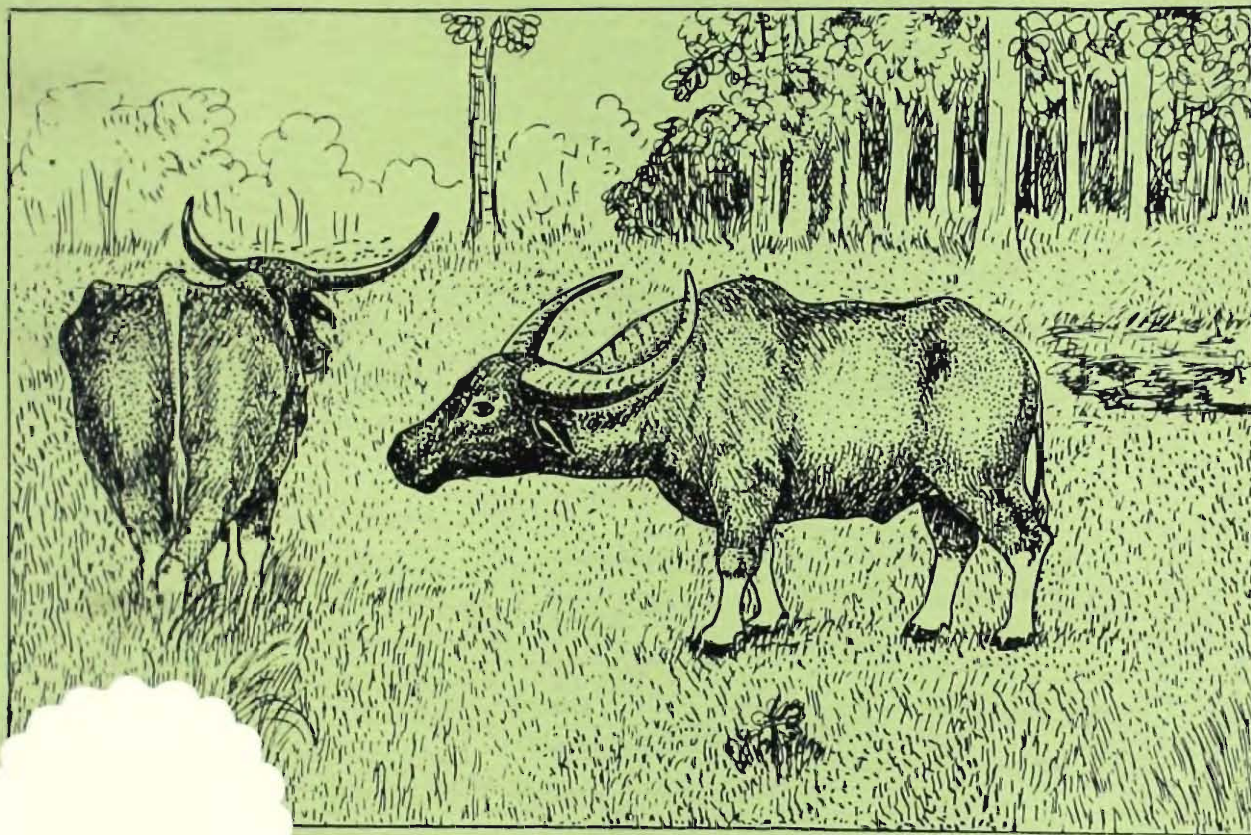
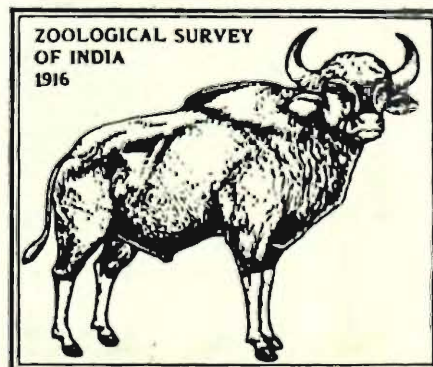


Fauna of Indravati Tiger Reserve

Madhya Pradesh



ZOOLOGICAL
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1995



FAUNA OF INDRAVATI TIGER RESERVE MADHYA PRADESH

Edited by :
The Director, Zoological Survey of India,
Calcutta.



सत्यमेव जयते

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FOREWORD

Indravati Tiger Reserve set up in 1982-83 in Bastar district of Madhya Pradesh is bounded on the north and the west by Indravati River. Presence of moist deciduous forests and grasslands characterise this highly potential zone. This Tiger Reserve still has some population of the central Indian wild buffalo (*Bubalus bubalis*) and may also provide an alternative home for the branderi barasinga (*Cervus duvauceli branderi*), at present confined to Kanha Tiger Reserve only. Indravati once used to abound in these animals but the devastating practice of 'Parad' (community tribal hunt after putting fire to the forest) has been held responsible for their debacle. Now, interspersed forest cover and grasslands by the Forest Department makes the area ideal home for a number of animals. Although the human and cattle population are very small, a large number of hamlets dot the Reserve including the ones in the core area.

Scientists of Zoological Survey undertook field trip to Indravati Tiger Reserve during January-February 1990 to investigate the faunal resources of the Tiger Reserve area. The field trip was undertaken under the leadership of Dr. R. K. Ghose, Scientist 'SD' with the assistance of Shri S. S. Saha, Asstt. Zoologist, Shri C. K. Misra, Jr. Taxidermist, Shri N. Prasad, Field Collector, Shri H. N. Bose, Laboratory Attendant (all from head quarters, Calcutta) and Dr. D. K. Harshe, Museum Assistant and Shri L. E. P. Das, Driver (both from Central Regional Station, Z. S. I., Jabalpur).

The Zoological Survey of India in the past has brought out some papers in different groups of fauna of the Bastar district. However, this volume on the Indravati Tiger Reserve has been specially brought out to highlight the fauna of the Reserve; it contained an account of both invertebrate and vertebrate faunal elements much of which have never been documented earlier.

I wish to place on record our sincere thanks to the then Director of the Tiger project (Dr. R. L. Singh), New Delhi, and to the Field Director, Indravati Tiger Reserve, and his officers and staff for rendering active support to our ZSI team in the field.

Calcutta
March, 1995

Dr. A. K. Ghosh
Director
Zoological Survey of India

FAUNA OF INDRAVATI TIGER RESERVE : MADHYA PRADESH

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INDRAVATI TIGER RESERVE : AN OVERVIEW

INTRODUCTION

The Indravati Tiger Reserve is situated on the bank of Indravati river, in Bastar district of Madhya Pradesh and has a great abundance of animal resources, Although stray study tours have been conducted in some places of the Bastar district, this area has particularly been neglected, reflecting the general paucity of information of the fauna of this Tiger Reserve. However, a study tour to Indravati Tiger Reserve has been undertaken at the instance of the Ministry of Environment, Forests and Wildlife, particularly for the responsibility assigned by the Steering Committee (Project Tiger) to Zoological Survey of India for faunal assessment of Tiger Reserve area.

One field trip has been undertaken in the area, but work could not be satisfactorily done due to geopolitical disturbances in the Tiger Project area. In the present volume, work so far completed on this survey-material, have been represented in 12 papers. A brief overview of relevant aspect, location, topography, geology, drainage system/sources of water, climate, vegetation, fauna, etc. presented in this paper is intended to act as general introduction to all the contributions that follows.

The survey team made the base camp at Kutru from 24 January to 2 February 1990. The party made a through survey in and around Kutru, Pharsegarh (in the buffer zone of the reserve). The other areas visited by the party are Bade Kakreli, Bedare, Neti Kakler, Aropalli, and adjoining area. The second camp of the party was settled at Bijapur. Here the party stayed from 3 February to 9 February 1990.

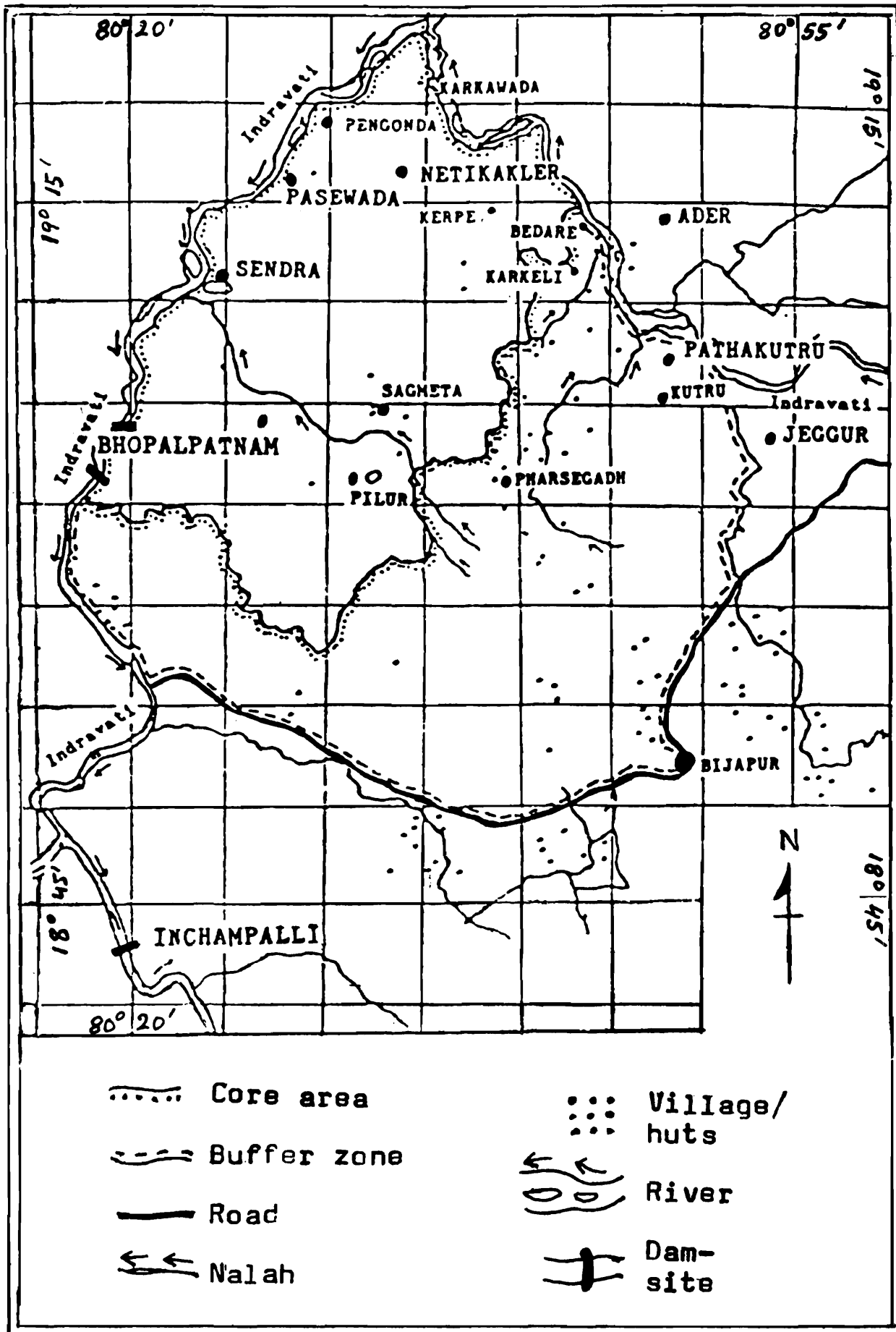


Figure 1. Sketch map of Indravati Tiger Reserve

LOCATION AND AREA

The Indravati Tiger Reserve is situated in the Western part of Bastar district of Madhya Pradesh adjacent to Chandrapur district of Maharashtra. In the east it is bounded by Borudi river joining the Indravati river and Jagdalpur-Bhopalpatnam road respectively. The Indravati river lies in the northern side and also in the western side where it forms the inter state boundary of Madhya Pradesh and Maharashtra. The core zone of the Indravati National Park is located between 18°51' and 19°24' North longitude and 80°16' and 80°44' East latitudes

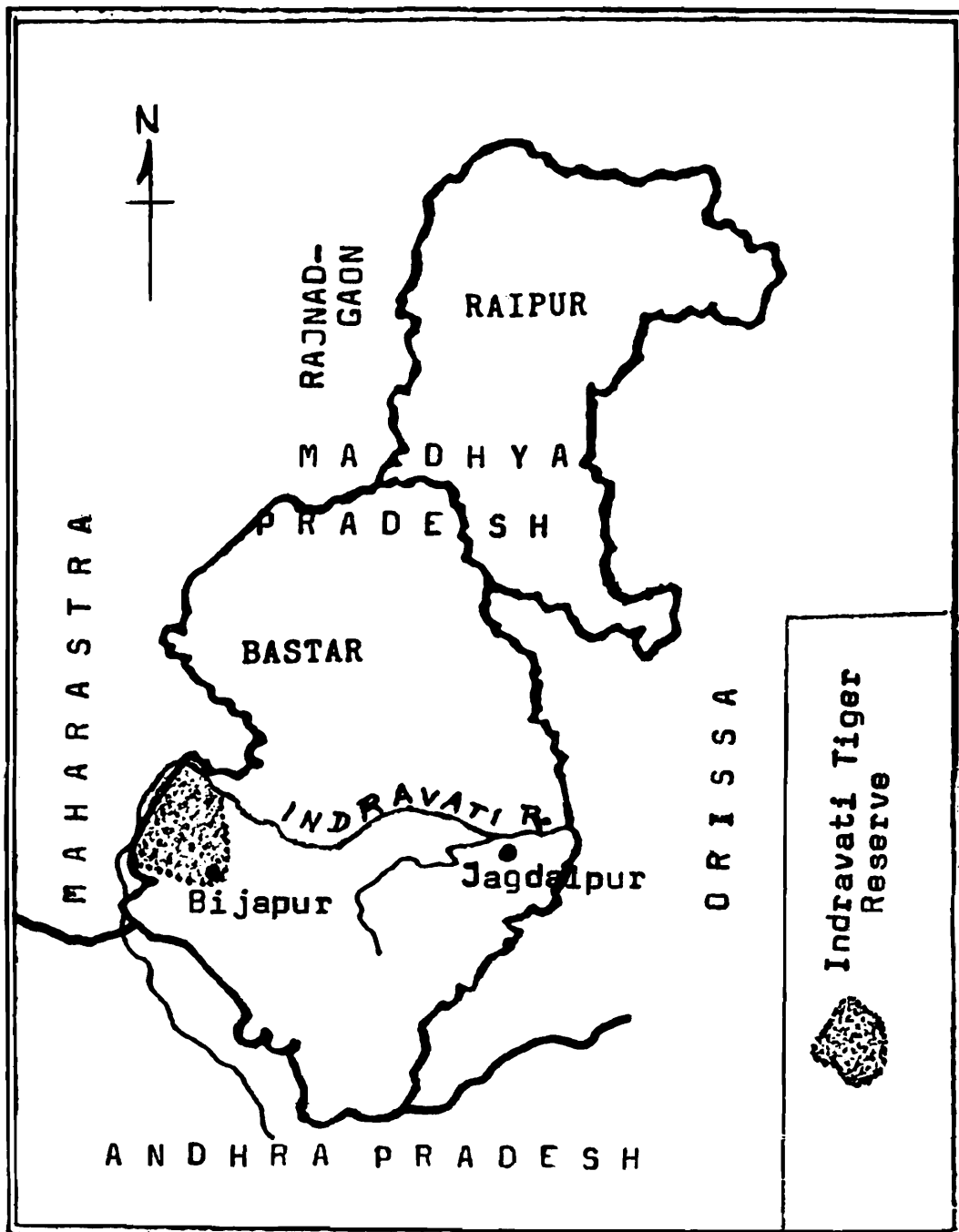


Figure 2. Location of Indravati Tiger Reserve in Bastar District, Madhya Pradesh.

The total area of the Tiger Reserve is 2799.086 km² with a core area of 1258.372 km². The buffer zone of 1540 km² in the eastern and southern side included in the tiger reserve enjoys the status of game sanctuary. In the north and west beyond Indravati, Chandrapur district (including Bhamragarh Forest Division) of Maharashtra has a good insulating effect as a buffer zone to the reserve.

The total forest area of the reserve under the control of forest department is 1836 km² (in 33 forest blocks and 403 compartments) and form 65.6% of the total area of the reserve, while remaining area with villages fall under the control of the Revenue department.

In the core zone, an area of 990.190 km² is spread in 12 forest blocks and 350 compartments and in under absolute control of the forest department. The rest of the area, i.e., area of 76 villages is under the control of the Revenue department.

The area is approachable from Jagdalpur (district head quarters) by Jagdalpur-Bhupalpatnam Road (State highway). Following are some major approach roads to the reserve from the State highway : (i) Nemed-kutru P.W.D. road (147 km from Jagdalpur), (ii) Matwada-Kutru P.W.D. road (139 km from Jagdalpur) and (iii) Bhupalpatnam-Uloor-Pilloor forest road (212 km. from Jagdalpur).

TOPOGRAPHY

The entire tiger reserve is mostly flat with hill features distributed all over. The main drainage system of the area is Indravati river (flowing towards north-west and south-west direction at the tiger reserve boundary) and its tributories which originates from the hill section of the area and adjoining places. The terrain slopes gradually in the north and western direction. The general slopes of the reserve area is towards west giving appearance of broad undulating valley bounded by hills in the north and south,

GEOLOGY : ROCK AND SOIL

Rock System

The rocks generally met with are lime stone, shale, granite, gneiss, granetiferous quartzite and pognalites and may conveniently be grouped into two major division : (1) Cuddapah and (2) Archean. The out crop of different rocks cover most of the area and they differ to varying extent in mineralogical composition and degree of metamorphosis. They are also found to be intermixed and in transition from one rock type to another.

The Cuddapah is represented by quartzites, shale (calcareous), lime stone and boulder beds. The rock system is prevalent near kutru, Toynar, Pasewada and Pilloor.

The Archean rock system is mainly composed of quartzites, charnockites, graniferous gneiss and intrusives. The quartzite is found below the ferruginous quartzites (whitish quartzite with streaks of hematite or sometimes in the form of clear hematite sand) in the hills, with very limited exposer. The charnockites (mesocratic to malanocratic and equigranular, sometimes gneiss and quartziferous) occur in isolated areas. Bands of granetiferous-quartz-felspathic neiss are generally associated with these rock. Granetiferous gneiss occupy a large area of the reserve extending up to Kandlaparti with intermitent exposers of charnockites, hornblend granite, etc. Frequently garnet, sillimanite, etc., are seen concentrated in localised areas with this rock system. Intrusives appear as fine grained dark coloured rocks, having primary composition of charnockite. At places, acidic

intrusives with numerous pegmatites are seen associated with granite-gneiss. In some cases mica and tourmaline are also associated. With intrusives, presence of beryl has also been noted.

Soil

The soil in the reserve is formed as a result of disintegration of the local rocks. The rate of disintegration, however, is largely dependent on the degree of dip of the rock strata. The dip of the strata here is usually vertical or inclined over 50 to 60 degree, forms thick soil and consequently capable of growing high quality forest.

The soil found at Indravati are generally loamy and well drained. Alluvial deposits are also not uncommon. The low lying plains of the area carry freshly deep and black clay soils which are capable of retaining moisture for long period. Occurrence of this type of soil is noticeable in the vicinity of Kutru, Pasewada, Sendra and Karpe. The alluvial soil is generally met with at the foot of the hills and along nala banks. They are silty in texture and reddish colour. The intensity of the hue is directly co-related with the degree of hydration which in turn is dependent on drainage pattern. Accordingly, the soil colour ranges from brown, yellow, grey to dark grey. At the foot-hills, the ingredients of coarse material is generally more if associated with granite-gneiss, quartzite, etc. Soil derived from shales are of uniform fine texture.

DRAINAGE SYSTEM AND OTHER SOURCES OF WATER

The Indravati river and its tributary Berudi, which are perennial, are the main source of water in the reserve. The other nalas as Dawilvagan, Koker, Ambeli, etc., which also flow towards Indravati, cease to flow after December. However, these water courses retain pools of water during pinch period in upper reaches intermittently.

The villages like Pharsegarh, Sendra, Kerpe, Dudopalli, Sunchkanta, etc. in the core area of the reserve and some villages like Gudma, Kutru, Toyner, Eramnar, etc. in the buffer zone have nistar tanks which retain water during summer season. An anicut near Sendra village has also been constructed as a part of compensatory water development activity.

During October every year some temporary bunds are also constructed with the aim to retain small pool of water during summer season. But these temporary bunds however do not retain water after March and as such the utility of such temporary bunds is restricted.

As the annual rainfall is quite sufficient, the water table in this area is generally high during summer season, to obtain water. Shallow pits are also dug here and there in dry stream beds.

CLIMATE

In Indravati, like rest of India there are three distinct seasons. The temperature, humidity, winds and precipitation so greatly vary that they regulate the growth of vegetation and also the habits of the wild animals.

Winter

November to February. December to January are the coldest months (about 3°C). This is the most healthy and pleasant season here.

Summer

March to middle of June. April to first week of June are the hottest period (about 41°C) here, but some pre-monsoon showers pull down this temperature to some extent.

Rains

The rain starts from second week of June to September. The average rainfall is 1610 mm at Bhopalpatnam and 1820 mm at Bijapur.

Mean rainfall recorded at jagdalpur from 1945-1972 (in mm)

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec	Total
6.5	2.7	19.3	25.0	28.7	187.03	490.5	456.4	273.5	88.2	13.2	3.6	1595.0

Temperature

Highest ever recorded in May 1973=45°C

Lowest ever recorded in January 1946=2.8°C

Record of temperature at Jagdalpur from 1960-1969 (°C)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec
Max :	27.1	29.5	32.4	35.2	36.6	32.0	27.6	27.0	27.9	28.9	27.1	26.2
	29.7	33.5	36.7	38.4	40.3	37.8	30.9	30.0	29.9	32.1	29.3	28.8
Min :	9.6	11.1	17.6	20.7	23.8	23.3	21.4	22.1	22.0	18.6	14.0	9.9
	14.0	16.1	20.7	24.7	25.7	24.9	23.1	22.6	22.5	21.0	18.7	15.8

Humidity

Maximum 87

Minimum 22

Wind

Maximum in July

Minimum in January

Mean wind speed (24 hrs) in km/hour at Jagdalpur : 1961-1966

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec
2.8	3.2	3.8	4.5	4.9	6.4	6.1	4.8	5.2	3.0	3.0	2.0
3.4	4.7	4.6	6.8	6.3	7.5	8.2	7.1	6.7	4.9	4.6	3.3

VEGETATION

The influence of geological formation on the growth condition and composition of vegetation is very marked. The resultant soil condition, with favourable climate produce a luxuriant type of climax vegetation here. This has, however, degraded where ever recurrent annual fires were extensive and shifting cultivation was common in the past. At places almost xerophytic conditions have been observed where thorny species predominate. Old cultivation patches inside the forest limits are blank. They are covered with grasses, mostly chhir, during the rains exclude every possibility of tree seedling to have any foothold. During summer, these blank areas are swept away by wild fires and as such the areas are persistently treeless.

The forests are mostly miscellaneous with or without teak. The teak (*Tectona grandis*) attains its finest development on suitable soil. Its natural regeneration is extremely poor in the moist areas where dense bamboo (mostly *Dandrocalamus strictus* and occasionally *Bansula* sp.) is the main constituent in the under story. The most valuable plant species, however, is Bija (*Pterocarpus marsupium*) which occur almost all over. Other plant species like Saja (*Terminalia tomentosa*), Dhobin (*Dalbergia plainculata*), Sal (*Shorea robusta*), Gab (*Diaspyros peregrina*), Tinsa (*O. dalbergeiodes*), Tendu (*Diospyros melamoxylon*), Mango (*Mangifera indica*), Haritaki (*Terminalia Cebula*), Bahera (*T. belerica*), Amlaki (*Embica officenalis*), Palas (*Butea monosperma*), Khair (*Acacia katechu*), Toddipalm (*Borassus flabelifera*), Anjan (*Hardwickia binata*), Sulphi palm (*Cargoto urnos*), Semal (*Salmalia malabarica*), Pipal (*Ficus religiosa*), Jamun (*Syzygius cumini*), Khajur (*Phoenix sylvestris*), Haldu (*Adina cordifolia*), etc. have been observed to occur almost every where, along with miscellaneous plants and herbs.

The forest of the tract is approximately of the following types :

Mixed forest without teak

This type covers the bulk of the the area of the reserve and occurs on all type of soil. Due to considerable local variation, the following sub-types are recognised.

1. Hill type with dense bamboo (at Sagmata, Madepur, Kodepal, Itpal, Jaitalur).
2. Hill type with scattered or no bamboo (at some places).
3. Plane type (at Sagmata, Annapur, Erammer, Madpur, Kutru, Pasewada, Kakler, Kodepal, Clinger, Kakreli).

Mixed forest with teak

The forest blocks included in this type are Annapur, Madepur, Itpal, Jaitlur, Kodepal, etc. The teak occurs mixed with other species but shows its preference for the plane region, nala banks and gently sloping areas, where soil is generally well drained and loamy with fare depth. The patches of teak are found in Kandapal block.

Southern dry mixed deciduous forests

These forests occur best in planes and gently undulating areas of the reserve, particularly in parts in Bijapur, Toyner and Bhairamgarh Ranges, The characteristic species are Tendu, Anjan, etc.

FAUNA

The tract is one of the most sparsely populated and interior-most areas of Madhya Pradesh. In the past during State regime, there were no dealings with outside world and hence tranquility prevailed in this forest. Due to sparse population and large chunks of forest the wildlife was practically undisturbed here. As such it automatically turned into a natural game reserve. In the past there was abundance of wild animals in the area. The area Kutru was famous for wild Buffalo and Bison. It is also stated that Rhinoceros was also found in the south of Indravati river.

With the development of the area number of villages grew up around the available water holes in the forest creating conditions that water and food in such areas were not available to the wild animals. Traffic increased gradually causing disturbance in the area thereby slow diminution in the number of wild animals. The recurring annual 'Parad' (a ritual community hunting) in which wild animals are killed indiscriminately, have greatly impoverished the game of this area. The incidence of wild life in the past can be well judged from the fact that in the past reward used to be given for destruction of carnivore and vermine.

