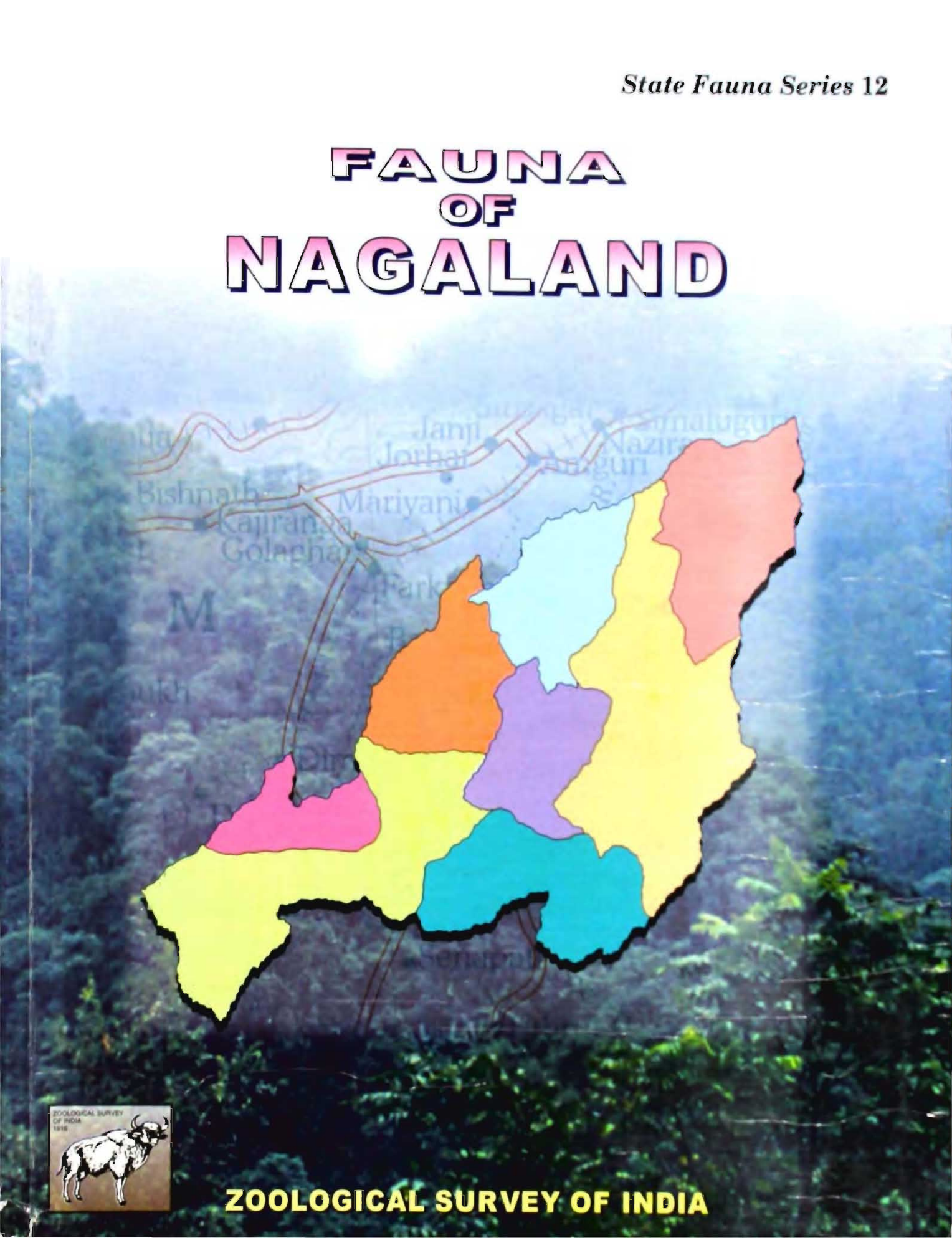
State Fauna Series 12

FAUNA OF NAGALAND



ZOOLOGICAL SURVEY OF INDIA

State Fauna Series 12

FAUNA OF NAGALAND

Edited by
Director, Zoological Survey of India, Kolkata

Zoological Survey of India
Kolkata

CITATION

Editor–Director, 2005. *Fauna of Nagaland, State Fauna Series* **12** : 1-620 (16 pp plates) (Published–Director, *Zool. Surv. India*, Kolkata)

Published : March, 2006

ISBN 81-8171-095-9

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PRICE
India Rs. 1,500.00
Foreign $ 100; £ 75

Published at the Publication Division by the Director, Zoological Survey of India, 234/4, AJC Bose Road, 2nd MSO Building, (13th Floor), Nizam Palace, Kolkata-700 020 and printed at Calcutta Repro Graphics, Kolkata–700 006.

FAUNA OF NAGALAND

STATE FAUNA SERIES

No. 12 2006 1-620

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 1-11, 2006

FAUNA OF NAGALAND : AN OVERVIEW

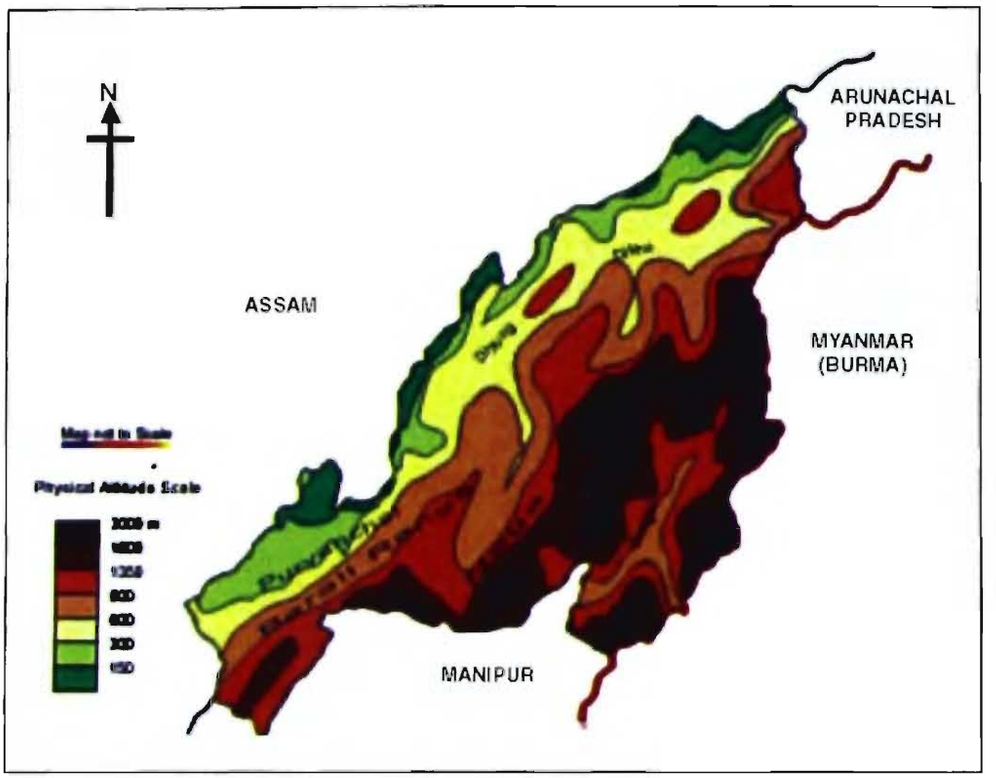
RAMAKRISHNA AND J.R.B. ALFRED

Zoological Survey of India, M-Block, New Alipore, Kolkata-700 053

Nagaland, the hilly state of northeastern India has an area of 16,579 km^2 lies between 25°6′ and 27°4′ latitude, north of equator and between the longitudinal lines 93°20′E and 95°15′E latitude, bounded by Tirap district of Arunachal Pradesh in north-east, Assam in the west and northwest, Manipur in the south while the eastern limits are continuous with the international boundary between India and Myanmar. This is predominantly a hilly state with valleys, meandering streams, high mountains and deep gorges. Nagaland includes the former Naga hill districts of Assam (established in 1881) and the Tuensang division of North East Frontier Agency (NEFA, now Arunachal Pradesh). The administrative 'unit' known as the 'Naga Hills and Tuensang Area' (NHTA) was established on 1st December 1957. NHTA was renamed as Nagaland on 18th February 1961. Nagaland was constituted as a full fledged 16th state of the Indian Union on 1st December 1963. The State consists of seven administrative districts having a Population of 12,88,636 (According to 2001 census) with Kohima (1,444.12 metres above sea-level) as its capital. The districts are Kohima, Mokokchung, Mon, Phek, Tuensang, Wokha, Zunheboto and Dimapur.

Map of Nort-east States of India

The state is located at an altitude of 1495 metres above sea-level, the Barail hill range flanks the international boundary and the highest peak is Saramati located at 3877 metres above



Physical Map of Nagaland
(*Source* : Govt. of Nagaland)

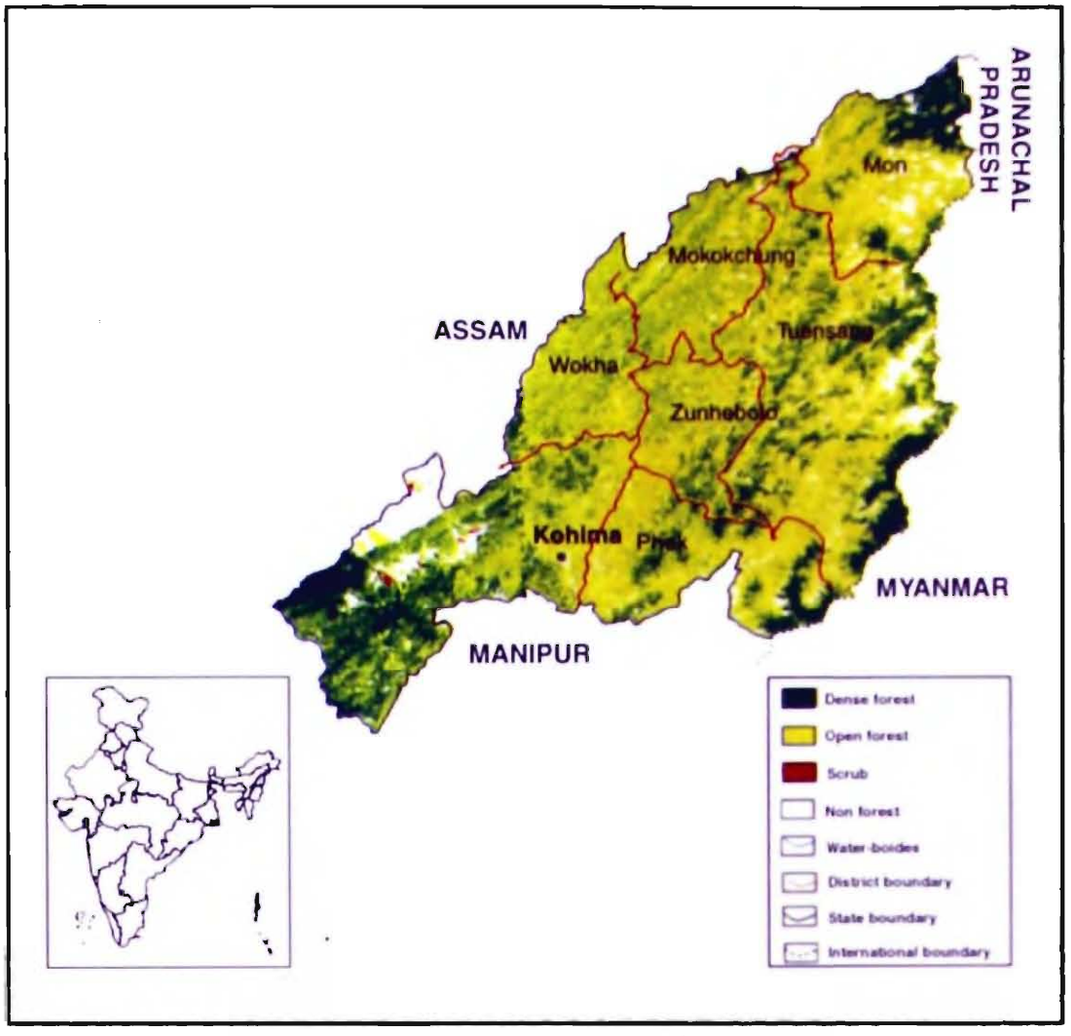
sea-level in this range. Other hill ranges *viz.*, Japfu in Kohima district (3014 m), Kapu (2840 m), Paona (2790 m) and Kapameyu (2430 m) lies in this Barail range. These hill ranges exhibit a remarkable topography and are dissected by a number of seasonal and perennial rivers such as Doyang, Dhansiri, Dikhu, all joining the Brahmaputra, while the river Tizu flows towards the east and southeast to join river Irravadi in Myanmar. Geologically Nagaland is the northern extension of the Arakan Yoma ranges which are of Tertiary – Cretaceous age and belong to fairly young mobile belt on the earth. The rock sequence is of the geosynclical facies represented by the Disang group of Lower and Middle Eocene – Upper Cretaceous period, the Barail group (Eocene and Oligocene), the Surma and the Tipam group (Miocene), the Namsang beds (Mio-pleocene) and the Dihing group belong to Pliocene and Pleistocene. The soil is acidic the pH values varying from 4.8–5.2, the organic content is quite high but poor in phosphate content. The soil texture varies from loam to silty coarse sand and sandy loam. Soil erosion is common in the state.

CLIMATE

The climate is pleasant in Nagaland. Nagaland receives heavy rains during the southwest monsoon. The average rainfall is between 175 cm and 250 cm. Most of the heavy rainfall occurs in the period of June to September. The rains during April to May are low. Strong winds blow from the north west in February and March. Rainy season is characterized by high humidity (67–88%) followed by low humidity during summer. The foot hills are located in the warm subtropical, mid slopes and western flanks are moderate and sub-montane and temperate types over the hills. March to June is summer; the temperature ranges from 5°C 30°C over the hills while it is 12°C -32°C over the foot hills. Winter months are characterized by heavy dew and misty nights.

VEGETATION

The state is divided into Sub-alpine medows confined to Saramati hill ranges with altitudes varying from 3500–3841 m lacks tree species, however has shrubs such as *Juniperus recurva* and *Rhododendron lepidotum*. Elevations between 250–450 m represent the Tropical evergreen and Semi evergreen forests with rich floristic diversity. Rain fall is quite high and as a result trees such as *Dipterocarpus retusus, Shorea assamica, Terminalia myriocarpa, Duabanga grandiflora, Artocarpus chama, Michelia champaca* are common timber trees. The middle story of this area has preponderance of *Mesua ferrea, Endospermum chinense, Terminalia* spp., *Garuga pinnata* and *Toona ciliate*. Bamboo species such as *Dendrocalamus hamiltonii* and *Bambusa tulda*



Forest cover of Nagaland

(Source : State of Forest Report–1999, Forest Survey of India)

are interspersed with the trees in the moist valleys. Canes of *Calamus* spp. are common in the foot hills of semi evergreen forests.

Tropical Deciduous forest is located in the state with the altitude varying from 400–1200 m having diverse vegetation dominated by *Albizzia procera, Terminalia belllirica, T. myriocarpa, Salmalia malabarica, Gmelina arborea* and the commercial species of *Schima wallachi*. The lower elevations are dominated by bamboos (*Bamboosa tulda, B arundinacea)* with ground cover having many herbs and shrubs. Elevations between 1300–1500 m exhibits Temperate forest with top canopy consisting of *Phoebe cooperiana, Michelia champaca, Castanopsis indica, exbucklandia populnea, Juglans regia, Betula alnoides, Alnus nepalensis* etc. Epiphytic forms such as orchids and ferns are common on these trees. Several evergreen species such as *Quercus cerrata, Bischofia javanica, Magnolia campbelli and Engelhardtia spicata* are common. The Subtropical Pine Forests are found in the elevations of 1000–2000 m where the annual rainfall is more than 175 cm, principle species are *Pinus kesia*.

According to the available information from Botanical Survey of India, the state is rich in floristic diversity represented by 2431 species belonging to 963 genera and 186 families. Of these 1668 species are dicots and 743 species are monocots. Gymnosperms are represented by 9 species. Shifting (Slash and Burn/Jhum) cultivation is the main source of livelihood of the people, as a result the forest loss and the topsoil erosion is enormous. According to official sources about 44 lakh tones of fertile soil is lost every year from areas where *jhum* cultivation is practiced in

Nagaland. It has been estimated that 70 percent of the total top soil degradation and water resource degradation in Nagaland was due to *Jhum* cultivation (The Hindu, 1998). Therefore management of forest resources on a sustainable basis have to be centred around the costs and benefits to the community, since ownership rights rest with them. The details of the forest divisions of Nagaland is as under :

Forest Divisions (2001)

Division	Total Area (In Hectare)
Kohima	109424.33
Mokokchung	28966.47
Mon	41649.26
Phek	56589.04
Tuensang	76809.79
Wokha	25371.91
Zunheboto	19327.90
Dimapur	Na

Land Types Available (In Hectare)

Built up	2873
Kharif	38951
Net Sown Area	38951
Gross Crop	38951
Evergreen Forest	284475
Deciduous Forest	366582
Degraded Area	490190
Forest Plantation	937
Shifting Cultivation	473892

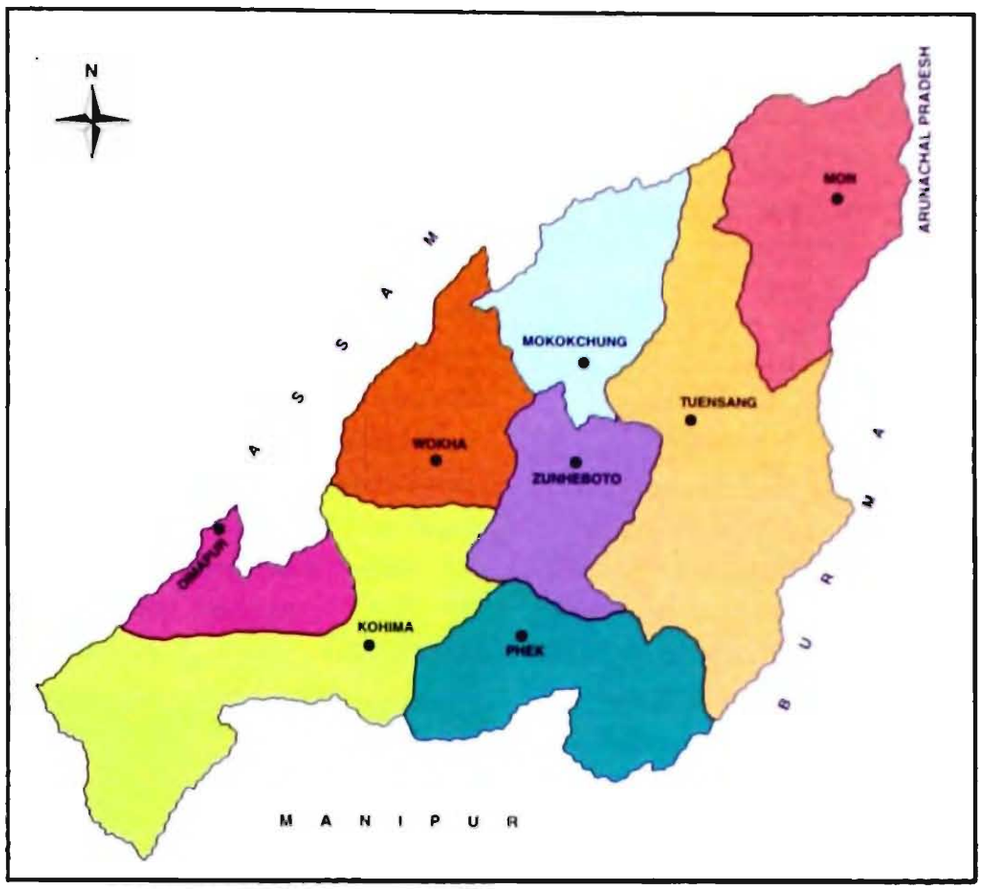
Source : State Forest Dept., Nagaland

TRIBES

The Nagas, inhabitants of Nagaland, are said to belong to the Indo-Mongoloid stock, a race whose presence was first noted ten centuries before Christ, at the time of the compilation of the Vedas. The Nagas form more than 20 tribes, as well as numerous sub tribes, each having a specific geographic distribution. The Konyaks are the largest tribe, followed by the Aos, Tangkhuls, Semas, and Angamis. Other tribes include the Lothas, Sangtams, Phoms, Changs, Khiemnungams, Yimchungres, Zeliangs, Chakhesangs (Chokri), Kuki, Pochury and Rengmas. The principal languages are Angami, Ao, Chang, Konyak, Lotha, Sangtam, Sema Each of the 16 odd tribes and sub-tribes that dwell in this exotic hill State can easily be distinguished by the colourful and intricately designed costumes, jewells and beads that they adorn. The use of animal and plant parts are in their tradition can be seen in multicoloured spears and daos decorated with dyed goats' hair, the headgear made of finely woven bamboo interlaced with orchid stems, adorned with boar's teeth and hornbill's feathers, elephant tusk armlets etc. Though sharing many cultural traits, these tribes have maintained a high degree of isolation. The tribal population of the rest of India came under the Fifth Schedule, the Sixth Schedule provided for the administration of the tribal population of the NER (Baruah, 2003). This Schedule provided for autonomous districts and autonomous regions within those districts with elected councils that enjoyed the power to levy certain taxes, to constitute courts for administering justice and make laws on various subjects (ibid, 2003).

FAUNAL RESOURCE IN NAGALAND

The mammalian fauna of the state owes largely to the Mammal Survey of India, Burma and Ceylon conducted during the 1911 to 1930. Of the total of 397 species of mammals distributed in India, 92 species and subspecies are reported from the Fauna of Nagaland by Zoological Survey of India (2006). The Order Scandentia includes *Tupia belangeri assamensis*, Order Insectivora includes *Talpa micrura* and *Talpa leucura* (Family : Talpidae) and the family Soricidae includes *Suncus murinus griffithi* and *Suncus murinus soccatus*, *Crocidura attentuata rubricosa* and



District-wise Map of Nagaland

Chimmaragole platycephala himalayica. The order Chiroptera includes 4 species of megachiroptera and 14 species and subspecies of microchiroptera. Of these *Megaerops niphanae, Taphozous longimanus longimanus, Megaderma lyra lyra, Rhinolophus lepidus lepidus* and *Scotozous savilei* are new records to the state during the investigation.

Primates are represented by all the representatives of northeasten India viz., *Nycticebus coucang bengalensis, Macaca mulatta mulatta, Macaca assamensis assamensis, Macaca arctoides, Prysbytes pileatus pileatus, Presbytes pileatus durga* and *Bunopithecus hoolock*.

The order Pholidota represented by *Manis pentadactyla*; Order carnivora includes Canidae represented by *Canis aureus indicus, Vulpes bengalensis* and *Cuon alpinus*. The family Felidae represented by 5 species, three species of *Felis* and two species of *Panthera*, all are common to Eastern Himalayan states. The family Herpestridae includes *Herpestes auropunctatus* and *Herpestes urva*. Family Mustelidae represented by *Martes flavigula, Mustela kathiah, Melogale moschata milisi, Arctonyx collarais, Lutra perspicillata* and *Aonyx cinera concolor*. Family Ursidae represented by *Selenarctos thibetanus;* family Viverridae represented by 5 species *Viverra zibetha zibetha, Viverricula indica indica, Paradoxurus trivarigata millsi* and *Paguma larvata*.

The order Proboscidea represented by the lone species *Elephas maximus indicus*, the elephant population present in small habitat patches. The even toed Artyodactyles are represented by four families in Nagaland; the family Suidae represented by *Sus scrofa cristatus*; the family Cervidae represented by *Muntiacus muntjak vaginalis*. The family Bovidae represented by *Capricornis sumatraensis* and *Bos frontalis* (a domesticated stock especially, *Bos gaurus* a synonym of *Bos frontalis*). The order Lagomorpha represented by a single species *Lepus nigricollis*. The order Rodentia includes the family Sciuridae

includes 13 species including; the family Muridae represented by 15 species and the family Hystricidae represented by 1 species and the family Rhizomyidae represented by 2 species. Among the members of the order Sciuridae, *Belomys pearsoni* is the eastern Himalayan fossorial representative living in dense forests. *Petaurista petaurista yunanensis* is the exclusive representative of the state, *Hylopetes alboniger alboniger*, 3 species and subspecies of *Callosciurus* and 2 species of *Dremomys* are the eastern Himalayan representative. On the basis of the collections made the family Muridae represented by 7 species of *Rattus*, 4 species of *Mus* and 2 species of *Bandicota*. The family Rhizomyidae represented by *Cannomys badius* and *Rhizomys pruinosus*. The family Hystricidae commonly includes porcupines *Hystrix brachyura*. Of the species mentioned above, *Ratuus ratuus arboreus, Bandicota savilei* are recorded for the first time from the state and the the later species *(Bandicota savilei)* has been reported for the first time from the country.

Comprehensive report on the avian fauna initially came from the work of Blyth (1845-1865), Godwin– Austen (1870-1872), Baker (1907-1925), and several others followed by Ali and Ripley (1974), Ripley (1982) and the recent investigation from the scientists of the survey. The list includes 428 species, under 205 genera, 50 families and 16 orders of which the family Muscicappidae with 174 species and subspecies forms the largest representative of the avian fauna of the state.

East Pakistan Crow-Pheasant

The reptilian fauna was first investigated by John Butler an Anthropologist (1872) who made collections from Naga Hills of the state. The present faunal exploration includes 62 species of which 6 are testudines, 15 species of lizards, 41 species of snakes of which Typhlopidae includes 3 species, Boidae 1 species, Colubridae-30 species, Elapidae-4 species and viperidae includes 3 species. Of the above, *Pangshura sylhetensis* and *Manouria emys* the two species are the northeastern representatives. 5 species viz., *Cosymbotus platyurus, Calotes emma, Draco maculatus, Draco norvilli, Plactolaaemus gularis* and *Ophiosaurus gracilis* are new to the state. Nearly 25 species are the northeastern representatives.

Rhabdophis nuchalis (Boulenger)

The amphibia represented by 10 species under 5 genera and 4 families, the species diversity in comparison to other northeastern states is less however, needs further exploration in the unrepresented areas. The report includes 2 species of eastern Himalayan representatives.

The fish fauna of Nagaland includes some of the rare description such as *Erythistes hara, E. elonga* and *Danio aequipinnatus* by Day (1889), *Rasbora rasbora* and *Rhynchobdella dhansharii* by Hora (1921), 44 species from Naga hills by Hora and Mukerjee (1935) from Tuzu River and its tributaries, fishes from Naga Hills by Hora (1935) and Menon (1954) are important. The present day diversity of the state is 108 species

under 57 genera, 20 families and 7 orders, of these 40 species are recorded for the first time from Nagaland and a rare specimen *Silurus indicus* was also collected from the state.

Invertebrate diversity represented by Protozoa dealing taxonomic account of 59 species from the state which includes 3 species of malarial parasites, 22 species of freeliving and 34 species of symbiotic species. Helminth parasite includes 14 species under 10 genera and 6 families. *Paramphistomum epiclitum, P cervi* from *Bubalis bubalis* host; *Calicophoraon calicophorum, Ceyllonocotyle dawesi, C streptocoelium,* from *Bos indicus, Fischoedirius elongates, F cobboldi,* from Goat, *Diplodiscus amphichrus, Ganeo tigrinum Haematoloechus almorai* are from *Rana cyanophlyctis, Opisthorchis noverca* from pig, *Fasciola gigantica* from cow and buffalo are some of the important findings of the investigation. Only freshwater molluscs are analysed from the state includes 21 species under 16 genera and 9 families. Bivalves are poorly represented by only 4 species. Of the 21 species of gastropods, 11 species are restricted to eastern Himalayan states and the rest are all India range of distribution. Three species viz., *Angulyagra microchaetophora* from Dimapur, *Trapezoideus dhanushori* from Dhanushori stream and *Shaerium austreni* from Naga hills are the type localities from the state. 16 species are new records to the state. Oribatid mites includes 16 species under 15 genera and 14 families, includes *Eremobelba indica* and *Allonothrus monensis* are the new species described from the state of Nagaland.

Insects so far known in India are grouped in 27 orders, of which 4 are apterygotes and the remaining 23 are pterygotes. Recently, a new order has been erected, thus making the number 28. Among apterygotes in India, the Collembola is known better than the other 3 groups. It is represented by 15 species under 6 genera. Indeed, our knowledge on the Indian apterygote groups is poor and therefore, much more attention requires to be paid in order to reveal the tremendous biodiversity among them. Odonata is an economically and ecologically important group of insects, as they act as predators of flies, mosquitoes and moths besides being a consumer link in the aquatic food chain. The diversity of the group being comparatively better with nearly 48 species distributed over 32 genera, 9 families and 2 suborders. Orthopterans are represented by 11 species of Tettigonids, and Acrididae represented by 34 species under 24 genera. The species recorded in the faunal explorations are first record to the state. *Conocephalus laetus* is a new record to the state as well as to the country. Only seven families of the coleopteran has been analysed in the present context includes 45 species included under 25 genera of which 36 species are new records to the state and one new record to the country. Dipteran fauna of Nagaland is represented by the family Tachinidae (16 species, 14 genera) of which 4 are new species viz., *Dexia prakritiae, Dexia quadristriata, Paradrino pilifacies* and *Phorinia nigra* from Nagaland. 11 species are new records to the state. The Muscidae includes 6 species, all are new records to the state. Family Syrphidae includes 11 species of which *Xylota asamensis* and *Brachypalpus dives* are exclusive to the state. Nearly 36 species under 25 genera are included under 10 families are dealt in the fauna of the state, of which 17 species are new records, 5 species are confined to India, 15 species are distributed in the Oriental region, 4 species extended up to Palearctic and the other 5 species are cosmopolitan in distribution.

The butterflies, besides their aesthetic value, form an important object of display in natural history museums. The ecological significance of this group need not be underestimated, as their immature stages or caterpillars are largely herbivorous and form the primary consumer in the ecosystem. Butterflies are in turn fed upon by higher groups of organism such as amphibians, birds, lizards and other groups and thus form a

link in the food web, besides being excellent pollinators. The butterflies and moths are represented by the following families in the present investigation. The family Nympahlidae includes 138 species and subspecies spread over 62 genera and six subfamilies. Of these, seven species are endemic to Nagaland, 11 species are protected under Wildlife Protection Act, 1972 in Schedule–I (part-4) and 13 species are included under Schedule–II (part-2) and seven species are new records to the state. The family Papilionidae includes 43 species and subspecies in 9 genera. 3 species are included in Schedule–I (part-4) and 9 species under Schedule–II (part-II) of the WPA, 1972. 17 species are new records to the state. Butterflies of the family Pieridae and Heperiidae includes 153 species, 3 species of Pieridae and 2 species of Hesperiidae listed in Schedule–II (part-2), 6 species of Hesperidae are included under Schedule–IV. 12 species of the former and 9 species of the later family are new records to the state. The family Geometricae includes 98 species of which 46 are restricted their distribution in India, 44 species are distributed in north India and 37 species to eastern Himalayan states and only 19 species are endemic to Nagaland. Moths belonging to the family Lasiocampidae and Lymantridae include 22 species, of which 10 are new records to the state. The moth family Arctiidae (28 species, 19 genera) and Ctenuchidae (11 species, 5 genera) includes 39 species, of which 12 species are new records to the state.

SUMMARY OF SPECIES DESCRIBED IN THE FAUNA OF NAGALAND

Chordata

No.	Animal group	Number of			Remarks
		Families	Genera	Species	
1	Mammalia	27	61	92 (including subspecies)	7 species are first record for the state, 37 species are exclusive to northeastern states of India
2	Aves	50	205	428 (including subspecies)	
3.	Reptilia			62	06 species of Testudines, 15 species of Squamata and 41 species of Serpentes. 2 species of Testudines, 6 species of Lizards and 25 species of Snakes are restricted to northeastern states, 5 species of Lizards are first record to the state
4.	Amphibia	4	5	10	3 species are restricted to north-eastern states
5.	Pisces	20	57	108	40 species of fishes are first record to the state.

Insecta : Arthropoda

No.	Animal group	Number of			Remarks
		Families	Genera	Species	
1	Diptera				
	Tachinidae	1	14	16	Tachinidae : 4 species are new to science, 11 species are new records to the state.
	Muscidae	2	3	6	Muscidae : 6 species are new record to the state
	Syrphidae	5	10	11	Syrphidae : 2 species are exclusive to northeastern states of India.
	Other families	10	25	36	17 species are restricted to northeastern states
2	Lepidoptera				
	Arctiidae	1	19	25	12 species are new records to the state
	Ctenuclidae	1	05	11	05 species are new records to the state
	Lasciocampidae	1	07	07	—
	Lymantridae	1	07	15	10 species are new records to the state
	Geometridae	1		98	4 species constitute new locality to Nagaland 37 are restricted to northeast Indian states 19 species are endemic to Nagaland
	Pieridae	1	14	32	3 species are included under Schedule-II, 12 species are new records to the state
	Hesperiidae	1	43	121	6 species are included under Schedule-IV, 9 species are new records to the state
	Papilionidae	1	09	43	3 species in Schedule-I + 9 species Schedule-II 17 species are new records to the state
	Nymphalidae	1	62	138	11 species in Schedule-I, 13 species in Schedule-II + 07 species are new records 07 species are endemic to Nagaland
3.	Coleoptera				
	Languriidae	1	06	10	04 species are new records to the state
	Discolomidae	1	01	03	03 species are new records to the state

No.	Animal group	Number of			Remarks
		Families	Genera	Species	
	Monotomidae	1	04	04	04 species are new records to the state
	Endomyclidae	1	03	03	03 species are new records to the state + 1 species new records to India
	Erotylidae	1	03	04	01 species are new records to the state
	Inopelidae	1	01	03	03 species are new records to the state
	Silvanidae	1	07	17	17 species are new records to the state
4.	Orthoptera	3	33	45	45 species are new records to the state + 01 species recorded for the first time from India
5.	Odonata	9	32	48	11 species restricted to northeast India + 01 species new record to Nagaland
6	Collembola	9	16	21	—

Other Invertebrate Groups

No.	Animal group	Number of			Remarks
		Families	Genera	Species	
1	Protozoa			59	22 species are free-living, 03 species are parasitic and 34 species are symbiotic
2	Trematoda	6	10	14	—
3	Arachnida : Mites	14	15	16	Includes 02 new species new described earlier
4	Mollusca	9	16	21	Total 21 species of Freshwater Molluscs, of which 4 species are bivalves, rest gastropoda. 11 species are restricted to northeast India, 03 species to Nagaland and 16 are new records to state

ACKNOWLEDGEMENTS

Authors wish to express their deep felt thanks to the Chief Conservator and Chief Wildlife Warden, government of Nagaland for assisting in various ways during the faunistic survey. Special thanks are also to Dr. M. Sanjappa, Director, Botanical Survey of India and to Dr. T.M. Hynniewta for the courtesies extended during the compilation. Special thanks are also due to Prof. M.S. Jairajpuri and Dr. A.K. Ghosh, Ex-Director for their guidance and active involvement during the survey work.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 13-41, 2006

PROTOZOA

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INTRODUCTION

Taxonomic work on Protozoa of Nagaland is completely unattended. Perusal of literature reveals that there is no published report on any protozoan species of the state excepting three species of malarial parasites, namely, *Plasmodium falciparum, Plasmodium malariae* and *Plasmodium vivax*. Knowles, Senior White and Das Gupta (1930) produced a map depicting the distribution of "malarial species" in "Indian Subregion" and showed the occurrence of these three "malarial species" in Diamapur (*see* also Bhatia, 1938).

In this context, the present communication deals with a consolidated taxonomic account of 59 species of protozoa collected from the State by the Scientists of the Zoological Survey of India during their recent faunistic surveys.

After the submission of manuscript of this paper Chattopadhyay and Das (2003) published a detailed taxonomic account and ecology of moss dwelling testacids of North and North-East India. In that publication they (*op. cit.*) recorded 20 species of testacids from Nagaland. Out of these, taxonomy of 17 species has been presented in this paper. Therefore, the remaining three, namely, *Diplochlamys timida, Plagiopyxis declivis* and *Difflugia lucida* constitute addition to the Protozoan species of the state, raising the number of species from 59 to 62. In view of this, these species have been freshly incorporated in the systematic list as well as in the district-wise distribution (Table 1) for depicting updated the Protozoan diversity of the State.

MATERIAL AND METHOD

Freeliving protozoa were collected from freshwater ponds and streams as well as mosses grown on soil, rocks and trees of different districts of Nagaland. Symbiotic protozoa were recovered from the gut of three species of termite hosts, namely, *Cryptotermes havilandi, Coptotermes travians* and *Reticulitermes assamensis*.

Freshwater samples were collected along with little algal mass, aquatic weeds, bottom ooze and flocculent matter arising out of aquatic vegetation of the sampling localities. Samples were kept in wide mouthed glass jars. These jars were brought to the laboratory and kept for a few days, with their lids open for increase in protozoan population. The samples were then thoroughly examined under light microscope from time to time. Freeliving ciliates were examined in living condition by keeping them in natural medium. Sometimes, methocyl solution was used for slowing down the movement of fast moving ciliates for the study of their internal structures *in situ* under light microscope. Sometimes, Lugol's solution was used as a killing agent for detecting perepheral organellae. Schaudinn's fluid and Carnoy's fluid were used as fixatives of freeliving ciliates for preparing their permanent slides. The first one is very effective for keeping the natural shape of the specimen while the second one is better for studying their nuclear structure. Heidenhain's and Delafield's haaematoxylin were used for staining the ciliates. These slides were mounted in DPX.

