* (Fabricius)
79. *Coccinela transversalis* Fabricius
80. *Menochilus sexmaculatus* (Fabricius)

Family CERAMBYCIDAE

81. *Acanthophorus serraticornis* Olivier
82. *Plocaederus pedestris* (White)
83. *Prionomma atratum* (Gmelin)
84. *Stromatium barbatum* (Fabricius)
85. *Xystrocera globosa* (Olivier)

Family CURCULIONIDAE

86. *Crinorrhinus approximans* Marshall
 87. *Cyphicerinus pannosus* Marshall
 88. *Cyphicerinus tectonae* Marshall

Family MELOIDAE

89. *Mylabris phalerata* Pallas

Family CHRYSOMELIDAE

90. *Aspidomorpha furcata* (Thunberg)
 91. *Aulacophora foveicollis* (Lucas)
 92. *Haltica coerulea* (Olivier)
 93. *Haltica cyanea* (Weber)
 94. *Haltica foveicollis* (Jacoby)
 95. *Lema terminata* (Lacordaire)

SYATEMATIC ACCOUNT

Family PAUSSIDAE

1. *Paussus hearseyanus* Westwood

1842. *Paussus hearseyanus* Westwood, *Proc. Linn. Soc. Lond.*, p. 133.

1912. *Paussus hearseyanus* : Fowler, *Fauna Brit. India, Coleopt., Cicin. & Pauss.*, p. 478.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (3 exs.), coll. K. Chandra.

Diagnosis : Of a more or less bright fulvo-castaneous colour, with the disc of each elytron black; head large, distinctly broader than long, with a transverse keel behind the eyes, which is slightly angled in the centre; clypeus slightly emarginate; antennae club-shaped with three distinct impressions.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra and Uttar Pradesh.

2. *Platyrhopalus denticornis* (Donovan)

1800. *Paussus denticornis* Donovan, *Ins. Ind.*, 1, p. 8, pl. 5, fig. 1.

1912. *Platyrhopalus denticornis* : Fowler, *Fauna Brit. India, Col., Cicin. & Pauss.*, p. 459.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (3 exs.), coll. K. Chandra.

Diagnosis : Colour variable, rufo-castaneous, the elytra dark, with a more or less broad longitudinal patch on each side of the suture, usually, but not always reaching the base, and with a smaller patch behind the middle, and all the margins rufous or rufo-castaneous, or rufo-castaneous with obscure darker markings on the elytra.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra and West Bengal.

Family CICINDELIDAE

3. *Cicindela cancellata* Dejean

1825. *Cicindela cancellata* Dejean, *Spec. Col.*, 1 : 116.

1912. *Cicindela cancellata* : Fowler, *Fauna Brit. India, Coleopt., Cicin. & Paus.*, p. 424.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (1 ex.), coll. K. Chandra.

Diagnosis : Head and pronotum coppery with various metallic reflections, and with sides green or bluish, the former shining, excavate and strongly striated between the eyes, which are very prominent; antennae with the base metallic and the rest reddish, the first joint furnished with a few white hairs.

Distribution : India : Madhya Pradesh (Hoshangabad), Kerala, Karnataka, Maharashtra, Orissa, Sikkim, Tamil Nadu, West Bengal.

Elsewhere : Myanmar, Pakistan, Indonesia and China.

4. *Cicindela catena* Fabricius

1775. *Cicindela catena* Fabricius, *Syst. Ent.*, p. 226.

1912. *Cicindela catena* : Fowler, *Fauna Brit. India, Coleopt., Cicin. & Paus.*, p. 426.

Material examined : Hoshangabad, Pachmarhi, Mahadev, 7.vi.1999 (6 exs.); Satpura National Park, Bori, 14.vi.1999 (1 ex.); Coll. K. Chandra.

Diagnosis : Characterised by the presence of densely pilose genae; legs metallic green and coppery, and the underside violaceous, except a brilliant fiery copper colour episterna.

Distribution : India : Madhya Pradesh (Hoshangabad), Karnataka, Uttaranchal, Tamil Nadu, Kerala, West Bengal, Jharkhand, Sikkim.

Elsewhere : Sri Lanka and Myanmar.

5. *Cicindela funerea* McLeay

1825. *Cicindela funerea* McLeay, *Ann. Jav.*, p. 12.

1912. *Cicindela funerea* : Fowler, *Fauna Brit. India, Coleopt., Cicin. & Pauss.*, p. 377.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 12.vi.1999 (4 exs.); Bhaisa nala, 12.vi.1999 (2 exs.); coll. K. Chandra.

Diagnosis : Usually of a dull greenish bronze or greenish colour, or coppery brown with slight metallic reflections on the front parts, and with the sculpture of the elytra finer, underside mostly violaceous.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra, Himachal Pradesh, Karnataka, Tamil Nadu, Sikkim, Assam.

Elsewhere : Nepal, Pakistan, Myanmar, Java, Indo-China, Hainan, and Celebes.

6. *Cicindela haemorrhoidalis* Wiedemann

1823. *Cicindela haemorrhoidalis* Wiedemann, *Zool. Mag.* ii, 1 : 63

1826. *Cicindela quadrimaculata* Sturn, *Cat.*, : 55, pl. 1, Fig. 1.

1912. *Cicindela haemorrhoidalis* : Fowler, *Fauna Brit. India, Coleoptera*, : 402.

Material examined : Hoshangabad, Dhain FRH, 16. vi.2003 (1 ex.), coll. K. Chandra.

Diagnosis : The species characterized by the red apex of the abdomen; elytra dull black, with a small spot at each shoulder and two large spots on each side one at middle and one before apex.

Distribution : India : Assam, Bihar, Madhya Pradesh (Hoshangabad), Maharashtra, Karnataka, Kerala, Tamil Nadu and West Bengal.

Elsewhere : China.

Family CARABIDAE

7. *Bembidion xanthacrum* Chaudoir

1923. *Bembidion xanthacrum* Chaudoir, *Bull. Mosc.* 2, p. 175.

1935. *Bembidion xanthacrum* : Andrewes, *Fauna British India, Coleoptera, Carabidae*, 2 : 98.

Material examined : Past record (Andrewes, 1935).

Diagnosis : Colour bronze-green above, piceous beneath, apex of venter ferruginous; palpi, joints 1 to 3 of antennae, with basal half of joint 4, base and apex of femora, tibiae, tarsi, and apex of elytra, covering from a sixth to an eighth of their length, flavous; rest of

femora and extreme apex of tibiae and tarsal joints piceous; head with short shallow furrows, a slight longitudinal engraved line at each end of the clypeal suture; elytra moderately convex, oval, a sixth wider than prothorax, nearly two-thirds longer than wide.

Distribution : India : Assam, Bihar, Himachal Pradesh, Madhya Pradesh (Hoshangabad), Maharashtra, Uttaranchal, Uttar Pradesh, Tamil Nadu and West Bengal,

Elsewhere : Myanmar, Siam, Laos, Pakistan.

8. *Clivina semicarinata* Putzeys

1877. *Clivina semicarinata* Putzeys, *Compt. Rend. Soc. Ent. Belg.*, p. 44.

1929. *Clivina semicarinata* : Andrewes, *Fauna British India, Coleoptera, Carab.*, 1 : 361.

Material examined : Past record (Andrewes, 1929).

Diagnosis : Head with the median part of clypeus distinctly emarginate, bordered and somewhat concave in front; prothorax rather more contracted in front, the sides less rounded, the median line rather deeper; elytra with rather deeper striae, especially in front, and the intervals therefore more convex.

Distribution : India : Madhya Pradesh (Hoshangabad), Bihar, Assam, Uttaranchal and West Bengal.

Elsewhere : Bhutan, Myanmar.

9. *Luperca laevigata* (Fabricius)

1781. *Carabus laevigatus* Fabricius, *Spec. Ins.* 1, p. 304.

1929. *Luperca laevigata* : Andrewes, *Fauna British India, Coleoptera, Carab.*, 1 : 206-208.

Material examined : Past record (Andrewes, 1929).

Diagnosis : Colour black, surface dull, coriaceous. Head wide and rather flat, clypeus emarginate in front, lateral ridges very narrow; elytra broadly oval, flat, convex.

Distribution : India : Madhya Pradesh (Hoshangabad), Bihar, Orissa, Uttar Pradesh, Maharashtra, Tamil Nadu.

Elsewhere : Baluchistan, Persia.

10. *Tachys babaulti* Andrewes

1924. *Tachys babaulti* Andrewes, in *Mission dans les...* p. 87, t. 2, f. 1.

1935. *Tachys babaulti* : Andrewes, *Fauna British India, Coleoptera, Carab.*, 2 : 271.

Material examined : Past record (Andrewes, 1935).

Diagnosis : Colour bronze-black, iridescent; joints 1 to 3 of antennae (rest brown), and legs ferruginous. Head with the frontal furrows short and not very deep, hardly duplicated; mentum without pores; eyes moderately prominent; antennae filiform, joints 2 and 3 equal.

Distribution : India : Madhya Pradesh (Hoshangabad, Indore), Maharashtra, Tamil Nadu, Uttaranchal.

Elsewhere : Pakistan.

11. *Tachys blandus* Andrewes

1924. *Tachys blandus* Andrewes, in *Mission dans les...* p. 85, t. 1, f. 8.

1935. *Tachys blandus* : Andrewes, *Fauna British India, Coleoptera, Carab.*, 2 : 276.

Material examined : Past record (Andrewes, 1935).

Diagnosis : Colour black above, brown beneath, the elytra faintly suffused with a deep reddish tinge; joints 1 to 3 of antennae (rest fuscous), and legs ferruginous, the middle of femora sometimes infuscate; head with short, fairly deep, duplicated furrows; elytra ovate and moderately convex.

Distribution : India : Andhra Pradesh, Bihar, Madhya Pradesh (Hoshangabad, Indore), Maharashtra, Punjab, Tamil Nadu and Uttaranchal.

12. *Tachys ornatus* (Apetz)

1854. *Bembidium ornatum* Apetz, *Col. Brehm*, p. 12.

1935. *Tachys ornatus* : Andrewes, *Fauna British India, Coleoptera, Carab.*, 2 : 254.

Material examined : Past record (Andrewes, 1935).

Diagnosis : Colour brassy, joints 1 to 3 of antennae (rest fuscous) and legs ferruginous, two spots on each elytron flavous, the front one extending inwards to stria 5, the hind one to stria 3; head with rather short, straight, duplicate furrows; elytra moderately convex, with parallel sides, not much wider than prothorax, a half longer than wide, border smooth.

Distribution : India : Madhya Pradesh (Hoshangabad, Indore), Maharashtra, Uttaranchal, Uttar Pradesh, Tamil Nadu, Bihar, Orissa and Karnataka.

Elsewhere : Sri Lanka, Philippines, Aden, Yemen, Sudan and Abyssinia.

Family DYTISCIDAE

13. *Hydaticus (Guignoties) luczonicus* Aube

1838. *Hydaticus luczonicus* Aube, in *Dejeans's species Coleopteres*. 6, p. 179.

1977. *Hydaticus (Guignoties) luczonicus* : Vazirani, *Cat. Orient. Dytiscidae* : 79

1995. *Hydaticus (Guignoties) luczonicus* : Saha et al., *State Fauna Series 3, Fauna of West Bengal*, Part 6(A) : 106

Material examined : Hoshangabad, Pachmarhi, 20.i.1916 (ex. 1), coll. F.H.Gravely. (Present in the collections of ZSI, Kolkata).

Distribution : India : Bihar, Gujarat, Madhya Pradesh (Hoshangabad), Maharashtra, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere : Thailand.

14. *Sandracottus dejeani* (Aube)

1838. *Hydaticus dejeani* Aube, in *Dejean's Species Coleopteres, Paris*, 6 : 115.

1964. *Sandracottus dejeani* : Vazirani, *Rec. zool. Surv. India*, 62 (1-2) : 47.

1969. *Sandracottus dejeani* : Vazirani, *Oriental Ins.* 2 (3-4) : 275-276.

Material examined : Hoshangabad, Joga, 1.i. 1966 (3 exs.), coll. H. Khajuria.

Diagnosis : Body long; middle femora with few long ciliae not or scarcely shorter than the trochanters.

Distribution : Madhya Pradesh, Maharashtra, Rajasthan, and West Bengal *Elsewhere* : West Pakistan.

Family GYRINIDAE

15. *Orectochilus (Patrus) cardoni* Régimbart

1891. *Orectochilus cardoni* Régimbart, *Ann. Soc. ent. Fr.*, 60 : 714, pl. 18, fig. 17.

1984. *Orectochilus (P.) cardoni* : Vazirani, *Fauna of India, Coleoptera, Gyri. & Hali.*, p. 95.

Material examined : Past record (Vazirani, 1984).

Diagnosis : Form elongate oval, very convex. Head bronze-black. Pronotum black, shining, lateral margins reddish; elytra black, shining; ventral surface black, abdominal sternites and legs rufo-ferruginous.

Distribution : India : Madhya Pradesh (Hoshangabad) and West Bengal.

16. *Orectochilus (Patrus) discifer* (Walker)

1859. *Gyrinus discifer* Walker, *Ann. Mag. nat. Hist.*, 3 (3) : 51.

1984. *Orectochilus (Patrus) discifer* : Vazirani, *Fauna of India, Coleoptera, Gyri. & Hali.*, p. 60.

Material examined : Past record (Vazirani, 1984).

Diagnosis : Head black, shining, clypeus black, more densely punctate than head. Pronotum black, shining, sateral margins yellow. Elytra black, shining, lateral margins yellow. Ventral surface ferruginous; legs, sternites and epipleura, reddish-yellow.

Distribution : India : Madhya Pradesh (Hoshangabad, Umaria, Rewa and Amarkantak), Bihar, West Bengal, Maharashtra, Andhra Pradesh, Eastern Ghats, Kerala and Tamil Nadu.

Elsewhere : Sri Lanka.

17. *Orectochilus (Patrus) fletcheri* Ochs

1925. *Orectochilus fletcheri* Ochs, *Rec. Indian Mus.*, 27 : 201.

1984. *Orectochilus (P.) fletcheri* : Vazirani, *Fauna of India, Coleoptera, Gyri. & Hali.*, p. 87.

Material examined : Past record (Vazirani, 1984).

Diagnosis : Labrum brown, semicircular, less than twice as broad as long, moderately punctate-pubescent; pronotum bronze coloured; elytra bronze-coloured, sutural margin with a row of black dots; ventral side dark brown, with abdomen and legs reddish, epipleurae yellow.

Distribution : India : Madhya Pradesh (Jabalpur, Narsinghpur, Hoshangabad), Bihar, Maharashtra, Kerala and West Bengal.

18. *Orectochilus (Patrus) haemorrhous* Régimbart

1891. *Orectochilus (Patrus) haemorrhous* Régimbart, *Ann. Soc. ent. Fr.*, 60 : 706.

1984. *Orectochilus (P.) haemorrhous* : Vazirani, *Fauna of India, Coleopt., Gyri. & Hali.*, p. 85.

Material examined : Past record (Vazirani, 1984).

Diagnosis : Head bronze-black, labrum brownish-black. Pronotum and elytra bronze-black. Ventral surface ferruginous; legs, abdominal sternites and epipleura reddish-yellow.

Distribution : India : Madhya Pradesh (Jabalpur, Hoshangabad, Narsinghpur, Rewa and Mandla), Bihar, Karnataka, Maharashtra, Tamil Nadu and West Bengal.

19. *Orectochilus (Patrus) limbatus* Régimbart

1883. *Orectochilus limbatus* Régimbart, *Ann. Soc. ent. Fr.*, 3 (6) : 424.

1984. *Orectochilus (P.) limbatus* : Vazirani, *Fauna of India, Coleoptera, Gyri. & Hali.*, p. 52.

Material examined : Past record (Vazirani, 1984).

Diagnosis : Head black, reticulation subtle; pronotum black, lateral margins yellow; elytra black, lateral margins yellow, reticulation absent; ventral surface reddish-brown including abdomen; legs and epipleura yellowish.

Distribution : India : Madhya Pradesh (Rewa, Mandla, Jabalpur, Narsinghpur and Hoshangabad), Bihar, Uttar Pradesh, Jharkhand, Maharashtra, Orissa and Tamil Nadu.

Elsewhere : Sri Lanka.

20. *Orectochilus (Patrus) ritsemai* Régimbart

1882. *Orectochilus ritsemai* Régimbart, *Notes Leydon Mus.*, 4 : 67.

1984. *Orectochilus (P.) ritsemai* : Vazirani, *Fauna of India, Coleoptera, Gyri. & Hali.*, p. 88.

Material examined : Past record (Vazirani, 1984).

Diagnosis : Head bronze-black, reticulation distinct; pronotum bronze-black, reticulation very subtle; elytra bronze-black, shining, lateral margins yellow; ventral surface brownish-black; abdominal sternites, legs and epipleura reddish.

Distribution : India : Madhya Pradesh (Mandla, Hoshangabad, Ratlam and Rewa), Bihar, Uttar Pradesh and Maharashtra, Orissa.

Elsewhere : Myanmar, Vietnam, and Indonesia.

Family STAPHYLINIDAE

21. *Stenus nigripes* Cameron

1930. *Stenus nigripes* Cameron, *Fauna British India, Coleoptera, Staphyl.*, 1 : 342.

Material examined : Past record (Cameron, 1930).

Diagnosis : Thorax with distinct smooth median line, the sculpture closer, more or less confluent and transversely rugose; elytra more closely punctured; abdomen less finely and more closely punctured, the apex with a short sharp spine on each side.

Distribution : India including Madhya Pradesh (Hoshangabad).

22. *Trogophloeus (Boopinus) chatterjeei* Cameron

1930. *Trogophloeus (B.) chatterjeei* Cameron, *Fauna Brit. India, Coleopt., Staphyl.*, 1 : 188.

Material examined : Past record (Cameron, 1930).

Diagnosis : Thorax much less dilated in front and less retracted behind, and more finely punctured on the disc as on head.

Distribution : India including Madhya Pradesh (Hoshangabad).

23. *Trogophloeus (Boopinus) congruus* Cameron

1930. *Trogophloeus (B.) congruus* Cameron, *Fauna Brit. India, Coleopt., Staphyl.*, 1 : 188.

Material examined : Past record (Cameron, 1930).

Diagnosis : Moderately shining; head and abdomen black, thorax pitchy-brown, elytra brownish-yellow ; antennae black, first four joints reddish-yellow; legs testaceous.

Distribution : India including Madhya Pradesh (Hoshangabad).

24. *Trogophloeus piceicollis* Cameron

1930. *Trogophloeus piceicollis* Cameron, *Fauna Brit. India, Coleopt., Staphyl.*, 1 : 193.

Material examined : Past record (Cameron, 1930).

Diagnosis : Body moderately shining; head and abdomen black, thorax and elytra brownish-red; antennae black, first four joints testaceous; legs testaceous.

Distribution : India including Madhya Pradesh (Hoshangabad).

25. *Trogophloeus trivialis* Cameron

1930. *Trogophloeus trivialis* Cameron, *Fauna Brit. India, Coleopt., Staphyl.*, 1 : 197.

Material examined : Past record (Cameron, 1930).

Diagnosis : Form moderately shining black, elytra dark brown; antennae black, first two joints testaceous; legs testaceous.

Distribution : India including Madhya Pradesh (Hoshangabad).

Family SCARABAEIDAE

Subfamily HYBOSORINAE

26. *Hybosorus orientalis* Westwood

1845. *Hybosorus orientalis* Westwood, *Trans. ent. Soc. Lond.*, 6 : 159.

1990. *Hybosorus orientalis* : Biswas & Chatterjee, *Fauna of Orissa*, 3 : 242.

Material examined : Hoshangabad, Bori Sanctuary, 12.vi.1999 (1 ex.), coll. K. Chandra.

Diagnosis : Colour black, underside a shade lighter; anterior margin of labrum with nine denticles; elytra with nine complete striae between suture and humeral umbone, and 7-8 well-developed striae and some interrupted short traces of further striae on lateral part.

Distribution : India : Madhya Pradesh (Hoshangabad), Kerala, Orissa, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Pakistan.

27. *Phaeochrous* sp.

1840. *Phaeochrous* Castelnau, *Hist. net. Des. Insectes*, 2(1), 1840, p. 108.

1848. *Phaeochrous* : Erichson, *Nicoli*, 4, p. 717.

1978. *Phaeochrous* : Kuijten, *Zool. Verh., Leiden*, 165, p. 8.

Material examined : Hoshangabad, P.B.R., Madai Forest Rest house (1 ex.), 13.vi.1999, coll. K. Chandra & Party.

Diagnosis : Body oval, clypeus not covering mouth parts. Paraocular lobes well developed, with the side protruding, beyond eyes; antennae 10 segmented cupuliform; pronotum glabrous, with lateral sides deplanet, and base completely and finely margined; elytra with 16-18 striae.

Distribution : India : Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh (Hoshangabad), Maharashtra, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal.

Elsewhere : Pakistan, Nepal, U.S.A. and England.

Subfamily APHODIINAE

28. *Aphodius (Calaphodius) moestus* Fabricius

1801. *Aphodius moestus* Fabricius, *Syst. Eleuth.*, 1 : 78.

1963a. *Aphodius (Calaphodius) moestus* : Balthasar, *Verl. Tschsl. Akad. Wissensch.*, III : 182.

1991. *Aphodius moestus* : Biswas & Chatterjee, *Fauna of Orissa, State Fauna Series*, I(Part 3) : 261.

Material examined : Hoshangabad, Bori Sanctuary, 20.ii.2003 (1 ex); Kakri Village, 21.ii.2003 (9 exs.); coll. M.L. Koshta & Party.

Diagnosis : Pale yellow, elytra with fourth interval in the last half and sixth in anterior two-third black.

Distribution : India : Haryana, Madhya Pradesh (Jabalpur and Hoshangabad), Orissa, Rajasthan, Uttar Pradesh and Uttaranchal.

Elsewhere : Afganistan, East and South Africa, Medagaskar and Sri Lanka.

29. *Aphodius (Pharaphodius) crenatus* Harold

1862. *Aphodius crenatus* Harold, *Berl. Ent. Zeit.*, **5** : 142

1963a. *Aphodius (Pharaphodius) crenatus* : Balthasar, *Verl. Tschsl. Akad. Wissensch.*, **III** : 74.

Material examined : Hoshangabad, Kakri vill., 21.ii.2003 (1ex.), coll. M.L. Koshta & Party.

Diagnosis : Dark-brown to black, scutellum with median longitudinal depressed line; punctures of elytral striae ending to sides of intervals.

Distribution : India : Haryana, Himachal Pradesh, Madhya Pradesh (Hoshangabad), Uttar Pradesh and Uttaranchal.

Elsewhere : Pakistan

30. *Termitopisthes (Chaetopisthes) laticollis* Wasmann.

1918. *Termitopisthes (Chaetopisthes) laticollis* Wasmann, *Wein. Ent. Zeit.*, **37** : 15.

1964. *Termitopisthes (Chaetopisthes) laticollis* : Balthasar, *Verl. Tschsl. Akad. Wissensch.*, **3** : 627.

Material examined : Past record (Balthasar, 1964).

Distribution : India : Madhya Pradesh (Hoshangabad) and Karnataka.

Subfamily SCARABAEINAE

31. *Catharsius molossus* (Linnaeus)

1758. *Scarabaeus molossus* Linnaeus, *Syst. Nat. ed.* **10** : 347.

1931. *Catharsis molossus* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) **3** : 95-96.

1991. *Catharsius molossus* : Biswas & Chatterjee, *Fauna of Orissa, State Fauna Series*, **I(Part 3)** : 255.

Material examined : Chhindwara, Badi Anthoni, 29.x.2002 (2 exs.), Coll. Y.N. Gupta & Party.

Diagnosis : Body broadly oval, convex, opaque and black, somewhat shining ventrally; head broad, bears a conical median horn; with the front margin almost excised at middle, a simple, smooth, shining area adjoining inner margin of each eyes; pronotum with a steep declivity in front, upper edge, which forms W shaped ridge; and densely covered with fine round granules, sides rounded; front angles broadly truncate.

Distribution : India : Anadaman Island, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Hoshangabad), Meghalaya, Orissa, Sikkim, Uttar Pradesh, Uttaranchal and West Bengal.

32. *Catharsius pithecius* (Fabricius)

1775. *Scarabaeus pithecius* Fabricius, *Syst. Ent.*, p. 21.

1931. *Catharsius pithecius* : Arrow, *Fauna British India, Coleopt., Lamelli.*, 3 : 100.

Material examined : Hoshangabad, Madai, 14.vi.1999 (4 exs.), Coll. K. Chandra; Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (3 exs.), 11.vi.1999 (1 ex.), Coll. K. Chandra; Hoshangabad, Satpura National Park, Madai, 14.vi.1999 (4 exs.), Coll. K. Chandra.

Diagnosis : Black or shining, with the pronotum partly or entirely opaque, the antennae, mouth organs, and hairy clothing of the legs and lower surface reddish. Shortly oval and very convex. The head is nearly semi-circular in shape, with the clypeus very feebly excised in the middle of the front margin and closely strigose. The metasternal shield is acutely angular in front, very smooth and shining, with a median longitudinal groove, and the sides of the metasternum are closely and rugosely punctured and hairy.

Distribution : India : Madhya Pradesh (Hoshangabad), Bihar, Uttar Pradesh, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh.

Elsewhere : Sri Lanka.

33. *Chironitis indicus* Lansberg

1875. *Chironitis indicus* Lansberg, *Ann. Soc. Ent. Belg.* xviii : 45.

1917. *Chironitis indicus* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 95-96.

Material examined : Chhindwara, Parsia, 27. x. 2002 (4 exs.), coll. Y. N. Gupta & Party.

Diagnosis : Body oblong, rather depressed, yellow, speckled with brown; the clypeus, ocular lobes and the lateral margins of the pronotum yellow; the head, pronotum, legs and lower surface usually suffused with a slight metallic lusture ; front margin of clypeus strongly reflexed and feebly bilobed; elytra very lightly striate, with the 2nd and 4th intervals rather broad and carinate.

Distribution : India : Haryana, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and Tamil Nadu.

34. *Copris imitans* Felsche

1910. *Copris imitans* Felsche, *Deutsche Ent. Zeits.*, : 347.

1931. *Copris imitans* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 124.

Material examined : Hoshangabad, Bori Sanctuary, 14.vi.2003 (1 ex.), coll. K.Chandra.

Diagnosis : Body black and shining, broadly oval and convex; with the antennae, mouth-organs, and the bristles clothing the legs; head very smooth and shining, with a few punctures upon the vertex and the ocular lobes; pronotum rather closely, finely but not densely punctured ; elytra deeply striate with the striae finely and closely and not conspicuously punctured.

Distribution : India : Madhya Pradesh (Hoshangabad), Goa, Karnataka and Maharashtra.

35. *Drepanocerus setosus* (Wied.)

1823. *Copris setosa* Wied., *Zool. Mag.*, ii, 1 : 19.

1931. *Drepanocerus setosus* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 381.

Material examined : Hoshangabad, Bori Sanctuary, 20.ii.2003 (8 exs.), 21.ii.2003 (14 exs.) coll. M.L. Koshta & Party.

Diagnosis : Body black, elongate oval and little depressed; with the antennae and tarsi reddish, and clothed with grey or dirty yellow scale like setae; head rather narrow, unevenly and unequally punctuate; pronotum closely covered with large shallow pits; elytra opaque, base angulate in middle.

Distribution : India : Chhattisgarh, Himachal Pradesh, Haryana, Madhya Pradesh (Hoshangabad), Maharashtra, Tamil Nadu, Uttar Pradesh and Uttaranchal.

Elsewhere : Sri Lanka.

36. *Gymnopleurus cyaneus* (Fabricius)

1798. *Copris cyaneus* Fabricius, *Ent. Syst. Suppl.* : 34.

1931. *Gymnopleurus cyaneus* : Arrow, *Fauna Brit. India, Coleopt., Lamelli.*, 3 : 49.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 11.vi.1999 (2 exs.), Coll. K. Chandra; Hoshangabad, Madai, 14.vi.1999 (3 exs.), Coll. K. Chandra; Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (20 exs.), Coll. K. Chandra.

Diagnosis : Bright, shining, metallic green, blue or violet, with the lower surface rather darker, the antennae dark, and the body above and beneath almost devoid of hairs or setae. Broadly oval and not very convex, with slender legs, the front tibia armed with three strong teeth. The front edge of the front femur a little flattened or hollowed, with a tooth placed at two-thirds of its length from the base; the middle tibia scarcely and the hind tibia distinctly serrate.

Distribution : India : Madhya Pradesh (Hoshangabad), Uttar Pradesh, West Bengal, Maharashtra, Karnataka, Tamil Nadu.

Elsewhere : Sri Lanka.

37. *Gymnopleurus miliaris* (Fabricius)

1775. *Gymnopleurus miliaris* Fabricius, *Syst. Ent.*, p. 817.

1931. *Gymnopleurus miliaris* : Arrow, *Fauna Brit. India, Lamell., Coprinae*, 3 : 50.

Material examined : Hoshangabad, Madai, 14.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Blue-black, dark green or coppery, with the lower surface black or nearly black, and the upper surface closely clothed with minute grey setae, bearing a few shining denuded patches, viz., a central spot upon the prothorax, a ring of five spots surrounding it, an outer one on each side and the lateral pit on each side near the last. Moderately broad, not very convex, with slender legs.

Distribution : India : Madhya Pradesh (Jabalpur, Hoshangabad), Haryana, Kashmir, Karnataka, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh, Uttaranchal, and West Bengal,

Elsewhere : Sri Lanka and Pakistan.

38. *Gymnopleurus mundus* Wied.

1819. *Gymnopleurus mundus* Wied., *Zool. Mag.*, 1, 3, p. 162.

1931. *Gymnopleurus mundus* : Arrow, *Fauna British India, Lamell., Coprinae*, 3 : 57.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 11.vi.1999 (18 exs.), Coll. K. Chandra; Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Dull opaque steely blue, olive-green, or nearly black, entirely devoid of hairy clothing, with the lower surface and legs black or greenish-black and moderately shining.