At present the status of wild life is still not very bad in the interior areas where communications have not yet been developed, particularly in the core zone (National Park area). The National Park which was declared as sanctuary in 1975 and some wildlife protection and management efforts are going on since then, has a number of animals in comparison to the rest of the reserve. The status of wildlife in the adjoining areas, though degraded but not completed and it has still good potential to develop itself like the core area if protection and management efforts could be extended there.

Tiger and its niche

The tiger (*Panthera tigris* Linnaeus) being a generalist has a wide adaptability in terms of shelter and food. This capacity of the supreme predator allows it in the utilisation of the available habitat to a considerable extent. The area being innermost and having good density of prey animals and shelter, makes the reserve an excellent home for the tiger.

Different types of shelters are available in different localities depending upon the terrain and forest type. The choice of shelter also varies with different physiological requirements of the species. Near the ridges tiger finds a suitable shelter including a lair for cubs in the broken rocks and in the gorges of major nala, crevices of broken rocks, small cage like space between base and overhanging rock providing an ideal hide outs. At many places these are accompanied by water holes and shade from large trees.

The lower slopes and the valleys have streams, with long patches of rocky belt retaining water holes at different places. Rock cravices on the bank of a nala also create an ideal hideout concealed by trees, grasses or reeds. These shelters are usually used during summer season. Patches of dense bamboo are available almost all over the area, particularly in lower slopes and alluvial pockets along streams. This is the most preferred refuge of the tiger during summer and winter. During rainy season the forest floor is usually wet and muddy. There is plenty of cover at this time in the form of rock out-crops with smooth bed and boulders concealed by shrub growth and is a favourable resting place for the tiger.

Co-predator

The most important co-predator is the Leopard (*Panthera pardus* Linnaeus). The other predators are the wild Dog (*Cuon alpinus* Pallas) and the Python. The population of these co-predators in core area and outside is expected to be quite good.

Scavengers

The Hyaena (*Hyaena hyaena* Linnaeus) and the Jackal (*Canis aureus* Linnaeus) are the chief scavengers along with vulturistic finish of the coarse remains of the an abandoned kill of major carnivores or the carcasses of animals dying through disease, etc.

Prey animals

The wild artiodactyls, primates and lagomorphs constitute the main food for the tiger and other carnivores. The following are the important prey animals.

Artiodactyla : Suidae : *Sus scrofa* Linnaeus

Cervidae : *Cervus unicolor* Kerr, *Axis axis* (Erxleben), *Muntiacus muntjak* (Zimmerman)

Tragulidae : *Tragulus meminna* (Erxleben)

Bovidae : *Babulus Bubalis* (Linnacus),
Boselaphus tragocamelus (Pallas),
Tetraceros quadricornis (Blainville),
Bos gaurus H. Smith.

Primates : Cercopithecidae : *Macaca mulatta* (Zimmerman),
Presbytis entellus (Dufresne).

Lagomorpha : Leporidae : *Lepus nigricollis* Cuvier

It appears that the number of prey species have greatly deteriorated and under heavy hunting/poaching pressure.

The wild buffalo, *Babulus bubalis* (Linnacus), is now highly endangered in Indravati. It may not survive here for long unless stringent action is taken immediately. It appear that the species has suffered great decline in number and approximately about 42 to 45 individuals altogether might be surviving at Pilloor and Pengonda areas. We have seen only about 8-10 wild buffalos in a meadow on Pharsegarh-Pilloor Road, near an artificially created water-hole by the side of wallow-area fed by manual hand pump.

Seasonal movement of herbivorous animals

During rains and winter when water and fodder are abundant, the herbivorous animals are very well dispersed all over the area including the hill ranges. During summer, when the water become scarce there is movement of the animals towards the villages where water is available. In the crop season, the movement of wild herbivores is also noticed due to the attraction of cultivated crop in the villages.

Other animal association

Among the other animal association using the same habitat are Sloth Bear (*Melusus ursinus* (Shaw)), Ratel (*Mellivora Capensis* (Schreber)), Jungle Cat (*Felis chaus* Guldenstadt), Indian Fox (*Vulpes bengalensis* (Shaw)), Common Grey Mongoose (*Herpestes edwardsi* Geoffroy), Palm Givt (*Paradoxurus hermaphroditus* Pallas), Indian porcupine (*Hystrix indica*), Giant Squirrel (*Ratufa indica* Erxleben). The small mammals are represented by Five-striped palm squirrel (*Funambulus pennanti* Wroughton), Three-striped palm squirrel (*F. palmarum* Linnaeus), Rats (*Rattus blanfordi* (Thomas), *Rattus rattus* (Linnaeus), Mice (*Mus booduga* (Gray), *Mus urbanus* Linnaeus), Shrew (*Suncus murinus* (Linnaeus), Fruit bats (*Pteropus giganteus* (Brunnich), *Rousettus Leschenaulti* (Desmarest), *Cynopterus sphinx* (Vahl), Horseshoe bat (*Rhinolophus rouxi*), Indian false vampire (*Megaderma lyra*), etc.

Avi fauna

There is a variety of birds in the area. The aquatic birds are common and mostly found in village tanks, tanks constructed for wildlife development and in the Indravati river which is perennial. The range of arboreal birds is wide but their number is very thin in comparison to other areas due to heavy collection of birds, their eggs and young-ones for food, by trapping. However, during our visit in the Reserve we have recorded about 92 species in and around Kutru, Pharsegarh, Pillor, Sendra, Bedare, Karkeli, Pasewada and Bijapur.

Invertebrate fauna

Having beautiful forest cover with suitable habitats this tiger reserve harbours a good number of cold blooded vertebrates and also various invertebrates. During our study period we have recorded a number of fishes, amphibians, etc. Among insects various groups of Lepidoptera, Orthoptera, Odonata, Diptera, etc. are quite rich in number.

ACKNOWLEDGEMENTS

We are thankful to the Director, Tiger Project, New Delhi and to the Field Director, Indravati Tiver Reserve, For extending all possible helps during the study period. Our thanks are also due to the Officers and other forest staffs for their assistance during the field work.

REFERENCES

- Dongaonkar, K. R. Management Plan for Indravati Tiger Reserve, M.P. 1982-83 to 1989-90. M.P. Forest Dept. (Mimeo).
- Divekar, H. K. and Bharatbhusan. 1988. Status survey of the wild Asiatic Buffalo *Bubalus bubalis* in the Raipur and Bastar Districts of Madhya Pradesh. Bombay Nat. Hist. Soc. (Mimeo).
- Majumder, N. 1984. On a collection of birds from Bastar District, Madhya Pradesh. *Rec. zool. Surv. India*, Occ. Paper No.59, pp. 1-54.

INSECTA : ORTHOPTERA

INTRODUCTION

Orthopterans are commonly known as grasshoppers, locusts, grouse-locusts, crickets, mole-crickets and pigmy-mole-crickets. These are medium to large sized, winged, brachypterous or even apterous forms. Grasshoppers are voracious devourers of vegetation during both their young and adult stages. Grouselocusts feed on the algae and mosses, while crickets and mole-crickets feed on all kinds of animal and vegetable matters, and also consume dead ones.

No worker has studied the Orthopteran fauna of National Parks of Madhya Pradesh, except Tandon *et al.* (1976), who have studied the grasshoppers of Kanha National Park, Madhya Pradesh. The present study is based on the material collected from Indravati Tiger Reserve, Bastar district, Madhya Pradesh, by Dr. R. K. Ghose (Senior) and party during the year 1990. A total of 80 examples have been studied, which are distributed under 15 species and 6 families. All the species are new records for the Tiger Reserve, and 5 of these constitute new records for the State of Madhya Pradesh.

SYSTEMATIC ACCOUNT

Class INSECTA

Order ORTHOPTERA

Family ACRIDIDAE

Subfamily HEMIACRIDINAE

1. *Spathosternum prasiniferum prasiniferum* (Walkar)

1871. *Heteracris* (?) *prasiniferum* Walker, *Cat. Derm. Salt. Brit. Mus.*, 5 (Suppl) : 65

1936. *Spathosternum prasiniferum prasiniferum* : Tinkham, *Lingnan. Sci.J.*, 15 : 51.

Material examined : 2♂ 1♀; Kutru; 26.i.1990.

Diagnosis : Size large; antennae filiform; postocular band well marked, and runs up to the postero-lateral lobe of pronotum; prosternal tubercle straight, broad and bilobate; central area of tegmina with a longitudinal black streak; tegmina and wings almost reaching beyond the hind femora.

Distribution : India (widely distributed); Burma; S. E. China; Thailand and Vietnam.

Remarks : It is normally graminicolous and is found among grasses. Its normal food plants

in the early hoper instars are various succulent grass weeds specially star grass (*Cynoclon clactylon*). In the later instars it prefers cereal crops to which it transfers when these are present nearby. Feeding on broad-leaved plants seems only to occur under duress, when succulent grasses are not available. However, it causes damage to paddy, Lucerne and Berseem plantation.

Subfamily OXYINAE

2. *Oxya hyla hyla* Serville

1931. *Oxya hyla* Serville, *Ann. Sci. nat. (Zool)*, **22** : 287.

1971. *Oxya hyla hyla* : Hollis, *Bull Br. Mus. nat. Hist. (Ent.)*, 26 (7) : 282.

Material examined : 4♂ 3♀ (3♂ 3♀ Nymphs); Bijapur : 26.i.1990.

Diagnosis : Size large; head broader than the pronotum; fastignum obtuse; antennae fili-form; prosternal tubercle straight and conical; supra-anal plate with triangular apical projection, with small tubercle on both sides; subgenital plate in female with two longitudinal ridges. Hind tibiae are somewhat widened distally and probably aid in swimming.

Distribution : India (Andhra Pradesh, Arunachal Pradesh, Bihar, Goa, Himachal Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal); Africa; Oriental Region including India.

Remarks : This species mainly inhabits the rice fields and low lying grasslands and is found near streams on grasses. There are also records of its feeding on broad-leaved crops. However, it is injurious to paddy, citrus, cotton, barley, canna, jowar, bajra, maize, sugercane, wheat, sweet potato, finger millet and lucerne plantations,

It is recorded here for the first time from Madhya Pradesh.

Subfamily COPTACRIDINAE

3. *Eucoptacra saturata* (Walker)

1870. *Acridium saturatum* Walker, *Cat. Derm. Salt. Brit. Mus.*, 3 : 628

1921. *Eucoptacra saturata* : Livarov, *Ann. Mag. nat. Hist.*, (9) 7 : 503

Material examined : 1♀; Bijapur; 7.ii.1990

Diagnosis : India (Madhya Pradesh and Orissa).

Remarks : Previously recorded from Chindwara, Madhya Pradesh.

Subfamily TROPIDOPOLINAE

4. *Tristria* sp.

Material examined : 1♀; Bijapur; 7.ii 1990

Diagnosis : Size large; fastigium of vertex parabolic, moderately narrow; antennae filliform; prosternal tubercle curved backwards, almost touching the anterior margin of mesosternum, widened apically; tegmina and wings extending up to the apex of subgenital plate.

Distribution : India (Assam, Bihar, Karnataka, Maharashtra, Tamil, Nadu, Uttar Pradesh and West Bengal); Sri Lanka.

Remarks : It is recorded here for the first time from Madhya Pradesh.

Family PYRGOMORPHIDAE

5. *Atractomorpha crenulate* (Fabricius)

1793. *Truxalis crenulata* Fabricius, *Ent. Syst.*, 2 : 28.

1969. *Atractomorpha crenulata* Kevan and Chen *Zool. J. Linn. Soc.*, 48 : 187

Material examined : 4♂; Kutru; 26.i.1990. 1♀; Bidare; 29.i.1990. 1♂; 10 kms. North of Kutru; 30.i.1990, 2♂ 3♀, Bijapur, 7-8.ii.1990.

Diagnosis : Body slender; foveolae of vertex contiguous, superior and forming the extremity of the fastigium; antennae situated in front of the ocelli; eyes shorter and oval; lateral pronotal lobes with a distinct membranous area.

Distribution : India (Andaman & Nicobar Islands, Andhra Pradesh, Bihar, Goa, Jammu & Kashmir, Kerala, Lakshadweep Islands, Madhya Pradesh, Orissa, Rajasthan and West Bengal); Burma; Kampuchea; Laos; Maldives; Nepal; N. W. Sumatra; Thailand; South Vietnam and Sri Lanka.

Remarks : It is active throughout the year, though its activities are much reduced in winter season. Both adult and hoppers are serious pests of young plants especially tobacco, maize, gram, jute, cotton, cabbage, cauliflower, castor, citrus, chillies, rice, sorghum, lucerne, etc.

Superfamily GRYLLOIDEA

Family GRYLLOTALPIDAE

6. *Gryllotalpa africana* Beauvois

1805. *Gryllotalpa africana* Beauvois, *Ins. Afr. Amer.*, : 229

1967. *Gryllotalpa africana* : Chopard, *Orth. Cat.* (Part 12) : 449.

Material examined : 1 ♂ : Kutru; 1.ii.1990.

Diagnosis : Size large; head small; ocelli two in number; pronotum shield shape and lateral lobes bent towards the median line beneath; coxa of anterior legs short and stout; anterior femur thick; anterior tibia short, triangular, its apical spurs transformed into strong elactyls; ovipositor vestigial.

Distribution : India (Andaman islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Meghalaya, Orissa, Pondichery, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal).

Remarks : This species is recorded here for the first time from Madhya Pradesh. It is subterranean in habit and lives in damp earth or sand. It causes serious damage to potato, paddy and tea plantation, and also said to eat insects and worms.

Family GRYLLIDAE

Subfamily GRYLLINE

7. *Plebeigryllus guttiventris* (Walker)

1871. *Gryllus guttiventris* Walker, *Cat. Derm. Salt. Brit. Mus.*, 5 (Suppl.) : 6.

1964. *Plabeigryllus guttiventris*, Randell, *Can. Ent.*, 96 (12) : 598

Material examined : 1 ♀; Kerpe; 20 km. North-West of Kutru; 31.i.1990. 1♀, Kutru; 2.ii.1990.

Diagnosis : General shape short and depressed; head blackish above with 6 short light lines on occiput, ocelli disposed as a triangle; face convex; mirror of elytra divided behind by a curved vein; lateral field with 6 close veins.

Distribution : India (Bihar, Gao, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal); Burma and Sri Lanka.

Remarks : Recorded here for the first time from Madhya Pradesh.

8. *Gryllodes sigillatus* (Walker)

1869. *Gryllus sigillatus* Walker, *Cat. Derm. Salt. Brit. Mus.*, 1 : 46.

1969. *Gryllodes sigillatus* : Chopard, *Fauna of India*, Orthoptera, Grylloidea, 2 : 856.

Material examined : 1 ♀; 10 km. North of Kutru; 30.i.1990. 1 ♀ (Nymph); Kerpe, 20 km. North west of Kutru; 31.i.1990. 1 ♀; Bijapur; 8.ii.1990

Diagnosis : Body pubescent; head small, a little flattened; frontal rostrum much smaller; ocelli disposed as a triangle; face convex; elytra of male may or may not reaching the middle of abdomen, truncate at apex; wings almost absent in both sexes.

Distribution :Cosmopolitan. In India it is recorded from Andaman Islands, Andhra Pradesh, Assam, Bihar, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Remarks : This species is very common in holes of houses, bungalows and crevice in the woodwork of a door, and produce sound of high pitch during night or when it is dark.

9. *Pteronmobius fascipes* (Walker)

1869. *Encopters fascipes* Walker, *Cat. Derm. Salt. Brit. Mus.*, 1 : 67.

1931. *Pteronemobius fascipes* : Chopard, *Bull. Raffles Mus.*, No.6 : 134

Material examined : 1♂ 1♀; Kutru; 2.ii.1990. 1♀; Bijapur; 4.ii.1990.

Diagnosis : Small in size; posterior femora adorned with blackish bands; maxillary palpi very dark at base, with 4th and 5th joints nearly white; lateral lobes of pronotum blackish; apical spurs of the posterior tarsi 3 on each side, 3 external and 4 internal spine in male, while 3 on each side in female.

Distribution : India (Arunachal Pradesh, Assam Bihar, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal); Burma; China, Malaysia, Philippines and Taiwan.

10 *Pteronemobius taprobanensis* (Walker)

1869 *Trigonidium taprobanense* Walker, *Cat. Derm. Salt. Brit Mus.*, 1 : 102.

1969. *Pteronemobius taprobanensis* : Chopard, *Fauna of India*, Grylloidea, 2 : 163.

Material examined : 1♂; Kutru; 26.i.1990, 3 ♀; Kutru; 2.ii.1990.

Diagnosis : Small In size; posterior femora without blackish bands; last joint of maxillary palp almost black; lateral lobes of pronotum and lateral field of elytra blackish, upper part testaceous; posterior tibiae armed with 3 external and 4 internal in male, while 3 on each side in female.

Distribution : India (Andaman Islands, Arunachal Pradesh, Assam, Bihar, Karnataka, Maharashtra, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura and West Bengal); Bangladesh; Burma; China; Malacca; Malaysia; Perak; Sri Lanka and Vietnam.

Remarks : It is recorded here for the first time from Madhya Pradesh.

Family TRIGONIDIDAE

11. *Trigonidium humbertianum* (Saussure)

1878. *Homoeoxiphus humbertianus* Saussure, *Men. Soc. Geneve*, 25 : 468

1925. *Trigonidium humbertianum* : Chopard, *Rec. Indian Mus.*, 26 : 188

Material examined : 2 ♂; Bedare; 29.i.1990

Diagnosis : Body very small; elytra glabrous, long, convex, similar in both sexes, false veins present between the principal veins; wings usually caudate; anterior tibiae perforated; posterior tibiae non-serrulated, armed with 3 spines on each margin; second segment of hind tarsi flattened.

Distribution : India (Assam, Bihar, Kerala, Maharashtra, Orissa, Tamil Nadu, Tripura and West Bengal); Malaya and Sri Lanka.

Remarks : It is recorded here for the first time from Madhya Pradesh. This species is distributed only in Oriental Region.

Super Family TERIGOIDEA

Family TETRIGIDAE

Sub Family SCELIMENINAE

12. *Scelimena pruthii* Gunther

1938. *Thoradonta pruthii* Gunther, *Stettin. ent. Ztg.*, 99 : 129.

Material examined : 6♂ 4♀; Kutru; 26.i.1990

Diagnosis : Size small; head not exserted; vertex not wider than an eye; frontal costa normally bifurcated; pronotum covers the whole part of the body, strongly sculptured; posterior angles of lateral lobes of pronotum with spines which are directed posteriorly; lateral lobes of pronotum, behind the shoulders, from the side view, distinctly angulated upward, and from dorsal view bent inwards, wider between shoulders; first segment of posterior tarsi longer than the third.

Distribution : India (Madha Pradesh and West Bengal).

Subfamily TETRIGINAE

13. *Euparatettix personatus* (Bolivar)

1887. *Paratettix personatus* Bolivar, *Annl. Soc. ent. Belg.*, 31 : 278.

1904. *Euparatettix personatus* : Hancock, *Spolia zeylan.*, 2 : 145

Material examined : 3♂, 6♀; Kuru; 26.i.1990.

Diagnosis : Size small; head a little exserted above the surface of pronotum; vertex subequal than an eye. a little narrower forward; antennae situated on the lower border of eyes; posterior angles of lateral lobes of pronotum turned downwards, rounded at apex; hind tibiae dense black with white annulations; first and third tarsal segments of posterior tarsi unequal.

Distribution : Widely distributed in India. It is also recorded from Bangladesh, Burma, Bhutan, Pakistan, Java, Phillipines, Sri Lanka and Taiwan.

14. *Hedotettix gracilis* (De Haan)

1842. *Acridium (Tetrix) gracile* De Haan, *Tenminck. Verhandl.*, Orthoptera : 167, 169

1887. *Hedotettix gracilis* : Bolivar, *Annl. Soc. ent. Belg.*, 31 : 284

Material examined : 2♂ 4♀, Kutru; 26.i.1990. 1 ♂, 2♀; Bijapur; 6.ii.1990

Diagnosis : Size small; head a little exserted; vertex equal or narrower than an eye, not angulated in front; frontal costa widely sulcated, the rami widened between the antennae; pronotum extending behind upto the apex of abdomen or more; dorsum tectiform between shoulders; angles of lateral lobes of pronotum turned downwards, rounded at apex; hind tibiae dense black with white annulations; first and third tarsal segments of posterior tarsi unequal.

Distribution : India (Arunachal Pradesh, Assam, Madhya Pradesh, Maharashtra, Manipur, Orissa, Tripura and West Bengal); Pakistan Bangladesh; Burma; Celebes; Java; Taiwan; Thailand; Sri Lanka and Vietnam.

15. *Ergatettix dorsifera* (Walker)

1871. *Tettix dorsifera* Walker. *Cat. Derm. Salt. Brit. Mus.*, 5 : 825.

1929. *Ergatettix dorsifera* : Hebard. *Revue suisse Zool.*, 36 : 588

Material examined : 1♂ 5♀; Kutru; 26.i.1990.

Diagnosis : Size small; head distinctly exserted; vertex more narrower than the preceding species; antennae inserted below the inferior margin of eyes; frontal costa narrowly sulcated; pronotum extending beyond the apex of hind femora, two black spots present behind the shoulders which may or may not unite to form a complete band; median carina of pronotum with or without undulations behind the shoulders; hind femora with distinct nodosities.

Distribution : India (Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal); Bangladesh; Burma; Central Asia; Greater Sunda Island and Sumba; South China; Sri Lanka Sumatra and Taiwan.

REFERENCES

- Bolivar, I. 1887. Essai sur les Acridiens de la tribu des Tettigidae. *Annl. Soc. ent. Belg.*, 31 : 175-313.
- Chopard, L. 1967. *Orthopterorum Catalogus*. Part 10 : 1-211.
- Chopard, L. 1969. The fauna of India and the adjacent countries, Orthoptera, Grylloidea, 2 : 175-421.
- Gunther, K. 1938. Revision der Acridiinae (Orthoptera) II. Scelimenae spuriae. *Stettin. ent. Ztg.*, 99 : 177-148.
- Hancock, J. L. 1904. The Tetrigidae of Ceylon. *Spolia zeylan*, 2 : 97-157.
- Hollis, D. 1971. A preliminary revision of the genus *Oxya* Audinet Serville (Orthoptera : Acridoidea). *Bull. Br. Mus. (nat. Hist.) Ent.*, 26 (7) : 269-343
- Kevan, D. K. McE. Chen, Y. K. 1969. A revised synopsis of the genus *Atractomorpha* Saussure, 1862 (Orthoptera : Pyrgomorphidae), with an account of the African Aberrans group. *Zool. J. Linn. Soc.*, 48 : 141-198.
- Randell, R. L. 1964. The male genitalia in the Gryllinae (Orthoptera : Gryllidae) and a Tribal revision. *Can. Ent.* 96 : 1565-1607.
- Tandon, S. K. Shishodia, M. S. and Anita Dey. 1976. On a collection of Orthoptera (Insecta) from the Kanha National Park, Mandla, Madhya Pradesh, India. *Newsl. zool. Surv. India*, 2 (4) : 167-170.
- Uvarov, B. P. 1921. Records and descriptions of Indian Acrididae. *Ann. Mag. nat. Hist.*, London, (9) 7 : 480-509.

INSECTA : HEMIPTERA

The study of hemipteran fauna of Madhya Pradesh made practically no headway except a few records by Distant (1902, 1908, 1910) also, no hemipteran insects are on record from Bastar including Indravati Tiger Reserve.

The Present paper is based on a small collection of hemiptera brought by Dr. R. K. Ghose from the said Tiger Reserve. It comprises 18 species belonging to 16 genera distributed over 8 families. Diagnostic characters together with distribution of each species are provided in the paper. All the species constitute new locality records from bastar (M.P.)

The present study will add to our knowledge of the fauna of Hemiptera from Madhya Pradesh. It is felt that proper surveys in the area may reveal many more species of Hemiptera which have not been collected and described as yet.

Classified List of Hemiptera from Indravati Tiger Reserve :

Suborder HOMOPTERA

Family I. Cicadellidae

Genus 1. *Goniagnathus* Fieb

1. *Goniagnathus punctifer* (Walker)

Family II. Cercopidae

Genus 2. *Clovia* Stal

2. *Clovia conifera* (Walker)

Family III. Membracidae

Genus 3. *Leptocentrus* Stal

3. *Leptocentrus substitutus* (Walker)

Suborder : HETEROPTERA

Family IV. Coreidae

Genus 4. *Cletus* Stal

4. *Cletus bipunctatus* (Westw.)

Family V. Lygaeidae

Genus 5. *Nysius* Dallas

5. *Nysius ceylonicus* (Mots.)

6. *N. lacustrinus* Dist.

Genus 6. *Pachygrontha* Germar

7. *Pachygrontha bipunctata* Stal

Genus 7. *Paromius* Fieber

8. *Paromius pallidus* (Mont.)

Genus 8. *Spilostethus* Stal

9. *Spilostethus pandurus militaris* (Fabr.)

Genus 9. *Stigmatonotum* Lindberg

10. *Stigmatonotum minutum* Malipatil

Family VI. Pentatomidae

Genus 10. *Halys* Fabr.

11. *Halys dentatus* (Fabr.)

Genus 11. *Eusarcocoris* Hahn

12. *Eusarcocoris guttiger* (Thunb.)

Family VII. Pyrrhocoridae

Genus 12. *Dysdercus* Amy. & Serv.

13. *Dysdercus cingulatus* (Fabr.)

Family VIII. Reduviidae

Genus 13. *Euagoras* Burm.

14. *Euagoras plagiatus* Burm

Genus 14. *Pirates* Serv.

15. *Pirates atromaculatus* (Stal)

16. *P. quadrinotatus* (Fabricius)

Genus 15. *Pygolampis* Germar

17. *Pygolampis unicolor* Walker

Genus 16. *Sastrapada* Amy. and Serv.