For the preparation of permanent slides of testacid rhizopods test were isolated from bottom ooze with the aid of a micropipette. The protozoans were also collected by squeezing different parts of aquatic vegetation including their roots and submerged portion of leaves. These testaceans were placed on a glass slides covered with thin layer of albumen-glycerol with the aid of a micropipette. These were then air dried at room temperature, transferred to xylene for about 10 hours and mounted in DPX.

For collecting moss dwelling protozoa moss samples were scraped from the top soil, rocks and barks of trees with spatula and brought to the laboratory in closed plastic bags. The samples were then processed with nonflooded petridish method as described by Foissner (1987). For that purpose, 1-2 g of field moist subsample taken from each bulk sample was kept in a petridish having 10-15 cm diameter. The sample was then saturated but not flooded with distilled water. After 48 hours about 2-3 ml run off was collected after tilting the petridish and thoroughly examined under a compound microscope for ciliates and rhizopods usually at magnification 450 x (ocular 10 x and objective 45 x). Such examination was continued for 2-3 weeks, depending upon the availability of protozoan specimens. Testaceans or ciliated protozoa observed in the run off were fixed, stained and mounted in the same manner as described earlier for freshwater protozoa.

For the collection of flagellate symbiotes of termites, the entire gut of the worker caste was removed and gut contents were emptied on clean slides, containing a drop of 0.5 per cent saline. For studying internal structures of these flagellates under *in situ* condition 67 per cent Lock's solution was used in which these protozoans remain active in living condition for a longer period with their natural shape and size. For preparing permanent slides, these flagellates were fixed in Schaudinn's fluid, stained with Heidenhain's iron haematoxylin and mounted in DPX. For more details Das *et al.* (1993, 1995) may be consulted.

SYSTEMATIC LIST

(Following Levine, *et al.*, 1980)

A. Freeliving Protozoa

Phylum SARCOMASTIGOPHORA

Subphylum SARCODINA

Class LOBOSEA

Order ARCELLINIDA

Family ARCELLIDAE

Genus ***Arcella*** Ehrenberg

1. *Arcella discoides* Ehrenberg
2. *Arcella vulgaris* Ehrenberg

Family MICROCORYCIIDAE

*3. *Diplochlamys timida*

Family CENTROPYXIDAE

Genus ***Centropyxis*** Stein

4. *Centropyxis aculeata* (Ehrenberg)
5. *Centropyxis aerophila* Deflandre
6. *Centropyxis ecornis* (Ehrenberg)
7. *Centropyxis minuta* Deflandre
8. *Centropyxis oblonga* (Deflandre)
9. *Centropyxis plagiostoma* Bonnet and Thomas
10. *Centropyxis platystoma* (Penard)
11. *Centropyxis spinosa* (Cash and Hopkinsen)

*12. *Plagiopyxis declevis*

Family DIFFLUNGIIDAE

Genus ***Difflugia*** Leclerc

13. *Difflugia lithophila* (Penard)
14. *Difflugia lobostoma* Leidy

*15. *Difflougia lucida*

Family NEBELIDAE

Genus ***Heleopera*** Leidy

16. *Heliopera rosea* Penard
17. *Heliopera sylvatica* Penard

Class FILOSEA

Order GROMIIDA

Family EUGLYPHIDAE

Genus ***Assulina*** Ehrenberg

18. *Assulina semilunum* (Ehrenberg)

Genus ***Corythion*** Taranek

19. *Corythion dubium* Taranek

Genus ***Euglypha*** Dujardin

20. *Euglypha acanthophora* (Ehrenberg)
21. *Euglypha rotunda* Wailes and Penard
22. *Euglypha tuberculata* Dujardin

Genus ***Tracheleuglypha*** Deflandre

23. *Tracheleuglypha dentata* (Vejdowsky)

Genus ***Trinema*** Dujardin

24. *Trinema enchelys* (Ehrenberg)
25. *Trinema lineare* Penard

B. Parasitic Protozoa

Phylum APICOMPLEXA

Class SPOROZOEA

Order EUCOCCIDA

Family PLASMODIIDAE

Genus ***Plasmodium*** Marchiafava and Celli

Parasites	**Hosts**
26. *P. falciparum* (Welch)	*Anopheles* spp. *Homo sapiens*
27. *P. malariae* Leveran	*Anopheles* spp. *Homo sapiens*
28. *P. vivax* (Grassi & Feletti)	*Anopheles* spp. *Homo sapiens*

C. Symbiotic Protozoa

Phylum SARCOMASTIGOPHORA

Subphylum MASTIGOPHOREA

Class MASTIGOPHORA

Order OXYMONADIDA

Family OXYMONADIDAE

Genus ***Oxymonas*** Janicki

Symbiotes	**Host**
29. *O. bosei* Das	*Cryptotermes havilandi*
30. *O. grandis* Cleveland	*Cr. havilandi*

Family PYRSONYMPHIDAE

Genus ***Dinenympha*** Leidy

31. *D. exilis* Koidzumi	*Reticulitermes assamensis*
32. *D. leidy* Koidzumi	*R. assamensis*
33. *D. nobilis* Koidzumi	*R. assamensis*
34. *D. rugosa* Koidzumi	*R. assamensis*

Genus ***Pyrsonympha*** Leidy

35. *P. grandis* Koidzumi	*R. assamensis*
36. *P. modesta* Koidzumi	*R. assamensis*

Order TRICHOMONADIDA

Family DEVESCOVINIDAE

Genus ***Devescovina*** Foa

37. *D. glabra* Grassi	*Cryptotermes havilandi*
38. *D. lemniscata* Kirby	*Cr. havilandi*

Genus ***Foaina*** Janicki

39. *F. reflexa* Janicki	*Cr. havilandi*
40. *F. solita* Kirbi	*Cr. havilandi*

Family CALONYMPHIDAE

Genus ***Stephanonympha*** Janicki

41. *S. minuta* Das and Choudhury	*Cr. havilandi*
42. *S. pyriformis* Das and Choudhury	*Cr. havilandi*
43. *S. sylvestrii* Janicki	*Cr. havilandi*

Order HYPERMASTIGIDA

Family HOLOMASTIGOTIDAE

Genus ***Holomastigotoides*** Grassi and Foa

44. *H. bengalensis* Chakraborty and Banerjee	*Coptotermes travians*
45. *H. campanula* (De Mello)	*C. travians*
46. *H. emersoni* Das	*C. travians*
47. *H. hollandei* Das	*C. travians*
48. *H. magnus* Uttangi	*C. travians*
49. *H. ogivalis* de Mello	*C. travians*
50. *H. ovalis* Uttangi	*C. travians*
51. *H. rayi* Karandikar and Vittal	*C. travians*
52. *H. reniformis* de Mello	*C. travians*
53. *H. spheroidalis* de Mello	*C. travians*

Family SPIROTRICHONYMPHIDAE

Genus ***Spirotrichonympha*** Grassi and Foa

54. *S. froilanoi* Karandikar and Vittal	*C. travians*

55. *S. porteri* (Koidzumi) *R. assamensis*

Genus ***Holomastigotes*** Grassi

56. *H. indica* Das *et al.* *R. assamensis*

Family EUCOMONYMPHIDAE

Genus ***Pseudotrichonympha*** Grassi and Foa

57. *P. cardiformis* Karandikar and Vittal *C. travians*

58. *P. indica* Chakraborty and Banerjee *C. travians*

59. *P. subapicalis* Chakraborty and Banerjee *C. travians*

Family TERATONYMPHIDAE

Genus ***Teranympha*** Koidzumi

60. *T. mirabilis* Koidzumi *R. assamensis*

Family TRICHONYMPHIDAE

Genus ***Trichonympha*** Leidy

61. *T. agilis* Leidy *R. assamensis*

62. *T. meghalayensis* Das *et al.* *R. assamensis*

* For species prefixed with asterics taxonomic account not given.

SYSTEMATIC ACCOUNT

A. Freeliving Protozoa

Phylum SARCOMASTIGOPHORA

Class LOBOSEA

Order ARCELLINIDA

Family ARCELLIDAE

Key to the families

1. Test membranous and rigid, having a distinct oral aperture ..... Family ARCELLIDAE
- Test with minerals or organic particles and with a oral aperture 2
2. Test with plates or scales, secreted by cytoplasm, sometimes with foreign particles ..... Family NEBELIDAE
- Test with foreign particles and without any plate or scale as above 3
3. Symmetry of test dorsoventral, oral aperture at one side of test (eccentric) or ventral..... .....Family CENTROPYXIDAE
- Test having axial symmetry, oral aperture at extremity of the test (terminal)..... ..... Family DIFFLUGIIDAE

Family ARCELLIDAE

Genus ***Arcella*** Ehrenberg

1832. *Arcella* Ehrenberg, *Abh. Preuss. Acad. Wiss.*, Berlin, p. 40.

Diagnosis : Test membranous, rigid with hexagonal markings, brown or yellow in colour, encrusted with chitinous particles; aperture central, circular and inverted like a funnel.

Key to the species

1. Test spherical, height of the dome about one-fourth to one-third of its diameter ....*A. discoides*
- Test hemispherical, evenly convex, height of the dome about half of its diameter..... ..... *A. vulgaris*

1. ***Arcella discoides*** Ehrenberg

1843. *Arcella discoides* Ehrenberg, *Abh. Akad. Wiss., Berlin*, : 139.

Material examined : 4 exs., Dimapur, Kohima district, 12.v.1994.

Diagnosis : Test smooth, flattened, plano-convex in lateral and circular in front view; height of dome about one-third to one-fourth of the diameter of the test; aperture large and circular.

Distribution : India : Nagaland (Kohima district), Arunachal Pradesh, Meghalaya, Himachal Pradesh, Sikkim, Tripura and West Bengal; common in freshwater ponds in bottom ooze, also in moss.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

2. ***Arcella vulgaris*** Ehrenberg

1832. *Arcella vulgaris* Ehrenberg, *Abh. Akad. Wiss., Berlin*, : 40.

Material examined : 3 exs., Jharnapani, Kohima district, 19.v.1994.

Diagnosis : Test hemispherical, evenly convex, height of the dome about half of its diameter; surface with large 'areoles'; mouth circular, central and often without buccal tube.

Distribution : India : Nagaland (Kohima district), Arunachal Pradesh, Himachal Pradesh, Sikkim and West Bengal; in freshwater amongst bottom ooze and submerged vegetation; also in moss.

Remarks : Chattopadhyay and Das (2003) reported this species from Nagaland from Kohima district.

Family CENTROPYXIDAE

Genus *Centropyxis* Stein

1859. *Centropyxis* Stein, *Abh. K. Bohm. Gesellsch. Wiss.*, **10** : 43.

1929. *Centropyxis* Stein : Deflandre, *Arch. Protistenkd.*, **67** : 322.

Diagnosis : Test dorso-ventrally flattened, spheroidal at posterior portion and tapering towards apertural region; oral aperture eccentric or ventral, typically invaginated without a raised rim.

Key to the species

1. Test beset with spine 2
– Test without spine 4
2. Test furnished with a few (usually 3-6) divergent spines in a single row 3
– Test furnished with variable number of spines (usually 6-8), spines frequently curved and distributed irregularly on dorsal side ..... *C. spinosa*
3. Test cap-shaped, with 4-6 spines at the border, arranged in a single and somewhat regular row ..... *C. aculeata*
– Test oblong-elliptical, with 3-6 spines mostly located at posterior part ..... *C. oblonga*
4. Test prolonged at anterior end resembling a flat lens covering the mouth, a constriction present between oral part and posterior part of the test ..... *C. platystoma*
– Test not prolonged as above, constriction between oral part and posterior part lacking 5
5. Test circular and nearly circular in ventral view 6
– Test more or less elliptical, hemispherical or discoidal in ventral view 7
6. Test subspherical in lateral view and usually less than 50 µm in diameter ..... *C. minuta*
– Test reniform in lateral view and usually more than 100 µm in diameter ..... *C. plagiostoma*
7. Test small, 60-70 µm in length, hemispherical, in ventral view and pear-shaped in lateral view, oral aperture semicircular ..... *C. aerophila*
– Test comparatively large, usually above 100 µm, discoidal or largely elliptical, mostly irregular in outline, oral aperture circular or round ..... *C. ecornis*

3. *Centropyxis aculeata* (Ehrenberg)

1832. *Arcella aculeata* Ehrenberg, *Abh. Preuss. Akad. Wiss., Berlin* : 40.

1857. *Centropyxis aculeata* (Ehrenberg) Stein, *S. Bohm. Ges. Wiss.*, Prague. **5**(10) : 41.

Material examined : 2 exs., Jharnapani, Kohima district, 19.v.1994.

Diagnosis : Test compressed, cap-shaped, fundus of test obtusely rounded and furnished with a few (usually 4-6) divergent spines at the border, arranged in a single and somewhat regular row; spines usually resembling scrap; test brownish, frequently encrusted with quartz crystals and sometimes with admixture of diatomes and sand particles.

Distribution : India : Nagaland (Kohima district), Andhra Pradesh, Arunachal Pradesh, Himachal Pradesh, Meghalaya, Rajasthan, Sikkim, Tripura and West Bengal; in freshwater tanks amongst vegetation, also in moss.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

4. ***Centropyxis aerophila*** Deflandre

1929. *Centropyxis aerophila* Deflandre, *Arch. Protistenkd.*, **67** : 330.

Material examined : 4 exs., Dimapur, Kohima district, 12.v.1994; sev. exs., Jharnapani, Kohima district, 19.v.1994; Doyong, Wokha district, 21.iii.1995.

Diagnosis : Test small, usually 60-70 µm in length, 'panse' (belly) spheroidal in dorsal view and strongly flattened towards oral aperture; in ventral view test oval, 'panse' circular or slightly elliptical converging towards the aperture; aperture mostly semicircular and frequently straight at the margin of 'panse'; in lateral view 'panse' much bulged, abruptly slopping near the aperture; apertural part very much transparent; test chitinous, finely punctate and rough, bearing foreign particles, usually vegetable fragments and transparent crystals.

Distribution : India : Nagaland (Kohima and Wokha districts), Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Tripura and West Bengal; common in moss and *Sphagnum.*

Remarks : This species was first recorded from Nagaland by Chattopadhyaya and Das (2003).

5. ***Centropyxis ecornis*** (Ehrenberg)

1843. *Arcella ecornis* Ehrenberg, *Abh. Preuss. Akad. Wiss., Berlin,* : 368.

1879. *Centropyxis ecornis* Leidy, *Freshwater Rhizopods of North America,* pl. 30, figs. 20-24.

Material examined : 2 exs., Phek district, 23.iii.1995.

Diagnosis : Test comparatively large, sometimes more than 200 µm in length in aquatic habitats and usually more than 100 µm in dry moss, discoidal or largely elliptical in shape, most irregular in outline, without any spine and covered with quartz sand grains; aperture usually circular, sometimes irregularly lobed, not much eccentric.

Distribution : India : Nagaland (Phek district), Arunachal Pradesh, Meghalaya, Himachal Pradesh, Sikkim and West Bengal; in freshwater and moss.

Remarks : Das and Chattopadhyay (2003) reported this species from Nagaland.

6. ***Centropyxis minuta*** Deflandre

1929. *Centropyxis minuta* Deflandre, *Arch. Protistenkd.* **67** : 349.

Material examined : 3 exs., Tuensang, Tuensang district, 23.v.1994; Mokokchung, Mokokchung district, 27.v.1994.

Diagnosis : Test small, usually less than 50 µm in diameter, circular in ventral view and subspherical in lateral view; oral aperture eccentric and circular.

Distribution : India : Nagaland (Tuensang and Mukokchung districts), Arunachal Pradesh, Himachal Pradesh, Meghalaya, Orissa, Sikkim, Tripura and West Bengal; in moss.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

7. ***Centropyxis oblonga*** (Deflandre)

1929. *Centropyxis aculeata* var. *oblonga* Deflandre, *Arch. Protistenkd.*, **67** : 349.

Material examined : 2 exs., Zunheboto, Zunheboto district, 18.iii.1995.

Diagnosis : Test oblong elliptical or oval, but never circular or cap-shaped in ventral view; in lateral view fundus of the test more elevated than that of *C. aculeata,* furnished with 3-6 divergent spines, mostly located at the posterior part; aperture always elliptical and eccentric.

Distribution : India : Nagaland (Zunheboto district) and Meghalaya; in freshwater.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

8. *Centropyxis plagiostoma* Bonnet and Thomas

1955. *Centropyxis plagiostoma* Bonnet and Thomas, *Bull. Soc. Hist. Nat. Toulouse*, **110** : 415.

Material examined : 3 exs., Dimapur, Kohima district, 12.v.1994; 2 exs., Phek, Phek district, 13.iii.1995.

Diagnosis : Test almost circular in both ventral and dorsal view, usually little broader than long; in lateral view test reniform, anterior portion more flattened than posterior; aperture more or less circular, border of which completely or partially covered with knobby xenoxomes, test composed of quartz particles.

Distribution : India : Nagaland (Kohima and Phek districts).

Remarks : This species was also collected from rock mosses and constitutes first record from Nagaland by Chattopadhyay and Das (2003).

9. *Centropyxis platystoma* (Penard)

1890. *Difflugia platystoma* Penard, *Mem. Soc. Phy. et. Hist. Nat. de Geneva.*

1929. *Centropyxix playstoma* Deflandre, *Arch. Protistenkd.*, **67** : 338.

Material examined: 3 exs., Zunheboto, Zunheboto district, 18.iii.1995; 2 exs., Doyong, Wokha district, 21.iii.1995.

Diagnosis : Test elongated, elliptical in ventral view, prolonged to the anterior end resembling a flat lens covering oral aperture, a constriction most often visible between 'sleeve' of the test and oral aperture; in lateral view posterior part of the test strongly convex and anterior part more or less flat; oral aperture circular or semi-circular; test chitinous, covered with siliceous and quartz particles and, occasionally small pebbles.

Distribution: India : Nagaland (Zunheboto and Wokha districts), Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim and Tripura; in moss.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

10. *Centropyxis spinosa* (Cash & Hopkinson)

1905. *Centropyxis aculeata* var. *spinosa* Cash and Hopkinson, *The British Freshwater Rhizopoda and Heliozoa*, **1** : 135.

1929. *Centropyxis spinosa* (Cash and Hopkinson) Deflandre, *Arch Protistenkd.*, **67** : 353.

Material examined : 5 exs., Jharnapani, Kohima district, 19.v.1994.

Diagnosis : Test more or less circular and considerably flat; oral aperture eccentric and circular with irregular border; test provided with 6-8 spines frequently curved and distributed irregularly on the dorsal side; test chitinous with few quartz crystals or diatom fistules.

Distribution : India : Nagaland (Kohima district), Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim and West Bengal; in freshwater bottom ooze and submerged moss.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

Family DIFFLUGIIDAE

Genus *Difflugia* Leclerc

1815. *Difflugia (Partim)* Leclerc, *Mem. du Mus.*, **2** : 474.

1958. *Difflugia* Gauthier-Lievre and Thomas. *Arch. Protistenkd.*, **103** : 241.

Diagnosis : Test having axial symmetry, shape of test varying from globular to elongate pyriform, or acuminate, aperture at the extremity of the test.

Key to the species

1. Test spherical to subglobose, aperture circular with a short collar ..... *D. lithophila*

– Test ovoidal, aperture 3-4 lobed, not enclosed by collar ..... *D. lobostoma*

11. *Difflugia lithophila* (Penard)

1902. *Difflugia hydrostatica* var. *lithophila* Penard, *Faune Rhizopodigue du bassin Leman*, Geneve, : 274

1958. *Difflugia lithophila* Gauthier-Lievre and Thomas, *Arch. Protistenkd.*, **103** : 286.

Material examined: 4 exs., Mokokchung, Mokokchung district, 27.v.1994.

Diagnosis : Test spherical to sub-globose, drawn out to aperture in the form of a short collar, aperture circular, test covered with well arranged stony particles.

Distribution : India : Nagaland (Mokokchung district), Arunachal Pradesh, Meghalaya, Tripura and West Bengal, in freshwater amongst bottom ooze.

Remarks : This species is reported for the first time from Nagaland.

12. ***Difflugia lobostoma*** Leidy

1879. *Difflugia lobostoma* Leidy, *Freshwater Rhizopods of North America* : 112.

Material examined: Sev. exs., Mokokchung, district, 27.v.1994.

Diagnosis : Test ovoidal, oral aperture usually quadrilobed in the form of a cross and sometimes trilobed, not enclosed by collar; test covered with angular quartz particles.

Distribution : India : Nagaland (Mokokchung district), Arunachal Pradesh, Himachal Pradesh, Meghalaya, Rajasthan, Tripura and West Bengal; in freshwater amongst vegetation and bottom ooze.

Remarks : This species constitutes new record for Nagaland.

Family NEBELIDAE

Genus ***Heleopera*** Leidy

1879. *Heleopera* Leidy, *Freshwater Rhizopods of North America* : 162.

Diagnosis : Test variously coloured, with a little foreign material at the fundus, aperture elliptical or linear with thin lip, elliptic notch visible near aperture in narrow lateral view.

Key to the species

1. Test ovoid-elongate, compressed, vinous red or rose-coloured, corners of aperture obtusely angular ..... *H. rosea*

– Test obovoid, much compressed, yellowish, aperture slightly convex in broad view, corners of aperture not as above ..... *H. sylvatica*

13. ***Heleopera rosea*** Penard

1890. *Heleopera rosea* Penard, *Mem. Soc. Phys. et Hist. Nat. Geneve* **31** : 166.

Material examined: 7 exs., Tuensang, Tuensang district, 23.v.1994.

Diagnosis : Test ovoid-elongate, compressed, vinous or rose coloured, corners of oral aperture obtusely angular.

Distribution : India : Nagaland (Tuensang district), Arunachal Pradesh, Himachal Pradesh and Sikkim; in moss and *Sphagnum*.

Remarks : This species is reported for the first time from Nagaland.

14. ***Heleopera sylvatica*** Penard

1890. *Heleopera sylvatica* Penard, *Mem. Soc. Phys. et Hist. Nat. Geneve*, **31** : 168.

Material examined : 6 exs., Dimapur, Kohima district, 12.v.1994; 4 exs., Phek, Phek district, 13.iii.1995.

Diagnosis : Test ovoid in broad view, much compressed, slightly yellowish, transparent, formed of siliceous shell plates of different sizes, aperture terminal, slightly convex in broad view, slit-like to elliptic with small border of organic cement.

Distribution : India : Nagaland (Kohima and Phek districts), Himachal Pradesh, Kerala and West Bengal; in moss.

Remarks : This species was reported for the first time from India by Chattopadhyay and Das (2003).

Class FILOSEA

Order GROMIIDA

Family EUGLYPHIDAE

Key to the genus

1. Aperture terminal 2

– Aperture subterminal 4

2. Test hyaline, aperture not bordered by any membrane 3

– Test colourless or brown, aperture bordered by an irregularly denticulated membrane..... ..... Genus ***Assulina***

3. Test with distinct hyaline collar, denticulate or lacinate, aperture bordered by a dentate neck without scale .... Genus ***Tracheleuglypha***

– Test without any collar, aperture bordered by regularly arranged serrated or denticulated scale ..... Genus ***Euglypha***

4. Test ovoid, formed of circular imbricated silicious scales, aperture circular, oblique, invaginated ..... Genus ***Trinema***

– Test ovoid or circular, formed of non-imbricated oval plates, aperture subcircular or oval, oblique ..... Genus ***Corythion***

Genus *Assulina* Ehrenberg

1871. (1872) *Assulina (Partim)* Ehrenberg, *Abh. Akad. Berlin*, : 224.

Diagnosis : Test brown or colourless, ovoid, glabrous, compressed, composed of elliptical, imbricated, siliceous scales arranged more or less regularly in diagonal rows; aperture oval, terminal, truncate or with a short neck, bordered by a thin chitinous finely dentate membrane.

15. *Assulina semilunum* (Ehrenberg)

1848. *Difflugia semilunum* Ehrenberg, *Ber. Akad. Berlin*, : 379.

1879. *Assulina semilunum* (Partim) Leidy, *Freshwater Rhizopods of North America*, : 225.

Material examined : 7 exs., Phek, Phek district, 13.iii.1995; Doyong, Wokha district, 21.iii.1995.

Diagnosis : Test usually yellowish to dark brown, occasionally colourless, pyriform or ovoid in broad view, compressed, composed of imbricated, oval or elliptical siliceus scales, aperture terminal, oval, surrounded by a thin chitinous membrane with irregularly dentate or undentate margin.

Distribution : India : Nagaland (Phek and Wokha districts) and Sikkim; in *Sphagum* and in moss growing near water bodies.

Remarks : This is the third report of this species from India. The first one is made by Das *et al.* (2000) from Sikkim and the second one by Chattopadhyay and Das (2003) from Nagaland.

Genus *Corythion* Taranek

1881. *Corythion* Taranek in *Sitzb. bohm. Ges. Wiss.*, : 232.

1915. *Corythion* : Cash, Wailes and Hopkinson, *The British Freshwater Rhizopoda and Heliozoa*, 3 : 96.

Diagnosis : Test small, ovoid or subcircular, hyaline, compressed, formed of non-imbricated oval, siliceous plates, aperture subterminal, ventral or oblique, circular or oval.

16. *Corythion dubium* Taranek

1881. *Corythion dubium* Taranek in *Sitzb. bohm. Ges. Wiss.*, : 232.

1915. *Corythion dubium* : Cash, Wailes and Hopkinson, *The British Freshwater Rhizopoda and Heliozoa*, 3 : 96.

Material examined : 6 exs., Jharnapani, Kohima district, 19.v.1994; Phek, Phek district, 13.iii.1995.

Diagnosis : Test ovoid, compressed unsymmetrically, aperture circular or oval, ventral, subterminal and oblique.

Distribution : India : Nagaland (Kohima and Phek districts), Arunachal Pradesh, Himachal Pradesh, Sikkim and Tripura; in moss.

Remarks : This species is reported for the first time from Nagaland.

Genus *Euglypha* Dujardin

1841. *Euglypha* Dujardin, *Zooph. Infus.* : 251.

1962. *Euglypha* Dectoitre, *Arch. Protistenkd.*, **106** : 51.

Diagnosis : Test hyaline, ovoid or elongated, circular or elliptical in transverse section, formed of circular or oval or scutiform silicious scales, arranged regularly in alternate longitudinal rows, imbricated; aperture terminal, bordered by serrated or denticulated scales.

Key to the species

1. Aperture bordered with one or two rows of dentate scales 2
- Aperture bordered by scales terminated with a semicircular projection ..... *E. rotunda*
2. Scales of the test elliptical, some scales of posterior half and at the base of fundus prolonged into 2-7 spines.. *E. acanthophora*
- Scales of the test oval, rarely circular and the test without any spine ..... *E. tuberculata*

17. ***Euglypha acanthophora*** (Ehrenberg)

1842. *Difflugia acanthophora* Ehrenberg, *Abh. Acad. Berlin,* 1841 (1842) : 413, 414.

1849. *Euglypha acanthophora* Perty, *Mitth, nat. Ges. Bern.,* : 45.

Material examined : 4 exs., Jharnapani, Kohima district, 19.v.1994.

Diagnosis : Test ovoidal, pseudostome bordered with one or occasionally two rows of finely dentate scales; scales of test elliptical, some scales at the base of the test and at posterior half prolonged into spines.

Distribution : India : Nagaland (Kohima district), Meghalaya and West Bengal; in freshwater bodies amongst vegetation and bottom ooze, also in submerged moss.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

18. ***Euglypha rotunda*** Wailes and Penard

1911. *Euglypha rotunda* Wailes and Penard, *Proc. roy. Irish Acad.,* **31** : 17.

1915. *Euglypha rotunda* : Cash, Hopkinson and Wailes, *The British Freshwater Rhizopoda and Heliozoa,* **3** : 31.

Material examined : 5 exs., Dimapur, Kohima district, 12.v.1994; Doyong, Wokha district, 21.iii.1995; Mokokchung, Mokokchung district, 27.v.1994.

Diagnosis : Test oval and without any spine, width of test about half of its length; aperture circular bordered by 8 scales, possessing one denticulate projection; body scales oval, about twice as long as broad, slightly imbricated, imbrication of scales of the test displaying a hexagonal and rectangular pattern on the surface.

Distribution : India : Nagaland (Kohima, Wokha and Mokokchung districts), Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Tripura and West Bengal; in moss.

Remarks : This species constitutes first report from Nagaland.

19. ***Euglypha tuberculata*** Dujardin

1841. *Euglypha tuberculata* Dujardin, *Zooph. Infus.* : 251-252.

1915. *Euglypha tuberculata* : Cash, Hopkinson and Wailes, *The British Freshwater Rhizopoda and Heliozoa,* **3** : 13.

Material examined : 5 exs., Dimapur, Kohima district, 12.v.1994.

Diagnosis : Test elongate-oviform, glabrous and not compressed; aperture circular, bordered by one or two rows of 8-12 finely serrated scales; body scales round or oval, imbricated, presenting a regular hexagonal design.

Distribution : India : Nagaland (Kohima district), Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Tripura and West Bengal; in freshwater amongst vegetation and in bottom ooze; also in submerged moss.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

Genus ***Tracheleuglypha*** Deflandre

1953. *Tracheleuglypha* Deflandre, *Traite de Zoology,* **1**(2) : 133.

Diagnosis : As in the key to the genus.

20. ***Tracheleuglypha dentata*** (Vejdowsky)

1882. *Euglypha dentata* Vejdowsky, *Thier. org. Brunnenw. Prag.,* : 38-39.

1890. *Sphenoderia dentata* Penard, *Mem. Soc. Geneve,* **31**(1) : 185.

1953. *Tracheleuglypha dentata* (Vejdowsky) Deflandre, *Traite de Zoologie*, 1(2) : 133.

Material examined : 4 exs., Jharnapani, Kohima district, 19.v.1994.

Diagnosis : Test oval or pyriform, scales of the test elliptical, imbricating, often presenting a hexagonal design, aperture bordered by transparent chitinous dentate membrane drawn out into finger like processes.

Distribution : India : Nagaland (Kohima district), Arunachal Pradesh, Himachal Pradesh, Sikkim, Tripura and West Bengal; in moss and in freshwater amongst vegetation.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

Genus *Trinema* Dujardin

1841. *Trinema* Dujardin, *Zooph. Infus.* : 249.

1915. *Trinema* : Cash, Wailes and Hopkinson, *The British Freshwater Rhizopoda and Heliozoa*, 3 : 85.

Diagnosis : Test small, hyaline, unsymmetrical, oviform or elongate, compressed anteriorly, covered with circular siliceous plates, oral aperture circular, oblique or invaginated.

Key to the species

1. Test ovoid, tapering both in broad and narrow views, covered with easily distinguishable circular plates ..... *T. enchelys*

– Test elongate, small, usually homogenous in appearance ..... *T. lineare*

21. *Trinema enchelys* (Ehrenberg)

1838. *Difflugia enchelys* Ehrenberg, *Infusionshierchen* : 132.

1878. *Trinema enchelys* Leidy, *Proc. Acad. Philad.* : 172.

Material examined : 7 exs., Jharnapani, Kohima district, 19.v.1994; sev. sex., Phek, Phek district, 13.iii.1995; sev. exs., Zunheboto, Zunheboto district, 18.iii.1995.

Diagnosis : Test hyaline, ovoid, compressed anteriorly, covered with siliceous circular plates, aperture circular, subterminal, oblique and invaginated, surrounded by very minute scales.

Distribution : India : Nagaland (Kohima, Phek and Zunheboto districts), Andhra Pradesh, Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Tripura and West Bengal; in freshwater amongst vegetation and bottom ooze, also in moss.

Remarks : This species was reported for the first time from Nagaland by Chattopadhyay and Das (2003).

22. *Trinema lineare* Penard

1890. *Trinema lineare* Penard, *Mem. Soc. Geneve* : 187.

Material examined : 7 exs., Jharnapani, Kohima district, 19.v.1994; sev. sex., Tuensang, Tuensang district, 23.v.1994.

Diagnosis : Test small, hyaline, elongate, smooth, composed of small circular plates, distinguishable near the edges where they may appear as minute undulations, aperture circular, oblique, invaginated.

Distribution : India : Nagaland (Kohima and Tuensang districts), Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim, Tripura and West Bengal; in moss, *Sphagnum* and in freshwater amongst aquatic vegetation.

Remarks : Chattopadhyay and Das (2003) reported this species earlier from Nagaland.

B. Parasitic Protozoa

Phylum APICOMPLEXA

Class SPOROZOEA

Order EUCOCCIDA

Family PLASMODIIDAE

Diagnosis : Parasites having sexual cycle in mosquito and asexual cycle in tissue and blood cells of vertebrate hosts, distinguished by erythrocytic schizogony; macrogamete and microgamont developing independently, syzygy absent, microgamont producing many microgamete.

Genus ***Plasmodium*** Marchiava and Celli

1885. *Plasmodium* Marchiava and Celli, *Rif. Med.*, Naples, No. **214** : 737.

Diagnosis : Trophozoites ring-shaped, amoeboid in erythrocytes, schizonts (merogony) in erythrocytes and also in various other tissues depending on species; hemozoin pigment visible with light microscope usually formed; vector mosquitoes or phlebotomin flies; parasitic in mammals, birds and reptiles.

Remarks : Three species of *Plasmodium* as discussed below occur in Nagaland.

Key to the species

1. Full grown schizonts rounded, nearly filling whole of erythrocytes, merozoite typically arranged in circle, schizogy in 72 hours .... *P. malariae*

– Full grown schizonts irregular in form, filling half to two-third the erythrocytes and irregularly arranged, schizogy in about 48 hours 2

2. Gametocytes crescent shaped, infected erythrocytes normal and atrophid .... *P. falciparum*

– Gametocytes rounded or oval, infected erythrocytes hypertrophied ..... *P. vivax*

23. ***Plasmodium falciparum*** (Welch)

1897. *Haematozoon flaciparum* Welch, *Syst. Pract. Med.*, **1** : 17.

1966. *Plasmodium falciparum* (Welch) : Garnham, *Matarial Parasites and other Haemosporidia.* Blackwell Scientific Publications, Oxford, : 357.

Diagnosis : 'Ring' form relatively small, often two or more in each infecting red cell, with double dots of chromatin, some apparently on edge (acoele forms), usually with crescentic gametocytes, macrogametocyte 12-14 μm long; trophozoite compact, rarely seen in peripheral blood; mature schizonts irregular in form, 8-32 merozoites irregularly arranged filling half to two-third the erythrocytes with early clumping of coarse dark pigments; rarely occur in peripheral circulation; host erythrocytes not hypertrophied but accompanied by reddish clefts known as Mauer's cleft.

Host : Man, *Homo sapiens;* site of infection : blood, liver, kidney, spleen, bone-marrow, brain, *etc.*

Distribution : India : Nagaland (Kohima district), in almost all parts of India (Knowles, Senior White and Das Gupta, 1930; Bhatia, 1938); also in all districts of Nagaland.

Remarks : This species of *Plasmodium* causes Malignant tertian Malaria and appears significantly fatal to human race in India, Africa and elsewhere in Tropies.

24. ***Plasmodium malariae*** (Grassi and Felleti)

1892. *Haemamoeba malariae* Grassi and Felleti, *Atti. Acad. Zioenia Sci. nat. Catania,* Memoir, **5** : 10.

1900. *Plasmodium malariae* Luhe, *Zbl. Bakt.*, **27** : 460.

Diagnosis : 'Ring' form about one-third diameter of erythrocyte, one in each infecting red cell; trophozoite compact, often band-like, schizont rounded, 7 μm in diameter, nearly filling the whole of erythrocyte, 6-12 merozoites typically arranged in circle, schizogony in 72 hours; gametocyte round or ovoid, 9 μm in diameter with brown black pigments; host erythrocyte not hypertrophied.

Host : Man, *Homo sapiens,* Chimpanzee in West Africa (Garnham, 1966); site of infection : blood, liver, kidney, *etc.*

Distribution : India : Nagaland (Kohima district); in almost all parts of India (Knowles, Senior White and Das Gupta, 1930; Bhatia, 1938); also in all districts of Nagaland.

Remarks : This species causes Quartan malaria in man. It is less common than both *P. falciparum* and *P. vivax* and not very pathogenic. However, its chronic infection may lead to a lethal kidney condition.

25. ***Plasmodium vivax*** (Grassi and Feletti)

1892. *Haemamoeba vivax* Grassi and Feletti, *Atti. Acad. Zioenia Sci. nat. Catania,* Memoir, **5** : 10.

1900. *Plasmodium vivax* Luhe, *Zbl. Bakt.*, **27** : 460.