Distribution : India : India : Madhya Pradesh (Hoshangabad) and Bihar.

Elsewhere : S.W. China.

39. *Gymnopleurus opacus* Redt.

1848. *Gymnopleurus opacus* Redt., *Hügel's Kaschmir*, 4, 2, p. 516.

1931. *Gymnopleurus opacus* : Arrow, *Fauna British India, Lamell., Coprinae*, 3 : 58.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 11.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Black, with a slight greenish or bluish tinge on the upper surface, the lower surface moderately shining and the upper surface entirely rough and opaque. The elytra are closely and finely granulate, and bear fine minutely punctured striae.

Distribution : India : Madhya Pradesh (Hoshangabad), Uttaranchal, Punjab, Himachal Pradesh.

40. *Gymnopleurus parvus* (Macl.)

1821. *Scarabaeus parvus* Macl., *Horae Ent.*, p. 517.

1931. *Gymnopleurus parvus* : Arrow, *Fauna British India, Lamell., Coprinae, 3* : 52.

Material examined : Hoshangabad, Kakri village, 11.vi.1999 (2 exs.), Coll. K. Chandra

Diagnosis : Dark coppery or greenish-black, occasionally steely blue, with the upper surface densely clothed with minute greyish setae, leaving a few shining denuded spots, viz., three placed in a transverse row along the middle line of the pronotum, one between the median spot and the base, and one on each side between the last and the lateral spot, a common spot at the base of the elytral suture, three along the basal margin, one on each side of the suture a little behind the middle and one upon each apical callus.

Distribution : India : Madhya Pradesh (Hoshangabad), Uttaranchal, Tamil Nadu, West Bengal, Orissa, Bihar.

Elsewhere : Sri Lanka.

41. *Liatongus rhadamistus* (Fabricius)

1775. *Scarabaeus rhadamistus* Fabricius, *Syst. Ent.*, : 22.

1931. *Liatongus rhadamistus* : Arrow, *Faun. Brit. India, (Lamellicornia : Coprinae) 3* : 374-375.

Material examined : Hoshangabad, Tekapar, 26.ii.2003 (7 exs.), coll. M. L. Koshta.

Diagnosis : Bright orange yellow, elongate oval, a little flattened above; with the head partly or entirely the pronotum, except the lateral margins; elytra deeply striate with the striae very indistinctly punctured; pronotum little longer than wide and has a deep excavation extending almost for its entire length, front margins produced in the middle into a rather sharp backwardly curved hook, and sides almost perpendicular and strongly angular beyond the middle.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra and Tamil Nadu.

Elsewhere : Sri Lanka.

42. *Oniticellus cinctus* (Fabricius)

1775. *Scarabaeus cinctus* Fabricius, *Syst. Ent.*, p. 30.

1931. *Oniticellus cinctus* : Arrow, *Fauna British India, Lamell., Coprinae, 3* : 379.

Material examined : Hoshangabad, Satpura National Park, Madai, 14.vi.1999 (1 ex.), Coll. K. Chandra

Diagnosis : Smooth, shining black, the head usually with a slight metallic green lustre and each elytron with a pale yellow external border extending from behind the shoulder to the sutural angle. The pygidium is generally yellowish at the base and apex.

Distribution : India : Assam, Madhya Pradesh (Hoshangabad, Amarkantak, Rewa), Uttaranchal, Maharashtra, Karnataka, Tamil Nadu and West Bengal.

Elsewhere : Bangladesh, Myanmar, Malay Peninsula, Siam, Annam, and S. China.

43. *Oniticellus pallens* (Olivier)

1789. *Scarabaeus pallens* Olivier *Ent.* I, 3, : 170, pl. 33, fig.203.

1931. *Oniticellus pallens* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 377.

Material examined : Hoshangabad, Bori Sanctuary, 17.ii.2003 (6 exs.), 20.ii.2003 (5 exs.), coll. by M.L. Koshta & Party.

Diagnosis : Body yellow, opaque, speckled with brown black spots and patches suffused with green metallic lusture; the front margin of the clypeus is straight or very feebly excised. In male, the clypeus is shining, with its margin thickened and divided transversely by a strongly curved broad carina; the front tibia broad and armed with four not very stout teeth.

Distribution : India : Haryana, Himachal Pradesh, Madhya Pradesh (Hoshangabad), Rajasthan, and North Uttar Pradesh and West Frontier Part of India.

Elsewhere : Arabia, Egypt, Algeria and Somalia Land.

44. *Onitis brahma* Lansberg

1875. *Onitis brahma* Lansb., *Ann. Soc. Ent. Belg.* 18, p. 142.

1931. *Onitis brahma* : Arrow, *Fauna British India, Coleopt., Lamelli.*, 3 : 399.

Material examined : Hoshangabad, Pachmarhi, Khakarpura, 11.iii.2000 (3 exs.), Coll. R.K. Singh; Hoshangabad, Pachmarhi, Sonbhadra river, 6.iii.2000 (3 exs.), 8.iii.2000 (1 ex.), Coll. R.K. Singh.

Diagnosis : Form black or dark chestnut-brown, with the antennae, mouth organs and the long hairy clothing of the lower surface and legs red. Rather elongate, parallel-sided; elytra rather smooth.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra and Karnataka.

45. *Onitis philemon* Fabricius

1801. *Onitis philemon* Fabricius, *Syst. Eleut.*, 1, p. 30.

1931. *Onitis philemon* : Arrow, *Fauna British India, Coleopt., Lamelli.*, 3 : 393.

Diagnosis : Green, coppery or bronzy-black, moderately shining. Oval, neither very elongate nor very convex. The head is rugulose, with the ocular lobes rather smooth, the

clypeus parabolic. The pronotum fairly strongly and closely but unevenly punctured, without well-marked median line.

Distribution : India : Madhya Pradesh, Bihar, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh.

Elsewhere : Sri Lanka.

46. *Onthophagus bonasus* (Fabricius)

1775. *Scarabaeus bonasus* Fabricius, *Syst. Ent.*, : 23.

1931. *Onthophagus bonasus* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 231-232.

1991. *Onthophagus bonasus* : Biswas & Chatterjee, *Fauna of Orissa, State Fauna Series, I(Part 3)* : 257.

Material examined : Hoshangabad, Bori Sanctuary, 18.ii.2003 (6 exs.), 20.2.2003 (4 Ex); coll. M.L. Koshta & Party.

Diagnosis : Body broadly oval, testaceous yellow; head, pronotum, elytral suture greenish black with metallic lusture; head semicircular, front margin reflexed, feebly sinuate at the middle; clypeus closely granulate and transversely rugulose; a short acute, erect horn (tubercle) at middle of forehead; vertex bears a backwardly projected horn; pronotal margin completely raised, front angles acutely produced.

Distribution : India : Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh (Hoshangabad), Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu Uttar Pradesh, Uttaranchal and West Bengal.

Elsewhere : Myanmar, Pakistan, Thailand and Vietnam.

47. *Onthophagus catta* (Fabricius)

1787. *Scarabaeus catta* Fabricius, *Mant. Ins.*, i : 12.

1931. *Onthophagus catta* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 230.

1991. *Onthophagus catta* : Biswas & Chatterjee, *Fauna of Orissa, State Fauna Series, I(Part 3)* : 257.

Material examined : Hoshangabad, Ranighat, 12.vi.2003 (3 ex.), coll. K.Chandra.

Diagnosis : Body broadly oval, convex, head, pronotum and tibiae testaceous yellow; body moderately shining; head semicircular, front margin strongly reflexed, feebly sinuated in the middle; pronotum rather sparsely granulate in its median part; elytra finely punctate striate, covered with whitish inconspicuous.

Distribution : India : Andhra Pradesh, Delhi, Gujarat, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh (Hoshangabad), Maharashtra, Punjab, Rajasthan and Tamil Nadu.

Elsewhere : Africa, Arabia, Medagaskar, Pakistan and Sri Lanka.

48. *Onthophagus cervus* (Fabricius)

1798. *Copris cervus* Fabricius, *Ent. Syst. Suppl.*, : 31.

1931. *Onthophagus cervus* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 348.

Material examined : Hoshangabad, Madai, Tekapar village, 26.ii.2003 (1 ex.), coll. M.L. Koshta.

Diagnosis : Body oval, moderately convex; head and pronotum copper black; elytra with copper black and orange colour; two orange stripes, one at base and other at other elytra; head moderately broad, ocular lobes rounded at sides, projecting a little outward in front of eyes; clypeus little produced, margin reflexed; pronotum closely and unevenly punctured.

Distribution : India : Madhya Pradesh, Maharashtra, Tamil Nadu and West Bengal.

Elsewhere : Sri Lanka.

49. *Onthophagus pactolus* (Fabricius)

1787. *Scarabaeus pactolus* Fabricius, *Mat. Ins.*, 1 : 12.

1931. *Onthophagus pactolus* : Arrow, *Fauna British India, Coleopt., Lamelli.*, 3 : 203.

Material examined : Hoshangabad, Satpura National Park, Madai, 14.vi.1999 (2 exs.), Coll. K. Chandra

Diagnosis : Rich deep metallic green, with the sides of the prothorax, and sometimes part of the head, reddish-golden, the elytra reddish-orange, with the suture green and the antennae pale yellow. The head, legs, and lower surface are clothed with moderately long yellow hair, and the pronotum and elytra with minute yellow setae.

Distribution : India : Madhya Pradesh (Hoshangabad, Indore), Uttaranchal; Uttar Pradesh, Maharashtra and Karnataka.

50. *Onthophagus ramosellus* Bates

1891. *Onthophagus ramosellus* Bates, *Entom.* 24, Suppl., p. 11.

1931. *Onthophagus ramosellus* : Arrow, *Fauna British India, Coleopt., Lamelli.*, 3 : 217.

This species is known from Hoshangabad.

Diagnosis : Broadly oval, compact, and convex and almost without hairs or setae above and beneath. Black, opaque above, shining beneath, with the antennae bright yellow.

Distribution : India : Madhya Pradesh (Betul, Hoshangabad), Uttar Pradesh, Uttaranchal, Himachal Pradesh, Maharashtra, Assam, Bihar, West Bengal, Karnataka.

Elsewhere : Myanmar, Pakistan.

51. *Onthophagus ramosus* (Wied.)

1823. *Copris ramosa* Wied., *Zool. Mag.*, : 21.

1931. *Onthophagus ramosus* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 236-237.

1991. *Onthophagus ramosus* : Biswas & Chatterjee, *Fauna of Orissa State Fauna Series*, I(Part 3) : 259.

Material examined : Hoshangabad, Churna FRH, 17. vi. 2003 (2 exs.), col. K.Chandra & Party; Chhindwara, Patakot, 22.xi.2002 (2 ex), Pandupani, 25.10.2002 (1 ex); coll. Y. N. Gupta & Party.

Diagnosis : Body black or very dark blue, oval, moderately convex and compact; with the lower surface shining black; head almost semicircular in outline; clypeus separated from the forehead by a slight rounded carina and the vertex bearing a pair of backwardly inclined horns; pronotum moderately and closely punctured, the punctures are rather coarse and confluent at the sides and finest and less closer at the base.

Distribution : India : Bihar, Haryana, Himachal Pradesh, Karnataka, Kashmir, Madhya Pradesh (Chhindwara), Maharashtra, Orissa, Punjab, Uttaranchal, Uttar Pradesh and Tamil Nadu.

Elsewhere : Thailand.

52. *Onthophagus sagittarius* (Fabricius)

1775. *Copris sagittarius* Fabricius, *Syst. Ent.*, p. 21.

1931. *Onthophagus sagittarius* : Arrow, *Faun. Brit. India*, (Lamellicornia : Coprinae) 3 : 304-305.

1991. *Onthophagus sagittarius* : Biswas & Chatterjee, *Fauna of Orissa , State Fauna Series*, 1(Part-3) : 259.

Material examined : Hoshangabad, Bori Sanctuary, 16.vi.2003 (1 Ex), coll.M.L. Koshta & Party.

Diagnosis : Testaceous yellow or dark brown, oval, moderately compact, fairly convex, not very convex. The head is smooth with little punctuation, subcircular; clypeus with a pair of antero-posteriorly compressed, erect, conical horns; pronotum smooth with little punctuation in front, well punctured behind; elytra strongly striate with minute punctures in striae, intervals flat.

Distribution : India : Madhya Pradesh (Hoshangabad), Orissa, Uttar Pradesh and West Bengal.

Elsewhere : Java, Myanmar, Malay Peninsula and S. China.

53. *Phalops divisus* (Wied.)

1823. *Copris divisus* Wied., *Zool. Mag.* 2, 1, p. 12.

1931. *Phalops divisus* : Arrow, *Fauna British India, Coleopt., Lamelli., 3* : 135.

Material examined : Hoshangabad, Satpura National Park, Madai, 14.vi.1999 (15 exs.), Coll. K. Chandra.

Diagnosis : Bright metallic green, dark blue or coppery, the elytra usually decorated with yellow markings, which may consist of a more or less triangular patch at the outer edge just behind the middle and a patch in the sutural angle extending a short distance forward. Additional yellow spots may appear near the base and near the middle of the suture, and all may unite so that a large part of the surface of the elytra is yellow.

Distribution : India : Madhya Pradesh (Hoshangabad), Uttar Pradesh, Tamil Nadu.

Elsewhere : Sri Lanka.

54. *Scarabaeus sanctus* (Fabricius)

1798. *Copris sanctus* Fabricius, *Ent. Syst., Suppl.*, p. 34.

1931. *Scarabaeus sanctus* : Arrow, *Fauna British India, Coleopt., Lamelli., 3* : 45.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 11.vi.1999 (1 ex.), Coll. K. Chandra; Hoshangabad, Satpura National Park, Madai, 14.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Dark blue, green or coppery above, with the lower surface and legs nearly black, the head, legs, and sides of thorax bearing nearly black hair. Erect, short hairs upon the clypeus, which is armed at the margin with four teeth separated by sharp notches. The lower surface is very shining, with the sides of the metasternum very finely and sparingly punctured and thinly hairy. The front femur bears a minute tooth beyond the middle of its anterior edge.

Distribution : India : Bihar, Karnataka, Madhya Pradesh (Hoshangabad), Maharashtra, Orissa, Tamil Nadu.

Elsewhere : Sri Lanka.

Subfamily MELOLONTHINAE

55. *Holotrichia fissa* Brenske

1894. *Holotrichia fissa* Brenske, *Mem. Soc. Ent. Belg.*, II, p. 71.

1971. *Holotrichia fissa* : Frey, Frey, *Ent. Arb. Mus. Frey*, 22, p. 222.

Material examined : Hoshangabad, Pachmarhi, Mahadeo, Nandia village, 07.vi.1999 (1ex.), coll.K. Chandra & party.

Diagnosis : Body brown red, oval, compact, and convex ; sternum closely covered with long silky setae; head strongly, densely and subrugosely punctate; clypeus with

margins rounded and reflexed, very feebly excised in front; frons less punctate anteriorly; vertex raised transversely. Pronotum moderately strongly and thinly punctate, a little closely anteriorly. Scutellum finely and not to closely punctate, smooth and a little depressed in middle.

Distribution : India : Haryana, Madhya Pradesh (Bhopal, Hoshangabad and Seoni) and Maharashtra.

56. *Holotrichia rustica* (Burmeister)

1856. *Ancylonycha rustica* Burmeister., *Handb. Ent.*, IV, 2, p. 313.

1971. *Holotrichia rustica* : Frey, *Ent. Arb. Mus. Frey*, p. 214.

Material examined : Hoshangabad, Bori WL Sanctuary, Churna Forest Rest House, 16.vi.1999 (1 ex.), coll.K. Chandra & Party.

Diagnosis : Body dark brown, oval, compact, and convex; sternum closely covered with long silky setae; head strongly, densely and subrugosely punctate; clypeus with margins rounded and reflexed, very feebly excised in front.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra, Tamil Nadu and Southern India

57. *Schizonycha ruficollis* (Fabricius)

1781. *Melolontha ruficollis* Fabricius, *Spec. Ins.*, 7:39.

1923. *Schizonycha ruficollis* : Arrow, *Rec. Indian Mus.*, 25(2) : 250.

1991. *Schizonycha ruficollis* : Biswas & Chatterjee, *Fauna of Orissa, State Fauna Series*, I(Part3) : 251.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (7 exs.), Coll K. Chandra

Diagnosis : Head with two transverse carinae, one arcuate before fronto-clypeal suture, other on vertex straight from eye to eye; body oblong, yellow to reddish-yellow, head and pronotum more reddish, upper surface with very minute setae, lower surface thinly covered with long and fine setae.

Distribution : India : Bihar, Orissa, Madhya Pradesh (Hoshangabad, Jabalpur), Uttar Pradesh, Uttaranchal and West Bengal,

Subfamily RUTELINAE

58. *Adoretus bicaudatus* Arrow

1914. *Adoretus bicaudatus* Arrow, *Ann. Mag. Nat. Hist.*, 13(8) : 587.

1917. *Adoretus bicaudatus* : Arrow, *Fauna British India, Coleopt., Lamell., 2* : 310.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (1 ex.), coll. K. Chandra Hoshangabad, Madai, Satpura National Park, 13.vi.1999 (37 exs.), coll. K. Chandra Hoshangabad, Madai, Satpura National Park, 14.vi.1999 (3 exs.), coll. K. Chandra.

Diagnosis : Brown, densely clothed with decumbent grey setae, which form alternate denuded and densely covered patches upon the elytra. It is small and narrowly elongate, densely and rugosely punctured above and beneath. The head is large, with prominent eyes and broadly semicircular clypeus. The antennae are 10-jointed, joints 4-6 nearly equal in length.

Distribution : India : Madhya Pradesh (Hoshangabad), Orissa and West Bengal,

Elsewhere : Bangladesh, Sri Lanka.

59. *Adoretus bicolor* Brenske

1893. *Adoretus bicolor* Brenske, *Ann. Soc. Ent. Belg.* 27, p. 142.

1917. *Adoretus bicolor* : Arrow, *Fauna British India, Coleopt., Lamell., 2* : 347.

Material examined : Hoshangabad, Madai, Satpura National Park, 14.vi.1999 (1 ex.), Coll. K. Chandra

Diagnosis : Bright reddish-yellow, with the pronotum reddish, and the head and tarsi rather deep red; closely clothed above and beneath with minute uniform decumbent setae. It is convex, oval and moderately elongate. In male the clypeus is rather smaller than that of the female.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur), Sikkim, West Bengal, Karnataka, Maharashtra, Bihar, Gujarat and Tamil Nadu.

60. *Adoretus bimarginatus* Ohaus

1914. *Adoretus bimarginatus* Ohaus, *Deutsche Ent. Zets.*, , p.480, fig. 12.

1917. *Adoretus bimarginatus* : Arrow, *Faun. Brit. India, (Lamellicornia : Rutelinae) 2* : 328.

Material examined : Hoshangabad, Dhain Forest Rest House, 16.vi.2003 (3exs.); Churna Forest Rest House, 17.vi.2003 (1 ex.), coll. K. Chandra & Party.

Diagnosis : Body bright yellow, rather short, broad, fairly closely clothed with short uniformly decumbent white setae; head large and densely rugose, with the eyes not very prominent; clypeus broadly semicircular; a sharp carina extends along each sides of the abdomen, and posterior margin of the propygidium also sharply elevated and joined to the lateral carina by a ridge on each side which cuts of the last spiracles.

Distribution : India : Bihar, Chhattisgarh, Madhya Pradesh (Jabalpur, Hoshangabad), Sikkim, Uttar Pradesh and West Bengal.

61. *Adoretus lasiopygus* (Burm.)

1855. *Adoretus lasiopygus* Burm., *Handb. Ent.* 4, 2, p. 530.

1917. *Adoretus lasiopygus* : Arrow, *Fauna British India, Coleopt., Lamell.*, 2 : 349.

Material examined : Hoshangabad, Madai, Satpura National Park, 13.vi.1999 (1 ex.), Coll. K. Chandra; Hoshangabad, Madai, Satpura National Park, 14.vi.1999 (8 exs.), coll. K. Chandra.

Diagnosis : It is elongate-oval in shape, dark brown, becoming lighter upon the clypeus, scutellum, sides of the pronotum and elytra, as well as on the pygidium, the lower surface and the legs. It is rather densely clothed with grey decumbent setae, intermixed with a few long erect hairs, and with the pygidium clothed with rather long erect hairs.

Distribution : India : Madhya Pradesh (Hoshangabad), Uttar Pradesh, Sikkim, Assam, West Bengal, Jharkhand, Bihar, Tamil Nadu.

Elsewhere : Sri Lanka, Nepal.

62. *Anomala bengalensis* Blanchard

1850. *Anomala bengalensis* Blanchard, *Cat. Coll. Ent. Mus. Paris*, : 182.

1917. *Anomala bengalensis* : Arrow, *Faun. Brit. India*, (Lamellicornia : Rutelinae) 2 : 143.

Material examined : Hoshangabad, Churna Forest Rest house, 16.iv. 2001 (1 ex.), 18.iv. 2001 (2 exs.), coll. Dr. Y.N. Gupta & Party; Dhain Forest Rest House, 14.vi. 2003(2 exs.), 16.vi. 2003 (1 ex.); Churna Forest Rest House, 17.vi. 2003 (1 ex.), 18.vi. 2003 (1 ex.); coll. K. Chandra & Party.

Diagnosis : Pale testaceous yellow, moderately elongate; head finely punctate rugose; clypeus broadly and transversely rectangular, front margin strongly reflexed and almost straight, but rather more elevated at the angles; pronotum very minutely punctate; scutellum with few fine punctures; elytra moderately deeply and closely punctate, some of them forming longitudinal rows. In Male, front tibia sharply tridentate, front tarsi rather thick and inner claw unequally cleft.

Distribution : India : Andhra Pradesh, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh (Seoni, Chhindwara, Balaghat, Jabalpur, Hoshangabad, Mandla, Umariya), Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal.

Elsewhere : Bangladesh, Myanmar.

63. *Anomala biharensis* Arrow

1917. *Anomala biharensis* Arrow, *Faun. Brit. India*, (Lamellicornia : Rutelinae) 2 : 166.

Material examined : Hoshangabad, Bori Sanctuary, Churna Forest Rest House, 16.iv.2001 (1ex.), coll. Y.N. Gupta; Dhain Forest Rest House, 16.vi. 2003 (1ex.), coll. K. Chandra & Party;

Diagnosis : Pale testaceous yellow, moderately elongate, eyes large; clypeus small and densely and rugosely punctured; head finely and closely punctate; pronotum finely and rather closely punctate, sides rounded, front angles acute, hind angles very obtuse and the base finely margined.

Distribution : Bihar, Chhattisgarh, Haryana, Karnataka, Madhya Pradesh (Hoshangabad, Seoni, Balaghat, Jabalpur, Umaria), Maharashtra, Sikkim, Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal.

64. *Anomala dorsalis* (Fabricius)

1775. *Melolontha dorsalis* Fabricius, *Syst. Ent.*, p. 35.

1917. *Anomala dorsalis* : Arrow, *Fauna British India, Coleopt., Lamell.*, 2 : 136.

Material examined : Hoshangabad, Madai, Satpura National Park, 14.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Testaceous or reddish, generally with the vertex of the head, the elytral suture, the hind tibiae and the tarsi blackish, or with a broad sutural stripe, or with the upper surface largely or entirely black.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra, Karnataka, Tamil Nadu, Gujarat, Punjab, Uttaranchal, Bihar, West Bengal, Sikkim, Assam, Andaman Is.

65. *Anomala ruficapilla* Burmeister

1855. *Anomala ruficapilla* Burmeister, *Handb. Ent.*, IV, 2 : 49.

1917. *Anomala ruficapilla* : Arrow, *Faun. Brit. India*, (Lamellicornia : Rutelinae) 2 : 153.

Material examined : Hoshangabad, Dhain Forest House, 16.vi.2003 (2 exs.), Churna Forest House, 17.vi.2003 (1ex.); coll. K. Chandra & Party.

Diagnosis : Testaceous, a large patch on each sides of pronotum, extreme edges of elytra, a broad sutural line and another extending obliquely from shoulder almost to the sutural angle and partly or entirely fused with lateral margins, black or nearly black; pygidium transversely strigose.

Distribution : Assam, Bihar, Chhattisgarh, Haryana, Karnataka, Madhya Pradesh (Hoshangabad, Seoni, Balaghat, Jabalpur, Umaria). Maharashtra, Sikkim, Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal.

Elsewhere : Sri Lanka.

66. *Anomala varicolor* (Gyll.)

1817. *Melolontha varicolor* Gyll., *Schonh. Syn. Ins.*, 1, 3, *App.*, : 114.

1917. *Anomala varicolor* : Arrow, *Fauna British India, Coleopt., Lamell.*, 2 : 152.

Material examined : Hoshangabad, Madai, Satpura National Park, 14.vi.1999 (2 exs.), Coll. K. Chandra; Hoshangabad, Pachmarhi, 13.vi.1999 (2 exs.), coll. K. Chandra.

Diagnosis : Length 14-17 mm., breadth 8-9 mm. Form oval, convex, smooth and shining with the head, the extremities of the tibiae and the tarsi dark red, and with a variable patch on each side of the pronotum (frequently uniting), the extreme edges of the elytra, a sutural line, a spot on each shoulder black or nearby black. Metasternum moderately clothed with short yellowish hair. The pygidium is rather closely transversely rugulose. The front tibia bears two well-developed teeth.

Distribution : India : Madhya Pradesh (Hoshangabad), Sikkim, West Bengal, Bihar, Tamil Nadu, Uttar Pradesh, Karnataka.

Elsewhere : Sri Lanka, South China.

67. *Mimela macleayana* Vigors

1825. *Euchlora macleayana* Vigors, *Zool. Journ.*, 1 : 540.

1917. *Mimela macleayana* : Arrow, *Fauna British India, Coleopt., Lamell.*, 2 : 105.

Material examined : Hoshangabad, Pachmarhi, 8.ix.2000 (2 exs.), Coll. Y.N. Gupta.

Diagnosis : Form bright coppery-red, with the head, pronotum and scutellum golden-green and the elytra grass green, with the outer margins yellowish; large, elongate-oval insect, with legs, pygidium and lower surface rather closely and evenly clothed with decumbent grey hair; scutellum rather long with few fine punctures; prosternal process small, with its ventral edge very oblique; the mesosternal process is rather long and narrow.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra, Karnataka, Andhra Pradesh.

Elsewhere : Sri Lanka.

68. *Mimela xanthorrhina* Hope

1837. *Mimela xanthorrhina* Hope, *Coleopterist's Manual*, 1 : 120.

1917. *Mimela xanthorrhina* : Arrow, *Fauna British India, Coleopt., Lamell.*, 2 : 122.

Material examined : Hoshangabad, Forest Guest House, Mahadev, 6.vi.1999 (2 exs.), Coll. K. Chandra; Hoshangabad, Pachmarhi, 4.vi.1999 (3 exs.), Coll. K. Chandra.

Diagnosis : Lower surface, legs and antennae testaceous, with a very faint metallic green lustre, upper surface light grass green, with reddish-yellow reflections, the clypeus paler, the sides of the pronotum and elytra narrowly and not very sharply bordered with yellow, and the end of the pygidium indefinitely yellow.

Distribution : India : Madhya Pradesh (Hoshangabad), Tamil Nadu and Kerala.

Subfamily DYNASTINAE

69. *Eophileurus platypterus* (Wied.)

1823. *Geotrupes platypterus* Wied., *Zool. Mag.*, ii, 1 : 5.

1910. *Eophileurus platypterus* : Arrow, *Faun. Brit. India*, (Lamellicornia : Dynastinae) I : 289.

1991. *Eophileurus platypterus* : Biswas & Chatterjee, *Fauna of Orissa, State Fauna Series, I(Part 3)* : 248.

Material examined : Hoshangabad, Churna Forest Rest House, 17.vi.2003 (1ex.), coll. K. Chandra & Party.

Diagnosis : Body black and shining, closely and very coarsely punctured, with very scanty bristles beneath; pronotum strongly rounded at the sides with the hind angles rather prominent and sharp, punctures become confluent in the anterior part; scutellum with a very few punctures, and elytra have rows of rather annuler punctures.

Distribution : India : Haryana, Madhya Pradesh (Seoni, Hoshangabad, Mandla), Maharashtra, Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal

70. *Phyllognathus dionysius* (Fabricius)

1792. *Scarabaeus dionysius* Fabricius, *Ent. Syst.*, 1 : 20.

1910. *Phyllognathus dionysius* : Arrow, *Fauna British India, Coleopt., Lamelli.*, 1 : 307.

Material examined : Hoshangabad, Bori Sanctuary, 8.vi.1999 (1 ex.), Coll. K. Chandra; Hoshangabad, Bori village, 9. vi.1999 (2 exs.), coll. K. Chandra.

Diagnosis : Form colour chestnut-red, shining above and clothed with tawny hairs beneath; head densely punctured and the clypeus bluntly pointed; prothorax is transverse,

strongly rounded at sides, with the front angle obtuse, the hind angles little marked, and the base feebly prominent in the middle; scutellum broad and rugose except at the extreme margins.

Distribution : India : Bihar, Madhya Pradesh (Hoshangabad), West Bengal, Jharkhand, Maharashtra, Orissa, Karnataka, Andhra Pradesh, Tamil Nadu.

Elsewhere : Sri Lanka.

71. *Xylotrupes gideon* (Linnaeus)

1767. *Scarabaeus gideon* Linnaeus, *Syst. Nat.* 12th ed., 1(2) : 541.

1910. *Xylotrupes gideon* : Arrow, *Fauna British India, Coleopt., Lamelli.*, 1 : 262.

Material examined : Hoshangabad, Forest Rest House, Pachmarhi, 2.ix.2000 (1 female), Coll. Y.N. Gupta; Hoshangabad, Forest Rest House, Mahadev, 1.ix.2000 (2 males), Coll. Y.N. Gupta.

Diagnosis : Chestnut red or brown with the head, pronotum and legs generally darker, the sternum and hind coxae clothed with a fine pubescence.