18. *Sastrapada baereuspringi* (Stal)

SYSTEMATIC ACCOUNT

Family I CICADELLIDAE

Genus 1. *Goniagnathus* Fieb. 1866

1866. *Goniagnathus* Fieb., Verh. z.-b. Ges. 14 : 506.

1. *Goniagnathus punctifer* (Walker)

1858. *Bythoscopus punctifer* Walker, *Ins. Saund., Hom.* : 104.

1988. *Goniagnathus punctifer* : Datta, *Rec. Zool, Surv. India, Occ. Paper No. 90* : 134.

Material examined : 2 exs.; Bijapur; 7.ii.1990. R.K. Ghose coll.

Diagnostic characters : Vertex with obscure dark spots, three to four times broader as middle length, face punctate with distinct transverse stripes, pronotum about three times the length of vertex; tegmina smoky with thick veins, spots fuscous; legs ringed with black markings.

Distribution : Madhya Pradesh (Bastar); Bihar, Gujarat, U.P., West Bengal; Burma, Maldives; Sri Lanka.

Remarks : In the present study this species is being recorded for the first time from the area.

Family II CERCOPIIDAE

Genus 2. *Clovia* Stal, 1866

1866. *Clovia* Stal, *Hem. Afr.* 4 : 75.

2. *Clovia conifer* (Walk)

1851. *Ptyelus conifer* Walk., *List Hom.*, 3 : 711.

1885. *Clovia conifer* : Atkins, *J.A.S.B.*, 14 : 114.

1976. *Clovia conifera* : Datta & Ghose, *EOS Revista Spanola de Entomologia* : 42.

Material examined : 2 exs.; Bijapur, Bastar; 8.ii.1990. R. K. Ghose coll.

Diagnostic characters : Head between the eyes subtriangularly rounded, angularly sinuate; tegmina with a large median and larger apical costal hyaline or subhyaline spots; legs ochraceous, annulated.

Distribution : Madhya Pradesh (Bastar); Maharashtra, Nagaland, Sikim, West Bengal; Burma; China, Japan, Sri Lanka.

Remarks : The species constitutes new locality record from Bastar.

Family III MEMBRACIDAE

Genus 3. *Leptocentrus* Stal. 1866

1866 *Leptocentrus* Stal, *Hem. Afr.*, 4 : 87 & 90.

3. *Leptocentrus substitutus* (Walker)

1851 *Centrotus substitutus* Walker, *List. Hom.* 2 : 605.

1885 *Leptocentrus substitutus* : Atkins., *J. A. S. B.*, 14 : 87.

1986. *Leptocentrus substitutus* : Ghosh, Biswas & Das, *Rec. zool. Surv. India* 83 (1 & 2) : 103

Material examined : 2 exs. Bijapur, Bastar, 8.ii.1990, R.K. Ghose coll.

Diagnostic characters : Head about three times wider than long; pronotum black; ocelli black nearer to eyes than to each other; apices of the suprahumeral less acute; scutellum silky white.

Distribution : Madhya Pradesh (Bastar), Maharashtra, West Bengal; China; Sri Lanka.

Remarks : It is a new record from Bastar area.

Family IV COREIDAE

Genus 4. *Cletus* Stal, 1859

1859. *Cletus* Stal, *Freg. Eng. Resa. Ins. Hem.*, : 236

4. *Cletus bipunctatus* (Westwood)

1842 *Coreus bipunctatus* Westwood. *Hope Cat.*, 2 : 23.

1904. *Cletus bipunctatus* Distant, *Fauna Brit. India*, I : 393.

Material examined : 1 ex., Bijapur, Bastar, 8.ii.1990, R.K. Ghose coll.

Diagnostic characters : Pronotal lateral angles shortly but acutely produced, the apices of the spines fuscous, posterior area of pronotum & the corcium somewhat rosette, lateral margins of corcium and a small spot on its inner apical margin pale luteous.

Distribution : Madhya Pradesh (Bastar), Maharashtra, Mysore, West Bengal, Burma, Sri Lanka.

Remarks : This is a distinct species and distributed in all Zoogeographical regions. It is a new record from Bastar.

Family V LYGAEIDAE

Genus 5. *Nysius* Dallas 1852

1852. *Nysius* Dallas, List Hem., 2 : 331 & 551.

Key to the species of Nysius

1(2) Head anterior area of pronotum and antennae piceous; coreium pale ochraceous, subhyaline, apical margin with 3 distinct oblong fuscus spots *ceylanicus*

2(1) Head pronotum, antennae ochraceous : Coreium hyaline with yellowish tint, two black lines on its apical margin *lacustrinus*

5 *Nysius ceylanicus* (Motschulsky)

1863. *Heterogaster ceylanicus* Motschulsky, *Bull. Soc. Nat. Mosc.* : 78.

1988. *Nysius ceylanicus* : Mukhopadhyay, *Rec. zool. Surv. India*, Occ. Paper No.107 : 20

Material examined : 1 ex.; Bijapur, Bastar; 7.ii.1990; R.K. Ghose coll.

Diagnostic characters : Antennae piceous, membrane pale hyaline; coreium ochraceous with three oblong fuscus spots in its apical margin; posterior area of pronotum ochraceous, coarsely brownly punctate; membrane pale hyaline.

Distribution : Madhya Pradesh (Bastar), Sikkim, West Bengal, Bihar; Sri Lanka.

Remarks : The characters show some variation between the species. The species. The species constitutes new locality record from Bastar.

6. *Nysius lacustrinus* Distant

1909. *Nysius lacustrinus* Distant, *A.M.N.H.*, (8) 3 : 321.

Material examined : 6 exs.; Bijapur; 7.ii.1990; R.K. Ghose coll.

Diagnostic characters : Pronotum ochraceous darkly punctate, forming longitudinal fasciae; scutellum piceous brown with a pale central line on apex.

Distribution : Madhya Pradesh (Bastar); North West India.

Remarks : The species is being recorded for the first time from Indravati Tiger Reserve in Bastar.

Genus 6. *Pachygrontha* Germar. 1837

1837. *Pachygrontha* Germar, *Silb. Rev. Ent.* 5 : 152-153.

7. *Pachygrontha bipunctata* Stal

1865. *Pachygrontha bipunctata* Stal, *Hem. Afr.*, 2 : 149.

1988. *Pachygrontha bipunctata* Mukhopadhyay, *Rec. zool. Surv. India*, Occ. Paper No.107 : 34

Material examined : 1 ex.; Bijapur, Bastar, 7.ii.1990, R.K. Ghose coll.

Distribution : Madhya Pradesh (Bastar), West Bengal.

Remarks : "The species occur on *Cyperus irva* & other hedges" (Mukhopadhyay 1988).

Present specimen constitutes its first record from Madhya Pradesh.

Genus 7. *Paromius* Fieber

1839. *Stenocoris* Rambur., *Fn. Andalous* : 139-140.

1860. *Paromius* Fieber, *Eur. Hem.*, 45 : 170-171.

8. *Paromius pallidus* (Montrousier)

1865. *Plociomerus pallidus* Montrousier, *Am. soc. Linn. Lyon.*, 2 (11).

1913. *Paromius pallidus* Distant, *Am. Mag. Nat. Hist.*, 8(12) : 556-557.

1988. *Paromius pallidus* : Mukhopadhyay, *Rec. zool. Surv. India*, Occ. Paper No.107 : 63.

Material examined : 1 ex., Bijapur, Bastar, 8.ii.1990. R.K. Ghose coll.

Diagnostic characters : The species can be recognised by its more robust body with darker shade.

Distribution : Madhya Pradesh (Bastar), West Bengal.

Remark : The species constitutes new locality record.

Genus 8. *Spilostethus* Stal, 1868

1868. *Lygaeus*, S. G. *Spilostethus* Stal, *Kongl. Svensk. Vet. Akad. Handl.*, 7 (11) : 72.

9. *Spilostethus pandurus militaris* (Fabricius)

1775. *Cimex mititaris* Fabricius, *Syst. Ent.*, : 717.

1988. *Spilostethus pandurus militaris* : Mukhopadhyay, *Rec. zool. Surv. India.*, Occ. Paper No. 107 : 15.

Material examined : 1 ex. ; Kerpe; 20 km N. W. of Kutru, Bastar; R. K. Ghose coll.

Diagnostic characters : Femora distinctly spined beneath; spot at inner margin of eyes and at the apex of clavus. Body colour dull red.

Distribution : Madhya Pradesh (Bastar), Rajasthan, West Bengal.

Remarks : The usual host plants of this species are *Calotropis gigantea* and *C. procera*. It is a well represented species in India.

Genus 9. *Stigmatonotum* Lindberg

1927. *Stigmatonotum* Lindberg, Act. Soc. Fn. Fl. Fern. 56 : 9-10.

10. *Stigmatonotum minutum* Malipatil

1978. *Stigmatonotum mintum* : Malipatil, Aust. J. Zool. Supplementary, Series 56 : 23-25.

1988. *Stigmatonotum minutum* : Mukhopadhyay, Rec. zool. Surv. India. Occ., Paper No. 107 : 60.

Material examited : 3 exs. Bijapur, Bastar; 7.ii.1990; R. K. Ghose coll.

Diagnostic Characters : Head, Pronotum and hemelytra with only short pubescence; posterior lobe of pronotum lightly punctate.

Distribution : Madhya Pradesh (Bastar), West Bengal.

Remarks : Mukhopadhyay (1988) recorded this species for the first time from India. However, it was unknown from Madhya Pradesh.

Family VI PENTATOMIDAE

Genus 10. *Halys* Fabr. 1803

1803. *Halys* Fabr., Syst. Rhyng. : 180

11. *Halys dentatus* (Fabricius)

1775. *Cimex dentatus* Fabricius, Syst. Ent. : 702

1803. *Halys dentatus* Fabricius, Syst. Rhyng. : 180.

Material examined : 1ex.,; 10 km North of Kutru, Bastar; R. K. Ghose coll.

Diagnostic Character : Head elongated, tapered; scutellum with short basal and obscure fasciae and two marginal spots before apex; coreium with some black obscure discal patches.

Distribution : Madhya Pradesh (Bastar), Kerala, Maharashtra, Meghalaya, Mysore, Tamil Nadu, Sikkim, U.P., West Bengal; Pakistan, Sri Lanka.

Remarks : It is distributed in all zoogeographical regions. It also constituted new locality record.

Genus 11. *Eusarcocoris* Hahn., 18341834. *Eusarcocoris* Hahn., *Wanz.*, 2 : 6612. *Eusarcocoris guttiger* (Thunp)1783. *Cimex guttiger* Thunb., *Nov. Ins. Sp.*, 2 : 32.1851 *Eusarcocoris guttiger* : Dallas, *List. Hem.*, 1 : 228.1989. *Eusarcocoris guttiger* : Ghose *et. al*, Fauna of Orissa : State Fauna Series, 1 (2) : 2.*Material examined* : 3 exs. Bijapur, Bastar; 7-8.i.1990, R.K. Ghose coll.*Diagnostic Characters* : Ventral disc of abdomen brassy black, apical segment of antennae piceous excepting the very base which is ochraceous brown, lateral angles of pronotum obtusely prominent.*Distribution* : Madhya Pradesh (Bastar), Assam, Kerala, Sikkim, Tamil Nadu, West Bengal; Burma; China; Java; Malay Peninsula; Philippines; Sumatra; Singapore.*Remarks* : It is hitherto reported for the first time from Bastar.

Family VII PHYRRHOCORIDAE

Genus 12. *Dysdercus* Amyot E' Servielle, 18431843. *Dysdercus* Amy. & Serv, *Hem.* : 27213. *Dysdercus cingulatus* (Fabricius)1775. *Cimex cingulatus* Fabricius, *Syst. Ent.*, 719.1902. *Dysdercus cingulatus* Distant, *Fauna Brit. India*, 2 : 118*Material examined* : 3 exs.; Bijapur, Bastar; 8.ii.1990; R. K. Ghose Coll.*Diagnostic characters* : Coreium with a black discal spot; anterior collar to pronotum creamy white; head and pronotum reddish in colour.*Distribution* : Madhya Pradesh (Bastar), Assam, Meghalaya, Mysore, Nicobar islands, Sikkim; West Bengal; Burma, Malay Peninsula.*Remarks* : This is a cosmopolitan species and distributed in all zoogeographical regions.

Family VIII REDUVIDAE

Genus 13. *Euagoras* Burm., 18351825. *Euagoras* Burm. *Handb.* 2 : 226.14. *Euagoras plagiatus* (Burm.)

1834. *Zelus plagiatus* Burm., *Nov. Act. Ac. Nat. Cur.*, 16(1) : 303.

1861. *Euagorus plagiatus* : Stal, *Stett. ent. Zeit.*, 22 : 136

Material examined : 1 ex.; Bijapur, Bastar; 8.i.1990. R.K. Ghose coll.

Diagnostic characters : Posterior pronotal lobe with a broad central longitudinal spot; femora linearly streaked with a black and with a subapical black annulation. Posterior spines to pronotum curved and reflexed.

Distribution : Madhya Pradesh (Bastar); Assam, Andaman, Meghalaya; Burma; Java, Philippines.

Remarks : The species is hitherto reported for the first time from Bastar.

Genus 14. *Pirates* Serv. 1831

1831. *Pirates* Serv., *Ann. Sc. Nat.*, 23 : 215

Key to the species of the genus *Pirates*

- 1(2) Membrane spotted or marked with greyish spots and a line on basal margin white.....*quadrinotatus*
 2(1) Membrane spotted with black; basal margin not as above, a small black spot near base of clavus.....*atromaculatus*

15. *Pirates atromaculatus* (Stal)

1870. *Cleptocoris atromaculatus* Stal, *Ofv. Vet.-Ak. Forth.*, : 692.

1902. *Pirates atromaculatus* : Distant, *A. M. N. H.*, 7 (19) : 283.

1989. *Pirates atromaculatus* : Ghose, Biswas, Chakraborty & Sen, *Fauna of Orissa : State Fauna Series 114* : 208.

Material examined : 1 ex.; Kutru, Bastar; 2.ii.1990; R. K. Ghose coll. 1 ex.; Kerpe, 20 km N. W. of Kutru, Bastar; 31.i.1990; R. K. Ghose coll.

Diagnostic characters : Posterior lobe of pronotum scutellum, clavus, coreium and posterior lateral margin of pro-sternum cinnamon brown; antennae pilose, second joint almost as long as pronotum.

Distribution : Madhya Pradesh (Bastar); Assam; Meghalaya; Burma; Java; Philippines; Sri Lanka.

Remark : The species is a new record from the area of study.

16. *Pirates quadrinotatus* (Fabricius)

1798. *Reduvius quadrinotatus* Fabricius, *Ent. Syst. Suppl.* : 544.

1803. *Pirates quadrinotatus* : Fabricius, *Syst. Rhyng* : 277.

Material examined : 2 exs.; Bijapur, Bastar; 9.ii.1990; R. K. Ghose coll.

Diagnoste characters : Antennae pilose, second joint about as long as anterior lobe of pronotum; hemelytra piceous, corcium with a medial longitudinal ochraceous fascia which is inwardly amplified and angulated.

Distribution : Madhya Pradesh (Bastar), Bangladesh, Sri Lanka.

Remark : It is a new locality record from Indravati Tiger Reserve in Bastar district.

Genus 15. *Pygolamis* Germ., 1817

1817. *Pygolampis* Germ., *Faun. Ins. Eur.* : 8.

17. *Pygolampis unicolor* Walker

1873. *Pygolampis unicolor* Walker, *Cat. Het.*, 8 : 36.

1902. *Pygolampis unicolor* : Distant, *Fauna Brit. India*, 2 : 223.

Material examined : 1 ex.; Bijapur, Bastar; 4.ii.1990; R. K. Ghose coll.

Diagnostic characters : Head a little shorter than pronotum; antecocular portion faintly longitudinally ridged; postocular portion absolutely sulcate. Anterior lobe of pronotum sulcate, posterior lobe with 4 discal carina.

Distribution : Madhya Pradesh (Bastar), West Bengal.

Remarks : Present study recorded the species as new from Bastar area.

Genus 16. *Sastrapada* Amy. & Serv., 1843

1843. *Sastrapada* Amy. & Serv. *Hem* : 388

18. *Sastrapada baerensprungi* (Stal)

1859. *Harpagochara baerensprungi* Stal, *Ofv. Vet-Ak. Forth.* : 381.

1902. *Sastrapada baerensprungi* : Dist., *A. M. N. H.*, 7(10) : 177.

Material examined : 1 ex.; Bijapur, Bastar; 4.ii.1990; R. K. Ghose coll.

Diagnostic characters : Small discoidal spot to hemelytra and minute lateral abdominal spots black.

Distribution : Madhya Pradesh (Bastar); South Africa; Madagascar; Malayan Archipelago; Mauritius; Sri Lanka; Southern Palaearctic Region.

Remarks : The species constitutes new record from the area under study.

ACKNOWLEDGEMENTS

The authors are indebted to Dr. A. K. Ghose, Director, Zoological Survey of India for encouragement. Thanks are due to Dr. S. K. Tandon, Scientist 'SE' for numerous courtesies. Co-operation rendered by the members of staff, Hemiptera Section is thankfully acknowledged.

REFERENCES

- Distant W. L. 1902. *The Fauna of British India, Rhynchota*, 1 : 1-438.
- Distant. W. L. 1908. *Ibid.*, 4 : 1-501.
- Distant. W. L. 1910. *Ibid.*, 5 : 1-362.
- Mukhopadhyay, Ananda. 1988. Taxonomic study of Lygaeidae (Heteroptera : Insecta) from West Bengal (India). *Rec. zool. Surv. India*, Occ. Paper No. 107 : 1-72.

INSECTA : ODONATA

The order Odonata represent dragonflies. They help in controlling the noxious insects viz. mosquitoes, flies, aphids, etc. These insects occur in all ecosystems. About five hundred species and subspecies of Odonata occur in India. The present paper reports dragonflies from the Indravati Tiger Reserve, Bastar district, Madhya Pradesh. This work is based on a collection of two hundred seven adult dragonflies collected during the period January-February, 1990, by Dr. R. K. Ghose, Scientist 'SD' and his party.

References on Odonata of central India are available in Baijal & Agarwal (1955), Bhasin (1953), Fraser (1919b, c & d, 1920, 1934, 1935 and 1936), Hamailinen (1989), Laidlaw (1917, 1919 & 1920), Saini and Singh (1984), Mitra (1977, 1988 & papers in press).

Order ODONATA

Suborder ZYGOPTERA

Family CALOPTERYGIDAE

1. *Vestalis smaragdina* Selys

1879. *Vestalis smaragdina* Selys, *Bull. Acad. Belg.*, (2) 47 : 362.

Material examined : 1♂ 1♀; Bijapur; 9.ii.1990

Distribution : Present record : India : Madhya Pradesh : Bijapur

Past records ; INDIA : Shillong, Khasi Hills (Fraser 1934; Lahiri 1987).

Outside India : Bangladesh, Burma, China, Kampuchea, Laos, Malaysia, Nepal, Thailand, Vietnam (Tsuda 1991).

Remarks : A new record from the central India.

Family COCNAGRIONEDAE

2. *Aciagrion hisopa hisopa* Selys

1876. *Pseudagrion hisopa* Selys *Bull. Acad. Belg.* (2) 42 : 509.

1931. *Aciagrion hisopa hisopa*, Tsuda, *A distributional list of Odonata, 1991*, p.18

Material examined : 1♂; Bijapur; 29.i.1990.

Distribution : Present record : India : Madhya Pradesh : Bastar dist (Bidare).

Past records : India : Darjeeling (Selys 1891); Coorg, Deccan, Nilgiris, Travancore (Fraser 1931); Mahabaleswar, Satara, Poona (Fraser 1933).

Outside India : Bangladesh, Burma, Malayasia, Nepal, Pakistan, Singapore, Sri Lanka, Thailand, Vietnam (Tsuda 1991).

Remarks : New record from the Central India. It breeds both in rivers and ponds, visible in the grass fields.

3. *Aciagrion pallidum* Selys

1891. *Aciagrion pallidum* Selys, *Ann. Mus. Civ. Genova*, (2) 10 (30) : 512.

Material examined : 8♂ 4♀; Bijapur; 9.ii.1990

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur).

Past records : India : Dibrugarh (Laidlaw 1914); Assam, Arunachal Pradesh. Manipur (Lahiri 1979); Nurbong (bottom of Mahanadi valley of Darjilling); Nagpur, Mormugao, Kanara (Laidlaw 1919); Khandala, Mahabaleswar, Poona, Satara (Fraser 1924b); Seoni (Madhya pradesh) (Mitra 1988).

Outside India : Burma, Kampuchea, Nepal, Thailand, Vietnam (Tsuda 1931).

Remarks : The species is usually visible among tall pale grasses, in which it is inconspicuous due to its cryptic colouring. This feature is considered as the evolutionary adaptation of the species.

4. *Agriocnemis dabreui* Fraser

1919. *Agriocnemis puris* Laidlaw, *Rec. Indian Mus.*, 16 : 179.

Material examined : 1♂ 2♀; Kutru; 1.ii.1990.

Distribution : Present record : Present record : India : Madhya Pradesh : Bastar (Kutru).

Past records : India : Lamta, Balaghat (Madhya Pradesh); Gauhati, Toklai (Fraser 1933).

Outside India : Burma, Malayasia, Thailand and Vietnam (Tsuda 1911).

5. *Agriocnemis pieris* Laidlaw

1919. *Agriocnemis pieris* Laidlaw, *Rec. Indian Mus.*, 16 : 179.

Material examined : 5♀; Kutru; 1.ii.1990.

Distribution : Present record : India : Madhya Pradesh : Bastar (Kutru)

Past records : India ; Calcutta (Mitra 1983); North Kanara (Laidlaw 1919); Coorg, Malabar, Wynaad (Fraser 1924b); Nilgiris (Fraser 1931), Western Ghats, south Kanara (Fraser 1933).

Remarks : The species breeds in marshy grasslands.

6. *Agriocnemis pygmaea* (Rambur)

1842. *Agrion pygmaeum* Rambur, *Ins. Nevrop*, p.279.

Material examined : 2♂; Bijapur; 8.ii.1990.

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur).

Past records : India : Calcutta (Mitra 1983; Selys 1891); Nicobars (Hagen 1858); Rajasthan (Bose & Mitra 1976); Dhanbad (Prasad & Kumar 1977) : Assam, Arunachal Pradesh and Mizoram (Lahiri 1979); Chhindwara (Madhya Pradesh), Bhandara (Mitra 1988).

Outside India : Afghanistan, Australia, Bangladesh, Burma, China, Hongkong, Indonesia, Japan, Kampuchea, Malayasia, Nepal, Pakistan, Philippines, Papua New Guinea, Singapore, Seychelles, Sri Lanka, Thailand and Taiwan (Tsuda 1991).

Remarks : It breeds throughout the year.

7. *Ceriagrion coromandelianum* (Fabr.)

1798. *Agrion coromandelianum* Fabricius, *Ent. Syst. Suppl.*, p.287.

Material examined : 1♂; Kutru; 1.ii.1990; 1♂; Bijapur; 8.ii.1990.

Distribution : Present record : India : Madhya Pradesh ; Bastar (Bajapur & Kutru).

Past records : India : Madhya Pradesh : Bastar (Bajapur & Kutru).

Past records : India : Bollovumpattis, Cochin, Coorg, Deccan, Kanara, Malabar, Nilgiris (Fraser 1931); Mahabaleswar (Fraser 1921); Calcutta, Manipur (Mitra 1975a); Seoni (Madhya Pradesh); Bhandara (Mitra 1988,; Assam, Mizoram (Lahiri 1979).

Outside India : Burma, China, Nepal, Pakistan and Sri Lanka (Tsuda 1991).

Remarks : It breeds in weedy tanks. It is visible among the bushes on the banks and borders of the aquatic bodies.

8. *Pseudagrion hypermelas* Selys

1876. *Pseudagrion hypermelas* Selys. *Bull. Acad. Belg.*, (2) 42 : 519

Material examined : 1♂; Bidare; 29.i.1990

Distribution : Present record : India : Madhya Pradesh : Bastar (Bidare).

Past records : India : Kierpur (Laidlaw 1919); Deesa (Laidlaw 1916); Deccan areas of the Bombay Presidency and South Punjab (Fraser 1933); Chhindwara (Madhya Pradesh); Bhandara (Mitra 1988).

Remarks : Endemic to India. It haunts the weedy banks of streams and canals.

Family LESTIDAE

9. *Lestes umbrina* Selys

1891. *Lestes umbrina* Selys. *Ann. Mus. Civ. Genova*, (2) 10 (30) : 497.

Material examined : 4 ♀; Bijapur; 8, -9.ii.1990;

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur).

Past records : India : Duars of Bengal (Fraser 1930; Cutch, Allahabad (Fraser 1933); Nagpur (Laidlaw 1920); Waltair (Laidlaw 1920); Chandigarh (Tyagi 1984).

Outside India : Bangladesh, Burma, China, Iran (Tsuda 1991).

10. *Lestes viridula* Rambur

1842. *Lestes viridula* Rambur. *Ins. Nevrip.*, p.252.

Material examined : 6 ♂ 9 ♀; 5-9.ii.1990;

Distribution : Present record : India ; Madhya Pradesh : Bastar (Bijapur).

Past records : India : Coorg, Deccan (Fraser 1931); Uttar Pradesh (Bhasin 1953); Dehra Dun, Kangra (Singh & Prasad 1974); Bihar (Varshney & Prasad 1988).

Outside India : Thailand (Tsuda 1991).

Remarks : It is visible among long dry grass, the colour of which it simillates closely (Fraser 1933).

Suborder ANISOPTERA

Family AESHNIDAE

11. *Gynacantha bayadera* Selys

1891. *Gynacantha bayadera* Selys, *Ann. Mus. Civ. Genova*, 30, p.47.

1920. *Gynacantha millardi* Fraser, *J. Bomay nat. Hist. Soc.*, 27 : 147.