Diagnosis : Relatively large 'ring' forms, about one-third diameter of erythrocyte, round or oval, usually one in each infecting red cell; a round chromatin dot in thin part of ring; trophozoite amoeboid, schizont irregular, filling half to two-third the erythrocyte; schizogony usually at interval of 48 hours; 12-14 merozoites in irregular grape-like cluster, with small pigment granules usually collected in a single mass; gametocyte large, round or ovoid, 10 µm in diameter; host erythrocyte hypertrophied, stippled with red dots known as Schiffner's dots; all erythrocytic stages occurring in peripheral blood.

Host : Man, *Homo sapiens;* site of infection : blood, liver, kidney, *etc.*

Distribution : India : Nagaland (Kohima district), almost in all parts of India (Knowles, Senior White and Das Gupta, 1930; Bhatia, 1938); also in all districts of Nagaland.

Remarks : This species is the most widespread human malarial parasite and causes Benign tertian malaria in man.

C. Symbiotic Protozoa

Phylum SARCOMASTIGOPHORA

Class ZOOMASTIGOPHOREA

Order OXYMONADIDA

Key to the families

1. Blepharoplast single and located at anterior tip, 4-8 flagellar cords starting from anterior tip of the body, running spirally backward and becoming free flagella at posterior end ..... Family PYRSONYMPHIDAE

– Blepharoplasts two in number and located near anterior extremity of axostyle, flagella two pairs, one pair arising from each blepharoplast, flagellar cord not spiral as above ..... Family OXYMONADIDAE

Family OXYMONADIDAE

Genus *Oxymonas* Janicki

1915. *Oxymonas* Janicki, *Zeit. Wiss. Zool.*, **112** : 608.

Diagnosis : Attached phase with a conspicuous rostellum, anterior end of which forming a tubular or flattened outgrowth for attachment with host's intestine, axostyle conspicuous resembling a slender stiletto, a pennant or a broad scimiter; recurvent portion of axostyle often extending backward from the holdfast into the body; predominantly uninucleate.

Key to the species

1. Axostyle slender resembling a stiletto, nucleus with a karyosome ..... *O. bosei*

– Axostyle broad resembling a scimiter, nucleus without any karyosome ..... *O. grandis*

26. *Oxymonas bosei* Das

1974. *Oxymonas bosei* Das, *Acta Protozool.*, **12** : 337.

Material examined : 2 exs., Doyong, Wokha district, 21.iii.1995.

Diagnosis : Body broadly ovoidal, dimensions 204.6 (172-236.2) µm × 38.2 (31-48.6) µm; rostellum conspicuous, axostyle stiletto-shaped extending little below the nucleus; nucleus elliptical, karyosome large, ovoidal, almost centrally located, surrounded by a distinct halo.

Host : *Cryptotermes havilandi;* location : gut.

Distribution : India : Nagaland (Wokha district), and West Bengal.

Remarks : This species constitutes first record from Nagaland.

27. *Oxymonas grandis* Cleveland

1935. *Oxymonas grandis* Cleveland, *Biol. Bull.*, **69** : 54

Material examined : 2 exs., Doyong, Wokha district, 21.iii.1995.

Diagnosis : Body ellipsoid, often irregular, dimensions 158.3 (78.7-266.2) µm × 30.7 (18.7-45) µm; rostellum conspicuous; axostyle resembling a scimitar in shape; recurvant portion of axostyle also conspicuous, nucleus ovoid, karyosome absent.

Host: *Cryptotermes havilandi;* location : gut.

Distribution : India : Nagaland (Wokha district), Bihar and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

Family PYRSONYMPHIDAE

Key to the genera

1. Body slender, club-shaped or lanceolate, sometimes spirally twisted, end of axostyle fixed at posterior tip of the body or indistinct except at the anterior end ..... Genus ***Dinenympha***

– Body pyriform, club-shaped, spindle-shaped or screw-like, spirally twisted, axostyle hanging in the endoplasm and its posterior end is free from body wall ..... Genus ***Pyrsonympha***

Genus ***Dinenympha*** Leidy

1877. *Dinenympha* Leidy, *Proc. Acad. Nat. Sci. Phila.*, **29** : 149.

Diagnosis : As in the key to the genus.

Key to the species

1. Body surface almost smooth 2

– Body surface ridged 3

2. Body long and slender, tapering gradually at extremities, axostyle thick and becoming slightly thinner towards posterior and ..... *D. exilis*

– Body slender or club-shaped, anterior portion of the body bend back, assuming commonly the shape of a hook, axostyle indistinct ..... *D. nobilis*

3. Body slender, flat and ribbon-like, tapering more abruptly at posterior end, course of flagellar cords markedly wavy, free end of flagellar cord not very long ..... *D. rugosa*

– Body lanceolate and fairly thick at posterior portion, course of flagellar cords straight, free end of flagellar cords conspicuously long, almost half the length of body ..... *D. leidy*

28. ***Dinenympha exilis*** Koidzumi

1921. *Dinenympha exilis* Koidzumi, *Parasitology*, **13** : 291.

1995. *Dinenympha exilis* : Das, Mandal, Tiwari and Sarkar, *Fauna of Meghalaya, Zool. Surv. India, State Fauna Series* **4** (Part-10) : 85.

Material examined: Sev. exs., Tuensang, Tuensang district, 23.v.1994.

Diagnosis : Body large, slender and gradually tapering at extremities, 50-110 μm × 4-10 μm in dimensions; number of complete spiral turn two or two and a half; body surface almost smooth; axostyle distinct and thick, but becoming thinner towards posterior end of the body, nucleus oval situated at anterior extremity.

Host : *Reticulitermes assamensis,* location : gut.

Distribution : India : Nagaland (Tuensang district), Meghalaya and Sikkim.

Remarks : This species is reported for the first time from Nagaland.

29. ***Dinenympha leidy*** Koidzumi

1921. *Dinenympha leidyi* Koidzumi, *Parasitology*, **13** : 292.

1995. *Dinenympha leidyi* : Das, Mondal, Tiwari and Sarkar, *Fauna of Meghalaya, Zool. Surv. India, State Fauna Series* **4** (Part 10) : 85.

Material examined: Sev. exs., Dimapur, Kohima district, 12.v.1994.

Diagnosis : Body lanceolate and fairly thick at posterior portion, dimensions 22-65 μm × 4-18 μm; body surface distinctly ridged, these ridges arranged regularly, axostyle distinct, free ends of flagellar cords conspicuously long, almost half the length of the body.

Host : *Reticulitermes assamensis;* location : gut.

Distribution : India : Nagaland (Kohima district), and Meghalaya and Sikkim.

Remarks : This species constitutes first report from Nagaland.

30. *Dinenympha nobilis* Koidzumi

1921. *Dinenympha nobilis* Koidzumi, *Parasitology*, **13** : 292.

1995. *Dinenympha nobilis* : Das, Mandal, Tiwari and Sarkar, *Fauna of Meghalaya, Zool. Surv. India, State Fauna Series* **4** (Part 10) : 85.

Material examined : 2 exs., Dimapur, Kohima district, 12.v.1994.

Diagnosis : Body club-shaped, gradually thickened towards posterior end, dimensions 30-50 µm × 5-15 µm, anterior portion of the body usually turned back assuming commonly the shape of a hook; axostyle indistinct; body surface smooth; nucleus round, located towards anterior end.

Host : *Reticulitermes assamensis;* location : gut.

Distribution : India : Nagaland (Kohima district), Arunachal Pradesh, Meghalaya and Sikkim.

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

31. *Dinenympha rugosa* Koidzumi

1921. *Dinenympha rugosa* Koidzumi, *Parasitology*, **13** : 292.

1995. *Dinenympha rugosa* : Das, Mandal, Tiwari and Sarkar, *Fauna of Meghalaya, Zool. Surv. India, State Fauna Series* **4** (Part 10) : 86.

Material examined : 2 exs., Dimapur, Kohima district, 12.v.1994; 4 exs., Tuensang, Tuensang district, 23.v.1994.

Diagnosis : Body long, slender but flat and ribbon like, tapering more abruptly at posterior end; dimensions 40-100 µm × 5-10 µm, body surface distinctly ridged; course of flagellar cords markedly wavy; nucleus round and located at anterior end of the body.

Host : *Reticulitermes assamensis*; location : gut.

Distribution : India : Nagaland (Kohima and Tuensang districts), Meghalaya and Sikkim.

Remarks : This species is reported for the first time from Nagaland.

Genus *Pyrsonympha* Leidy

1877. *Pyrsonympha* Leidy, *Proc. Acad. Nat. Sci. Phila.*, **29**, p. 148.

Diagnosis : As in the key to this genus.

Key to the species

1. Body pear-shaped often conspicuously twisted resembling a screw, axostyle slender .... *P. modesta*

– Body club-shaped, not twisted as above, axostyle comparatively thick ..... *P. grandis*

32. *Pyrsonympha grandis* Koidzumi

1921. *Pyrsonympha grandis* Koidzumi, *Parasitology*, **13** : 281.

1995. *Pyrsonympha grandis* : Das, Mandal, Tiwari and Sarkar, *Fauna of Meghalaya, Zool. Surv. India, State Fauna Series* **4** (Part 10) : 87.

Material examined : 2 exs., Tuensang, Tuensang district, 23.v.1994.

Diagnosis : Body club-shaped, slightly curved with pointed anterior and round posterior ends; dimensions 67.2-83.2 µm × 19-12 µm, axostyle thick, well developed and hanging free in the endoplasm; nucleus ovoidal and situated at anterior end of the body.

Host : *Reticulitermes assamensis;* location : gut.

Distribution : India : Nagaland (Tuensang district), Arunachal Pradesh, Meghalaya and Sikkim.

Remarks : This species is reported for the first time from Nagaland.

33. *Pyrsonympha modesta* Koidzumi

1921. *Pyrsonympha modesta* Koidzumi, *Parasitology*, **13** 289.

1995. *Pyrsonympha modesta* : Das, Mondal, Tiwari and Sarkar, *Fauna of Meghalaya, Zool. Surv. India, State Fauna Series* **4** (Part 10) : 87.

Material examined: 2 exs., Tuensang, Tuensang district, 23.v.1994.

Diagnosis: Body pear-shaped with slightly pointed anterior and oval posterior ends; body often conspicuously twisted resembling a screw, dimensions 40.7-59.3 µm × 24-37 µm; axostyle more slender than that of the preceeding species and always single, hanging freely in the endoplasm; nucleus round and located at anterior end of the body.

Host : *Reticulitermes assamensis;* location : gut.

Distribution : India : Nagaland (Tuensang district), Meghalaya and Sikkim.

Order TRICHOMONADIDA

Key to the families

1. Nucleus single, mastigont also single with three anterior flagella and a stout trailing flagellum generally adherent in part to body surface, cresta present ..... Family DEVESCOVINIDAE
- Nuclei multiple, four flagella attached to each mastigont, trailing flagellum absent ..... Family CALONYMPHIDAE

Family DEVESCOVINIDAE

Key to the genera

1. Trailing flagellum 1 to 1.5 times the length of the body, parabasal body spiraling around axostyle or posterior part of the nucleus ½ turns to 5 turns ..... Genus ***Devescovina***
— Trailing flagellum exceeding twice the length of the body, parabasal body not coiled around axostyle ..... Genus ***Foaina***

Genus ***Devescovina*** Foa

1905. *Devescovina* Foa, *Atti R. Acad. Lincei.* Ser. 5, Sem 2, **14** : 546.

Diagnosis : As in the key to the genera.

Key to the species

1. Trailing flagellum cord shaped (posteromedial edge of cresta longer than anteromedial)..... ..... *D. glabra*
- Trailing flagellum ribbon-shaped (with broad proximal and pointed distal end)..... ..... *D. lemniscata*

34. ***Devescovina glabra*** Grassi

1917. *Devescovina glabra* Grassi, *Mem. R. Acad. Lincei* (5), **12** : 54.

1941. *Devescovina glabra* : Kirby, *Univ. Calif. Publs. Zool.*, **45** : 39.

Material examined: 2 exs., Doyong, Wokha district, 21.iii.1995.

Diagnosis: Body elongated with pointed posterior end, 34-44.2 µm × 10.2-15.3 µm in dimensions, trailing flagellum cord-shaped, cresta varying from 5.7-6.2 µm, posteromedial edge of cresta longer than anteromedial edge; parabasal body usually turning 1-5 times around axostyle, axostyle straight or little curved with stout anterior and filamentous posterior ends.

Host: *Cryptotermes havilandi,* location : gut.

Distribution : India : Nagaland (Wokha district), Bihar, Tripura and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

35. ***Devescovina lemniscata*** Kirby

1926. *Devescovina lemniscata* Kirby, *Univ. Calif. Publs. Zool.*, **29** : 103.

Material examined: 3 exs., Zunheboto, Zunhebota district, 18.iii.1995; 2 exs., Sanis, Wokha district, 23.iii.1995.

Diagnosis : Body more or less pyriform with bluntly pointed posterior end, 51-71.4 µm × 11.9-22.1 µm in dimensions; trailing flagellum resembling a broad ribbon in its middle part; cresta measuring 11-12.7 µm with broad proximal and pointed distal ends, number of parabasal turns varying from 1-4; one turn of parabasal body observed in specimens from the host, *Cryptotermes bengalensis,* axostyle bent or sinuous in posterior portion of the body.

Host: *Cryptotermes havilandi;* location : gut.

Distribution : India : Nagaland (Zunheboto and Wokha districts), Tripura and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

Genus ***Foaina*** Janicki

1915. *Foaina* Janicki, Zeit. *Wiss. Zool.*, **92** : 615.

Diagnosis : As in the key to the genera.

Key to the species

1. Parabasal body 'U' shaped bend, axostyle stout, projecting out from posterior part of the body ..... *F. reflexa*

— Parabasal body without such band, axostyle stout, projecting out from posterior part of the body ..... *F. solita*

36. ***Foaina reflexa*** Kirby

1942. *Foaina reflexa* Kirby, *Univ. Calif. Publs. Zool.*, **45** : 206.

Material examined: 2 exs., Zunheboto, Zunheboto district, 18.iii.1995.

Diagnosis : Body ovoidal, 25.5-42.5 µm × 15.5-28 µm in dimensions, anterior flagella three in number and equal to the length of the body, trailing flagellum resembling a stout cord, but occasionally band-shaped exceeding twice the body length; cresta long but narrow; part of the parabasal body near blepharoplast showing a 'U' shaped band; axostyle stout, projecting out of posterior part of the body to a short distance.

Host: *Cryptotermes havilandi;* location : gut.

Distribution : India : Nagaland (Zunheboto district), Bihar, Tripura and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

37. ***Foaina solita*** Kirby

1929. *Devescovina kirbyi* de Mello and de Brito *(Partim), Archos, Esc. med. Cir. (Nova), Goa* (A), **5** : 699.

1942. *Foaina solita* Kirby, *Univ. Calif. Publs. Zool.*, **45** : 182.

Material examined: 2 exs., Zunheboto, Zunheboto district, 18.iii.1995.

Diagnosis : Small, dimensions 7.6-17 µm × 3.2-9.2 µm, anterior flagella slender, three in number and longer than the body length, trailing flagellum resembling a stout cord with a length 2-5 times the length of the body; parabasal body short and restricted to dorsal side of nucleus; axostyle moderately stout with or without enlarged cusp and projecting out from posterior part of the body.

Host: *Cryptotermes havilandi*, location : gut.

Distribution : India : Nagaland (Zunheboto district), Tripura and West Bengal.

Remarks : This species constitutes first record from Nagaland.

Genus ***Stephanonympha*** Janicki

1911. *Stephanonympha* Janicki, *Biol. Central*, **31**, p. 325.

Diagnosis : Oval but plastic, numerous nuclei spirally arranged in the anterior half; karyomastigont present; axial filament forming a bundle.

Key to the species

1. Nuclei arranged in a single spiral series ..... *S. minuta*

– Nuclei arranged in more than one spiral series 2

2. Nuclei arranged 2-3 spiral series ..... *S. silvestrii*

– Nuclei arranged in 8-9 spiral series ..... *S. pyriformis*

38. ***Stephanonympha minuta*** Das and Choudhury

1972. *Stephanonympha minuta* Das and Choudhury, *Proc. Zool. Soc., Calcutta*, **25** : 26.

Material examined: 2 exs., Sanis, Wokha district, 23.iii.1995.

Diagnosis : Body oval with broad anterior and bluntly pointed posterior ends, 28-36 µm × 20-29.7 µm in dimensions; nuclei oval, 6-10 in number and set closely to form a single spiral series near the anterior end of the body.

Host : *Cryptotermes havilandi,* location : gut.

Distribution : India : Nagaland (Wokha district), Bihar, and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

39. ***Stephanonympha pyriformis*** Das and Choudhury

1972. *Stephanonympha pyriformis* Das and Choudhury, *Proc. Zool. Soc., Calcutta,* **25** : 27.

Material examined : 2 exs., Doyong, Wokha district, 21.iii.1995.

Diagnosis : Body shape pyriform with bluntly pointed posterior end, 70.2.-86.7 µm × 38-47.5 µm in dimensions, nuclei ovoid or slightly elongated, numerous and embedded in series of 8-9 concentric spirals, occupying almost one third portion of anterior end of the body; axial bundle running through the middle of the body and reaching almost its posterior extremity.

Host : *Cryptotermes havilandi,* location : gut.

Distribution : India : Nagaland (Wokha district), Bihar, Tripura and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

40. ***Stephanonympha silvestrii*** Janicki

1911. *Stephanonympha silvestrii* Janicki, *Biol. Central,* **31** : 325.

Material examined : 2 exs., Doyong, Wokha district, 21.iii.1995.

Diagnosis : Oval or rounded, 45-56.2 µm × 31.5-41.2 µm in dimensions; nuclei fusiform containing distinct chromatin granules and embedded closely in 2 or 3 spiral series occupying anterior portion of the body; axial bundle extending in the same fashion as in the preceeding species.

Host : *Cryptotermes havilandi;* location : gut.

Distribution : India : Nagaland (Wokha district), Bihar, Tripura and West Bengal.

Remarks : This species is reported for the first time from West Bengal.

Order HYPERMASTIGIDA

Key to the families

1. Body regularly ridged transversely, giving its segmented appearance, each ridge provided with a single row of flagella .... Family TERATONYMPHIDAE
– Body not ridged as above 2
2. Flagella arranged in spiral rows 3
– Flagella not arranged in spiral rows.....4
3. Spiral rows of flagella 12-40, a mass of dense cytoplasm usually surrounding ovoid nucleus near anterior end of the body .... Family HOLOMASTIGOTIDAE
– Spiral rows of flagella few, arising from a common point near anterior end of the body, nucleus anchorded to rostrum by a nuclear sleeve ....Family SPIROTRICHONYMPHIDAE
4. Entire body covered with flagella leaving a very small posterior region .... Family EUCONYMPHIDAE
– Posterior portion of the body not flagellated and longest flagella arising at posterior limit of flagellated region .... Family TRICHONYMPHIDAE

Family HOLOMASTIGOTIDAE

Genus ***Holomastigotoides*** Grassi and Foa

1911. *Holomastigotoides* Grassi and Foa, *Rend. R. Accad. Lincei* (5), sem 1, **20** : 279.

Diagnosis : As in the key to the genera.

Key to the species

1. Prenuclear zone present.....2
– Prenuclear zone absent 9
2. Posterior portion of the body glabrous 3
– Posterior portion of the body not glabrous.....4

3. Posterior one fifth of the body without any flagella ..... *H. magnus*

– A small portion of the body without any flagella and longer flagella occupying posteriormost portion of the body .... *H. bengalensis*

4. Flagella of uniform size 5

– Flagella of posterior portion of the body much longer 6

5. Body exactly spherical in shape .... *H. spheroidalis*

– Body resembling an 'inverted cup' with finger like projection at anterior end ... *H. ogivalis*

6. Longer flagella occupying the posterior fifth of the body ..... *H. rayi*

– Longer flagella occupying only the posterior extremity of the body 7

7. Body more or less round in shape, having moderately projected finger like elevation with apical pit at anterior end ..... *H. hollandei*

– Body oval, elliptical, club-shaped or reniform without any apical pit at anterior end 8

8. Body elliptical or club-shaped with considerable elevation at anterior and forming a nipple like structure, axostyle indistinct ... . *H. emersoni*

– Body reniform, axostyle short but distinct .. ..*H. reniformis*

9. Body resembling a bell jar without any apical knob, axostyle short..... *H. campanula*

– Body oval, axostyle lacking .....*H. ovalis*

41. ***Holomastigotoides bengalensis*** Chakravarty and Banerjee

1956. *Holomastigotoides bengalensis* Chakravarty and Banerjee, *Proc. Zool. Soc., Calcutta,* **9** : 36.

Material examined : Sev. exs., Peren, Kohima district, 14.v.1994; 4 exs., Sanis, Wokha district, 23.iii.1995.

Diagnosis : Body more or less oval, occasionally elliptical, anterior end bluntly pointed resembling a nipple and posterior end rounded, 67.3-105.2 µm × 41.2-70.5 µm in dimensions; flagella of two types, shorter one covering a major portion of the body in dexiotropic manner, leaving a small glabrous portion without having any flagella; longer flagella occupying posteriormost portion of the body, axostyle well developed extending almost up to posterior extremity of the body; prenuclear zone conical and densely granulated.

Host : *Coptotermes travians;* location : gut.

Distribution : India : Nagaland (Kohima and Wokha districts), Tripura, Uttar Pradesh and West Bengal.

Remarks : This species constitutes new record for Nagaland.

42. ***Holomastigotoides campanula*** (de Mello)

1921. *Leidya campanula* de Mello, *Arque. Indo-Port Med. Hist. Nat.*, **1** : 179.

1927. *Holomastigotoides campanula* de Mello; *Trans. 7th Congr. East. Assoc. Trop. Med.*, **2** : 591.

Material examined : 3 exs., Mokokchung, Mokokchung district, 26.v.1994.

Diagnosis : Body resembling exactly a bell-jar without apical knob; 42.5-69.1 µm × 56.1-73.3 µm in dimension; flagella of two types, shorter ones arranged all over the body in dexiotropic rows and longer ones restricted to posterior extremity of the body; axostyle short but distinct, prenuclear zone absent.

Host : *Coptotermes travians;* location : gut.

Distribution : India : Nagaland (Mokokchung district), Bihar, Diu, Karnataka, Sikkim, Tripura and West Bengal.

43. ***Holomastigotoides emersoni*** Das

1976. *Holomastigotoides emersoni* Das, *Acta Protozool.*, **15** : 105.

Material examined : 2 exs., Phek, Phek district, 13.iii.1995.

Diagnosis : Body elliptical or club-shaped, measuring 93.4 (96.5-110.4) µm × 38.2 (28.9-47.6) µm in dimension, maximum being near posterior half of the body; anterior end of the body considerably elevated forming a nipple like structure and posterior end broadly round; flagella of two types, shorter ones covering major portion of the body dexiotropically and longer ones restricted only to posterior extremity; axostyle indistinct, dense and homogenous prenuclear zone present.

Host : *Coptotermes travians;* location : gut.

Distribution : India : Nagaland (Phek district), Bihar and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

44. ***Holomastigotoides hollandei*** Das

1976. *Holomastigotoides hollandei* Das, *Acta Protozool.*, **15** : 103.

Material examined : Sev. exs., Peren, Kohima district, 10.iii.1995.

Diagnosis : Body more or less round with finger like projection at anterior end bearing apical pit; 70.9 (55-76.8) µm × 57.1 (50.2-64) µm in dimension; posterior extremity of the body thickly studded with much longer flagella; axostyle fibrillar and well developed, reaching obliquely almost posterior part of the body; prenuclear zone conspicuous.

Host : *Coptotermes travians* ; location : gut.

Distribution : Nagaland (Kohima district), and West Bengal.

Remarks : This species constitutes first report from Nagaland.

45. ***Holomastigotoides magnus*** Uttangi

1962. *Holomastigotoides magnus* Uttangi, *J. Karnatak Univ.*, **7** : 188.

Material examined : 2 exs., Phek, Phek district, 13.iii.1995.

Diagnosis : Body comparatively large and ovoidal, both anterior and posterior ends broadly round, 100.3-170 µm × 74.8-102 µm in dimensions; flagella of one type covering major portion of the body dexiotropically leaving a posterior glabrous region, measuring about one-fifth of the body length; axostyle fibrous and moderately developed reaching beyond the middle of the body; prenuclear zone clearly visible in stained preparation.

Host : *Coptotermes travians;* location : gut.

Distribution : India : Nagaland (Phek district), Sikkim, Tripura and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

46. ***Holomastigotoides ogivalis*** de Mello

1937. *Holomastigotoides ogivalis* de Mello, *C. R. XII Congr. Int. Zool.* Lisbon, 1935, **2** : 1373.

Material examined : 2 exs., Peren, Kohima district, 10.v.1995.

Diagnosis : Body shape resembling an inverted cup with a blunt finger-like elevation at the anterior end, 71.4-91.8 µm × 39-74.8 µm in dimension; shorter flagella covering the entire body dexiotropically while longer flagella thickly set at the posterior extremity of the body; axostyle short but distinct, prenuclear zone present.

Host : *Coptotermes travians* ; location : gut.

Distribution : India : Nagaland (Kohima district), Bihar, Daman, Karnataka, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Remarks : This species constitutes first record from this state.

47. ***Holomastigotoides ovalis*** Uttangi

1962. *Holomastigotoides ovalis* Uttangi, *J. Karnatak Univ. Sci.*, **7** : 185.

Material examined : 2 exs., Peren, Kohima district, 10.v.1995.

Diagnosis : Body oval, anterior end narrowly and posterior end broadly rounded, 105 µm × 68 µm in dimension; flagella longer, arranged in

dexiotropic rows, covering whole of the body excepting posterior glabrous portion which bear short "steriocilia", nucleus oval located at anterior pole of the body; prenuclear zone and axostyle absent.

Host: *Coptotermes travians* ; location : gut.

Distribution : India : Nagaland (Kohima district), Bihar, Karnataka and Tripura.

Remarks : This species is reported for the first time from Nagaland.

48. ***Holomastigotoides rayi*** Karandikar and Vittal

1954. *Holomastigotoises rayi* Karandikar and Vittal, *J. Univ. Bombay*, **23B** : 18.

Material examined: 4 exs., Mokokchung, Mokokchung district, 26.v.1994.

Diagnosis : Body oval, sometimes with apical pit; 88.4-125.8 µm × 61.2-70.5 µm in dimension; flagella of two types, first type covering the body dexiotropically while the second type, sometimes longer, sometimes of almost equal length setting irregularly around one-fifth of the posterior region of the body; axostyle faintly visible, prenuclear zone distinct in stained preparation.

Host: *Coptotermes travians* ; location : gut.

Distribution : India : Nagaland (Mokokchung district), Bihar, Karnataka, Sikkim, Tripura and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

49. ***Holomastigotoides reniformis*** de Mello

1937. *Holomastigotoides reniformis* de Mello; *C. R. XII Congr. Intern. Zool. Lisb.*, **2** : 1373.

Material examined: 3 exs., Mokokchung district, 26.v.1994; 2 exs., Demapur, Kohima district, 12.v.1994.

Diagnosis : Body reniform, 50-125.5 µm × 20.5-45.2 µm in dimension; flagella of one type covering whole of body dexiotropically; axostyle short and reaching slightly below nucleus; prenuclear zone distinct and granular; endoplasm containing ingested wood particles.

Host: *Coptotermes travians* ; location : gut.

Distribution : India : Nagaland (Mokokchung and Kohima districts), Bihar, Goa, Sikkim and Tripura.

Remarks : This species constitutes first record from Nagaland.

50. ***Holomastigotoides spheroidalis*** de Mello

1937. *Holomastigotoides spheroidalis* de Mello, *C. R. XII Congr. Int. Zool. Lisb.* 1935, **2** : 1373.

Material examined: Sev. exs., Phek, Phek district, 13.iii.1995.

Diagnosis : Body spherical, 67.5-86.2 µm in diameter; flagella of one type, covering entire body dexiotropically; nucleus circular and located very near a point at anterior end from which flagellar bands seem to diverge out; axostyle well developed, prenuclear zone distinct.

Host: *Coptotermes travians* ; location : gut.

Distribution : India : Nagaland (Phek district), Bihar, Daman, Karnataka, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Family SPIROTRICHONYMPHIDAE

Key to the genera

1. Body spindle-shaped, nucleus located at very close to rostrum and embedded in a mass of dense cytoplasm, whose shape non-conical ..... Genus ***Holomastigotes***

– Body elongate pyriform, nucleus considerably away from rostrum and appearing to be suspended in a mass of dense conical shaped cytoplasm whose base indistinct ..... Genus ***Spirotrichonympha***

Genus ***Spirotrichonympha*** Grassi and Foa

1911. *Spirotrichonympha* Grassi and Foa, *Rend. R. Acad. Lincei.*, (5), **20**, p. 727.

Diagnosis : Body elongate, pyriform, flagella deeply embedded in cytoplasm in anterior region arising from flagellar bands, mass of dense cytoplasm conical and its base indistinct.

Key to the species

1. Anterior portion of the body narrowed to a blunt end and posterior extremity broadest, flagellar bands 4 in number, conspicuously long flagella spreading out from posterior surface in a brush-like manner .. *S. froilanoi*

– Anterior end of the body cone-shaped and posterior end round with finger-like prolongation; flagellar bands 6-8 in number, hinder portion of the body free from any flagella ..... *S. porteri*

51. ***Spirotrichonympha froilanoi*** Karandikar & Vittal

1954. *Spirotrichonympha froilanoi* Karandikar & Vittal, *J. Univ. Bombay*, **23B** : 20.

Material examined : Sev. exs., Sanis, Wokha district, 23.iii.1995.

Diagnosis : Body cone-shaped, anterior portion narrowed to a blunt end, posterior extremity broadest, 20.4-42.5 μm × 11.9-27.2 μm in dimentions; nucleus round and located near anterior third of the body; four flagellar bands originating from the centroblepharoplast, covered by apical operculum; conspicuously long flagella spreading out from posterior surface in a brush-like manner; axostyle distinct and cord-like in postnuclear region extending obliquely towards posterior extremity and occasionally protruding out of the body.

Host : *Coptotermes travians;* location : gut.

Distribution : India : Nagaland (Wokha district), Bihar, Karnataka, Sikkim, Tripua, Uttar Pradesh and West Bengal.

Remarks : This species is reported for the first time from India.

52. ***Spirotrichonympha porteri*** (Koidzumi)

1917. *Spirotrichonympha porteri* Koidzumi, *Ann. Rep. Inst. Sci. Govt. Formosa*, **6** : 93.

1921. *Microspironympha porteri* Koidzumi, *Parasitology*, **13** : 268.

Material examined : Sev. exs., Tuensang, Tuensang district, 23.v.1994.

Diagnosis : Anterior end of the body cone-shaped and posterior end round with finger-like prolongation; dimensions 14.4-35.2 μm × 11.2-27.2 μm, number of spiral flagellar bands 6-8; hinder portion of the body free from any flagella; nucleus oval, situated at about anterior third of the body; nucleus not suspended freely but connected with anterior tip of body by means of rostral tube of uniform thickness.

Host : *Reticulitermes assamensis* ; location : gut.

Distribution : India : Nagaland (Tuensang district), Arunachal Pradesh, Meghalaya and Sikkim.

Genus ***Holomastigotes*** Grassi

1892. *Holomastigotes* Grassi, *Rend R. Accad. Lince.*, Soc 5, **1** : 36.

Diagnosis : Body spindle-shaped, a few spiral flagellar bands arising from a common point near anterior end of the body and reaching up to posterior end; flagella arising from the bands lining up closely in row and forming fasciculi after reaching the surface of the body; nucleus located very close to the rostrum, embedding in a mass of dense cytoplasm.

53. ***Holomastigotes indica*** Das, Mandal, Tiwari & Sarkar

1995. *Holomastigotes indica* Das, Mandal, Tiwari and Sarkar, *Fauna of Meghalaya, Zool. Surv. India, State Fauna series* **4** (Part 10) : 88.

Material examined : Sev. exs., Dimapur, Kohima district, 12.v.1994.

Diagnosis : Body more or less spindle-shaped with rounded posterior end, dimensions 43.2-65.5 μm × 12.8-25.6 μm; anterior end with well marked rostrum, flagellar band 8 in number, arising from a common point near anterior end of the body, these bands spiraling slightly in rostrum but markedly in body portion up to the posterior end of the body and forming fasciculi; nucleus oval, situated very close to the rostrum and embedded in a mass of dense cytoplasm, containing small fragments of ingested wood particles.

Host: *Reticulitermes assamensis*, location : gut.

Distribution : India : Nagaland (Kohima district), Meghalaya and Sikkim.

Remarks : This species is reported for the first time from Nagaland.

Family EUCOMONYMPHIDAE

Genus ***Pseudotrichonympha*** Grassi & Foa

1911. *Pseudotrichonympha* Grassi & Foa, *Rend. R. Accad.* Ser 5, Sem. 1, **20** : 729.

Diagnosis: Anterior portion consisting of apical cap and campanula; campanular surface covered with three types of flagella, first type shortest and immobile, strictly confined to rostral tube, second type longest and arranged below first type in a thick circular band, third type arranged in longitudinal rows in leiotropic manner covering rest of the body excepting short glabrous end.

Key to the species

1. Campanula anterior and medially placed ...2
- Campanula disposed obliquely on one side of the median axis and distinctly subapical .... *P. subapicalis*
2. Body heart-shaped having sphaerita-like microorganisms ..... *P. cardiformis*
- Body elongated and truncated at both ends (nucleus with scattered chromatin granules) ..... *P. indica*

54. *Pseudotrichonympha cardiformis* Karandikar & Vittal

1954. *Pseudotrichonympha cardiformis* Karandikar and Vittal, *J. Univ. Bombay*, **23B** : 2.

Material examined: 4 exs., Mokokchung, Mokokchung district, 25.v.1994; 2 exs., Dimapur, Kohima district, 12.v.1994; 2 exs., Phek, Phek district, 10.iii.1995.

Diagnosis: Body typically heart-shaped, anterior part consisting of bell-like campanula demarcated by a faintly stained circlet-like line from the rest of the body; dimensions 105-181.2 µm × 82.2-130.3 µm, campanula placed mid-apically at anterior end of the body; nucleus spherical and located generally above the middle region of the body, endoplasm with sphaerita-like organisms.

Host: *Coptotermes travians;* location : gut.

Distribution : India : Nagaland (Mokokchung, Kohima and Phek districts), Karnataka, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Remarks : This species is reported for the first time from Nagaland.

55. *Pseudotrichonympha indica* Chakravarty and Banerjee

1965. *Pseudotrichonympha indica*, Chakravarty and Banerjee, *Proc. Zool. Soc., Calcutta*, **9** : 42.

Material examined: 3 exs., Mokokchung, Mokokchung district, 26.v.1994; 4 exs., Dimapur, Kohima district, 12.v.1994; 2 exs., Phek, Phek district, 13.iii.1995.

Diagnosis: Body much elongated with its broadest part being almost near the middle; 165-221.2 µm × 22.5-52.5 µm in dimensions; campanular region very short in comparison to body length; campanula located mid-apically at anterior end; nucleus more or less round located near middle of body (rarely near posterior region) containing scattered chromatin granules.

Host: *Coptotermes travians*; location : gut.

Distribution : India : Nagaland (Mokokchung, Kohima and Phek districts), Bihar, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Remarks : This species constitutes first record from Nagaland.

56. *Pseudotrichonympha subapicalis* Karandikar and Vittal

1954. *Pseudotrichonympha subapicalis*, Karandikar and Vittal, *J. Univ. Bombay*, **23B** : 8.

Material examined: 2 exs., Peren, Kohima district, 14.v.1994; 3 exs., Mokokchung district, 26.v.1994.

Diagnosis : Body generally rounded, swollen anteriorly and narrowed posteriorly to a blunt end; 172.5-205 µm × 82.5-90 µm in dimensions; campanula disposed obliquely on one side of the median axis and distinctly subapical; nucleus spherical, located at the anterior region of the body (occasionally in the middle).

Host : *Coptotermes travians* : location : gut.

Distribution : India : Nagaland (Kohima and Mikokchung districts), Karnataka, Sikkim, Tripura and West Bengal.

Remarks : This species is reported for the first time from India.

Family TERATONYMPHIDAE

Genus ***Teranympha*** Koidzumi

1917. *Teranympha* Koidzumi, *An. Rep. Inst. Sci. Govt.* Formosa, **6** : 93.

Diagnosis : Large, elongate body, ridged regularly and transversely, presenting a metameric appearance, each ridge provided with a single row of flagella, nucleus single, vesicular, enclosed in nuclear sac, fixed to the body wall and base of head lying on the first apparant segment of the body.

57. ***Teranympha mirabilis*** Koidzumi

1917. *Teranympha mirabilis* Koidzumi, *Ann. Rep. Inst. Farmosa,* **6** : 93.

Material examined: Sev. exs., Tuensang, Tuensang district, 23.v.1994; 3 exs., Dimapur, Kohima district, 12.v.1994.

Diagnosis : Body wider at anterior and gradually tapering towards posterior ends, dimensions 150-233 µm × 21.6-70 µm, body ridged regularly and transversely, number of ridges varying from 18-30 and sometimes even more; shape and location of nucleus as in the genus.

Host : *Reticulitermes assamensis;* location : gut.

Distribution : India : Nagaland (Tuensang and Kohima districts), Arunachal Pradesh, Meghalaya and Sikkim.