Distribution : India : Madhya Pradesh (Hoshangabad), Assam, Meghalaya, Sikkim, West Bengal, Maharashtra, Kerala.

Elsewhere : Sri Lanka.

Subfamily CETONIINAE

72. *Anatona stillata* (Newman)

1838. *Cetonia stillata* Newman, *Ent. Mag.*, V : 169.

1910. *Anatona stillata* : Arrow, *Faun. Brit. India, (Lamellicornia : Cetoniinae)* I : 114.

Material examined : Chhindwara, Lalgaoon, 22. x. 2002 (1 ex), coll. Y. N. Gupta & Party.

Diagnosis : Form short, oval and convex; head granulated and clothed on the vertex with long tawny hairs; body black, with the elytra red or chocolate in coloured and upper surface, except the head, covered with greyish or tawny bloom, and decorated with yellow marking; a broader on each side of the prothorax, and two discoidal and two basal spots; a small spots near the shoulder of each elytron, another near the middle of inner margin, three small patches adjoining the outer margin, and a spots little in front of the last.

Distribution : India : Himachal Pradesh, Haryana, Karnataka, Madhya Pradesh (Bhopal, Chhindwara, Hoshangabad and Mhow), Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal.

73. *Chiloloba acuta* (Wied.)

1823. *Cetonia acuta* Wied., *Zool. Mag.*, II, 1 : 8.

1910. *Chiloloba acuta* : Arrow, *Faun. Brit. India*, (Lamellicornia : Cetoniinae) I : 172.

Material examined : Chhindwara, Parasia, 25.x. 2002 (1 ex.), coll. Y.N. Gupta & party

Diagnosis : Brightly metallic green, sometimes fiery red, or deep blue, very smooth and shining, but irregularly punctured, and densely clothed with yellow hairs upon sternum and short and erect on rest of the body; clypeus excised and its angles bluntly hooked with a fine carina extends from the forehead to the extremity of the clypeus; pronotum closely punctured and setose; pygidium clothed with long hairs.

Distribution : India : Haryana, Karnataka, Maharashtra Madhya Pradesh (Jabalpur, Seoni, Chhindwara, Umaria, Bhopal), Sikkim, Tamil Nadu, Uttar Pradesh and Uttaranchal

74. *Clinteria hearseiana* Westwood

1849. *Clinteria hearseiana* Westwood, *Trans. ent. Soc. Lond.*, 5, p. 149, pl. 16, fig. 8.

1910. *Clinteria hearseiana* : Arrow, *Fauna Brit. India, Coleopt., Lamelli.*, 1 : 188.

Material examined : Hoshangabad, Pachmarhi, Nandiya village, 7.vi.1999 (2 exs.), Coll. K. Chandra

Diagnosis : Shining black above and below, often with the pronotum coppery and the elytra slightly metallic; legs reddish, and white markings consisting of an irregular lateral line and a basal spot on each side of the pronotum and a spot at the apex of the basal lobe.

Distribution : India : Madhya Pradesh (Hoshangabad) and West Bengal.

75. *Clinteria klugi* (Hope)

1831. *Cetonia klugi*, Hope, *Gray's Zool. Misc.*, p. 25.

1910. *Clinteria klugi* : Arrow, *Fauna British India, Coleoptera*, 1 : 187.

Material examined : Hoshangabad, Pachmarhi, Mahadev, 7.vi.1999 (23 exs.), Nandiya village, 7. vi. 1999 (7 exs.), coll. K. Chandra; Hoshangabad, Satpura National Park, Madai, 14.vi.1999 (1 ex.), coll. K. Chandra.

Diagnosis : Body moderately elongate and depressed, black or deep reddish-chocolate, opaque, with deep yellow or orange markings, consisting of a broad marginal band upon the pronotum, arising in the front angles and a little incurved near the hind angles, but frequently more or less abbreviated and sometimes absent, a large spot on each mesosternal epimeron, an irregular transverse median band on each elytron, sometimes broken into two spots, a spot anterior to this and two apical spots, a patch on each side of the pygidium , and the sides of the sternum and abdomen.

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra, Uttar Pradesh, West Bengal.

76. *Oxycetonia versicolor* (Fabricius)

1775. *Cetonia versicolor*, Fabricius, *Syst. Ent.*, p. 51.

1910. *Oxycetonia versicolor* : Arrow, *Fauna British India, Coleoptera*, 1 : 164.

Material examined : Hoshangabad, Madhuvan, 24.viii.2000 (8 exs.), Coll. Y.N. Gupta.

Diagnosis : Form oval and convex and the upper surface devoid of hairs or setae; clypeus very sharply bidentate; colouration variable, but the ground colour is black, with the following white markings : a pair of minute spots upon the neck behind the eyes, a pair at middle of the pronotum, another at the base and a lateral border on each side, a spot at the apex of scutellum, from 5-8 spots on each elytron and two on each side of the pygidium.

Distribution : India : Madhya Pradesh (Hoshangabad), Assam, West Bengal, Tamil Nadu, Karnataka.

Elsewhere : Bhutan, Pakistan, Sri Lanka, Mauritius, Madagascar, Bourbon.

77. *Protaetia aurichalcea* Fabricius

1775. *Protaetia aurichalcea* Fabricius, *Syst. Ent.*, : 45.

1910. *Protaetia aurichalcea* : Arrow, *Faun. Brit. India*, (Lamellicornia : Cetoniinae) I : 143.

Material examined : Hoshangabad, P.B.R., Pachmarhi, Rajendragiri, 15.ii.2003 (1ex.), Coll. M. L. Koshta.

Diagnosis : Form short and broad, rather depressed and very little narrowed behind; deep bronzy and very shining above and beneath, with opaque white markings, consisting with large irregular patch on each sides of the pronotum; head strongly punctate, with front margin rounded, reflexed and scarcely perceptibly notched; pronotum strongly punctate with a smooth line down the middle; scutellum unpunctate, rather short and broad at base; elytra are thinly and finely punctured, and more strongly and rugosely posteriorly.

Distribution : India : Bihar, Madhya Pradesh, Tamil Nadu and West Bengal.

Elsewhere : Mauritius and Sri Lanka.

Family COCCINELLIDAE

78. *Brumus suturalis* (Fabricius)

1798. *Coccinella suturalis* Fabricius, *Suppl. ent. Syst.*, p. 78.

1996. *Brumus suturalis* : Chakroborty *et al.*, *Fauna of West Bengal, State Fauna Series, 3 (Part-6B) : 458.*

2003. *Brumus suturalis* : Chakroborty & Biswas, *Fauna of Sikkim, State Fauna Series, 9(Part-3) : 129-130.*

Material examined : Hoshangabad, Bori Sanctuary, 8.vi.1999 (1 ex.), Coll. K. Chandra

Distribution : India : Madhya Pradesh (Hoshangabad), Maharashtra, Karnataka, Goa, Sikkim, West Bengal.

Elsewhere : Nepal, Bhutan and Sri Lanka.

79. *Coccinella transversalis* Fabricius

1781. *Coccinella transversalis* Fabricius, *Spec. Ins.*, : 97

1966. *Coccinella transversalis* : Kapur, *Proc. nat. Ins. Sci. India, 32 B(3-4) : 178.*

Material examined : Chhindwara, PBR, Delakheri, 19.x. 2002 (1 ex.), 21.x.2002 (1 ex.); coll. Y. N. Gupta and Party.

Diagnosis : Body rather rounded and convex, prosternum with a pair of carinae with hardly extend beyond the level of the front coxae; abdominal lines forked like a 'V' in the external part; elytra with a trinagular black marking on the sub-humeral area, with a triangular black

Distribution : India : Andaman Islands, Madhya Pradesh (Chhindwara), Kerala, Goa, Sikkim, West Bengal.

Elsewhere : Australia, Japan and South East Asia.

80. *Menochilus sexmaculatus* (Fabricius)

1781. *Coccinella sexmaculatus* Fabricius, *Spec. Ins.*, : 96

1966. *Menochilus sexmaculatus* : Kapur, *Proc. nat. Ins. Sci. India, 32 B(3-4) : 176-177.*

Material examined : PBR, Chhindwara, Jamai Pachmarhi, 26.x.2002 (6 ex.); Hoshangabad, Tekapar, 1.xi.2002 (1ex.); Sin Jamna PWD Guest House, 1.xi.2002 (1 ex.); coll. Y. N. Gupta.

Diagnosis : Pronotum with a black basal band connected by a short narrow constriction; with a transverse-oval, black discal spot; elytra with a black sutural stripe dilated once behind the scutellum and before the apex, each elytron with two wavy, post humeral and median, black bands and a rounded black, subapical spot, the bands not normally connected to the sutural stripe.

Distribution : India : Andaman Islands, Madhya Pradesh (Chhindwara, Hoshangabad), Meghalaya, West Bengal.

Elsewhere : Indonesia, Nepal, Philippines, Celebes and new Guinea.

Family CERAMBYCIDAE

81. *Acanthophorus serraticornis* Olivier

1795. *Prionus serraticornis* Olivier, *Ent.* iv, no. 66, p. 14, pl. 9,

1832. *Acanthophorus serraticornis*, Serville, *Ann. Soc. Ent. Fr.* I, p. 153.

Material examined : Hoshangabad, PBR, Dhain FRH, 16.vi.2003 (1 ex.), coll. K. Chandra.

Diagnosis : Body color reddish tawny, with head, basal half of antennae and pronotum black or brownish-black; head sparsely punctate in front and between supraorbital carinae; eyes large and space between them less than one third of the whole width of the head; antennae 12-jointed, with the joints from 5th to 11th produced each into a strong dentiform process at apex.

Distribution : India : Madhya Pradesh (Hoshangabad), Karnataka, Kerala and Tamil Nadu.

82. *Plocaederus pedestris* (White)

1853. *Hammaticherus pedestris* White, *Cat. Col. B. M., Longic.*, p. 127.

1906. *Plocaederus pedestris* : Gahan, *Fauna British India, Coleopt., Ceramb.*, 1 : 123.

Material examined : Hoshangabad, Pachmarhi, Mahadev, 5.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Almost black, with the antennae and legs ferruginous; clothed with a faint grey pubescence. Antennae of the female a little longer than the body; joints fifth to tenth denticulately produced at the anterior apical angle. Elytra slightly narrowed backwards; finely and closely punctate, the punctures on the basal half, especially near the base, a little larger and more crowded together than those on the apical half.

Distribution : India : Madhya Pradesh (Hoshangabad, Indore), North-West and Northern India.

83. *Prionomma atratum* (Gmelin)

1789. *Prionus atratum* Gmelin, *Syst. Nat.*, 4(1) : 1818.

1906. *Prionomma atratum* : Gahan, *Fauna British India, Coleopt., Ceramb.*, 1 : 17.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 11.vi.1999 (3 exs.), Coll. K. Chandra.

Diagnosis : Male : Black or brownish black in colour. Head glossy, sparsely punctured. Antennae reaching to the apical third or fourth of the elytra; first joint nitid. Elytra very feebly and sparsely punctured, with little or no gloss.

Female : Legs and antennae shorter and narrower; the legs not asperate. Elytra distinctly and rather closely punctured, more or less rugulose.

Distribution : India : Madhya Pradesh (Hoshangabad), Southern India. *Elsewhere* : Sri Lanka.

84. *Stromatium barbatum* (Fabricius)

1775. *Callidium barbatum* Fab., *Syst. Ent.*, p. 189.

1906. *Stromatium barbatum* : Gahan, *Fauna British India, Coleopt., Ceramb.*, 1 : 114.

Material examined : Hoshangabad, Pachmarhi, 4.vi.1999 (1 ex.), Coll. K. Chandra; Hoshangabad, Pachmarhi, Mahadev, 5.vi.1999 (2 exs.), Coll. K. Chandra.

Diagnosis : Varies in colour from brownish black to reddish brown, faintly covered with tawny pubescence. Head densely and rather coarsely punctured above and at the sides, as densely but less strongly punctured in front.

Distribution : India : Madhya Pradesh (Hoshangabad), Andamans.

Elsewhere : Myanmar, Sri Lanka, Mauritius, Madagascar.

85. *Xystrocera globosa* (Oliv.)

1795. *Cerambyx globosa* Oliv., *Entom.*, 4, 67 : 27.

1906. *Xystrocera globosa* : Gahan, *Fauna British India, Coleopt., Ceramb.*, 1 : 106.

2000. *Xystrocera globosa* : Mukho. & Biswas, *Fauna of Tripura*, 3 : 141.

Material examined : Hoshangabad, Churna, Bori Sanctuary, 10.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Reddish-brown; prothorax with the front and hind borders, a narrow median longitudinal band (sometimes obsolete) and a broad lateral band, which in the male runs obliquely from the side of the thorax in front towards the medio-basal lobe behind, metallic blue or green; elytra testaceous yellow.

Distribution : India : Madhya Pradesh (Hoshangabad), Tripura, Assam, West Bengal, Maharashtra, Karnataka, Tamil Nadu.

Elsewhere : Sri Lanka, Myanmar, Siam, Java, Celebes, Malay Peninsula, Philippines, Egypt, Mauritius, Hawaiian Islands.

Family : CURCULIONIDAE

86. *Crinorrhinus approximans* Marshall

1942. *Crinorrhinus approximans* Marshall, *Proc. R. ent. Soc. bond.*, 11(B) : 144.

1990. *Crinorrhinus approximans* : Pajni, *Fauna of India, Col., Cur., Erem.*, p. 194.

Material examined : Past record (Pajni, 1990).

Diagnosis : Frons piceous, shiny; rostrum piceous, about as long as its basal width. Antennae piceous, moderately long. Prothorax and scutellum piceous. Elytra piceous. Abdominal sternites piceous, covered with fine subrecumbent setae becoming erect and longer towards apex.

Distribution : Madhya Pradesh (Hoshangabad), Maharashtra, Gujarat, Karnataka, Orissa.

87. *Cyphicerinus pannosus* Marshall

1913. *Cyrtapistomus pannosus* Marshall, *Ann. Mag. nat. Hist.*, 8(12) : 187

1944. *Cyphicerinus pannosus* : Marshall, *Ann. Mag. nat. Hist.*, 11(11) : 93.

1990. *Cyphicerinus pannosus* : Pajni, *Fauna of India, Coleoptera, Curcul., Eremn.*, p. 89.

Material examined : Past record (Pajni, 1990).

Diagnosis : Frons fuscus, flat, covered with a few ochraceous scales; antennae castaneous, moderately long, scape curved, clavate; prothorax fuscus, transverse, with anterior margin almost straight; scutellum small, fuscus, rectangular with anterior margin rounded, bare with a few recumbent setae; elytra fuscus, oblong, posteriorly declivous, with shoulders roundly rectangular.

Distribution : India including Madhya Pradesh (Jabalpur, Damoh, Hoshangabad).

88. *Cyphicerinus tectonae* Marshall

1928. *Cyphicerinus tectonae* Marshall, *Ann. Mag. nat. Hist.*, 2(10) : 539.

1990. *Cyphicerinus tectonae* : Pajni, *Fauna of India, Col., Cur., Erem.*, p. 87.

Material examined : Past record (Pajni, 1990).

Diagnosis : Frons shining black, eyes black, rostrum-shining black; antennae castaneous, moderately long; scape gently curved; prothorax black, transverse; scutellum small, black, oblong, furnished with a few recumbent setae; elytra black, oblong; legs black with sparse elongate scales; abdominal sterna black, furnished with a few brown scales.

Distribution : India including Madhya Pradesh (Hoshangabad).

Family MELOIDAE

89. *Mylabris phalerata* (Pallas)

1781. *Meloe phalerata* Pallas, *Icones Insecturum Ross, Sibir* : 78.

1917. *Mylabris phalerata* Borchmann, *Junk's Col. Cat.*, 17(69) : 45.

1917. *Mylabris (Euzonabris) phalerata* Kuzin, *Trudi Ent. Obs*, 44 : 358.

Material examined : Chhindwara, PBR, Badi Anthoni, 29.x.2002 (4 ex.), Shivpuri Trasia, 27.x.2002 (1 ex.); coll. Y. N. Gupta.

Diagnosis : Antennae poorly clubbed apically; Cardo with an elevated ridge anteriorly.

Distribution : India : Andhra Pradesh, Bihar, Gujarat, Jammu, Karnataka, Madhya Pradesh (Hoshangabad, Umaria), Orissa, Punjab and Tamil Nadu.

Elsewhere : China and Sri Lanka.

Family CHRYSOMELIDAE

90. *Aspidomorpha furcata* (Thunberg)

1789. *Cassida furcata* Thunberg, *Nov. Ins. Spec.*, 5 : 87.

1919. *Aspidomorpha furcata* : Maulik, *Fauna Brit. India, Col. Chry.*, : 333

Material examined : PBR, Hoshangabad, Bori Sanctuary, Churna, 12.vi.1999 (2 ex.), coll. K. Chandra & Party.

Diagnosis : Dorsal surface varying from pale yellow to yellowish brown; only anterior lateral angle of elytral explanate margin with dark patch; one or two apical segments of antennae black, except the extreme apex on the underside.

Distribution : India : Arunachal Pradesh, Assam, Karnataka, Kerala, Meghalaya, Madhya Pradesh (Hoshangabad), Orissa, Sikkim, Tamil Nadu and West Bengal.

Elsewhere : Myanmar, China, Malaya, Phillipines, Sri Lanka, Sumatra, Sunda Is. Thailand and Vietnam.

91. *Aulacophora foveicollis* (Lucas)

1849. *Galeruca foveicollis* Lucas, *Explor. Alger. Ent.*, : 542.

1879. *Aulacophora foveicollis* : Baly, *Cist. Ent.*, 2 : 445.

1936. *Aulacophora foveicollis* : Maulik, *Fauna Brit. India, Col. Chry.* : 173

Material examined : Hoshangabad, Bori Sanctuary, 20.ii.2003 (1 ex), coll. M.L. Koshta & Party.

Diagnosis : General color brown; metasternum and abdominal sternites entirely or largely black; in the male humerus covered with erect hairs.

Distribution : India : Andaman Islands, Arunachal Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Maharashtra, Meghalaya, Madhya Pradesh (Hoshangabad), Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

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

92. *Haltica coerulea* (Olivier)

1791. *Galeruca coerulea* Olivier, *Encyl. Meth.*, vi : 590.

1926. *Haltica coerulea* : Maulik, *Fauna Brit. India, Col. Chry.*, : 423.

Material examined : PBR, Hoshangabad, Bori FRH, 18.ii.2003 (1 ex), coll. M.L. Koshta & Party.

Diagnosis : Body oblong and somewhat narrowed behind; color blue above, black on underside, antennae and legs black; interantennal carina well developed.

Distribution : India : Assam, Madhya Pradesh (Hoshangabad) and Tamil Nadu.

Elsewhere : Sri Lanka.

93 *Haltica cyanea* Weber

1801. *Haltica cyanea* Weber, *AObs. Entom.* i : 57.

1926. *Haltica cyanea* : Maulik, *Fauna Brit. India, Col. Chry.*, : 422.

Material examined : Hoshangabad, Bori FRH, 14.iv.2001 (1 ex), coll. Y.N. Gupta & Party.

Diagnosis : Body color dark blue above; antennae black, basal segments brownish at apex and scutellum nearly black; head with vertex impunctate and tubercles strongly raised.

Distribution : India : Maharashtra, Madhya Pradesh (Hoshangabad) and Punjab.

Elsewhere : Myanmar, Sri Lanka, Java and Sumatra.

94. *Haltica foveicollis* (Jacoby)

1889. *Haltica (Graptodera) foveicollis*, Jacoby, *Ann. Mus. Civ. Genova*, xxvii : 190.

1926. *Haltica foveicollis* : Maulik, *Fauna Brit. India, Col. Chry.*, : 419.

Material examined : Hoshangabad, PBR, Madai, 16.iv.2001(1 ex.), coll. Y.N. Gupta & Party.

Diagnosis : Body color greenish-aneous above and black on the underside; head and vertex impunctate, frontal elevations rather flat, interantennal carina well developed.

Distribution : India : Andaman Islands, Madhya Pradesh (Hoshangabad). *Elsewhere* : Myanmar, and Sri Lanka.

95. *Lema terminata* Lacordaire

1845. *Lema terminata* Lacordaire, *Mon. Phytoph.*, 1 : 341.

1908. *Lema terminata* : Jacoby, *Fauna Brit. India, Col. Chry.*, 1 : 59

Material examined : Hoshangabad, Pachmarhi, Madhuvan, 24.viii.2000 (1 ex), coll.Y.N. Gupta & Party.

Diagnosis : General color dark reddish, head anteriorly, antennae, sternum and legs black; elytra with the apical third blue.

Distribution : India : Madhya Pradesh (Hoshangabad) and Tamil Nadu.

SUMMARY

The present study enumerates 95 species of 56 genera under 12 families of Coleopterans from the Pachmarhi Biosphere Reserve.

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INSECTA : LEPIDOPTERA : RHOPALOCERA

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INTRODUCTION

The butterfly fauna of Pachmarhi Biosphere Reserve is quite diverse and represented by 65 species of 49 genera under 9 families. Family Papilionidae is represented by 5 species, Pieridae by 10 species, Danaidae by 4 species, Satyridae by 11 species, Acraeidae by 1 species, Nymphalidae by 15 species, Riodinidae by 1 species, Lycaenidae by 10 species, and Hesperidae by 8 species.

List of Butterflies of Pachmarhi Biosphere Reserve

Family PAPILIONIDAE

1. *Papilio demoleus demoleus* Linnaeus The Lime Butterfly
2. *Papilio polytes romulus* Cramer The Common Mormon
3. *Pachliopta hector* (Linnaeus) The Crimson Rose
4. *Pathysa nomius nomius* (Esper) The Spot Swordtail
5. *Graphium (Graphium) agamemnon* (Linnaeus) The Tailed Jay

Family DANAIDAE

6. *Danaus chrysippus chrysippus* (Linnaeus) The Plain Tiger
7. *Danaus genutia* (Cramer) The Common Tiger
8. *Tirumala limniace leopardus* (Butler) The Blue Tiger
9. *Euploea core core* (Cramer) The Common Crow

Family PIERIDAE

10. *Catopsilia pyranthe pyranthe* (Linnaeus) The Mottled Emigrant

- | | |
|--|---------------------------|
| 11. <i>Catopsilia pomona</i> (Fabricius) | The Lemon Emigrant |
| 12. <i>Catopsilia florella gnoma</i> (Fabricius) | The African Emigrant |
| 13. <i>Colotis etrida etrida</i> (Boisduval) | The Little Orange Tip |
| 14. <i>Belenois aurota aurota</i> (Fabricius) | The Pioneer |
| 15. <i>Cepora nerissa phryne</i> (Fabricius) | The Common Gull |
| 16. <i>Delias eucharis</i> (Drury) | The Common Jezebel |
| 17. <i>Terias hecabe simulata</i> (Moore) | The Common Grass Yellow |
| 18. <i>Terias brigitta rubella</i> (Wallace) | The Small Grass Yellow |
| 19. <i>Terias laeta laeta</i> (Boisduval) | The Spotless Grass Yellow |

Family RIODINIDAE

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|---|---------------|
| 20. <i>Abisara echerius suffusi</i> Moore | The Plum Judy |
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Family ACRAEIDAE

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|---|------------------|
| 21. <i>Acraea terpsicore</i> (Linnaeus) | The Tawny Coster |
|---|------------------|

Family NYMPHALIDAE

- | | |
|--|------------------------------|
| 22. <i>Junonia orithya swinhoi</i> Butler | The Blue Pansy |
| 23. <i>Junonia lemonias vaisya</i> (Fruhstorfer) | The Lemon Pansy |
| 24. <i>Junonia hierta hierta</i> (Fabricius) | The Yellow Pansy |
| 25. <i>Neptis hylas astola</i> Moore | The Common Sailer |
| 26. <i>Neptis soma soma</i> Moore | The Sullied Sailer |
| 27. <i>Neptis jumbah jumbah</i> Moore | The Chestnut-Streaked Sailer |
| 28. <i>Athyma perius</i> (Linnaeus) | The Common Sergeant |
| 29. <i>Symphaedra nais</i> Forster | The Baronet |
| 30. <i>Phalanta phalantha phalantha</i> (Drury) | The Common Leopard |
| 31. <i>Hypolimnas misippus</i> (Linnaeus) | The Danaid Eggfly |
| 32. <i>Euthalia garuda anagama</i> Fruhstorfer | The Baron |
| 33. <i>Phaedyma columella ophiana</i> (Moore) | The Short Banded Sailer |

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|--|---------------------|
| 34. <i>Cynthia cardui</i> (Linnaeus) | The Painted Lady |
| 35. <i>Precis iphita pluviatilis</i> Fruhstorfer | The Chocolate Pansy |
| 36. <i>Kallima inachus huegeli</i> (Kollar) | The Orange Oakleaf |

Family SATYRIDAE

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|--|------------------------------|
| 37. <i>Melanitis leda ismene</i> (Cramer) | The Common Evening Brown |
| 38. <i>Ypthima ceylonica ceylonica</i> Hewitson | The White or Ceylon Fourring |
| 39. <i>Ypthima ceylonica hubneri</i> Kirby | The Common Four Ring |
| 40. <i>Ypthima inica</i> Hewitson | The Lesser Threering |
| 41. <i>Ypthima asterope mahratta</i> Moore | The Common Threering |
| 42. <i>Ypthima baldus satpura</i> Evans | The Common Fivering |
| 43. <i>Mycalesis perseus tabitha</i> (Fabricius) | The Common Bushbrown |
| 44. <i>Mycalesis mineus mineus</i> (Linnaeus) | The Dark Brand Bushbrown |
| 45. <i>Lethe rohria neelgheriensis</i> (Guerin) | The Common Treebrown |
| 46. <i>Lethe rohria rohria</i> (Fabricius) | The Common Tree Brown |
| 47. <i>Lethe europa europa</i> (Fabricius) | The Common Bamboo Tree Brown |

Family LYCAENIDAE

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|---|-----------------------|
| 48. <i>Castalius rosimon rosimon</i> (Fabricius) | The Common Pierrot |
| 49. <i>Rapala iarbus iarbus</i> (Fabricius) | The Lesser threering |
| 50. <i>Tajuria cippus cippus</i> (Fabricius) | The Peacock Royal |
| 51. <i>Virachola isocrates</i> (Fabricius) | The Common Guava Blue |
| 52. <i>Jamides celeno aelianus</i> (Fabricius) | The Common Cerulean |
| 53. <i>Lampides boeticus</i> (Linnaeus) | The Pea Blue |
| 54. <i>Euchrysops cnejus</i> (Fabricius) | The Gram Blue |
| 55. <i>Catochrysops strabo strabo</i> (Fabricius) | The Forget-Me-Not |
| 56. <i>Narathura amantes amantes</i> (Hewitson) | The Large Oakblue |
| 57. <i>Acytolepis puspa</i> Horsfield | The Common Hedge Blue |

Family HESPERIIDAE

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|---|-------------------------|
| 58. <i>Telicota ancilla bambusae</i> (Moore) | The Dark Palm Dart |
| 59. <i>Celaenorrhinus ambareesa</i> Moore | The Malabar Flat |
| 60. <i>Udaspes folus</i> (Cramer) | The Grass Demon |
| 61. <i>Caprona ransonnettii ransonnettii</i> (Felder) | The Golden Angle |
| 62. <i>Suastus gremius</i> (Fabricius) | The Indian Palm Bob |
| 63. <i>Baoris farri</i> (Moore) | The Paintbrush Swift |
| 64. <i>Spialia galba</i> (Fabricius) | The Indian Skipper |
| 65. <i>Pelopidas mathias</i> Fabricius | The Small Branded Swift |

List of additional species occurring in the region as per published literature but not collected from the area

Family SATYRIDAE

66. *Mycalesis visala visala* Moore
 67. *Mycalesis igilia mercea* Evans
 68. *Mycalesis lepcha bethami* Moore
 69. *Melanitis phedima bethami* de Niceville
 70. *Melanitis phedima varaha* Moore

Family NYMPHALIDAE

71. *Argyreus hyperbius hyperbius* (Linnaeus)

Family LYCAENIDAE

72. *Narathura atrax* Hewitson
 73. *Curetis dentata* Moore
 74. *Curetis thetis* Fabricius
 75. *Curetis bulis* Doub. & Hewitson
 76. *Pseudozizeeria maha maha* (Kollar)

Family HESPERIIDAE

77. *Bibasis sena* Moore
 78. *Satarupa bhagava* Moore
 79. *Caprona ransonnettii* (F.D.)

SYSTEMATIC ACCOUNT

Family PAPILIONIDAE

1. *Papilio demoleus demoleus* Linn.**The Lime Butterfly**

1758. *Papilio demoleus* Linnaeus, *Syst. Nat.*, ed. 10 : 464.

1939. *Papilio demoleus demoleus* : Talbot, *Fauna Brit. India, Buttf.*, 1 : 189.

Material examined : Hoshangabad, Near Eklama River, Bori, 5.iii.2000 (1 ex.), Coll. R.K. Singh; Bori Forest, Bori, 6.iii.2000 (2 exs.), Coll. R.K. Singh; Near Manas Gwari Nala, Dhain, 9.iii.2000 (1 ex.), Coll. R.K. Singh; Defence Land, Singanama, 8.ix.2000 (2 exs.), Coll. Y.N. Gupta; Sarangpur, 2.ii.2002 (1 ex.), Coll. Y.N. Gupta; On the way to Babai, 14.ii.2002 (1 ex.), Coll. Y.N. Gupta; Chhindwara, Anthoni, Jhirpa, 28.viii.2000 (1 ex.), Coll. Y.N. Gupta; Jhirpa Forest, 26.ix.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis: Antennae dark reddish-brown; head, thorax and abdomen dusky black. A discal transverse series of creamy yellow spots, irregular in arrangement and size, extends from area 1a to 8, interrupted in area 5, and the spot in area 7 double. Hind wing with the base, and an edging that decreases in width along the inner margin, irrorated with yellow scales.

Distribution : Throughout India : Chhattisgarh (Bastar, Raigarh, Sarguja), Madhya Pradesh (Hoshangabad, Bhind, Chhatarpur, Chhindwara, Dhar, Indore, Jabalpur, Mandsaur, Morena, Ratlam, Sagar, Seoni, Shahdol, Shivpuri, Tikamgarh, Ujjain).