1991. *Gynacantha Bayadera*, Tsuda, *A distributional list of World Odonata, 1991*, p.223.

Material examined : Bastar : 7 ♂, 3 ♀ Bijapur 7-8.ii.1990

Distribution : Present record : India, Madhya Pradesh : Bastar (Bijapur).

Past record : India : Bengal, Poona (Fraser 1936); Sikkim (Selys 1891); Meghalaya (Lahiri 1987).

Outside India : Bangladesh, Burma, Indonesia, Malayasia, Nepal, Philippines, Papua New guinea, Singapore, Thailand and Taiwan (Tsuda 1991).

Remarks : The specimens in front of me agree with the descriptions of *Gynacantha millardi* Fraser; but here views of Tsuda (1991) has been followed. It is a new record from Madhya Pradesh as well as from central India.

Family LIBELLULIDAE

12. *Diplacodes trivialis* (Rambur)

1842. *Libellula trivialis* Rambur, *Ins. Nevrov.*, p.115.

Material examined : 9♂ 4♀; Bijapur; 5-9.ii.1990;

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur).

Past records : India : Assam (Laidlaw 1914; Lahiri 1989); Mahabaleswar (Fraser 1921); Barkuda Island (Fraser & Dover 1927); Anaimalai, Cochin, Coimbatore, Coorg, Deccan, Kanara, Malabar, Mudi hills, Niligiri Hills (Fraser 1931); Manipur (Mitra 1975); Tripura (Lahiri 1977); Mizoram (Lahiri 1979); Uttar Pradesh (Bhasin 1953); Chhindwara (Madhya Pradesh), Bhandara (Mitra 1988).

Outside India : Australia, Burma, China, Fiji, Hongkong, Indonesia, Japan, Laos, Malaysia, Nepal, Philippines, Palau, Papua, New Guinea, Solomon Islands, Seychelis, Sri Lanka, Thailand, Taiwan, Vietnam, Vanuatu (Tsuda 1991).

Remarks : It wanders about near and away from water; sometimes follow passer by on the grassy path.

13. *Indothemis limbata sita* Champion

1923. *Indothemis limbata sita* Champion, *Ann. Nat. Hist.*, (9) 11 : 28.

Material examined : 1♀; Kutru; 30.i.1990;

Distribution : Present records : India : Madhya Pradesh : Bastar (Bijapur & Kutru).

Past records : India : Coorg (Fraser 1936).

Outside India : Sri Lanka (Tsuda 1991).

Remarks : New record from the central India.

14. *Lathrecista asiatica asiatica* (Fabr.)

1798. *Libellula asiatica* Fabricius, *Ent. Syst. Suppl.*, p.283.

Material examined : 2♀; Bijapur; 4.ii.1990. 1♀; Kondagaon; 23.i.1990; 2♂; Kutru; 30.i.1990 and 1.ii.1990.

Distribution : Present records : India : Madhya Pradesh : Bastar (Bijapur, Kondagaon & Kutru).

Past records : India : Sibsagar (Bhasin 1953); Calcutta (Mitra 1983), Howrah (Dasgupta 1957); Barkuda Island (Fraser & Dover 1922), Coorg, Khandala, Nilgiris, Palnis (Fraser 1924b); Deccan, Malabar (Fraser 1931). Bombay, Poona (Fraser 1978).

Outside India : Burma, China, Fiji, Indonesia, Japan, Malayasia, Philippines, Papua New Guinea, Singapore, Thailand, Taiwan, Samoa, Sri Lanka (Tsuda 1991).

Remarks : New report from central India.

15. *Neurothemis fulvia* (Drury)

1773. *Libellula fulvia* Drury, *All. Exot. Ins.* 2 : 84.

Material examined : 3♂ 1♀; Bijapur; 4-9.i.1990. 2♂; Kutru; 28-30.i.1990.

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur & Kutru).

Past records : India : Dejoo, North Lakhimpur, Dibrugarh (Laidlaw 1914) : Sibsagar, Buxa, Singhbhum, Poona, Bombay (Bhasin 1953); Manipur (Lahiri 1979); Saugor (Bajjal & Agarwal 1955); Calicut (Selys 1891); Anaimalai, Cochin, Coorg, Deccan, Kanara, Malabar, Nilgiris, Travancore (Fraser 1931).

Outside India : Burma, China, Hongkong, Indonesia, Kampuchea, Laos, Malayasia, Nepal, Thailand (Tsuda 1991). Taiwan (Lieftinck *et. al* 1984).

Remarks : Addition to the Odonata fauna of central India. The species breeds in weedy aquatic bodies.

16. *Neurothemis intermedia intermedia* (Rambur)

1842. *Libellula intermedia* Rambur, *Ins. Nevrop.*, p.91.

Material examined : 2♂ 6♀; Bijapur; 4-9.ii.1990.

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur & Kutru).

Past records : India : Arunachal Pradesh, Assam, Mizoram (Lahiri 1979); Sikkim (Lieftinck 1948); Buxa, Singhbhum, Chandanpur, Gorakhpur, Surpur (Bhasin 1953); Doon Valley (Singh & Prasad 1976; Kangra (Prasad 1976); Bombay, Khandala, Poona (Fraser 1924), Chhindwara (Madhya Pradesh) (Mitra 1988); Anaimalai, Coorg, Deccan, Kanara, Malabar, Nilgiris (Fraser 1931); Silent valley (Rao & Lahiri 1983).

Outside India : Bangladesh, Burma, China, Malaysia, Nepal, Sri Lanka (Tsuda 1991).

17. *Orthetrum pruinosum neglectum* (Rambur)

1842. *Libellula neglecta* Rambur, *Ins. Nevrop.*, p.86.

Material examined : 1♂; Kutru; 30.i.1990.

Distribution : Present record : India : Madhya Pradesh : Bastar (Kutru).

Past records : India : Assam (Laidlaw 1914), Anaimalai and Mudi Hills, Bollovoom pattis, Cochin, Coorg, Deccan, Kanara, Malabar, Nilgiris, Palnis, Travancore (Fraser 1931); Tripura (Mitra & Sen 1975), Arunachal Pradesh, Manipur and Mizoram (Lahiri 1979); Dhanbad (Prasad & Kumar 1977); Betul and Chhindwara (Madhya Pradesh), Mitra 1988).

Outside India : Afghanistan, Bangladesh, Burma, China, Hongkong, Indonesia, Japan, Laos, Malaysia, Nepal, Singapore, Sri Lanka, Thailand, Taiwan, Vietnam (Tsuda 1991).

18. *Orthetrum sabina* (Drury)

1770. *Libellula sabina* Drury, *All. Exot. Ins.* 1 : 114.

Material examined : 1♂; Bijapur; 7.ii.1990.

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur).

Past records : India : Mahabaleswar (Fraser 1921); Barkuda Island (Fraser & Dover 1922); Anaimalai, Mudi Hills, Coimbatore, Cochin, Coorg, Kanara, Malabar, Nilgiris, Palni Hills (Fraser 1931); Assam, Bihar, Panjab Uttar Pradesh (Bhasin 1953) : Nainital (Sahni 1964); Gwalior (Baigal & Agarwal 1955); Calcutta (Mitra & Lahiri 1974); Tripura (Mitra & Sen 1975); Dhanbad (Prasad & Kumar 1977); Arunachal Pradesh (Lahiri 1979); Andaman Islands (Fraser 1924a).

Outside India : Afghanistan, Algeria, Australia, Burma, China, Cyprus, Egypt, Hongkong, Indonesia, Iran, Iraq, Israel, Japan, Kampuchea, Laos, Malayasia, Micronesia, Nepal, Oman, Philippines, Papua New Guinea, Qatar, Saudi Arabia, Sudan, Singapore, Somalia, Syria, Sri Lanka, Thailand, Tunisia, Turkey, Taiwan, Vietnam (Tsuda 1991).

19. *Pantala flavescens* (Fabricius)

1798. *Libellula flavescens* Fabricius, *Ent. Syst. Suppl.*, p. 285

Material examined : 1♂; Bijapur; 23.i.1990.

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur).

Past records : India : Throughout India,

Outside India : Tropical and circum tropical.

Remarks : Migratory species.

20. *Trithemis aurora* (Burmeister)

1839. *Libellula aurora* Burmeister, *Handb. Ent.*, 2 : 859.

Material examined : 1♂; Bidare; 29.i. 1990. 6♂ 6♀; Bijapur; 4-5.ii. 1990; 6♂ 2 ♀; Kutru; 30.i.1990.

Distribution : Present records : India : Madhya Pradesh : Baster (Bidare, Bijapur, Kurtu).

Past records : India : Bengal (Sclys 1891); Assam (Laidlaw 1914); Anaimalai and Mudi Hills (Fraser 1931); Khandala, Mahabaleswar, Poona (Fraser 1942b); Arunachal Pradesh, Manipur, Mizoram (Lahiri 1979); Rajasthan (Bose & Mitra 1976); Betul, Chhndwara (Madhya Pradesh) (Mitra 1988).

Outside India : Burma, China, Hongkong, Indonesia, Japan, Kampuchia, Laos, Malaysia, Nepal, Philippines, Singapore, Sri Lanka, Thailand, Taiwan, Vietnam (Tsuda 1991).

21. *Trithemis festiva* (Rambur)

1842. *Libellula festiva* Rambur, *Ins. Nevrop.*, p. 92.

Material examined : 1♂; Bijapur; 7.ii. 1990.

Distribution : Present record : India : Madhya Pradesh : Bastar (Bijapur).

Past records : India : Deejoo, North Lakhimpur (Laidlaw 1914); Arunachal Pradesh, Manipur, Mizoram (Lahiri 1979); Meghalaya (Lahiri 1987); Almora, Bishanpur, Dehra Dun, Mothuonwala, Nalapani, Saharanpur, Nilgiris, Palnis, Travancore (Fraser 1931),

Outside India : Afghanistan, Burma, China, Cyprus, Hongkong, Indonesia, Iraq, Kampuchia, Laos, Malaysia, Nepal, Philippines, Papua New Guinea, Singapore, Sri Lanka, Thailand, Turkey, Taiwan, Vietnam (Tsuda 1991).

Remarks : New record from the central India.

22. *Tholymis tillarga* (Fabr.)

1798. *Libellula tillarga* Fabricius; *Ent. Syst. Suppl.*, p. 285.

Material examined : 4♂ 4♀; Bijapur; 23.i. 1990-8.ii. 1990.

Distribution : Present records : India : Madhya Pradesh : Baster (Bijapur).

Past records : India : Deejoo, North Lakhimpur (Laidlaw 1914); Barkuda Island (Fraser & Dover 1922); Arunachal Pradesh (Lahiri 1979); Meghalaya (Lahiri 1987); Kangra (Prasad 1976); Uttar Pradesh (Ram *et al.* 1983); Trichur (Baijlal & Agarwal 1955); Bolloovum pattis, Cochin, Coorg, Deccan, Kanara, Malabar, Nilgiris (Fraser 1931); Poona (Fraser 1919); Laccadives (Fraser 1924b).

Outside India : Throughout southern Asia to Australia, and Oceania westwards to Africa and Madagascar.

Remarks : It is crepuscular in habit and move along the edges of ponds.

SUMMARY

The paper reports twenty two species of odonates of which ten species, viz., *Aciagrion l. hisopa*, *Agriocnemis pieris*, *Vestalis smaragdina*, *Gynacantha bayadera*, *Indothemis limbata sita*, *Lathrecista*

a. asiatica, *Neurothemis fluviae*, *Pantala flavescens*, *Trithemis festiva* and *Tholymis tillarga* are new records from the central India. At present, only forty eight species are known from the central India.

Among the species recorded, only *Pantala flovesceus* have been recorded as migratory spices.

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Appendix I
(Odonata of central India)

Suborder ZYGOPTERA

Family PROTONEURIDAE

1. *Disparoneura quadrimaculata* (Rambur)
2. *Elatoneura nigerrima* (Laidlaw)
3. *Elatoneura nihari* sp. n.

*Elatoneura nihari** sp. n.

Male : Abdomen 26 mm; hindwing 15 mm.

Head : Labium yellow, labrum and clypeus yellow with black markings; frons and vertex yellow with a black line across the vertex joining the bases of antennae. Occiput yellow, *prothorax* brownish yellow, *thorax* yellow, a fine black line on the middorsal carina, two thick black lines, one on either side of femora brown. *Wings* hyaline, 11 post nodals in the forewings. 10 in the hindwings; Pterostigma yellow. Cu_1 in the forewing 4 cell long, that of hind wing 5 cell long. ac meets ab distal to the origin of latter. *Abdomen* yellow, with brown mark at the apex of 1 to 6 segments: 6 to 7 yellowish brown 8 and 9 yellow with dark brown spot on the lateral side. *Anal appendages* usual generic shape; yellowish brown, tip of the inferior black, ventral spine of the superior bifid, inferiors longer than superiors.

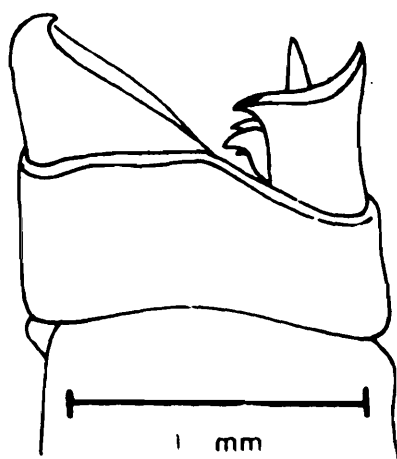


Figure 3 : Anal appendage of *Elatoneura nihari* Muta

appendages. The specimen differ from *Elatoneura atkinsoni* (Selys) in length of body parts and colour of different body parts.

The species was sent to Late Dr. M. A. Lieftinck, Rhenen, The Netherlands, for comment. Unfortunately he could not fit it to any known species of the genus.

Material : Holotype : 1♂ (on board) : India : Madhya Pradesh : Chhindwara, November 20, 1971, coll. V. D. Srivastava and party. ZSI Registration No. 4096/H13

The specimen is deposited in the National Zoological Collection, Zoological Survey of India, Calcutta along with the comments of late Dr. M. A. Lieftinck.

Family PLATYENEMIDIDAE

4. *Copera maiginipes* (Rambur)

Family COENAGRIONIDAE

5. *Aciagrion pallidum* Selys
6. *Agriocnemis dabreui* Fraser
7. *Agriocnemis pygmaea* (Rambur)
8. *Cercion calamorum dyeri* (Fraser)
9. *Cercion malayanum* (Selys)
10. *Ceriagrion coromandelianum* (Fabr.)
11. *Ceriagrion olivaceum* Laidlaw
12. *Enallagma parvum* Selys
13. *Ischnura aurora aurora* (Brauer)
14. *Ischnura senegalensis* (Rambur)
15. *Pseudagrion decorum* (Rambur)
16. *Pseudagrion hypermelas* Selys
17. *Pseudagrion microcephalum* (Rambur)
18. *Pseudagrion rubriceps rubriceps* Selys
19. *Rhodischnura nursei* Morton

Family LESTIDAE

20. *Lestes umbrina* Selys
21. *Lestes viridula* Rambur

Family CHLOROCYPHIDAE

22. *Libellago lineata lineata* (Burm.)
23. *Rhinocypha bisignata* Selys

Suborder ANISOPTERA

Family GOMPHIDAE

24. *Ictinogomphus rapax* (Rambur)
25. *Onychogomphus orammicus* (Rambur)

Family LIBELLULIDAE

26. *Acisoma panorpoides panorpoides* Rambur
27. *Brachythemis contaminata* (Fabr.)
28. *Bradinopyga geminata* Rambur
29. *Crocothemis servilia servilia* (Drury)
30. *Diplacodas trivialis* (Rambur)
31. *Indothemis carnatica* (Fabr.)
32. *Neurothemis intermedia intermedia* (Rambur)
33. *Orthetrum cancellatum cancellatum* (Linne.)
34. *Orthetrum priusinsoum neglectum* (Rambur)
35. *Orthetrum sabina sabina* (Drury)
36. *Orthetrum taeniolatum* (Schneider)
37. *Potamarcha congener* (Rambur)
38. *Tramea basilaris burmeisteri* Kirby
39. *Trithemis aurora* (Burmeister)

REFERENCES

- Baijal, H. N. and J. P. Agarwal 1955. Opuscula Libellulologica. I. *Agra Univ. J. Res. (Sci.) Agra*, 4 : 455-470.
- Bhasin, G. D. 1953. Odonata. *Indian forest half.*, Dehra Dun, 121 : 63-69.
- Bose, G. and T. R. Mitra 1976. The Odonata fauna of Rajasthan, *Rec. zool. Surv. India*, Calcutta, 71 : 1-11.
- Dasgupta, J. B. 1957. Cytological studies on the Indian dragonflies. II. A study of the chromosomes during meiosis in thirty species of Indian Odonata (Insecta). *Proc. zool. Soc.*, Calcutta, 10 : 1-65.
- Fraser, F. C. 1918. Indian dragonflies. Part 3. *J. Bombay nat. Hist. Soc.*, 16 : 141-171.
- 1919(a). Indian dragonflies. Part 4. *J. Bombay nat. Hist. Soc.*, 16 : 488-517.
- 1919(b). Indian dragonflies. Part 5. *J. Bombay nat. Hist. Soc.*, 16 : 734-744.
- 1919(c). Descriptions of four new Indian Odonata. *Rec. Indian Mus.*, Calcutta, 16 : 451-455.
- 1919(d). Descriptions of new Indian Odonata larvae and exuviae. *Rec. Indian Mus.*, Calcutta, 16 : 459-467.
1920. Notes on Indian dragonflies. *Rec. Indian Mus.*, Calcutta, 19 : 31-33.
1921. A list of dragonflies recorded from Mahabaleswar. *J. Bombay nat. Hist. Soc.*, 27 : 540-544.
- 1924(a). Report on a collection of dragonflies (Odonata) from the Andaman Islands. *Rec. Indian Mus.*, Calcutta, 26 : 409-413.
- 1924(b). A survey of the Odonata (dragonfly) fauna of western India with special remarks on the genera *Macromia* and *Idionyx* and description of thirty new species with Appendix I, II. *Rec. Indian Mus.*, Calcutta, 26 : 423-522.
1930. Indian dragonflies, part 35. *J. Bombay nat. Hist. Soc.*, 34 : 87-101.
1931. Additions to the survey of the Odonata (dragonfly) fauna of western India with descriptions of nine new species. *Rec. Indian Mus.*, Calcutta, 33 : 443-474.

- 1933, 1934 & 1936. Fauna of British India, including Ceylon and Burma. Odonata, Vols I : xii + 423; II : xxiii + 398; III : xi + 461. Taylor & Francis Ltd., London.
- Fraser, F. C. and C. Dover. 1922. The dragonflies of Barkuda Island. *Rec. Indian Mus.*, Calcutta, 24 : 303-311
- Hagen, Dr. 1858. Odonata, *Verh. zool bot. Ges Wien*, 8 : 478-481
- Lahiri, A. R. 1977. New records of Odonata from Tripura and Arunachal Pradesh. *Proc. zool. Soc.*, Calcutta, 30 : 45-49.
1979. Odonata (Insecta) from different states of north eastern India, *Oriental Ins.*, Delhi, 13 : 119-132.
1987. Studies on the Odonate fauna of Meghalaya, *Rec. zool. surv. India*, Occ. Pap, No. 99 : pp. 402.
- Laidlaw, F. F. 1914. Odonata. *Rec. Indian Mus.*, Calcutta, 8 : 335-349.
1916. Notes on Oriental dragonflies in the Indian Museum. No. 4. The genus *Pseudagrion*. *Rec. Indian Mus.*, Calcutta, 12 : 21-25.
1917. A list of the dragonflies recorded from the Indian Empire with species reference to the collection of the Indian Museum. Part I. The Family Agrioninae. *Rec. Indian Mus.*, Calcutta 13 : 321-348.
1919. A list of the dragonflies recorded from the Indian Empire with species reference to the collection of the Indian Museum. Part II. *Rec. Indian Mus.*, Calcutta, 16 : 169-195.
1920. A list of the dragonflies recorded from the Indian Empire with species reference to the collection of the Indian Museum. Part III. *Rec. Indian Mus.*, Calcutta, 19 : 145-163.
- Lieftinck, M. A. 1948. Odonata. *Arkiv. For. Zoologi*, 41 A no. 10 : 1-23
- Lieftinck, M. A., J. C. Lien and T. C. Maa. 1984. Catalogue of Taiwanese Dragonflies (Insecta : Odonata), pp. 81. Taiwan.
- Mitra, T. R. 1975. On a collection of Odonata from Manipur, India. *Ent. News, USA*, 86 : 213-216.
1977. Field observations on the death of adult dragonflies. *Odonatologica*. Utrecht, 6 : 27-33.
1983. A list of Odonata of Calcutta. *Entomologist's mon. Mag.*, Oxford, 119 : 29-31.
1988. Note on Odonata fauna of central India. *Rec. zool. Surv. India*, Calcutta, 83 : 69-81 (1986).
- (in press) Note on taxonomic status of five Indian Odonata. *J. Bengal nat. Hist. Soc.*, Darjeeling.
- (in press) Taxonomic status of *Anax marginope*, *Orolestes motes* and *Platylestes orientalis* described by Baiyal and Agarwal.
- Mitra, T. R. and A. R. Lahiri. 1974. Notes on the distribution of some dragonfly species (Odonata : Anisoptera) of Bengal, *Entomologist's Rec. J. Var.*, Kent, 86 : 73-74.
- Mitra, T. R. and G. S. Sen. 1975. first records of dragonflies (Odonata, Anisoptera) from Tripura, (India). *Entomologist's Rec. J. Var.*, Kent, 87 : 119-120.
- Prasad, M. 1976. Odonate of district Kangra (Himachal Pradesh). *Rec. zool. Surv. India*, Calcutta, 71 : 95-119.
- Prasad, M. and A. Kumar. 1977. New records of Odonata from Dhanbad, Bihar. *Newsl. zool. Surv. India*, Calcutta, 3 : 433-435.
- Prasad, M. and Varshney, R. K. 1988. The Odonata of Bihar, India. *Rec. zool. Surv. India*, Occ. pap. No. 110, pp.47.

- Ram, R., V. D. Srivastava and M. Prasad. 1983. A note on a collection of Odonata from eastern Uttar Pradesh. *Notul. Odonatol.*, Utrecht , 2 : 15-16.
- Rao, K. R. and A. R. Lahiri. 1983. First records of Odonates (Arthropoda : Insecta) from the Silent Valley and New Amacambalam Reserved Forests. *J. Bombay nat. Hist. Soc.*, 79 : 557-562
- Sahni, D. N. 1964. Survey of the Insect fauna of Naini Tal (Odonata : Anisoptera). *Agra Univ. J. Rec. (Sci.)*, Agra 13 : 89-93.
- Sahni, R. S. and R. S. Singh. 1984. Certain aquatic insects of Rewa with notes on their habitat. *Rec. zool. Surv. India*, Calcutta, 81 : 345-354 (1983).
- Selys-Longchamps, E. De. 1891. Odonates in Viaggio Di Leonondo Fea in Birmania Regioni Vicine. *Ann. del. Mus. Civ. dist. Nat.*, Seria 2, 10 (30) : 433-518.
- Tsuda, S. 1991. A distributional list of world Odonata 1991; pp. 362. Osaka.
- Tyagi, B. 1984. List of Odonata of the Chandigarh Union territory and the Chandigarh Siwalik out crops, India. *Notul. Odonatol.*, Utrecht, 2 : 61-62.

INSECTA : LEPIDOPTERA

The Zoologica Survey of India conducted several faunistic surveys to different Tiger Reserves in India. This paper is based on a collection of Lepidoptera made by Dr. R. K. Ghose from Indravati Tiger Reserve, Bastar District, Madhya Pradesh. It deals with 21 species in 14 genera distributed over 6 families of Rhopalocera and 4 species in 4 genera spread over 4 families of Heterocera. Original and current references and also the geographical distribution of each species have been given. In this connection the works of Bingham (1905, 1907), Evans (1932), Hampson (1894, 1896, 1898, 1900), Talbot (1939, 1947), Gupta and Shukla (1987), Varshney (1979), Wintet-Blyth (1957) and Singh (1977) have been consulted.

TAXONOMIC ACCOUNT

Family PAPILIONIDAE

1. *Papilio demoleus* Linnaeus

1758 *Papilio demoleus* Linnaeus, *Syst. Nat.*, 10., 1 : 464.

1987 *Papilio demoleus*, Gupta and Shukla, *Rec. zool. Surv. India*, Occ. Paper No. 106 : 3.

Material examined : 3 exs.; Bijapur, Bastar District, Madhya Pradesh; 4.ii.1990; R.K. Ghose coll.

Distribution : Iran, Arabia, India, Sri Lanka, Burma, Malaysia, Lesser Sunda Islands, North Australia and South Papua.

2. *Papilio polytes* Linnaeus

1758. *Papilio polytes* Linnaeus, *Syst. Nat.*, 10 ed., 1 : 460.

1981. *Papilio polytes*, Arora and Mandal, *Rec. zool. Surv. India*, Occ. Paper, No. 29 : 29-30

Material examined : 1 ex; Kutru, Bastar District, Madhya Pradesh, 1.ii.1990; R. K. Ghose coll.

Distribution : West and south China, India and as far as to Timor and neighbouring Islands except Timimber.

3. *Papilio paris* Linnaeus

1758. *Papilio paris* Linnaeus, *Syst. Nat.*, 10 ed., 1 : 471

1987. *Danus chrysippus*, Gupta and Shukla, *Rec. zool. Surv. India*, Occ. Paper, No. 106 ; 16-17.

Material examined : Nil.

Distribution : Indo-Malayan Region. Sulawesi and Key Islands.

Family DANAIDAE

4. *Danas chrysippus* (Linnaeus)

1758. *Papilio chrysippus* Linnaeus, *Syst. Nat.*, 10 ed., 1 : 471

1987. *Danas chrysippus*, Gupta and Shukla, *Rec. zool. Surv. India*, Occ. Paper No. 106 : 16-17.