Family TRICHONYMPHIDAE

Genus ***Trichonympha*** Leidy

1877. *Trichonympha* Leidy, *Proc. Acad. Nat. Sci. Phila,* **29** : 147.

Diagnosis : Relatively large, body subdivided into three regions; rostrum, flagella bearing region behind rostrum and non-flagellated posterior region, flagella arising at the posterior limit of flagellated region longest, extending beyond the posterior end of the body, parabasal apparatus composed of numerous cords in endoplasm of posterior region.

Key to the species

1. Body more or less oval or spindle shaped with widest portion from anterior to middle of the body ..... *T. agilis*

– Body with truncated posterior end, widest portion being in the posterior part of the body, usually possessing a notch near anterior one-third of the body ..... *T. meghalayensis*

58. ***Trichonympha agilis*** Leidy

1877. *Trichonympha agilis* Leidy, *Proc. Acad. Nat. Sci. Phil.,* **29** : 147.

Material examined: Sev. exs., Tuensang, Tuensang district, 23.v.1994; sev. exs., Kohima, Kohima district, 16.v.1994.

Diagnosis : Body more or less spindle-shaped or oval, measuring 40-110 µm in length and 20-46 µm in width; flagellated region occupying about one-third the length of the body, parabasal apparatus basket-like comprising numerous slender separate cords usually meeting just behind the nucleus; nucleus speroidal or ellipsoidal, situated near or just beyond the posterior end of the flagellated zone of the body.

Host: *Reticulitermes assamensis;* location : gut.

Distribution : India : Nagaland (Tuensang and Kohima districts), Arunachal Pradesh, Meghalaya and Sikkim.

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

59. *Trichonympha meghalayensis* Das, Mandal, Tiwari and Sarkar

1995. *Trichonympha meghalayensis* Das, Mandal, Tiwari and Sarkar, *Fauna of Meghalaya, Zool. Surv. India, State Fauna series* 4 (Part 10) : 91.

Material examined : 2 exs., Kohima, Kohima district, 16.v.1994.

Diagnosis : Body more or less elongated with truncated posterior end, usually possessing a notch just behind the flagellated zone of the body; 111-148.7 µm × 29.6-59.2 µm in dimensions; maximum width being near the posterior end of the body; body divisible into three distinct zones, *viz.*, rostrum, flagellated zone and non-flagellated zone; flagella on the rostrum of uniform length; flagellated zone occupying less than one-third the length of the body; parabasal apparatus forming bowl-shaped structure within which nucleus located; nucleus ovoidal, situated near the posterior end of the flagellated zone.

Host : *Reticulitermes assamensis;* location : gut.

Distribution : India : Nagaland (Kohima district), Meghalaya and Sikkim.

GENERAL REMARKS ON DISTRIBUTION

The district-wise distribution of 62 protozoan species known so far from Nagaland has been presented in Table 1. From the table it is quite evident that maximum number of protozoan species (35) has been recorded from Kohima district, none from Mon district and only 6-12 species from the remaining five districts, namely, Zunheboto, Tuensang, Mokokchung, Phek and Wokha.

The present study clearly shows that parasitic protozoa of the state is completely unattended. As a result, other than three species of malarial parasites, *Plasmodium falciparum, P. malariae* and *P. vivax* which were recorded as early as 1930 by Knowles *et al.*, no information on this group from Nagaland is available. In this connection it is needed to mention here that these malarial parasites are cosmopolitan in distribution, particularly in North-East India. Therefore, there is every probability that they occur in all the seven districts of this state. Even then, their distribution is shown only in Kohima district (Table 1) since no report on their occurrence in other districts of Nagaland is available in any published account.

Among freeliving protozoa, only Testacid Rhizopods have been recorded from Nagaland leaving a complete gap of information on the occurrence of freeliving flagellates and ciliates in the state, which are known to be present abundantly in all aquatic and terrestrial biotopes of the globe.

During the present study symbiotic protozoa have been recovered from three species of termite hosts, namely, *Cryptotermes havilandi, Coptotermes travians* and *Reticulitermes assamensis.* Among them the first one belongs to the family Kalotermitidae and the remaining two belong to Rhinotermitidae, the gut contents of which compulsorily include innumerable and taxonomically diverse groups of symbiotic flagellates. The present study reveals the occurrence of 9, 11 and 15 species of flagellates in the gut contents of *Cryptotermes bengalensis, Reticulitermes assamensis* and *Coptotermes travians* respectively. The flagellate assemblages found in the guts of these hosts confirm the earlier findings which were analysed in details by Das (1983).

SUMMARY

As many as 62 species of Protozoa have been recorded from Nagaland. These Protozoans include 25 species of freeliving, 3 species of parasitic and 34 species of symbiotic protozoa, belonging to 2 phyla, 4 classes, 6 orders, 16 families and 24 genera.

Out of these, 8 species of freeliving Protozoa

and 34 species of symbiotic protozoa constitute new record for Nagaland.

Three species of termite hosts, *viz., Cryptotermes havilandi, Coptotermes travians* and *Reticulitermes assamensis* were studied for their symbolic flagellates.

ACKNOWLEDGEMENT

The authors are grateful to the Director, Zoological Survey of India for extending necessary facilities for the present work and to Dr. G.K. Srivastava, Addl. Director, ZSI for critically going through the manuscript.

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Table 1. District-wise distribution of Protozoan species in Nagaland, India. (Koh : Kohima; Phe : Phek; Zun : Zunhebeto; Wok : Wokha; Tue : Tuensang; Mok : Mokokchung; Mon : Mon).

Name of species	Districts						
	Koh	Phe	Zun	Wok	Tue	Mok	Mon
A. Freeliving Protozoa							
Order ARCELLINIDA							
Family ARCELLIDAE							
1. *Arcella discoides*	+	–	–	–	–	–	–
2. *Arcella vulgaris*	+	–	–	–	–	–	–
Family MICROCORYCIIDAE							
3. *Diplochlamys timida*	+	–	–	–	–	–	–
Family CENTROPYXIDAE							
4. *Centropyxis aculeata*	+	–	–	–	–	–	–
5. *Centropyxis aerophila*	+	–	–	+	–	–	–
6. *Centropyxis ecornis*	–	+	–	–	–	–	–
7. *Centropyxis minuta*	–	–	–	–	+	+	–
8. *Centropyxis oblonga*	–	–	+	–	–	–	–
9. *Centropyxis plagiostoma*	+	+	–	–	–	–	–
10. *Centropyxis platystoma*	–	–	+	+	–	–	–
11. *Centropyxis spinosa*	+	–	–	–	–	–	–
12. *Plagiopyxis decleves*	+	–	–	–	–	–	–
Family DIFFLUGIIDAE							
13. *Difflugia lithophila*	–	–	–	–	–	+	–
14. *Difflugia lobostoma*	–	–	–	–	–	+	–
15. *Dufflugia lucida*	+	–	–	–	–	–	–
Family NEBELIDAE							
16. *Heleopera rosea*	–	–	–	–	+	–	–
17. *Heleopera sylvatica*	+	+	–	–	–	–	–
Order GROMIIDA							
Family EUGLYPHIDAE							
18. *Assulina semilunum*	–	+	–	+	–	–	–
19. *Corythion dubium*	+	+	–	–	–	–	–
20. *Euglypha acanthophora*	+	–	–	–	–	–	–
21. *Euglypha rotunda*	+	–	–	+	–	+	–
22. *Euglypha tuberculata*	+	–	–	–	–	–	–
23. *Tracheleuglypha dentata*	+	–	–	–	–	–	–

Table 1. *Contd.*

Name of species	Districts						
	Koh	Phe	Zun	Wok	Tue	Mok	Mon
24. *Trinema enchelys*	+	+	+	–	–	–	–
25. *Trinema lineare*	+	–	–	–	+	–	–
B. Parasitic Protozoa							
Order EUCOCCIDA							
Family PLASMODIIDAE							
26. *Plasmodium falciparum*	+	–	–	–	–	–	–
27. *Plasmodium malariae*	+	–	–	–	–	–	–
28. *Plasmodium vivax*	+	–	–	–	–	–	–
C. Symbiotic Protozoa							
Order OXYMONADIDA							
Family OXYMONADIDAE							
29. *Oxymonas bosei*	–	–	–	+	–	–	–
30. *Oxymonas grandis*	–	–	–	+	–	–	–
Family PYRSONYMPHIDAE							
31. *Dinenympha exilis*	–	–	–	–	+	–	–
32. *Dinenympha leidyi*	+	–	–	–	–	–	–
33. *Dinenympha nobilis*	+	–	–	–	–	–	–
34. *Dinenympha rugosa*	+	–	–	–	+	–	–
35. *Pyrsonympha grandis*	–	–	–	–	+	–	–
36. *Pyrsonympha modesta*	–	–	–	–	+	–	–
Order TRICHOMONADIDA							
Family DEVESCOVINIDAE							
37. *Devescovina glabra*	–	–	–	+	–	–	–
38. *Devescovina lemniscata*	–	–	+	–	–	–	–
39. *Foina reflexa*	–	–	+	–	–	–	–
30. *Foina solita*	–	–	+	–	–	–	–
Family CALONYMPHIDAE							
41. *Stephanonympha minuta*	–	–	–	+	–	–	–
42. *Stephanonympha pyriformis*	–	–	–	+	–	–	–
43. *Stephanonympha silvestrii*	–	–	–	+	–	–	–

Table 1. *Contd.*

Name of species	Districts						
	Koh	Phe	Zun	Wok	Tue	Mok	Mon
Order HYPERMASTIGIDA							
Family HOLOMASTIGOTIDAE							
44. *Holomastigotoides bengalensis*	+	–	–	+	–	–	–
45. *Holomastigotoides campanula*	–	–	–	–	–	+	–
46. *Holomastigotoides emersoni*	–	+	–	–	–	–	–
47. *Holomastigotoides hollandei*	+	–	–	–	–	–	–
48. *Holomastigotoides magnus*	–	+	–	–	–	–	–
49. *Holomastigotoides ogivalis*	+	–	–	–	–	–	–
50. *Holomastigotoides ovalis*	+	–	–	–	–	–	–
51. *Holomastigotoides rayi*	–	–	–	–	–	+	–
52. *Holomastigotoides reniformis*	+	–	–	–	–	+	–
53. *Holomastigotoides sphraeroidalis*	–	+	–	–	–	–	–
Family SPIROTRICHONYMPHIDAE							
54. *Spirotrichonympha froilanoi*	–	–	–	+	–	–	–
55. *Spirotrichonympha porteri*	–	–	–	–	+	–	–
56. *Holomastigotes indica*	+	–	–	–	–	–	–
Family EUCOMONYMPHIDAE							
57. *Pseudotrichonympha cardiformis*	+	+	–	–	–	+	–
58. *Pseudotrichonympha indica*	+	+	–	–	–	+	–
59. *Pseudotrichonympha subapicalis*	+	–	–	–	–	+	–
Family TERATONYMPHIDAE							
60. *Teranympha mirabilis*	+	–	–	–	+	–	–
Family TRICHONYMPHIDAE							
61. *Trichonympha agilis*	+	–	–	–	+	–	–
62. *Trichonympha meghalayensis*	+	–	–	–	–	–	–
Total no. of species	**35**	**11**	**6**	**12**	**10**	**10**	**–**

Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 43-53, 2006

TREMATODA : DIGENEA

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INTRODUCTION

Nagaland was the part of undivided Assam and comes into existence only in the January, 1972. It is one of the "seven Sisterland" in north-east India. It is a land of exotic charm, diverse landscape and culture. It's capital Kohima attracted world attention during world war II when British Indian forces were struck by the Indian National Army of Netaji Subash Chandra Bose.

It is a hilly State and 95% of the total land of the State covered by hill and bounded by Arunachal Pradesh in the North (partly), Assam in west and partly north, Manipur in the south and Burma in the east shares its eastern international boundary. The total area is in this state 18013 sq. km. Kohima is the Capital city of this State and there are seven districts *viz.*, Kohima, Mokokhung, Mon, Phek, Wakha, Tuensang and Zunheboto. Some of the foot hill areas are only valley area like Dimapur and Tuli. There are seven major rivers, such as Dhansiri, Doyang, Dekhu, Junghi, Sinyang, Eanzi or Melek and Tsurong or Desai river, out of which Dhansiri, Dekhu and Doyang rivers meet into the Barak river and rest of these into the river Brahmaputra.

The average temperature varies from 4°C to 24°C in winter and 16°C to 31°C in summer. Climate usually ranges in winter from October to February and Summer from June to September but having the best season October to May. The average annual rainfall is around 180 cm/anum spread over six months between May and October. The warm type of subtropical climate is characteristic of foot hill area whereas the high hills are under cool and temperate climate. The heavy rains in the state helps to luxurious growth of vegetation but terrential rains cause landslides. The State Nagaland having subtropical monsoon, dry winter and summer. There are four major seasons occur in Nagaland, *viz.*, i) Pre monsoon (March-April), ii) Monsoon (May-September), iii) Retreating monsoon (October-November) and, iv) Winter (December to February).

The State being in tropical medium rainfall zone, having 85% of the land covered by forest cover, out of which 93% of forest area under private ownership of individuals or village councils as per the provision IV schedule of the constitution. Remaining 7% is managed by the Forest department, even for which no clear cut boundary demarcation exists. Rest of 15% land is covered by cities, towns and villages of residential area and cultivated land. Nagaland State is famous for its varied wildlife and forest resources. Warm and humid region under tropical climate, is ideal place for survival and propagation of helminth parasites. Unfortunately the faunal diversity of helminth parasites have not been studied in this state, proportionate to their importance to public health, livestock, poultry, fishery and wildlife. Ghosh and Srivastava (in press) estimated that 70-80% trematode species are still to be discovered and recorded from India. Position in this regard, studies on helminth parasites in Assam, Nagaland and other North-eastern States are even much negligible.

Helminths cause deadly diseases in human being. Almost all other animals associated with them, such as cattle, goat, sheep, horse, mule, elephant, dog, cat, fish, poultry birds etc., also harbour helminth parasites. But Stoll (1970) opined that there are more number of parasites than free living forms, both in number and variety. Various diseases caused to man and animals of their utility, by the helminth parasites, impair their efficiency and utility to a varying degree. In case of animals, meats become spoild, bones brittled, leather become useless, milk yeilding and egg laying capacity is lost, etc. Ghosh and Chauhan (1975) opined that damage caused by the helminth diseases are even more than those by bacteria or virus, viral and bacterial diseases are devastating for a sudden period but normally not of regular or frequent occurence and remain limited to a geographical area. Helminth parasites are found through out the Globe and may be present for the rest of the life, in the animals and impair their efficiency for a much greater period. In India according to Bhalerao (1935) *Fasciola gigantica* Cobbold, 1855 alone causes more damage to cattle than any other bacterial or viral diseases. Bhalerao (1944) examined amphistomes collected from various parts of India including Assam and opined that immature form of these parasites are invariably fatal to sheep, goat and cattle.

Leaving aside the record of helminth parasites of medical importance, only very few records are also available in literature about the parasites of pig, cattle, mule, horse, elephant, etc. But no consolidated account or any comprehensive work on parasitic helminths are available from Assam. Helminth parasites of Burma on the other hand have been worked out with much emphasis. Evans and Rennie (1908-1909), Jackson (1921), Bhalerao (1924-35), Meggitt (1930-35), Gogate (1932-39), Chatterjee (1936-40), Le Roux (1962) made extensive studies on trematode parasites of Burma and recorded large number of parasites from almost all groups of vertebrates. The helminth fauna of Assam and Nagaland can well be presumed to be the same as those of Burma or India and should be compared, while studying the helminth parasites of North-east region. Most of the important studies on the trematode parasites of Burma are included in the reference list.

All the records of helminth parasites from the Nagaland or so to say, from all the North-eastern states are very much meagre, the present study is hoped, will laid a foundation for further work. The present review is an consolidated account of trematode parasites from Nagaland, based on record in the literature and collection made in the survey tour, by the scientists of Zoological Survey of India. 14 species under 10 genera and 6 families have been included in the present work. Diagnostic characters of all species along with keys, for easy identification of families and genera, they belong, have been provided. Text figures of all the species, have also been provided.

HISTORICAL BACKGROUND

History of studies on the trematode parasites of Nagaland can not dealt in isolation, as the state came into existence only in the year 1972. In the earstwhile, state of Assam, the portion is dominated by the tribal population of Nagas, were demarcated and given the status of autonomous state on 1970, subsequently became the full fledged state on 1972. So history of studies on trematode parasites will be dealt in the present work for Assam, which will cover the present state of Nagaland, as well.

Inspite of great veterinary and public health importance, biodiversity of helminth fauna, has not been studied proportionate to their importance. It became evident while screening the literature for the present work.

Stoll estimated that about 10 million human being are infected with the trematode parasite *Fasciolopsis buski* (Lankester, 1857) Stiles, 1901, throughout the globe, with epidemic form in Assam and Bengal. Buckley (1939) also recorded the species from Assam. It may be recorded that the genus ***Gastrodiscoides*** was established by Leiper (1913) from some specimens of Assam,

sent to him by Dr. Mackie. This species has been recorded from Assam by Lewis and Mc Connel (1876), Stephens (1906), Gibs (1890), which shows its wide distribution and high incidence. This parasite is also very common in pigs. Buckley (1939) in order to investigate the life history of *Gastrodiscoides hominis* came all the way from England to Assam. He did not succeed. He made detail study on the epidemology of the species. He recorded 82 positive cases our of 221 faecal samples examined by him from 3 villages of Kamrup district of Assam. He recovered as many as 200 specimens of *G. hominis* from a girl patient. Maplestone (1940) and Mukherjee (1945, 1946 and 1948) also tried to find out the exact snail host for *G. hominis* in Assam. Success also eluded them, ultimately Dutt and Srivastava (1966) found out by experimental infection that the planorbid snail *Helicorbis exonosus* (Benson) is the intermediate host of *G. hominis*, infecting pigs at Barielly (U.P.).

Regarding earlier record of trematode parasites from animals other than man. Gibs (1892) recorded Paramphistomum cervi (Zeder, 1790) Fischoeder 1901 from horse and cattle in Assam. Baylis (1929) and Faust 1929 recorded *Gastrodiscoides hominis* (Lewis and Mc Connell, (1826) Leiper, 1913. Buckley (1939) recorded this parasites not only in human population only but in pigs and opined that over 50% pigs are infected with this parasite in some places of Assam.

So far the Nagaland State is concerned no previous survey work or study on helminth parasite appears to have been undertaken, excepting Dr. (Mrs) V. Tandon (1981-93) who developed a centre of studies in Helminthology at North-eastern Hill University, Shillong, and she undertook surveys and initiated other studies on different aspect of Helminthology, not only in Nagaland alone, but in other North-eastern States as well. She published a series of papers and in 1992, a very useful account of amphistome parasites of Nagaland has been published.

SYSTEMATIC INDEX

I. Family PARAMPHISTOMIDAE Fischoeder, 1901

Subfamily PARAMPHISTOMINAE Fischoeder, 1901

1. Genus ***Paramphistomum*** Fischoeder, 1904

1. *P. epiclitum* Fischoeder, 1904
2. *P. cervi* (Zeder, 1790) Fischoeder, 1901

2. Genus ***Calicophoron*** Nasmark, 1937

3. Genus ***Ceylonocotyle*** Nasmark, 1937

4. *C. orthocoelium* (Fischoeder 1901) Nasmark, 1937
5. *C. dewesi* Gupta, 1959
6. *C. streptocoelium* (Fiscoeder, 1901) Nasmark, 1937

Subfamily GASTROTHYLACINAE Stiles and Goldberger, 1910

4. Genus ***Fischoederius*** Stiles et Goldberger, 1910

7. *F. elongatus* (Poirier, 1889) Stiles and Goldberger, 1910
8. *F. cobboldi* (Poirier, 1889) Stiles and Goldberger, 1910

Subfamily DIPLODISCINAE colen, 1909

5. Genus ***Diplodiscus*** Diesing, 1837

9. *D. amphichrus* Tubangui, 1933

II. Family OPISTHORCHIIDAE (Looss, 1899) Braun, 1901

Subfamily OPISTHORCHIINAE Looss, 1899

6. Genus ***Opisthorchis*** Blanchard, 1895

10. *O. noverca* Braun, 1902

III. Family FASCIOLIDAE Railliet, 1895

Subfamily FASCIOLINAE Stiles et Hassal, 1898

7. Genus ***Fasciola*** Linnaeus, 1758

11. *F. giantica* Cobbold, 1855

IV. Family LECITHODENDRIIDAE Odhner, 1911

Subfamily GANEONINAE Yamaguti, 1958

8. Genus ***Ganeo*** Klein, 1905

12. *G. tigrinum* Mehra et Negi, 1928

V. Family GORGODERIDAE Looss, 1901

Subfamily HAEMATOLOECHINAE Freitas et Lent, 1939

9. Genus ***Haematoloechus*** Looss, 1989

13. *H. almorai* Freitas et Lent, 1938

VI. Family CLINOSTOMIDAE Lühe, 1901

Subfamily CLINOSTOMINAE Pratt, 1902

10. Genus ***Clinostomum*** Leidy, 1856

14. *C. complanatum* (Rud. 1814) Braun, 1899

SYSTEMATIC ACCOUNT

I. Family PARAMPHISTOMIDAE Fischoeder, 1901

Key to subfamilies

1. Ventral pouch present ..... GASTROTHYLACINAE
- Ventral pouch absent 2
2. Oral diverticula absent, testes two; no genital sucker ..... PARAMPHISTOMINAE
- Genital sucker otherwise 3
3. Pharynx with paired diverticula, vitellaria encroaching intercaecal field, testes one or two ..... DIPLODISCINAE

Subfamily PARAMPHISTOMINAE Fischoeder, 1961

Key to genera

1. Laurer's canal crossing excretory vesicle, pars musculosa not strongly developed ..... ***Paramphistomum***
- Laurer's canal not crossing excretory vesicle 2
2. Pars musculosa strongly developed; ratio of diameter between acetabulum and body 1 : 6-7 ..... ***Ceylonocotyle***
- Ratio of diameter between acetabulum and body is 1 : 3-4 3
3. Genital papilla; surrounded by discoid muscular calyx pars prostatica and pars musculosa strongly developed ..... ***Calicophoron***

1. Genus ***Paramphistomum*** Fischoeder, 1904

Key to species

1. Intestinal caeca wavy, papillae on the mouth present ..... *P. cervi*
- No papillae on the mouth 2
2. Caeca terminating at posterior end of acetabulum ..... *P. epiclitum*

1. ***Paramphistomum epiclitum*** Fischoeder, 1904

1904. *Paramphistomum epiclitum* Fischoeder *Ctbl. Bl. Bakb. U. Par.* **35** : 598-601.

Material : Host : *Bubalis bubalis,* Location : Rumen

Diagnosis : Body elongated with blunt ends, 7.48-9.52 in length, 2.63-3.23 in breadth, pharyux 0.59-0.76 in length, ratio in relation to body length 1 : 8.6; oesophagus 0.40-0.46 in length, intestinal caeca coiled, number of coils 3-4, caeca terminating at about the level of middle of acetabulum. Excretory canal pretesticular. Testes lobed, tandem, anterior testis 0.52-1.36 × 0.59-1.02, pasterior one 0.50-1.02×0.59-1.02 in size, ovary 0.34-0.51×0.34-0.51×0.34-0.44. Laurer's canal crosses the excretory canal; vitelline glands extend from pharyngeal region to the anterior level of acetabulum, genital atrium with prominent genital papillae. Eggs 0.12-0.14×0.05-0-06 in size.

Distribution : India : Nagaland, Meghalaya.

Elsewhere : Pakistan, Saigon.

2. ***Paramphistomum cervi*** (Zeder, 1790) Fischoeder, 1901

1790. *Distoma cervi* Zeder *Schr. de Geo. Sch. naturfarsch Freunde.*, **10** : 65-72.

1901. *Paramphistomum cervi* Fischoeder *Zool. Anz. Bd.* **25** (646) : 367-375.

Material : Host : Cattle (Rumen) Loc : Dimapur, 5.xii.1993, Coll. S. Chakrabarti; 3 exs.

Diagnosis : Body length 6.1-8.6, Pharynx 0.7-1.5 in length, oesophagus 0.75-1.2. Intestinal caeca reaching upto acetabulum. Ventral sucker 1-3.2 in diameter. Testes lobed, oval, obliquely tandem, upto 1-2 in length, genital pore below caecal bifurcation, ovary post testicular, vitelline glands extending from intestinal bifurcation to posterior end of acetabulum. Eggs 0.145-0.156 × 0.075-0.082.

Distribution : India : Nagaland (widely distributed).

Elsewhere : Myanmar, Italy, West German, England, Sweden.

2. Genus ***Calicophoron*** Nasmark, 1937

3. ***Calicophoron calicophorum*** (Fischoeder 1901) Nasmark, 1937

1901. *Paramphistomum calicophorum* Fischoeder *Zool. Anz. Bol.* **25**(646) : 367-375.

1937. *Calicophoron calicophorum* Nasmark *Zool. Bidr. Uppsala* **16** : 301-565.

Material : Host – *Bos indicus.*

Diagnosis : Body ovoid or conical, 5.78-12.5×2.4-5.3. Acetabulum 3-4.3 in diameter. Ratio in relation to body length 1 : 3.28-4.3, oral aperture may be with papillae. Pharynx 0.48-2 long. Oesophagus 0.21-0.84. Intestinal caeca coiled, extend upto mid level of acetabulum. Testes deeply lobed placed diagonally or rather almost symmertrical than tandem. Laurer's canal crosses the excretory vesicle. Genital pore at bifurcal zone. Ovary post testicular, 0.13-0.29×0.19-0.27, vitelline follicles from oesophageal region to posterior end of body. Eggs 0.115-0.126×0.067-0.074.

Distribution : India : Nagaland, Uttar Pradesh, Punjab, West Bengal, Meghalaya.

Elsewhere : China, Vietnam, Sri Lanka, Kampuchia.

3. Genus ***Ceylonocotyle*** Nasmark, 1937

Syn. : *Orthocoelium*

Key to species

1. Lip sphincter present ..... *C. dawesi*
– No lip sphincter 2
2. Short oesophagus with oesophageal sphincter ..... *C. streptocoelium*
– No oesophageal sphincter 3
3. Oesophagus long, genital atrium without genital sphincter ..... *C. orthocoelium*

4. ***Ceylonocotyle orthocoelium*** (Fischoeder, 1901) Nasmark, 1937

1901. *Orthocoelium orthocoelium* Fischoeder *Zool. Anz. Bd.*, **25**(646) : 367-375.

1937. *Ceylonocotyle orthocoelium* Nasmark *Zool. Bidr Uppsale*, **16** : 301-365.

Material : Host–Cattle.

Diagnosis : Oval to elongate in shape, 3.11×1.5-3, cuticular papillae at anterior end may be present. Acetabulum 0.72-1.0 in diameter. Ratio in relation to body length 1 : 6-6.5, pharynx 0.046-0.9 in length, oesophagus 0.7-1.4 in length with oesophageal bulb or sphincter. Intestinal caeca straight extending upto anterior boarder of acetabulum. Testes lobed, tandem. Genital pore above caecal bifurcation. Ovary anterodorsal to acetabulum. Pars musculosa well developed, uterus coiled, vitellaria follicular, in bunches, from caecal bifurcation to acetabular level. Eggs 0.075-0.14×0.16-0.08.

Distribution : India : Nagaland, Uttar Pradesh, Kerala, Meghalaya.

Elsewhere : Sri Lanka, Indo-China.

5. ***Ceylonocotyle dawesi*** Gupta, 1959

1959. *Ceylonocotyle dawesi* Gupta *Res. Bull. Punjab Univ Sci.*, **140** : 62-73.

Material : Host – *Bos indicus.*

Diagnosis : Body elongated or oval, blunt at both ends, 2.8-8.1×1.5-3.3. Acetabulum 0.38-1.15 in diameter. Ratio in relation to body length 1 : 5.4-6.4, surrounded by prominent muscular ridges. Pharynx 0.25-9.1. Ratio with body length varies from 1 : 4.6-7.3. Oesophagus 0.45-1.1, curved without oesophageal bulb, caeca straight reaching upto middle of acetabulum, testes tandem. Genital

pore 0.6-1.04, behind anterior end. Pars musculosa muscular, Laurer's canal do not cross excretory canal. Ovary post testicular, 0.18-4.2×0.25-0.61. Vitellaria follicular, extend laterally from caecal bifurcation to caecal end. Eggs 0.09-0.13×0.05-0.07.

Remarks : Mukherjee and Chauhan (1965), Yamaguti (1971), Gupta (1953) held the species as valid one while Mehra (1980) listed the species as synonym of *C. scoliocoelium*. We consider the species as a valid one.

Distribution : India : Nagaland, Kerala, Tamil Nadu, Meghalaya.

6. ***Ceylonocotyle streptocoeluim*** (Fischoeder, 1901) Nasmark, 1937

1901. *Paramphistomum streptocoelium* Nasmark, *Zool. Anz. Bd.* **25** (646) : 367-375.

1937. *Ceylonocotyle streptocoelium* Nasmark *Zool. Idr. Uppsala* **16** : 301-565.

Material : Host – *Bos indicus*.

Diagnosis : Body elongate, 7.1-7.7×2.5-3.7, Acetabulum 1-1.05 in diameter, ratio in relation to body length 1 : 7.2. Pharynx 0.72-0.80. Oesophagus 0.30-0.67 in length. Oesophageal sphincter present near caecal bifurcation. Intestinal caeca coiled. Testes with a few lobes, total form rounded elliptically 0.35-0.95×0.34-0.8. Genital pore post bifurcal, ovary 0.35-0.39 in diameter, post testicular, Laurer's canal not crossing excretory vesicle. Vitelline coils in groups, from caecal bifurcation to anterior level of acetabulum.

Distribution : India : Nagaland, Kerala, Meghalaya.

Elsewhere : Sri Lanka.

Subfamily GASTROTHYLACINAE Stiles and Goldberger, 1910

4. Genus ***Fischoederius*** Stiles and Goldberger, 1910

Key to species

1. Caeca short, terminate at equatorial pretesticular level of body, caeca long .... *F. elongatus*

2. Caeca extend upto post testicular or preacetabular level ..... *F. cobboldi*

7. ***Fischoederius elongatus*** (Poirier, 1883), Stiles and Goldberger, 1910

1883. *Gastrothylax elongatus* Poirier *Bull. de. la. Soc. Philomath,* 73-80.

1910. *Fischoederius elongatus* Stiles and Goldberger *Hyg. Lab. Bull.* **60** : 250.

Material : 2 exs., Host - Goat (Rumen), Loc-Dimapur, 4.xii.1993, coll. S. Chakrabarti, 2 exs.

Diagnosis : Body elongate, 7.5-15.5×2.5-4.2, constricted slightly at Testicular zone, ventral pouch present, extending upto testicular zone. Pharynx 0.45-0.8×0.35-0.62. Acetabulum terminal, 1.2-1.4×0.75-1.2. Ratio between dorso ventral diameter and body length 1 : 4.5-4.9, oesophagus 0.42-0.81, straight or wavy, extending upto equatorial zone of body length. Testes tandem, irregularly lobed, ovary compact, intertesticular, 0.15-0.34×0.35-0.58 uterus extends along vas deference upto genital opening at mid level of oesophagus in ventral pouch, vitelline glands follicular from caecal bifurcation to testicular level. Eggs 0.119-0.125×0.065-0.075.

Distribution : India : Nagaland, West Bengal, Uttar Pradesh, Tamil Nadu, Punjab, Meghalaya.

Elsewhere : Sri Lanka, Japan.

8. ***Fischoederius cobboldi*** (Poirier, 1889), Stiles et Goldberger, 1910

1883. *Gastrothylax cobboldi* Poirier *Bull. de la s. r. Philomath* : 73-80.

1910. *Fischoederius cobboldi* Stiles et Goldberger *Hyg. Lab. Bull., No.* **60** : 259.

Material : Host – Goat (Rumen) and Cattle (Rumen), Loc : Dimapur, 4.xii.1993 & 5.xii.1993, Coll. S. Chakrabarti, 6 exs.

Diagnosis : Body elongate, 2.5-15.5×1-8.5. Ventral pouch reaching upto testicular zone, opening ventral to pharynx. Acetabulum terminal, 3.5-5.5×2.55-3.35, cup-shaped. Ratio between

dorsoventral diameter and length of body 1 : 4.9-7. Pharynx 0.61-0.85×0.73-1.2, oesophagus straight or 'S' shaped, caeca wavy, extending upto preacetabular level. Testes tandem, median, globular, irregular margin, 0.7-0.12 in diameter. Ovary compact, posterolateral to dorsal testis 0.39-0.5×0.35-0.49. Genital pore precaecal. Vitellaria follicular in ventrolateral fields from caecal bifurcation to caecal end, eggs 0.108-1.19×0.06-0.065.

Distribution : India : Nagaland, Assam, Meghalaya, (widely distributed in India).

Elsewhere : Japan, Java.

Subfamily DIPLODISCINAE Colen, 1909

5. Genus ***Diplodiscus*** Diesing, 1837

9. ***Diplodiscus amphichrus*** Tubangui, 1933

1993. *Diplodiscus amphichrus* Tubangui Philipp. *J. Sc.* **52** (2) : 167-197.

Material : Host–*Rana cyanophlyctis* (Intestine), Loc. Dimapur, 4.xii.1993, Coll. S. Chakrabarti, 4 exs.

Diagnosis : Body shape elongated to conical, 1.3-6.7×0.98-2.5. Acetabulum 0.55-1.5 in diameter with a central acessory sucker 0.1-0.35. Pharynx 0.3-0.6. Oral pouches 0.1-0.26, oesophagus 0.2-0.56 with oesophageal bulb 0.1-0.26×0.01-0.17 in diameter, caeca extending upto acetabulum. Testis single, round or oval, at equatorial level, 0.1-0.46 in diameter. Cirrus sac 0.1-0.22. Genital pore post bifurcal, at about $^1/_3$rd of the level from anterior end. Ovary oval or rounded 0.17-0.22 in diameter, post pesticular, vitelline follicle large, contiguous at anterior and posterior end, extending from pharyngeal level to acetabulum. Eggs 0.12-0.14×0.05-0.07.

Distribution : India : Nagaland, Meghalaya, Uttar Pradesh, Maharashtra, West Bengal, Tripura, Bihar.

Elsewhere : Phillippines, Burma, Ceylon, Manchuria, Korea, Ghana.

II. Family OPISTHORCHIIDAE (Looss, 1899) Braun 1901

Subfamily OPISTHORCHIINAE Looss, 1899

6. Genus ***Opisthorchis*** Blanchard, 1895

10. ***Opisthorchis (Opisthorchis) noverca*** Braun, 1902

1902. *Opisthorchis noverca* Braun *Zool. Jaharab.* : 16-162

Material : Host – Pigs.

Diagnosis : Body elongate, 2-14 long and 1-3 broad. Cuticle spined. Oral sucker 0.21-0.32 in diameter. Prepharynx very small or absent. Pharynx globular 0.15-0.31. Oesophagus 0.03-0.07 long, caeca extending almost to posterior end. Acetabulum on protrusible pedicle, smaller than oral sucker, 0.05-0.81 in diameter. Testes in posterior third of body, round or lobulate, sometime anterior testis round or egg shaped, while posterior one may be lobulate. Anterior testis 0.28-0.55, posterior testis 0.38-0.52, cirrus sac absent. Genital pore anterior to acetabulum. Ovary pretesticular, irregularly lobed, usually three, with one or more subdivision. Recepticulum seminis upto 0.33 long. Shell gland in between ovary and recepticulum seminis, uterine coils massive, extending from ovary to acetabulum, do not overlap caeca. Vitellaria follicular, forming upto eight groups, or in continuous band, extending from post-acetabular level to ovary of testicular level. Eggs numerous, 0.02-0.029× 0.011-0.013. Excretory vesicle 'Y' shaped, beginning posterior to ovary, stems passing between testes.

Distribution : India : Nagaland, Meghalaya, Uttar Pradesh, West Bengal.

Elsewhere : Myanmar Phillipines.

III. Family FASCIOLIDAE Railliet, 1895

Subfamily FASCIOLINAE Stiles et. Hassal, 1898

7. Genus ***Fasciola*** Linnaeus, 1758

11. ***Fasciola gigantica*** Cobbold, 1855

1855. *Fasciola gigantica* Cobbold, *Edib. N. Phil. J. n s* **2**(2) : 262-266.

Material : Host - Cow, Buffalo.

Diagnosis : Body elongate, 20-29 Breadth 3-15. Cephalic cone not prominent. Cuticle with spiny scales. Oral sucker 1-2.5, subterminal, prepharynx small, pharynx conspicuous, oesophagous very short. Caeca long, reaching posterior extremity, branched internally and externally. Acetabulum larger than oral sucker, 1.5-3.2. Testes branched, cirrus sac in between caecal bifurcation and acetabulum. Genital pore median, ovary much branched, pretesticular, vitellaria extensive, filling up all available space between caecal branching, uterus with rosette like coils, between ovary and acetabulum. Eggs 0.125-0.19×0.06-0.12.

Distribution : India : Nagaland, Widely distributed Meghalaya.

Elsewhere : Cosmopolitan.