Elsewhere : Sri Lanka, North Myanmar and Pakistan.

2. *Papilio polytes romulus* Cramer**The Common Mormon**

1775. *Papilio romulus* Cramer, *Pap. Exot.*, 1 : 67.

1939. *Papilio polytes romulus* : Talbot, *Fauna Brit. India, Buttf.*, 1 : 178.

Material examined : Hoshangabad, Pachmarhi, Panarpani, 2.iii.2000 (1 ex.), Coll. R.K. Singh; Bori Forest, 6.iii.2000 (1 ex.), Coll. R.K. Singh; Khakrapura, Churna, 11.iii.2000 (9 exs.), Coll. R.K. Singh; On the way to Babai, 14.ii.2002 (1 ex.), Coll. Y.N. Gupta; Panarpani and surrounding area, 13.ii.2003 (1 ex.), Coll. M.L. Koshta; Gupt Mahadeo, Pachmarhi, 14.ii.2003 (1 ex.), Coll. M.L. Koshta; Churna, 23.ii.2003 (3 exs.), Coll. M.L. Koshta.

Diagnosis (Male) : Antennae, head, thorax and abdomen black. Outer margin of fore wing with a series of white spots, which are narrower at the edge of the wing. Hind wing with a transverse discal series of elongate white spots from inner margin to area 7.

Distribution : India : Madhya Pradesh (Hoshangabad, Bhind, Morena, Dhar, Shivpuri, Ujjain, Jhabua, Panna, Chhattarpur, Tikamgarh, Narsinghpur, Chhindwara, Jabalpur, Seoni), Andaman & Nicobar, Assam, Bihar, Delhi, Goa, Kerala, Lakshadweep, Sikkim, Tamil Nadu, Uttar Pradesh.

Elsewhere : Sri Lanka, Myanmar and Bangladesh.

3. *Pachliopta hector* (Linn.)

The Crimson Rose

1758. *Papilio hector* Linnaeus, *Syst. Nat.* : 459.

1993. *Pachliopta hector* : Varshney, *Oriental Ins.*, 27 : 354.

Material examined : Hoshangabad, Pachmarhi, Panarpani, 2.iii.2000 (1 ex.), Coll. R.K. Singh.

Diagnosis : Upperside bluish-black. Fore wing with interrupted and irregular discal and apical white bands. Hind wing with discal band nearly round and marginal rows of bright crimson crescent spots. The bands and spots broader in female. Underside of fore wing dull brownish-black and hind wing black. Wingspan 90-120 mm.

Distribution : India : Madhya Pradesh (Hoshangabad, Seoni), Orissa, Bihar, West Bengal, Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Maharashtra.

Elsewhere : Sri Lanka, Pakistan, Bangladesh and Myanmar.

4. *Pathysa nomius nomius* (Esper)

The Spot Swordtail

1785. *Papilio nomius* Esper, *Ausl. Schmett.* : 210.

1939. *Pathysa nomius nomius* : Talbot, *Fauna Brit. India, Buttf.*, 1 : 207.

Material examined : Hoshangabad, Pachmarhi, near Nandiya village, 7.vi.1999 (1 ex.), Coll. K. Chandra.

Diagnosis : Upper side bluish-white. Forewing crossed by five broad black bands, the basal and sub-basal bands reach the inner margin, the discal band is generally extended into area 2, the fourth band ends on the median vein, the fifth extends from the costa on both sides of the discocellulars and terminates at lower angle of cell. Hind wing with the ground colour whitish along the inner margin and above vein 7.

Distribution : India : Madhya Pradesh (Hoshangabad, Seoni), South India to Sikkim.

Elsewhere : Sri Lanka.

5. *Graphium (Graphium) agamemmon* (Linn.)

The Tailed Jay

1758. *Papilio agamemmon* Linn., *Syst. Nat.*, ed. 10, p. 462.

1939. *Graphium (Graphium) agamemmon* : Mondal & Maulik, *Fauna of W. Bengal*, 7 : 762.

Material examined : Hoshangabad, Pachmarhi, Panarpani, 2.iii.2000 (1 ex.), Coll. R.K. Singh.

Diagnosis : Upperside of fore wing with a spot at extreme base of costa, a transverse short bar near base of cell, and seven spots beyond, except the apical spot, which is single. Hind wing with a basal stripe, ending in a point in area 1. Underside fuliginous-brown or brownish-black, more or less suffused with pink along the costal margin, over the apical area, and along the outer edge of the discal markings on fore wing.

Distribution : India : Madhya Pradesh (Hoshangabad); Kumaon to Myanmar.

Family DANAIIDAE

6. *Danaus chrysippus chrysippus* (Linn.)

The Plain Tiger

1758. *Papilio chrysippus* Linnaeus, *Syst. Nat.*, 10th ed. : 471.

1883. *Danaus chrysippus* : Mar. & Nice., *Butterflies India, Burma, Ceylon*, 1 : 50.

1947. *Danaus chrysippus chrysippus* : Talbot, *Fauna Brit. India, Buttf.*, 2 : 20.

Material examined : Hoshangabad, Bori village, Bori, 9.vi.1999 (1 ex.), Coll. K. Chandra; Neemghan road, Madai, 14.vi. 1999 (1 ex.), Coll. K. Chandra; Anthoni, Pipariya, 23.viii. 2000 (92 exs.), Coll. Y.N. Gupta; Madhuban, Pachmarhi Road, 24.viii. 2000 (1 ex.), Coll. Y.N. Gupta; Private Bird Sanctuary, Matkuli, 27.viii. 2000 (1 ex.), Coll. Y.N.

Gupta; Defence Land, Singanama, 8.ix.2000 (1 ex.), Coll. Y.N. Gupta; Dokri Khera, 5.ii.2002 (2 exs.), Coll. Y.N. Gupta; Pachmarhi, 15.ii.2003 (2 exs.), Coll. M.L. Koshta.

Diagnosis : Upper side of fore wing tawny, darkening towards the costal margin, apical third of wing black; one or two white spots beyond and above apex of cell, a subapical white band, with one inner and two submarginal white spots below its lower end, a more or less complete series of antemarginal white spot and dots of varying size. Hind wing with paler ground-colour. Antennae black; head and thorax black, spotted with white.

Distribution : India : Madhya Pradesh, Assam, Andaman & Nicobar, Bihar, Delhi, Gujarat, Himachal Pradesh, Maharashtra, Manipur, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh.

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

7. *Danaus genutia* (Cramer)

The Common Tiger

1779. *Papilio genutia* Cramer, *Pap. Ex.*, 3, pl. ccvi, figs. C, D.

1883. *Danais genutia* : Mar. & Nice., *Butterflies India, Burma, Ceylon*, 1 : 52.

1947. *Danaus plexippus* : Talbot, *Fauna Brit. India, Buttf.*, 2 : 23.

Material examined : Hoshangabad, Eklama River, Bori, 5.iii.2000 (3 exs.), Coll. R.K. Singh; Sagra village, Kamti, 3.ii.2002 (3 exs.), Coll. Y.N. Gupta; Rani Pipariya, 6.ii.2002 (2 exs.), Coll. Y.N. Gupta; Betul, Near Chilam Dekhri Pond, Shahpura, 16.ii.2002 (1 ex.), Coll. Y.N. Gupta; Kantawadi, Shahpura, 20.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upper side of the fore wing tawny and veins with broad black margins, three post-discal white spots and subapical white band crossed by the veins, an irregular submarginal and marginal series of white spots.

Distribution : India : Madhya Pradesh, Andaman & Nicobar, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Manipur, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

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

8. *Tirumala limniace leopardus* (Butler)

The Blue Tiger

1866. *Danais leopardus* Butler, *Proc. Zool. Soc. London* : 52.

1883. *Danais limniace* : Mar. & Nice., *Butterflies India, Burma, Ceylon*, 1 : 47.

1947. *Danaus limniace leopardus* : Talbot, *Fauna Brit. India, Buttf.*, 2 : 67.

Material examined : Hoshangabad, Panarpani, 2.iii. 2000 (3 exs.), Coll. R.K. Singh; Bori river, Bori, 4.iii. 2000 (1 ex.), Coll. R.K. Singh; Near Eklama river, Bori, 5.iii. 2000 (2 exs.), Coll. R.K. Singh; Kamti (Tawa Dam), Pipariya, 22.viii. 2000 (2 exs.), Coll. Y.N. Gupta; Dokari Khera, 5.ii. 2002 (2 exs.), Coll. Y.N. Gupta; Rani Pipariya, 6.ii. 2002 (2 exs.), Coll. Y.N. Gupta; Panarpani and surroundings, Pachmarhi, 13.ii.2003 (1 ex.), Coll. M.L. Koshta; Betul, Kamtawadi, Shahpur, 20.ii. 2002 (1 ex.); Coll. Y.N. Gupta.

Diagnosis : Upper side black, with bluish-white semihyaline spots and streaks. Fore wing in area 1b, with two streaks; cell with a basal streak and an outwardly indented distal spot. Hind wing in areas 1a, 1b and 1c with basal streaks, double in 1b and 1c, cell with a forked broad streak, the lower branch with a hook or spur like short projection; at the base of area 2 and 3 a slender loop, an irregular series of post-discal and submarginal spots.

Distribution : India : Madhya Pradesh, Andaman & Nicobar, Assam, Bihar, Delhi, Himachal Pradesh, Karnataka, Lakshadweep, Manipur, Nagaland, Orissa, Punjab, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

9. *Euploea core core* (Cramer)

The Common Crow

1780. *Papilio core* Cramer, *Pap. Ex.*, 3, pl. cclxvi, figs. E, F.

1883. *Euploea core* : Mar. & Nice., *Butterflies India, Burma, Ceylon*, 1 : 80.

1947. *Euploea core core* : Talbot, *Fauna Brit. India, Buttf.*, 2 : 67.

Material examined : Hoshangabad, Churna, 10.vi. 1999 (1 ex.), Coll. K. Chandra; Panarpani, Pachmarhi, 2.iii. 2000 (5 exs.), Coll. R.K. Singh; Near Bori River, Bori, 4.iii.2000 (2 exs.), Coll. R.K. Singh; Near Eklama River, Bori, 5.iii.2000 (3 exs.), Coll. R.K. Singh; Bori Forest, Bori, 6.iii.2000 (4 exs.), Coll. R.K. Singh; Kamti (Tawa Dam), Pipariya, 22.viii.2000 (2 exs.), Coll. Y.N. Gupta; Anthoni, Pipariya, 23.viii.2000 (2 exs.), Coll. Y.N. Gupta; Private Bird Sanctuary, Matkuli (1 ex.), Coll. Y.N. Gupta; Dhoopgarh, Pachmarhi, 31.viii.2000 (1 ex.), Coll. Y.N. Gupta; Rajendragiri, Pachmarhi, 2.ix.2000 (1 ex.), Coll. Y.N. Gupta; Defence Land, Singanama, 8.ix. 2000 (1 ex.), Coll. Y.N. Gupta; Sibra village, 3.ii.2002 (1 ex.), Coll. Y.N. Gupta; Rani Pipariya, 6.ii.2002 (2 exs.), Coll. Y.N. Gupta; Najarpur, 10.ii.2002 (3 exs.), Coll. Y.N. Gupta; Panarpani and surrounding area, Pachmarhi, 13.ii.2003 (3 exs.), Coll. M.L. Koshta; Churna, 23.ii.2003 (2 exs.), Coll. M.L. Koshta; Betul, Gedi dhana, Shahpur, 19.ii.2002 (2 exs.), Coll. Y.N. Gupta.

Diagnosis : Upper side glossy-brown with marginal and terminal white spots. Fore wing with the series of submarginal spots curved inwards opposite the apex. Hind wing with inner series of spots elongate, the outer conical.

Distribution : India : Bihar, Delhi, Karnataka, Lakshadweep, Orissa, Sikkim, Tamil Nadu, Madhya Pradesh, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar, Nepal and Pakistan.

Family PIERIDAE

10. *Catopsilia pyranthe pyranthe* (Linn.)

The Mottled Emigrant

1758. *Papilio pyranthe* Linnaeus, *Syst. Nat.*, 10th ed. : 469.

1939. *Catopsilia pyranthe pyranthe* : Talbot, *Fauna Brit. India, Buttf.*, 1 : 496.

Material examined : Hoshangabad, Bori village, Bori, 9.vi.1999 (1 ex.), Coll. K. Chandra; Kakri village, 11.vi.1999 (2 exs.), Coll. K. Chandra; Pachmarhi, Bori village, 2.iii.2000 (1 ex.), Coll. K. Chandra.

Diagnosis : Upper side chalky white or greenish in male but in female black margins a little broader, with (or without) cell spot. Hind wing either unmarked or with a marginal series of black vein-dots or spots which may form a continuous line.

Distribution : India : Madhya Pradesh, Assam, Andaman & Nicobar, Gujarat, Tamil Nadu, Uttar Pradesh, West Bengal, North-West Himalaya.

Elsewhere : Sri Lanka, Myanmar and Pakistan.

11. *Catopsilia pomona* (Fab.)

The Lemon Emigrant

1775. *Catopsilia pomona* Fabricius, *Syst. Ent.* : 479.

1939. *Catopsilia pomona* : Talbot, *Fauna Brit. India, Buttf.*, 1 : 493.

Material examined : Hoshangabad, Bori Sanctuary, Churna, 10.vi.1999 (1 ex.), Coll. R.K. Singh; Pachmarhi, Panarpani, 2.iii.2000 (1 ex.), Coll. R.K. Singh; Bori Forest, 6.iii.2000 (5 exs.), Coll. R.K. Singh; Khakrapura, Churna, 11.iii.2000 (1 ex.), Coll. R.K. Singh; Kamti (Tawa dam), Pipariya, 22.viii.2000 (1 ex.), Coll. Y.N. Gupta; Bee Fall, Pachmarhi, 5.ix.2000 (1 ex.), Coll. Y.N. Gupta; Semari, 4.ii.2002 (1 ex.), Coll. Y.N. Gupta; Betul, Near Chilam Dekhri Pond, 16.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Costal margin only black at apex on upper side of fore wing and outer marginal narrow border muscular. Ground colour of both wings white. Under side of both wings with silvery-red ringed spots at ends of cells. Antenna red.

Distribution : India : Madhya Pradesh, Assam, Andaman & Nicobar, Bihar, Delhi, Gujarat, Tamil Nadu, Uttar Pradesh, Maharashtra, West Bengal, North-West Himalaya.

Elsewhere : Sri Lanka, Myanmar and Pakistan.

12. *Catopsilia florella gnoma* (Fab.)**The African Emigrant**

1776. *Papilio gnoma* Fabricius, *Syst. Ent.*, : 828.

1939. *Catopsilia florella gnoma* : Talbot, *Fauna Brit. India, Buttf.*, 1 : 500.

Material examined : Hoshangabad, Bori forest, 6.iii.2000 (1 ex.), Coll. R.K. Singh; Singanama West, 7.ix.2000 (3 exs.), Coll. Y.N. Gupta; Chhindwara, Anhoni, Jhirpa, 30.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Male : Upper side white with reddish-brown or black markings. Fore wing with a narrow outer border, formed of spots either disconnected or connected only at the margin. Female greenish yellow-to-white with more distinct markings. Underside with well developed, 3 red-ringed silver spots at the end of the cell, a curved discal series of 9-10 spots and 3-4 basal spots. Wing span 50-70 mm.

Distribution : Throughout the Oriental region, Tropical Africa, New Guinea and Australia.

13. *Colotis etrida etrida* (Boisd.)**The Little Orange Tip**

1836. *Anthocharis etrida* Boisduval, *Spec. Gen. Lep.*, 1 : 576.

1939. *Colotis etrida etrida* : Talbot, *Fauna British India, Butterflies*, 1 : 464.

Material examined : Hoshangabad, Neemghan Road, Madai, 14.vi.1999 (5 exs.), Coll. K. Chandra; Semari, 4.ii.2002 (1 ex.), Coll. Y.N. Gupta; Sonbhadra River, 27.ii.2003 (1 ex.), Coll. M.L. Koshta.

Diagnosis : Upperside white, the base of both wings sparsely dusted with black. Fore wing with a small black discocellular spot; apical area broadly black, bearing an oval, curved, rich orange patch placed obliquely. Hind wing with a series of marginal black spots.

Distribution : India : Madhya Pradesh (Hoshangabad, Bhind, Mandasaur, Morena), Assam, Delhi, Himachal Pradesh, Karnataka, Jammu & Kashmir, Punjab, Tamil Nadu, Uttar Pradesh, North-West Himalaya.

Elsewhere : Pakistan.

14. *Belenois aurota aurota* (Fabricius)**The Pioneer**

1793. *Papilio aurota* Fabricius, *Ent. Syst.*, 3 (1) : 197.

1939. *Anapheis aurota aurota* : Talbot, *Fauna British India, Butterflies*, 1 : 380-382.

1997. *Anapheis aurota aurota* : Ghosh & Chow., *Fauna of W. Bengal*, 7 : 710.

Material examined : Hoshangabad, Nimghan Road, Mandai, 14.vi.1999 (4 exs.), Coll. K. Chandra.

Diagnostic characters : Upper side white. Fore wing with a prominent curved jet black discocellular bar; a broad black apical area; six white spots in the apical area of which the anterior four are elongate. Hind wing with a marginal black border, bearing four round white spots in areas 2 to 5.

Distribution : India : Chhattisgarh (Sarguja), Madhya Pradesh (Bhind, Jabalpur, Mandsaur, Morena, Ratlam, Ujjain), Andaman & Nicobar, Delhi, Karnataka, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Pakistan, Sri Lanka.

15. *Cepora nerissa phryne* (Fab.)

The Common Gull

1775. *Papilio phryne* Fabricius, *Syst. Ent.*, : 473.

1939. *Cepora nerissa phryne* : Talbot, *Fauna British India, Butterflies*, 1 : 362.

Material examined : Hoshangabad, Madhuban, Pachmarhi road, 24.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upperside of forewing with apical black area bearing prominent white spots. Hind wing with marginal black border dentate on the inner edge.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad, Bhind, Chhatarpur, Chhindwara, Dhar, Gwalior, Indore, Jabalpur, Mandsaur, Morena, Sarguja, Shivpuri, Ujjain), Assam, Bihar, Maharashtra, Sikkim, Tamil Nadu, Uttar Pradesh, North-West Himalaya.

Elsewhere : Nepal, Sri Lanka.

16. *Delias eucharis* (Drury)

The Common Jezebel

1773. *Papilio eucharis* Drury, *Illustr. Nat. Hist.*, 2 : pl. x, figs. 5, 6.

1939. *Delias eucharis* : Talbot, *Fauna British India, Butterflies*, 1 : 352.

Material examined : Hoshangabad, Panarpani, Pachmarhi, 2.iii.2000 (5 exs.), Coll. R. K. Singh; Near Eklama River, Bori, 5.iii.2000 (1 ex.), Coll. R. K. Singh; Bori Forest, Bori, 6.iii.2000 (1 ex.), Coll. R. K. Singh; Khakrapara, Churna, 11.iii.2000 (1 ex.), Coll. R. K. Singh; Denwa River, Matkuli, Singanama, 9.ix.2000 (3 exs.), Coll. Y.N. Gupta; Panarpani and surrounding area, Pachmarhi, 13.ii.2002 (10 exs.), Coll. M.L. Koshta; Gupt Mahadeo, Pachmarhi, 14.ii.2003 (1 ex.), Coll. M.L. Koshta; Rajendragiri, Pachmarhi, 15.ii.2003 (4 exs.), Coll. M.L. Koshta.

Diagnosis : Under side of hind wing being yellow with black veins and bearing a submarginal row of large brick-red spots.

Distribution : India : Chhattisgarh (Bastar, Raigarh, Sarguja), Madhya Pradesh (Balaghat, Betul, Chhindwara, Hoshangabad, Indore, Jabalpur, Narsinghpur, Shahdol, Shivpuri), Bihar, Uttar Pradesh, Peninsular India extending up to lower slopes of Himalaya.

Elsewhere : Sri Lanka and Myanmar.

17. *Terias hecabe simulata* (Moore)

The Common Grass Yellow

1758. *Papilio hecabe* Linnaeus, *Syst. Nat.*, 10th ed. : 470.

1939. *Eurema hecabe simulata* : Talbot, *Fauna British India, Butterflies*, 1 : 530.

Material examined : Hoshangabad, Panarpani, Pachmarhi, 2.iii.2000 (1 ex.), Coll. R.K. Singh; Near Eklama River, Bori, 5.iii.2000 (3 exs.), Coll. R.K. Singh; Bori Forest, Bori, 6.iii.2000 (8 exs.), Coll. R.K. Singh; Near Sonbhadra River, Dhain, 8.iii.2000 (2 exs.), Coll. R.K. Singh; Near Manas Gwari Nala, Dhain, 9.iii.2000 (2 exs.), Coll. R.K. Singh; Khakrapura, Churna, 11.iii.2000 (1 ex.), Coll. R.K. Singh; Bori village, Bori, 13.iii.2000 (1 ex.), Coll. R.K. Singh; Madhuban, Pachmarhi Road, 24.viii.2000 (3 exs.), Coll. Y.N. Gupta; Dhoopgarh, Pachmarhi, 31.viii.2000 (1 ex.), Coll. Y.N. Gupta; Chauragarh, Pachmarhi, 1.ix.2000 (2 exs.), Coll. Y.N. Gupta; Rajendragiri, Pachmarhi, 2.ix.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Bright yellow in colour. Upper side of fore wing has a blackish, narrow border varying in width, sometimes very thin and almost attenuated anteriorly and posteriorly. Under side of fore wing is with or without a subapical prominent and elongate brown spot, the latter extending downwards from the costa but never reaches the anal margin; this spot (when present) is irregular and varies in width.

Distribution : India : Madhya Pradesh, Andaman & Nicobar, Bihar, Delhi, Himachal Pradesh, Lakshadweep, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal, South India.

Elsewhere : Myanmar, Pakistan and Sri Lanka.

18. *Terias brigitta rubella* Wallace**The Small Grass Yellow**

1867. *Terias rubella* Wallace, *Trans. Ent. Soc. Lond.*, 4 (3), pt. 3 : 323.

1939. *Eurema brigitta rubella* : Talbot, *Fauna British India, Butterflies*, 1 : 515-517.

Material examined : Hoshangabad, Panarpani, Pachmarhi, 2.iii.2000 (2 exs.), Coll. R.K. Singh; Near Bori River, Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh; Near Eklama river, 5.iii.2000 (1 ex.), Coll. R.K. Singh; Khakrapura, Churna, 11.iii.2000 (1 ex.), Coll. R.K. Singh; Neemghan Road, Mandai, 14.iii.2000 (1 ex.), Coll. R.K. Singh; Madhuban, Pachmarhi Road, 24.viii.2000 (1 ex.), Coll. Y.N. Gupta; Semari, 4.ii.2002 (1 ex.), Coll. Y.N. Gupta; Najarpur, 10.ii.2002 (1 ex.), Coll. Y.N. Gupta; Near Tawa Dam, 13.ii.2002 (1 ex.), Coll. Y.N. Gupta; Panarpani and surrounding area, Pachmarhi (1 ex.), Coll. M.L. Koshta; Chhindwara, Anhoni, Jhirpa, 28.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Bright yellow. The outer border and apical third of fore wing are black. The inner edge of this area more or less regularly incurved from costa to inner margin; basal area dusted with black. Hind wing with a black outer border that is broader anteriorly; basal area dusted with black.

Distribution : India : Madhya Pradesh, Bihar, Karnataka, Maharashtra, Nicobar, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal and North West Himalaya.

Elsewhere : Sri Lanka, Myanmar.

19. *Terias laeta laeta* (Boisduval)**The Spotless Grass Yellow**

1836. *Terias laeta* Boisduval, *Spec. Gen. Lep.*, 1 : 674.

1939. *Eurema laeta laeta* : Talbot, *Fauna Brit. India, Buttf.*, 1 : 517.

Material examined : Hoshangabad, Bori Forest, Bori, 6.iii.2000 (2 exs.), Coll. R.K. Singh; Near Manas Gwari Nala, Dhain, 9.iii.2000 (1 ex.), Coll. R.K. Singh; Semari, 4.ii.2002 (1 ex.), Coll. Y.N. Gupta; Near Tawa Dam, 13.ii.2002 (2 exs.), Coll. Y.N. Gupta; Betul, Gedi dhana, Shahpur, 19.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Bright yellow. Fore wing much more pointed at apex, outer margin sharply cut and straight. Fore wing with basal half of costa broadly dusted with black; outer black border stopping abruptly at vein 2; the tornus except for a very fine black anticiliary line, yellow. Hind wing with black border reduced to a black subapical patch and posteriorly to a series of black spots, or the later or all these markings absent.

Distribution : India : Bihar, Delhi, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal, Peninsular India to North West Himalayas.

Elsewhere : Myanmar, Nepal, Pakistan and Sri Lanka.

Family RIODINIDAE

20. *Abisara echerius suffusa* Moore

The Plum Judy

1865. *Sospita echerius* Moore (nec Cramer), *Proc. Zool. Soc. Lond.*, p. 771.

1882. *Abisara suffusa* Moore, *Proc. Zool. Soc. Lond.*, p. 244.

1886. *Abisara suffusa* : Niceville, *Butterflies India, Burma, Ceylon*, 2 : 325.

Material examined : Hoshangabad, Pachmarhi, Panarpani, 2.iii.2000 (1 ex.), Coll. R.K. Singh; Near Bori river, Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh; Near Eklama river, Bori, 5.iii.2000 (2 exs.), Coll. R.K. Singh; Rajendragiri, Pachmarhi, 2.ix.2000 (1 ex.), Coll. Y.N. Gupta; Handi Koh, Pachmarhi, 4.ix.2000 (1 ex.), Coll. Y.N. Gupta; Panarpani and surrounding area; Pachmarhi, 13.ii.2003 (2 exs.), Coll. M.L. Koshta.

Diagnosis : Smaller, the male being of a deeper tint, with the fasciae straighter and suffused with grey. Female of a much duller colour and suffused with grey, the medial transverse dark fascia less angular on both wings, and the outer fasciae much less distinct, broader and more suffused.

Distribution : India : Madhya Pradesh (Hoshangabad), Himachal Pradesh, Uttaranchal, Uttar Pradesh, West Bengal, Orissa, Tamil Nadu, Maharashtra.

Elsewhere : Bhutan.

Family ACRAEIDAE

21. *Acraea violae* (Fab.)

The Tawny Coster

1787. *Papilio vesta* Fabricius, *Mant. Ins.*, 2 : 14.

1883. *Pareba vesta* : Niceville, *Buttf. India, Burma, Ceylon*, 1 : 318.

1947. *Acraea violae* : Talbot, *Fauna British India, Butterflies*, 2 : 466.

Material examined : Hoshangabad, Sonbhadra River, Dhain, 8.iii.2000 (1 ex.), Coll. R.K. Singh; Madhuban, Pachmarhi Road, 24.viii.2000 (1 ex.), Coll. Y.N. Gupta; Singanama West, 7.ix.2000 (4 exs.), Coll. Y.N. Gupta; Defence Land, Singanama, 8.ix.2000 (1 ex.), Coll. Y.N. Gupta; Demoa River, Matkuli, Singanama, 9.ix.2000 (1 ex.), Coll. Y.N. Gupta; Sarangpur, 2.ii.2002 (1 ex.), Coll. Y.N. Gupta; Near Tawa Dam, Tawa Nagar, 13.ii.2002 (3 exs.), Coll. Y.N. Gupta; Panarpani and surrounding area, Pachmarhi, 13.ii.2003 (1 ex.), Coll. M.L. Koshta; Gupt Mahadeo, Pachmarhi, 14.ii.2003 (1 ex.), Coll. M.L. Koshta; Chhindwara, Anthoni, Jhirpa, 30.viii.2000 (1 ex.), Coll. Y.N. Gupta; Jhirpa Forest, 26.ix.2000 (4 exs.), Coll. Y.N. Gupta; Betul, near Chilam Dekhri Pond, Shahpur, 16.ii.2002 (1 ex.), Coll. Y.N. Gupta; Gedidhana, Shahpur, 19.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Both wings fulvous, with the veins black and more or less broadly bordered with black irrorations. Fore wing with the costa and outer margin black, the latter bearing a marginal series of eight fulvous oblong spots, one in each interspace, except the last, which has two. Hind wing with a series of four blackish spots, one in each interspace outside the cell from the first median nervule; a marginal highly dentate line leaving a series of yellow spots on the margin, one in each interspace. Underside paler.

Distribution : India : Madhya Pradesh, Himachal Pradesh, Assam, Sikkim, Uttar Pradesh, West Bengal, Khasi Hills.

Elsewhere : Myanmar, Bhutan, and Java.

Family NYMPHALIDAE

22. *Junonia orithya swinhoei* Butler

The Blue Pansy

1869. *Junonia orithya* Butler, *Cat. Fab. Lep. B. M.*, : 73.

1886. *Junonia orithya swinhoei* : Niceville, *Butterflies India, Burma, Ceylon*, 2 : 73.

Material examined : Hoshangabad, Pachmarhi, Kakri Village, 11.vi.1999 (1 ex.), Coll. K. Chandra; Nimghan road, Madai, 14.vi.1999 (1 ex.), Coll. K. Chandra; Near Bori river, Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh; Near Sonbhadra River, Dhain, 8.iii.2000 (1 ex.), Coll. R.K. Singh; Bori village, Bori, 13.iii.2000 (1 ex.), Coll. R.K. Singh; Handi Koh, Pachmarhi, 4.ix.2000 (1 ex.), Coll. Y.N. Gupta; Singanama West, 7.ix.2000 (1 ex.), Coll. Y.N. Gupta; Betul, Padhar, 17.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Male : Upperside of fore wing dark blue-black from base to the disc, outer area fuliginous black; a purple-tinted ochreous-white short oblique subapical band and two transverse submarginal narrow lunular fasciae; on the inner fascia are two small red-ringed ocelli. Hind wing blue, two ocelli near the outer margin, the lower one red and ringed with black, the upper one almost black and blind.