Material examined : 4 exs; Bidare, Bastar District, Madhya Pradesh; 29.i.1990; R. K. Ghose coll.

Distribution : Indo-Malayan Region. Sulawesi and Key Islands.

5. *Euploea core* (Cramer)

1780. *Papilio core* Cramer, *Pap. exot.*, 3 : pl. 266, figs. E.F.

1987. *Euploea core*, Gupta and Shukla, *Rec. zool. Surv. India*, Occ. Pap. No. 106 : 15-16

Material examined : 2 exs.; Kutru, Bastar District, Madhya Pradesh; 28.i.1990; R. K. Ghose coll. 2 exs.; Bidare, Bastar District, Madhya Pradesh; 29.i.1990; R. K. Ghose coll. 4 exs.; Bijapur, Bastar District, Madhya Pradesh; 4-8.ii.1990; R.K. Ghose coll.

Distribution : India, Sri Lanka, Indo-China, Sumatra and Java.

Family ACRAEIDAE

6. *Acraca violae* (Fabricius)

1775. *Papilio violae* Fabricius, *Syst. Ent.* : 460.

1987. *Acraca violae*, Gupta and Shukla, *Rec. zool. Surv. India*, Occ., Paper. No. 106 : 18-19.

Material examined : 24 exs.; Bijapur, Bastar District, Madhya Pradesh; 4-9.ii.1990; R. K. Ghose coll.

Distribution : Peninsular India and Indo-gangetic plains up to lower hills of Himalaya and Sri Lanka.

Family PIERIDYE

7. *Delias eucharis* (Drury)

1773. *Papilio eucharis* Drury, *Ill. exot. Ent.*, 2 : 16, Pl. 10, figs. 5-6.

1987. *Delias eucharis*, Gupta and Shukla, *Rec. zool. Surv. India*, Occ. Pap. No. 106 : 6

Material examined : 9 exs.; Kutru, Bastar District, Madhya Pradesh; 28.i.1990; R.K. Ghose coll. 1 ex.; Bidare, Bastar District, Madhya Pradesh; 29.i.1990; R.K. Ghose coll.

Distribution : Lower slopes of the Himalayas, Peninsular India and Sri Lanka.

8. *Eurema hecabe* (Linnaeus)

1758. *Pailipo hecabe* Linnaeus, *Syst. Nat.*, 10 ed., 1 : 470.

1986. *Eurema hecabe*, Ghose and Choudhury, *Rec. zool. Surv. India*, 84 (1-4) : 117.

Material examined : 7 exs.; Bijapur, Bastar District, Madhya Pradesh; 4-9.ii.1990; R. K. Ghose coll.

Distribution : Ethiopian, Oriental, Australian and Palaearctic regions, east to Korea and Japan

9. *Eurema laeta* (Boisduval)

1836. *Terias Laeta* Boisduval, *Spec. Gen Lep.*, 1 : 674.

1986. *Eurema laeta*, Ghose and Chaudhury, *Rec. zool. Surv. India*, 84(1-4) : 117.

Material examined : 4 exs.; Bijapur, Bastar District, Madhya Pradesh; 4-9.ii.1990; R.K. Ghose coll.

Distribution : Soviet Russia (Amur), North and South China, Vietnam (Tonkin, Annam), India, Burma, Java, Kei Island, the Philippines, Timor and Japan.

Family NYMPHALIDAE

10. *Precis iphita* (Cramer)

1749. *Papilio iphita* Cramer, *Pap. exot.*, 3 : 209, figs. C. D.

1986. *Precis iphita*, Ghose and Choudhury, *Rec. zool. Surv. India*, 34(1-40) : 112

Material examined : 2 exs.; Bijapur, Bastar District, Madhya Pradesh; 6-9.ii.1990; R. K. Ghose coll.

Distribution : Central to South China (Taiwan), India, Sri Lanka and Burma.

11. *Precis atlites* (Linnaeus)

1763. *Papilio atlites* Linnaeus, *Centur Ins.*, p.24.

1986. *Precis atlites*, Ghose and Choudhury, *Rec. Zool. Surv. India*, 84 (1-4) 111-112.

Material examined : 1 ex.; Bijapur, Bastar District., Madhya Pradesh; 4.ii.1990; R.K. Ghose coll.

Distribution : Sri Lanka, India, Burma and central and south china.

12. *Precis lemonias* (Linnaeus)

1758. *Papilio lemonias* Linnaeus, *Syst. Nat.*, 10 ed, 1 : 479.

1987. *Precis lemonias*, Chose and Choudhury, *Rec. zool. Surv. India*, 84 (1-4) : 111-112.

Material examined : 1 ex.; Bidare, Bastar District, Madhya Pradesh; 29.i.1990; R. K. Ghose coll.

Distribution : South china, Taiwan, the Philippines, Burma, India and Sri Lanka.

13. *Neptis hordonia* (Stoll)

1791. *Papilio hordonia* Stoll, In *Cramer's Pap. Exot. Suppl.*, pl.33, figs. 4,40.

1987. *Neptis hordonia*, Gupta and Shukla, *Rec. zool. surv. India. Occ. Pap. No. 106* : 37

Material examined : 3 exs.; bijapur, Bastar District, Madhya Pradesh; 8-9.ii.1990; R.K. Ghose coll.

Distribution : India (Uttar Pradesh, Madhya Pradesh, South India and Andaman Islands) and Burma.

14. *Neptis hylas* (Linnaeus)

1758. *Papilio hylas* Linnaeus, *Syst. Nat.*, 10 ed, 1 : 486.

1986. *Neptis hylas*, Ghose and Chaudhury, *Rec. zool. Surv. India*, 84 (1-4) : 110

Material examined : 5 exs.; Bijapur, Bastar District, Madhya Pradesh; 9.ii.1990; R. K. Ghose coll.

Distribution : Sri Lanka, India, Burma, Malayan Subregion (including Lesser Sunda Islands), Palaearctic Asia and Europe.

15. *Phalanta alcippe* (Cramer)

1782. *Papilio alcippe* Cramer, *Pap. exot.*, 43, pl. 389. fig. G.H.

1983. *Phalanta alcippe*, Varshney, *Rec. zool. Surv. India. Occ. Paper, No. 47* : 26.

Material examined : 1 ex.; Bijapur, Bastar District, Madhya Pradesh; 8.ii.1990; R. K. Ghose coll.

Distribution : India (Sikkim, Assam), Burma, Tenasserim and extending Malaya Peninsula.

Remarks : This species is a new record from Bastar District, Madhya Pradesh.

16. *Parathyma ranga* (Moore)

1857. *Athyma ranga* Moore, *Cat. Lep. Mus. E.I.C.*, 1 : 175, pl. 5a, fig.6.

1983. *Parathyma ranga*, Varshney, *Rec. zool. Surv. India. Occ. Paper*, No. 47 : 36.

Material examined : 1 ex.; Bijapur, Bastar District, Madhya Pradesh; 8.ii.1990; R. K. Ghose coll.

Distribution : Southern India to Uttar Pradesh, though Sikkim, Assam, Bhutan to Burma.

17. *Parathyma selenophora* (Kollar)

1844. *Limenitis selenophore* Kollar, *Hungels Kaschmir*, 4(2) : 426, pl.7, figs. 1, 2.

1983. *Parathyma selenophora*, Varshney, *Rec. zool. Surv. India. Occ. Pap.* No. 47 : 37.

Material examined : 1 ex.; Bijapur, Bastar District, Madhya Pradesh, 8.ii.1990; R.K. Ghose coll.

Distribution : Southern India, Himalayas, Assam and Burma.

Family SATYRIDAE

18. *Mycalesis visala* Moore

1857. *Mycalesis visala* Moore, *Cat. Lep. Mus. Ins. E.I.C.*, 1 : 230.

1987. *Mycalesis visala*, Gupta and Shukla, *Rec. zool. Surv. India, Occ. Pap.*, No. 106-21.

Material examined : 1 ex.; Bijapur, Bastar District, Madhya Pradesh; 7.ii.1990; R.K. Ghose coll.

Distribution : India (Madhya Pradesh and Uttar Pradesh to Assam) and Burma.

19. *Orsotrioena medus* (Fabricius)

1775. *Papilio medus* Fabricius, *Syst. Ent.* : 488.

1987. *Orsotrioena medus*, Gupta and Shukla, *Rec. zool. Surv. India, Occ. Paper* No. 106 : 25.

Material examined : 1 ex.; Bijapur, Bastar District, Madhya Pradesh; 7.ii.1990; R.K. Ghose coll.

Distribution : India, Nepal, Burma, South china (Hainan), Vietnam (Tonkin), australia and Papua.

Family LYCANIDAE

20. *Castalius rosimen* (Fabricius)

1775. *Papilio rosimon* Fabricius, *Syst. Ent.* : 523.

1987. *Cqstalius rosimon*, Gupta and Shukla. *Rec. zool. Surv. India, Occ. Paper*, No, 106 : 44-45.

Material examined : 2 exs.; Bijapur, Bastar District, Madhya Pradesh; 8-9.ii.1990; R.K. Ghose coll.

Distribution : Sri Lanka, Pakistan, India and Burma.

21. *Lampides bocticus* (Linnaeus)

1767. *Papilio bocticus* Linnaeus, *Syst. Nat.*, 12 ed, 1 : 789

1987. *Lampides bocticus*, Gupta and Shukla, *Rec. zool. Surv. India*, Occ. Pap No. 106. 106 : 53.

Material examined : 1 ex.; Bijapur, Bastar District, Madhya Pradesh; 8.ii.1990; R. K. Ghose coll.

Distribution : Sri Lanka, India, Nepal and Burma.

Family ARCTIIDAE

22. *Cyana bianca* (Walker)

1856. *Bizone bianca* Walker, *List Lep. Net. Brit. Mus.*, 7 : 1684.

1983. *Cyana bianca*, Arora, *Rec. zool. Surv. India*, Occ. Paper, No. 60 : 35

Material examined : 1 ex.; Bijapur, Bastar district, Madhya Pradesh, 23.i.1990; R. K. Ghosh coll.

Distribution : India (Sikkim, Assam, Andaman Island), Burma and Malayasia.

Remarks : This species is a new record from Bastar district as also from Madhya Pradesh.

Family CTENUCHIDAE

23. *Syntomis passalis* (Fabricius)

1781. *Zygevena passalis* Fabricius, *Sp. Ins.*, 2 : 159.

1896. *Syntomis passalis*, Hampson, *Cat. Lep. Phab. Brit. Mus.*, 1 : 86.

Material examined : 1 ex.; Bijapur, Bastar District, Madhya Pradesh; 5.ii.1990. R. K. Ghose coll.

Distribution : India (Sikkim, Assam), Nepal and Burma.

Remarks : This species is a new record from Bastar District as also from Madhya Pradesh.

Family NOCTUIDAE

24. *Ophiusa onelia* (Guenee)

1852. *Naxia onelia* Guenee, *Noct.*, 3 : 258, 1679.

1894. *Ophiusa onelia*, Hampson, *Fauna of Brit. India*, Moth, 2 : 502.

Material examined : 1 ex.; Bijapur, Bastar District, Madhya Pradesh; 23.i.1990. R. K. Ghose coll.

Distribution : Sri Lanka, throughout India, Burma, China, Penang and Java.

25. *Diaphania laticostalis* (Guenee)

1854. *Margaroder laticostalis* Guenee, Delt et. Pyral., : 303.

1939. *Diaphania laticostalis*, Klima, *Lep Catalogus*, 89(2) : 247-248.

Material examined : 1 ex.; Bijapur, Bastar district, Madhya Pradesh; 6.ii.1990; R. K. Ghose coll.

Distribution : Sri Lanka, throughout India (including Andaman), Burma, Pulolaut, Sumbawa, Cirma and New Hebrides.

SUMMARY

The Paper incorporates the account of 25 species of Lepidoptera belonging to 10 families of Rhopalocera and Heterocera from Indravati Tiger Reserve in the Bastar District of Madhya Pradesh. Of these three are recorded for the first time from Indravati Tiger Reserve as also from Madhya Pradesh.

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REFERENCES

- Bingham C. T. 1905. *The Fauna of British India, including Ceylon and Burma*, Butterflies, 1 : xviii + 537, 15 pls. Taylor and Francis, London.
- Bingham, C. T. 1907. *The Fauna of British India, including Ceylon and Burma*, Butterflies, 2 : viii + 480, 11-20 pls. Taylor and Francis, London.
- Evans, W. G. 1932. *The identification of Indian Butterflies*, 2nd. ed., 454 pp., 32 pls.
- Gupta, I. J. and Shukla, J. P. N. 1987. Butterflies from Bastar district (Madhya Pradesh, India), *Rec. Zool. Surv. India*, Occ. Paper, No. 106 : 1-74, 11 pls.
- Hampson, G. F. 1894. *The Fauna of British India, including Ceylon and Burma*, Moths, 2 : xxii + 609. Taylor & Francis, London.

- Hampson, G. F. 1896. *The Fauna of British India, including Geylon and Burma, Moths*, 4 : xxviii + 594. Taylor & Francis, London.
- Hampson, G. F. 1898. *Catalogue of the Lepidoptera Phalaenae in the British Museum*, 1 : xxi + 559. *Brit. Mus. Nat. Hist.*, London.
- Hampson, G. F. 1900. *Catalogue of the Lepidoptera Phalaenae in the British Museum*, 2 : xx + 589. *Brit. Mus. Nat. Hist.*, London.
- Singh, R. K. 1977. On a collection of Butterflies (Insecta) from Bastar District, Madhya Pradesh. *Newsl. zool. Surv. India*, 3(5) : 323-326.
- Talbot, G. 1939. *The Fauna of British India, including Ceylon and Burma, Butterflies*, 1 : xxix + 600. 2 pls, 1 map.
- Talbot, G. 1947. *The Fauna of British India, including Ceylon and Burma, Butterflies*, 2 : xv + 506. 2 pls, 1 map.
- Varshney, R. K. 1979. Revised nomenclature for taxa in Wynter Blyth's Book on the Butterflies of Indian Region. *J. Bombay nat. Hist. Soc.*, 76(i) : 33-40.
- Wynter-Blyth, M. A. 1957. *Butterflies of Indian Region*, 523 pp, 72 pls. Bombay Natural History Society, Bombay.

ARACHNIDA : SPIDERS

The arachnid fauna consist of 13 species of spiders leading to 10 genera, some of which were hetherefore unknown from the State of Madhya Pradesh. An account of the fauna is given below.

Order ARANEAE

Family THOMISIDAE

1. *Thomisus projectus* Tikader

1960. *Thomisus projectus* Tikader. *J. Bombay nat, Hist. Soc.*, 57 : 182.

1980. *Thomisus projectus* Tikader, *Fauna of India, Spiders*, 1 (1) : 40.

Specimens examined : 3♂ ; Bijapur, Baster dist., M.P.; 7-8.ii.1990; R.K. Ghose coll.

Distribution : India : West Bengal.

Remarks : This species is being reported here for the first time from Madhya Pradesh.

2. *Thomisus cherapujeus* Tikader

1960. *Thomisus cherapujeus* Tikader, *Proc. Indian Acad. Sci.*, 64(1) : 54.

1980. *Thomisus cherapujeus* Tikader, *Fauna of India, Spiders*, 1(1) : 54.

Specimen examined : 1♀; Kutru village, Bastar dist., M. P.; 26.i.1990; R. K. Ghose coll.

Distribution : India : Meghalaya.

Remarks : This species is being reported here for the first time from Madhya Pradesh.

3. *Amyciaea forticeps* (Cambridge)

1873. *Amycle forticeps* Cambridge, *Proc. Zool. Soc. Lond.*, 1873 : 122.

1885. *Amyclaea forticeps* : Simon, *Bull. Soc. Zool. Fr.*, 10 : 447.

1980. *Amyciaea forticeps* : Tikader, *fauna of India, Spiders.*, 1(1) : 169.

Specimen examined : 1♂ ; Bijapur, Bastar dist., M. P.; 26.i.1990; R. K. Ghose coll.

Distribution : India : Maharashtra; Burma and Malaysia.

Remarks : This species is being reported here for the first time from Madhya Pradesh.

Family LYCOSIDAE

4. *Hippasa agelenoides* (Simon)

1884. *Pirata agelenoides* Simon, *Ann. Mus. civ. stor. nat. Genova*, 20 : 334.

1895. *Hippasa agelenoides* : Thorell, *Spiders of Burma*, : 218.

1980. *Hippasa agelenoides* : Tikader & Malhotra, *Fauna of India, Spiders*, 1(2) : 293.

Specimen examined : 1♀, (subadult); Kurtu village, Bastar dist., M. P.; 28.i.1990; R. K. Ghose coll. 1♀, (sabadult); Kerpe villege, 20 km. NW of Kurtu, Indravati Tiger Reserves, Bastar dist., M. P.; 31.i.1990; R. K. Ghose coll.

Distribution : India : Kerala, Karnataka, Tamil Nadu, Uttar Pradesh, Maharashtra; Burma : Tharrawaddy and Rangoon.

Remarks : This species is being reported here for the first time from Madhya Pradesh.

5. *Pardosa sumatrana* (Thorell)

1890. *Lycosa sumatrana* Thorell, *Ann. Mus. Stor. nat. Genova.*, 30 : 136.

1980. *Pardosa sumatrana* : Tikader & Malhotra, *Fauna of India, Spiders*, 1(2) : 353.

Specimen examined : 3 ♀; Bijapur, Bastar dist., M.P.; 4.ii.1990; R. K. Ghose coll. 1 ♀; Kerpe. 20 km. NW of Kurtu Indravati Tiger Reserves, Basar dist., M. P.; 31.i.1990; R. K. Ghose coll.

Distribution : India : Kerala, Karnataka, Tamil Nadu, Bihar, Himachal Pradesh, West Bengal, Meghalaya, Rajasthan, Gujrat, Madhya Pradesh, Arunachal Pradesh; Bangladesh, Sumatra, Sri Lanka.

Remarks : This is common species and reported here for the first time from Bastar district.

6. *Pardosa birmanica* Simon

1884. *Pardosa Birmanica* Simon, *Ann. Mus. civ. stor. nat. Geneva*, 20 : 333.

1980. *Pardosa birmanica* : Tikader & Malhotra, *Fauna of India, spiders*, I (2) : 329.

Specimen examined : 1 ♀; Bijapur, Bastar District, M. P.; 4.ii.1990; R. K. Ghose coll. 1 ♂, (subadult); Kurtu. Baster dist., M. P.; 2.ii.1990; R. K Ghose coll. 3♀, 1 ♂, Bijapur, Bastar dist., M. P.; 5.ii.1990; R. K. Ghose coll.

Distribution : India : Maharashtra, West Bengal, Orissa, Uttar Pradesh, Rajasthan, Gujrat, Himachal Pradesh, Madhya Pradesh, Meghalaya, Bihar, Tamil Nadu, Andhra Pradesh, Burma; Java; Pakistan.

Remarks This is a common species.

Lycosa poonaensis Tikader & Malhotra

1980. *Lycosa poonaensis* Tikader & Malhotra, *Fauna of India, spiders*, I (2) : 392.

Specimen examined : 1♂; Kurtu, Bastar dist., M. P.; 31.i.1990; R. K. Ghose coll.

Distribution : India : Poona, Maharashtra.

Remarks : This species is being reported here for the first time from Madhya Pradesh.

Family ARANEIDAE

7. *Argiope aemula* (Walckenaer)

1841 *Eperira aemula* Walckenaer, *Hist. Nat. Ins. Apt.*, 2 : 118

1982. *Argiope aemula* : Tikader, *Fauna of India, spiders*, 2 (1) : 119

Specimen examined : 1♀ (immature); Bidare village, Indravati Tiver Reserve, Bastar dist., M. P. : 21.i.1990; R.K. Ghose coll. 1♂ 1♀, Bijapur, Bastar dist., M.P. ; 9.ii.1990; R.K. Ghose coll.

Distribution : India : Tamil Nadu, Maharashtra, West Bengal, Gujarat, Andaman and Nicobar Islands; Sri Lanka; Burma; Indo and Astro-Malaysia.

Remarks : This species is being reported here for the first time from Bastar district.

8. *Argiope pulchella* Thorell

1881 *Argiope pulchella* Thorell, *Ann. Mus. civ. Genova*, 18 : 74.

1982 *Argiope pulchella* : Tikader, *Fauna of India, Spiders*, 2(1) : 129.

Specimen examined : 1♀; Bijapur, Bastar dist., M.P.; 8.ii.1990; R.K. Ghose coll.

Distribution : India : Andaman & Nicobar Islands, West Bengal, Madhya Pradesh, Orissa, Assam, Maharashtra, Tamil Nadu; Burma; Malaya Peninsula.

Remarks : This species is being reported here for the first time from Indravati Tiger Reserves.

9. *Argiope pradhani* Sinha

1951. *Argiope pradhani* Sinha, *Rec. Indian Mus.*, 49 : 76

1982. *Argiope pradhani* : Tikader, *Fauna of India, Spiders*, 2 (1) : 123.

Specimen examined : 1♀; Bijapur, Bastar dist., M.P.; 8.ii.1990; R.K. Ghose coll.

Distribution : India : West Bengal, Andaman & Nicobar Islands ; Burma; Irrawaddy, Moulmein; Sri Lanka; Indo and Austro-malaysia.

Remarks : This species is being reported here for the first time from Madhya Pradesh.

10. *Neoscona mukherjei* Tikader

1980. *Neoscona mukherjei* Tikader, *Proc. India Acad. Sci.*, 89 (3) : 247.

1982. *Neoscona mukherjei* : Tikader, *Fauna of India, Spiders*, 2(1) : 248.

Specimen examined : 1♀; Bijapur, Bastar dist., M.P.; 6.ii.1990; R.K. Ghose coll.

Distribution : India : Maharashtra, West Bengal.

Remarks : This species is being reported here for the first time from Madhya Pradesh.

11. *Cyclosa hexatuberculata* Tikader

1982. *Cyclosa hexatuberculata* Tikader, *Fauna of India, Spiders*, 2(1) : 197.

Specimen examined : 2♀; Bijapur, Bastar dist., M.P.; 5.ii.1990; R.K. Ghose coll.

Distribution : India : Poona, Maharashtra.

Remarks : This species is being represented here for the first time from Bastar district, M.P.

Family GNAPHOSIDAE

12. *Callilepis lambai* Tikader & Gajbe

1977. *Callilepis lambai* Tikader & Gajbe, *Rec. zool. Surv. India*, 73 (1-4) : 50

1988. *Callilepis lambai* : Gajbe, *Rec. zool. Surv. India*, 85 (1) : 65.

Specimen examined : 1♀; Kondagaon, Bastar dist., M.P.; 22.i.1990; R.K. Ghose coll.

Distribution : India : Karnataka, Punjab, Madhya Pradesh.

Remarks : This species is being reported here for the first time from Bastar, district. M.P.

13. *Scopodes maitraiae* Tikader & Gajbe

1977. *Scopodes maitraiae* Tikader & Gajbe, *Rec. zool. Surv. India*, 73 (1-4) : 14

1982. *Scopodes maitraiae* : Tikader, *Fauna of India, Spiders*, 2(2) : 365.

1988. *Scopodes maitraiae* : Gajbe, *Rec. zool. Surv. India*, 85 (1) : 65

Specimen examined; 1♀; Kondagaon, Bastar dist., M.P.; 22.i.1990; R.K. Ghose coll.

Distribution : India : Maharashtra, Gujarat, Orissa, Bihar, Madhya Pradesh.

Remarks : This species is being reported here for the first time from Bastar district, M.P.

CRUSTACEA : OSTRACODA

The Ostracod crustaceans belong to 8 species representing 8 genera of which 4 species were not known from Madhya Pradesh and one at least appears to be a new record for India. Systematic account of the fauna is given below.

Order	PODOCOPIDA
Family	CYPRIDIDAE
Sub-family	CYPRIDINAE

1. *Cypris subglobosa* Sowerby

1840 *Cypris subglobosa* Sowerby in J. G. Malcomson, *Trans, Geol. Soc. Lond.*, Ser. 2, 5, 47.

Material : Reg. No. A/1948. Bijapur, Bastar dist., M.P.; 7.ii.90; R. K. Ghose coll. Reg. No. A/2164. Kirpe, Kutru, Bastar dist., M.P.; R. K. Ghose coll.

Previous Records : No records available.

Distribution in India : India : Nagpur, Bombay, Phandarpur in Maharashtra; Chitoor, Guntur, Yanam in Godawari delta in Andhra Pradesh; Madurai, Trichy and Kanyakumari in Tamil Nadu; Trivendrum in Kerala; Jabalpur, Shahdol, and Indravati Tiger Reserve at Bastar in M.P.

Distribution in other countries : Indonesia, Malaysia, Phillipines, Sri Lanka, Japan, Venezuela, USA, Yugoslavia and USSR.

2. *Strandesia weberi* (Moniez)

1892. *Cypris weberi* Moniez, *Zoologische Ergebnisse Niederlaansch Ost. Indien* M. weber : 129.

Material : Reg. No. A/1903; Kutru, Bastar dist., M.P.; 31.i.90; R. K. Ghose coll.

Previous records : In India recorded for the first time from Jabalpur, Madhya Pradesh.

Distribution in India : Shahdol and Jabalpur and Indravati Tiger Reserve in M.P.

Distribution in other countries : West Malaysia, Philipines and Indonesia.

Remarks : Population/food habits etc. not studied.

Subfamily HERPETOCYPRIDINAE

3. *Stenocypris hislopi* Ferguson

1969. *Stenocypris hislopi* Ferguson. In Neale J. W. (ed.) *The Taxonomy, morphology and 'Ecology of Recent Ostracoda* : 68.

Material : Reg. No. A/1937 : 15♀; Kutru, Bastar dist., M.P.; 28.i.90; R. K. Ghose coll.

Previous records : No earlier records are available from M.P.

Distribution in India : Nagpur in Maharashtra; Kovur in Andhra Pradesh; Salem in Tamil Nadu; Jabalpur and Indravati Tiger Reserve in Madhya Pradesh.

Remarks : Population, food habits etc., not studied.