IV. Family LECITHODENDRIIDAE Odhner, 1911

Subfamily GANEONINAE Yamaguti, 1958

8. Genus *Ganeo* Klein, 1905

12. *Ganeo tigrinum* **Mehra** et. Negi, 1928

1928. *Ganeo tigrinum* Mehra et. Negi *Allahabad Univ. Stud.*, **4** : 63-118.

Material : Host - *Rana cyanophlyctis* (Intestine, Loc. Dimapur, 4.xii.1993, Coll. S. Chakrabarti, 34 exs.

Diagnosis : Body oval in shape, 2.35-2.85 long, 0.875-1.075 wide. Posterior end rounded, cuticle spined, prepharynx present, pharynx 0.09-0.1×0.06-0.07. Oesophagus 0.245-0.314×0.498-0.64 divides into two caeca at the level of genital pore. Caeca extend upto two third of body length. Oral sucker subterminal, 0.141-0.157×0.074-0.099, slightly smaller that the acetabulum. Testes two, diagonally tandem around acetabular zone, anterior testis 0.248-0.306×0.240-0.331. Posterior testis 0.27-0.33×0.23-0.30. Seminal vesicle long, coiled, wel-developed, broad and round at base, anterolateral to ventral sucker. Spines on terminal part of ejaculatory duct, genital atrium and metraterm. Pars prostatica surrounded by prostate gland cells, ejaculatory duct long, opening into genital atrium. Genital pore marginal, situated at level of oesophageal bifurcation.

Ovary entire, 0.207-0.240×0.215-0.233, post lateral or over lapping the ventral sucker. Seminal receptacle behind ovary. Vitellaria follicular, bilateral, distributed between posterior end of acetabulum to caecal end, uterus post ovarian, occupying most of hind body. Metraterm wel-developed, opening into genital atrium separately. Eggs 0.0249×0.0166. Excretory vesicle 'U' shaped.

Distribution : India : Nagaland, Meghalaya, Uttar Pradesh, Jammu & Kashmir, Bihar, Andhra Pradesh, Maharashtra, Tripura.

Elsewhere : Bangladesh.

V. Family GORGODERIDAE Looss, 1901

Subfamily HAEMATOLOECHINAE Freitas et. Lent, 1939

9. Genus *Haematoloechus* Looss 1989

13. *Haematoloechus almorai* (Pande, 1937) Odening 1958

1937. *Pneumonoeces almorai* Pande *Proc. Ind. Acad. Sci.*, **6** (2) *Sec. b* 109-120.

1939. *Haematoloechus almorai* Odening *Mitt. Zool. Mus. Berlin* **34** (1) : 63-108.

Material : Host - *Rana cyanophlyctis* (Lung); Loc. Kohima; 09.xii.1993; coll. S. Chakrabarti, 3 exs.

Diagnosis : Body elongate, anterior portion pointed and posterior part rounded, 3.55 long, 1.84 wide. Tegument aspinose. Acetabulum pre-equatorial 0.18 long, 0.19 wide. Oral sucker sub-terminal, 0.38 long, 0.38 wide, larger than acetabulum, pharynx 0.18×0.2, oesophagus short, intestinal caeca extend upto the posterior end of body. Testes two, oblique, posterior to ovary, anterior testis 1.5×0.56 and posterior testis 1.45×0.70. Cirrus sac long, seminal vesicle coiled in anterior part and straight at posterior part. Pars

prostatica short with prostate gland cells, ejaculatory duct opens into the cirrus sac. Genital opening ventral to pharynx.

Ovary 0.7×0.48, seminal receptacle large. Uterus occupying most of the body. Eggs 0.024-0.03×0.016-0.018 Excretory vesicle 'Y' shaped.

Distribution : India : Nagaland, Tripura (Seepahijula), Uttar Pradesh, West Bengal.

Elsewhere : Ceylon.

VI. Family CLINOSTOMIDAE Lühe, 1901

Subfamily CLINOSTDMINAE Pratt, 1902

10. Genus ***Clinostomum*** Leidy, 1856

14. ***Clinostomum complanatum*** (Rud. 1814) Braun, 1899

1899. *Clinostomum complanatum* Braun, *Ibidem.*, **22** : 489-493.

Material : Host - *Rhynchobdella aquiliata* (Intestine), Loc. Dimapur, 5.xii.1993, Coll. S. Chakrabarti, 4 exs.

Diagnosis : Body spined, stout, linguiform, convex dorsally and concave ventrally, 1.552-1.749×.512-.62 oral sucker 0.080-0.09×0.064-0.71, surrounded by collar like finfold when retracted. No typical pharynx; oesophagus bubously swollen at its posterior end. Caeca with sinous wall, opening into excretory vesicle by a very narrow passage. Acetabulum relatively larger, strongly built 0.208-0.261×0.272-0.301. Testes at about middle of hind body. Cirrus pouch in between anterior to ovary and right half of anterior testis, containing winding seminal vesicle and ejaculatory duct Prostatic complex absent. Genital atrium opening in front of anterior testis. Ovary 0.012-0.015×0.021-0.034, to right of median line, between two testes. Laurer's canal present. Uterus reaching to acetabulum. Vitellaria extending upto forebody, confluent between posterior testis. Excretory vesicle 'V' shaped with dorsoterminal pore. Eggs 0.001-0.002.

Distribution : India : Nagaland, Uttar Pradesh.

Elsewhere : Singapore.

SUMMARY

The present work is an account of all the species of the Digenetic Trematodes recorded and studied so far from Nagaland. History of taxonomic studies on Trematode species causing diseases to man and livestock and early records from not only Nagaland but other North-eastern States, have all been discussed for obvious reason, as the state of Nagaland came into existence as full fledged state in the year 1972 only. Diagnostic characters and keys for the families, genera and species, dealt in the present work, have been provided, as far as possible. Diagnostic characters and geographical distribution of all the species recorded from Nagaland have been furnished. Only one newly proposed synonymy of species have been included, omitting detail discussion, which is beyond the scope of present treatise.

In all 14 species under 10 genera and 6 families have been included in the present work.

ACKNOWLEDGEMENT

We are thankful to the Director, Zoological Survey of India for providing laboratory facilities. We also express our deep indebtness to Dr. Amalendu Chatterjee, Scientist-'SE' and O/c, Platyhelminthes Section for his constant encouragement. Authors are also grateful to Dr. A.K. Das, Scientist-SF and Head, LID(A) for his constant help during the period of study and critically going through the manuscript. We are specially greatful to Dr. (Mrs.) V. Tandon. Prof. & Head, Dept. of Zoology. North Eastern Hill University. Shillong, for information regarding the State fauna.

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FRESHWATER MOLLUSCS

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INTRODUCTION

Nagaland, one of the smallest states of India with a total area of 16,579 Km^2, lies in the north-eastern fringe of the country. It is bordered by Assam on the west and north, by Arunachal Pradesh on the north, by Manipur on the south and on the east by Myanmar.

A high, average annual rainfall of 2000-2500 mm. keeps the thickly wooded mountainous terrain well-watered. The major rivers criss-crossing the state are, Dhansiri, Doyang, Dikhu and Thanji.

North-east India as a whole, records above one-third of total fauna of Indian land and freshwater molluscs. Nagaland harbours a large number of Indo-Burmese species of land operculates. Terrestrial species of mollusca of Nagaland were thoroughly explored and worked out by earlier workers like Blanford & Godwin-Austen (1908), Godwin-Austen (1893, 1920), Gude (1914, 1921). Well over 100 species of land mollusca were described and or recorded from the Naga hills which pass through the state. In contrast, freshwater molluscs of Nagaland somehow did not receive much attention and except a few stray references (Annandale, 1921, Annandale & Rao 1921, Prashad 1921) there is no comprehensive report on this group till date.

The present report is based on the named and unnamed material available in the Mollusca section as well as those received from the Eastern Regional Station, Shillong of ZSI, for identification.

Key to families

1. Shell with a single valve ..... 2 (GASTROPODA)
– Shell with two valves ..... 8 (BIVALVIA)
2. Shell with an operculum 3
– Shell without an operculum 6
3. Shell small not exceeding 10 mm in length ..... BITHYNIIDAE
– Shell much larger, always exceeding 10 mm. in length 4
4. Operculum with concentric growthlines 5
– Operculum with spiral growthlines ..... THIARIDAE
5. Operculum calcareous, shell globose, body whorl at least thrice as long as spire ..... PILIDAE
– Operculum horny, shell pyramidal, body whorl shorter, just about equal to spire ..... VIVIPARIDAE
6. Shell very small, limpet like, without spiral coil ..... ANCYLIDAE
– Shell larger, with spiral coil 7
7. Shell depressed, spire not raised, columella simple ..... PLANORBIDAE
– Shell elongate with raised spire, columella twisted ..... LYMNAEIDAE
8. Shell thick, large, always more than 10 mm. in length, internelly nacreous..... UNIONIDAE

– Shell thin, small, not exceeding 10 mm. in length, internally non-nacreous....PISIDIIDAE

Class GASTROPODA

Order MESOGASTROPODA

Family I VIVIPARIDAE

Represented by three genera *Angulyagra, Bellamya* and *Cipangopaludina.*

Key to the genera

1. Adult shell without distinct ridges or sculpture 2
– Adult shell with distinct spiral ridges ..... ***Angulyagra***
2. Adult shell large, very thin without colour-bands, edge of mantle thickened and with a prominent sphincter muscle ..... ***Cipangopaludina***
– Adult shell medium, rather thick, usually with colour-bands, edge of mantle not thickened, without prominent sphincter muscle..... ***Bellamya***

Subfamily BELLAMYINAE

Genus 1. ***Angulyagra*** Rao, 1931

Shell moderately large, thin, conical, flattened at base with a number of spiral ridges, umbilical opening narrow with a downward channel.

Distribution : India. North-east India.

Elsewhere : China, Indonesia, Japan, Malaysia, Myanmar, Philippines.

1. ***Angulyagra microchaetophora*** (Annandale)

1921. *Vivipara microchaetophora* Annandale, *Rec. Indian Mus.*, **22** : 546, fig. 4.

1989. *Augulyagra microchaetophora* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 51, fig. 69.

Material examined : (i) 3 exs. (Syntypes), Dimapur, North of Naga Hills, Nagaland. Coll. N. Annandale, 1920. (ii) 46 exs., Dimapur, North of Naga Hills. Coll. N. Annandale, 1920.

Measurements : Length 15.2-30.6; Diameter 11.45-22.45; Height of aperture 9-17.5.

Shell thin, elongately conical, sharply acuminate, perforate with a downward groove along inner lip, whorls 5-5½, very little convex, marked by low spiral ridges, crowded at base, last whorl with a prominent ridge at periphery, flattened at base; aperture ovate, outer lip thin. Remains attached to different parts of floating aquatic plants (Annandale, 1921).

Distribution : India : Nagaland (Dimapur), Assam and Manipur.

Genus 2. ***Cipangopaludina*** Hannibal, 1912

Shell large, thin, narrowly perforate with broad rounded whorls, smooth, without bands or distinct sculpture.

Distribution : India.

Elsewhere : China, Japan, Indonesia, Korea, Myanmar, N. America (introduced), Philippines, Thailand, Asiatic Russia, Vietnam.

2. ***Cipangopaludina lecythis*** (Benson)

1836. *Paludina lecythis* Benson, *J. Asiat. Soc. Beng.*, **5** : 745.

1989. *Cipangopaludina lecythis* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 50, fig. 73.

Material examined : (i) 31 exs., Rice field pools, Khezabama, Naga Hills, Nagaland, Coll. K. N. Das, 20.2.1935. (ii) 2 exs. Kohima market, Kohima Dist., 1600 mtr., Coll. J. P. Sati, 14.1.1990. (iii) 4 exs., Lanyi river, Coll. J. P. Sati, 20.1.1990. (iv) 33 exs., Akhuloto, Zunheboto Dist., Coll. Y. P. Sinha, 11.7.1991.

Measurements : Length 11.2-22.65; Diameter 9.6-19.0; Height of aperture 7.25-14.1.

Shell large, thin, globosely conical, usually olive green in colour, apex acuminate, whorls 5, rounded, flattened above, sutures deep; aperture broadly oval, with a thin, blackish lip, columella arched. Operculum externally concave in the middle. Young shell in the species looks similar to that in *Bellamya crassa*. Can be distinguished by its thinness and also by its indistinct sculpture of irregularly arranged low short wavy ridges.

Shells studied are all young ones, it grows to much bigger sizes. Inhabits stagnant waters.

Distribution : India : Nagaland (Kohima, Naga Hills, Zunheboto), Meghalaya, Mizoram, Tripura.

Elsewhere : China, Myanmar, Vietnam.

Remarks : Recorded for the first time from Nagaland.

Genus 3. ***Bellamya*** Jousseaume, 1886

Shell moderately large, oblong-ovate, often with colour-bands, imperforate or narrowly perforate, whorls fairly rounded. Adult shell without distinct sculpture. Ethiopian and oriental. Very widely distributed throughout India.

3. ***Bellamya bengalensis f. typica*** (Lamarck)

1822. *Paludina bengalensis* Lamarck, *Hist. nat. Anim. sans. vert.*, 6(2) : 174.

1989. *Bellamya bengalensis* f. *typica* : Subba Rao, *Handbook : Freshwater molluscs of India*, : 45, fig. 55.

Material examined : (i) 15 exs., Ashukhuto, Zunheboto Dist. Coll., Y. P. Sinha, 17.7.1991. (ii) 7 exs., on way to Mokokchung, 15 km from Wokha, Wokha Dist., Coll. Y. P. Sinha, 20.3.1993. (iii) 4 exs., on way to Kohima, 17 km from Wokha, Wokha Dist. (iv) Villages near Mokokchung, Mokokchung Dist., Coll. Y. P. Sinha, 24.3.1993.

Measurements : Length 24.8-35.65; Diameter 16.25-23.35; Height of aperture 13.45-18.2.

Shell fairly thick, oblong with a number of dark spiral bands, three of which are more broad, spire acuminate with an acute apex, narrowly perforate, whorls 5-5½, fairly rounded; spire and body whorl of nearly equal height; aperture subcircular, outer lip thin, inner lip slightly thickened in mature shells. Usually remains attached to vegetations or other floating objects.

Distribution : Commonest species in the family. Widely distributed throughout India.

Elsewhere : Bangladesh, Myanmar, Sri Lanka.

Remarks : Recorded for the first time from Nagaland.

Family II PILIDAE

Genus 4. ***Pila*** (Bolten) Roeding, 1798

Shell large, rather thin, globose, smooth, spire short, aperture large, umbilicus closed or open, operculum thick, calcareous.

Distribution : Asia and Africa.

4. ***Pila theobaldi*** (Hanley)

1875. *Ampullaria theobaldi* Hanley, *Proc. zool. Soc. Lond.*; p. 608.

1989. *Pila theobaldi* : Subba Rao, *Handbook : Freshwater molluscs of India*, : 60, fig. 84.

Material examined : (i) 3 exs., Naga Hills, Coll. S. L. Hora. (ii) 1 ex. Satakha, on Kohima Road, Zunheboto Dist., Coll. Y. P. Sinha, 13.7.1991. (iii) 5 exs., Lenai River, Phek Dist., Coll. K. P. Singh, 14.9.1981.

Measurements : Length 11.0-40.3; Diameter 10.4-41.5; Height of aperture 9.25-31.8.

Shell rather thin, large to very large, globose with a short obtuse spire, openly umbilicate, without distinct sculpture except close, radial growth striae and rather sub-distant obsolete spiral markings. Whorls 5-5½, rounded, body whorl large and inflated, suture moderately deep; aperture large, ovate, outer lip thin in young shell, slightly thickened in adult, inner lip distinctly thickened and reflected below, operculum thick, calcareous. Shells collected from Nagaland are not fully grown, adult shell grows to much bigger size. Occurs among vegetations, usually in littoral zones of ponds, also in rice fields.

Distribution : India : North-eastern region, Nagaland (Naga Hills, Phek, Zunheboto), Manipur, Meghalaya, Tripura.

Elsewhere : Myanmar.

Remarks : Recorded for the first time from Nagaland.

Family III BITHYNIIDAE

Subfamily BITHYNIINAE

Genus 5. ***Gabbia*** Tryon, 1865

Shell small, globose, fairly thick, imperforate

or very narrowly perforate, smooth, whorls 4-5, well rounded, aperture small, columellar fold ridge like.

Distribution : India.

Elsewhere : Africa, Australia, Iran.

5. ***Gabbia orcula*** (Frauenfeld)

1862. *Bithynia orcula* Frauenfeld, *Verhandl. zool. Bot. Geschaft*, : 1154

1989. *Gabbia orcula* : Subba Rao, *Handbook : Freshwater molluscs of India*, : 76.

Material examined : 1 ex., Naga Hills, Coll. S. L. Hora.

Measurements : Length 5.6; Diameter 5.35; Height of aperture 2.3.

Shell small, globosely conoid, imperforate, smooth. Whorls 4½, rounded, body whorl tumid and large in proportion to spire, suture deep, apex obtuse; aperture small, ovate, outer lip thin, columella slightly reflected. In stagnant water, among vegetations or on muddy bottoms.

Distribution : India : Nagaland (Naga Hills), Assam, Bihar, Maharashtra, Manipur, Punjab, Rajasthan, Uttar Pradesh, West Bengal.

Elsewhere : Malaysia, Myanmar, Pakistan.

Remarks : Recorded for the first time from Nagaland.

Family IV THIARIDAE

Represented by three genera, *Brotia, Paludomus* and *Thiara*

Key to the genera

1. Shell rounded or ovate, whorls upto 5, body whorl longer than spire, inner lip distinctly thickened ..... ***Paludomus***
2. Shell elongate-turreted, whorls more than 5, body whorl equal or shorter than spire, inner lip not distinctly thickened 3
3. Shell smaller and narrower, operculum ovate with a basal nucleus ..... ***Thiara***

Shell larger and broader, operculum circular with a central nucleus ..... ***Brotia***

Subfamily MELANATRINAE

Genus 6. ***Brotia*** H. Adams, 1866

Shell large, elongate turreted, thick, many whorled, spire distinctly longer than body whorl, with prominent axial ribs; operculum circular.

Distribution : India.

Elsewhere : Malaysia, Philippines, Vietnam.

Subgenus ***Antimelania*** Crosse & Fischer, 1892

6. ***Brotia (Antimelania) costula*** (Rafinesque)

1833. *Melania costula* Rafinesque, *Atlantic Journ.* No. **5** : 166.

1989. *Brotia (Antimelania) costula* : Subba Rao. *Handbook : Freshwater molluscs of India*, : 108. figs. 192-184, 197, 198.

Material examined : (i) 1 ex., River, backside of Circuit House, Dimapur, Coll. A. Dey, 4.11.1977. (ii) 71 exs., Mokokchung Dist., Coll. K. P. Singh. 24.9.1981. (iii) 30 exs., Pond in a village; Mokokchung Dist., Coll. Y. P. Sinha, 24.3.1993.

Measurements : Length 22.0-51.8; Diameter 9.5-20; Height of aperture 10-20.

Shell large, much elongate, thick, usually covered by a dark epidermis, with 10-14, scarcely rounded whorls; sculptured by well developed axial ribs and spiral ridges, sometimes formed into nodules, or rows of sharp spines; aperture ovate, angled above, produced at the columellar angle below; young shells with coloured bands inside aperture; columella slightly thickened. The shell shows wide variations in sculpture. Mostly inhabits ponds and other stagnant water bodies.

Distribution : India : Nagaland (Dimapur, Mokokchung), fairly widely distributed through east and north-east.

Elsewhere : Bhutan, Indonesia, Malaysia, Myanmar, Pakistan.

Remarks : Recorded for the first time from Nagaland.

Subfamily PALUDOMINAE

Genus 7. ***Paludomus*** Swainson, 1840

Shell globose or oblong-globose, thick with a large, inflated body whorl, which is longer than spire; aperture proportionately large; columella thickened.

Distribution : India (North-eastern and peninsular part).

Elsewhere : Myanmar, Sri Lanka.

Subgenus ***Paludomus*** s. str.

Key to species

- Shell smaller, more globose, body whorl shouldered above the periphery .... *P. blanfordiana*
- Shell bigger, more conical, body whorl evenly rounded above the periphery..... *P. conica*

7. ***Paludomus (Paludomus) blanfordiana*** Nevill

1877. *Paludomus blanfordiana* Nevill, *J. Asiat. Soc. Beng.*, 46(2) : 37.

1989. *Paludomus (Paludomus) blanfordiana* : Subba Rao, *Handbook : Freshwater molluscs of India*, : 112. figs. 222, 239.

Material examined : (i) 33 exs., Akhutolo, Zunheboto Dist., Coll. Y. P. Sinha, 11.7.1991. (ii) 4 exs., Molvan & around, Kohima Dist., Coll. Y. P. Sinha, 15.7.1991.

Measurements : Length 12.35-17.75; Diameter 10.6-15.15; Height of aperture 9.2-12.85.

Shell small to moderately large, ovately globose, yellowish brown, whorls rounded, body whorl inflated and large, about thrice as long as spire, shouldered above; minutely sculptured with inconspicuous spiral striae and radial markings, also with three chocolate bands which show through the aperture; aperture ovate, outer lip thin, columella distinctly thickened, rounded below.

Inhabits moving waters like streams, rivers; usually remains attached to stones, boulders etc.

Distribution : India : Nagaland (Kohima, Zunheboto), Assam, Meghalaya, Mizoram, Tripura.

Elsewhere : Myanmar.

Remarks : Recorded for the first time from Nagaland.

8. ***Paludomus (Paludomus) conica*** (Gray)

1834. *Melania conica* Gray, *Griffith Cuvier, Moll.* : pl. 14, fig. 5.

1989. *Paludomus (Paludomus) conica* : Subba Rao, *Handbook : Freshwater molluscs of India*, : 113. figs. 227, 228.

Material examined : (i) 21 exs., Chang Chang Pani, Naga Hills, Coll. C. Mckuum, 23.2.1930. (ii) 10 exs., Tsupha stream, 6 miles from Chongbyimsen, Naga Hills, Coll. B. Prashad, 3.3.1935. (iii) 71 exs., Mokokchung, Coll. K. P. Sinhg, 23.9.1981. (iv) 20 exs., Pagola river, near Aboi Mon Dist., 6.6.1990. (v) 60 exs., Pagila Pahar and around, Kohima Dist. 13.3.1990. (vi) 60 exs., villages near Chuketong, Wokha Dist., 23.3.1993. (vii) 30 exs., villages near Mokokchung Dist., Coll. Y. P. Sinha, 24.3.1993.

Measurements : Length 14.15-27; Diameter 12.85-17.2; Height of aperture 12.85-16.8.

Shell larger, globosely conical, usually dark brown, body whorl well rounded, large, twice as long as spire, spire conically raised, finely sculptured by faint spiral striae and wavy radial markings, also a few distinct spiral ridges at sutural region; whorls $4^1/_1$-5; aperture ovate, outer lip thin, columella distinctly thickened.

It shows variations in general shape, particularly in form of aperture and also in sculpture.

Though abundantly occurring throughout north-east India, this species is for the first time recorded from Nagaland now. Inhabits slow and fast moving waters.

Distribution : Nagaland (Naga hills, Aboi Mon, Kohima, Mokokchung, Wokha), Assam, Manipur, Meghalaya, Mizoram, Tripura.

Elsewhere : Bangladesh, Bhutan.

Subfamily THIARINAE

Genus 8. ***Thiara*** Roeding, 1798

Shell elongate-turreted, many whorled, variously sculptured, usually with spiral striae or ridge; aperture vertical, ovate, without siphonal canal, operculum pear shaped

Distribution : Tropical and subtropical Africa, Asia, N. Australia.

Key to subgenera

- Body whorl distinctly shorter than spire, number of whorls above 10, radial sculpture prominent ..... ***Melanoides***
- Body whorl about equal to spire, number of whorls less than 10, radial sculpture indistinct ..... ***Tarebia***

Subgenus ***Melanoides*** Olivier, 1807

9. ***Thiara (Melanoides) tuberculata*** (Mueller)

1774. *Nerita tuberculata* Mueller. *Hist. Verm. Terr. Fluv.*, **2** : 191.

1989. *Thiara (Melanoides) tuberculata* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 103. figs. 183-184.

Material examined : (i) 5 exs., Chang Chung Pani, Naga Hills, Coll. C. Mckuum, 23.2.1930. (ii) 6 exs., Medziphema and around, Kohima Dist., Coll. Y. P. Sinha, 12.3.1993.

Measurements : Length 15.3-24; Diameter 5.35-7.6; Height of aperture 5.1-7.85.

Shell elongate turreted with a long, acuminate spire, apex acute, whorls 10-12, well rounded, conspicuously sculptured by spiral and vertical ridges, also with irregular, brown flames and dots; aperture small, pear-shaped, outer lip thin, basal lip rounded.

Shows variations in sculpture and also in length-diameter ratio. Abundantly occurs in all types of freshwater bodies, stagnant and moving, including drains and water mains, extending to low salinity.

Distribution : India : Nagaland (Naga Hills, Kohima), widely distributed throughout rest of the country except Kashmir.

Elsewhere : A cosmopolitan species, occurring in many countries of Asia, Africa, Australia and also Europe.

Subgenus ***Tarebia*** H. & A. Adams, 1834

10. ***Thiara (Tarebia) lineata*** (Gray)

1828. *Helix lineata* Gray, in *Wood's Index Test. Suppl.*, : 24, fig. 68.

1989. *Thiara (Tarebia) lineata* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 101. figs. 191.

Material examined : (i) 11 exs., Chang Chung Pani, Naga Hills, Coll. C. Mckuum, 23.2.1930.

Measurements : Length 15.0-28.05; Diameter 6.15-9.65; Height of aperture 7.2-11.25.

Shell distinctly broader than in the preceding species, spire acuminate, whorls 7-7$^{1}/_{2}$, scarcely rounded, body whorl broad and high with a few dark spiral bands, shell sculptured by spiral ridges, vertical sculpture obsolete, upper part of body whorl and also the penultimate whorl studded with rows of granules; aperture ovate, outer lip thin, columella thickened, angulately produced at the base. Usually occurs in ponds, remains attached to vegetations or crawls on muddy bottoms.

Distribution : India : Nagaland (Naga Hills). Fairly widely distributed in rest of the country, Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Orissa, Uttar Pradesh.

Elsewhere : Bhutan, Myanmar, Sri Lanka.

Remakrs : Recorded for the first time from Nagaland.

Order BASOMMATOPHORA

Family V LYMNAEIDAE

Genus 9. ***Lymnaea*** Lamarck, 1799

Shell thin, ovate, body whorl inflated, and larger than spire; aperture large, with a thin and sharp peristome, columella spirally twisted.

Key to species

1. Shell smaller (seldom above 12 mm) conspicuously perforate, columella distinctly reflected ..... *L. andersoniana*
- Shell larger (usually above 12 mm) imperforate, columella straight 2
2. Spire short and abruptly acuminate, outer lip convex ..... *L. acuminata*
- Spire proportionately long, less acuminate, outer lip almost straight ..... *L. luteola*

Subgenus ***Galba*** Schrank

11. ***Lymnaea (Galba) audersoniana*** Nevill

1881. *Limnaea andersoniana* Nevill, 1881, *J. Asiat. Soc. Beng.*, 50(2) : 142. pl. V, fig. 9.

1989. *Lymnaea (Galba) andersoniana* : Subba Rao, *Handbook : Freshwater molluscs of India*, : 132. figs. 268, 269, 310.

Material examined : (i) 5 exs., Rice field down the road, Khezabama, Naga Hills, Coll. K. N. Das, 20.2.1935.

Measurements : Length 6.3-12.25; Diameter 4.1-7.85; Height of aperture 4.15-4.3.

Shell small, globosely ovate, perforate, without distinct sculpture, whorls 5, body whorl large, spire very short, suture impressed; aperture rather large, ovate, outer lip thin and almost straight, not expanded, columella conspicuously reflected. Occurs in stagnant waters with ample vegetations.

Specimens studied belong to the form *typica*, another form, *intermedia* was also recorded from small cattle ponds at Dimapur, Naga Hills by Annandale & Rao (1925). Annandale (1921) referred to this phase from Dimapur as the most interesting and being intermediate between the stream phase and pond phase of the species. The material however could not be studied at present.

Subgenus ***Pseudosuccinea*** Baker

12. ***Lymnaea (Pseudosuccinea) acuminata f. typica*** Lamarck

1822. *Limnaea acuminata* Lamarck, *Hist. nat. Anim. Sans. Vert.*, 6(2) : 160.

1989. *Lymnaea (Pseudosuccinea) acuminata* f. *typica* Subba Rao, *Handbook : Freshwater molluscs of India*, : 127. figs. 258, 259.

Material examined : (i) 31 exs., Streams at Mao, Naga Hills, Coll. K. N. Das & J. C. Fernandes; 14.2.1935. (ii) 7 exs., Kohima, Coll. K. N. Das, 14.2.1935.

Measurements : Length 12.35-22.35; Diameter 7.0-12.7; Height of aperture 9.0-18.7.

Shell fairly large, oblong-ovate, thin, smooth, body whorl large and greatly inflated, spire very short and abruptly acuminate with a sharp apex; aperture large and wide, outer lip thin, convex, columella superficially twisted, briefly reflected below.

Usually occurs in permanent water bodies, remains attached to vegetations, close to surface.

Distribution : India : Nagaland (Kohima, Naga Hills). Common throughout rest of the country.

Elsewhere : Myanmar.

Remarks : Recorded for the first time from Nagaland.

13. ***Lymnaea (Pseudosuccinea) acuminata f. patula*** Troschel

1837. *Limnaeus patula* Troschel, *Weigman's Arch. f Naturges*, 3 : 167.

1989. *Lymnaea (Pseudosuccinea) acuminata* f. *patula* Subba Rao, *Handbook : Freshwater molluscs of India*, : 127. figs. 256, 257.

Material examined : (i) 31 exs., Rice field down the road, Khezabama, Naga Hills, Coll. K. N. Das, 20.2.1935.

Measurements : Length 11.8-18.5; Diameter 7.1-11.15; Height of aperture 7.75-14.1.

Differs from f. *typica* in the spire being more elongately produced and also the body whorl being more tapering above.

Distribution : India : Nagaland (Naga Hills), Maharashtra, Manipur, Punjab.

Elsewhere : Bangladesh, China, Myanmar, Nepal, Pakistan.

14. *Lymnaea (Pseudosuccinea) acuminata f. rufescens* Gray

Limnaea rufescens Gray, in Sowerby's *Genera of shells*, **1** : *Limnaea*, fig. 2.

1989. *Lymnaea (Pseudosuccinea) acuminata* f. *rufescens* : Subba Rao, *Handbook : Freshwater molluscs of India*, : 127. figs. 254, 255.

Material examined : 2 exs., Pools near Rice field at Shekhabama, Naga Hills, Coll. K. N. Das, 16.2.1935.

Measurements : Length 22.0; Diameter 11.15; Height of aperture 16.6.

Body whorl is uniformly narrower with a distinctly elongate spire.

Distribution : India : Nagaland (Naga Hills). Common throughout other parts.

Elsewhere : Bangladesh, Myanmar.

15. *Lymnaea (Pseudosuccinea) luteola f. typica* Lamarck

1822. *Limnaea luteola* Lamarck, *Hist. nat. Anim. sans. Vert.*, **6**(2) : 160.

1989. *Lymnaea (Pseudosuccinea) luteola* f. *typica* : Subba Rao, *Handbook* : *Freshwater molluscs of India*, : 129. figs. 275, 276.

Material examined : (i) 146 exs., Pools near rice field at Shekhabama, Naga Hills, Coll. K. N. Das, 16.2.1935.

Measurements : Length 8.1-20.7; Diameter 4.8-11.6; Height of aperture 5.5-14.2.

Differs from other species being more ovate, body whorl more globose and laterally compressed, spire much less acuminate and gradually tapering; aperture is also less wide. Often found in temporary water bodies.

Distribution : India : Nagaland (Naga Hills), very widely occurring throughout the country.

16. *Lymnaea (Pseudosuccinea) luteola f. impura* Troschel

1837. *Limnaeus impurus* Troschel, in Weigman's *Arch. f. Naturges, Berlin*, **3** : 172.

1989. *Lymnaea (Pseudosuccinea) luteola* f. *impura* : Subba Rao. *Handbook : Freshwater molluscs of India*, : 129. figs. 281, 282.

Material examined : 18 exs., Rice field area, Kakrima, Naga Hills (5390 ft.), Coll. K. N. Das, 18.2.1935.

Measurements : Length 10.65-15.25; Diameter 6.6-90; Height of aperture 7.8-10.65.

Shell more narrowly elongate than in f. *typica*, body whorl less inflated and without compression, spire proportionately longer.

Distribution : India : Nagaland (Naga Hills), though not as widespread as the *typical* form, fairly common throughout.

Elsewhere : Bangladesh, Myanmar, Sri Lanka.

17. *Lymnaea (Pseudosuccinea) luteola f. ovalis* Gray

Limnaea ovalis Gray, in Sowerby's *Genera Rec. Foss. Shells* **1** : pl. 178.

1989. *Lymnaea (Pseudosuccinea) luteola* f. *ovalis* : Subba Rao. *Handbook : Freshwater molluscs of India*, : 129.

Material examined : 32 exs., Dimapur, Coll. N. Annandale, 5.3.1920.

Measurements : Length 10.2-15.45; Diameter 6.15-10.7; Height of aperture 7.15-11.3.

Shell sub-globose with an abruptly pointed, short spire, body whorl without any compression.

Distribution : India : Nagaland (Dimapur), fairly common in rest.

Elsewhere : Myanmar, Sri Lanka.

Remarks : Though Annandale (1921, p. 629), reported collecting specimens of *L. ovalior* from "a single pool of very foul water at Dimapur" in 1920, the material could not be studied. The above material collected from Dimapur by Annandale in March 1920 was identified as *L. luteola* f. *ovalis* and as it appears the shell figured by Annandale (1921, pl. VII, fig. 4) as *L. ovalior* from Dimapur belonged to this lot.

Family VI ANCYLIDAE

Genus 10. *Ferrissia* Walker, 1903

Shell small, limpetlike, with a large aperture,

apex blunt or pointed, sometimes laterally deflected, radially striate.

Distribution : Australia, New Zeland, South-east Asia, South-east Africa.

18. *Ferrissia viola* Annandale & Prashad

1921. *Ancylus (Ferrissia) viola* Annandale & Prashad, *Rec. Indian Mus.*, **22** : 589, figs. 18A, 19.

1989. *Ferrissia viola* : Subba Rao. *Handbook : Freshwater molluscs of India*, : 139. figs. 317, 319.

Material examined : 3 exs., Dimapur, Coll. N. Annandale, 1920.

Measurements : Length 3.6; Diameter 2.5; Height of aperture 1.9.

Shell small, thin, blackish, suboval, posteriorly narrower, sides compressed; apex blunt, slightly turning laterelly; external surface is rather smooth; inside the shell dark violet, marked with concentrie ridges and also fine microscopic radial striae from the lower side of the apex to the margin. Remains attached to under surface of floating objects or on submerged stones, pebbles, in running water.

Distribution : India : Nagaland (Dimapur), Manipur.

Family VII PLANORBIDUE

Three subfamilies represented by three species.

Key to genera

1. Shell large, (above 5 mm in diameter) whorls rounded at periphery ..... ***Indoplanorbis***

– Shell small, (below 5 mm in diameter) whorls depressed and angulate or keeled at periphery 2

2. Shell narrowly coiled, whorls convex above, aperture triangularly lunate, with internal septa ..... ***Segmentina***

– Shell widely coiled, whorls flattened above, aperture oval, without internal septa ..... ***Gyraulus***

Subfamily BULININAE

Genus 11. *Indoplanorbis* Annandale & Prashad, 1921

Shell moderately large, thick, flattened, spire low, body whorl projecting above the level of spire, sutures deep, aperture ear-shaped.

Distribution : South and West Asia, Celebes.

19. *Indoplanorbis exustus* (Deshayes)

1834 *Planorbis exustus* Deshayes, in Belanger, *Voy. Indes-orientales*, : 417, pl. 1, figs. 11-13.

1989. *Indoplanorbis exustus* : Subba Rao, *Handbook : Freshwater molluscs of India*, : 142. figs. 326, 327.

Material examined : (i) 1 ex. Naga Hills, Coll. S. L. Hora. (ii) 15 exs., Asukheilo & around (Zunheboto), Coll. Y. P. Sinha, 17.7.1991.

Measurements : Diameter 10.9-16.8; Height 6.2-8.15; Height of aperture 6.0-7.7.

Sine *Indoplanorbis* is a monotypic genus, the specific characters are same as those of the genus.

Remains attached to floating plants, etc., seldom at the bottom, also occurs in very foul waters.

Distribution : India : Nagaland (Naga Hills, Zunhelloto), Widely destributed throughout the plains of India.

Elsewhere : Indonesia. Japan, Malaysia, Pakistan, Persia, Thailand and Celebes islands.

Remarks : Recorded for the first time from Nagaland.

Subfamily SEGMENTININAE

Genus 12. *Segmentina* Fleming, 1817

Shell small, thin, depressed, whorls convex above, flattened below, umbilicus narrowly open, spire obtuse; body whorl large, angulate or carinate; internal septa present, aperture lunate.

Distribution : Asia, Europe & N. Africa.