Female : Differs in the upper side in having the basal half of the hind wing entirely black, both the ocelli being large and of a bright red.

Distribution : India : Bihar, Delhi, Himachal Pradesh, Madhya Pradesh, Orissa, South India, Uttar Pradesh.

Elsewhere : Myanmar, Pakistan and Sri Lanka.

23. *Junonia lemonias vaisya* (Fruhstorfer)

The Lemon Pansy

1912. *Precis vaisya* Fruhstorfer, In Seitz; *The Macrolepidoptera of the World*, 9 : 520.

1987. *Precis lemonias vaisya* : Gupta & Shukla, *Rec. zool. Surv. India, Occ. Pap. No.*, 106 : 34.

Material examined : Hoshangabad, Near Nandiya village, 7.vi.1999 (4 exs.), Coll. K. Chandra; Panarpani, Pachmarhi, 2.iii.2000 (1 ex.), Coll. R.K. Singh; near Bori River, Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh; Near Eklama River, Bori, 5.iii.2000 (2 exs.), Coll. R.K. Singh; Near Sonbhadra River, Dhain, 8.iii.2000 (2 exs.), Coll. R.K. Singh; Madhuban, Pachmarhi Road, 24.viii.2000 (1 ex.), Coll. Y.N. Gupta; Dhoopgarh, Pachmarhi, 31.viii.2000 (1 ex.), Coll. Y.N. Gupta; Rajendra giri, Pachmarhi, 2.ix.2000 (1 ex.), Coll. Y.N. Gupta; Bee Fall, Pachmarhi, 5.ix.2000 (1 ex.), Coll. Y.N. Gupta; Gup Mahadeo, Pachmarhi, 14.ii.2003 (2 exs.), Coll. M.L. Koshta; Pachmarhi, 15.ii.2003 (2 exs.), Coll. M.L. Koshta; Rajendragiri, Pachmarhi, 15.ii.2003 (1 ex.), Coll. M.L. Koshta; Gedi dhana, Shahpur, 19.ii.2002 (2 exs.), Coll. Y.N. Gupta; Chhindwara, Anthoni, Jhirpa, Chhindwara, 23.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upperside of fore wing with the cell crossed by the following markings: a slender waved black line near base, two waved black lines enclosing a pale ochraceous fascia; the ground colour is darker and marked with pale ochraceous spots. Hind wing with a large elongated and duplex ocellated spot, the smaller portion of which is situated between the subcostal nervules, the larger portion extending over the discoidal nervule, and a very small and indistinct ocellated spot between the second and first median nervules.

Distribution : India : Bihar, Madhya Pradesh, Orissa, South India.

Elsewhere : Sri Lanka.

24. *Junonia hierta hierta* (Fab.)

The Yellow Pansy

1798. *Papilio hierta* Fabricius, *Syst. Ent., Suppl.*, : 424.

1886. *Junonia hierta hierta* : Niceville, *Butterflies India, Burma, Ceylon*, 2 : 71.

Material examined : Hoshangabad, Near Nandiya village, 7.vi.1999 (1 ex.), Coll. R.K. Singh; Near Sonbhadra River, Dhain, 8.iii.2000 (1 ex.), Coll. R.K. Singh; Rajendragiri, Pachmarhi, 2.ix.2000 (1 ex.), Coll. Y.N. Gupta; Denwa River, Matkuli, Singanama, 9.ix.2000 (1 ex.), Coll. Y.N. Gupta; Betul, Gedi dhana, Shahpur, 19.ii.2002 (2 exs.), Coll. Y.N. Gupta; Chhindwara, Anthoni, Jhirpa, 30.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Male : Upper side black. Fore wing with a broad medial yellow patch, extending from the base to beyond the disc, and thence narrowed and bent downward, two short paler streaks above the apex. Hind wing black, with a large broad subana' yellow patch.

Female : Upperside, fore wing dark yellow-brown, with the yellow patch paler, shortened basally, and crossed by two black lines on middle of the cell.

Distribution : India : Bihar, Delhi, Orissa, Madhya Pradesh, Uttar Pradesh.

Elsewhere : Pakistan, Sri Lanka.

25. *Neptis hylas astola* Moore**The Common Sailer**

1872. *Neptis astola* Moore, *Proc. Zool. Soc. London* : 560.

1886. *Neptis astola* : Niceville, *Butterflies India, Burma, Ceylon*, 2 : 99.

Material examined : Hoshangabad, Gupt Mahadev, Pachmarhi, 5.vi.1999 (3 exs.), Coll. R.K. Singh; Near Nandiya village, 7.vi.1999 (1 ex.), Coll. K. Chandra; Panarpani, pachmarhi, 2.iii.2000 (5 exs.), Coll. R.K. Singh; Near Bori River, Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh; Near Eklama River, Bori, 5.iii.2000 (1 ex.), Coll. R.K. Singh; Bori Forest, Bori, 6.iii.2000 (2 exs.), Coll. R.K. Singh; Near Sonbhadra River, Dhain, 8.iii.2000 (3 exs.), Coll. R.K. Singh; Near Manas Gwari Nala, Dhain, 9.iii.2000 (1 ex.), Coll. R.K. Singh; Bori village, Bori, 13.iii.2000 (1 ex.), Coll. R.K. Singh; Near Tawa Dam, Tawa River, 13.ii.2002 (2 exs.), Coll. Y.N. Gupta.

Diagnosis : Upperside black with white markings. Fore wing with white streaks, triangular spot and a series of spots. Hind wing with a basal broad white band and an outer series of squarish white spots. Underside golden brown with white markings, but sharply edged with black lines. In wet season forms, markings narrower with broad black margin.

Distribution : Most of the Oriental region except the Philippines and Sulawesi.

26. *Neptis soma soma* Moore**The Sullied Sailer**

1858. *Neptis soma* Moore, *Proc. zool. Soc. London* : 9.

1932. *Neptis soma soma* : Evans, *The Identification of Indian Butterflies* : 166.

1997. *Neptis soma* : Singh & Koshta, *Rec. zool. Surv. India*, 96 (1-4) : 20.

Material examined : Hoshangabad, Rajendragiri, Pachmarhi, 2.ix.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upper side black, markings white. Forewing with discoidal streak narrower and the seven spots of the curved row smaller. All the markings very small and narrow and more or less sullied, not clear pure white, the submarginal series of small white spots; the bands on the hind wing are also narrower. Underside deep maroon, the markings as on upper side, but those of the hind wing less straight.

Distribution : India : Madhya Pradesh (Balaghat, Jabalpur), Assam, Sikkim, Uttar Pradesh.

Remarks : Recorded for the first time from Pachmarhi.

27. *Neptis jumbah jumbah* Moore

1857. *Neptis jumbah* Moore, *Cat. Lep. Mus. E. I. C.*, 1 : 167.

1886. *Neptis jumbah jumbah* : Gupta, *Fauna of W. Bengal*, 7 : 592.

Material examined : Hoshangabad, Near Bori river, Bori, 4.iii.2000 (6 exs.), Coll. R.K. Singh; Near Eklama river, Bori, 5.iii.2000 (3 exs.), Coll. R.K. Singh; Bori Forest, Bori, 6.iii.2000 (2 exs.), Coll. R.K. Singh; Khakrapara, Churna, 11.iii.2000 (1 ex.), Coll. R.K. Singh; Bori village, Bori, 13.iii.2000 (1 ex.), Coll. R.K. Singh; Panarpani and surrounding area, Pachmarhi, 13.ii.2003 (1 ex.), Coll. M.L. Koshta.

Diagnosis : Upperside smoky-black. Forewing with a narrow longitudinal discoidal streak, and a triangular spot in continuation. Hindwing with a broad white band from costal to abdominal margin, being intersected by the veins. Underside ferruginous.

Distribution : Eastern and Southern India, Madhya Pradesh (Hoshangabad), Andamans.

Elsewhere : Sri Lanka, Myanmar.

28. *Athyma perius* (Linn.)

The Common Sergeant

1758. *Papilio perius* Linnaeus, *Syst. Nat.* ed. 10 : 471.

1987. *Pantoporia perius* : Gupta & Shukla, *Rec. zool. Surv. India, Occ. Pap. No.*, 106 : 31.

1994. *Athyma perius* : Varshney, *Oriental Ins.*, 28 : 180.

Material examined : Hoshangabad, Near Nandiya village, 7.vi.1999 (1 ex.), Coll. K. Chandra; Pachmarhi, Panarpani, 2.iii.2000 (1 ex.), Coll. R.K. Singh; Panarpani and surrounding area, Pachmarhi, 13.ii.2003 (1 ex.), Coll. M.L. Koshta.

Diagnosis : Upper side dark fuscous, with the following lemon-white spots and markings: forewing with a basal streak and two spots in cell; a sub triangular spot at end of cell, two elongated subapical spots; a submarginal series of six very small spots, the third, fourth and fifth contiguous to the upper three discal spots. Hind wing with a wide transverse macular fascia near base, and an outer discal series of six small spots.

Distribution : India: Chhattisgarh (Bastar), Madhya Pradesh (Chhindwara), Arunachal Pradesh, Bihar, Himachal Pradesh, Orissa, Uttar Pradesh, West Bengal.

Elsewhere : Myanmar.

29. *Symphaedra nais* Forster

The Baronet

1771. *Papilio nais* Forster, *Novae Spec. Ins. Cent.*, 1 : 73.

1886. *Symphaedra nais* : Niceville, *Butterflies India, Burma, Ceylon, 2* : 186.

Material examined : Hoshangabad, Gupt Mahadeo, 5.vi.1999 (1 ex.), Coll. K. Chandra; Near Nandiya village, 7.vi.1999 (1 ex.), Coll. K. Chandra; Panarpani, Pachmarhi, 2.iii.2000 (1 ex.), Coll. R.K. Singh; Near Bori River, Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh; Near Eklama River, Bori, 5.iii.2000 (1 ex.), Coll. R.K. Singh; Near Sonbhadra River, Dhain, 8.iii.2000 (1 ex.), Coll. R.K. Singh; Near Manas Gwari Nala, Dhain, 9.iii.2000 (2 exs.), Coll. R.K. Singh; Khakrapara, Churna, 11.iii.2000 (3 exs.), Coll. R.K. Singh; Defence Land, Singanama, 8.ix.2000 (1 ex.), Coll. Y.N. Gupta; Sarangpur, 2.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upper side of fore wing with a broad black disco-cellular spot, a contiguous discal spot, an oblique subapical streak, and transverse submarginal and marginal narrow lunular band, the two joined by streaks on the veins. Hind wing with a large black medial costal spot; a submarginal row of small round spots, and broad marginal band.

Distribution : India: Bihar, Goa, Gujarat, Madhya Pradesh, Orissa, Sikkim, South India.

Elsewhere : Sri Lanka.

30. *Phalanta phalantha phalantha* (Drury)

The Common Leopard

1770. *Papilio phalanta* Drury, *Ill. Ex. Ent.*, 1, pl. xxi, figs. 1, 2.

1886. *Atella phalanta* : Niceville, *Butterflies India, Burma, Ceylon, 2* : 30.

Material examined : Hoshangabad, Near Eklama River, Bori, 5.iii.2000 (1 ex.), Coll. R.K. Singh; Bori Forest, Bori, 6.iii.2000 (1 ex.), Coll. R.K. Singh; Anthoni, Pipariya, 23.viii.2000 (1 ex.), Coll. Y.N. Gupta; Defence Land, Singanama, 8.ix.2000 (1 ex.), Coll. Y.N. Gupta; Chhindwara, Anthoni, Jhirpa, 30.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upperside bright ochraceous, with the following blackish markings: fore wing with the apical half of the costal margin, four narrow waved fascial (arranged in pairs) crossing cell, a waved and broken spot beyond cell extending from costa to the lower discoidal nervulae, an oblique series of four spots divided by the median nervules. Hind wing with some transversely waved linear fascial on basal area; a discal series of four rounded spots; two waved submarginal fascial.

Distribution : India : Arunachal Pradesh, Bihar, Delhi, Madhya Pradesh, Maharashtra, Nicobar, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar, Pakistan and Sri Lanka.

31. *Hypolimnas misippus* (Linn.)**The Danaid Eggfly**

1767. *Papilio misippus* Linnaeus, *Syst. Nat.*, 12th ed., 1, pt. 2 : 767.

1886. *Hypolimnas misippus* : Niceville, *Butterflies India, Burma, Ceylon*, 2 : 126

Material examined : Hoshangabad, Madhuban, Pachmarhi, 24.viii.2000 (1 ex.), Coll. Y.N. Gupta; Chauragarh, Pachmarhi, 1.ix.2000 (1 ex.), Coll. Y.N. Gupta; Gupt Mahadeo, Pachmarhi, 14.ii.2003 (1 ex.), Coll. M.L. Koshta; Betul, Kantawada village, Shahpur, 20.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Male : Upperside very dark indigo-blue. Fore wing with an oblong subapical white spot; a large elongated white spot on disc beyond apex of cell. Hind wing with a large irregularly rounded discal white spot; these spots on both wings surrounded by dark blue.

Female : Upper side reddish-ochraceous. Fore wing with less than apical half black, containing a waved series of five white spots preceded by about two small subcostal white spots and four small subapical white spots. Hind wing with a large medial black spot.

Distribution : India : Madhya Pradesh, Andaman & Nicobar, Arunachal Pradesh, Bihar, Delhi, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Sri Lanka, Pakistan and Myanmar.

32. *Euthalia garuda anagama* Fruhstorfer**The Baron**

1913. *Euthalia anagama* Fruhstorfer, In seitz : *The Macrolepidoptera of the World*, 9: 667.

1987. *Euthalia garuda anagama* : Gupta and Shukla, *Rec. zool. surv. India.*, Occ. Pap. 106 : 39.

Material examined : Hoshangabad, Handi Koh, 4.ix.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upperside of forewing has a submarginal band of black spots.

Forewing length : 35mm.

Distribution : India : Madhya Pradesh (Hoshangabad), Chhattisgarh (Bastar, Sarguja), Himachal Pradesh, Maharashtra, Orissa and Uttar Pradesh.

Remarks : Recorded for the first time from Pachmarhi.

33. *Phaedyma columella ophiana* (Moore)**The Short Banded Sailer**

1872. *Neptis ophiana* Moore, *Proc. Zool. Soc. Lond.*, p. 561.

Material examined : Hoshangabad, Near Eklama River, Bori, 5.iii.2000 (1 ex.), Coll. R.K. Singh.

Diagnosis : Upperside dark fuliginous black, markings white. Forewing with very narrow terminally-indented discoidal streak, and large broad triangular spot beyond. Hindwing with broad inner band. Underside brownish-ferruginous.

Distribution : Eastern and Southern India.

Elsewhere : Myanmar, Malay Peninsula.

34. *Cynthia cardui* (Linnaeus)**The Painted Lady**

1758. *Papilio cardui* Linnaeus, *Syst. Nat.*, 10th ed. : 475.

1816. *Vanessa cardui* : Hubner, *Verz. Bek. Schmett.*, : 33.

1886. *Pyrameis cardui* : Niceville, *Butterflies India, Burmah, Ceylon*, 2 : 30.

Material examined : Hoshangabad, about 2 km. E. from Mandai, 24.ii.2003 (1 ex.), Coll. M.L. Koshta.

Diagnostic characters : Upperside, both wings ochreous-red. Fore wing with the basal area ochreous-brown; an oblique irregular shaped angular band, the apical area and exterior border black, before the apex a short white oblique band and a curved series of four spots, a pale marginal line. Hind wing with ochreous brown basal area; a transverse discal row of five black spots, each spot with slightly paler outer ring, a submarginal row of lunular spots, and marginal row of larger spots.

Distribution : India : Madhya Pradesh, Arunachal Pradesh, Andamans, Bihar, Lakshadweep, Meghalaya, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar, Sri Lanka.

Remarks : Recorded for the first time from Pachmarhi.

35. *Precis iphita pluviatilis* Fruh.**The Chocolate Pansy**

1900. *Precis pluviatilis* Fruhstorfer, *Berl. ent. Z. Berlin*, 45 : 22.

1987. *Precis iphita pluviatilis* : Gupta & Shukla, *Rec. zool. Surv. India, Occ. Pap. No.*, 106 : 32.

Material examined : Hoshangabad, Near Bori river, Bori, 4.iii.2000 (6 exs.), Coll. R.K. Singh; Near Eklama River, Bori, 5.iii.2000 (5 exs.), Coll. R.K. Singh; Bori Forest, Bori, 6.iii.2000 (3 exs.), Coll. R.K. Singh; Khakrapura, Churna, 11.iii.2000 (2 exs.), Coll. R.K. Singh; Kamti (Tawa Dam), Pipariya, 22.viii.2000 (1 ex.), Coll. Y.N. Gupta; Madhuban, Pachmarhi Road, 24.viii.2000 (1 ex.), Coll. Y.N. Gupta; Private Bird Sanctuary, Matkuli, 27.viii.2000 (1 ex.), Coll. Y.N. Gupta; Jata Shankar, Pachmarhi, 3.ix.2000 (3 exs.), Coll. Y.N. Gupta; Defence Land, Singanama, 8.ix.2000 (2 exs.), Coll. Y.N. Gupta; Panarpani and surrounding area, Pachmarhi, 13.ii.2003 (3 exs.), Coll. M.L. Koshta; Pachmarhi, 15.ii.2003 (1 ex.), Coll. M.L. Koshta; Chhindwara, Anthoni, Jhirpa, 28.viii.2000 (1 ex.), Coll. Y.N. Gupta; Betul, On the way to Babai, 14.ii.2002 (1 ex.), Coll. M.L. Koshta; Gedi Dahana, Shahpur, 19.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Forewing with two transverse fascial crossing cell, the first situated about middle and the second near apex; the apical half of wing is somewhat paler, and inwardly bounded by a dark fascia; between this and outer margin is a somewhat similar fascia, followed by two very dark submarginal lines. Hind wing with the apical half paler and with the fascial on the forewing continued, the first terminating near abdominal margin about one third from anal angle, the second broader and more outwardly curved than on forewing.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Chhindwara, Jabalpur), Kashmir, Orissa, South India, Uttar Pradesh.

Elsewhere : Maldives, Sri Lanka.

36. *Kallima inachus* (Boisduval)

The Orange Oakleaf

1836. *Paphia inachus* Boi., *Crochard's Ed. Cuvier's Reg. Anim., Ins.*, 2, pl. cxxxix, f. 3.

1886. *Kallima inachus* : Niceville, *Butterflies India, Burma, Ceylon*, 2 : 261.

Material examined : Hoshangabad, Pachmarhi, Chauragarh, 2.iv.1979 (1 ex.), Coll. P.D. Rane; Trisool Nala, 15.vi.2003 (1 ex.), Coll. K. Chandra.

Diagnosis : Upperside: Forewing, with broad fulvous band extending to outer margin, a short apical point in the male and a very prolonged one in the female; the discal hyaline spot larger than in the other species. Hindwing bright violet blue, the outer border paler, and prominently marked with short brown strigae. Underside, ochreous-brown, vinous-tinted, minutely brown-speckled; rib-line indistinct. A large, dark, bright violet-blue, prominently-marked species.

Distribution : India : Madhya Pradesh (Hoshangabad), Assam, Sikkim, Orissa, Eastern Ghats, Jammu & Kashmir, Uttar Pradesh.

Family SATYRIDAE

37. *Melanitis leda ismene* (Cramer)**The Common Evening Brown**

1775. *Papilio ismene* Cramer, *Pap. Ex.*, 1, pl. 26, figs. A, B.

1883. *Melanitis ismene* : Mar. & Nice., *Butterflies India, Burma, Ceylon*, 1 : 256.

Material examined : Hoshangabad, Near Bori River, Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh; Near Eklama river, Bori, 5.iii.2000 (1 ex.), Coll. R.K. Singh; Kamti (Tawa Dam), Pipariya, 22.viii.2000 (1 ex.), Coll. Y.N. Gupta; Handi Koh, Pachmarhi, 4.ix.2000 (1 ex.), Coll. Y.N. Gupta; On the way to Babai, 14.ii.2002 (1 ex.), Coll. Y.N. Gupta; Panarpani and surrounding area, Pachmarhi, 13.ii.2003 (1 ex.), Coll. M.L. Koshta; Chhindwara, Forest Rest House, Jhirpa, 26.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Fore wing with apex obtuse and more or less falcate, outer margin below vein 5 straight or sinuous. Upper side brown; markings especially the ochraceous lunules inwardly bordering the black subapical spots on fore wing, larger than in the wet form, and more extended below and above the black costa. Hind wing without an ocellus in area 2, but posteriorly replaced by three or four minute submarginal spots.

Distribution : India : Madhya Pradesh (Hoshangabad), Assam, Andaman & Nicobar, Bihar, Delhi, Himachal Pradesh, Lakshadweep, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

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

38. *Ypthima ceylonica ceylonica* Hewitson**The White or Ceylon Fourring**

1865. *Ypthima ceylonica* Hewitson, *Trans. Ent. Soc. Lond.*, (3) 2, p. 288.

1947. *Ypthima ceylonica ceylonica* : Talbot, *Fauna British India, Butterflies*, 2 : 328.

Material examined : Hoshangabad, Pachmarhi, near Bori river, 4.iii.2000 (1 ex.).

Diagnosis : Upperside vandyke-brown to dark sepia-brown. Fore wing uniform, with the usual single subapical ocellus. Hind wing with posterior half, or less, pure white. Underside white, with somewhat sparse, short, delicate, fine brown striae, becoming denser towards apex of fore wing. Hind wing with four ocelli in a curve. Antenna, head, thorax and abdomen brown; abdomen white beneath.

Distribution : India : Madhya Pradesh (Hoshangabad), South India to Bengal.

Elsewhere : Sri Lanka.

39. *Ypthima ceylonica hübneri* Kirby
The Common Four Ring

1871. *Ypthima hübneri* Kirby, *Cat. Diurn. lep.*, : 95.

1947. *Ypthima ceylonica hübneri* : Talbot, *Fauna British India, Butterflies, 2* : 329.

Material examined : Hoshangabad, near Bori river, Bori, 4.iii.2000 (3 exs.), Coll. R.K. Singh; near Bori forest, Bori, 6.iii.2000 (1 ex.), Coll. R.K. Singh; near Sonbhadra river, Dhain, 8.iii.2000 (5 exs.), Coll. R.K. Singh.

Diagnosis : Upperside greyish-brown. Fore wing with subapical ocellus comparatively large, black, bipupilled, with yellow ring. Hind wing usually with two unipupilled post-discal ocelli, sometimes with three, rarely all absent. Underside greyish-white, not very densely covered with short brown striae.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad), Assam, Bihar, Maharashtra, Nagaland, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Myanmar and Malaya.

40. *Ypthima inica* Hewitson
The Lesser Threering

1865. *Ypthima inica* Hewitson, *Trans. ent. Soc. Lond.* 2(3), p. 284.

1947. *Ypthima inica* : Talbot, *Fauna British India, Butterflies, 2* : 319.

Material examined : Hoshangabad, Pachmarhi, Bori River, 4.iii.2000 (1 ex.), Coll. R.K. Singh; Kalmeshra, 9.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upperside uniform dark brown. Fore wing with a subapical black ocellus, comparatively large, rounded, bipupilled, and with usual yellow iris. Hind wing with a similar subtornal ocellus, but smaller and unipupilled. Underside pale grey. Antenna, head, thorax and abdomen brown, paler beneath.

Distribution : India : Madhya Pradesh (Hoshangabad), Punjab to Bengal.

41. *Ypthima asterope mahratta* Moore
The Common Threering

1884. *Ypthima mahratta* Moore, *Journ. As. Soc. Beng.*, liii (2), no. 1 : 16

Material examined : Hoshangabad, Madhuban, Pachmarhi Road, 24.viii.2002 (1 ex.), Coll. Y.N. Gupta; Tekapar, 26.ii.2003 (1 ex.), Coll. M.L. Koshta; Eklama River, Bori, 18.ii.2003 (1 ex.), Coll. M.L. Koshta.

Distribution : India : Madhya Pradesh (Hoshangabad).

42. *Ypthima baldus satpura* Evans**The Common Fivering**

1923. *Ypthima baldus satpura* Evans, *J. Bombay nat. Hist. Soc.*, 29 : 787.

1947. *Ypthima baldus satpura* : Talbot, *Fauna Brit. India, Butterflies*, 2 : 338

Material examined : Hoshangabad, Semari, 4.ii.2002 (1 ex.), Coll. Y.N. Gupta; Panarpani and surroundings, Pachmarhi, 13.ii.2003 (1 ex.), Coll. M.L. Koshta.

Distribution : India : Madhya Pradesh (Hoshangabad).

43. *Mycalesis perseus tabitha* (Fabricius)**The Common Bushbrown**

1793. *Papilio tabitha* Fabricius, *Syst. Ent.*, 3 (1) : 243.

1947. *Mycalesis perseus tabitha* : Talbot, *Fauna British India, Butterflies*, 2 : 131.

Material examined : Hoshangabad, near Bori river, Bori, 4.iii.2000 (3 exs.), Coll. R.K. Singh; Near Eklama river, Bori, 5.iii.2000 (1 ex.), Coll. R.K. Singh; Bori Forest, Bori, 6.iii.2000 (2 exs.), Coll. R.K. Singh; Near Sonbhadra river, Dhain, 8.iii.2000 (1 ex.), Coll. R.K. Singh; Near Manas Gwari Nala, Dhain, 9.iii.2000 (3 exs.), Coll. R.K. Singh.

Diagnosis: Upperside of fore wing usually without an ocellus in area 2. Size, smaller on the whole.

Expanse : 38-50 mm.

Distribution : India : Chhattisgarh (Bastar), Madhya Pradesh (Hoshangabad), Kerala, Orissa, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Sri Lanka.

44. *Mycalesis mineus mineus* (Linnaeus)**The Dark Brand Bushbrown**

1767. *Papilio mineus* Linnaeus, *Syst. Nat.*, 1, pt. 2 : 768.

1947. *Mycalesis mineus mineus* : Talbot, *Fauna Brit. India, Butterflies*, 2 : 134-136.

1997. *Mycalesis mineus mineus* : Bhattacharya, *Fauna of W. Bengal*, 7 : 732.

Material examined : Chhindwara, Anthoni, Jhirpa, 28.viii.2000 (2 exs.), Coll. Y.N. Gupta; Hoshangabad, Eklama River, Bori, 18.ii.2003 (2 exs.), Coll. M.L. Koshta.

Diagnosis : Upperside brown with marginal and sub-marginal yellow lines. Fore wing with a yellow-ringed, white pupilled ocellus. Hind wing with a small sub-anal ocellus. Underside greyish-brown. Both wings with a prominent, broad, yellowish white transverse discal band and yellow outer marginal lines. Fore wing with 2 purple-ringed

ocelli, the lowest large. Hind wing with 7 purple-ringed ocelli, in a line, the upper second, third and the last smaller.

Distribution : Throughout North-East and South India.

Elsewhere : Myanmar, Sri Lanka, Malay Peninsula, Sumatra, Java and China.

45. *Lethe rohria neelgheriensis* (Guérin)

The Common Treebrown

1843. *Satyrus neelgheriensis* Guerin, in Delessert, *Souv. Voy. Ind.*, 2 : 74.

1947. *Lethe rohria neelgheriensis* : Talbot, *Fauna British India, Butterflies*, 2 : 201.

Material examined : Hoshangabad, Pachmarhi, near Nandiya village, 7.vi.1999 (1 ex.), Coll. K. Chandra; Handi Koh, Pachmarhi, 4.ix.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upperside of fore wing with a distal whitish spot in area 2. Upperside of fore wing with the discal white band divided into three distinct, well-separated, white spots. Underside of fore wing with discal band narrower.

Distribution : India : Madhya Pradesh (Hoshangabad), Bihar and Peninsular India.

Elsewhere : Sri Lanka.

46. *Lethe rohria rohria* (Fab.)

The Common Tree Brown

1787. *Papilio rohria* Fabricius, *Mant. Ins.*, 2 : 45.

1947. *Lethe rohria rohria* : Talbot, *Fauna British India, Butterflies*, 2 : 200-201.

1997. *Lethe rohria rohria*: Bhattacharya, *Fauna of W. Bengal*, 7 : 739.

Material examined : Hoshangabad, Pachmarhi, near Nandiya village, 7.vi.1999 (2 exs.), Coll. K. Chandra

Diagnosis : Upperside vandyke-brown, slightly darker, especially in the female, towards apex of fore wing. In male, upperside of fore wing with a costal and two subapical white spots, underside paler, shaded with dark brown. In female, upperside of fore wing with a discal, broad, oblique white band, underside as in the male, but the markings more pronounced.

Distribution : India : Madhya Pradesh (Hoshangabad), Kashmir to Sikkim.

Elsewhere : Myanmar, Yunnan, Malaya and Java.

Remarks : New record from Madhya Pradesh.

47. *Lethe europa europa* (Fab.)**The Common Bamboo Tree Brown**

1775. *Papilio europa* Fabricius, *Syst. Ent.*, 3(1) : 500.

1947. *Lethe europa europa* : Talbot, *Fauna British India, Butterflies*, 2 : 197-198.

1997. *Lethe europa europa* : Bhattacharya, *Fauna of W. Bengal*, 7 : 738.

Material examined : Hoshangabad, Dhain, near Manas Gwari nala, 9.iii.2000 (1 ex.), Coll. R.K. Singh; Eklama River, Bori, 18.ii.2003 (1 ex.), Coll. M.L. Koshta.

Diagnosis : Inner third of hind wing covered with long brown hairs. Upperside rich dark brown. Fore wing with discal band showing through faintly from underside; two obscure black spots on ocelli. Hind wing with a submarginal, obscure, pale line. Underside very dark blackish-brown; both wings crossed by a sub-basal, slender, lalacine-white straight line.

Distribution : India : Madhya Pradesh (Hoshangabad), Peninsular India.

Family LYCAENIDAE

48. *Castalius rosimon rosimon* (Fab.)**The Common Pierrot**

1775. *Papilio rosimon* Fabricius, *Syst. Ent.*, : 523.