4. *Stenocypris derupta* Vavra

1906. *Stenocypris derupta* Vavra. *Zool. Jb. (Syst)*, 23 : 246.

Material : Reg. No. 1870 : 3 ♀; Kutru, Bastar dist., M.P.; 31.i.90; R. K. Ghose coll.

Distribution in India : Pandharpur, in Maharashtra; Guntur area in Andhra Pradesh; Madurai in Tamil Nadu; Jabalpur and Indravati Tiger Reserve in M.P.

Distribution in other countries : Java, Sumatra, Phillipines, Sri Lanka.

5. *Parastenocypris biswasi* (Deb)

1972. *Stenocypris biswasi* Deb. Jaipur, Rajasthan.

Material : Reg. No. A/1905 : 15♀; Kutru, Bastar dist., M.P.; 28.ii.90; R. K. Ghose coll.

Previous records : No records available.

Distribution in India : Jaipur district in Rajasthan; Jabalpur, Shahdol and Indravati Tiger Reserve in M.P.

Remarks : Population, food habits etc. not studied. Only females are collected. Male not known.

6. *Chrissia humilis* (Kue)

1964. *Chrissia humilis* (Kile) *indica* Harimann. *Int. Revue Hydrobiol. Syst. Beith.* : 8.

Material : 16 ♀; Bijapur, Bastar dist., M.P.; 7.ii.92; R. K. Ghose coll.

Previous records : No records available.

Distribution in India : Bombay in Maharashtra; Travancore in Kerala; Pondichery ; Kanyakumari in Tamil Nadu; Calcutta in West Bengal; Jabalpur, Damoh, Sagar, Mandla and Indravati Tiger Reserve in M.P.

Distribution in other countries : W. Malaysia.

Remarks : Population, food habits etc. not studied. Only females have been collected. Male unknown.

Family CYPRIDOPSIDAE

Subfamily CYPRETTINAE

7. *Cypretta raciborskii* Grochmalicki

1915. *Cypretta raciborskii* Grochmalicki. *Anz. Akad. Wiss Krakau Math nat. ki. Reith.*, 13 : 234.

Material : Reg. No. A/1938 : 15 ♀; Kutru, Bastar dist.; 28.i.90; R. K. Ghose coll.

Distribution in India : The present material constitutes the first record from India.

Distribution in other countries : W. Malaysia, Indonesia.

Remarks : Population, food habits etc. not studied. Only females are collected. Male unknown.

Subfamily CYPRIDOPSINAE

8. *Pseudocypretta maculata* Kuc

1932. *Pseudocypretta maculata* Kua. *Arch. Hydrobiol. Suppl.*, 11 : 485.

Material : Reg. No. A/1906 : 2 ♀; Kutru; Bastar dist., M.P.; 28.i.90; R. K. Ghose coll.

Previous records from the area : No records available.

Distribution in India : Trivendrum in Kerala; Madras in Tamil Nadu; Jabalpur and Indravati Tiger Reserve in M.P.

Distribution in other countries : Java, Sumatra, Sri Lanka.

Remarks : Population, food habits etc. not studied. Only females are collected. Males unknown.

PISCES

INTRODUCTION

The present report is based upon the fish collection made from Indravati Tiver Reserve, Bastar district of Madhya Pradesh, by Dr. R. K. Ghose & party during 1990. It reveals 4 orders, 8 families, 18 genera, 24 species and 199 examples.

Earlier workers who worked on fishes of M.P. are, Dubey and Mehra, 1959 (Chambal river, Bastar dt.), Hora, 1938, 1940 (Balladila range, Bastar dt., headwaters of Mahandi river, Raipur dt.), Soni, 1959, 1960 (Bhopal lower and upper lakes), Karmakar and Datta, 1988 (Saber, Indravati, Mahanadi, Dudhnadi and Kukri (Bhor) rivers, Bastar dt.). The fish collections mentioned above have been thoroughly worked out taxonomically and arranged systematically.

SYSTEMATIC ACCOUNTS

Class PISCES
Order CYPRINIFORMES
Family CYPRINIDAE

1. *Puntius conchoni* (Hamilton)

1822. *Cyprinus conchoni* Hamilton, *Fish. Ganges*, pp. 317, 389 (type-locality : Ponds of N.E. Bengal and the rivers of Kosi and Ami).

1985. *Puntius conchoni*, Sen, *The fish fauna of Assam and the neighbouring N. E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No. 64, p. 81.

Material studied: 5 exs.; 5.5-8.5 cm: Pellur, Indravati Tiger Reserve, M.P.; 22.i.90; R. K. Ghose & party. 4 exs.; 5.5-7.5 cm; 10 km. N. of Kutru, Bastar District, M.P.; 30.i.90; R. K. Ghose & party.

Distribution : W. Bengal, Assam, Madhya Pradesh, Orissa, Bihar, U.P. Punjab, Deccan ; Bangladesh; Pakistan.

Remarks : Most commonly found barb in streams, canals, ponds, lakes, tanks and rivers. Popularly known as "*Stigma Barb*" Commercially less important.

2. *Puntius sarana sarana* (Hamilton)

1822. *Cyprinus sarana sarana* Hamilton, *Fish Ganges*, pp. 307, 388 (type-locality : ponds and rivers of Bengal).

1985. *Puntius sarana sarana* Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No. 64, p. 79.

Material studied : 2 exs.; 10.0-10.5 cm; Pellur, Indravati Tiger Reserve, M.P.; 22.i.90; R. K. Ghose & party.

Distribution : Freshwaters throughout India; Bangladesh; Pakistan; Sri Lanka; Thailand; South China.

Remarks : Found in rivers, canals, road side ditches, beels, ponds and paddy-fields during monsoon. It is a commercially important species due to its bigger size and oily good taste. Popularly known as 'Olive-barb'

3. *Puntius sophore* (Hamilton)

1822. *Cyprinus sophore* Hamilton, *Fish Ganges*, pp. 310, 389, pl. 19, fig. 86 (type-locality : Ponds and rivers in the Gangetic provinces).

1985. *Puntius sophore*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No. 64, p. 78.

Material studied : 17 exs.; 4.5-8.5 cm; Pellur, Indravati Tiger Reserve, Madhya Pradesh; 22.i.90; R. K. Ghose & party. 10 exs; 6.5-8.5 cm; Kutru, Indravati River, Bastar District, Madhya Pradesh; 8.ii.90; R. K. Ghose & party. 6 exs.; 4.5-6.0 cm; near Kutru, Indravati Tiger Reserve, Bastar district, Madhya Pradesh; 8.ii.90, R. K. Ghose & party.

Distribution : Freshwaters throughout India; Bangladesh; Pakistan; Burma; Nepal and S. China.

Remarks : Found in both clear as well as foul waters : It can live even in adverse conditions inside silt, with thick bed of aquatic weeds. It is a voracious eater of floating organisms and aquatic plants. Popularly known as 'Common Barb' 'Yellow Barb' etc.

4. *Danio (D) aequipinnatus* (McClelland)

1839. *Perilampus aequipinnatus* McClelland, *Asiat. Res.*, 19 (2), p. 393, pl. 60, fig. 1 (type-locality : Assam).

1985. *Danio (D) aequipinnatus*, Sen, *The fish fauna of Assam and the neighbouring N.E. states of India*, *Rec. zool. surv. India*, Occ. Paper No. 64, p.42.

Material studied : 1 ex.; 8.0 cm; Pellur, Indravati Tiger Reserves, Madhya Pradesh; 22.i.90; R.K. Ghose & party.

Distribution : Freshwaters throughout India; Sri Lanka; Bangladesh; Burma and Thailand.

Remarks : An ideal aquarium fish of attractive colour; commercially found in clear waters and hill-streams. Popularly known as "Giant Danio" (Chebli/Malabar Danio).

5. *Salmostoma bacaila* (Hamilton)

1822. *Cyprinus bacaila* Hamilton, *Fish Ganges*, p. 265. pl. 8, fig. 76 (type-locality : Gangetic provinces).

1985. *Salmostoma bacaila*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No. 64, p.31.

Material studied : 2 exs; 12.5-12.5 cm; near Kutru, Indravati River, Baster district, Madhya Pradesh; 8.ii.90; R.K. Ghose & party.

Distribution : West Bengal, Madhya Pradesh, North India and Orissa.

Remarks : A food fish; lives in beels, tanks, canals and rivers of shallow depth. Popularly known as "Chela" (Selcona/Chelliah).

6. *Rasbora daniconius* (Hamilton)

1822. *Cyprinus daniconius* Hamilton, *Fish Ganges*, p.327, pl.15, fig.89 (type-locality : Rivers of S. Bengal).

1985. *Rasbora daniconius*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p.45.

Material studied : 6 exs.; 4.0-7.5 cm; near Kutru, Indravati River, Bastar district, Madhya Pradesh; 8.ii.90; R.K. Ghose & party. 2 exs.; 5.0-7.0 cm; Pellur, Bastar District, Madhya Pradesh, Indravati Tiger Reserve; 25.i.90; R.K. Ghose & party.

Distribution : Throughout India; Bangladesh; Pakistan; Burma; Sri Lanka; Malaysia.

Remarks : Lives in streams, pools, ponds, canals, paddy-fields (during monsoon months) etc. Popularly known as "Common Rashora" (Dadhikha/Dendua/Jilo/Darai).

7. *Esomus danricus* (Hamilton)

1822. *Cyprinus danricus* Hamilton, *Fish Ganges*, pp. 325, 390, p.16, fig.88 (type-locality : ponds and ditches of Bengal).

1985. *Esomus danricus*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p.44.

Material studied : 45 exs.; 1.5-3.5 cm; Bidare, Bastar district, Madhya Pradesh, Indravati Tiger Reserve; 29.i.90; R.K. Ghose & party.

Distribution : West Bengal, Assam, Madhya Pradesh, Uttar Pradesh, Punjab, Bihar, Orissa, Madras, Gujarat ; Bangladesh; Pakistan; Burma; Sri Lanka; Malaya; Thailand.

Remarks : It is a larvicidal fish. Commonly found in road-side ditches, canals, pools, streams and ponds. Popularly known as "Darika"

8. *Labeo gonius* (Hamilton)

1822. *Cyprinus gonius* Hamilton, *Fish. Ganges*, p.292, 387 (typelocality : Bengal).

1985. *Labeo gonius*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No. 64; p.73.

Material studied : 10 exs; 6.5-9.5 cm; Pellur, Indravati Tiger Reserve, Madhya Pradesh; 22.i.90; R.K. Ghose & party.

Distribution : Assam, Madhya Pradesh, West Bengal, Bihar, all over North India as far as Krishna River ; Bangladesh; Pakistan and Burma.

Remarks : Can be distinguished easily by its small scales from other species under this genus. A food fish of commercial importance. Lives in rivers, beels, lakes etc. Popularly known as "Kurchi"

9. *Labeo nandina* (Hamilton)

1822. *Cyprinus nandina* Hamilton, *Fish Ganges*, p.300, pl.8, fig. 84 (type-locality : River Mahananda).

1985. *Labeo nandina*, Sen, *The Fish fauna of Assam and the neighbouring N.E. States of India*; *Rec. zool. Surv. India*, Occ. Paper No. 64, p.73, fig.34.

Material studied : 1 ex.; 22.5 cm; near Kutru, Indravati R., Bastar District, Madhya Pradesh; 8.ii.90; R.K. Ghose & party.

Distribution : Assam, W. Bengal, Madhya Pradesh (new record).

Remarks : Lives in rivers, canals and lakes. Rarely found in the catches. Known popularly as "Nandi" (Nadani).

10. *Labeo boggut* (Hamilton)

1841 *Chondrostoma boggut* Sykes, *Trans. Zool. Soc. Lond.*, 2 : 359 (type-locality : Poona waterways).

1981 *Labeo boggut*, Jayaram, *F.W. Fishes of India*, Handbook No.2, Calcutta, ZSI, p.117.

Material studied : 5 exs.; 4.5-7.5 cm; Pellur, Bastar District, Indravati Tiger Reserve; 25.i.90; R.K. Ghose & party.

Distribution : Throughout N. India and up to Cauvery river system ; Bangladesh; Pakistan.

Remarks : Lives in torrential rivers. A torrential carp of economic importance.

11. *Cirrhina reba* (Hamilton)

1822. *Cyprinus reba* Hamilton, *Fish Ganges*, pp.280, 386 (type-locality : Rivers and ponds of Bengal and Bihar).

1985. *Cirrhina reba*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p.55, fig.20.

Material studied : 6 exs.; 15.5 cm; near Kutru, Indravati R., Bastar District, Madhya Pradesh, 8.ii.90; R.K. Ghose & party.

Distribution : India; Bangladesh; Pakistan; Burma and Thailand.

Remarks : Lives in rivers, clear streams and tanks. A good eating fish of economic importance. Popularly known as "Reba" (Lasseem/Raig, Rewah).

12. *Tor putitora* (Hamilton)

1822. *Cyprinus putitora* Hamilton, *Fish. Ganges*, pp. 303, 388 (type-locality : Eastern parts of Bengal).

1982. *Tor putitora*, Sen & Jayaram, *The Mahseer fishes of India : A Review*, *Rec. zool. Surv. India*, Occ. Paper No. 39, p.5.

Material studied : 3 exs.; 6.5-7.8 cm; Pellur, Indravati Tiger Reserve, Madhya Pradesh; 22.i.90; R.K. Ghose & party.

Distribution : All along the Himalayas including Kashmir, Uttar Pradesh, Punjab, Haryana, W. Bengal (Darjeeling District), Madhya Pradesh, Orissa, Assam. Also found in Nepal, Pakistan, and Bangladesh.

Remarks : An economically important game fish of India. Known all over India as 'Mahaseer'. The fish can be easily distinguished by its big scales and prominent barbels.

13. *Tor tor* (Hamilton)

1822. *Cyprinus tor* Hamilton, *Fish Ganges*, pp. 305, 388 (typelocality : River Mahananda).

1982. *Tor tor*, Sen & Jayaram, *The Mahseers of India : A Review.*, *Rec. zool. Surv. India*, Occ. Paper No.39, p.31, fig.1.

Material studied : 6 exs.; 9.5-13.5 cm; Bidare, Bastar District, Madhya Pradesh, Indravati Tiger Reserve; 19.i.90; R.K. Ghose & party.

Distribution : All along the Himalayas including Punjab, Haryana, Uttar Pradesh., Orissa, Madhya Pradesh. Assam, Bihar, W. Bengal (Darjeeling District) ; Bangladesh; Pakistan; Burma; China. Ganga and Narmada rivers are its principal habitat.

Remarks : A popular game fish of India, of high economic importance. Known as "Mahseer" all over India.

14. *Garra gotyla gotyla* (Gray)

1832. *Cyprinus Gotyla* Gray. *All. Ind. Zool.*, 1, pl. 88, figs. 3, 3a (type-locality : Mismee Mountains, Assam).

1885. *Garra gotyla gotyla*, sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p. 64.

Material studied : 27 exs.; 4.5-11.5 cm; Pellur, Bastar District, Madhya Pradesh, Indravati Tiger Reserve; 25.i.90; R.K. Ghose & party.

Distribution : All along the Himalayas, Chota Nagpur and the Vindhya—Satpura mountains of the Indian Peninsula. Also Nepal, Bangladesh, Pakistan and Burma.

Remarks : Lives in clear torrential waters along the foot-hills. Popularly known as "Stone-sucker" (Ghor Poia, Siltoka Bettwa/Kurka).

Family HOMALOPTERIDAE

(Formerly, Cobitidae)

15. *Noemachellus savona* (Hamilton)

1822. *Cobitis savona* Hamilton, *Fish Ganges*, pp. 357, 394 (typelocality : River Koshi).

1987. *Noemacheilus savona*, Menon, *Fauna of India : Cobitoidea, Homalopteridae*; Pt. I, p.91, fig.10, pl.13.

Material studied : 6 exs.; 6.5-9.5 cm; Pellur, Indravati Tiger Reserve, Madhya Pradesh; 22.i.90; R.K. Ghose & Party.

Distribution : Widely distributed in the eastern sub-Himalayan region. New record from Madhya Pradesh.

Remarks : Popularly known as "Loach" The genus *Noemacheilus*, is now placed under family Homalopteridae (Menon, 1987). Lives in hill-streams, torrential rivulets, etc. Commercially not important.

Order PERCIFORMES

Family GOBIIDAE

16. *Glossogobius giuris* (Hamilton)

1822. *Gobius giuris* Hamilton, *Fish Ganges*, pp.51, 366, pl.33, fig.15 (type-locality : Gangetic provinces).

1985. *Glossogobius giuris*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p.195.

Material studied : 1 ex; 5.5 cm; Bidare, Bastar District, Madhya Pradesh, Indravati Tiger Reserve; 19.i.90; R.K. Ghose & party.

Distribution : India, E. Africa, Sri Lanka, Pakistan, Bangladesh, Malay Peninsula, China, Japan, Philippines, Australia, Indo-Australian Archipelago and S. Pacific Islands.

Remarks : Lives in rivers, tanks, beels, canals, lakes etc. Most commonly found freshwater species throughout India under this genus. A food fish but not tasty. Popularly known as "*Bar-eyed Goby*"

Family NANDIDAE

17. *Badis badis* (Hamilton)

1821 *Labrus badis* Hamilton, *Fish Ganges*, pp. 70, 368, pl. 25, fig. 23 (type-locality : Gangetic provinces).

1985. *Badis badis*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p.192, fig.102.

Material studied : 1 ex; 5.0 cm; Indravati Tiger Reserve, Madhya Pradesh; 25.i.90; R.K. Ghose & party.

Distribution : Throughout India, Pakistan, Bangladesh, Nepal and Burma.

Remarks : Not commonly found. Small woody fish of no economic value. Popularly known as "*Mud-perches*" (Bot-Koi/Sumha/Nabat/Kundala). Lives in beels and marshy wetlands.

Order SILURIFORMES

Family BAGRIDAE

18. *Mystus vittatus* (Bloch)

1897. *Silurus vittatus* Bloch, *Ichthyol. Hist. nat.* 11, p.40, pl.371, fig.2 (type-locality : Tranqueber, S. India).

1985. *Mystus vittatus*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p.138

Material studied : 5 exs.; 5.5-11.0 cm; Pellur, Indravati Tiger Reserve, Madhya Pradesh; 22.i.90; R.K. Ghose & party.

Distribution : India, Bangladesh, Pakistan, Burma, Malay, Thailand and Sri Lanka.

Remarks : Most commonly available cat-fish in tanks, beels, rivers, canals lakes etc. Popularly known as "*Striped Dwarf Cat fish*" or "*Tengra*" A tasty food fish of demand though bony and small in size.

19. *Rita rita* (Hamilton)

1822. *Pimelodus rita* Hamilton, *Fish Ganges*, pp. 165, 376, pl. 24 & 25, fig. 53, (type-locality : estuaries of Bengal).

1974. *Rita rita*, Menon, *A checklist of fishes of the Himalayan and Indo-Gangetic Plains*, Spl. Pub. (1), *Inld. Fish. Soc. India*, p.63.

Material studied : 7 exs.; 17.5-20.5 cm; Kutru, Bastar District, Madhya Pradesh; 28.i.90; R.K. Ghose & party.

Distribution : Freshwaters of U.P., Bihar, Madhya Pradesh, W. Bengal, Ganges in India and Bangladesh, Pakistan (Sind), Burma (Irrawady R.).

Remarks : Popularly known as "*Ritha/Rita*" Grows to a length of 1.2 m. This fish is less important commercially due to its heavy aweful bony encasement and stiff flesh.

Family SILURIDAE

20. *Ompok bimaculatus* Bloch

1797. *Silurus bimaculatus* Bloch, *Ichthyol. Hist. d. Poiss.*, 11, p.17, pl.364 (type-locality : Malabar).

1985. *Ompok bimaculatus*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India* Occ. Paper No. 64, p.141.

Material studied : 2 exs; 12.5-14.0 cm; near Kutru, Indravati R., Bastar District, Madhya Pradesh; 8.ii.90; R.K. Ghose & party.

Distribution : India, Bangladesh, Pakistan, Sri Lanka, Thailand, Burma, Indonesia.

Remarks : Popularly known as "*Butter Catfish*" Lives in rivers, beels, canals, lakes. A commercially important fish of high demand.

21. *Wallago attu* (Schneider)

1801. *Silurus attu* Schneider, *Syst. Schth.*, p.378, pl.75 (typelocality : Malabar).

1985. *Wallago attu*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No. 64, p.145 fig.79

Material studied : 1 ex; 27.5 cm; near Kutru, Indravati River., Bastar District, Madhya Pradesh; 8.ii.90; R.K. Ghose & party.

Distribution : Throughout India, Bangladesh. Pakistan, Sri Lanka, Burma, Thailand, China, Indonesia.

Remarks : Popularly known as "Freshwater Shark" (Boal/Boali). It is very much liked in Assam, Bihar, Orissa and Madhya Pradesh for its rich oil content.

22. *Clupisoma garua* (Hamilton)

1822. *Silurus garua* Hamilton, *Fish Ganges*, pp.156, 376, pl.21, fig.50 (type-locality : Gangetic provinces).

1985. *Clupisoma garua*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No. 64, p.147

Material studied : 2 exs; 22.5-24.0 cm; near Kutru, Indravati R., Bastar District, Madhya Pradesh; 8.ii.90; R.K. Ghose & party.

Distribution : West Bengal, Madhya Pradesh, Assam, Bihar, Orissa, Bangladesh, Pakistan.

Remarks : Not taken as food due to its unfortunately imposed bad name of being a "Foul feeder"
Lives in big rivers.

Order CHANNIFORMES

Family CHANNIDAE

23. *Channa marulius* (Hamilton)

1822. *Ophiocephalus marulius* Hamilton, *Fish Ganges*, pp.65, 367, pl. 17, fig.19 (type-locality : R. Ganges).

1985 *Channa marulius*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p.181.

Material studied : 1 ex; 16.5 cm; Kutru, Indravati R., Bastar District, Madhya Pradesh; 8.ii.90; R.K. Ghose & party.

Distribution : India, Sri Lanka, Bangladesh, Pakistan, Burma, Thailand, China.

Remarks : Popularly known as "Giant snake-head" (Sal/Gajal). Generally taken by the poorer section. A large number of consumers do not take it purely in superstitions belief. Lives in rivers, canals, beels, lakes etc.

24. *Channa stewarti* Playfair

1867. *Ophiocephalus stewartii* Playfair, *Proc. zool. Soc. Lond.*, p.14, pl.3 (type-locality : Cachar, Assam).

1985. *Channa stewartii*, Sen, *The fish fauna of Assam and the neighbouring N.E. States of India*, *Rec. zool. Surv. India*, Occ. Paper No.64, p.183.

Material studied : 1 ex; 9.5 cm; Kutru, Indravati River, Bastar District, Madhya Pradesh; 8.ii.90; R.K. Ghose & party.

Distribution : Assam, E. Himalayas, Arunachal Pradesh, Meghalaya, West Bengal, Orissa, Madhya Pradesh (new record). Nepal.

Remarks : Generally found in beels and marshy wetlands; can withstand strong drought conditions very well. Popularly known as "Striped snake head" Commercially not important.

REFERENCES

- Day, F. 1875-78. The fishes of India. XX + 778 pp., 195 pls., London
- Dubey, G. P. & Mehra, R. K. 1959. Fishes and fisheries of Chambal River. *Proc. First All India Congr. Zool.*, 647-665, 1 map.
- Hora, S.L. 1938. Notes on fishes in the Indian Museum. XXXVII. On a collection of fishes from Balladila range, Bastar State, Central Provinces. *Rec. Indian Mus.*, 40 (3) : 237-241.
- Jayaram, K.C. 1981. The freshwater fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka. Handbook No.2. Calcutta, ZSI, iii-viii + 1-475 + i-viii (plates).
- Karmakar, A.K & Datta, A. K. 1988. On a collection of fish from Bastar District, Madhya Pradesh. *Rec. zool. Surv. India, Occ. Paper No. 98*, p.1-50.
- Misra, K. S. 1962. An aid to the identification of common commercial fishes of India and Pakistan. *Rec. Indian Mus.*, 57 (1-4) : 1-320.
- Menon, A. G. K. 1987. The fauna of India and the adjacent countries. Cobitoidea, Homalopteridae : Noemacheilinae, ZSI, Vol. IV, Pt.1, 1-X + 1-259, pls. 1-XVI.
- Sen, T. K., Jayaram, K.C. 1982. The Mahseer Fishes of India : A review. *Rec. zool. Surv. India, Occ. Paper No. 39* : 1-36.
- Soni, D.D. 1959 [1962]. Fish fauna of Bhopal lower lake. *Proc. First All India Congr. Zool.*, pp.639-641
- Soni, D.D. 1960. First fauna of Bhopal upper lake. *Proc. Indian Sci.*, 47 (3) : 477.

AMPHIBIA

INTRODUCTION

After Boulenger (1890) amphibian fauna of India has been studied by a number of workers from mid-nineteenth Century. Among them works of Boulenger (1890-1920), Annandale (1907-1919), Rao (1915-1937), Bhadury (1929-1980), Daniel (1962-1975), Pillai (1978-1981), Pillai and Chanda (1973-1981) and Chanda (1985-1991) are noteworthy.

Perusal of literature shows that very little attention has been paid to this group available in Madhya Pradesh including Indravati Tiger Reserve of Bastar District. However Saksena et al. (1988) reported eight species of amphibians from Gwalior and Chambal Division, Madhya Pradesh and Sanyal et al. (in Press) reported seven species of amphibians from Bastar district, Madhya Pradesh.

Present report is based on a small collection of amphibians made from Indravati Tiger Reserve, Bastar District, Madhya Pradesh by Dr. R.K. Ghose in 1990. A total of eight species belonging to six genera and four families have been reported from the area.

Family BUFONIDAE

Genus *Bufo* Laurenti

Bufo melanostictus Schneider

(Common Indian Toad)

1799. *Bufo melanostictus* Schneider, *Hist. Amph.*, 1 : 216

1985. *Bufo melanostictus* : Frost, *Amphibian species of the world* : 54

Material examined : 2 exs.; Pillur, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 25.i.90; R.K. Ghose coll.