Subgenus *Polypylis* Pilsbry, 1906

20. *Segmentina (Polypylis) calatha* (Benson)

1850. *Planorbis calathus* Benson, *Ann. Mag. nat. Hist.*, (2)5 : 348.

1989. *Segmentina (Polypylis) calatha* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 150. figs. 339-341.

Material examined : 6 exs., Dimapur, Coll. N. Annandale, 1920.

Measurements : Diameter 3.5-5.0; Height 1.3-1.85.

Shell small, depressed, smooth, yellowish brown, convex above, flat on base, narrowly umbilicate, spire flat with a sunken apex, whorls 4, body whorl large and wide, embracing the penultimate, bluntly angulate at the periphery, very finely, obliquely marked, also with a few transeverse yellowish markings indicating the presence of internal septa; suture impressed; aperture triangularly lunate.

Occurs among vegetation.

Distribution : India : Nagaland (Dimapur), fairly common in northern India.

Elsewhere : Myanmar, Sri Lanka.

Subfamily PLANORBINAE

Genus 13. ***Gyraulus*** Charpentier, 1837

Shell small, very much depressed, thin, spire low, not projecting beyond body whorl in height, whorls 3-5, rapidly increasing, body whorl rounded or keeled; aperture wide, oval, lip thin or sometimes internally thickened.

Distribution : World wide.

21. ***Gyraulus labiatus*** (Benson)

1850. *Planorbis labiatus* Benson, *Ann. Mag. nat. Hist.,* (2)5 : 350.

1989. *Gyraulus labiatus* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 155. figs. 342-344.

Material examined : 1 ex., Pool near rice field, Chakhabama, Naga Hills, Coll. K. N. Das, 16.2.1935.

Measurements : Diameter 5.35; Height 1.50; Height of aperture 2.30.

Shell small, depressed with 3½ rapidly increasing whorls, obliquely striate, penultimate whorl just projecting above the body whorl near the aperture, apex sunken, body whorl wide and becoming wider at the aperture, angulate at the periphery; aperture wide, ovate, with a whitish rib inside. Remains attached to aquatic vegetations near the surface, sometimes floats on water surface, in upside down condition.

Distribution : India : Nagaland (Naga Hills), Andhra Pradesh, Madhya Pradesh, Maharashtra, Mizoram, Tamil Nadu, West Bengal.

Elsewhere : Myanmar.

Remarks : Recorded for the first time from Nagaland.

Class BIVALVIA

Order UNIONOIDA

Family VIII UNIONIDAE

The largest and most common family of Indian freshwater bivalves is represented by two genera and three species under two subfamilies.

Key to the genera

- Shell rounded to subrhomboid, umbo high and prominent, cardinal teeth vertically striate, compressed ..... ***Parreysia***
- Shell trapezoidal, umbo less prominent, cardinal teeth without striae, elongate..... ..... ***Trapezoideus***

Subfamily PARREYSIINAE

Genus 14. ***Parreysia*** Conrad, 1853

Subgenus ***Parreysia*** s. str.

Shell thick and strong, inflated, rounded or subrhomboidal, with distinct zig-zag ribbings on umbo and adjacent areas, usually covered by a blackish, or brownish, shining periostracum; cardinal teeth heavy and vertically striate, lamellar teeth short.

Distribution : South-east Asia and Africa.

22. ***Parreysia (Parreysia) favidens assamensis*** Preston

1912. *Parreysia favidens* var. *assamensis* Preston, *Rec. Indian Mus.,* 7 : 299.

1989. *Parreysia (Parreysia) favidens* subsp. *assamensis* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 181, fig. 468, 469.

Material examined : 3 exs., River, backside of Circuit House, Dimapur, Coll. A. Dey, 4.11.1977.

Measurements : Length 40.5-47.0; Width 27.45-29.9; Thickness 18.85-20.9.

Shell thick, subrhomboidal-elongate, inequilateral, with very fine striae and zig-zag radial ribs on the beak, umbo prominent, dorsal margin short, anteriorly rounded, angulately sloping on posterior end; cardinal teeth strong, vertically striate, lateral teeth somewhat short, beak-cavity deep.

Differs from typical form being more angulately sloping posteriorly. Usually remains burried under soft sand or mud at the bottom of ponds or rivers.

Distribution : India : Nagaland (Dimapur), Assam, Bihar, Mizoram.

Remarks : Recorded for the first time from Nagaland.

Subgenus ***Radiatula*** Simpson, 1900

23. ***Parreysia (Radiatula) lima*** (Simpson)

1900. *Nodularia (Radiatula) lima* Simpson, *Proc. U. S. natn. Mus.*, 22 : 820.

1989. *Parreysia (Radiatula) lima* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 190, figs. 528-531.

Material examined : 3 exs., 10 km from Mokokchung, Coll. K. P. Singh, 23.9.1981.

Measurements : Length 25.5-31.45; Width 15.3-19.3; Thickness 10.0-11.2.

Shell rather small, thin, elongate, posterior end broad and rather truncate in front, anterior end narrow and rounded, dorsal margin short and rather straight, posteriorly sloping in an angle, umbo at anterior end; distinctly sculptured on umbonal region.

Distribution : India : Nagaland (Mokokchung), Assam, Sikkim, West Bengal.

Remarks : Recorded for the first time from Nagaland.

Subfamily RECTIDENTINAE

Genus 15. ***Trapezoideus*** Simpson, 1900

Shell small, thin, trapezoid, compressed, umbo not raised, both anterior and posterior end rounded; sculptured by concentric ridges and zig-zag markings; cardinal teeth elongate. North-east India, South and S.E. Asia.

24. ***Trapezoideus exolescens exolescens*** (Gould)

1843. *Unio exolescens* Gould, *Proc. Boston Soc. nat. Hist.*, 1 : 141.

1921. *Trapezoideus dhanushori* Prashad, *Rec. Indian Mus.*, 22 : 611, fig. 31.

1989. *Trapezoideus exolescens exolescens* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 194.

Material examined : 1 ex., Dhanushori stream, 1 mile from Dimapur, Coll. S. L. Hora (Type of *T. dhanushori* Prashad, ZSI Reg. No. M 11962/2)

Measurements : Length 35-40; Width 19.15; Thickness 13.05.

Shell thin, compressed, greenish brown, umbo depressed, valves slightly inflated, concentrically ridged, zig-zag markings of umbonal region extend upto the postero-dorsal margin as radial ridges, a blunt posterior umbonal carina present, posterior end broader, rounded on both sides.

Distribution : India : Nagaland (Dimapur), Assam, Manipur, Mizoram.

Elsewhere : Myanmar, Thailand.

Order VENEROIDA

Family IX PISIDIIDAE

Genus 16. ***Sphaerium*** Scopoli, 1777

Shell very small, thin, more or less oval, with concentric sculpture, umbo almost at the centre.

Distribution : Africa, Holarctic.

Subgenus ***Sphaerium*** s. str.

25. ***Sphaerium (Sphaerium) austeni*** Prashad

1921. *Sphaerium austeni* Prashad, *Rec. Indian Mus.*, 22 617, fig. 35.

1989. *Sphaerium (Sphaerium) austeni* : Subba Rao, *Handbook : Freshwater molluscs of India,* : 212, fig. 602-605.

Material examined : 3 exs., Naga Hills, Coll. H. H. Godwin-Austen, (Syntypes, ZSI, Reg. No. M7147/1.

Measurements : Length 6-2; Width 4.8; Thickness 3.0

Shell elongate ovate, small, rather tumid, equilateral, umbo small but prominent, anterior margin broadly rounded, posterior margin truncate; concentrically striate, yellowish brown with a light border along the margin; right valve with two laterals and two cardinals, left with one lateral on each side and two cardinals.

Distribution : India : Nagaland (Naga Hills), Manipur.

Remarks : Inhabits stagnant waters, on muds or among vegetations.

SUMMARY AND GENERAL DISCUSSION

21 species of freshwater molluscs under 16 genera and 9 families are reported as occurring in Nagaland. Bivalves are rather poorly represented by 4 species, under 3 genera and 2 families.

Out of these 21 species, 11 are restricted to the north-east region of India and also Myanmar. Rest of the species have all–India range of distribution. Three species, *Angulyagra, microchaetophora* from Dimapur, *Trapezoideus dhanushori* from Dhanushori stream and *Sphaerium austeni* from 'Naga hills' were described from Nagaland. *T. dhanushori* has subsequently been synomymised with *T. exolescens exolescens* (Gould). Only 5 species, *Lymnaea ovalior, Segmentina calatha, Ferrissia viola, Trapezoideus dhanushori* (= *T. exolescens exolescens)* and *Sphaerium austeni* were recorded from Nagaland in earlier literature and the rests are all recorded for the first time.

ACKNOWLEDGEMENTS

The authors are gratefull to the Director, Zoological Survey of India for the facilities of work, to the officer-in-charge, Eastern Regional Station, Shillong for making some of the study material available and also to the Officer-in-Charge, Publication Division for arranging the typing of the manuscript.

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COLLEMBOLA

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INTRODUCTION

Perusal of literature reveals that first study of Collembola from India is of Ritter (1911). Imms (1912) made significant contribution on Indian Collembola. The knowledge of Indian Collembola was further enriched through the contributions of several workers like—Carpenter (1913, 1924), Handschin (1920), Mukherjee (1932), Denis (1936), Baijal (1955), Salman (1957), Chowdhury (1963), Choudhury and Roy (1965), Yosii (1966 a, b), Mitra (1967, 1993), Prabhoo (1971) and Hazra (1995).

The first collection of Collembola from Nagaland was probably made by Dr. T. Clay of British Museum Natural History, London during 1952 and studied by J. T. Salmon of New Zealand (1956, 58, 69). The present study of Collembolan fauna is based on collection made by various scientists of Zoological Survey of India during 1994, 1997 and 1998. from Nagaland as a part of the Action Plan on "State Fauna"

The present contribution is the first consolidated record of this group of Insects from the State of Nagaland involving 15 species under 6 genera of 2 families.

Order COLLEMBOLA

Suborder ARTHROPLEONA

Key to the superfamilies of ARTHROPLEONA

1. First thoracic segment dorsally distinct and with dorsal setae .... PODUROIDEA Womersley, 1933

– First thoracic segment without dorsal setae and frequently more or less reduced or hidden dorsally by mesothoracic segment..... .....ENTOMOBRYOIDEA Womersley, 1933

Key to the families of PODUROIDEA

1. Pseudocelli present, at least an antennal base or dorsum of fifth abdominal segment .... ONYCHIURIDAE Gervais, 1841

2. Pseudocelli absent..... ..... HYPOGASTRURIDAE, Bourlet, 1839

Key to the families of ENTOMOBRYOIDEA

1. Hind coxae usually with trochanteral organ Abdomen IV appreciably longer than abdomen III. Scales present or absent, often ciliated. Furcula well developed ....ENTOMOBRYIDAE Tomosvary, 1882

2. Hind coxae without trochanteral organ. Abdomen III and IV usually subequal; the abdomen IV never more than one and one-half times as long as the abdomen III, the other posterior abdominal segments fused scales usually not present .... ISOTOMIDAE, Borner, 1913

Key to the subfamilies of ENTOMOBRYIDAE

1. Dentes dorsally crenulated and curving upwards basally in the line with manubrium ..... ENTOMOBRYINAE Schaeffer, 1896

– Dens not crenulated, straight and usually forming a basal angle with manubrium 2

2. Eyes and pigment absent; dens with large dorsal scales and without apical lobe .... CYPHODERINAE Borner, 1913

– Eyes and pigment present, dens without dorsal scales and with apical lobe .... PARONELLINAE Borner, 1913

Family HYPOGASTRURIDAE

This family is best recognised by the absence of true pseudocelli and the simplicity of the sense organ of the third antennal segment.

This family represents single genus and species from Nagaland.

I. Genus ***Xenylla*** Tullberg, 1869

The genus represented by single species.

1. ***Xenylla obscura*** Imms, 1912

1912. *Xenylla obscura* Imms.

1970. *Xenylla obscura* Salmon, *Roy. Soc. N.Z. Biol. Sci.*, **12** (13) : 145-152.

Material examined: Itangki Reserve Forest, Dimapur Distt., 18.3.1997, coll. A. K. Hazra, 36 exs.

Diagnostic characters : Body length 1.4 mm., elongate in shape. Colour indigo blue, segmental margins and ventral side pale. Ant. ratio as 10 : 12, 12 : 14. Postantennal organ absent. Unguis carinate, without lateral teeth, but with 1, 1, 1 inner tooth near the apex, unguiculus absent, ventral tube with 4+4 setae. Tenent hair 2, 2, 2 very long and capitate at the end. Dentes and mucro separated. Mucro short, obtuse and blunt on apex, with a narrow rounded lamella, which is often very obscure.

Distribution : India : Nagaland, Sikkim, Maharashtra.

Family ENTOMOBRYIDAE

Subfamily ENTOMOBRYINAE Schaeffer, 1896

Dentes crenulated dorsally. Mucrone fulcate with basal spine, it is short and hook-like. Body with hairs or scales or both the chaetotaxy of head and trunk and eye numbers are useful in identifying the members of this family.

II. Genus ***Lepidocyrtus*** Bourlet, 1839

The genus is represented by three species from Nagaland.

Key to the species of *Lepidocyrtus*

1. VI th abdominal segment without elongate cerci form tergum 2

2. Dental lobe with accessory apparatus .... *Lepidocyrtus (Acrocyrtus) malayanus* Yosii, 1959

– Dental lobe without accessory apparatus 3

3. Th II. is very prominent and protruded over the head. Abd. II : IV = 1 : 7 .... *L. magnificus* Carpenter, 1917

– Th II is protruded considerably over the head. Abd III : IV = 1 : 3 .... *L. medius* Schaeffer, 1893

2. ***Lepidocyrtus (Acrocyrtus) malayanus*** Yosii, 1959

1959. *Lepidocyrtus (Acrocyrtus) malayanus* Yosii, *Contr. Biol. Lab. Kyoto. Univ.*, **10** : 28.

Material examined: Rangapahar Reserve Forests *(Dimapur-distt.)*, 19.3.1997, coll. A.K. Hazra, 25 exs.; Itangki Reserve Forest, *(Dimapur-distt.)*, 18.3.1997, coll. A. K. Hazra, 35 exs.

Diagnostic characters: Ground colour brownish white, antennae distally bluish pigment from Ant II. Eye 6+6, Scales are present dorsally upon Ant. I and II, ratio of Ant. segs + 9 : 18 : 11 : 23. Th II : III = 7 : 3. Abd. III : IV = 1 : 5. Mambrium : dentes = 9 : 8. Dorsal appendex of dental lobe is prominent, acutely pointed in profile. Body length 2.5 mm.

Distribution : India : Nagaland, Sikkim, Tripura (West Distt.),

Elsewhere : Singapore.

3. *Lepidocyrtus* (s. str) *magnificus* Carpenter, 1924

1924. *Lepidocyrtus* (S. str.) *magnificus* Carpenter, *Rec. Ind. Mus. Cal.*, **26** : 285-289.

Material examined : *Phek Distt.* Culvert No. 36/3, way to Phek from Kohima, 24.3.1997, coll. A. K. Hazra, 38 exs.

Diagnostic characters : Mesonotum four times as long as metanomum. Abd. IV seven times as long as Abd III. Antennae twice as long as head. Colour pale-yellow with Ant III and IV, edges of Th II & III and last abdominal segments dark violet. Relatively short III rd Antennal segment. Mucro stout with strong teeth, the dorsal spine short.

Distribution : India : Nagaland, Sikkim, Tripura (West Distt.), Assam.

4. *Lepidocyrtus* (s. str.) *medius* Schaeffer, 1898

1898. *Lepidocyrtus* (s. str.) *medius* Schaeffer, *Contr. Biol. Lab. Kyoto Univ.*, **10** : 26.

1913. *Lepidocyrtus* (s. str.) *medius* Borner, *Tijdchr. V. Entomon.*, **56** : 44-61.

1926. *Lepidocyrtus* (s. str.) *medius* Uchida, *Insecta Mat. Sap.*, **17** : 38-47.

Material examined : Culvert No. 36/3, Way to Phek from Kohima, 24.3.1997, coll. A. K. Hazra, 20 exs.; Khezikinoma, *Phek Distt.* 24.3.1997, coll. A. K. Hazra, 35 exs. *Kohima Distt.* Pulebadge wild life sanctuary, 25.3.1997, coll. A. K. Hazra, 26 exs.

Diagnostic characters : Colour brownish-white. Antennae pigmented purple distally. A median spot between eyes. Ant. seg. as 12 : 28 : 30 : 42. Th. II : III = 15 : 7. Abd. III : IV = 1 : 3. Manubrium : dens as 1 : 1. Mucro with apical tooth elongated, anteapical tooth is little smaller.

Distribution : India : Nagaland, Sikkim, Tripura (West Distt.),

Elsewhere : Singapore.

III. Genus *Dicranocentrus* Schott. 1925

5. *Dicranocentrus indicus*, Bonet, 1930

1960. *Dicranocentrus indicus* Yosii, *Kyoto Univ. Sci. expd to the Karakoram & Hindukush*, **8** : 33-405.

Material examined : Botanical Garden, Kohima, 23.3.1997, coll. A. K. Hazra, 25 exs., Keolie village, *Phek Distt* : 24.3.1997, coll. A. K. Hazra, 32 exs., Khezikinoma, 24.3.1997, coll. A.K. Hazra, 12 exs.

Diagnostic characters : Body length upto 3.2 mm. Antennae reddish violet. Eyes black. Antennae 5 jointed, ant. I being subdivided. Ant IV is elongated, distinctly annulated. Manubrium is dorsally beset with many plumose setae. No dental spine. Mucro is bidentate equally and with or without a basal spine.

Distribution : India : Nagaland, Manipur, Mizoram.

Elsewhere : Formosa, South Pacific Island.

Subfamily PARONELLINAE Borner, 1913

The members of this subfamily can be distinguished from other entomobryids by the right and short dentes, presence of dental scale appendage on the terminal part of dentes. The mucrones in majority cases are plump, lobed into several teeth and is different in shape from the members of subfamily Entomobryinae.

Key to genera of subfamily PARONELLINAE from Nagaland

1. Body covered with scale 2
- Body not covered with scale 4
2. Eye 8 + 8 3
3. Basal seta of the outer maxillary ramus is blunt ..... ***Callyntrura*** Borner
- Basal setae of the outer maxillary ramus is pointed ..... ***Dicranocentroides*** Schott
4. Mucro stout, usually tridented, dentes not annulated ..... ***Salina*** MacGillivary

IV. Genus ***Callyntrura*** Borner, 1906

The genus is represented by two species from the state.

Key to the species of the genus *Callyntrura*

1. Dental scale appandage absent, ventral side of the mucro with serration .... *C. (Callyntrura) serrata* (Salmon) 1957

– Dens with apical setae heavily ciliated, the small spine-like basal tooth on the posterior face of the mucro almost rudimentary .... *C. (Handschinphysa) vestita* (Handschin, 1925)

6. ***Callyntrura (Callyntrura) serrata*** (Salmon) 1957

1957. *Handschinphysa serrata* Salman, *Acta. Zool. Cracov.*, **11**(14) : 313-362.

1964. *Aphysa serrata* : Salmon, *Bull. Roy. Soc. N.Z.*, (7) : **2** : 145-644.

1974. *Callyntrura (Callyntrura) serrata* Mitra, *Rev. Ecol. Biol. Soc.*, **11**(3) : 391-439.

Material examined : Nil.

Diagnostic characters : Tergal mergin of Th. II, III, Abds. I, III with dark blue pigment, lateral extension of Abds. III, IV with the same pigment, pigment also present dorsally on Abds. IV. Ocelli 8 + 8. Manubrium to dens to mucro 54 : 85 : 4. Mucro with two prominent apical teeth, one prominent subapical tooth on the posterior face, a large lateral tooth and a row of tooth like serration along the posterior edge which edge which is most salient feature of the species. Body length 1.4 mm.

Distribution : India : Nagaland, Tripura (West Distt.).

Remarks : The collection of this species are lacking in the present survey. Salman (1957) recorded this species from Manipur based on the collection of Dr. T. Clay made in 1952.

7. ***Callyntrura (Handschinphysa) vestita*** (Handschin, 1925)

1925. *Microphysa vestita* Handschin

1957. *Handschinphysa vestita* Salmon, *Acta. Zool. Cracov.*, **11**(14) : 315-362.

1974. *Callyntrura (Handschinphysa) vestita* Mitra, *Rev. Ecol. Biol. Soc.* **11**(3) : 391-439.

Material examined : Nil.

Diagnostic characters : Length upto 3.8 mm. Antennae pale yellow, be coming bluish towards apex of Ant. IV. Furcula pale yellow. Ant. Seg. 41 : 45 : 30 : 75. Abd. IV 8-9 times longer than Abd. III. Mucro with 6-7 teeth; the sabas inner pair of teeth on the claw being much closer to the claw base. The mucro has three apical teeth, of which two are truly apical and one slightly sub-apical, with two plate-like teeth and a small spine-like tooth on the posterior face and a large lateral tooth.

Distribution : India : Nagaland, Assam, Sikkim.

Remarks : No specimens of this species are collected from present survey. Salmon (1957) recorded this species from Manipur based on the collection of Dr. T. Clay made in 1952 from Manipur.

V. Genus ***Dicranocentroides*** (Imms) 1912

The genus is represented by five species from Nagaland.

Key to the species of *Dicranocentroides*

1. Body devoid of dark pigmented patches..... ..... *Dicranocentroide flavescens* Yosii

– Body with distinct dark pigmented patches.....2

2. Ground colour of body brown with faint purple blue pigment all over body. Abd IV with faint longitudinal strands descending from its anterior margin; tergal margin darkest; Ant. I, II, III each with a pigmented distal ring .... *D. indica* (Handschin), 1929

3. Pigment absent on Abds. I, II; Abd. IV laterally and lateral extensions of Abd. III at middle with a common and characteristic almost quadrangular darker patch. Abd. IV posteriorly also with a transverse band of same pigment. Abd VI devoid of dark pigment; in living

specimens, no shining metallic pigment occurs ..... *D. gisini* Mitra

4. Th II totally pigmented, Abd. III with its lateral extensions and Abd. IV totally dark no distinct transverse band on Abd. IV. In living specimens shining Metallic golden pigment occurs posteriorly on head, Th. II, Abd. I, II, posteromedially on Abd. IV. .... *D. fasciculatus* Salmon, 1957

– Median patches on Th. II may be absent, but anterior margin always pigmented, Abd. III and its lateral extensions pigmented. Abd IV with medially and posteriorly pigmented transverse band. No shining metallic pigment occurs in living conditions .... *D. salmoni* Mitra, 1975

8. *Dicranocentroides flavescens* Yosii, 1966

1966. *Dicranocentroides tasciculatus* f.n. *flavescens* Yosii, *Res. Kyoto Univ. Sci. Exped. Karakoram and Hindukush.*, 1995, **8**, 333-405.

Material examined : Khezikenoma, *Phek Distt* : 24.3.1997, coll. A. K. Hazra, 20 exs. Keolie village, 24.3.1997, coll. A. K. Hazra, 12 exs.

Diagnostic characters : Body length 2-3.5 mm. A dark patch, Characteristic of the species, present on vertex in between two ocellar fields. Dark patches absent on body. Ocelli 8+8. Ant. segment I : II : III : IV = 15 : 17 : 12 : 19. Th II : III = 14 : 8.5 Legs all similar, unguiculus lanceolate, accuminate with 2 external tooth. Abd I : II : III : IV : V : VI = 5 : 6 : 4 : 39 : 5.5 : 2. Ventral tube with macrochaetae dentes armed with two closely apposed rows of spines on inner margin; mucro large parallel sided with 6 teeth.

Distribution : India : Nagaland, Sikkim, Tripura (West Distt.), West Bengal, Manipur, Mizoram, Maharashtra, U.P.

9. *Dicranocentroides indica* (Handschin, 1929)

1929. *Aphysa indica* handschin, *Rev. Suisse, Zool.*, **36** : 221-262.

1975. *Dicranocentroides indica* Mitra, *Rec. zool. Surv. India*, **71** : 57-59.

Material examined : On the way to Karbi Awlong Road, *Dimapur Distt.* 19.3.1997, coll. A.K. Hazra, 18 exs.

Diagnostic characters : Ground colour brown with faint purple blue pigments all over the head and body. Head with two dark ocellar fields, each field containing 8 ocelli arranged in two longitudinal parallel rows. Ant. I : II : III : IV = 17 : 19 : 13 : 25; Ant. IV superficially annulated, apical sense-knob not distinct. Th II : III = 12 : 9. Relative length index of Abd. I : II : III : IV : V : VI = 6 : 6 : 3 : 29 : %1. relative length index of manubrium : mucrodens = 22 : 35. each dentes with two closely apposed rows of spines on inner margin; mucro short with six teeth.

Distribution : India : Nagaland, Manipur, Mizoram, Kerala.

10. *Dicranocentroides gisini* Mitra, 1975

1975. *Dicranocentroides gisini* Mitra, *Rec. zool. Surv. India*, **71** : 57-95.

Material examined : Minkong protected forest, *Mokokchung Distt.* 22.3.1994, coll. P. Mukhopadhyay, 1 ex., Lungsong, Wokha, *Wokha Distt* : 14.10.1998, coll. T. K. Pal, 1 ex.

Diagnostic characters : Ground colour of body pale yellow; Th II, III, Abd. I, II, III usually devoid of any dark pigmented patches. Head with 1+1 dark ocellar field, Relative length index of antennae I : II : III : IV = 11 : 15 : 16 : 20; Th II : III = 14 : 9.8; Relative length index of Abds I : II : III : IV : V : VI = 7 : 7 :3.5 : 34 : 5 : 3.5; relative length index of manubrium : mucrodens = 27 : 40; dentes armed with two closely apposed rows of spines on inner margin; mucro large with 6 teeth. Length upto 2-3 mm.

Distribution : India : Nagaland, Uttar Pradesh.

11. *Dicranocentroides fasciculatus* Imms, 1912

1912. *Dicranocentroides fasciculatus* Imms, *Proc. Zool. Soc. London* : 80-125.

1917. *Paronella cransicornis* Carpenter, *Rec. Indian Mus. Cal.*, **8** : 561-568, New Synonymy.

1925. *Dicranocentroides fasciculatus* Schott, Sarawak. *Mus. Jour.*, **3** : 107-125 (Lapsus for *fasciculatus*)

1957. *Dicranocentroides fasciculatus* Salmon, *Acta Zool. Cracov.* **11** (14) : 313-362.

1975. *Dicranocentroides fasciculatus* Mitra, *Rec. zool. Surv. India*, **71** : 57-95.

Material examined : Keolie village, *Phek Distt* :24.3.1997, coll. A. K. Hazra, 18 exs., Pulebadge wild life sanctuary, *Kohima Distt* : 26.3.1997, coll. A.K. Hazra, 12 exs. Sungkomen, *Mokokchung Distt* : 18.10.1998, coll. T.K. Pal, 4 exs.

Diagnostic characters : Th. II always with reddish to brown pigment. Abd. III, IV, V usually dar brown. Head 1+1 dark ocellar field; Relative length index of Ths. II : III : IV : V : VI = 21 :21 : 13 : 108 : 9 : 4; Relative length index of manubrium : mucrodens = 85 : 122; each dentes armed with an inner row of spines which transit into stiff ciliated setae distally, mucro large with 5-6 teeth.

Distribution : India : Nagaland, Sikkim, Manipur, Mizoram, U.P.

12. ***Dicranocentroides salmoni*** Mitra, 1975

1957. *Dicranocentrodes fasciculatus* : Salmon, *Acta Zool. Cracov.*, **11** (14) : 313-362.

1957. *Handchinphysa crassicornis* Sensu Salmon, ibid.

1975. *Dicranocentroides salmoni* Mitra, *Rec. zool. Surv. Ind.*, **71** : 57-95.

Material examined : Pule Badge wild life sanctuary, *Kohima Distt* : 25.3.1997, coll. A.K. Hazra, 12 exs., Jufa hills, *Kohima Distt* : 23.3.1997, coll. A.K. Hazra, 10 exs., Karbi-Awlong Road, *Dimapur Distt* : 19.3.1997, coll. A.K. Hazra, 8 exs., Y. Semyong, *Mokokchung Distt* : 21.3.1994, coll. P. Mukhopadhyay, 2 exs.

Diagnostic characters : Th III, Abds. I, II almost always dark pigmented. Antennae subequal to the length of head and body; Relative length index of Ths. II : III = 14.10; Relative length index of Ads. I : II : III : IV : V : VI = 7 : 7 : 4 : 37 : 4 : 2; Relative length index of manubrium : mucrodens = 28 : 40; each dentes armed with a row of stout spines that beyond three-fourth of its length transit into stiff, mucro large with six prominent teeth. Body length upto 2-3 mm.

Distribution : India : Nagaland, Meghalaya, Assam, Sikkim, Manipur.

VI. Genus ***Salina*** MacGillivary, 1894 (Imms) 1912

The genus is represented by three species.

Key to the species of *Salina*

1. Pigment usually tends to form longitudinal bands on body 2
- Pigment usually tends to form transverse bands on body (at least on thorax) 3
2. Two longitudinal bands on each side of body formed by patches present on Th II, III & Abd. I-VI ..... *striata* (Handschin)
3. Pigment does not cover entire surface of any segment ..... *tricolor tricolor*
- Dark blue-black pigment totally covers Th III, & Abds I, II ..... *tricolor sikkinensis*

13. ***Salina striata*** (Handschin) 1928

1928. *Cremastocephalus striatus* Handschin, *Treibia.*, **10** : 245-270.

1929. *Salina striata* Handschin, *Rev. Suisse Zool.*, **36** : 229-262.

1961. *Salina striatella* Yosii, *Nature and Life in South-East Asia.*, **1** : 171-200 (Lapsus for *striata*).

Material examined : Jafu Hills, *Kohima Distt;* 22.3.1997, coll. A.K. Hazra, 21 exs.

Diagnostic characters : Ground colour of head and body white incling to pale yellow; Head pear shaped dorsally, 1+1 pronotal spines present; ocelli 8+8. Relative length index of Ths. II : III = 15 : 9; Abds. I : II : III : IV : V : VI = 8 : 14 : 3 : 41 : 7 : 3; manubrium : mucrodens = 28 : 33; mucro short, broad, prominently lobed into three teeth, median tooth sometime truncated; dental scale appendage subequal to mucro with faint longitudinal striations. Length upto 3 mm.

Distribution : India : Nagaland, Assam, Meghalaya, Uttar Pradesh.

14. ***Salina tricolor tricolor*** (Handschin), 1928

1928. *Cremoistocephalus tricolor* : Handschin, *Treubia.*, **10** : 245-270.

1929. *Salina tricolor* : Handschin, *Rev. Suisse. Zool.*, **36** : 229-262.

1973. *Salina tricolor tricolor* Mitra, *Oriental Ins.*, **7** (2): 159-202.

Material examined : Culvert No. 36/3, way to Phek from Kohima *(Phek Distt).* 24.3.1997, coll. A.K. Hazra, 18 exs.

Diagnostic characters : General ground colour of head and body pale yellow; head pear-shaped dorsally, 1+1frontal spines present; relative length index of Ant. I : II : III : IV = 26 : 33 : 29 : 46; Relative length index of Ths. II : III = 9 : 4; Abds I : II : III : IV : V : VI = 4 : 9 : 1.5 : 29 : 4 : 2.5; Manubrium : mucrodens = 22 : 25; mucro deeply lobed into three teeth, dental scale appendage striated longitudinally, subequal to mucro; Abd. V and VI with symmetrical patches of orange to dark pigment; antennae pale yellow to dark brown with diffused blue pigment. along the edges; legs generally brown with diffused blue pigment. Body length upto 2 mm.

Distribution : India : Nagaland, Manipur, Kerala.

15. ***Salina tricolor sikkinensis*** Mitra, 1973

1973. *Salina tricolor sikkinensis* Mitra, *Oriental Insects*, Vol. **7** (2) : 159-202.

Material examined : Khezikinoma, *Phek Distt;* 24.3.1997, coll. A.K. Hazra, 18 exs.

Diagnostic characters : Ground colour of the specimens pale yellow; dark blue-black patches totally cover Th. III, Abds. I and II; Th. II may be entirely with pigment or devoid of pigment; half of And. IV posterodorsally with dark blue-black pigment or with irregular blotches or spots of the same pigment; lateral extensions of Abd. III each with an extensive patch of the same pigment or totally devoid of it; antennae pale yellow without dark pigment distally on antennal segments; femora distally darker; tibiotarsi distally and proximally with dark blue black patches. Length (excluding appendages) : 1-1.5 mm.

Distribution : India : Nagaland, Sikkim.

ACKNOWLEDGEMENT

We express our sincere gratitude to the Director, Zoological Survey of India for providing laboratory facilities.

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INSECTA : ODONATA

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INTRODUCTION

The order Odonata, popularly known as dragonflies, is an economically important, primitive group of insects. Adults live in air and land; they control the population of noxious insects *viz.* mosquitoes, flies, aphids, termites and small moths which are considered as pests. Larvae live in water and feed on larvae of mosquitoes, and other dipteran insects, beetles, oligochaet worms and during the dearth of food they attack fish seeds and spawns (Mitra 1998).

In India, Odonata occurs in all ecosystems, present in the country in the Himalayas, desert, islands, coasts and plains. There are about five hundred species and subspecies distributed over one hundredforty genera, seventeen families and three suborders. A few are migratory in nature. Generally the Indian fauna is closely related to Malayasian fauna, Nagaland is no exception to that.

Nagaland is a small state in north-east India covering about 16,580 sq. km. and has a population density of about 47 per sq. km. The state is composed of easternmost Cachar Hills (Mt. Japvo) and the Naga Hills area, north to the northern patkai range. It has been divided into seven administrative districts, *viz.* Kohima, Mokokchung, Mon, Phek, Tuensang, Wokha, Zunheboto.

The climate of the state reflects characteristic rhythm and as such the year is divisible into Winter (December-February) Summer or pre monsoon (March-April), Monsoon (May-September), and retreating monsoon (October-November). January is the coldest month. The vegetation varies from tropical evergreen to temperate evergreen forests. Drainage mainly through the tributaries of Brahmaputra.

HISTORICAL REVIEW OF ODONATA FAUNA OF NAGALAND

Till the formation of the state, Odontologists used to refer it within "Assam" Bhasin (1953), Fraser (1934), Lahiri (1977, 1987), Lahiri *et al.* (1970), Mitra (1994) and Prasad and Varshney (1995) reported following species from the state, *Coeliccia didyma* Selys, *Aciagrion approximans* Selys, *Rhinocypha quadrimaculata* Selys, *Rhinocypha spuria* Selys, *Rhinocyoha perforata beatifica* Fraser, *Euphaea guerini masoni* Selys, *Nepogomphus modestus* (Selys), *Anax nigrofasciatus nigrolineatus* Fraser *Potamancha congener* Rambur, *Orthetrum japonicum internum* MacLachlan, *Orthetrum sabina* (Drury) *Palpopleura sexmaculata* (Fabricius), *Crocothemis servilia servilia* (Drury), *Trithemis pallidinervis* Kirby.

In the present paper a total of forty eight species distributed over thirty two genera, nine families and two suborders have been reported.

Material and Methods : Adult specimens only were available for study. They were collected by different parties from Zoological Survey of India, Headquarters and Eastern Regional Station, Shillong. Specimens were studied under binoculars. Keys for identification of different

taxa have been prepared on the basis of specimens available in Zoological Survey of India. Specimens were compared with specimens from other states present in Zoological Survey of India, Calcutta and with the descriptions provided by Fraser 1933, 1934 and 1936) in his Fauna of British India, volumes. Specimens are deposited in the National Zoological Collection in Zoological Survey of India, Calcutta and Shillong.

LIST OF SPECIES RECORDED FROM NAGALAND

Order ODONATA

Suborder ZYGOPTERA

Family CALOPTERYGIDAE

Genus ***Neurobasis*** Selys, 1853

1. *Neurobasis chinensis chinensis* (Linne)

Genus ***Echo*** Selys, 1853

2. *Echo margarita margarita* Selys

Family EUPHAEIDAE

Genus ***Anisopleura*** Selys, 1853

3. *Anisopleura comes* Selys

Genus ***Euphaea*** Selys, 1840

4. *Euphaea guerini masoni* Selys

Family CHLOROCYPHIDAE

Genus ***Rhinocypha*** Rambur, 1842

5. *Rhinocypha quadrimaculata* Selys
6. *Rhinocypha trifasciata* Selys
7. *Rhinocypha perforata beatifica* Fraser
8. *Rhinocypha spuria* Selys

Family PROTONEURIDAE

Genus ***Prodasineura*** Cowley 1934

9. *Prodasineura* sp. indet.