1890. *Castalius rosimon* : Niceville, *Butterflies India, Burma, Ceylon*, 3 : 197.

Material examined : Hoshangabad, Pachmarhi, Panarpani, 2.iii.2000 (1 ex.), Coll. R.K. Singh; Near Sonbhadra river, Dhain, 8.iii.2000 (3 exs.), Coll. R.K. Singh; Near Manas Gwari nala, Dhain, 9.iii.2000 (1 ex.), Coll. R.K. Singh; Defence Land, Singanama, 8.ix.2000 (1 ex.), Coll. Y.N. Gupta; Semari, 4.ii.2002 (1 ex.), Coll. Y.N. Gupta; Eklama River, Bori, 18.ii.2003 (1 ex.), Coll. M.L. Koshta; Chhindwara, Anthoni, Jhirpa, 28.viii.2000 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upperside white with blue base and black markings. Fore wing with a narrow blackish-brown costal band, an outer marginal band, a large discocellular spot and an outer discal row of 5 spots. Hind wing : basal spots clouded by blue scales. Outer marginal band traversed by a row of slender white conical rings. Tail black with white tip. Underside white with deep black markings. Both wings with a subterminal row of small round spots. Spots coalesce to form bands in female.

Distribution : West Bengal, Madhya Pradesh, Chhattisgarh, Peninsular India, south of outer ranges of the Himalaya, except in desert tracts.

Elsewhere : Sri Lanka, Myanmar, Malayan sub region, Pakistan.

49. *Rapala iarbus iarbus* (Fabricius)

1787. *Papilio iarbus* Fabricius, *Mant. Ins.*, 2 : 68

1890. *Rapala iarbus* : deNiceville, *Butterflies of India Burma & Ceylon*, 3 : 468.

1932. *Rapala iarbus* : Evans, *Identification of Indian Butterflies* : 299

1957. *Rapala melampus* : Wynter-Blyth, *Butterflies of the Indian Region* : 362.

Material examined : Hoshangabad, Near Bori River, Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh.

Distribution : India : Madhya Pradesh (Hoshangabad).

50. *Tajuria cippus cippus* (Fab.)

The Peacock Royal

1798. *Hesperia longinus* Fab., *Ent. Syst., Suppl.*, 5 : 430.

1869. *Iolaus cippus* : Butler, *Cat. Fab. Lep. B. M.*, p. 186.

1890. *Tajuria longinus* : Niceville, *Butterflies India, Burma, Ceylon*, 3 : 376.

Material examined : Hoshangabad, Panarpani, Pachmarhi, 2.iii.2000 (1 ex.), Coll. R.K. Singh; Rani Pipariya, 6.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Male : Upperside, both wings cyaneus blue. Underside, both satin-grey with a common striga of minute black arcs, beyond the middle.

Female : Upperside, both wings sordid white, with pale azure silvery irrorations confined to the base. Underside, both wings as in the male.

Distribution : Throughout India (except the desert tracts), the outer Himalaya.

Elsewhere : Sri Lanka, Myanmar, Malay Peninsula, and Java.

51. *Virachola isocrates* (Fab.)

The Common Guava Blue

1793. *Hesperia isocrates* Fab., *Ent. Syst.*, 3 : 266.

1890. *Virachola isocrates* : Niceville, *Butterflies India, Burma, Ceylon*, 3 : 477.

Material examined : Chhindwara, Anthoni, Jhirpa, 4.iii.2000 (2 exs.), Coll. R.K. Singh.

Diagnosis : Male : Both wings deep violet-blue. Forewing with a very indistinct ochreous spot. Hindwing with a slender black marginal line and small anal spots, the latter grey-speckled. Cilia greyish-white. Underside, both wings pale vinous-grey.

Female : Upperside, both wings violet-brown. Forewing with a more distinct ochreous spot beyond the cell than in the male. Hindwing with a prominent subanal black spot, which is inwardly bordered with ochreous.

Distribution : Throughout the plains of India except the desert tracts. *Elsewhere*: Sri Lanka.

52. *Jamides celeno aelianus* (Fabricius)

The Common Cerulean

1932. *Jamides celeno* : Evans, *Identification of Indian Butterflies* : 237

1997. *Jamides celeno* : Varshney, *Oriental Insects*, 31 : 93

Material examined : Hoshangabad, Near Sonbhadra River, Dhain, 8.iii.2000 (2 exs.), Coll. R.K. Singh; Near Manas Gwari Nala, Dhain, 9.iii.2000 (2 exs.), Coll. R.K. Singh.

Distribution : India : Madhya Pradesh (Hoshangabad).

53. *Lampides boeticus* (Linnaeus)

The Pea Blue

1767. *Papilio boeticus* Linnaeus, *Syst. Nat. ed.* 12 : 789

1907. *Polyommatus boeticus* : Bingham, *Fauna Brit. India Butterflies*, 2 : 432.

1962. *Lampides boeticus* : Cantlie, *The Lycaenidae portion of Brigadier Evans, The Identification of Indian Butterflies*, 1932 : 69

Material examined : Hoshangabad, Kalmeshra, 9.ii.2002 (1 ex.), Coll. Y.N. Gupta; Panarpani and surrounding area, Pachmarhi, 13.ii.2003 (1 ex.), Coll. M.L. Koshta; Tekapar, 26.ii.2003 (1 ex.), Coll. M.L. Koshta; Betul, Gedi Dhana, Shahpur, 19.ii.2002 (2 exs.); Coll. Y.N. Gupta.

Distribution : India : Madhya Pradesh (Hoshangabad).

Remarks : Recorded for the first time from Pachmarhi.

54. *Euchrysops cnejus* (Fabricius)

The Gram Blue

1798. *Hesperia cnejus* Fabricius, *Ent. Syst., Suppl.*, : 430.

1890. *Catochrysops cnejus* : Niceville, *Butterflies India, Burmah, Ceylon*, 3 : 178.

Material examined : Hoshangabad, Kalmeshra, 9.ii.2002 (1 ex.), Coll. Y.N. Gupta; Betul, Gedi Dhana, Shahpur, 19.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnostic characters : Male : Upperside, both wings uniformly pale violet-blue, with a narrow greyish-brown posterior (outer) border, and two oblong black spots in the anal region, within (on either side of) the caudal appendage. Underside, both wings grey with a faint yellow shade.

Female : Upperside, both wings with a deep brown border; a light blue tint with a bright silvery reflexion is, in the hind wing confined to the base, in the forewing expanded to the disc.

Distribution : Throughout India.

Elsewhere : Myanmar, Sri Lanka, Malay Peninsula, Sumatra, Java, Borneo, Celebes, Philippines, China, Australia, South Sea Islands.

55. *Catochrysops strabo strabo* (Fabricius)

The Forget-me-not

1793. *Hesperia strabo* Fabricius, *Ent. Syst.*, 3 : 287.

1865. *Catochrysops strabo* : Moore. *Proc. Zool. Soc. Lond.*, : 773.

1890. *Catochrysops strabo* : Niceville, *Butterflies India, Burmah, Ceylon*, 3 : 177.

Material examined : Hoshangabad, Kesha, 11.ii.2002 (1 ex.), Coll. Y.N. Gupta; Eklama River, Bori, 18.ii.2003 (1 ex.), Coll. M.L. Koshta.

Diagnostic characters : Male : Upperside, both wings pale violet-blue, with a rich silvery reflexion, assuming in a certain light a dusky greyish shade, the colour being uniformly distributed over the whole surface; surrounded with a delicate blackmarginal thread and an extreme greyish cilia. Underside, both wings pale whitish-grey and marked with catenulated band.

Female : Upperside, both wings have a broad brown border, the blue colour being brighter than in the male, covered with a silvery gloss, confined to the base in the hind wing, but spreading also over the disc in the fore wing.

Distribution : India : Madhya Pradesh, Chhattisgarh, Bihar, Maharashtra, South India, West Bengal.

Elsewhere: Malay Peninsula, China, Java, Borneo, Celebes, Philippines, Formosa, Australia.

Remarks : Recorded for the first time from Pachmarhi.

56. *Narathura amantes amantes* (Hewitson)**The Large Oakblue**

1862. *Amblypodia amantes* Hewitson, *Cat. Lycaenidae B. M.* : 4.

1890. *Arhopala amantes* : de Niceville, *Butterflies of India, Burmah & Ceylon*, 3 : 239-240.

1932. *Amblypodia amantes amantes* : Evans, *Identification of Indian Butterflies* : 264.

Material examined : Hoshangabad, Panarpani and surrounding area, Pachmarhi, 13.ii.2003 (2 exs.), Coll. M.L. Koshta.

Distribution : India : Madhya Pradesh (Indore), Andamans, Central Province, Maharashtra and thence southwards to Travencore, Sikkim, Uttar Pradesh and West Bengal.

Remarks : Recorded for the first time from Pachmarhi.

57. *Acytolepis puspa* Horsfield**The Common Hedge Blue**

Material examined : Hoshangabad, Eklama River, Bori, 18.ii.2003 (1 ex.), Coll. M.L. Koshta.

Distribution : India : Madhya Pradesh (Hoshangabad).

Family HESPERIIDAE**58. *Telicota ancilla bambusae* (Moore)****The Dark Palm Dart**

1869. *Telicota ancilla* Herrich-Schaffer, *Stett. Ent. Ztg.* : 79.

1997. *Telicota ancilla* : Ghosh & Chow., *St. F. Ser.* 3, *F. W. Bengal*, 7 : 307.

Material examined : Hoshangabad, Bori Forest, Bori, 6.iii.2000 (3 exs.), Coll. R.K. Singh; Bori village, Bori, 13.iii.2000 (1 ex.), Coll. R.K. Singh; Near Tawa Dam, 13.ii.2002 (1 ex.), Coll. Y.N. Gupta.

Diagnosis : Upperside dark orange in male and light orange in female. Fore wing with an oblique brown band and irregular outer margin. Hind wing with brown base and outer border and orange discal band. Underside markings duller. Hind wing pale olive-green at the base and outer area.

Distribution : Common throughout India, except in the arid north-west.

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

59. *Celaenorrhinus ambareesa* Moore**The Malabar Flat**

1932. *Celaenorrhinus ambareesa* Evans, *The Identification of Indian Butterflies* : 324

2006. *Celaenorrhinus ambareesa* : Smetacek, *Bionotes*, 8 : 93

Material examined : Hoshangabad, Near Nandiya village, 7.vi.1999 (1 ex.), Coll. K. Chandra; P.W.D. Rest House, Singanama, 7.ix.2000 (1 ex.), Coll. Y.N. Gupta; Dhain, 19.ii.2003 (1 ex.), Coll. M.L. Koshta.

Distribution : India : Madhya Pradesh (Hoshangabad).

60. *Udaspes folus* (Cramer)**The Grass Demon**

1775. *Papilio folus* Cramer, *Pap. Exot.*, 1 : 118, pl. 74, fig. F.

1997. *Udaspes folus* : Ghosh & Chaudhury, *Fauna of West Bengal* : 294.

Material examined : Hoshangabad, Dhain, 19.ii.2003 (1 ex.), Coll. M.L. Koshta; Trisool Nala, 15.vi.2003 (1 ex.), Coll. K. Chandra.

Distribution : India : Madhya Pradesh, Assam, North West Himalaya, Orissa, South India, Sikkim, and West Bengal.

61. *Caprona ransonnettii ransonnettii* (Felder)**The Golden Angle**

1949. *Caprona ransonnettii ransonnettii* (Felder), Evans, *A Catalogue of the Hesperidae from Europe, Asia and Australia in the Brit. Mus. (nat. Hist.)* : 166.

1997. *Caprona ransonnettii ransonnettii* : Ghosh & Chaudhury, *Fauna of W. Bengal* : 284.

Material examined : Hoshangabad, Sonbhadra River, 27.ii.2003 (1 ex.), Coll. M.L. Koshta.

Distribution : India : South India to Dun to Assam; West Bengal.

62. *Suastus gremius* (Fabricius)**The Indian Palm Bob**

1798. *Hesperia gremius* Fabricius, *Ent. Syst. Suppl.*, : 433.

1997. *Suastus gremius* : Ghosh & Chaudhury, *Fauna of West Bengal* : 297.

Material examined : Hoshangabad, Panarpani and surrounding area, 13.ii.2003 (1 ex.), Coll. M.L. Koshta; Gupt Mahadeo, Pachmarhi, 14.ii.2003 (1 ex.), Coll. M.L. Koshta; Churna, 23.ii.2003 (1 ex.), Coll. M.L. Koshta.

Distribution : India : Central India-North and West Himalayas, Assam, Sikkim, South India, and West Bengal.

63. *Baoris farri* (Moore)

The Paintbrush Swift

1878. *Hesperia farri* Moore, *Proc. zool. Soc. Lond.*, : 688.

1997. *Baoris farri* : Ghosh & Chaudhury, *Fauna of West Bengal* : 314.

Material examined : Hoshangabad, Sonbhadra River, 27.ii.2003 (1 ex.), Coll. M.L. Koshta.

Distribution : India : Central India: Andaman and Nicobar, Assam, Sikkim, South India, Uttar Pradesh and West Bengal.

64. *Spialia galba galba* Fabricius

The Indian Skipper

1793. *Hesperia galba* Fabricius, *Ent. Syst.*, 3 (1) : 352.

1949. *Spialia galba*: Evans, *Cat. Hesper. Europe, Asia, Australia in Br. Mus.*, : 175.

1987. *Spialia galba* : Gupta & Shukla, *Rec. zool. Surv. India, Occ. Pap. No.*, 106 : 54.

Material examined: Hoshangabad, about 2 km. E. from Mandai, 24.ii.2003 (1 ex.), Coll. M.L. Koshta.

Diagnosis : Male : Upperside olive-brown with numerous yellowish-white semi-transparent spots on both wings. Fore wing with 3 spots in the cell, 1 beneath it, a transverse series of 7 spots (4 discal and 3 subapical) and a submarginal series of small spots. Hind wing with a sub-basal spot, discal series of spots (2 and 4, large, quadrate and rectangular respectively) and a submarginal series of small spots. Underside grey.

Female : Usually larger and darker with similar markings but with smaller spots on the upperside.

Wingspan 24-27 mm.

Distribution : India: Throughout the plains and in hills upto 1300 m. in the Himalayas and 2700 m. in South India.

Elsewhere: Bangladesh, Myanmar, and Sri Lanka.

**65. *Pelopidas mathias* Fab.
The Small Branded Swift**

1949. *Pelopidas mathias mathias* : Fabricius, *Cat. Hesp. Brit. Mus. (nat. Hist.)* : 441.

1997. *Pelopidas mathias mathias* : Ghosh & Chow., *St. f. Ser. 3, F. W. Bengal*, 7 : 313.

Material examined : Hoshangabad, Bori river Bori, 4.iii.2000 (1 ex.), Coll. R.K. Singh; near Eklama river, Pachmarhi, 5.iii.2000 (1 ex.), Coll. R.K. Singh.

Diagnosis : Upperside olive-brown. Male: Fore wing with nearly 9 small yellowish semi-transparent spots, those in the apex and disc prominent. Hind wing often with one very indistinct pale discal spot.

Female : Fore wing with 5 discal spots and 4 or 5 in hind wing. Underside pale greyish-brown with distinct markings. Hind wing with a spot in the cell.

Wing span 38-40 mm.

Distribution : India, Sri Lanka, Pakistan, Syria, Arabia, Africa, Bangladesh, Myanmar, Malaysia, Thailand, Indonesia, Philippines, China, Taiwan, Japan, Comoro Islands, New Guinea and the Celebes.

SUMMARY

Altogether 65 species of 49 genera under nine families of Butterflies are recorded from the Pachmarhi Biosphere Reserve.

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INSECTA : LEPIDOPTERA : HETEROCERA

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INTRODUCTION

For the first time, thirty-seven species of moths belonging to ten families have been recorded from Pachmarhi Biosphere Reserve.

List of Moths recorded from Pachmarhi Biosphere Reserve

Family PYRALIDAE

1. *Agathodes ostentalis* Hübner
2. *Diaphania indica* (Saunders)
3. *Hymenia recurvalis* (Fabricius)
4. *Maruca testulalis* Geyer
5. *Sameodes cancellalis* Zeller

Family GEOMETRIDAE

6. *Trygodes cuneilinea* Walker
7. *Hyposidra talaca* (Walker)
8. *Macaria fasciata* Fabricius

Family URANIIDAE

9. *Micronia aculeata* Gueflee

Family SPHINGIDAE

10. *Deilephila nerii* (Linnaeus)
11. *Hippotion boerhaviae* (Fabr.)
12. *Marumba dyras dyras* (Walker)
13. *Theretra alecto alecto* (Linn.)

14. *Theretra oldenlandiae oldenlandiae* (Fabricius)

Family EUPTEROTIDAE

15. *Eupterote* sp.

Family LYMANTRIIDAE

16. *Lymantria* sp.

17. *Euproctis* sp.

Family NOCTUIDAE

18. *Achaea janata* (Linn.)

19. *Westermannia argentea* Hampson

20. *Shipingomorpha chlorea* Cramer

21. *Hypocala* sp.

22. *Heliothis* sp.

23. *Brevipecten captatus* Butler

24. *Plusia eriosoma* (Doubleday)

25. *Plusia orichalcea* Fabr.

26. *Grammodes mygdon* (Cramer)

27. *Spodoptera litura* (Fabricius)

28. *Pericyma cruegeri* Butler

29. *Acontia transversa* Guen.

30. *Trigonodes hyppasia* Cramer

Family NOTODONTIDAE

31. *Phalera raya* Moore

Family ARCTIIDAE

32. *Phissama transiens* (Walker)

33. *Utetheisa pulchella* (Linn.)

34. *Cretonotus gangis* (Linn.)

35. *Argina astrea* Drury

36. *Aeonistis entella* Cramer

Family HYPSIDAE

37. *Hypsa ficus* Fabr.

SYSTEMATIC ACCOUNT

Family PYRALIDAE

Genus *Agathodes* Guenée1. *Agathodes ostentalis* Hübner1818-23. *Agathodes ostentalis* Hübner, *Zutr. Samm. exot. Schmett.*, : 833-34.1896. *Agathodes ostentalis* : Hampson, *Fauna British India, Moths*, 4 : 345.*Locality* : Patalkot, near Tamia, Chhindwara.*Diagnosis* : Pale fawn-colour; head and thorax marked with white; abdomen ringed with white and suffused with fuscous on dorsum except at base; the anal tuft blackish. Fore wing with the costa white; a discocellular white lunule; a broad oblique medial pink band with whitish edges from cell to inner margin. Hind wing ochreous.*Expanse* : 26-40 mm.*Distribution* : Throughout India.*Elsewhere* : Sri Lanka, Myanmar, Java and Sumbawa.Genus *Diaphania* Hübner2. *Diaphania indica* (Saunders)1851. *Eudiptes indica* Saunders, *Trans. ent. Soc. Lond.*, 1 (2) : 163, figs. 5-7.1997. *Diaphania indica* : Bhatt., *Fauna of W. Bengal*, 7 : 385.*Locality* : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.*Diagnosis* : Colour hyaline white and black; abdomen white, anal tuft with segments 7 and 8 brown and black. Fore wing with the costal and marginal areas broadly black, rest hyaline white. Hind wing hyaline white with the marginal black band broad at costa.*Expanse* : 24-28 mm.*Distribution* : India : Madhya Pradesh (Hoshangabad, Jabalpur, Indore, Seoni), Bihar, West Bengal, Andaman & Nicobar Is., Haryana, Himachal Pradesh, Maharashtra, Punjab, Sikkim, Tamil Nadu.*Elsewhere* : Myanmar, Australia, China, Celebes, Java, Pakistan; throughout the Australian, Ethiopian and Oriental regions.

Genus *Hymenia* Hübner3. *Hymenia recurvalis* (Fabricius)

1792. *Phalaena recurvalis* Fabricius, *Ent. Syst.* 3, pt. 2 : 237.

1896. *Zinckenia fascialis* : Hampson, *Fauna Brit. India, Moths*, 4 : 262.

1939. *Hymenia recurvalis*, Klima, *Lep. Cat.*, 89 : 31.

Locality : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Brownish. Fore wing with no antemedial line; a medial black-edged white band developed, not reaching the costa, its outer edge irregular and toothed on vein 2. Hind wing with the band wider, more regular, less oblique and only slightly narrowing to inner margin.

Expanse : 24 mm.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur, Seoni), Neotropical and Ethiopian regions; Palaearctic Asia from Syria to Japan; the whole Oriental and Australian regions.

Genus *Maruca* Walker4. *Maruca testulalis* Geyer

1824-41. *Maruca testulalis* Geyer, *Samml. Exot. Schmett.*, 4, 4 : 12.

1896. *Maruca testulalis* : Hampson, *Fauna British India, Moths*, 4 : 393.

Locality : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Head, thorax and abdomen fuscous brown; palpi white below. Fore wings fuscous brown; the costal area tinged with fulvous; indistinct subbasal and antemedial lines across the cell and white spots below the cell. Hind wing semi-hyaline white; the basal costal area fuscous and a spot at upper angle of cell.

Expanse : 26-30 mm.

Distribution : Neotropical and Ethiopian regions, Japan, throughout the Oriental and Australian regions.

Genus *Sameodes* Snell5. *Sameodes cancellalis* Zeller

1852. *Sameodes cancellalis* Zeller, *K. Vet.-Ak. Handl.*, : 34.

1896. *Sameodes cancellalis* : Hampson, *Fauna Brit. India, Moths*, 4 : 375.

Locality : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Fulvous, abdomen tinged with white; male with protrusible black anal tuft. Fore wing with the costal lobe of male edged by curled black scales; a quadrate hyaline spot in cell and larger spots below middle and end of cell. Hind wing hyaline, with dark speck in and another below cell. Both wings with marginal black line and the cilia black and white.

Expanse : 22 mm.

Distribution : Throughout India : Madhya Pradesh (Hoshangabad, Seoni, Sidhi).

Elsewhere : Africa, Australia, Java, Sri Lanka and Myanmar.

Family GEOMETRIDAE

Genus *Trygodes* Guen.

6. *Trygodes cuneilinea* Walker

1862. *Trygodes cuneilinea* Walker, *Cat.* 26, p. 1752.

1895. *Trygodes cuneilinea* : Hampson, *Fauna Brit. India, Moths*, 3 : 461.

Locality : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Pale grey, irrorated with rufous. Fore wing with slightly sinuous antemedial rufous line; both wings with large olive-green spots in the interspaces beyond and below the end of the cell; a highly curved postmedial rufous line. Underside white.

Expanse : 32 mm.

Distribution : India : Madhya Pradesh (Hoshangabad).

Genus *Hyposidra* Guen.

7. *Hyposidra talaca* (Walker)

1860. *Hyposidra talaca* Walker, *Cat.*, 20, p. 59.

1895. *Hyposidra talaca* : Hampson, *Fauna Brit. India, Moths*, 3 : 213.

Locality : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Dark olive fuscous, more or less irrorated and suffused with grey; both wings with faint traces of medial and crenulate postmedial lines; the cilia dark. Fore wing with traces of antemedial line and more or less distinct subapical patch in male. Underside with crenulate postmedial line to both wings.

Expanse : Male 44 mm., female 54-60 mm.

Distribution : Throughout India: Madhya Pradesh (Hoshangabad) and Andamans.

Elsewhere : Sri Lanka, Myanmar, Java, Borneo, Celebes, Philippines.

Genus *Macaria* Curt.

8. *Macaria fasciata* Fabricius

1775. *Macaria fasciata* Fabricius, *Syst. Ent.*, p. 629.

1895. *Macaria fasciata* : Hampson, *Fauna Brit. India, Moths*, 3 : 202.

Locality: Dhoopgarh, Pachmarhi, Hoshangabad.

Diagnosis : Male : Slaty grey; palpi, antennae, and abdomen (except on dorsum) orange. Fore wing with indistinct curved and waved antemedial line. Hind wing with broad medial white band enclosing a speck at end of cell. Underside with the base of wings orange.

Female : More irrorated with fuscous; often suffused with rufous, and with the pale band grey; the cilia fuscous. Underside with the outer area suffused with orange and blotched with white.

Expanse : 42 mm.

Distribution : Throughout India: Madhya Pradesh (Hoshangabad), Andamans.

Elsewhere : Sri Lanka and Myanmar.

Family URANIIDAE

Genus *Micronia* Guen.

9. *Micronia aculeata* Gueñee

1857. *Micronia aculeata* Gueñee, *Hist. Nat. des. Ins.*, : 26.

1895. *Micronia aculeata* : Hampson, *Fauna Brit. India, Moths*, 3 : 117.

Locality : Beefall, Pachmarhi, Hoshangabad.

Diagnosis : Head, thorax and abdomen white, with a fuscous tinge. Wings white, closely striated with fuscous; somewhat ill defined antemedial, medial and post-medial fuscous oblique bands; a fine marginal line and black spot at base of tail of hind wing. Underside white or fuscous.

Expanse : 42-50 mm.

Distribution : Throughout India: Madhya Pradesh (Hoshangabad, Seoni).

Elsewhere : Myanmar, Sri Lanka, Java and Borneo.

Family SPHINGIDAE

Genus *Deilephila* Laspeyres

10. *Deilephila nerii* (Linnaeus)

1758. *Sphinx nerii* Linnaeus, *Syst. Nat.*, p. 490.

1937. *Deilephila nerii* : Bell & Scott, *Fauna Brit. India, Moths*, 5 : 268.

Locality : Forest Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Head green, rufous in front, a grey band on vertex. Thorax green, the collar outlined in grey; a triangular grey patch on vertex. Abdomen pale green with dark green lateral oblique stripes and a pale subbasal belt. Fore wing bright green. Hind wing fuscous with a pale, curved, submarginal line, beyond which the colour is dark olivaceous.

Expanse : Male 84-116 mm, female 84-126 mm.

Distribution : Throughout India: Madhya Pradesh (Hoshangabad).

Elsewhere : Myanmar and Sri Lanka.

Genus *Hippotion* Hübner

11. *Hippotion boerhaviae* (Fabr.)

1775. *Sphinx boerhaviae* Fabricius, *Syst. Ent.*, : 542.

1903. *Hippotion boerhaviae* : Roths. & Jord., *Revision of Sphingidae* : 756.

1937. *Hippotion boerhaviae* : Bell & Scott, *Fauna British India, Moths*, 5 : 424.

Locality : Churna, Hoshangabad.

Diagnosis : Body and wings washed with red, but usually less red; first segment of palpus paler, the white line less distinct. Hind wing red, base not black; a clayish subanal patch.

Expanse : 50-68 mm.

Distribution : India : Madhya Pradesh, Western and Eastern Himalaya and South India.

Elsewhere : Sri Lanka to South China, Malaya and Philippines.

Genus *Marumba* Moore12. *Marumba dyras dyras* (Walker)

1856. *Smerinthus dyras* Walker, *List Lep. Ins. B. M.*, 8 : 250.

1937. *Marumba dyras dyras* : Bell & Scott, *Fauna Brit. India, Moths*, 5 : 179.

Locality : Mahadeo, Pachmarhi, Hoshangabad.

Diagnosis : Fore wing grey, or earthen-brown with grey powdering; of the most distal double line the external one is much heavier than proximal one; the formal stops mostly at M_1 , but occasionally continued beyond. Hind wing reddish to yellow; with fuscous base and large anal spot. Tongue with fringe. Pilifer with brush of bristles. Antenna one-third length of fore wing in male, a little shorter in female.

Expanse : Male 90-92 mm, female 90-119 mm.

Distribution : India : Madhya Pradesh (Hoshangabad, Seoni), Western and Eastern Himalaya, South India and Andaman Islands.

Elsewhere : Sri Lanka.

Genus *Theretra* Hübner13. *Theretra alecto alecto* (Linn.)

1758. *Sphinx alecto* Linnaeus, *Syst. Nat.*, p. 492.

1937. *Theretra alecto alecto* : Bell & Scott, *Fauna Brit. India, Moths*, 5 : 440.

Locality : P.W.D. Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Head and thorax dark brown, abdomen pale brown; antenna and sides of head and thorax whitish; abdomen with a black side-patch on first segment and three dark dorsal lines, sometimes absent. Fore wing pale brown, with a dark speck at end of cell. Hind wing pink, black at base, anal angle flesh-colour.

Expanse : Male 84-92 mm, female 75-106 mm.

Distribution : India : Madhya Pradesh (Hoshangabad, Indore), Western and Eastern Himalaya, S. India.

Elsewhere : Myanmar, northward to Cambodia, eastward to the Key Islands.

14. *Theretra oldenlandiae oldenlandiae* (Fabricius)

1758. *Sphinx oldenlandiae* Fabricius, *Syst. Ent.*, p. 542.

1937. *Theretra o. oldenlandiae* : Bell & Scott, *Fauna Brit. India, Moths*, 5 : 448.

Locality : P.W.D. Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Head and thorax brown; a pale lateral stripe from palpus to end of thorax; a broad, pale, irregular dorsal band and a white dorso-lateral streak on thorax; abdomen greyish-brown with a double silvery-white dorsal stripe. Fore wing greyish-brown. Hind wing dusky with a pale submarginal band not reaching apex.

Expanse : Male 54-74 mm, female 80 mm.

Distribution : India : Madhya Pradesh (Hoshangabad, Indore), Western and Eastern Himalaya, S. India.

Elsewhere : Sri Lanka and Myanmar to Japan and New Guinea.

Family EUPTEROTIDAE

Genus *Eupterote* Hübner

15. *Eupterote* sp.

1818. *Eupterote* Hübner, *Verz.*, : 187.

1892. *Eupterote*, Hampson, *Fauna Brit. India, Moths*, 1 : 54.

Locality : Churna, Hoshangabad.

Diagnosis : Palpi very slight and porrect. Antennae with the branches moderately long. Legs somewhat hairy. Hind wing with the discocellulars angled below vein 5; veins 6 and 7 stalked or from angle of cell.

Distribution : Throughout India, Sri Lanka, Myanmar, Sumatra, Java and Philippines.

Family LYMANTRIIDAE

Genus *Lymantria* Hübner

16. *Lymantria* sp.

1818. *Lymantria* Hübner, *Verz.* : 160.