Measurements : 80-100 mm. from snout to vent.

Distribution : Common throughout Sri Lanka; Indian region; Burma; Southern China; Malay Peninsula and Archipelago.

Remarks : This is the commonest species among Indian anurans and is found to occur in almost all the biotopes. According to Chanda (1991) this species has been found to occur in Himalayan region upto an altitude of 3048 m. The hill specimen is generally found abundantly in the damp places and near the banks of streams.

During the greater part of the year this species generally remain silent but may be heard throughout the year where there is plenty of rainfall. It is nocturnal in habit but during the breeding season it can be seen both during day and night. This species is mainly insectivorous in habit.

Family RANIDAE

Genus *Tomopterna* Dumeril and Bibron*Tomopterna breviceps* (Schneider)

(Burrowing Toad)

1799. *Rana breviceps* Schneider, *Hist. Amph.*, 1 : 1401985. *Tomopterna breviceps* : Frost, *Amphibian species of the world* : 523.

Material examined : 1 ex; Kutru, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 30.i.90; R.K. Ghose coll.

Measurements : 29 mm from snout to vent.

Distribution : Sri Lanka; India (Andhra Pradesh, Gujarat, Himachal Pradesh); Nepal and Burma.

Remark : *T. Breviceps* has been reported here for the first time from Indravati Tiger Reserve, Bastar District as also from Madhya Pradesh. It is a very rare and burrowing species of the family Ranidae and can be seen during early monsoon period. It's shovel shaped metatarsal tubercle is used for digging the soil in search of food and shelter. According to Rao (1915) it is a terrestrial species and the burrowing habit is very similar to the Microhylid frog *Uperodon systoma*.

Genus *Rana* Linnacus*Rana cyanophlyctis* Schneider

(Skipper Frog)

1799. *Rana cyanophlyctis* Schneider. *Hist. Amph.*, 1 : 1371985. *Rana cyanophlyctis* : Frost, *Amphibian species of the world* : 487.

Material examined : 1 ex; Bidare, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 29.i.90; R.K., Ghose coll. 1 ex; Kutru, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 30.i.90; R.K. Ghose coll.

Measurements : 40-55 mm. from snout to vent.

Distribution : Iran; throughout Indian subcontinent from the base of the Himalayas to the southern part of the country; Sri Lanka; Nepal and Thailand.

Remarks : It is the commonest and most easily available of the Indian frogs, inhabiting all the biotopes of the country. It is almost entirely aquatic and is active both during the day and night. Skipper frog has the peculiar habit of skipping over the surface of water. It may be frequently found on the banks of streams or ponds and prefers still water. This frog is a voracious feeder, its food consisting of insects, little frogs, tadpole and insect larvae.

***Rana limnocharis* Weigmann**
(Paddy Field Frog)

1835. *Rana limnocharis* Weigmann, *N. Acta Leop Carol*, 16 (1) : 255

1985. *Rana limnocharis* : Frost, *Amphibian species of the world* : 500

Material examined : 2 exs; Bidare, Indravati Tiger Reserve, Bastar Dist., Madhya Pradesh; 25.i.90; R.K. Ghose coll. 1 ex; Pellur, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 25.i.90; R.K. Ghose coll. 1 ex; Kutru, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 27.i.90; R.K. Ghose coll.

Measurements : 35-40 mm. from snout to vent.

Distribution : Sri Lanka; throughout the Indian region; Pakistan and Eastern Asia from Japan to China.

Remarks : It is the commonest and most widely distributed Indian frog. It is found abundantly in the vicinity of tanks and streams as well as at the edges of ponds and marshes. During monsoon, they wander far and wide in the grass and may be found both during the day and night. This species apparently does not have any fixed breeding season and can breed throughout the year if the conditions are suitable. It is a voracious feeder and its food mainly consists of insects and their larvae.

***Rana tigerina* Daudin**
(Indian Bull Frog)

1803. *Rana tigerina* Daudin, *Hist. Rain Gren. Crap.*, p.64

1985. *Rana tigerina* : Frost, *Amphibian species of the world* : 518

Material examined : 1 ex; Bijapur, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 8.ii.1990; R.K. Ghose coll.

Measurements : 62 mm. from snout to vent.

Distribution : Sri Lanka; common throughout India from the base of the Himalayas to South India; Nepal; Burma; Thailand; South China and Taiwan.

Remarks : It is the commonest and most widely distributed of the Indian frogs next to *Rana cyanophlyctis* and *Rana limnocharis*. It is generally found in the vicinity of tanks and streams as well as at the edges of ponds and marshes. Occasionally they are also found to occur in permanent or semipermanent water bodies. This species has a high commercial importance. A large amount of foreign exchange being earned by exporting the hind limbs of this frog.

Family MICROHYLIDAE

Genus *Microhyla* Tschudi

Microhyla cranata (Dumeril and Bibron)
(Ornate Microhylid)

1841 *Engystoma crati*, Dum. and Bibron, *Erpet. Gen.*, 8 : 745

1985. *Microhyla ornata* : Frost, *Amphibian species of the world* : 387.

Material examined : 5 exs; Pillur, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 25.i.90; R.K. Ghose coll.

Measurements : 12-20 mm. from snout to vent.

Distribution : It is a widely distributed species of Indian and found all over the plains of the country upto an altitude of 1524 m. Also found in Sri Lanka; Burma; South China and Taiwan.

Remarks : It is the commonest species of the family Microhylidae and is generally nocturnal in habit. It may be found during the day, hidden under leaves and stones. It has adopted itself to life in different biotopes from heavy rainfall areas to desert. This species is mainly insectivorous and feeds on specially small Coleopteran insects and ants. June-July is the breeding season of this frog. Eggs are laid in flat, transparent masses.

Genus *Uperodon* Dum and Bibson

Uperodon globulosum
(Baloon Frog)

1864. *Cacopus globulosum* Gunther, *Rept. Brit. India* : 416

1985. *Uperoden globulosum* : Frost, *Amphibian species of the world* : 391

Material examined : 1 ex; Pillur, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 25.i.90; R.K. Ghose coll.

Measurements : 50 mm. from snout to vent.

Distribution : Indian in distribution and has been recorded from Assam, West Bengal, Orissa, Madhya Pradesh, Maharashtra, Gujarat and Karnataka.

Remarks : This species is endemic to Indian region. It is a fossorial frog and generally found inside the soil except during the breeding season. In loose soil, this species can quickly burrow and disappear inside the soil, using their powerful shovel-shaped metatarsal tubercles. On land, it can simply hop or slowly walk, while in water they simply float and are the most feeble swimmers. This

sedentary species restricts its movements for burrowing into the nests of their main food, termites as well as the ground dwelling ants.

Family RHACOPHORIDAE

Genus *Polypedates* Tschudi

Polypedates leucomystax (Gravenhorst)

1829. *Hyla leucomystax* Gravenhorst, *Delic Mus. Uratislau* : 26

1985. *Polypedates leucomystax* : Frost, *Amphibian species of the world* : 541.

Material examined : 1 ex; Bijapur, Indravati Tiger Reserve, Bastar District, Madhya Pradesh; 8.ii.1990; R.K. Ghose coll.

Measurements : 55 mm. from snout to vent.

Distribution : India (Assam, Arunachal Pradesh, Sikkim and West Bengal); Southern China; Taiwan and Philippines.

Remarks : The present specimen from Indravati constitutes its first record from Madhya Pradesh. It is nocturnal and a rare species of frog. During the monsoon this species occasionally found to occur inside rooms, specially at night. It prefers moist and dark atmosphere of lavatory and may also be found to rest inside thick leaves of plants like pine and roofs of thatched village huts. It is mainly insectivorous.

REFERENCES

- Inger, R.F. and Dutta, S.K. 1988. An over view of the Amphibian fauna of India. *J. Bombay nat. Hist. Soc.*, 83 : 135-146.
- Saksena, D.N., Sarkar, A.K. and Tewari, K.K. 1988. Anuran fauna of Gwalior and Chambal Divisions of Madhya Pradesh, India. *J. Hydrobiol*, 4 (1) : 25-27.
- Sanyal, D.P., Chandra, P.K. and Roy, S. On a collection of amphibian from Bastar District, Madhya Pradesh. (In press)

REPTILIA

INTRODUCTION

I had the opportunity to study a small lot of reptile collections made by the Indravati Tiger Reserve survey party of Zoological Survey of India during January–February, 1990. Though the collection at my disposal are far too small to give any idea of the exact number of species of reptiles occurring in the Reserve, it is hoped, will add to the little known herpetological knowledge of the area. The lot contains 12 species and recorded first time from the Reserve.

SYSTEMATIC ACCOUNT

Class	REPTILIA
Order	SQUAMATA
Suborder	SAURIA
Family	GEKKONIDAE

1. *Hemidactylus brooki* Gray

(Spotted Indian House Gecko)

1885. *Hemidactylus brooki* Gray, *Cat. Liz. Brit. Mus.*, : 153

1935. *Hemidactylus brooki* Smith, *fauna Brit. Ind.*, 2 : 89-91.

Material examined : 1 ex.; Sendra; 24.i.1990; R.K. Ghose coll.

Diagnostic character : Snout obtusely pointed. Scales on the body granular with 14-19 rows of sub-triangular tubercles. 8 upper and 7 lower labials; Mental subangular; nostril between the rostral, first labial and two small shields. Digits free, moderately dilated, with 5 oblique lamellae under the first digit; 7 under the fourth. Greyish above with dark brown spots, more or less regularly arranged; a dark streak along the side of the head.

Distribution : Indravati Tiger Reserve, Madhya Pradesh as mentioned in the material. Elsewhere : The species is distributed throughout the Indian region.

Status : Common.

Remarks : Common house gecko in India, but also found away from human habitations.

2. *Hemidactylus flaviviridis* Ruppeel

(Yellow Bellied House Gecko)

1835. *Hemidactylus flaviviridis* Ruppell, *Neue Wirb. Faun. Abyss.* : 18.

1935. *Hemidactylus flaviviridis* Smith, *Fauna Brit. Ind.*, 2 : 98

Material examined : 1 ex.; Bijapur; 3.ii.1990; R.K. Ghose coll.

Diagnostic characters : Tubercles and the body are negligible in number ; upper labials 11 and lower labials 9. 12 lamellae in the fourth toe. Greyish above, with indistinct darker transverse bands.

Distribution : Indravati Tiger Rserve as mentioned above. Elsewhere : India : Northern India to West Bengal and south to the vicinity of Bombay.

Status : Common.

Remarks : This gecko is an edifical species, seldom found far from human dwellings.

3. *Hemidactylus triedrus* (Daudin)

(Termite Hill Gecko)

1802. *Gecko triedrus* Daudin, *Hist. Nat. Rept.*, 4 : 155.

1935. *Hemidactylus triedrus* Smith, *Fauna. Brit. Ind.*, 2 : 88-89.

Material examined : 1 ex.; Kutru; 24.i.1990; R.K. Ghose coll.

Diagnostic characters : Head rather large, snout obtusely pointed. Upper labials 8 and lower labials 7. Mental large and subtriangular. Two well-developed pairs of postmentals. Gular region with small granular scales. 7 lamellae under the first digit. A handsomely marked gecko with three-edged olive-green crossbars on back; greenish above eye. Back with large tubercules arranged in 16 rows.

Distribution : Indravati Tigrer Reserve as mentioned above. Elsewhere : Widely distributed in India and Pakistan.

Status : Common.

Remarks : A ground-dwelling form commonly associated with termite hills.

Family AGAMIDAE

4. *Calotes versicolor* (Daudin)

(Common Garden Lizard or Bloodsucker)

1802. *Agma versicolor* Daudin, *Hist. Nat. Rept.*, 3 : 395.1935. *Calotes versicolor* Smith, *Fauna Brit. Ind.*, 2 : 189-193.*Material examined* : 1 ex.; Bijapur; 8.ii.1990; R.K. Ghose coll.*Diagnostic characters* : Head oval and body laterally compressed. Two distinct spines on each side of head behind tympanum. Dorsal scales large, equal sized, keeled and directed backwards and upwards. A distinctive dorsal crest of lance-shaped scales from nape to above vent in the male. Sand grey above, with a pattern of spots and bars on the back and sides.*Distribution* : Indravati Tiger Reserve as mentioned in the material. Widely distributed throughout the Indian subcontinent and most of SE Asia.*Status* : Common.*Remarks* : Found in all biotopes from dry desert to thick forests, from the plains to about 2000 m.5. *Psammophilus blanfordanus* (Stoliczka)

(Rock Lizard)

1871. *Charasia blanfordana* Stoliczka, *P. Asiat. Soc. Beng.*, : 194.1935. *Psammophilus blanfordanus* Smith, *Fauna Brit. Ind.*, 2 : 210.*Material examined* : 1 ex.; Bijapur; 2.ii.1990; R.K. Ghose coll.*Diagnostic characters* : Dorsal scales slightly larger, keeled and imbricate arranged in 80-100 rows round the midbody; flank with a few scattered and a little larger series of scales.*Distribution* : Indravati Tiger Reserve as mentioned in the material. Elsewhere : Bihar, Orissa, Madhya Pradesh, Andhra Pradesh.*Status* : Common.*Remarks* : It is found only on rocks. In the breeding season the head and fore-parts of the male assume a brilliant red colour.

6. *Sitana ponticeriana* Cuvier

(Fan Throated Lizard)

1844. *Sitana ponticeriana* Cuvier, *Guerin, Icon. Reg. Anim. Rept.*, Pl. 10, Fig.2.*Material examined* : 1 ex.; Bijapur; 2.ii.1990; R.K. Ghose coll.*Diagnostic characters* : A small lizard easily distinguished by the presence of only four toes as against five toes in all other Agamid lizards. The fan-like throat appendage in the male is an additional distinguishing character. Brown above, with a series of dark brown, black-edged, rhomboidal spots along the middle of the back.*Distribution* : Indravati Tiger Reserve as mentioned in the material. Elsewhere : Widely distributed from Kanyakumari to the foot of the Himalayas.*Status* : Common*Remarks* : Inhabits all biotopes except perhaps the heavy rainfall forests and the deserts. A ground-dwelling, diurnal and commonly found in open sandy scrub country.

Family SCINCIDAE

7. *Mabuya carinata* (Schneider)

(Common or Brahminy Skink)

1801. *Scincus carnatus* Schneider, *Hist. Amphib.*, 2 : 183.1890. *Mebuia carinata* Boulenger, *Fauna Brit. Ind.*, : 1881935. *Mabuya carinata* Smith, *Fauna Brit. Ind.*, 2 : 266-268.*Material examined* : 1 ex.; Kutru; 25.i.1990; R.K. Ghose coll.*Diagnostic characters* : Dorsal and lateral scales subequal, with 3 or 5 distinct keels; 32 scales round the middle of the body. Digits moderately long, with obtusely lamellae. A light band from behind the eye to the base of the tail. Upper lip white.*Distribution* : Indravati tiger Reserve as mentioned in the material. Elsewhere : Widely distributed in the Indian Peninsula but rare or absent in NW India.*Status* : It is one of the commonest and best known Indian skinks.*Remarks* : Almost a commensal of man. A diurnal lizard. In the forest it is more often heard than seen as it creeps through and among the litter on the ground.

8. *Mabuya macularia* (Blyth)
(Little Skink)

1853. *Euprepes macularius* blyth, *J. Asiat. Soc. Beng.*, 22 : 652.

1935. *Mabuya macularia* Smith, *fauna Brit. Ind.*, 2 : 264-266.

Material examined : 1 ex.; Kutru; 2.ii.1990; R.K. Ghose coll.

Diagnostic characters : Supranasals separated from one another; frontonasal about as long as broad. Temporal scales keeled. Dorsal and lateral scale subequal. Digits moderately long with obtusely keeled lamellae. The general body-colour is brown with or without spots.

Distribution : Indravati Tiger Reserve as mentioned in the material. Elsewhere : It is widely distributed in forested areas of the Peninsular India.

Status : Common.

Remarks : A diurnal lizard.

Suborder SERPENTES
Family COLUBRIDAE

9. *Amphiesma stolata* (Linnaeus)
(Striped Keelback)

1758. *Coluber stolatus* Linnaeus, *Syst. Nat.* 10th Ed. : 379.

1854. *Amphiesma stolatum* Dumeril & Bibron, *Erp. Gen.*, 7 : 724.

Material examined : 1 ex.; Pilur; 25.i.1990; R.K. Ghose coll.

Diagnostic characters : Nasals not touching the 2nd supralabial, rostral touching 6 shields. Scales in 19 rows, strongly keeled, except the outer row, which is smooth. Eyes large, pupil round, flecked with gold. Colour olivaceous brown of varying intensity. A pair of conspicuous buff striped covering one whole or two half rows of scales front of neck to tip of tail. Some blackish, irregular crossbars on body, olivaceous anteriorly. Head olivaceous brown. Belly white with some small scattered black spots.

Distribution : Indravati Tiger Reserve as mentioned in the material. Elsewhere : In India it is a common snake in the plains and rarer in the hills.

Status : Common.

Remarks : An inoffensive gentle snake, found in fields, grassy and cultivated areas of open country during the rainy season. Essentially diurnal.

10. *Xenochrophis piscator* (Schneider)
(Checkered Keelback)

1799. *Hydrus piscator*, Schneider, *Hist. Amph.*, 1 : 247.

1968. *Xenochrophis piscator* Malnate and Milton. *Proc. Acad. Nat. Sci. Philadelphia*, 117 (2) : 19.

Material examined : 1 ex.; Sendra; 2.ii.1990; R.K. Ghose coll.

Diagnostic characters : A fairly robust snake with oval head having slit-like nostrils and moderately large eyes. Tail one-third to one-fourth total length. 19 rows of scales at midbody more or less strangely keeled. Five rows of black spots on an olivaceous back ground, spots varying in size sometimes occupying most of the back. Head olive-brown with two black streaks one below and one behind eye.

Distribution : Indravati Tiger Reserve as mentioned in the material. Elsewhere : Found throughout the Indian suncontinent.

Status : Common.

Remarks : The commonest freshwater snake. It may be seen away from water.

11. *Ptyas mucosus* (Linnaeus)
(Common Rát Snake)

1758. *Coluber mucosus*, Linn. *Mus. Ad. Fried.*, 1:37, Pl. 23.

1824. *Ptyas mucosus*, Gunther, *Rept. Brit. Ind.*, : 249.

Material examined : 1 ex.; Karkeli; 26.i.1990; R.K. Ghose coll.

Diagnostic characters : Scales in 17 rows, the median rows more or less distinctly keeled. Head elongate, eyes large and lustrous. Nostrils large. Neck constricted. Body robust, compressed, tapering towards both ends. Dorsally olivaceous brown, and yellowish-white below, the posterior ventrals and subcaudals edged with black.

Distribution : Indravati Tiger Reserve as mentioned in the material. Elsewhere : Throughout the Indian subcontinent.

Status : Common.

Remarks : Diurnal¹; in populated areas it may not be commonly seen during the day.

12. *Lycodon aulicus* (Linnaeus)
(Common Wolf Snake)

1754. *Coluber aulicus* Linn, *Mus. Ad. Fried.*, 1 : 29, Pl.12.

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

Material examined : 1 ex.; Bidare; 2.ii.1990; R.K. Ghose coll.

Diagnostic characters : 17 scales at midbody, loreal touching internasal, nasal in contact with 1st and 2nd labial. 9 upper labials. A glossy, slender snake with a pear-shaped depressed head. Neck slightly constricted. The body colour is light brown with yellow crossbars on body.

Distribution : Indravati Tiger Reserve as stated in the material. Elsewhere : Found throughout India.

Status : common.

Remarks : It is most often seen near human habitations.

SUMMARY

This paper deals with the little known reptile fauna of Indravati Tiger Reserve, Madhya Pradesh. It is based on a collections made by Indravati Tiger Reserve survey party during January-February 1990 by Dr. R.K. Ghose and party. This collection contains 12 species belonging to 9 genera and 4 families.

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REFERENCES

- Sanyal, D. P. & Dasgupta, Gouri, 1990. On a collection of reptiles from Baster District, Madhya Pradesh, Central India. *Hamadryad*, 15 (1) : 18-20.
- Smith, M. A. 1935. *The Fauna of British India*, Voll. II. Sauria. Taylor and Francis, London.
- Smith, M. A. 1943. *The Fauna of British India*, vol III. Serpentes. Taylor and Francies, London.
- Anon. 1993. Fauna of Tiger Reserves : An overview, Edited by the Director, Zoological Survey of India, Calcutta.

AVES

INTRODUCTION

The avifauna of the sparsely populated Indravati Tiger Reserve in the Bastar district has been very little known except for some scattered information available through the publications of Abdulali and Ambedkar (1966) and Majumdar (1984). However, a list of birds made in course of the Indravati Tiger Reserve survey from field observation and some collection taken in the field from 24 January to 9 February 1990 has been reported in this communication. This contains 92 species and subspecies of birds under 83 genera and 36 families. Systematics etc. have been treated after Ripley (1982), Ali and Ripley (1968-74 and 1983).

Order PELECANIFORMES

Family PHALACROCORACIIDAE

	<i>Common Name</i>	<i>Status</i>
1. <i>Phalacrocorax niger</i> (Vicillot)	Little Cormorant	Sc IV

Order CICONIFORMES

Family ARDEIDAE

2. <i>Ardeola grayii</i> (Sykes)	Pond Heron	Sc IV
3. <i>Bubulcus ibis coromandus</i> (Boddaert)	Cattle Egret	Sc IV
4. <i>Ardea alba</i> Linnaeus	Large Egret	Sc IV
5. <i>Egretta garzetta</i> (Linnaeus)	Little Egret	Sc IV

Family CICONIIDAE

6. <i>Anastomus oseeitans</i> (Boddaert)	Openbill Stork	Sc IV
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Family THRESKIORNITHIDAE

7. <i>Pseudibis papillosa</i> (Temminck)	Black Ibis	Sc IV
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Order ANSERIFORMES

Family ANATIDAE

8. <i>Dendrocygna javanica</i> (Horsfield)	Lesser Whistling Teal	Sc IV
9. <i>Anas acuta</i> Linnaeus	Pintail	Sc IV
10. <i>Anas clypeata</i> Linnaeus	Shoveller	Sc IV

Order FALCONIFORMES

Family ACCIPITRIDAE

11. <i>Elanus caeruleus vocifer</i> (Latham)	Blackwinged Kite	Sc IV
12. <i>Aviceda jerdoni</i> (Blyth)	Blyth's Baza	Sc IV
13. <i>Pernis ptilorhyncus</i> (Temminck)	Honey Buzzard	Sc IV
14. <i>Milvus migrans govinda</i> Sykes	Pariah Kite	Sc IV
15. <i>Accipiter badius dussumieri</i> (Temminck)	Shikra	Sc IV

Order FALCONIFORMES

Family ACCIPITRIDAE

16. <i>Accipiter trivergatus indicus</i> (Hodgson)	Crested Goshawk	Sc I
17. <i>Gyps indicus</i> (Scopoli)	Longbilled Vulture	Sc IV
18. <i>Circus malanoleucos</i> (Pinnant)	Pied Harrier	Sc IV
19. <i>Spilornis cheela</i> (Latham)	Crested Serpenter Eagle	Sc IV

Family CICONIIDAE

Family PHASIANIDAE

20. <i>Francolinus pondicerianus</i> (Gmelin)	Grey Partridge	Sc IV
21. <i>Perdica argorndah</i> (Sykes)	Rock Bush Quail	Sc IV
22. <i>Gallus gallus</i> (Linnaeus)	Red Jungle fowl	Sc IV
23. <i>Pavo cristatus</i> Linnaeus	Peafowl	Sc IV

Family TURNICIDAE

24. <i>Turnix sultator tigoor</i> (Sykes)	Common Bustard Quail	Sc IV
25. <i>Gallinula choropus indica</i> Blyth	Moorhen	Sc IV
26. <i>Porphyrio porphyrio</i> (Linnaeus)	Purple Moorhen	Sc IV

Order CHARADRIIFORMES

Family JACANIDAE

- | | | |
|---|------------------------|-------|
| 27. <i>Hydrophasianus chirurgus</i> (Sespoli) | Pheasant-tailed Jacana | Sc IV |
| 28. <i>Metopidius indicus</i> (Latham) | Bronzwinged Jacana | Sc IV |

Family CHARADRIIDAE

- | | | |
|---|--------------------|-------|
| 29. <i>Venellus indicus</i> (Boddaert) | Redwattled Lapwing | Sc IV |
| 30. <i>Tringa ochropus</i> Linnaeus | Green Sand piper | Sc IV |
| 31. <i>Gallinago gallinago gallinago</i> (Linnaeus) | Fantailed Snipe | Sc IV |

Order COLUMBIFORMES

Family COLUMBIDAE

- | | | |
|--|-----------------------------|-------|
| 32. <i>Treron bicineta</i> (Jerdon) | Orangebreasted Green Pigeon | Sc IV |
| 33. <i>Treron phoneicoptera</i> (Latham) | Yellowlegged Green Pigeon | Sc IV |
| 34. <i>Columba punicea</i> Blyth | Purple Wood Pigeon | Sc IV |
| 35. <i>Streptopelia orientalis</i> (Latham) | Rufous Turtle Dove | Sc IV |
| 36. <i>Streptopelia decaocto</i> (Frivaldszky) | Ring dove | Sc IV |
| 37. <i>Streptopelia chinensis</i> (Scopoli) | Spotted Dove | Sc IV |

Order PSITTACIFORMES

Family PSITTACIDAE

- | | | |
|--|------------------------|-------|
| 38. <i>Psittacula eupatria nipalensis</i> (Hodgson) | Alexandrine Parakeet | Sc IV |
| 39. <i>Psittacula krameri</i> (Scopoli) | Roseringed Parakeet | Sc IV |
| 40. <i>Psittacula cyanocephala cyanocephala</i> (Linnaeus) | Blossomheaded Parakeet | Sc IV |