Family PLATYCNEMIDIDAE

Genus ***Calicnemia*** Strand, 1926

10. *Calicnemia eximia* Selys
11. *Calicnemia pulverulans* Selys

Genus ***Coeliccia*** Kirby, 1890

12. *Coeliccia didyma didyma* Selys
13. *Coeliccia vacca* Laidla

Genus ***Copera*** Kirby, 1890

14. *Copera superplatypes* Fraser

Family COENAGRIONIDAE

Genus ***Pseudagrion*** Selys, 1876

15. *Pseudagrion australasiae* Selys

Genus ***Ceriagrion*** Selys, 1876

16. *Ceriagrion coromandelianum* (Fabricius)
17. *Ceriagrion praetermissum* Lieftinick

Genus ***Aciagrion*** Selys, 1891

18. *Aciagrion approximans* Selys

Genus ***Ischnura*** Charpentier, 1840

19. *Ischnura senegalensis* (Rambur)
20. *Ischnura aurora aurora* Brauer
21. *Ischnura rufostigma rufostigma* Selys

Genus ***Agriocnemis*** Selys, 1877

22. *Agriocnemis pygmaea pygmaea* (Rambur)

Genus ***Onychargia*** Selys, 1865

23. *Onychargia atrocyana* Selys

Suborder ANISOPTERA

Family GOMPHIDAE

*Genus ***Nepogomphus*** Fraser, 1934

24. *Nepogomphus modestus* (Selys)

Family AESHNIDAE

Genus ***Gynacantha*** Rambur, 1842

25. *Gynacantha bayadera* Selys

Genus ***Anax*** Leach, 1815

26. *Anax nigrofasciatus nigrolineatus* Fraser

Family LIBELLULIDAE

Genus ***Lathrecista*** Kirby, 1889

27. *Lathrecista asiatica asiatica* Frbricius

Genus ***Potamarcha*** Karsch, 1890

28. *Potamarcha congener* (Rambur)

Genus ***Orthetrum*** Newman, 1833

29. *Orthetrum sabina sabina* (Drury)
30. *Orthetrum japonicum internum* MacLachlan
31. *Orthetrum triangulare triangulare* (Selys)

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* There are differences of opinion regarding the status of the genus. In this paper tentatively it is being retained following Fraser (1934).

32. *Orthetrum pruinosum neglectum* (Rambur)
33. *Orthetrum glaucum* (Brauer)
34. *Orthetrum taeniolatum* (Schneider)
35. *Orthetrum luzonicum* (Brauer)

Genus ***Palpopleura*** Rambur, 1842

36. *Palpopleura sexmaculata sexmaculata* (Fabr.)

Genus ***Brachydiplax*** Brauer, 1868

37. *Brachydiplax sobrina* (Rambur)

Genus ***Acisoma*** Rambur, 1842

38. *Acisoma panorpoides panorpoides* Rambur

Genus ***Crocothemis*** Brauer, 1868

39. *Crocothemis srvilia servilia* (Drury)

Genus ***Neurothemis*** Brauer, 1867

40. *Neurothemis fulvia* (Drury)
41. *Neurothemis internedia intermedia* (Rambur)
42. *Neurothemis tullia tullia* (Drury)

Genus ***Diplacodes*** Kirby, 1890

43. *Diplacodes trivialis* (Rambur)

Genus ***Brachythemis*** Brauer, 1868

44. *Brachythemis contaminata* (Fabricius)

Genus ***Trithemis*** Brauer, 1868

45. *Trithemis pallidinervis* Kirby

Genus ***Tholymis*** Magen, 1867

46. *Tholymis tillarga* (Fabricius)

Genus ***Pantala*** Hagen, 1861

47. *Pantala flavescens* (Fabricius)

Genus ***Camacinia*** Kirby, 1889

48. *Camacinia gigantea* (Brauer)

FIELD KEY FOR IDENTIFICATION

Key for identification of suborders

1. Fore-and hind wings are usually petiolated, or the base of the wings not markedly broad, similar to each other, discoidal cell four sided ..... ZYGOPTERA
– Fore-and hind wings are not petiolated, broad at bases, dissimilar to each other, discoidal cell divided into superior or hyper-triangle and inferior or triangle ..... ANISOPTERA

Suborder ZYGOPTERA

Key to Superfamilies of the Suborder ZYGOPTERA

1. Wings with two antenodals ..... COENAGRIONOIDEA
– Wings with more than two antenodals ..... CALOPTERYGOIDEA

Superfamily CALOPTERYGOIDEA

Key to families of CALOPTERYGOIDEA

1. Wings petiolated ..... CHLOROCYPHIDAE
– Wings apetiolate or slightly petiolated 2
2. First thoracic suture complete ..... CALOPTERYGIDAE
– First thoracic suture incomplete ..... EUPHAEIDAE

Family CALOPTERYGIDAE

Key to species of family CALOPTERYGIDAE

1. Wings with distinct pterostigma ..... *Echo margarita margarita* Selys
– Wings without pterostigma or pterostigma traversed with veins ..... *Neurobasis chinensis chinensis* Linnaeus

Genus *Neurobasis* Selys

1. ***Neurobasis chinensis chinensis*** (Linnaeus)

1758. *Libellula chinensis* Linnaeus, *Syst. Nat.*, **10** 545

1934. *Neurobasis chinensis chinensis*, Fraser, *Fauna Brit India, Odon.*, **2** : 121-124

Material examined : 1♂, Zunheboto, Hosenepu village, 25. vii. 1991, Coll. Y.N.P. Sinha.

Distribution : Throughout India, Palaearctic, and Oriental region.

Genus *Echo* Selys

2. ***Echo margrita margarita*** Selys

1853. *Echo margarita* Selys, *Bull. Acad. Belg.* 20 (Annexe), *Syn. Calopt.* : 19.

1934. *Echo margarita margarita*, Fraser, *Fauna Brit. India, Odon.*, **2** : 136-137.

Material examined : 1♂, Zunheboto, Hosenepu village, 25.vii.1991. Coll. Y.N.P. Sinha.

Distribution : Northeastern India : Nagaland, Arunachal Pradesh, Manipur, Meghalaya.

Family EUPHAEIDAE

Key to species of family EUPHAEIDAE

1. Petiolation of wings present .... *Anisopleura comes* Selys
- Petiolation of wings absent .... *Euphaea guerini masoni* Selys

Genus *Anisopleura* Selys

3. *Anisopleura comes* Selys

1880. *Anisopleura comes* Selys, *C. R. Soc. Ent. Belg.* 23 : 43; Fraser, 1934, *Fauna Brit. India. Odon.*, **2** : 87-89.

Material examined : 1♂, 1♀, Zunheboto, Atoiju village, 8.vii.1991, Coll. Y.N.P. Sinha.

Distribution : India : Western to eastern Himalaya including the Indo-Gangetic plains.

Elsewhere : China.

Genus *Euphaea* Selys

4. *Euphaea guerini masoni* Selys

1879. *Euphaea masoni* Selys, *Bull. Acad. Belg.*, (2)47 : 377.

1934. *Pseudophaea masoni*, Fraser, *Fauna Brit. India, Odon.*, **2** : 102-103.

1991. *Euphaea guerini masoni*, Tsuda, A distribution *al list of World Odonata*, 1991 : 81.

Distribution : India : Manipur, Nagaland.

Elsewhere : Myanmar, Bangkok.

Family CALOPTERYGIDAE

Genus *Rhinocypha* Rambur

Key to species of *Rhinocypha* Rambur

1. Dorsal meso-thoracic triangle extending as far as root of wings 2
- Dorsal mesothoracic triangle coloured, extending from one-third to half way up dorsum, hind-wing nearly same as fore wing ..... *perforata beatifica* Fraser
2. Hind wing of male with opaque bands .... *trifasciata* Selys
- Hind wings of male opaque with vitreous spots 3
3. Apical spots large, mid row of vitreous spots more or less confluent ..... *spuria* selys
- Apical spots moderately large, mid row of vitreous spots well separated. .... *quadrimaculata* Selys

5. *Rhinocypha quadrimaculata* Selys

1853. *Rhinocypha quadrimaculata* Selys, *Bull. Acad. Belg.* 20 *(Annexe) Syn. Calopt.* P. 60; Fraser, 1934, *Fauna Brit. India Odon.*, **2** : 14-17.

Distribution : India : Nagaland, Assam, Meghalaya, Mizoram.

6. *Rhinocypha trifasciata* Selys

1853. *Rhinocypha trifasciata* Selys, *Bull. Acad. Belg. (Annexe) Syn. Calopt.* P. 61; Fraser, 1934, *Fauna Brit. India, Odon.*, **2** : 31-33.

Material examined : 1♀, Mon dist., Mon village, 8.vi.1990 Coll. Y.N.P. Sinha.

Distribution : India : Nagaland, Uttar Pradesh, Himachal Pradesh.

Elsewhere : Nepal.

7. *Rhinocypha perforata beatifica* Fraser

1927. *Rhinocypha perforata beatifica* Fraser, *Rec. Indian Mus.*, 29 : 86-87; 1934, *Fauna Brit. India, Odon.*, **2** : 44-45.

Material examined : 1♀, Mon dist. Atoi village, 6.vi.1990 Coll. Y.N.P. Sinha.

Distribution : India : Nagaland.

8. *Rhinocypha spuria* Selys

1879. *Rhinocypha spuria* Selys, *Bull. Acad. Belg.* (2) **47** : 388; Fraser, 1934, *Fauna Brit. India, Odon.* **2** : 12-14.

Distribution : India : Nagaland, Assam, Meghalaya, Mizoram.

Elsewhere : Myanmar.

Superfamily COENAGRIONOIDEA

Key to families of COENAGRIONOIDEA

1. Anal vein (1A) absent....PROTONEURIDAE
- Anal vein (1A) present and long.....2
2. Discoidal cell almost rectangular; costal or anterior side slightly shorter than the basal. ..... PLATYCNEMIDIDAE
- Angle of discoidal cell usually acute; costal side much shorter than the basal .... COENAGRIONIDAE

Family PROTONEURIDAE

Genus ***Prodasineura*** Cowley

9. ***Prodasineura*** sp. indet.

Material examined: 1♀, Dimapur dist., Rangapahar village 18.iii.1997. Coll. A.K. Hazra.

Remark: The specimen agrees with the description of female of *Prodasineura autumnalis* (Fraser) but differs from the description in having the thinner yellow band on the vertex, and the colours of baso-dorsal spot on segments 3 to 6 are brownish. The absence of male have made us to keep the specimen indeterminate.

Family PLATYCNEMIDIDAE

Key to genera/species of family PLATYCNEMIDIDAE

1. Costal side of discoidal cell in forewing about one-fifth or more shorter than the posterior 2
- Costal side and posterior side of discoidal cell equal or nearly so .... *Copera superplatypes* Fraser
2. Wings petiolated to the level of *ac*, i.e. *ab* ends at the level of ac..... *Coeliccia* Kirby
- Wings petiolated short of *ac* i.e. *ab* ends before the level of ac ..... *Calicnemia* Strand

Genus ***Calicnemia*** Strand

Key to species of genus *Calicnemia*

1. Beneath head entirely black..... ..... *pulverulans* Selys
- Head black marked with yellow beneath..... .....*eximia* Selys

10. ***Calicnemia eximia*** Selys

1863. *Calicnemia eximia* Selys, *Bull. Acad. Belg.* (2)16 : 160; Fraser, 1933, *Fauna Brit. India. Odon.*, 1 : 174-175.

Material examined: 1♀, Zunheboto, Settsu village, 12.vii.1991, 2♂, Zunheboto, Shoike village, 6.vii.1991 2♂, Zunheboto, Asukuto town, 17.vii.1991; 1♂, Zunheboto Satoi village, 27.vii.1991, coll. Y.N.P. Sinha.

Distribution: India : Arunachal Pradesh, Sikkim, West Bengal, Meghalaya, Uttar Pradesh, Himachal Pradesh,

Elsewhere : Bangladesh, Nepal, Taiwan, China, Afganistan.

Remarks: Specimen agree with description provided by Fraser (1933), and other specimens present in Zoological Survey of India.

11. ***Calicnemia pulverulans*** Selys

1886. *Calicnemia pulverulans* Selys, *Mem. Cour.* 38 : 133 Fraser, 1933, *Fauna Brit. India, Odon.*, 1 : 175-177

Material examined: 1♂, Mon district, Mon village, 8.vi.1991 Coll. Y.N.P. Sinha.

Distribution: India : Sikkim, West Bengal, Nagaland, Uttar Pradesh.

Elsewhere : Bangladesh, Nepal, Myanmar.

Remarks: The specimen does not very from description provided by Fraser (1933).

Genus ***Coeliccia*** Kirby

Key to species of genus *Coeliccia* Kirby

1. Dorsum of thorax with two pairs of pale blue spots.....*didyma didyma* (Selys)
- Dorsum of thorax with a pair of antehumeral stripes .....*vacca* Laidlaw

12. ***Coeliccia vacca*** Laidlaw

1932. *Coeliccia vacca* Laidla, *Rec. Indian Mus.* 34 : 11, 15, 16; Fraser, 1933, *Fauna Brit. India, Odon.*, 1 155-156.

Material examined : 1♀, Zunheboto, Hosenephu village 25.vii.1991. Y.N.P. Sinha.

Distribution : India : Meghalaya, Nagaland.

Remarks : The Specimen agree with description provided by Fraser (1933).

13. *Coeliccia didyma didyma* (Selys)

1863. *Trichocnemis didyma* Selys, 1863, *Bull. Acad. Belg.*, (2) **16** : 155.

1933. *Coeliccia didyma*, Fraser, 1933, *Fauna Brit. India, Odon.*, **1** : 159-160.

Distribution : Himachal Pradesh, Nagaland.

Genus *Copera* Kirby

14. *Copera superplatypes* Fraser

1927. *Copera superplatypes* Fraser, *Rec. Indian Mus.* **29** : 88-89; Fraser, 1933, *Fauna Brit. India, Odon.*, **1** : 206-208.

Material examined : 1♂, Dimapur, Karbianglong, 19.iii.1997, Coll. A.K. Hazra.

Distribution : India : West Bengal, Nagaland.

Elsewhere : Bangladesh.

Family COENAGRIONIDAE

Key to genera/species of family COENAGRIONIDAE

1. Arc at the level of distal antenodal nervurre 2
- Arc distal to the distal antenodal nervure.... ..... *Agriocnemis p. pygmaea* (Rambur)
2. Ab (anal bridge) arising from the hind border of Wing at the point where *ac* meets it..... 3
- Ab arising from the point which is more or less proximal to *ac* 5
3. A prominent ridge on frons, no postocular coloured spot..... ***Ceriagrion*** Selys
- No prominent ridge on frons, postocular coloured spots always present 4
4. Pterostigma in fore wing longer than that of the hind wing, abdomen thin and long .... *Aciagrion approximans* Selys
- Pterostigma in fore wings and hind wings are not different, abdomen not very long .... *Pseudagrion australasiae* Selys
5. Pterostigma differing in shape and size in fore and hind wings of male .... ***Ischnura*** Charpentier
- Pterostigma of the same colour and shape in fore and hind wings of male .... *Onychargia atrocyana* Selys

Genus ***Pseudagrion*** Selys

15. ***Pseudagrion australasiae*** Selys

1876. *Pseudagrion microcephalum race? australasiae* Selys, *Bull. Acad. Belg. Sc.* (2), **42** : 506 (Pars).

1916. *Pseudagrion australasiae* Laidlaw, *Rec. Indian Mus.*, **12** : 21-23.

1919. *Pseudagrion bengalense* Laidlaw, *Rec. Indian Mus.* 16 : 192-193; Fraser, 1933, *Fauna Brit. India, Odon.*, **1** : 282-284.

Material examined : 1♂, Zunheboto, Asukhuto, 17.vii.1991. Coll. Y.N.P. Sinha.

Distribution : India : Assam, West Bengal, Nagaland, Manipur, Meghalaya.

Elsewhere : South and South East Asia.

Remarks : The Specimen agrees with the description of its synonym *P. bengalense* provided by Fraser (1933).

Genus *Ceriagrion* Selys

Key to species of genus *Ceriagrion*

1. Abdomen bright citron yellow without markings ..... *coromandelianum* Fabricius
- Abdomen bright reddish orange without markings .....*praetermissum* Lieftinck

16. *Ceriagrion coromandelianum* (Fabricius)

1798. *Agrion coromandelianum* Fabricius, *Ent. Syst (Suppl.)*, : 287.

1933. *Ceriagrion coromandelianum*, Fraser, *Fauna Brit. India Odon.*, **1** : 315-316.

Material examined : 1♀, 10.ix.1994, 4♂, 6♀, 17.ix.1994 Dimapur, coll. B. Mitra; 1♂, Kohima,

22.ix.1994, coll. P.H. Roy; 1♀, Dimapur, 19.iii.1997, coll. A.K. Hazra.

Distribution : Throughout South Asia, China.

17. *Ceriagrion praetermissum* Lieftinck

1972. *Ceriagrion praetermissum* Lieftinck, *Tijdschr. Ent.*, **70** : 88, 91.

1933. *Ceriagrion praetermissum* Fraser, 1933, *Fauna Brit, India, Odon.*, **1** : 319-321.

Material examined : 2♀, Dimapur, 17.ix.1994, Coll. B. Mitra.

Remarks : Specimen agree with description of *C. praetermissum* Lieftinck by Fraser (1933), but due to lack of male specimen tentative identificatin is pressented here.

Genus *Aciagrion* Selys

18. *Aciagrion approximans* (Selys)

1891. *Aciagrion approximans* Selys, *Ann. Mus. Civ.* Genova, (2) **10**(90) : 512; Fraser, 1933. *Fauna Brit. India. Odon.*, **1** : 342-344.

Distribution : South and Southeast Asia.

Remarks : Bhasin (1953) recorded the species from Nagaland Hills, Luwanglen. Confusion regarding its real status is existing. Hence the revision of the genus is needed. Pending revision of the genus *A. approximans* is being retained instead of using *A. tillyardi* Laidlaw.

Genus *Ischnura* Charpentier

Key to species of genus *Ischnura*

1. Species with ground colour of both sexes bright orange ... *rufostigma rufostigma* Selys
- Species with ground colour of males and isochrome females blue or pale grass green. 2
2. Abdominal segments 3-6 citron yellow .... *aurora aurora* (Brauer)
- Abdominal segments 3-6 black on dorsum ..... *senegalensis* (Rambur)

19. *Ischnura senegalensis* (Rambur)

1842. *Agrion senegalensis* Rambur, *Ins. Nevrop.*, : 276.

1933. *Ischnura senegalensis*, Fraser, *Fauna Brit. India. Odon.*, **1** : 348-351.

Material examined : 1♀, Zunheboto, Surohoto, 10.vii.1991, coll. Y.N.P. Sinha.

Distribution : Throughout India and old world.

20. *Ischnura aurora aurora* (Brauer)

1865. *Agrion aurora* Brauer, *Verh. Zool.-bot. Ges. Wien*, **8** : 510.

1991. *Ischnura aurora aurora*, Tsuda, *A distributional list of World Odonata.*, 1991 : 34.

1933. *Ischnura delicata*, Fraser, *Fauna Brit. India, Odon.*, **1** : 360-362.

Material examined : 1♂, Dimapur, Rangapahar, 18.ix.1994 coll. B. Mitra.

Distribution : Throughout the old world.

21. *Ischnura rufostigma rufostigma* Selys

1876. *Ischnura rufostigma* Selys, *Bull. Acad. Belg.*, (2) **41** : 283; Fraser, 1933. *Fauna Brit. India, Odon.*, **1** 362-364.

Material examined : 1♂, Phek road, 24.iii.1997, coll. A.K. Hazra.

Distribution : India : Nagaland, Manipur, Meghalaya, Assam, West Bengal.

Elsewhere : China, Myanmar.

Genus *Agriocnemis* Selys

22. *Agriocnemis pygmaea pygmaea* (Rembur)

1842. *Agrion pygmaeum* Rambur, *Ins. Nevrop.*, : 275

1933. *Agriocnemis pygmaea*, Fraser, *Fauna Brit India Odon.*, **1** : 398-410.

Material examined : 1♀, Zunheboto, Atoiju, 8.vii.1991 coll. Y.N.P. Sinha, 1♀, Zunheboto, Surohoto, 10.vii.1991, 3♀, Mokokchung, Tuli; 1♂, 1♀, Dimapur, Rangapahar, 18.ix.1994 coll. B. Mitra; 1♂, Mokokchung, Tuli, 21.ix.1994, 1♂, Longcham, 22.ix.1994, coll. B. Mitra.

Distribution : Old world.

Genus *Onychargia* Selys

23. *Onychargia atrocyana* Selys

1865. *Onychargia atrocyana* Selys. *Bull. Acad. Belg.*, (2) **10** : 416; Fraser, 1933, *Fauna Brit. India, Odon.*, **1** : 417-418.

Material examined : 2♀, Dimapur, 11.ix.1994 & 17.ix.1994, coll. B. Mitra.

Distribution : South and Southeast Asia.

Suborder ANISOPTERA

Key to families/genus/species of suborder ANISOPTERA

1. Eyes widely separated ..... Gomphidae *Nepogomphus modestus* (Selys)
- Eyes not separated 2
2. Discoidal cell approximately of the same size, shape in both fore and hind wings ..... *Aeshnidae*
- Discoidal cell differing in shape and size, that of forewing distal to the arc and hind wing at the level of arc ..... *Libellulidae*

Family GOMPHIDAE

Genus ***Nepogomphus*** Fraser

24. ***Nepogomphus modestus*** (Selys)

1878. *Onychogomphus modestus* Selys, *Bull. Acad. Belg.*, (2) **41** : 423

1934. *Nepogomphus modestus*, Fraser, *Fauna Brit. India, Odon.*, **2** : 285-286.

Distribution : India : North West Bengal, Meghalaya, Nagaland.

Elsewhere : Myanmar (Burma), Sumatra.

Family AESHNIDAE

Key to genera/species of family AESHNIDAE

1. Anal triangle absent; tornus of wings rounded in both sexes .... *Anax nigrofasciatus nigrolineatua* Fraser
- Anal triangle present, tornus of wings of male only angulated .... *Gynacantha bayadera* Selys

Genus **Gynacatha** *Rambur*

25. ***Gynacantha bayadera*** Selys

1891. *Gynacantha bayadera* Selys, *Ann. Mus. Civ. Geneva* **30** : 47; Fraser, 1936, *Fauna Brit. India, Odon.*, **3** : 103-104

Material examined : 1♀, Dimapur, 19.iii.1994, coll. A. K. Hazra.

Distribution : Nagaland, Sikkim, West Bengal, Meghalaya.

Elsewhere : Myanmar (Burma), China, Taiwan, Cambodia, Australian region.

Genus ***Anax*** Leach

26. ***Anax nigrofasciatus nigrotinestus*** Fraser

1935. *Anax nigrolineatus* Fraser, *J. Darjiling Nat. Hist. Soc.*, **10** : 23-25.

1962. *Anax nigrofasciatus nigrolineatus*, Asahina, *Jap. J. Zool.*, **13** : 249-255.

Distribution : India : Darjeeling (West Bengal), Sikkim, Nagaland.

Elsewhere : Bhutan, Nepal, Thailand, China.

Family LIBELLULIDAE

Key to genera/species of family LIBELLULIDAE

1. Borders of anal loop end in the posterior margin of the hind wing, anal loop open .... *Tholymis tillarga* (Fabricius)
- Borders of anal loop close in the posterior border of the wing 2
2. Antenodals in fore wing incomplete 6
- Antenodals in forewing complete 3
3. Posterior lobe of prothorax small with scanty hairs ..... *Camacinia gigantea* (Brauer)
- Posterior lobe of prothorax large and fringed with long erected hairs 4
4. Upper surface of frons metallic glistening .. .. *Brachydiplax sobrina* (Rambur)
- Upper surface of frons nometallic 5
5. 6-7 antenodal nervures in fore wing; abdominal segments 1-6 dilated .... *Acisoma p. panorpoides* Rambur

– 12 or moe antenodals in the forewing. .... ***Orthetrum*** Newman

6. Posterior lobe of prothorax large and fringed with erected hairs 7

– Posterior lobe of prothorax small and with scanty hairs 8

7. Frons non metallic on upper surface; discoidal field in the forewing beginning with a row of cells..... *Diptacodes trivialis* (Rambur)

– Frons metallic on upper surface; discoidal field in the forewing beginning at least with a row 3 cells ..... *Palpopleura sexmaculata sexmaculata* (Fabr.)

8. Discoidal field with borders converging at wing margin 9

– Discoidal field with borders diverging at wing borders 10

9. Discoidal cell in forewing very narrow, its costal side only about one-fourth to one third of the length of the basal, a conspicuous supplementary nerve present between R_2 and R_3..... *Pantala flavescens* (Fabr.)

– Discoidal cell in forewing broader, its costal side about one half the length of the basal; no supplementary nervure IR_3 present between R_2 and R_3..... *Trithemis pallidinervis* Kirby

10. One cubital nervure in all wings.....11

– 2 or more cubital nervure in all wings..... .....***Neurothemis*** Brauer

11. Red or ochreous species with basal or medial yellow markings to wings 12

– Grey or black species, wings hyaline or with brown (light) in the margins.....13

12. Wings with small basal yellow marking, $9\frac{1}{2}$ to $10\frac{1}{2}$ antenodal nervure in fore wing..... ..... *Crocothemis servilia servilia* (Drury)

– Wings with broad red or yellow fascia at middle in the male, $6\frac{1}{2}$ to $7\frac{1}{2}$ antenodals in forewing..... ..... *Brachythemis contaminata* (Fabricius)

13. Arc situated between the second and third antenodal nervures; only one row of cells between IR_3 and R_{spl} .... *Lathrecista asiatica asiatica* (Fabr.)

– Arc situated between the first and second, antenodal nervure; 2 rows of cells between IR_3 and R_{spl} .... *Potamarcha congener* (Rambur)

Genus ***Lathrecista*** Kirby

27. ***Lathrecista asiatica asiatica*** (Fabricius)

1798. *Libellula asiatica* Fabricius, *Ent. Syst., (Suppl.)* 203.

1936. *Lathrecista asiatica asiatica*, Fraser. *Fauna Brit India. Odon.*, 3 : 281-284.

Material examined : 1♂, 1♀, Pulebadze W.L. Sanctuary, Kohima coll. B. Mitra, 14.ix.1994.

Distribution : Throughout India.

Elsewhere : South and Southeast Asia, Australian region.

Genus ***Potamarcha*** Karsch

28. ***Potamarcha congener*** (Rambur)

1842. *Libellule congener* Rambur, *Ins. Nevrop.*, : 70.

1991. *Potamarcha congener* Tsuda, *A distributional list of World Odonata*, 1991 P. 175. *Potamarcha obscura*, Fraster, 1936 *Fauna of Brit. India, Odon.*, 3 : 289-291.

Material examined : 3♂ 6♀, Zunheboto, Hosenephu 25.vii.1991. Y.N.P. Sinha.

Distribution : Throughout India.

Elsewhere : South and Southeast Asia, Australia.

Genus ***Orthetrum*** Newman

Key to species of genus *Orthetrum* Newman

1. Abdomen extremely swollen at base and then abruptly slimmed and compressed, laterally to the end ..... *sabina sabina* (Drury)

– Abdomen not abruptly swollen at base and not abruptly slimmed and not compressed laterally 2

2. Males violaceous red, due to a thin film of

pruinescence and frons blue black anteriorly .....*pruinosum neglectum* (Rambur)

– Males coloured bright red, frons bright red or yellow in front 3

3. Base of hindwing with a large black triangular marking..... *triangulare triangulare* (Selys)

– Base of hind wing without a black triangular marking.....4

4. Cu_2 in hindwing well distal to the posterior angle of the discoidal cell..... ..... *luzonicum* (Brauer)

– Cu_2 in hindwing arising from the distal side of the discoidal cell 5

5. Abdomen short and broad, almost white with pruinescence, thorax with broad greenish or bluish stripes more or less covered by pruinescence ....*japonicum internum* MacLachian

– Abdomen long and rather narrow, often blue with pruinescens, thorax with very narrow creamy or whitish stripes 6

6. Face and frons greyish green or bluish; membrane dark brown bordered with white ..... *taeniolatum* (Sch.)

– Face and frons blackish membrane black.... .....*glaucum* (Brauer)

29. *Orthetrum sebina sabina* (Drury)

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

1936. *Orthetrum sabina*, Fraser, *Fauna Brit. India, Odon.*, **3** : 300-302.

Material examined : 2♀, Zunheboto, Surohoto, 10.vii.1991, 1♂, 2♀, Zunheboto, Aghuneto, 19.vii.1991; 1♂, Mon, 8.vi.1990; 1♀, Zunheboto 20.vii.1991, 6♂, 6♀, Zunheboto, Hosenephu, 25.vii.1991, 1♀, Zunheboto, Satoi, 27.vii.1991, coll. Y.N.P. Sinha; 1♂, 1♀, Dimapur, 10.ix.1991; 1♀, 11.ix.1994, 2♂, Dimapur 19.ix.1994; 1♂, Mokokchung, Kevija, 17.x.1994. 1♂, 2♀, Mokokchung, Tuli, 2.ix.1994, coll. B. Mitra, 1♂, Chumukodina, 2.x.1994 coll. P. H. Roy.

Distribution : Throughout the old world.

Remarks : Specimen do not vary from Fraser's (1936) description and specimens present in the collection of Zoological Survey of India from Rajasthan, Sikkim, Calcutta, Uttar Pradesh.

30. *Orthetrum japonicum internum* MacLachlan

1894. *Orthetrum japonicum internum* MacLachlan, *Ann. Mag, Nat, Hist.*, (6) **13** : 431; Fraser, 1936, *Fauna Brit. India, Odon.*, **3** : 304-305.

Distribution : India : Eastern India, northern India, Southern India.

Elsewhere : Southeast Asia, Tibet, China.

31. *Orthetrum triangulare triangulare* (Selys)

1878. *Libellule triangularis* Selys, *Mith, Mus, Dresden* P. 314; *Orthetrum triangulare triangulare*, Fraser, 1936, *Fauna Brit. India, Odon.*, **3** : 305-307.

Material examined : 4♂, Zunheboto, Atoiju, 8.vi.1991 2♂, Zunheboto, Shoike, 16 & 17.vii.1991, coll. Y.N.P. Sinha.

Distribution : South and Southeast Asia and China.

32. *Orthetrum pruinosum neglectum* (Rambur)

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

1936. *Orthetrum pruinosum neglectum*, Fraser, *Fauna Brit. India, Odon.*, **3** : 311-313.

Material examined : 1♂, Mon dist, Mon viii., 8.vi.1990 1♂, Zunheboto, Neltoqua, 9.vii.1991, 1♀, Zunheboto, 20.vii.1991, coll. Y. N. P. Sinha; 1♂, Dimapur, 10.ix.1994; 1♂, Dimapur, 10.ix.1994; 1♂, Dimapur Nagayar, 17.ix.1994, 2♂, Dimapur, Rangapahar, 19.ix.1994; 21.ix.1994; 1♀, Mokokchung, Longcham, 22.ix.1994, Coll, B. Mitra.

Distribution : South and Southeast Asia.

33. *Orthetrum glaucum* (Brauer)

1865. *Libellula glauca* Brauer, *Verh. zool. bot. Ges Wien* **15** : 1012.

1936. *Orthetrum glaucum*, Fraser, *Fauna Brit. India Odon.*, **3** : 307-309.

Material examined : 1♂, Zunheboto, Atoijio, 2.vii.1991 1♂, Zunheboto, Akhutoto, 11.vii.1991;

1♂, Zunheboto, Lungti, 14.vii.1991; 1♂, Zunheboto, Shoike, 16.vii.1991 1♀, Zunheboto, Satoi, 27.vii.1991 coll. Y.N.P. Sinha; 3♂, Mokokchung, 4.ix.1994; 20.ix.1994; coll. B. Mitra.

Distribution : South and Southeast Asia.

34. *Orthetrum taeniolatum* (Schneider)

1845. *Libellula taeniolata* Schneider, *Stett. Ent. Zeit*, **6** : 111.

1936. *Orthetrum taeniolatum*, Fraser, *Fauna Brit. India, Odon.*, **3** : 296-298.

Material examined : 1♂, Kohima, 21.iii.1997, coll. 1♀, Phek, Kahezikenoma, 24.iii.1997, coll. A.K. Hazra.

Distribution : Oriental and Palaearctic region.

Remarks : The Specimens agree with Fraser's (1936) description.

35. *Orthetrum luzonicum* (Brauer)

1868. *Libellula luzonica* Brauer, *Verh. Zool-bot. Gas. Wien.* **18** : 169.

1936. *Orthetrum chrysostigma* luzonicum, Fraser, *Fauna Brit. India, Odon.*, **3** : 298-300.

Distribution : Throughout South and Southeast Asia.

Genus *Palpopleura* Rambur

36. *Palpopleura sexmaculata sexmaculata* (Fabricius)

1787. *Libellula sexmaculata* Fabricius, *Mant. Ins.* **1** : 338.

1936. *Palpopluera sexmaculata sexmaculata*, Fraser, *Fauna Brit. India, Odon.*, **3** : 318-200. Tsuda, 1991, *A distributional list of World Odonata*, 1991 P. 173, Prasad and Varshney, 1995. *A checklist of the Odonata of India* P. 412.

Material examined : 1♀, Mon dist, Mon viii., 8.vi.1990 coll. Y.N.P. Sinha; 1♀, Dimapur, 1.x.1994, coll. P.H. Roy, 1♂, 2♀, Dimapur, 18.iii.1997, coll. A.K. Hazra.

Distribution : South and Southeast Asia.

Genus *Brachydiplax* Brauer

37. *Brachydiplax sobrina* (Rambur)

1842. *Libellula sobrina* Rambur, *Ins. Nevrop.*, : 114.

1936. *Brachydiplax sobrina*, Fraser, *Fauna Brit. India, Odon.*, **3** : 325-327.

Material examined : 1♂, Dimapur, Rangapahar, 19.ix.1994, coll. B. Mitra.

Distribution : South and Southeast Asia.

Genus *Acisoma* Rambur

38. *Acisoma panorpoides panorpoides* Rambur

1842. *Acisoma panorpoides* Rambur, *Ins. Nevrop.*, 28

1936. *Acisoma panorpoides panorpoides*, Fraser, *Fauna Brit. India, Odon.* **3** : 330-331.

Material examined : 1♀, Dimapur, 11.ix.1994, coll. B. Mitra.

Distribution : South and Southeast Asia.

Genus *Crocothemis* Brauer

39. *Crocothemis servilia servilia* (Drury)

1770. *Libellula servilia* Drury, *Ill. Exot. Ins.*, **1** : 112.

1936. *Crocothemis servilia servilia* Fraser, *Fauna Brit. India, Odon.*, **3** : 345-347.

Material examined : 3♂, 1♀, Zunheboto, Surohoto, 10.vii.1991 1♂, Zhunheboto, Shoike, 16.vii.1991; 4♂, 2♀, Zunheboto, Asukhuto, 17.vii.1991; 1♂, Zunheboto, 20.vii.1991; 1♂, 3♀, Zunheboto, Hosenephu, 25.vii.1991; 2♂, 4♀, Zunheboto, Satoi, 27.vii.1991; coll. Y.N.P. Sinha; 3♂, 3♀, Dimapur, 10.ix.1994; 2♀, Kohima, 14 : 15.ix.1994; 2♀, Kohima, 22.ix.1994; 1♂, 1♀, Mokokchung 23.ix.1994, coll. B. Mitra.

Distribution : Old World.

Genus *Neurothemis* Brauer

Key to species of genus *Neurothemis*

1. Bases of wings of male broadly black, in female it is bright amber yellow as far as two or three cells distal to node .... *tullia tullia* (Drury)

– Wings broadly dark reddish brown with very close net work of veins .....*fulvia* (Drury)

– Wings tinted with pale golden yellow at base, reticulation fairly open .... *intermedia intermedia* (Rambur)

40. *Neurothemis fulvia* (Drury)

1770. *Libellula fulvia* Drury, *Ill. Exot. Ins.*, **2** : 84.

1936. *Neurothemis fulvis*, Fraser, *Fauna Brit. India, Odon.*, **3** : 353-354.

Material examined : 1♂, Zunheboto, Hosenephu 25.vii.1991. coll. Y.N.P. Sinha. 1♂, 2♀, Dimapur, 10.ix.1994, 1♀, Mokokchung, Zlima, 12.ix.1994, 1♂, 1♀, Mokokchung, 18-19.ix.1994, coll. B. Mitra

Distribution : South and Southeast Asia.

Remarks : The Specimens agree with description provided by Fraser (1936) in his Fauna of British India, Odonata.

41. *Neurothemis tullia tullia* (Drury)

1770. *Libellula tullia* Drury, *Ill. Exot. Ins.*, **2** : 85.

1936. *Neurothemis tullia tullia*, Fraser, *Fauna Brit. India, Odon.*, **3** : 360-362.

Material examined : 2♂, 1♀, Dimapur; 2♀, Dimapur Kevije and Nagajar, 17.ix.1994; 1♂, Mokokchung, 23.ix.1994, coll. B. Mitra; 1♂, Dimapur, Rangapahar, 18.iii.1994, coll. A.K. Hazra.

Distribution : South and Southeast Asia, China.

42. *Neurothemis intermedia intermedia* (Rambur)

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

1936. *Neurothemis intermedia intermedia*, Fraser, *Fauna Brit. India, Odon.*, **3** : 357-358.

Material examined : 2♂, Wokha, Meerapani, 25.i.1990. coll. J.P. Seti.

Distribution : Throughout India, Myanmar, Sri Lanka, Bangladesh, China, Thailand.