1892. *Lymantria* : Hampson, *Fauna Brit. India, Moths*, 1 : 459.

Locality: Delakhari, Chhindwara.

Diagnosis : Male : Palpi porrect and hairy; antennae with the branches long. Fore wing with veins 3, 4, 5 from close to angle of cell; 6 from below upper angle; 7, 8, 9, 10 stalked, 7 being given off further from the cell than 10. Hind wing with veins 3, 4 or 5 from close to angle of cell; 6 and 7 from upper angle. Female : Antennae serrate; wings either fully developed, or partially aborted, or reduced to scales.

Distribution : Throughout India.

Elsewhere : Japan, Sri Lanka, Myanmar, Java, Amboina, Celebes and Europe.

Genus *Euproctis* Hübner

17. *Euproctis* sp.

1818. *Euproctis* Hübner, *Verz.*, : 159.

1892. *Euproctis* : Hampson, *Fauna Brit. India, Moths*, 1 : 470.

Locality : Bori, Hoshangabad.

Diagnosis : Palpi obliquely porrect, reaching beyond the frons; antennae bipectinated in both sexes, the branches long in male, each with a spine to keep it in position with regard to the contiguous branch.

Distribution : Palaearctic, African, Oriental and Australian regions.

Family NOCTUIDAE

Genus *Achaea* Hübner

18. *Achaea janata* (Linn.)

1758. *Achaea janata* Linnaeus, *Syst. Nat.*, 10 : 527.

1985. *Achaea janata*, Kobes, *Heterocera Sumatrana*, Band, 4 : 39.

Locality : Patalkot, near Tamia, Chhindwara.

Diagnosis : The white medial fascia in the hind wing is always continuous, not divided into two parts. Head, thorax and legs pale buff-grey, paler beneath. Abdomen pale greyish buff. Fore wing buff-grey patterned with red-brown and black, the pattern and density of colouration somewhat variable. Hind wing charcoal grey, paler basally, marked with white.

Expanse : 42-46 mm.

Distribution Throughout India including Madhya Pradesh (Jabalpur, Seoni, Sidhi).

Elsewhere : Europe, Africa, Mauritius, Japan, China, Myanmar and Sri Lanka.

Genus *Westermannia* Hübner

19. *Westermannia argentea* Hampson

1891. *Westermannia argentea* Hampson, *Ill. Het.*, 8 : 80.

1894. *Westermannia argentea* : Hampson, *Fauna British India, Moths*, 2 : 359.

Locality : Pataalkot, near Tamia, Chhindwara.

Diagnosis : Head, tegulae and metathorax white. Fore wing bright silvery grey, with a broad fascia on inner basal area; the disc tinged with gold. Hind wing opalescent white, fuscous towards outer margin.

Expanse : 50 mm.

Distribution : India : Madhya Pradesh, Nilgiris.

Genus *Sphingomorpha* Guenée

20. *Sphingomorpha chlorea* Cramer

1894. *Sphingomorpha chlorea*: Hampson, *Fauna British India, Moths*, 2 : 490.

Locality : Pataalkot, near Tamia, Chhindwara.

Diagnosis : Head ochreous white, the basal joint of palpi dark brown; thorax dark brown above, with a broad ochreous-white stripe on vertex; abdomen dark brown above, with a series of dorsal ochreous-white spots. Fore wing red-brown with dark striae. Hind wing fuscous brown.

Expanse : 60-84 mm.

Distribution : Throughout India including Madhya Pradesh (Narsinghpur and Chhindwara).

Elsewhere : Sri Lanka, Myanmar and Africa.

Genus *Hypocala* Guenée

21. *Hypocala* sp.

1852. *Hypocala*, *Guen. Noct.*, 3 : 73.

1894. *Hypocala*: Hampson, *Fauna British India, Moths*, 2 : 452.

Locality: Pataalkot, near Tamia, Chhindwara.

Diagnosis : Palpi porrect, triangularly scaled, and rostriform; antennae ciliated in male; thorax and abdomen smoothly scaled; tibiae but slightly hairy, and without spines.

Distribution : Throughout the tropical and subtropical zones.

Genus *Heliothis* Ochs

22. *Heliothis* sp.

1816. *Heliothis* Ochs. *Eur. Schmett.*, 4 : 91.

1894. *Heliothis* : Hampson, *Fauna Brit. India, Moths, 2* : 361.

Locality : Patakot, near Tamia, Chhindwara.

Diagnosis : Eyes naked and without lashes; proboscis fully developed; palpi porrect, the 2nd joint evenly clothed with long hair, the 3rd short and depressed; a short frontal tuft. Thorax and abdomen without tufts.

Distribution : Universally distributed.

Genus *Brevipecten* Hampson

23. *Brevipecten captatus* Butler

889. *Brevipecten captatus* Butler, *Ill. Het.* 7, p. 79, pl. 133, fig. 1.

894. *Brevipecten captatus* : Hampson, *Fauna Brit. India, Moths, 2* : 361.

Locality : Mahadeo, Pachmarhi, Hoshangabad.

Diagnosis: Brownish grey. Fore wing with short subbasal line; an ante-medial oblique line; a large triangular medial deep chocolate patch with white edges extending to lower angle of cell. Hind wing fuscous brown.

Expanse : 32 mm.

Distribution : India : Madhya Pradesh (Hoshangabad), N. W. Himalaya, Nilgiris.

Elsewhere : China.

Genus *Plusia* Ochs.

24. *Plusia eriosoma* (Doubleday)

1894. *Plusia eriosoma*: Hampson, *Fauna British India, Moths, 2* : 569.

Locality : Patakot, near Tamia, Chhindwara.

Diagnosis : Head, thorax and forewing having a reddish tinge; abdomen with the lateral and anal tufts often black in the male. Fore wing with much more gliding on the basal, medial, and outer areas; the antemedial line more oblique, the postmedial more oblique and sinuous; the Y-mark large, prominent, and golden, the arms often filled in with golden and occasionally joined to the tail.

Distribution : Throughout India.

Elsewhere : Japan, China, Aden, Wadelai, North and South America, throughout Malayan and Australasian regions.

25. *Plusia orichalcea* Fabr.

1894. *Plusia orichalcea* : Hampson, *Fauna British India, Moths*, 2 : 573.

Locality : Pataalkot, near Tamia, Chhindwara.

Diagnosis : Head, collar, and vertex of thorax reddish-orange; tegulae and fore wing pale red-brown. Hind wing pale at base, the outer area fuscous.

Expanse : 44 mm.

Distribution : Throughout India.

Elsewhere : Sri Lanka, Azores; Madeira, Canaries, St. Helena, Ascension, S. Africa, Mauritius, Arabia, Japan, China, Formosa.

Genus *Grammodes* Guen.26. *Grammodes mygdon* Cramer

1779-83. *Grammodes mygdon* Cramer, *Pap. Exot.*, 2, pl. 156.

1894. *Chalciope mygdonias* : Hübner, *Verz.*, : 268.

1894. *Grammodes mygdon* : Hampson, *Fauna British India, Moths*, 2 : 531.

Locality : Forest Rest House, Bori, Hoshangabad.

Diagnosis : Head and thorax dark red-brown; abdomen greyish fuscous. Fore wing purplish-grey; the costa ochreous; a large red-brown patch occupying the whole wing except the costal and outer areas, and crossed by an oblique ochreous band, its costal and outer edges bordered by reddish-ochreous. Hind wing fuscous; the cilia grey below apex and at outer angle.

Distribution : Throughout India.

Elsewhere : Myanmar, Sri Lanka, Java, Borneo.

Genus *Spodoptera* Guen.27. *Spodoptera litura* (Fabricius)

1775. *Noctua litura* Fabricius, *Syst. Ent.*, : 601.

1980. *Spodoptera litura* Rawal & Verma, *JNKVV Research Journal*, 10 (4) : 413.

1991. *Prodenia litura*, Mandal & Maulik, *Fauna of Orissa*, 3 : 212.

Material examined : Hoshangabad, Mahadeo Forest Rest House, Pachmarhi, 5.vi.1999 (1 ex.), Coll. K. Chandra.

Wing expanse : 36-40 mm.

Distribution : India : Madhya Pradesh (Hoshangabad), West Bengal, Sikkim, Orissa, Tripura, Himachal Pradesh, Uttar Pradesh, Punjab, Maharashtra, Karnataka, Tamil Nadu and Kerala.

Genus *Pericyma* Herrich-Schaffer

28. *Pericyma cruegeri* Butler

1985. *Pericyma cruegeri* : Kobes, *Het. Sum.*, Band 4 : 78.

Locality : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Antennae of male penicillate, tibiae with heavy hair. Fore wing reddish-light brown. Basal band broad, dark reddish brown, sometimes blackish. Antemedial line blackish brown to black, oblique inwards.

Distribution : India : Throughout.

Elsewhere : Sumatra.

Genus *Acontia* Ochs.

29. *Acontia transversa* Guen.

1852. *Acontia transversa* Guen., *Noct.*, 2 : 211, pl. 10, fig. 5.

1894. *Acontia transversa* : Hampson, *Fauna Brit. India, Moths*, 2 : 323.

Locality : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Bright canary-yellow; Palpi and legs red-brown; vertex of thorax tinged with rufous. Fore wing with ante- and post medial highly angulated rufous lines, which are sometimes waved. Hind wing slightly suffused with red-brown, the outer margin rufous.

Distribution : Throughout India: Madhya Pradesh (Hoshangabad, Seoni).

Elsewhere : Sri Lanka, Myanmar, China, Indonesia, Duke of York Isle.

Genus *Trigonodes* Guen.

30. *Trigonodes hyppasia* Cramer

1779-83. *Trigonodes hyppasia* Cramer, *Pap. Exot.*, 3, pl. 250, E.

1894. *Trigonodes hyppasia* : Hampson, *Fauna British India, Moths*, 2 : 527.

Locality : Parasia, Chhindwara.

Diagnosis : Pale ochreous brown, slightly suffused with fuscous or dark grey-brown. Fore wing with a large black white-edged triangular patch below the cell from near base to towards outer angle; a similar smaller patch beyond the cell on vein 5, with some pale fulvous beyond it. Hind wing with distinct medial line; the outer area suffused with fuscous.

Expanse : 46 mm.

Distribution : Throughout India.

Elsewhere : Sri Lanka, Myanmar, China, Formosa, Java, Africa, Mauritius, Madagascar, Aden, Australasia.

Family NOTODONTIDAE

Genus *Phalera* Hübner

31. *Phalera raya* Moore

1857-59. *Phalera raya* Moore, *Lep. E. I. Co.*, : 433.

1892. *Phalera raya* : Hampson, *Fauna Brit. India, Moths*, 1 : 134.

Locality : P.W.D. Rest House, Pachmarhi, Hoshangabad.

Diagnosis : Palpi dark brown; frons buff; thorax buff, fringed with dark brown; abdomen brown; fore wing dark brown, heavily suffused with silvery grey on basal and inner areas; a large, pale brownish patch extending as a lunulate submarginal marks to vein 3. Hind wing fuscous, the cilia chequered white and fuscous.

Expanse : Male 76 mm, female 82 mm.

Distribution : India : Madhya Pradesh (Hoshangabad, Seoni), Sikkim, Nagas, West Bengal, Himachal Pradesh, Maharashtra and Nilgiris.

Family ARCTIIDAE

Genus *Phissama* Moore

32. *Phissama transiens* (Walker)

1855. *Spilosoma transiens* Walker, *List Lep. Insects Brit. Mus.*, 3 : 675.

1982. *Phissama transiens* : Arora & Chaud., *Tech. Monograph*, No., 6 : 15.

1997. *Phissama transiens* : Ghosh & Chaud., *Fauna of W. Bengal*, 7 : 255.

Locality : Mahadeo Forest Rest House, Pachmarhi, Hoshangabad.

Wing expanse : Male 38-48 mm, female 48-55 mm.

Expanse : 50 mm.

Distribution : India : Madhya Pradesh (Hoshangabad, Seoni), Sikkim, 2000-4000 feet; Khasis; Nagas, 6000 feet.

Elsewhere : Myanmar, Java and Borneo.

Genus *Utetheisa* Hübner

33. *Utetheisa pulchella* (Linn.)

1758. *Tinea pulchella* Linnaeus, *Syst. Nat.*, 1 : 534.

1901. *Utetheisa pulchella*, Hampson, *Cat. Lep. Phal. Brit. Mus.*, 3 : 483.

1997. *Utetheisa pulchella* : Ghosh & Chaud., *Fauna of W. Bengal*, 7 : 253.

Locality : Forest Rest House, Bori, Hoshangabad.

Expanse : Female 30 mm.

Distribution : Throughout India.

Elsewhere : Sri Lanka, Philippines, Malay Archipelago, New Guinea, Australia and the Pacific groups.

Genus *Cretonotus* Hübner

34. *Cretonotus gangis* (Linn.)

1764. *Phalaena gangis* Linnaeus, *Ameon. Acad.*, 6 : 410.

1919. *Cretonotus gangis*: Strand, *Lep. Catalogus, Pars*, 22 : 245.

1997. *Cretonotus gangis* : Ghosh & Chaud., *Fauna of W. Bengal*, 7 : 254.

Locality : Siganama P.W.D. Rest House, Pachmarhi, Hoshangabad.

Expanse: Male 35-42 mm, female 42 mm.

Distribution : Throughout India.

Elsewhere : Sri Lanka, Malaysia, Nepal, Pakistan, Eastern Asia, China, N. Australia.

Genus *Argina* Hübner

35. *Argina astrea* (Drury)

1770-82. *Phalaena astraea*: Drury, *Ill. Exot. Ins.*, 2 : 11, pl. 6, fig. 3.

1894. *Argina cribraria* : Hampson, *Fauna British India, Moths*, 2 : 51.

1983. *Argina astrea* : Arora, *Rec. zool. Surv. India, Occ. Pap. No.*, 60 : 9.

Locality : Forest Rest House, Bori, Hoshangabad.

Diagnosis : The head, thorax and forewing orange-yellow or whitish; abdomen and hind wing bright orange. Fore wing with six transverse series of yellow-ringed black spots, each series curved, irregularly disposed and variable as to size and number. Hind wing with blackish spots, somewhat variable.

Expanse : Male 35-44 mm, female 35-50 mm.

Distribution : Throughout India.

Elsewhere : Sri Lanka, Myanmar, China and New Guinea.

Genus *Aeonistis* Hübner

36. *Aeonistis entella* (Cramer)

1779-83. *Philagria entella*, Cramer, *Pap. Exot.* 3 : pl. 208, fig. D.

1818. *Aeonistis entelliola* : Hübner, *Verz.*, : 165.

1894. *Philagria entella* : Hampson, *Fauna British India, Moths*, 2 : 71.

Locality : Forest Rest House, Bori, Hoshangabad.

Diagnosis : Head, collar, and abdomen orange; thorax and extremities of tegulae, metallic blue-green. Wings pale orange. Fore wing with the costa, except the apex, blue-green; a medial blue-green band expanding into a large quadrate patch below the cell; a band from the costa before the apex joined to a large quadrate patch on outer margin. Hind wing orange.

Expanse : Male 42 mm, female 46 mm.

Distribution : India : Madhya Pradesh (Hoshangabad) and south India.

Elsewhere : Sri Lanka, Myanmar, Borneo and New Hebrides.

Family HYPSIDAE

Genus *Hypsa* Hübner

37. *Hypsa ficus* Fabr.

1792-98. *Hypsa ficus* Fabricius, *Ent. Syst.* 3, 2 : 27.

1892. *Hypsa ficus* : Hampson, *Fauna British India, Moths*, 1 : 504.

Locality : Patalkot, near Tamia, Chhindwara.

Diagnosis : Third joint of palpi is grey tipped with black; the base of tegulae yellow with a black spot. Fore wing with a yellow basal patch. Hind wing bright orange-yellow, a black spot at end of cell and a submarginal irregular series.

Expanse : Male 58 mm, female 64 mm.

Distribution : Throughout India and Sri Lanka.

SUMMARY

An account of 37 species under 36 genera belonging to ten families of Moths has been provided from the Pachmarhi Biosphere Reserve.

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MOLLUSCA

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INTRODUCTION

Among invertebrates the Mollusca is one of the important phyla because it is the second largest in animal kingdom based on its species number. They are found on land, freshwater and marine waters. Out of the seven classes so far only five are reported from India. Only two classes *i.e.* Gastropoda and Bivalvia are dealt here that too the species occurring on land and freshwater bodies.

Mollusca are soft bodied animals and the bodies in many species are protected by calcareous shell. Terrestrial Mollusca are generally found near moist places, under leaf; bark of tree and under stones, whereas freshwater Mollusca are found in various lentic and lotic water, embankment, among weeds, grasses or macrophytes. The estimated number of Mollusca today varies from 80,000 species Boss (1971) to 1,35,000 species Abott (1989) from the world.

Some of the species are intermediate hosts for trematode parasites which spread many diseases. A perusal of literature on Molluscan studies from Central India reveals that not much work has been done barring Agarwal (1976, 1977a,b,c & 1995) and Subba Rao (1989).

The compilation of past records from published literature and identified collections from Pachmarhi Biosphere Reserve resulted in the presence of 12 species, of which, 10 belong to freshwater Gastropoda and 2 species to freshwater Bivalvia. Out of these twelve species two are land mollusca.

List of Mollusca recorded from Pachmarhi Biosphere Reserve

Class GASTROPODA

Subclass PROSOBRANCHIA

Order MESOGASTROPODA

Family VIVIPARIDAE

Sub Family BELLAMYINAE

1. *Bellammya bengalensis* (Lamarck)

2. *Bellammya dissimilis* (Frauenfeld)

Family THIARIDAE

Sub Family THIARINAE

3. *Tarebia lineate* (Gray)4. *Melanoides tuberculata* (Müller)

Family AMPULLARIDAE

5. *Pila globosa* (Swainson)

Subclass PULMONATA

Order BASOMMATOPHORA

Family LYMNAEIDAE

6. *Lymnaea (Pseudosucciniea) acuminata* forma *typica* (Lamarck)7. *Lymnaea (Pseudosucciniea) luteola* forma *typica* (Lamarck)

Family BULLINIDAE

Sub family BULLININAE

8. *Indoplanorbis exustus* (Deshayes)

Class BIVALVIA

Order TRIGOINOIDAE

Family Unionidae

9. *Parreysia (Parreysia) corrugata* (Müller)10. *Parreysia (Parreysia)) corrugata* (Müller) sub.sp. *nagpoorensis* (Lea)**Land Mollusca**

Subclass PULMONATA

Class GASTROPODA

Order STYLOMMATOPHORA

Family VERTIGINIDAE

11. *Gastrocopta bathyodon* (Benson)

Family SUBULINIDAE

Sub Family RUMININAE

12. *Zootecus chion* (Pfeiffer)

SYSTEMATIC ACCOUNT

Order MEGAGASTROPODA

Family VIVIPARIDAE

Sub Family BELLAMYINAE

Genus *Bellamyia* de Montfort1. *Bellamyia bengalensis* (Lamarck)1822. *Paludina bengalensis* Lamarck, *Hist. nat. Anim. Sans. Vert.*, 6, 2 : 174.1921. *Vivipara bengalensis* Annandale, *Rec. Indian Mus.*, 22 : 267.1980. *Vivipara bengalensis forma typica* (Lamarck) Subba Rao, Das and Mitra, *Rec. zool. Surv. India*, 77, 225, p 1, fig. 5.*Material examined* : Hoshangabad, Dokarikhera, 4.i.1990 (6 exs.), Coll. U.A. Gajbe; Shelter caves south of Hoshangabad, 10.i.1990 (7 exs.), Coll. U.A. Gajbe.*Distribution* : Madhya Pradesh (Hoshangabad) and common through out India.2. *Bellamyia dissimilis* (Mueller)1774. *Nertia dissimilis* Mueller, *Hist. Verm. Terr. Fluv.*, 2 : 184.1960. *Viviparus dissimilis* : Styamurti, *Bull. Madras Govt. Mus.*; 6 (4) : 33-34.*Material examined* : Hoshangabad, Narmada Railway Bridge, 9.i.1990 (23 exs.), Coll. U.A. Gajbe.*Distribution* : India : Madhya Pradesh (Hoshangabad, Jabalpur, Mandla, Seoni, Shivpuri) and common through out India.

Family THIARIDAE

Genus *Tarebia* Bolten3. *Tarebia lineatus* (Gray)1774. *Nertia dissimilis* Mueller, *Hist. Verm. Terr. Fluv.*, 2 : 184.1960. *Viviparus dissimilis* : Styamurti, *Bull. Madras Govt. Mus.*, 6(4) : 33-34.*Material examined* : Hoshangabad, Brandhabhan village, 13.i. 1990 (59 exs.), Coll. U.A. Gajbe.*Distribution* : India, Andhra Pradesh, Assam, Bihar, Jharkhand, Madhya Pradesh (Hoshangabad), Maharashtra, Uttar Pradesh and West Bengal.

4. *Melanoides tuberculata* (Müller)

1974. *Nerita tuberculata* Muller. *Hist. Verm. Torr Fluv.*, **2** : 191. Type locality : Coromandel coast.

1836. *Melania pyramis* Benson. *J. Asiat. Soc. Beng.*, **5** : 357. Type locality : Ganges.

1969. *Melanoides (Melanoides) peddamunjalensis* Roy and Toy Chowdhuri. *Proc. Zool. Soc., Calcutta* **22** : 48 p. 14, fig. 12-17. Type locality : Peddamunigal Nagarjunakonda Nalgonda dist. A.P.

Material examined : Hoshangabad, Brandhabhan village, 13.i.1990 (2 exs.), Coll. U.A. Gajbe; Hoshangabad, Narmada Railway Bridge, 9.i.1990 (20 exs.), Coll. U.A. Gajbe.

Distribution : Throughout India, in Chhattisgarh (Sarguja), Madhya Pradesh (Hoshangabad, Jabalpur, Mandla, Seoni, Shivpuri) & widely distributed through out India except Kashmir.

Elsewhere : Myanmar and Sri Lanka, extending from Morocco in the West to China and Australia in the East.

Family AMPULLARIDAE

Genus *Pila* Bolten

5. *Pila globosa* (Swainson)

1822. *Ampullaria globossa* Swainson, *Zool Illustrations* vol. **2** pl. CXIX.

2007. *Pila globosa* (Swainson), Ramakrishna and Dey, Handbook on Indian Freshwater Molluscs : 98-99. (Publ. : *Zool. Surv. India*, Kolkata).

Material examined : Hoshangabad, Railway Bridge between Hoshangabad and Budni, 24.xii.1964 (4 exs.), Coll. H. Khajuria.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur), Assam, Bihar, Himachal Pradesh, Jharkhand Maharashtra, Meghalaya Orissa, Rajasthan, Uttar Pradesh and West Bengal.

Subclass PULMONATA

Order BASOMMATOPHORA

Family LYMNAEIDAE

Genus *Lymnaea* Lamarck

6. *Lymnaea (Pseudosuccinea) acuminata form typica* Lamarck

1822. *Lymnaea acuminata* Lamarck. *Hist. Nat. Anim. Sans. Vert.*, **6**. pt. 2 :

1925. *Lymnaea (Pseudosuccinea) acuminata* Annandale & Rao, *Rec. Indian Mus.*, **27** : 177.

Material examined : Hoshangabad, Shelter caves south of Hoshangabad, 10.i.1990 (115 exs.), Coll. U.A. Gajbe.

Distribution : India : Madhya Pradesh (Hoshangabad) and through out India.

7. *Lymnaea (Pseudosuccinea) luteola form typica* Lamarck

1822. *Limnaea luteola* Lamark, *Hist. Nat. Anim. Sans. Vert.*, 6 pt. 2; 160.

1925. *Limnaea (Pseudosuccinea) luteola*, Annandale & Rao, *Rec. Indian Mus.*, 27 : 183.

Material examined : Hoshangabad, Brandhabhan village, 13.i. 1990 (31 exs.), Coll. U.A. Gajbe.

Distribution : India : Madhya Pradesh (Balaghat, Gwalior, Hoshangabad, Jabalpur, Shivpuri, Mandla) and throughout India.

Family BULLINIDAE

Subfamily BULLININAE

Genus *Indoplanorbis* Geoffroy

8. *Indoplanorbis exustus* (Deshayes)

1834. *Planorbis exustus* Deshayes, in Belanger, *Voy Indes.Orientalis*, p. 417, pl. 1. figs. 11–13. Type locality : Malabar Coast.

1915. *Planorbis exustus*: Preston, *Fauna Brit. India, Mollusca, Fresh. Gast. & Pele.*, 99.

1956. *Indoplanorbis exustus* Bentham Jutting. *Treubia*, 23(2) : 471.

Material examined : Hoshangabad, Shelter caves south of Hoshangabad, 10.i.1990 (20 exs.), Coll. U.A. Gajbe.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur) and widely distributed in India.

Class BIVALVIA

Order TRIGOINOIDA

Family UNIONIDAE

Genus *Parreysia* Conrad

9. *Parreysia (Parreysia) corrugata* (Müller)

1774. *Mya corrugata* Mueller. *Verm. Terr. et. Fluv.*, Pt. 2, P. 214, No. 398.

1900. *Parreysia corrugata* Simpson. *Proc. U.S. natn. Mus.*, 22 : 841 Preston, 19 *Rec. Indian Mus.*, 7 : 297.

1900. *Parreysia (Parreysia) corrugata* Müller, *Nat. Mus. Proc.*, 22 : 841.

1915. *Parreysia (P.) corrugata* : Prest., *Fauna Brit. India, Moll., Fre. Gast. & Pele.*, 154.

Type Locality : Rivers of coromondel.

Material examined : Chhindwara, Kulbehar River at Chand village, 3.iv.1990 (2 exs.), Coll. H.S. Sharma.

Distribution : India : Madhya Pradesh (Balaghat, Chhindwara, Jabalpur, Mandla, Seoni), & widely distributed throughout India.

10. *Parreysia (Parreysia) corrugata (Müller) nagpoorensis (Lea)*

1900. *Parreysia (Parreysia) wynegungaënsis* Lea, Simpson, *Washington, D.C., Smiths. Inst., Nat. Mus. Proc.*, 22 : 842.

1915. *Parreysia (P.) wynegungaënsis*: Preston, *Fauna British India, Mollusca, Fresh. Gast. & Pele.*, p. 157.

Material examined : Hoshangabad, Narmada Railway Bridge, 9.i. 1990 (1 ex.), Coll. U.A. Gajbe.

Distribution : India : Madhya Pradesh (Hoshangabad, Jabalpur, Khandwa, Mandla, Seoni), Assam, Gujarat, Maharashtra, Orissa, Tamilnadu and West Bengal.

Class GASTROPODA

Order STYLLOMATOPHORA

Family VERTIGINIDAE

Genus *Gastrocopta* Wollaston

11. *Gastrocopta bathyodon* (Benson)

1863. *Pupa bathyodon* Benson *Ann. Mag. Nat. Hist.*, (3) 12 : 426.

1914. *Bifadari bathyodon* : Gude, *Fauna of British India, Mollusca*, 2 : 290.

Material examined : Recorded from literature (Gude, 1914).

Distribution : India : Madhya Pradesh (Hoshangabad) and Maharashtra.

Order STYLOMMATOPHORA

Family SUBULINIDAE

Sub Family RUMININAE

Genus *Zootecus* Westerlund12. *Zootecus insularis* Ehrenberg

1831. *Pupa insularis* Ehrenberg, *symp. Phys. Anim. Evert. Series*, 1, p3.

1914. *Zootecus insularis* Gude, *Fauna British India, Mollusca*, 2 : 367.

Material examined : Hoshangabad, shelter caves south of Hoshangabad, 10.i. 1990 (5 exs.), Coll. U.A. Gajbe.

Distribution : India : Madhya Pradesh, Andhra Pradesh, Bihar, Kashmir, Maharashtra, Punjab, Rajasthan Tamilnadu, Uttar Pradesh.

SUMMARY

Altogether 12 species of belonging to eight families of Molluscs have been recorded from the Pachmarhi Biosphere Reserve.

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ANNELIDA

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INTRODUCTION

The available literature reveals that annelid fauna of Pachmarhi Biosphere Reserve is represented by a total of 10 species comprising five species of Hirudinea (leeches), and five species of Oligochaeta. Harding & Moore (1927) in their monographic work, *The Fauna of British India including Ceylon and Burma*, on leeches, documented five species of leeches from the area. Oligochaete diversity of the biosphere includes one aquatic species belonging to family Naididae, and four species of true earthworms under families Octochaetidae (3 spp.) and Megascolecidae (1 sp.). Stephenson (1920) was the first to report three species of earthworms from Palia area of the biosphere, which included a widely distributed *Polypheretima elongata*, and two new species, viz., *Eudichogaster prashadi* and *Octochaetona paliensis*. Further, Stephenson (1921) recorded aquatic oligochaete *Allonais paraguayensis* from Pachmarhi. Subsequently, Julka (1988) reported *Eudichogaster ashworthi* from Betul area of the biosphere, which is the second known distributional record of the species. Members of the family Octochaetidae occurring in the biosphere are endemic to Indian subcontinent (Julka, 1993). *Polypheretima elongata* has been introduced accidentally in India and has its original home in Borneo (Julka, 1988). Aquatic oligochaete *Allonais paraguayensis* is widely distributed throughout the world. The nomenclature adopted for leeches is after Sawyer (1986). Characteristics of the taxa are based on the works of Brinkhurst & Jamieson (1971), Stephenson (1923), Harding & Moore (1927), Sawyer (1986), and Easton (1979).