Order CUCULIFORMES

Family CUCULIDAE

- | | | |
|---|----------------------------|-------|
| 41. <i>Cuculus micropterus</i> Gould | Indian Cuckoo | Sc IV |
| 42. <i>Eudynamys scolopacea scolopacea</i> (Linnaeus) | Koel | Sc IV |
| 43. <i>Rhopodytes tristis tristis</i> (Lesson) | Large Green billed Milkoha | Sc IV |

- | | | |
|--|----------------|-------|
| 44. <i>Taccocoa leschenaultii</i> Lesson | Sirkeer Cuckoo | Sc IV |
| 45. <i>Centropus sinensis</i> (Stephens) | Coucal | Sc IV |

Order STRIGIFORMES

Family STRIGIDAE

- | | | |
|---|-------------------|-------|
| 46. <i>Otus bakkamoena marathae</i> Ticehurst * | Collard Scops Owl | Sc IV |
| 47. <i>Bubo bubo</i> (Linnaeus) | Eagle-Owl | Sc IV |
| 48. <i>Glaucidium radiatum</i> (Tickell) | Jungle Owlet | Sc IV |
| 49. <i>Athene brama</i> (Temminck) | Spotted Owlet | Sc IV |
| 50. <i>Strix leptogrammica</i> Temminck | Brown Wood Owl | Sc IV |

Order CAPRIMULGIFORMES

Family CAPRIMULGIDAE

- | | | |
|---|------------------------|-------|
| 51. <i>Caprimulgus indicus</i> Latham * | Indian Jungle Nightjar | Sc IV |
|---|------------------------|-------|

Order APODIFORMES

Family APODIDAE

- | | | |
|--|------------|-------|
| 52. <i>Cypsiurus parvus</i> (Lichtenstein) | Palm Swift | Sc IV |
|--|------------|-------|

Family HEMIPROCNIDAE

- | | | |
|--|--------------------|-------|
| 53. <i>Hemiprocne longipennis coronata</i> (Tickell) | Crested Tree Swift | Sc IV |
|--|--------------------|-------|

Order TROGONIFORMES

Family TROGONIDAE

- | | | |
|---|----------------|-------|
| 54. <i>Harpactes fusiatus</i> (Pennant) | Malabar Trogon | Sc IV |
|---|----------------|-------|

Order CORACIIFORMES

Family ALCEDENIDAE

- | | | |
|-------------------------------------|-------------------|-------|
| 55. <i>Alcedo atthis</i> (Linnaeus) | Common Kingfisher | Sc IV |
|-------------------------------------|-------------------|-------|

* Species collected by ZSI

56. *Alcedo meninting* Horsfield Blue-eared Kingfisher Sc IV

57. *Halcyon smyrnensis* (Linnaeus) White breasted Kingfisher Sc IV

Family MEROPIDAE

58. *Merops orientalis orientalis* Latham Green Bea-eater Sc IV

Family CORACIIDAE

59. *Coracias benghalensis benghalensis* (Linnaeus) Indian Roller Sc IV

Order PICIFORMES

Family CAPITONIDAE

60. *Megalaima zeylanica* (Gmelin) Large Green Barbet Sc IV

61. *Megalaima haemacephala indica* (Latham) Blue throated Barbet Sc IV

Order PICIFORMES

Family PICIIDAE

62. *Dinopium benghalense benghalense* (Linnaeus) Lesser Golden backed Woodpecker Sc IV

63. *Picoides canicapillus* (Blyth) Grey crowned Pigmy Woodpecker Sc IV

Order PASSERIFORMES

Family ORIOLIDAE

64. *Oriolus xanthornus* (Linnaeus) Blackheaded Oriole Sc IV

Family DICRUSIDAE

65. *Dicrurus leucophaeus* Vieillot Grey Drongo Sc IV

66. *Dicrurus paradiseus* (Linnaeus) Greater Racket-tailed Drongo Sc IV

Family STURNIDAE

67. *Sturnus malabaricus malabaricus* (Gmelin) Grey headed Myna Sc IV

68. *Sturnus pagodarum* (Gmelin) Blackheaded Myna Sc IV

69. *Acridotheres tristis* (Linnaeus) Common Myna Sc IV

Family CORVIDAE

- | | | |
|--|-------------|-------|
| 70. <i>Corvus macrorhynchos culminatus</i> Sykes | Jungle Crow | Sc IV |
| 71. <i>Corvus splendens</i> Vicillot | House Crow | Sc IV |
| 72. <i>Dendrocitta vegabunda vegabunda</i> (Latham)* | Treepie | Sc IV |

Family CAMPIPHAGIDAE

- | | | |
|--|---------------------|-------|
| 73. <i>Coracina novaehollandiae maccei</i> (Lesson)* | Large Cuckoo-Shrike | Sc IV |
| 74. <i>Pericrocotus cinnamomeus</i> (Linnaeus) | Small Minivet | Sc IV |

Order PASSERIFORMES

Family PYCNONOTIDAE

- | | | |
|---|------------------|-------|
| 75. <i>Pycnonotus cafer</i> (Linnaeus)* | Redvented Bulbul | Sc IV |
|---|------------------|-------|

Family MUSCICAPIDAE

- | | | |
|---|-----------------------------------|-------|
| 76. <i>Turdoides striatus</i> (Dumont)* | Jungle Babbler | Sc IV |
| 77. <i>Muscicapa tickelliae tickelliae</i> (Blyth)* | Tickell's Blue Flycatcher | Sc IV |
| 78. <i>Rhipidura albicollis</i> (Vicillot) | White throated Fantail Flycatcher | Sc IV |
| 79. <i>Terpsiphone paradisi</i> (Linnaeus) | Paradise Flycatcher | Sc IV |
| 80. <i>Hypothymis azurea</i> Boddaert* | Blacknaped blue flycatcher | Sc IV |
| 81. <i>Prinia sylvatica sylvatica</i> Jerdon* | Jungle Wren-Warbler | Sc IV |
| 82. <i>Copsychus saularis saularis</i> (Linnaeus)* | Magpei-Robin | Sc IV |
| 83. <i>Copsychus malabaricus</i> (Scopli)* | Shama | Sc IV |
| 84. <i>Saxicoloides fulicata</i> (Linnaeus) | Indian Robin | Sc IV |
| 85. <i>Zoothera citrina</i> (Latham)* | Orangeheaded Ground Thrush | Sc IV |

Family PASIDAE

- | | | |
|--|--------------------|-------|
| 86. <i>Parus xanthogenys aptonotus</i> (Blyth) | Yellow cheeked Tit | Sc IV |
|--|--------------------|-------|

Family MOTACILLIDAE

87. *Anthus hodgsoni hodgsoni* Richmond Indian Tree Pipit Sc IV

Order PASSERIFORMES

Family MOTACILLIDAE

88. *Motacilla cinerea cinerea* Tunstali Grey Wagtail Sc IV

Family DICAEDAE

89. *Dicaeum erythrorhynchos erythrorhynchos* (Latham) Tickell's Flowerpeaker Sc IV

Family NECTARINIDAE

90. *Nectarinia asiatica asiatica* (Latham) Purple Sunbird Sc IV

Family PLOCCIDAE

91. *Passer domesticus* (Linnaeus) House Sparrow Sc IV

92. *Petronia xanthocollis xanthocollis* (Burton) Yellow throated Sparrow Sc IV

REFERENCES

- Abdulali, H. and Ambedker, V. C. 1966. Occurrence of the Blackcrested Baza *Avicida leuphotes* (Dumont) in Madhya Pradesh. *J. Bombay nat. Hist. Soc.*, 62 (3) : 56.
- Ali, S. and Ripley, S. D. 1968-1974. Hand book of the birds of India and Pakistan together with those of Bangladesh, Nepal, Bhutan and Sri Lanka. 10 Vols. Oxford University Press, Bombay.
- Ali, S. and Ripley, S. D. 1983. A pictorial guide to the birds of the Indian Subcontinent. Oxford University Press, Delhi and London.
- Majumdar, N. 1984. On a collection of birds from Bastar District, Madhya Pradesh. *Rec. zool. Surv. India*, Occ. Paper No. 59, pp. 1-54.
- Ripley, S. D. 1982. A synopsis of the birds of India and Pakistan together with those of Nepal, Bangladesh and Sri Lanka. 2nd. ed. Bombay Nat. Hist. Soc., Bombay.

MAMMALIA

INTRODUCTION

The mammal material listed hereunder from the Indravati Tiger Reserve is comprised of 38 species belonging to 35 genera and 20 families. The list is mainly based on the local reports, Management Plan of Indravati Tiger Reserve, 1982-83 to 19889-90 (by K. R. Dongaonkar) and some collection made by the Zoological Survey of India party from 24 January to 9 February 1990. Classification, in general, has been adopted after Ellerman and Morrison-Scott (1966) unless otherwise stated. For identification of rodents and other mammals, Blanford (1988-91) and Ellerman (1961) have been followed.

TAXONOMIC ACCOUNT

Order INSECTIVORA

Family SORICIDAE

1. *Suncus murinus* (Linnaeus)

(Common Shrew)

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

Type locality : Java.

Material examined : 4♂ 1♀; Kutru, Bastar dist., M.P.; 25.i. 1990 to 2. ii. 1990; R. K. Ghose coll.

<i>Measurements</i> :	♂				1♀
H. & B.	102,	116,	116,	117	105
Tl.	60,	62,	70,	95	64
H.F.	18,	19,	20,	28	16
E.	11,	15,	15,	19	—

Weight : 2♂ : 25, 30 gms.; 1♀ : 26 gms.

Remarks : Trapped in the forest camp.

Order CHIROPTERA

Family PTEROPODIDAE

2. *Pteropus giganteus* (Brunnich)

(Indian Flying Fox)

1782. *Vespertilio gigantea* Brunnich, *Dyrenes Historie*, 1 : 45.*Type locality* : Bengal, India.*Remarks* : Though not collected, this flying fox has been seen both at Kutru and at Bijapur.3. *Rousettus leschenaulti* (Desmarest)

(Fulvus Fruit Bat)

1820. *Pteropus leschenaulti* Desmarest, *Encycl. Meth. Mamm.*, 1 : 110*Type locality* : Pondicherry, India.*Material* : 1♂; Bijapur, Bastar Dist., M.P.; 5.ii.1990; R.K. Ghose coll.*Measurements* :

	♀
H. & B.	125
Tl.	21
E.	21
Forearm	84

Weight : 85 gms.*Remarks* : This bat has been observed to be not very common.4. *Cynopterus sphinx* Vahl

(Short nosed fruit Bat)

1797. *Vespertilia sphinx* Vahl, *Skr. Nat. Selsk*, Copenhagen, 4, 1 : 123.*Type locality* : Tranquebar, Madras, India.*Material examined* : 3♂ 4♀; Kutru., Bastar Dist., M.P.; 17-18.i.1990; R.K. Ghose coll. 1♀; Bijapur, Bastar Dist., M.P.; 5.ii.1990; R. K. Ghose coll.

H. & B.	102, 108, 108	98, 107, 107
Tl.	8, 8, 9	9, 9, 14
E.	20, 21, 24	21, 21, 21
Forearm	68, 71, 74	68, 71, 74

Weight : 1 ♀ : 52 gms.

Remarks It is a very common species of fruit bat in this Tiger Reserve.

Family RHINOLOPHIDAE

5. *Rhinolophus rouxi* Temminck (Horseshoe Bat)

1935. *Rhinolophus rouxii* Temminck, *Mon. Mamm.*, 2 : 30b.

Type locality : Pondicherry, India.

Material examined : 1 ♂; Kutru, Bastar Dist., M.P.; 27.i. 1990; R.K. Ghose coll. 1 ♂; Bijapur, Bastar Dist., M.P.; 6.ii. 1990; R.K. Ghose coll.

Measurements :

	2 ♀	
H. & b.	56,	56
Tl.	24,	28
E.	18,	19
Forearm	47,	48

Weight : 1 ♂ : 10 gms.

Remarks : This species was caught in mist-net inside the forested area.

Family MEGADERMATIDAE

6. *Megaderma lyra* Geoffroy (Indian False Vampire)

1810. *Megaderma lyra* E. Geoffroy, *Ann. Mus. N. H.*, Paris, 15 : 190.

Type locality : India (? East coast, Madras).

Material examined : 1 ♂; Bijapur, Bastar Dist., M.P.; 6.ii.1990; R.K. Ghose coll.

<i>Measurements</i> :	1 ♀
H. & B.	75
E.	39
Forearm	62

Weight : 30 gms.

Remarks : Caught in the mist-net while feeding on a specimen of *Cynopterus sphinx* (Short nosed Fruit Bat).

Order PRIMATES

7. *Macaca mulatta* (Zimmerman) (Rhesus Macaque)

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

Type locality : India.

Remarks : Rhesus macaques are commonly seen in the areas where trees with fruits are available within the Reserve.

8. *Presbytis entellus* (Dufresne) (Common Langur)

1797. *Simia entellus* Dufresne, *Bull. Soc. Philom.*, Paris, I, 7 : 49.

Type locality : Bengal, India.

Remarks : Langurs are seen in the areas where trees with fruits are available within the Reserve.

Order CARNIVORA

Family FELIDAE

9. *Panthera tigris* (Linnaeus)
(Tiger)

1758. *Felis tigris* Linnaeus, *Syst. Nat.*, 106th. ed., 1 : 41.

Type locality : Bengal.

Remarks : Reported to be seen near water bodies, nullahs or in ravines.

10. *Panthera pardus* (Linnaeus)
(Leopard)

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

Type locality : Egypt.

Remarks : Reported to be found in the Reserve but appears to be a very rare animal here. Sometimes lifts cattle from forest village.

11. *Felis chaus* Guldenstaedt
(Jungle Cat)

1776. *Felis chaus* Guldenstaedt, *Nov. Com. Acad. Petrop.*, 20 : 483.

Type locality : Terek River, north of the Caucasus.

Remarks : Reported to be common throughout the Reserve.

Family VIVERIDAE

12. *Paradoxurus hermaphroditus* (Pallas)

1777. *Viverra hermaphroditus* Pallas, in Schreber, *Saugeth.*, 3 : 426.

Type locality : ? India.

Material examined : 1♂ 1♀; Kutru, Bastar Dist., M.P.; 30.i.1990; R. K. Ghose coll.

Measurements :	1♂	1♀
H. & B.	532	500

TL.	455	450
H.F	75	73
E.	44	45

Remarks : Common in the Reserve. *P. h. hermaphroditus* is known to occur in Sri Lanka, and in southern India as far north as Narbada River.

Family HERPESTIDAE

13. *Herpestes edwardsi* (Geoffroy)
(Common Grey Mongoose)

1818. *Ichneumon edwardsii* E. Geoffroy, *D'dscr. Egypte*, 2 : 139.

Type locality : Madras (Pocock 1933).

Remarks : Grey mongoose was seen both at Kutru and Bijapur. The species is widely distributed in peninsular India.

14. *Hyaena hyaena* (Linnaeus)
(Striped Hyaena)

1758. *Canis hyaena* Linnaeus, *Syst. Nat.*, 10th. ed., 1 : 4.

Type locality : Benna Mountains, Laristan, S. Iran.

Remarks : Population of the striped hyaena has been reported to be less in the Reserve. The species has a wide range of distribution throughout India, Russia, Iran and Iraq.

Family CANIDAE

15. *Canis aureus* Linnaeus
(Asiatic Jackal)

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

Type locality : Province of Lar, Persia.

Remarks : Asiatic Jackal has been reported to occur everywhere in the Reserve and preys mainly on hares and other small-sized mammals.

16. *Vulpes bengalensis* (Shaw)
(Indian Fox)

1800. *Canis bengalensis* Shaw, *Gen. Zool.*, I, 2 : 330

Type locality : Bengal.

Remarks : The species occurs throughout India. One specimen was seen near Kutru in the Reserve.

17. *Cuon alpinus* (Pallas)
(Indian Wild Dog)

1811 *Canis alpinus* Pallas, *Zoogr. Ross. Asiat.*, 1 : 34.

Type locality : Near Udskoi Ostrong, Amurland.

Remarks : The subspecies *Cuon alpinus dukhunensis* Sykes which occurs south of the Ganga river in India, has been reported to be found in the Indravati Tiger Reserve also.

Family URSIDAE

18. *Melursus ursinus* (Shaw)
(Sloth Bear)

1791. *Bradypus ursinus* Shaw, *Nat. Misc.*, 2 (unpaged), Pls. 58-59.

Type locality : Patna, Bihar.

Remarks : Reported from some places of this Tiger Reserve, but appears to be comparatively rare.

Family MUSTELIDAE

19. *Mellivora capensis indica* (Kerr)
(Ratel)

1776. *Ursus indicus* Kerr, *Anim. Kingd.*, p. 188.

Type locality : India.

Remarks : Reported to occur in the Reserve, but the population appears to be very thin.

Order ARTIODACTYLA

Family BOVIDAE

20. *Boselaphus tragocamelus* (Pallas)
(Nilgai)

1766. *Antlope tragocamelus* Pallas, *Misc. Zoll.*, 5.

Type locality : Peninsular India.

Remarks : Nilgai is found throughout the Reserve, but more common in its western part. Reports of poaching for its meat are occasionally received.

21. *Tetracerus quadricornis* (Blainville)
(Chousingha)

1816. *Cerophorus (Cervicapra) quadricornis* Blainville, *Bull. Soc. Philom.*, Paris, 75 and 78.

Type locality : Peninsular India.

Remarks : Seen in small numbers in forested parts adjoining nullahs or other water sources.

22. *Bos gaurus* (H. Smith)
(Indian Bison)

1827. *Bos Gaurus* H. Smith, *Griffith's Cuvier Anim. King.*, 4 : 399.

Type locality : Mainpat (23°N, 83°E), Sarguja Tributary States, India.

Remarks : The species is known to occur in forest areas in Peninsular India, south to Travancore and in the north from Nepal Terai to Assam and then through Burma to Malaya States. Small herds are reported to occur in the Indravati Tiger Reserve.

23. *Bubalus bubalis* (Linnaeus)
(Wild Buffalo)

1758. *Bos bubalis* Linnaeus, *Syst. Nat.* 10th. ed., 1 : 72.

Type locality : Rome, Italy (description based on a domestic animal).

Remarks : Previously a number of Wild Buffaloes were present in this Tiger Reserve. At present

small populations are restricted to such areas as Pilur (=Pilloor), Pengonda etc. Z.S.I. party has noticed a herd of about twelve individuals at Pilur.

24. *Antelope cervicapra* (Linnaeus)
(Black Buck)

1758. *Capra cervicapra* Linnaeus, *Syst. Nat.*, 10th. ed., 1 : 69.

Type locality : Inland of Trivandrum, India.

Remarks : The Black Buck is reported to occur in this Tiger Reserve, but the population appears to be very rare due to local poaching.

Family CERVIDAE

25. *Cervus unicolor* Kerr
(Sambar)

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

Type locality : Sri Lanka.

Remarks : Sambar is still present in the Reserve, but very rarely seen.

26. *Axis axis* (Erxleben)
(Spotted Deer)

1777. *Cervus axis* Erxleben, *Syst. Regn. Anim.*, p. 312

Type locality : Bank of the Ganga river, India.

Remarks : Spotted Deer are scarcely seen at many places of the Reserve. Z.S.I. party has noticed it in pair near Kutru and Pilur.

27. *Muntiacus muntjak* (Zimmerman)
(Barking Deer)

1780. *Cervus muntjak* Zimmerman, *Geogr. Gesch.*, 2 : 131.

Type locality : Java.

Remarks : Barking Deer are commonly seen every where within the Reserve. Z.S.I. party has seen one animal at Kutru.

Family TRAGULIDAE

28. *Tragulus meminna* (Erxleben)

1777. *Moschus meminna* Erxleben, *Syst. Regn. Anim., Mamm.*, p.322.

Type locality : Sri Lanka.

Remarks : Z.S.I. party has seen one specimen among the fallen logs in the forest about 4 km. west of Bijapur. In India, the species occurs as far north as Orissa, southern Bihar and northern Madhya Pradesh.

Family SUIDAE

29. *Sus scrofa cristatus* (Wagner)
(Indian Wild Boar)

1839. *Sus cristatus* Wagner, *Munch. Gelehrt. Anz.*, 9 : 435.

Type locality : Probably the Malabar Coast, India.

Remarks : Wild Boar is commonly seen in many places in the Reserve. Z.S.I. party observed one individual on Kutru-Pilur Road.

Order LAGOMORPHA

Family LEPORIDAE

30. *Lepus nigricollis* F. Cuvier
(Black naped hare)

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

Type locality : Madras, India.

Material examined : 1♂; Kutru, Bastar Dist., M.P.; 25.i. 1990; R.K. Ghose coll.

Measurements :

	1♂
H. & B.	445
Tl.	95
H.F.	105
E.	88

Remarks : A common species throughout the Tiger Reserve.

Order RODENTIA

Family SCIURIDAE

31. *Petaurista petaurista* (Pallas)
(Common Giant Flying Squirrel)

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

Type locality : Western Java.

Material examined : 4 ♀ ; Kutru, Bastar Dist., M.P.; 27.i. 1990 to 2.ii.1990; R.K. Ghose coll.

Measurements :

	4 ♀			
H. & B.	340,	360,	380,	390
TL.	400,	405,	410,	414
H.F.	70,	72,	72,	73
E.	40,	42,	42,	45

Remarks : A common species of mammal in the Reserve. Tickell (1842, *Calcutta J.N.H.*, 2 : 401) described a species *Petaurista oral* from Sinabhum district. This was ultimately merged with *P. petaurista* by Ellerman and Morrison-Scott (1966). However, the material collected from Kutru resemble more with *P. oral* than with *P. petaurista*. Further study may prove *P. oral* to be a valid species.

32. *Ratufa indica* (Erxleben)
(Indian Giant Squirrel)

1777. *Sciurus indica* Erxleben, *Syst. Regn. Anim.*, p. 420.

Type locality : Maharashtra, India.

Remarks : Observed in many places during the day time where trees with fruits are available.

33. *Funambulus pennanti* Wroughton
(Fivestriped Palm Squirrel)

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

Type locality : Mandvi Taluka, Surat, India.

Remarks : Commonly seen near human habitation. Two specimens of this species were seen in the Forest Rest House campus at Kutru.

34. *Funambulus palmarum* Linnaeus
(Threestriped Palm Squirrel)

1766. *Sciurus palmarum* Linnaeus, *Syst. Nat.*, 12th. ed., 1 : 86.

Type locality : Madras, India.

Material examined : 1♂; Bijapur, Bastar district; M.P.; 5.ii.1990; R. K. Ghose coll.

Measurements :

	1♂
H & B.	130
TL.	110
H.F.	34
E.	13

Weight : 75 gms.

Remarks : Common every where.

Family MURIDAE

35. *Rattus blanfordi* (Thomas)
(Whitetailed Wood Rat)

1881 *Mus blanfordi* Thomas, *Ann. Mag. N. H.*, 7 : 24.

Type locality : Kadapa, Madras India.

Material examined : 3♂ 2♀; Kutru, Bastar Dist., M.P.; 26.i.1990 to 2.ii.1990; R.K. Ghose coll. 2♂; Bijapur, Bastar Dist., M.P.; 5.ii.1990; R. K. Ghose coll.

<i>Measurements</i> :	5♂					2♀	
H. & B.	170,	175,	176,	180,	185,	160,	170
Tl.	182,	190,	210,	215,	220,	188,	198
H.f.	35,	35,	35,	35,	37,	32,	37
E.	26,	27,	27,	27,	28,	27,	28

Weight : 2♂ : 130, 135 gms.; 1♀ : 102 gm.

Remarks : Appears to be a common rat in the Reserve.

36. *Rattus rattus* (Linnaeus)

(House Rat)

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

Type locality : Sweden.

Material examined : 4♂; Kutru, Bastar Dist, M.P.; 29-30.i. 1990; R.K. Ghose coll. 1♂; Bijapur, Bastar Dist., M.P.; 6.ii. 1990; R.K. Ghose coll.

<i>Measurements</i> :	4♂			
H. & B.	152,	152,	152,	180
Tl.	190,	205,	207,	220
H.F.	32,	33,	33,	33
E.	21,	22,	23,	24

Weight : 4♂ : 100, 105, 110, 145 gms.

Remarks : House rats are very common where human habitation is there. Infact it is cosmopolitan in distribution.

37. *Mus booduga* (Grey)

(Indian Field Mouse)

1837. *Leggada booduga* Grey, *Charlesworths Mag. N.H.*, 1 : 586.

Type locality : Southern Marhatta country, India.

Material examined : 1♂ 1♀; Bijapur, Bastar Dist., M.P.; 9.ii.1990; R.K. Ghose coll.

<i>Measurements</i> :	1♂	1♀
H. & B.	76	73
Tl.	60	58
H.F.	15	13
E.	12	12

Weight : 1♂ 1♀ : 5 gms.

Remarks : Widely distributed throughout India.

38. *Mus musculus urbanus* Linnaeus
(House Mouse)

1845. *Mus urbanus* Hodgson, *Ann. Mag. N. H.*, 15 : 269.

Type locality : Katmandu, Nepal.

Material examined : 1♀; Kutru, Bastar Dist., M.P. 29.i. 1990; R.K. Ghose coll.

<i>Measurements</i> :	1♀
H. & B.	62
Tl.	58 +
H.F.	14
E.	11.5

Weight : 1♀ : 5 gms.

Remarks : It is a common House Mouse of India and mostly found in the human habitation (indoor type).

REFERENCES

- Dongaonkar, K. R. Management plan for Indravati Tiger Reserve, M. P. 1982-83 to 1989-90. M. P. Forest Dept. (Mimeo.).
- Ellerman, J. R. 1961 (issued 1963). The fauna of India including Pakistan, Burma and Ceylon. Mammalia, 3 (Rodentia). Govt. of India, Delhi.
- Ellerman, J. R. and Morrison-Scott, T. C. S. 1966. Checklist of Palaearctic and Indian Mammals. Brit. Mus. (N.H.), London.
- Blanford, W. T. 1888-1891. Fauna of British India, Mammalia. Taylor and Francis, London.