List of Annelid Fauna recorded from Pachmarhi Biosphere Reserve

Phylum ANNELIDA

Class HIRUDINEA

Order RHYNCHOBDELLIDA

Family GLOSSIPHONIIDAE

1. *Alboglossiphonia weberi* (Blanchard, 1897)

*Present address : Zoological Survey of India, FPS Building, Kolkata-700016

2. *Hemiclepsis marginata* (O.F. Müller, 1774)

3. *Placobdelloides emydae* (Harding, 1920)

Order ARHYNCHOBDELLIDA

Suborder HIRUDINIFORMES

Family HIRUDINIDAE

4. *Poecilobdella granulosa* (Savigny, 1820/1822)

Suborder ERPOBDELLIFORMES

Family SALIFIDAE

5. *Barbronia weberi* (Blanchard, 1897)

Class OLIGOCHAETA

Order HAPLOTAXIDA

Suborder TUBIFICINA

Superfamily TUBIFICOIDEA

Family NAIDIDAE

6. *Allonais paraguayensis* (Michaelsen, 1905)

Superfamil MEGASCOLECOIDEA

Family OCTOCHAETIDAE

7. *Eudichogaster ashworthi* Michaelsen, 1902

8. *Eudichogaster prashadi* Stephenson, 1920

9. *Octochaetona paliensis* (Stephenson, 1920)

Family Megascolecidae

10. *Polypheretima elongata* (Perrier, 1872)

Key to the identification of annelids of Pachmarhi Biosphere Reserve

- 1 Body with setae; suckers absent 6 (Oligochaeta)
- Body without setae; suckers present at one or both ends of the body.
..... 2 (Hirudinea)
2. With exsertible proboscis; without jaws 3
- Without proboscis; jaws present 5

3. Eyes three pairs *Alboglossiphonia weberi*
 – Eyes less than three pairs 4
4. Eyes two pairs *Hemiclepsis marginata*
 – Eyes one pair *Placobdelloides emydae*
5. Size large; jaws large size, each bearing 86-128 teeth *Poecillobdella granulosa*
 – Size small; jaws vestigial, each bearing one or two retractile styliform teeth
 *Barbronia weberi*
6. Setae in bundles *Allonais paraguayensis*
 – Setae not in bundles 7
7. Setaelumbricine 8
 – Setae perichaetine *Polypheretima elongata*
8. Female pore single and median, presetal, on 14; oesophagus with two gizzards .. 9
 – Female pores paired, within *a* lines, on 14; oesophagus with a single gizzard
 *Octochaetona paliensis*
9. Spermathecal pores minute at *ab*, those of 8 on setal annulus (equatorial); those of 9 on presetal annulus, slightly nearer to 8/9 than to setal arc and within genital markings *Eudichogaster ashworthi*
 – Spermathecal pores minute, on the setal arcs of 8 and 9, at *ab*
 *Eudichogaster prashadi*

SYSTEMATIC ACCOUNT

Class HIRUDINEA

Order RHYNCHOBDELLIDA

Family GLOSSIPHONIIDAE

1. *Alboglossiphonia weberi* (Blanchard)

1897. *Glossiphonia weberi* Blanchard, *Zool. Ergeb. einer. Reise in Niederlandische Ost-Indian.* Maxweber, 4 : 332.

1927. *Glossiphonia weberi*, Harding & Moore, *Fauna Br. India, Hirudinea* : 62.

1986. *Alboglossiphonia weberi*, Sawyer, *Leech Biology & Behaviour*, II : 748, 763,765.

Characteristics : Length about 12 mm, width about 5.5 mm. Colour, during live state, is described as “very dark and purplish red” Body translucent, ovate-acuminate, almost triangular in contraction, dorsal surface appears rough due to presence of numerous transversely arranged small tubercles upon every ring. Additionally, dorsal surface possess a series of prominent metameric papillae in seven longitudinal rows from segment 5 to posterior extremity. Posterior sucker smaller than half the greatest width of the body, upper surface bearing paired radial stripes of dark pigment as occurring upon the body. Rings 70 in number, generally five of which are preocular. Rings 5 and 6 unite below to form the posterior margin of the anterior sucker. Segment 1 to 4 form head region; segment 5 to 24 are complete with three rings; segment 25 to 27 are represented by the last four rings. Three pairs of eyes, usually situated upon three successive rings 6,7 and 8; first pair lie near together, second and third pair are also closely apposed but are wider apart, thus eyes form three groups corresponding to the points of a triangle. The male and female genital ducts open by a common pore, generally situated between rings 27 and 28, that is between segment 11 and 12. The anus opens between last two rings.

Type locality : Sumatra.

Distribution : India : Assam; Jammu & Kashmir; Jharkhand; Karnataka; Madhya Pradesh (Burhanpur, Sagar, Itarsi, Pachmarhi Biosphere Reserve : Old bed of river Narmada in the north of Babai); Manipur; Orissa; Punjab; Uttaranchal; West Bengal.

Elsewhere : Myanmar, Nepal, Pakistan, and Sumatra.

Remarks : It occurs in ponds, lakes and streams, in a free living state or attached to substratum; ectoparasitic on molluscs, aquatic beetles and amphibians.

2. *Hemiclepsis marginata* (O.F. Müller)

1774. *Hirudo marginata* Müller, *Vermium Terrestrium et Fluviatilium*, 1, pars 2.4°. Havinae et Lipsiae.

1927. *Hemiclepsis marginata marginata*, Harding & Moore, *Fauna Br. India, Hirudinea* : 83.
Hemiclepsis marginata, Sawyer, *Leech Biology & Behaviour*, II : 764.

Characteristics : Medium size leech, length at rest 15-20 mm, fully extended upto 30 mm, width at rest 3-7 mm. Body flattened claviform, translucent. Usually richly pigmented, colour may vary considerably both in kind and intensity. Typical examples have colourless or hyaline thin margins and extremities, and yellow ground-colour of thicker parts, profusely sprinkled above with bright green. The green body pigment modifies and sometimes eclipses due to scarlet hue of blood filled crop shining through the semi-transparent body. Dorsal surface with seven longitudinal rows of lemon-yellow spots. Head-region dilated and distinct from rest of the body. Mouth-opening with anterior sucker. Posterior sucker with an outer, and often with an inner series of lemon-yellow spots between which reddish-brown radial stripes are often present. Rings 72, of which two are preocular. The seventy-first is partly subdivided and traces of subdivision appear

in ring 69. The twenty-one segments from 4 to 24 are complete with three rings. The two pairs of eyes are situated respectively upon the third and fourth rings. The crop provided with 10-11 pairs of lateral caeca, extends anteriorly into the preclitellar region. Male genital pore opens between segments 11 and 12, that is, between rings 29 and 30; female pore lies two rings behind the male pore, between second and third rings of segment 12. The anus opens between the last and the penultimate ring.

Type locality : Not Known.

Distribution : India : Jammu & Kashmir; Madhya Pradesh (Pachmarhi Biosphere Reserve: Bagra); Maharashtra; Orissa; Rajasthan; Uttaranchal; West Bengal.

Elsewhere : Greater part of Europe, Western Asia and Nepal.

Remarks : It inhabits freshwater ponds, streams and lakes in free-living state or attached to submerged objects. It is chiefly a fish parasite but also attacks some molluscs.

3. *Placobdelloides emydae* (Harding)

1920. *Placobdella emydae* Harding, *Mem. Indian Mus.*, 5 : 510.

1927. *Placobdella emydae*, Harding & Moore, *Fauna Br. India, Hirudinea* : 74.

1986. *Placobdelloides emydae*, Sawyer, *Leech Biology & Behaviour*, II : 766.

Characteristics : Total length 13.5 mm, greatest width 9 mm. Body flattened with a crustaceous dorsal surface, elliptico-lanceolate in extension, with the head-region somewhat dilated. Three pairs of metameric papillae present dorsally on the middle ring of somite; a paramedian, an intermediate and a paramarginal pair, the second intermediate pair being the largest. The ground-colour varies from greyish-green to pale olive-brown, the gorged crop may appear dull green through the translucent body. Dorsal surface with a white median stripe and profusely speckled with white and a darker green. Ventral surface smooth and olivaceous. Anterior sucker with a shallow interior cup having a finely-ribbed surface somewhat resembling that of the human finger-tip. Posterior sucker circular, centrally attached, narrower than widest part of the body, with upper surface bearing paired white rays. Total number of rings 71. The second and third rings are subdivided at their margins; the fifth is confluent with the free ventral posterior edge of the anterior sucker. segments 1-3 uniannulate; 4, 25, 26 and 27 biannulate; the twenty segments 5-24 complete with three rings. The single pair of eyes usually lie in the third ring, but sometimes appear between rings 2 and 3. Male pore situated between rings 26 and 27, that is, between segments 11 and 12; female pore lies two rings behind the male pore, between rings 28 and 29, in segment 12. Crop with seven pairs of caeca. The anus opens between rings 69 and 70, separated by two rings from the posterior sucker.

Type locality : Not known.

Distribution : India : Madhya Pradesh (Pachmarhi Biosphere Reserve : Hoshangabad); Maharashtra; Orissa; Rajasthan; West Bengal.

Elsewhere : Myanmar.

Remarks : It occurs in lakes, tanks, and pools, attached to submerged substratum, or in the free-living state. It is also parasitic on Mud-turtles.

Order ARHYNCHOBDELLIDA

Suborder HIRUDINIFORMES

Family HIRUDINIDAE

4. *Poecilobdella granulosa* (Savigny)

1820 (1822). *Sanquisuga granulosa* Savigny, *Système des annelids*, Paris.

1927. *Hirudinaria (Poecilobdella) granulosa*, Harding & Moore, *Fauna Br. India, Hirudinea* : 226.

1986. *Poecilobdella granulosa*, Sawyer, *Leech Biology & Behaviour*, II : 768.

Characteristics : Size large, form robust. Colour of dorsum varied shades of olive-green, often divided by one or two pairs of yellowish longitudinal stripes, marked by a black pattern consisting of a median constricted or broken line, four pairs of narrow wavy lines bordering the yellow stripes. This pattern is variable and disappears with increasing size. Margins with a yellow or orange stripe and venter usually reddish-orange with submarginal black stripes. Head very broad, lip short and rounded constituted of segments 1-4, median longitudinal furrow on ventral surface of upper lip. Gonopores at 11 *b5/b6* and 12 *b5/b6*. Caudal sucker, in normal extension, less than two-thirds of body-width. Sensillae prominent, elliptical, and oblique. Jaws large size, the median frequently larger or at least more prominent, shorter and more strongly convex than others. Teeth usually about 100, varying from 86-128, not continued as disappearing series. Salivary papillae numerous. Pharynx short and broadly ellipsoidal or fusiform extending through segment 8 and part of 9, with six longitudinal folds not uniting in pairs at the anterior end. Atrium pyriform with penis-sac longer than prostate; ejaculatory bulb little enlarged, epididymus a globular mass. Unpaired female organ with usually large caecum (caecal pouch); vaginal stalk well developed, equaling or exceeding vaginal caecum.

Type locality : Pondichery, India.

Distribution : India : Assam; Gujarat; Himachal Pradesh; Jammu & Kashmir; Madhya Pradesh (supposedly Pachmarhi Biosphere Reserve); Maharashtra; Punjab; Rajasthan; Tamil Nadu; Uttar Pradesh.

Elsewhere : Pakistan, Sri Lanka, Nepal and Myanmar.

Remarks : It is a common medicinal leech; occurs in rivers, marshes, swamps, tanks, pools and ponds; attacks cattles and human beings.

Suborder ERPOBDELLIFORMES

Family SALIFIDAE

5. *Barbronia weberi* (Blanchard)

1897. *Dina weberi* Blanchard, *Zool. Ergeb. Reise in Neiderländisch Ost-Indien*, 4 : 332-355.

1927. *Barbronia weberi*, Harding & Moore, *Fauna Br. India, Hirudinea* : 135.

1986. *Barbronia weberi*, Sawyer, *Leech Biology & Behaviour*, II : 769.

Characteristics : Small size, 25-35 mm long, extended preserved specimens may be up to 36 mm long and 3.8 mm in maximum width. Colour, when live, probably reddish, as little pigment is present. Body slender with nearly uniform width behind clitellum, and tapering anteriorly to the very small head; the caudal end broadly rounded to the sucker. Buccal and preclitellar region terete, the remainder of the body flattened and in the anal region provided with lateral flanges. Lip narrow, usually long and prominently projecting, often flat and less arched, ventrally with a marginal welt that passes into the buccal ring. Mouth small. Eyes three pairs, the first larger, close together and conspicuous, on dorsum of anterior part of second lip; the other two pairs small and on the sides of the anterior annulus (buccal ring 4 a2). Clitellum thick and prominent in sexually active specimens, extending over fifteen annuli, 10 b5 to 13 a2 inclusive; in some specimens much wrinkled. Gonopores separated by 4½ to 5 annuli. Male pore is usually at 12 b1/b2 or slightly in b1; female pore on 13 b1; accessory copulatory pores are very constant in position, the first is at 10/11, and the second at 13/14. Anus large, with raised and often furrowed margins, situated at 26/27. Sucker relatively large, due to slenderness of body sometimes of a diameter little less than the maximum width, but in no other way distinctive. Pharynx elongated with three muscular ridges, that is, ventral and dorso-lateral ridges except at the cephalic end, where there position is reversed. Small pseudognaths and vestigial jaws each bearing one or two retractile styliform teeth arranged in tandem.

Type locality : Java.

Distribution : India : Himachal Pradesh; Jammu & Kashmir; Madhya Pradesh (Pachmarhi Biosphere Reserve: Hoshangabad); Maharashtra; Rajasthan; Uttaranchal.

Elsewhere : Pakistan, Nepal, Java, Sumatra, Borneo, Celebes; Philippines, Great Britain (accidentally introduced), and Sino-Japanese region.

Remarks : It occurs under stones in streams, ponds and lakes in association with other leeches.

Class OLIGOCHAETA
Order HAPLOTAXIDA
Suborder TUBIFICINA
Superfamily TUBIFICOIDEA
Family NAIDIDAE

6. *Allonais paraguayensis* (Michaelsen)

1905. *Nais paraguayensis* Michaelsen, *Zoologica, Stuttg.*, 18, 44 : 354.

1923. *Nais paraguayensis*, Stephenson, *Fauna Br. India, Oligochaeta* : 61.

1971. *Allonais paraguayensis*, Brinkhurst & Jamieson, *Aquatic Oligochaeta of the world* : 385.

Characteristics : Size small, 4-60 mm; segments 15-200. Colour light orange. No eyes. Dorsal setae beginning in 5,6 or 7; simple, 1-2 hairs per bundle; 1-2 simple, pointed or bifid needles with long teeth, the lower being about twice as long as the upper, the upper bifid or single or strongly reduced. Ventral setae 2-8 per bundle, bifid, setae in anterior segments are shorter and thinner than those in posterior segments; anterior setae with nodulus median or distal and upper tooth usually slightly longer; in the remaining segments nodulus distal and equally long teeth. Vascular system in anterior segments forming a plexus. Clitellum in segments 5-8; spermathecal ampulla ovoid, short duct well developed. Atrial ampulla round, duct well developed. Penial setae 3-11 per bundle, simple and hooked.

Type locality : Paraguay.

Distribution : India : Bihar; Madhya Pradesh (Gwalior, Pachmarhi Biosphere Reserve: Pachmarhi); Orissa(?); West Bengal.

Elsewhere : Asia, Africa, North and South America.

Remarks : It swims with transverse movements, rotating round its axis. Variety *barkudensis* described by Stephenson (1921) from Orissa has been doubtfully included under the species by Brinkhurst & Jamieson (1971).

Suborder LUMBRICINA
Superfamily MEGASCOLECOIDEA
Family OCTOCHAETIDAE

7. *Eudichogaster ashworthi* Michaelsen

1902. *Eudichogaster ashworthi* Michaelsen, *Jb. hamb. wiss. Anst.*, 19 : 14.

1988. *Eudichogaster ashworthi*, Julka, *Fauna of India and the adjacent countries, Megadrile Oligochaeta, Octochaetidae* : 118.

Characteristics : Length 84-210 mm, diameter 4-7 mm, 163-192(+) segments. Prostomium prolobic. First dorsal pore 12/13. Clitellum $\frac{1}{2}$ 13-16. Setae lumbricine; *a*, *b* on 8-34 enlarged (absent on 17-19). Male genital field with a pair of crescentic longitudinal tumescences, each with a seminal groove, between setal arcs of 17 and 19, slightly lateral to *b*. Male pores minute, in seminal grooves, on the setal arc of 18; prostatic pores minute, at the ends of seminal grooves, on 17 and 19, at *b*. Spermathecal pores minute, at *ab*, those of 8 on setal annulus, those of 9 on presetal annulus, slightly nearer to 8/9 than to setal arc and within genital markings. Genital markings tiny, circular, greyish translucent areas, in transverse rows of 4-9 on a postsetal area of epidermal tumescence on 16, at *bb*. Additionally, similar rows of single markings on following locations: postsetal on 17, 18 and presetal on 19 between seminal grooves; postsetal on 9, 20 at *aa*; presetal and postsetal on 8 at *ab*; presetal on 9 at *ab*; postsetal on 9 at *ab* or *bc*; presetal and postsetal on 20 in median half of *bc*; single and paired markings, postsetal on 8, 19 at *aa*, setal on 16 lateral to *bc*, setal annulus on 18, 19 between seminal grooves, presetal on 20 at median half of *bc*; single and unpaired markings, postsetal or setal on 9, presetal and postsetal on 10, at *aa*. Oesophagus with 2 gizzards, in 5-6 and two pairs of discrete extramural calciferous glands, in 11-12; supra-intestinal glands 8 pairs, in 78-87 to 85-94; typhlosole lamelliform, simple. Testes and male funnels in 10 and 11, male funnels all of same size; seminal vesicles in 9, 10 and 12. Each spermatheca with a flat, disc-like, vertically placed ental diverticulum. Enlarged setae *a*, *b* on 8-34 ornamented with short transversely placed ridges or rows of very fine thorn-like teeth, 0.20-0.47 mm long. Genital marking glands absent.

Type locality : Nagpur, Maharashtra, India

Distribution : India : Madhya Pradesh (Pachmarhi Biosphere Reserve : Betul); Maharashtra.

8. *Eudichogaster prashadi* Stephenson

1920. *Eudichogaster prashadi* Stephenson, *Mem. Indian Mus.*, 7 : 250.

1960. *Eudichogaster prashadi*, Gates, *Ann. Mag. Nat. Hist. (ser. 13)*, 3 : 647.

1988. *Eudichogaster prashadi*, Julka, *Fauna of India and the adjacent countries, Megadrile Oligochaeta, Octochaetidae*: 125.

Characteristics : Length 35, 60-145 mm, diameter 3, 4-7 mm, 140-190 segments. Prostomium prolobic. First dorsal pore 12/13. Clitellum 13-16,17. Setae lumbricine; usually *a*, *b* on 8 and 9, sometimes *c* on 9 copulatory, being surrounded by epidermal tumescences. Male genital field tumescent without special demarcation, on 17-19, with or without a deep slit-like depression along eq/18, and with a deep longitudinal depression on 17 and 19. Male pores minute, in seminal grooves, on the setal arc of 18, at *ab*;

prostatic pores minute, at the ends of seminal grooves, on 17 and 19, at *ab*; seminal grooves biconcave, wide and shallow or narrow and deep. Spermathecal pores minute, on the setal arcs of 8 and 9, at *ab*. Genital markings circular to oval, with 1-9 small circular translucent areas that are irregularly distributed or in transverse rows. They are located as follows: unpaired and median, at *aa*, primarily presetal on 9, 10, 11, 21 and some of posteriad segments, primarily postsetal on 14, 15, 16; paired extending from *a* or *b* well into *bc*, primarily postsetal on 16, primarily presetal on 20.

Oesophagus with 2 gizzards, in 5-6 and two pairs of discrete extramural calciferous glands, in 11-12; supra-intestinal glands 7-9 pairs, in 76-89; typhlosole lamelliform, simple. Holandric, testes and male funnels free, in 10 and 11; seminal vesicles in 9 and 12, pseudovesicles in 13-14. Each spermatheca with a flat, disc-like, multiloculate ental diverticulum, duct about as long as or slightly shorter than ampulla. Copulatory setae ornamented with several longitudinal rows of excavations, tip claw-shaped, 0.47-0.74 mm long, 16-19 μ diameter.

Type locality : Palia, Madhya Pradesh, India.

Distribution : India : Gujarat; Madhya Pradesh (Baraila, Bheraghat, Bina(?), Choral(?), Gaurighat, Indore, Khandwa, Mhow Cantt., Safraha, Sagar, Teor, Pachmarhi Biosphere Reserve: Betul, Palia); Maharashtra; Rajasthan(?).

9. *Octochaetona paliensis* (Stephenson)

1920. *Octochaetus paliensis* Stephenson, *Mem. Indian Mus.*, 7 : 228.

1988. *Octochaetona paliensis*, Julka, *Fauna of India and the adjacent countries, Megadrile Oligochaeta, Octochaetidae* : 280.

Characteristics : Length 35-92 mm, diameter 2-3.5 mm, 119-182 segments. Prostomium epilobic, tongue open. First dorsal pore 12/13. Clitellum 13-17. Setae lumbricine; *a* and *b* on 8 and 9 copulatory being surrounded by tumescences. Male pores minute, at or slightly lateral to *a* or *b*; prostatic pores minute, at *b*; seminal grooves straight or convex between setal arcs of 17 and 19. Female pores paired, within *a* lines, on 14. Spermathecal pores minute, presetal on 8 and 9, close to setal arcs, at *ab*. Genital markings when present oval, unpaired and median on 19/20-23/24, at *aa* or *bb*, paired on 18, at *bc*. Septa 4/5, 7/8-11/12 muscular, 5/6/7 absent. Oesophagus with single gizzard between septa 4/5 and 7/8. Intestine begins in 17, typhlosole 22-23 to 89-98. Last pair of hearts in 12. Holandric, testes and male funnels free, in 10 and 11; seminal vesicles in 9 and 12. Penial setae ornamented with circles of fine spines, tip bluntly pointed, 0.55-0.73 mm long, 13-17 μ diameter. Each spermatheca with a somewhat clavate ental diverticulum, duct shorter than ampulla. Copulatory setae ornamented with transverse rows of serrated ridges, tip claw-shaped, 0.51-0.82 mm long, 15-23 μ diameter. Genital marking glands absent.

Type locality : Palia, Madhya Pradesh, India.

Distribution : India : Andhra Pradesh; Madhya Pradesh (Bina, Gwalior, Indore, Nowgong, Pachmarhi Biosphere Reserve: Palia); Maharashtra.

Family MEGASCOLECIDAE

10. *Polypheretima elongata* (Perrier)

1872. *Perichaeta elongata* Perrier, *Nouv. Arch. Mus. Hist. nat. paris*, **8** : 124.

1976. *Metapheretima elongata*, Easton, *Bull. Brit. Mus. Nat. Hist. (Zool.)*, **30** : 40.

1979. *Polypheretima elongata*, Easton, *Bull. Brit. Mus. Nat. Hist. (Zool.)*, **35** : 53.

Characteristics : Length 40-360 mm; diameter 1.5-10 mm. Segments 136-297. Colour grayish yellow. Prostomium rudimentary or lacking. First dorsal pore at 12/13. Clitellum annular, 14-16, usually without setae. Setae 80-130 on 7, 55-75 on 20, 13-17 between spermathecal pores, and 7-15 between male pores. Spermathecal pores, when present, minute and superficial, mostly two pairs of ventro-lateral batteries of 0-5 pores in furrows 5/6/7, some or all often absent. Female pore single, mid-ventral, on 14. Male pores paired, on short penes within shallow copulatory pouches on 18, c. 2.25 body circumference apart. Genital markings three to seven pairs, large, oval presetal papillae, in line with or slightly ventral to the male pores on segments 19-25.

Septa 5/6-7/8 thickened, 8/9 membranous, 9/10 absent, 10/11-13/14 thickened. Gizzard between septa 7/8-9/10; intestine begins in 15; intestinal caeca absent. Last hearts in 12. Holandric; testis sacs large, paired, in 10 and 11, extending to dorsal line such that they are completely fused, projecting round the gut resembling seminal vesicles; seminal vesicles paired in 11 and 12, the anterior pair enclosed in the posterior testes sacs. Polythecal, spermathecae in paired batteries of up to 28 in 6 and/or 7; unidiverticulate; diverticulum arising from ectal end of duct, with longer stalk and ovoidal to ellipsoidal seminal chamber. Genital marking glands sessile on parietes.

Type locality : Peru.

Distribution : India : Andaman & Nicobar Islands; Andhra Pradesh; Karnataka; Madhya Pradesh (Indore, Rewa, Satna, Ujjain, Pachmarhi Biosphere Reserve: Palia); Maharashtra; Tamil Nadu; West Bengal.

Elsewhere : Africa, Madagascar, Comoro Island, Pakistan, Sri Lanka, Bangla Desh, Myanmar, Thailand, Malay Peninsula, Indonesia, Philippines, Taiwan, Japan, Australia, Papua New Guinea, New Britain, New Caledonia, Caroline Islands, Ryuku Islands, Hawaii, Tahiti, South America, Oman.

SUMMARY

A total of 10 species of Annelids (5 species each of leaches and earthworm are recorded from the Pachmarhi Biosphere Reserve.

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APPENDIX

The following species are recorded in the past from the areas falling under Pachmarhi Biosphere and are listed with a view to bring the known information on diversity at one place.

1. CHILOPODA SCOLOPENDROMORPHA

Class CHILOPODA

Order SCOLOPENDROMORPHA

Family SCOLOPENDRIDAE

Tribe SCOLOPENDRINI

1. *Scolopendra morsitans* Linnaeus, 1758
2. *Scolopendra amazonica* (Bucherl), 1946

Tribe ASANADINI

3. *Asanada agharkari* (Gravely), 1912
4. *Asanada sukhensis* Jangi and Dass, 1984

Subfamily OSTOSTIGMINAE

Tribe OSTOSTIGMINI

5. *Rhysida nuda immarginata* (Porath), 1876

REFERENCE

Khanna, Vinod, 2006. A Checklist of Centipedes (Chilopoda: Scolopendromorpha) from Central India. *Zoo's Print Jour.*, 21(2) : 2164-2166.

2. Order SCORPIONIDA

Family SCORPIONIDAE

1. *Heterometrus (Chersonesometrus) granulomanus* Counzj

Family BUTHIDAE

2. *Mesobuthus tamulus gangeticus* Poc.

Family VAEJOVIDAE

3. *Scorpiops (Scorpiops) pachmarhicus*' Bastawade**REFERENCE**

Bastawade, D.B. 1992. First report of the family Vaejoividae (Scorpionida: Arachnida) in Madhya Pradesh, with the description of a new species *Scorpiops (Scorpiops) pachmarhicus*. *J. Bombay nat. Hist. Soc.*, 89(1) : 99-103.

3. Order DICTYOPTERA

Suborder BLATTARIA

Family BLATTIDAE

1. *Periplaneta affinis* Saussure*Material examined:* Hoshangabad, Mahadeo, 5.vi.1999 (1 ex.), Coll. K. Chandra.

Family HOMEOGAMIIDAE

2. *Therea nuptialis* (Gerstaecker)*Material examined :* Hoshangabad, Mahadeo, 5.vi.1999 (1 ex.), Coll. K. Chandra.**4. Order MANTODEA**

Family HYMENOPODIDAE

Subfamily ACROMANTINAE

Tribe Acromantini

1. *Ephestiasula intermedia* Werner, 1930

Family MANTIDAE

Subfamily LITURGUSINAE

2. *Humbertiella indica* Saussure, 1869
3. *Humbertiella similis* Giglio-Tos, 1917

REFERENCE

Mukherjee, T.K. and Hazra, A.K. Mantodea (Insecta) from Madhya Pradesh and Chhattisgarh, new records and descriptions.

5. Order DERMAPTERA

Superfamily PYGIDICRANOIDEA

Family PYGIDICRANIDAE

Genus *Diplatys* Serv.

1. *Diplatys fletcheri* Burr

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6. Order HEMIPTERA

Family JASSIDAE

The following species were recorded from Pachmarhi, identified by Dr H.S. Pruthi, and present in the collections of HQs, Kolkata.

1. *Agallia senuata* (M&H)
2. *Athysanus indicus* (Distant)
3. *Chiasmus (kartwa) mustelina* (Pruthi)
4. *Dio facialis* (Distant)

5. *Eugnathodus indica* (Pruthi)
6. *Eugnathodus ocellatus* (Pruthi)
7. *Eugnathodus (Nesosteles) sanguinescens*
8. *Ledra mutica* (Fabricius)
9. *Nehela bimaculicollis*, (Stal)
10. *Nephotethix bipunctatus* (Fabricius)
11. *Parvana indra* (Distant)

7. Order THYSANOPTERA

Family PHLAEOTHIRIPIDAE

Genus *Liothrips* Uzel

1. *Liothrips epacrus* Ananth & Muraleedharan

REFERENCE

Ananthakrishnan, T.N. and Sen, S. 1980. *Handbook Taxonomy of Indian Thysanoptera*. 234 pp. + 19 pls. Published by Zoological Survey of India, Kolkata.

8. Order HYMENOPTERA

Family MUTILIDAE

Genus *Mutilla* Linnaeus

1. *Mutilla niveosignata* Bingham

Family Formicidae

Genus *Aphaenogaster* Mayr

2. *Aphaenogaster rothneyi* (Forel)
3. *Aphaenogaster schurri* (Forel)

Genus *Formica* Linnaeus

4. *Formica fusca* Linnaeus

Genus *Leptothorax* Mayr5. *Leptothorax rothneyi* Forel6. *Leptothorax schurri* ForelGenus *Monomorium* Mayr7. *Monomorium aberrans* ForelGenus *Myrmica* Latr.8. *Myrmica inezae* Forel

Family ICHNEUMONIDAE

Genus *Henicospilus* Stephens9. *Henicospilus merdarius* (Gravenhorst)Genus *Nototrachys* Marshall10. *Nototrachys foliator* (Fabricius)Genus *Pristomerus* Cushman11. *Pristomerus microdon* Cushman

Family ENCYRTIDAE

Genus *Cheiloneurus* Westwood12. *Cheiloneurus fusciscapus* Agarwal

Family PERILAMPIDAE

Genus *Perilampus* Latreille13. *Perilampus microgastris* Férrière

Family TETRASTICHIDAE

Genus *Tetrastichus* Haliday14. *Tetrastichus satpurensis* (Saraswat)

Family SCELIONIDAE

Genus *Baryconus*15. *Baryconus diversus* Saraswat

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