Remarks : Specimens agree with specimens from Sikkim.

Genus *Diplacodes* Kirby

43. *Diplacodes trivialis* (Rambur)

1842. *Libellula trivialis* Rambur, *Ins. Nevrop.*, : 115.

1936. *Diplacodes trivialis* Fraser, *Fauna Brit. India, Odon.*, **3** : 336-338.

Material examined : 1♂, Zunheboto, Surohoto, 10.vii.1991 1♂, Zhunheboto, viii. Zunheboto, 20.vii.1991; col. Y.N.P. Sinha; 2♀, Dimapur, Nagajar, 17.ix.1994; 2♀, Dimapur Rangapahar, 19.ix.1994; 1♂, M. Mokokchung, Tuli, 20.ix.1994; coll. B. Mitra.

Distribution : South and Southeast Asia.

Genus *Brachythemis* Brauer

44. *Brachythemis contaminata* (Fabricius)

1793. *Libellula contaminata* Fabricius, *Ent. Syst.*, **2** : 382.

1936. *Brachythemis contaminata*, Fraser, *Fauna Brit. India, Odon.*, **3** : 365-366, Prasad and Varshney 1995, *A Check list of Odonat of India.*, : 410.

Material examined : 1♂, 1♀, Dimapur, 11.ix.1994 Coll. B. Mitra.

Distribution : South and Southeast Asia.

Genus *Trithemis* Brauer

45. *Trithemis pallidinervia* (Kirby)

1889. *Sympetrum pallidinervis* Kirby, *Trans. Zool. Soc. Lond.*, **12** : 237.

1936. *Trithemis pallidinervis*, Fraser, *Fauna Brit. India, Odon.*, **3** : 389-390.

Material examined : 2♀, Zunheboto, Atoiju, 8.vii.1991 1♀, Zhunheboto, Surohoto, 10.vii.1991; 1♀, Zunheboto, Shoike, 16.vii.1991; 1♂, Zunheboto, Asukhuto, 17.vii.1991; 1♂, Zunheboto, 20.vii.1991; 2♂, Zunheboto, Satoi, 27.vii.1991, coll. Y.N.P. Sinha.

Distribution : South and Southeast Asia.

Genus *Tholymis* Hagen

46. *Tholymis tillarge* (Fabricius)

1798. *Libellula tillarga* Fabricius, *Ent. Syst., (Suppl.)* : 285.

1936. *Tholymis tillarge*, Fraser, *Fauna Brit. India. Odon.*, **3** : 411-413.

Material examined : 1♀, Dimapur, 10.ix.1994, coll. B. Mitra.

Distribution : Old and new World.

Genus ***Pantala*** Hagen

47. ***Pantala flavescens*** (Fabricius)

1798. *Libellula flavescens* Fabricius, *Ent. Syst., (Suppl.)*: 285.

1936. *Pantala flavescens*, Fraser, *Fauna Brit. India, Odon.*, **3**: 415-417.

Material examined: 1♀, Mondist, Mon viii. 8.vi.1990 1♀, Zhunheboto, Satoi, 27.vii.1991; coll. Y.N.P. Sinha.

Distribution : Circumtropical of both world.

Genus ***Camacinia*** Kirby

48. ***Camacinia gigantea*** (Brauer)

1867. *Neurothemis gigantea* Brauer, *Verh. Zool.-bot Ges. Wien*, **17** : 8.

1936. *Camacinia gigantea*, Fraser, *Fauna Brit. India Odon.*, **3**: 417-419.

Material examined : 1♂, Dimapur, 18.iii.1997, coll. A. K. Hazra.

Distribution : Assam, West Bengal, Nagaland, Nicobar.

Elsewhere : Indo-Chinese and Malayasian region.

Remarks : The specimen agrees with the specimen from the Nicobar and with the description present in the Fauna of British India.

SUMMARY

Fortyeight species and subspecies distributed over thirty two genera, nine families and two suborders have been reported.

ACKNOWLEDGEMENT

Authors are thankful to the Director, Drs. G.K. Srivastava, Additional Director (Retd.), S.K. Mitra, Joint Director (Retd.) of Zoological Survey of India for facilities and encouragement in the work.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 89-93, 2006

INSECTA : ORTHOPTERA : TETTIGONIIDAE

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INTRODUCTION

The State of Nagaland derives its name from the dominant tribal group in the region the 'Nagas' It is surrounded by Assam and Arunachal Pradesh in the North and North-East, Manipur in the South and Myanmar in East. It is spread over in nearly 16,580 sq kms with a population density about 47 sq kms Nagaland covers both plains and mountain hills with seven districts–Kohima, Mon, Mokokchung, Phek, Tuensang, Wokha and Zunheboto.

Long-horned grasshoppers (Orthoptera : Ensifera) are widely distributed throughout the world, but are predominantly tropical, although many of them occur in temperate countries. Most of the species are arboreal, but there are also many that live in herbage, reeds, or grasslands and also on the ground. These insects, generally, are phytophagous, but few are largely or wholly carnivorous and may be feroceous predators of quite large insects.

The present paper deals with 11 species which are spread over under 9 genera and 4 subfamilies. All the species are new records to Nagaland. *Conocephalus laetus* (Redtenbacher) is a new record not only to Nagaland but also to India. This study is based only on the available material present in Zoological Survey of India. Intensive Survey may reveal many more species from the area. The collection is deposited in the Zoological Survey of India, Calcutta.

The classification is followed after Rentz (1979).

SYSTEMATIC ACCOUNT

Order ORTHOPTERA

Suborder ENSIFERA

Family TETTIGONIIDAE

Key to Subfamilies

1. Head globose, not usually slanted or frontally flattened; dorsal surface of fore tibiae flat or slightly concave; proximal tarsomere cylindrical, not laterally sulcate; ovipositor usually short and upturned, flattened laterally, margins usually crenulate; prosternum unarmed ..... PHANEROPTERINAE

– Without above combination of characters..2

2. Tibial auditory structure typically open, if closed on one side or both sides then slit directed laterally, the opening broad and its margins undulate; prosternum armed with a pair of prominent spike-like processes..... ..... MECOPODINAE

– Tibial auditory structure with foramina (either open or closed) directed distinctly dorsally in relation to position on tibiae, if open, the opening of nearly uniform width.....3

3. Fore tibia usually bearing 5-7 long, movable, outwardly bowed opposing spines; fastigium of vertex narrow, strongly laterally compressed, its greatest width less than that of 1st entennal segment in most species, usually sulcate (fore and middle femora of many species bear heavy teeth)..... ..... LISTROSCELIDINAE

– Fore tibia of most species with spines not usually lengthened and not as long as or longer than the 1st 2 tarsomeres combined; fastigium of vertex variable in width and not sulcated..... CONOCEPHALINAE

Subfamily PHANEROPTERINAE

Genus ***Elimaea*** Stål, 1874

Subgenus ***Orthelimaea*** Karny, 1926

1. ***Elimaea (Orthelimaea) securigera*** Brunner

1878. *Elimaea securigera* Brunner, *Monogr. Phaneropt.*, : 93.

1990. *Elimaea (Orthelimaea) securigera* : Ingrisch, *Spixiana*, **13** (2) : 157.

Material examined : 1♀Mokokchung, 27.xi.1994, coll. R. S. Barman.

Diagnostic characters : Head short and rounded; antennae weakly margined, very long and without white rings; pronotum with a fine yellowish carinula; anterior femur not compressed, straight; front coxae with spines; tegmina broad, radial sector of tegmina usually with 3-4 branches; subgenital plate notched in the middle; ovipositor sickle-shaped, flat, curved upwards, apex crenulated.

Measurements (in mm.) : Body length 29.0; pronotum 4.0; tegmen 36.0; wing extended beyond tegmen 6.0; ovipositor 6.0.

Distribution : India : Nagaland, Andaman & Nicobar Islands, Assam, Himachal Pradesh, Karnataka, Manipur, Meghalaya, Sikkim, Tripura and West Bengal. The present species also recorded from Andhra Pradesh, Kerala, Madhya Pradesh, Orissa and Rajasthan.

Elsewhere : Australia, Indonesia, Nepal and Sri Lanka.

2. ***Elimaea (Elimaea)* subcarinata** (Stål)

1861. *Phaneroptera subcarinata* Stål, *Kong. Sven. Freq. Eug. Resa, Omkring, Jorden*, : 319.

1998. *Elimaea (Elimaea) subcarinata* : Ingrisch, *Tijdschr. Entom.*, **141** : 70, 83.

Material examined : 1♂, Zungi village and around, Zunheboto Dist., 14.vii.1991, coll. Y. P. Sinha.

Diagnostic characters : Fastigium of vertex narrow, apex subacute, dorsal surface furrowed; disc of pronotum flattened, transverse sulcus Y-shaped; tegminal width in middle distinctly longer than the length of pronotum; tegmina with radial sector branching distinctly before the middle of tegmina; anterior tibial tympanum covered by conchate fold both ext. and internally; subgenital plate split into two obtuse lobes at apical third; cerci strongly curved, apical area compressed, apex subacute on dorsal side.

Distribution : Hong Kong to North-East India. In India it is recorded from Nagaland, Mizoram (Aizawl) and West Bengal (Jalpaiguri).

Genus ***Ducetia*** Stål, 1874

3. ***Ducetia japonica*** (Thunberg)

1815. *Locusta japonica* Thunberg, *Mem. Acad. Sci. St.-Peterab.* **5** : 282.

1961. *Ducetia japonica* : Ragge, *Bull. Br. Mus. nat. Hist.* (Ent.). **10** (5) : 182.

Material examined : 1♀, Dimapur, Rangapahar, 24.xi.1994, coll. R. S. Barman.

Diagnostic characters : Radius of tegmina with 4-6 closely parallel branches; hind wings well developed; cerci with internoventral ridge at apex; subgenital plate deeply bifurcate with continuous lobes.

Distribution : This species is spread over the whole of Asia, south of latitude 40°N and east of longitude 70° E. It is found throughout Indonesia, extending eastwards to the Solomon Islands and southwards to northern Australia (Ragge, 1961). In India, it is reported from Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu and West Bengal.

Genus ***mirollia*** Stål, 1873

4. ***Mirollia*** sp.

1873. *Mirollia* Stål, *Ofv. Kong. Veten.-Akad. Forh.*, **30** : 42.

Material examined : 1♂, Kohima, 22.ix.1994, coll. P. H. Roy.

Diagnostic characters : Fastigium of vertex with inverted Y-shaped impression; pronotum with dark-brown coloured band dorsally; 2 distinct transverse sulci, posterior margin obtuse; anterior tibiae with linear tympanum; pronotum and abdomen without white spots; male cerci long, apical third curved medially, apex with a sharp tooth, subgenital plate long fissing in middle.

Distribution : The genus is recorded from Borneo, India, Java, South China, Malaysia, Philippines, Sumatra, Taiwan. Thailand and Yunnan.

Genus ***Phaneroptera*** Serville, 1831

5. ***Phaneroptera myllocerca*** Ragge

1956. *Phaneroptera myllocerca* Ragge, *Proc. zool. Soc. Lond.*, **127** : 254.

Material examined : 1♂, Phek, near Nagaland Armed Police Campus, 1200m., 24.x.1998, coll. T.K. Pal.

Diagnostic characters : Fastigium of vertex long, sulcated above; pronotum without lateral carinae; fore tibae with 3-5 external spurs, including 1-2 apical ones; middle tibiae with about 7-8 external spurs; hind tibiae with 43 external dorsal spines and 3 apical spurs on each side; tegmina reddish-brown with distinct bifurcate branched RS which is free from MA; cerci terminating upwards directed spine with recurved black apical spine; subgenital plate elongate with almost contiguous lobes.

Distribution : India : Nagaland, North India, Arunachal Pradesh, Jammu & Kashmir, Mizoram, Sikkim, Tamil Nadu and Uttar Pradesh.

Elsewhere : China; Myanmar and Yunnan.

Genus ***Isopsera*** Brunner, 1878

6. ***Isopsera spinosa*** Ingrisch

1990. *Isopsera spinosa* Ingriach, *Spixiana*, **13** (2) : 159.

Material examined : 1♀, Puliebedge, 12.x.1998, coll. T.K. Pal.

Diagnostic characters : Uniformly light-brown in colour; fastigium of vertex slightly widening anteriorly; disc of pronotum almost flat, slightly widening posteriorly; tegmina surpassing the hind knees; radial and medial fields with regular parallel transverse veinlets; radius sector branching before the middle of tegmen; anterior coxae spined; anterior tibiae dorsally furrowed; tympana open on both sides; subgenital plate triangular, apex obtuse; ovipositor sickle-shaped, dorsal and ventral margin near the apex with fine, rounded teeth.

Measurements (in mm.) : Body length 26.0; pronotum length 8.0; tegmen length 46.0; tegmen width 11.0; posterior femur length 28.0; ovipositor 7.0.

Distribution : India : Nagaland, Arunachal Pradesh, Manipur and West Bengal.

Elsewhere : China and Nepal.

Subfamily MECOPOOINAE

Genus ***Macopoda*** Serville, 1831

7. ***Mecopoda elongata*** (Linnaeus)

1758. *Gryllus Tettigonia elongatus* Linnaeus, *Sys. Nat.* (ed 10) **1** : 429.

1906. *Mecopoda elongata* : Kirby, *Syn. Cat. Orthopt.* **2** 364.

Material examined : 1♂, Mokokchung, 27.ix.1994, coll. P. H. Roy; 1♀, Mokokchung, Sungkomen, 18.x.1998, coll. T. K. Pal.

Diagnostic characters : Body very large; colour brown to dry leave colour; head more or less rounded; antennae strongly margined; prosternum with a pair of long spines; pronotum wide at posterior margin; lateral lobes dark-brown at least on upper margin; wings fully developed; hind famora and tibiae very large; male subgenital plate bifurcated, apex pointed and tegmina with 4-6 white spots in the middle.

Distribution : India : Nagaland, Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Maharashtra, Meghalaya, Orissa, Sikkim, Tamil

Nadu, Tripura, Uttar Pradesh, and West Bengal.

Elsewhere : Australia; Aru-Islands; Buru-Islands, Celebes; China; Japan; Malacca; Malaya Island; Moluccas; New Guinea; Philippines; Sunda Island; Taiwan and Tonkin.

Subfamily LISTROSCELTDINAE

Genus ***Hexacentrus*** Serville, 1831

8. ***Hexacentrus unicolor*** Serville

1831. *Hexacentrus unicolor* Serville, *Annls. Sci. Nat.*, **22** : 146.

1922. *Hexacentrus unicolor* : Hebard, *Proc. Acad. nat. Sci. Philad.*, **74** : 269.

Material examined: 1♀, Mokokchung, Tuli, 20.ix.1994, coll. B. Mitra and party.

Diagnostic characters : General colour yellowish-brown; anterior femora with 5 spines on each margin; pronotum longer than broad; a special dark-brown coloured band covers the pronotum dorsally; ovipositor straight, broad at base and pointed at apex.

Distribution : Distributed in Oriental Region. In India, it reported from Nagaland, Manipur and Mizoram (in press), (2004).

Subfamily CONOCEPHALINAE

Genus ***Conocephalus*** Thunberg, 1815

9. ***Conocephalus maculatus*** (Le Guillou)

1841. *Xiphidion maculatum* (Le Guillou), *Rev. Zool.*, : 294.

1980. *Conocephalus maculatus* : Pitkin, *Bull. Br. Mus. nat. Hist.* (Ent.), **41** (5) : 344.

Material examined : 1♂, 1♀, Medziphema and around, Kohima, 12.iii.1993, coll. Y. P. Sinha; 1♀, Molvon and around, Kohima, 15.iii.1993, coll. Y. P. Sinha; 1♀, Jharna Pani Farm and around, Kohima District, 18.iii.1993, coll. Y. P. Sinha; 1♂, Mokokchung, 22.ix.1994, coll. M. Sil and B. Mitra; 1♂, 1♀, Dimapur, Piphima, 25.xi.1994, coll. R. S. Barman; 1♀, Chizami, 30.xi.1994, coll. R. S. Barman; 1♂, Wokha, Chukitong, 1310m., 15.x.1998, coll. T. K. Pal.

Diagnostic characters : Prosternum bispinose; hind femora unarmed ventrally; tegmina pigmented with large dark colour spots; male cerci with one internal spine; ovipositor short and relatively straight.

Distribution : India : Nagaland, (Himachal Pradesh, Mizoram, Sikkim and Tripura). It is also found in Arunachal Pradesh, Jammu & Kashmir, Kerala, Tamil Nadu and West Bengal.

Elsewhere : The species is also recorded from Australia, Ethiopian region, Hong Kong, Indonesia, Java, Malaysia, Melagasian region, Nepal, Philippines etc.

10. ***Conocephalus laetus*** (Redtenbacher)

1891. *Xiphidium laetum* Redtenbacher, *Verh. zool.-bot. Ges. Wien*, **41** : 514.

1980. *Conocephalus laetus* : Pitkin, *Bull. Br. Mus. nat. Hist.* (Ent.), **41** (5) : 345.

Material examined: 1♂, 5 kms. West of Longcham Forest Rest House, 210m, 23.ix.1994, coll. B. Mitra.

Diagnostic characters : Fastigium of vertex moderately narrow; prosternum bispinose; tegmina unicolorous; hind femora unarmed ventrally; stridulatory area of left male tegmen large and male cerci with internal spine.

Distribution : It is distributed west of the Pacific. It is recorded here for the first time from Nagaland in India.

Genus ***Euconocephalus*** Karny, 1907

11. ***Euconocephalus incertus*** (Walker)

1869. *Conocephalus incertus* Walker, *Cat. Derm. Salt. Brit. Mus.*, **2** : 320.

1912. *Euconocephalus incertus* : Karny, *Gen. Ins.*, **2** (139) : 35.

Material examined: 1♀, (nymph), Kohima, Baghty, 22.xi.1994, coll. R. S. Barman; 1♂, Mokokchung, 27.xi.1994, coll. R. S. Barman.

Diagnostic characters: Generally green in

colour; vertex conically produced; pronotum broadly rounded at posterior margin; radius sector 2 arises much before middle of tegmina; male subgenital plate bears two styles at apex, slightly bifurcated at apex; ovipositor subequal to the length of body.

Distribution : India : Nagaland, Andaman & Nicobar Islands, Madhya Pradesh, Meghalaya, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Australia; Borneo; China; Java; Myanmar; Penang; Sri Lanka; Sumatra etc.

SUMMARY

Eleven species of tettigoniids are recorded here. All the species are new records to Nagaland State. *Conocephalus laetus* is reported for the first time from India.

ACKNOWLEDGEMENT

The author is indebted to the Director, Zoological Survey of India, Calcutta, for laboratory facilities. He is also thankful to Dr. G.K. Srivastava, Scientist-SG (Retd.) and Dr. S.K. Mitra, Scientist-SF (Retd.) for various type of help and encouragement.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 95-110, 2006

INSECTA : ORTHOPTERA : ACRIDIDAE AND PYRGOMORPHIDAE

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INTRODUCTION

The State of Nagaland lies in between 25°6′ and 27°6′ north latitudes and between 93°15′ east longitudes in the north-east part of India. It is surrounded by Assam and Arunachal Pradesh in the North and North-East, Manipur in the South and Myanmar in East. It covers both plains and mountain hills. Most of the area is uneven configuration with highest mountain to the foot hill plain all along western boundary.

No exclusive study on the Acridoidea fauna of Nagaland has been made so far. This study is based only on the collections available in National Collections of Zoological Survey of India, Calcutta, as well as collections from the Eastern Regional Station, Zoological Survey of India, Shillong. The present study deals with 34 species, under 24 genera and two families. All the species are now records for the State. It is the comprehensive report of Acridoidea of Nagaland. Intensive Survey may reveal many more species from the State.

SYSTEMATIC ACCOUNT

Order ORTHOPTERA

Superfamily ACRIDOIDEA

Key to families

1. Foveelae of the vertex contigueus, superior and forming the extremity of the fastigium; stridulatory mechanism absent..... ..... PYRGOMORPHIDAE

– Foveelae lateral or inferior, never forming the tip of the fastigium; stridulatory mechanism present. ..... ACRIDIDAE

Family PYRGOMORPHIDAE

Key to genera

1. Tegmina long and narrow; body moderately slender ..... ***Atractemerpha*** Saussure

– Tegmina ratner short and broader; body robust. ..... ***Tagasta*** Bolivar

Genus *Atractemorpha* Saussure, 1862

Key to species

1. Eyes comparatively short, reundish-eval or eveid; lateral prenetal lobes, except in rebust forms, with a distinct membraneus area in metazena; aedeagal valves comparatively short, not very strongly curved.....2

– Eyes comparatively long, elongate-oval; lateral pronotal lobes usually without trace of a membranous area in metazena; aedeagal valves longer and strongly curved..... ..... *burri* Bolivar

2. Build rather robust, and somewhat large for the genus; lateral prenotal lobas without a menbranous area in metazena; hind femora with external face strongly keeled and convex. ..... *himalayica* Bolivar

– Build comparatively slender; lateral pronotal lobes with a membraneus area in metazona; hind femora net notably convex or strongly keeled..... *crenulata* (Fabr.)

1. *Atractemorpha crenulata* (Fabr.)

1793. *Truxalis crenulatus* Fabricius, *Ent. Sys.*, **2** : 28.

1969. *Atractomorpha crenulata* : Kevan & Chen, *Zoel. J. Linn. Soc.*, **48** : 153, 187.

Material examined : 1♂, Nagajeim colony, Dimapur, 185 m, 12.ix.1994, coll. B. Mitra; 1♂, Diamapur, 195 m, 17.ix.1994, coll. B. Mitra.

Diagnostic characters : Body slender and elongate; lateral pronotal lobes with a membraneus area in metazone; eyes short and convex; fastigium of vertex comparatively short; hind wings normally tyrian pink; aedeagal valves small and short.

Distribution : India : Nagaland, Andaman & Nicobar Islands, Andhra Pradesh, Assam, Bihar, Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Lakshadweep Islands, Madhya Pradesh, Meghalaya, Orissa, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh; Malaya; Myanmar; Pakistan; Sri Lanka; Sumatra; Thailand and Vietnam.

2. *Atractemorpha burri* Bolivar

1905. *Atractemorpha burri* Bolivar, *Bel. Soc. Espan Hist. nat.*, **15** : 197, 203.

1969. *Atractomorpha burri* : Kevan & Chen, *Zoel. J. Linn. Soc.*, **48** : 158, 160, 193.

Material examined : 1♂, Medzephema and around, Kohima, 12.iii.1993, coll. Y. P. Sinha; 1♂, Aboi and around, 33 kms. SE of Mon, Dist. Mon, 6.vi.1990, coll. Y. P. Sinha; 1♂, 1♀, Sathri, 10 kms. NW of Phek, 1075m, 19.i.1990 coll. J. P. Sati; 1♂, Science college campus, Kohima, 1500m, 15.ix.1994, coll. B. Mitra.

Diagnostic characters : Body-form short and moderately stout; pestecular tubercle strongly raised and regularly arranged; lateral pronetal lobes without a membranous area; posterior margin of pronotal disc distinctly angular; tegmina net pointed at apex; hind wings hyaline or rosy at base; outer face of femora convex and strongly keeled; apex of male genital plate blunt in profile; aedeagal valves, in lateral view, long and slender.

Distribution : India : Nagaland, Andhra Pradesh, Assam, Manipur, Meghalaya, Orissa, Sikkim, Tripura, West Bengal;

Elsewhere : Bangladesh; Bhutan; SW China; Indo-China; Malaya; Nepal; Mergui Archipelago and Thailand.

3. *Atractemorpha himalayica* Bolivar

1905. *Atractemerpha himalayica* Bolivar, *Bel. Soc. Espan Hist. nat.*, **5** : 198, 204.

1969. *Atractomorpha himalayica* : Kevan & Chen, *Zoel. J. Linn. Soc.*, **48** : 152, 160, 189.

Material examined : 1♂, Mokokchung, Tsumarehieng, 28.ix.1994, coll. P. H. Roy; 3♀, Rangapahar, Mokokchung, 24.xi.1994, coll. R. S. Barman; 1♀, Chizami, 30.xi.1994, coll. R. S. Barman.

Diagnostic characters : Body robust and somewhat large; lateral pronotal lobes without membranous area in metazona; eyes comparatively short, roundish-eval; hind femora on external face with strong keel and convex; hind wings usually colourless or very faintly pinkish at base; aedeagal valves comparatively short, not very strongly curved.

Distribution : India : Nagaland, West Bengal (North-East India).

Elsewhere : Bangladesh; south wards to Malaya and south east to Indo-China, and Nepal.

Genus *Tagasta* Bolivar, 1905

4. *Tagasta indica* Belivar

1905. *Tagasta indica* Boliver, *Bel. Soc. Espan Hist. nat.*, **5** : 112.

Material examined : 1♀, Rangapahar, Dimapur, 18.ix.1994, coll. M. Sil; 1♀, Rangapahar, Dimapur, 24.xi.1994, coll. R. S. Barman; 1♂, 1♀, Kiphire, Melory road, 16.ix.1981, coll. K. P. Singh.

Diagnostic characters : Body subfusiform; antennae inserted near the eyes; checks with a

raw of large yellow granules behind each eye; pronotum rounded in front and obtusely angulated behind; median carina almost and lateral carinae wholly obsolete; tegmina nearly as long as the hind femora, with tip narrowly obtuse, olive-green in colour, with a dark-brown spot at the base; wings shorter than the tegmina, deep rose colour at base, hind tibiae blue in colour.

Distribution : India : Nagaland, Arunachal Pradesh, Meghalaya, Sikkim, West Bengal.

Elsewhere : Bhutan; Myanmar.

Family ACRIDIDAE

Key to subfamilies

1. Presternal process or tubercle usually absent. ..... ACRIDINAE
- Presternal tubercle present. 2
2. Radial area of tegmina with a series of regular, parallel stridulatery veinlets. .... HEMIACRIDINAE
- Stridulatery veinlets of radial area of tegmina absent 3
3. Lower external lobe of hind knee with apine-like apex. ..... OXYINAE
- Lower external lobe of hind knee with apex rounded, angular or subacute, but not spine-like. 4
4. Last abdominal tergite, in male (in most of the genera), with well developed furcula; supra-anal plate mostly with attenuate or trilobate apex. ..... COPTACRIDINAE
- Last abdominal tergite without well developed furcula; supra-anal plate variable. 5
5. Mesosternal interspace closed. .... TROPIDOPOLINAE
- Mesesternal interspace mostly open 6
6. Mesesternal lobes rectangular .... CYRTACANTHACRIDINAE
- Mesosternal lobes rounded or obtuse-angular or acute-angular, but not rectangular 7
7. Dorsum of pronotum flat of weakly tectiform, with median and lateral carinae linear; male cercus with strongly compressed, lobiform or suacute, down curved at apex. .... EYPREPOCNEMIDINAE
- Dorsum of pronotum of variable shape; lateral carinae, if present, not linear; male cercus variable, but not as mentioned above. .... CATANTOPINAE

Subfamily ACRIDINAE

Key to genera

1. Fastigium of vertex horizontally produced, and forming an angle with the frontal ridge. 2
- Fastigium of vertex rounded infront, which is nearly vertical 5
2. Head long, conically ascending, fastgium of vertex extended considerably infront of eyes ..... ***Acrida*** Linnaeus
- Head equal to or somewhat greater than that of pronotum 3
3. Antennae filiform. ..... ***Ceracris*** Walker
- Antennae ensiform at least on basal half ..4
4. Lateral carinae of pronotum continuous; fastigium of vertex shallowly concave and often with a strong median dividing carinula; pestarier femora thickened at base .... ***Phlaeoba*** Stål
- Lateral carinae of pronotum diverging in metazona; fastigium of vertex moderately concave and with or without indistinct median carinula; posterior femora slender. .... ***Helepercna*** Karsch
5. Median carina cut by two groeves .... ***Trilophidia*** Stål
- Median carina of pronotum cut by one greeve or complete 6
6. Transverse veins in apical part of tegmina eblique and arranged zig-zag .... ***Pternoscirta*** Sause

- Transverse veins in apical part of tegmina erect, cells square or oblong 7

7. Wings without well-marked fasciae (internal spur of posterior tibiae graetly unequal). ..... ***Heterepternis*** Stål

- Wings usually with black fasciae (pronotum with strongly median crest or acutely tectiform). ..... ***Gastrimargus*** Sauss.

Genus ***Acrida*** Linnaeus, 1758

5. ***Acrida exaltata*** (Walker)

1859. *Truxalis exaltata* Walker, *Ann. Mag. nat. Hist.*, (3) **4** : 222.

1954. *Acrida exaltata* : Dirsh, *Bull. Sec. Fouad Ent.*, **38** : 149.

Material examined : 1♂, Rangapahar, Dimapur, 195 m; 18.ix.1994, coll. B. Mitra.

Diagnostic characters : Fastigium of vertex bread, laminate and truncate at extremity; transverse sulcus of pronetum present about the middle of pronotal disc; male subgenital plate, in profile, comparatively long, with more elongated part, the upper margin with small projection; tegmina produced beyond the hind kees; wings slightly shorter than tegmina.

Distribution : India : Nagaland, Arunachal Pradesh, Andhra Pradesh, Assam, Bihar, Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Kerala, Karnataka, Maharashtra, Madhya Pradesh, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : W. Aden; Afghanistan; Bangladesh; Iran; Nepal; Pakistan; Saudi Arabia; Sri Lanka; SE Tibet; and Yemen.

Genus ***Ceracris*** Walker, 1870

6. ***Ceracris nigricornis nigricornis*** Walker

1925. *Ceracris nigricornis nigricornis* Uvarov, *Ent. Mittl.*, **14** :

Material examined : 1♂, Zungi village and around, Zunheboto, 14.vii.1991, coll. Y.P. Sinha; 1♂, Kohima, 15.ix.1994, coll. B. Mitra.

Diagnostic characters : Face and pronotum coarsely punctured; tegmina brown, with a anal field olive green; hind femora externally with a narrow, but always distinct blackish fascia just before the pre-apical pale ring.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Afghanistan; S. China; Myanmar; Taiwan; Thailand and Vietnam.

Genus ***Phlaeoba*** Stål, 1860

Key to species

1. Subgenital plate of male tapering at apex 2

— Subgenital plate of male obtuse at apex. .... *antennata* Brunner

2. Wings more or less fuscous at apex; fastigium of vertex shortar; body-form not robust..... ..... *infumata* Brunner

— Wings hyaline at apex; fastigium of vertex longer; body-form robust .... *sikkimensis* Ramme

7. ***Phlaeoba antennata*** Brunner

1893. *Phlaeoba antennata* Brunner, *Annali Mus. civ. Stor. nat. Giacomo Doria, Genova*, **33** : 125.

1914. *Phlaeoba antennata* : Kirby, *Fauna Brit. India*, Orth. (Acridiidae) : 102.

Material examined : 1♀, Tuensang, 21.ix.1981, coll. K. P. Singh; 1♂, Aboi and around, 33 km SE of Mon, District Mon, 6.vi.1990, coll. Y. P. Sinha; 2♂, 1♀, Rangapahar Wild Life Sanctuary, Dimapur, 195m, 18.ix.1994, coll. B. Mitra; 1♂, Mokokchung, 27.xi.1994, coll. R. S. Barman.

Diagnostic characters : Antennae black, tipped with yellow; pronotum smooth, with all the carinae well-marked; tegmina narrow; wings bluish hyaline at base, infuscated towards the tip; subgenital plate rounded at apex; posterior tibiae dirty blue.

Distribution : India : Nagaland, Arunachal

Pradesh, Assam, Kerala, Meghalaya, Rajasthan, Sikkim, West Bengal.

Elsewhere : Annam, Bangladesh; Borneo; China; Hainan; Myanmar; Isle of Penang; Malaya Peninsula; Perak; Sumatra; Tonking.

8. ***Phlaeoba infumata*** Brunner

1893. *Phlaeoba infumata* Brunner, *Annali Mus. civ. Stor. nat. Giacomo Doria, Genova.*, **33** : 124.

1914. *Phlaeoba infumata* : Kirby, *Fauna Brit. India*, Orth. (Acridiidae) : 103.

Material examined : 1♀, Lanai river bed, District Phek, 14.ix.1981, coll. K.P. Singh; 1♂, 2♀, Pherema and around, District Kohima, 14.iii.1993, coll. Y.P. Sinha; 2♂, 1♀, Piphima and around, Kohima, 16.iii.1993, coll. Y.P. Sinha; 1♂, Inside the village, 10 kms from Medziphema town, Kohima, 17.iii.1993, coll. Y.P. Sinha; 2♀, Jhema Pani farm and around, Kohima, 18.iii.1993, coll. Y.P. Sinha; 1♀, Mokokchung, 21.iii.1994, coll. P. Mukhopadhya; 1♂, Rangapahar, Dimapur, 18.ix.1994, coll. M. Sil & B. Mitra; 2♂, Okha, 21.xi.1994, coll. R.S. Barman; 4♀, Rangapahar, Dimapur, 24.xi.1994, coll. R.S. Barman; 2♂, Phek, 29.xi.1994, coll. R.S. Barman; 1♂, Chizami, 30.xi.1994, coll. R.S. Barman.

Diagnostic characters : Antennae ansiform; lateral carinae of pronotum straight; pronotum rugose; wings fusco-hyaline, infumated towards apex; subgenital plate of male acute.

Distribution : India : Nagaland, Arunachal Pradesh, Bihar, Delhi, Haryana, Himachal Pradesh, Madhya Pradesh, Meghalaya, Orissa, Punjab Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : S. China; Hainan Island; Kampuchia; Kuangtang; Kwangsi; Malacca; Malaysia; Myanmar; N. Nepal; Taiwan; Thailand; Yunnan.

9. ***Phlaeoba sikkimensis*** Ramma

1941. *Phlaeoba sikkimensis* Ramme, *Mitt. zool. Mus. Berl.*, **25** (1) : 13.

Material examined : 1♀, Settsu village and around, District Zunheboto, 12.vii.1991, coll. Y.P. Sinha; 1♀, Rangapahar, Dimapur, 24.xi.1994, coll. R.S. Barman.

Diagnostic characters : A little large in size; fastigium of vertex as long as broad, with longitudinal ridges in the middle; pronotum with sharp middle and lateral carinae; lateral carinae parallel, posterior margin obtuse; tegmina reaching 1/3rd of the posterior margin of hind femora; anal plate, in male deeply grooved at basal half; subgenital, in male, tapering.

Distribution : India : Nagaland, Sikkim.

Elsewhere : Eastern Nepal.

Remarks : Female specimen collected from Rangapahar has damaged antennae. Tegmina has 4-5 small black dots which are arranged linearly; hind wings fumate at apical periphery except on anal region; hind legs missing.

Genus ***Holopercna*** Karach, 1891

10. ***Holopercna darjeelingensis*** (Bolivar)

1914. *Sjoedtedtia darjeelingensis* Bolivar, *Trab. Mus. cienc nat. Madr.*, **20** : 77.

1984. *Holopercna darjeelingensis* : Jago, *Trans. Amer ent Soc.*, **109** : 78.

Material examined : 5♂, 2♀, Tuensang, District Tuensang, 21.viii.1981, coll. K.P. Singh; 1♂, Lanai river bed, District Phek, 14.ix.1981, coll. K.P. Singh; 1♀, Lanai river bed, District Phek, 21.i.1990, coll. J.P. Sati.

Diagnostic characters : Larger than *Phlaeoba* Stål; fastigium of vertex with indistinct median carinula and concave; lateral carinae divergent in metazona; wings blue in the middle, followed by a black band, varying in width but generally with broad band, curving from the middle of costa, without dark spot at apex; hind femora rather slender at base; hind tibiae banded with blue & black.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Genus ***Gastrimargus*** Saussure, 1884

11. ***Gastrimargua africacanus africanus*** (Saussure)

1888. *Oedaleus (Gastrimargus) marmoratus* var *africana* Saussure, *Mem. Soc. Phys. Hist. nat. Geneve*, **30** (1) : 39.

1982. *Gastrimargus africanus africanus* : Ritchie, *Bull. Br. Mus. nat. Hist.* (Ent.), **44** : 248.

Material examined : 1♂, Lanai river bed, District Phek, 14.ix.1981, coll. K.P. Singh.

Diagnostic characters : Fastigium of vertex concave; tegmina surpassing hind knees by one-third to one-half of hind femur length, basal pale transverse band present; hind wings bright yellow at basal area, with complete dark-brown fascie, apex infumate; hind femur with three oblique dark transverse bands on external face, internal ventral surface suffused with blue-black in basal half.

Distribution : India : Nagaland, Arunachal Pradesh, Bihar, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Meghalaya, Orissa, Sikkim; Uttar Pradesh, West Bengal.

Elsewhere : Africa; Myanmar; Nepal; Pakistan; Saudi Arabia; Sri Lanka; Tibet and Thailand.

12. ***Gastrimargus marmoratus*** (Thunberg)

1815. *Gryllus marmoratus* Thunberg, *Mem. Acad. Sci. St.-Peterb.*, **5** : 232.

1982. *Gastrimargus marmoratus* : Ritchie, *Bull. Br. Mus. nat. Hist.* (Ent.) **44** (4) : 262.

Material examined : 1♂, Jharna Pani farm and around, District Kohima, 18.iii.1993, coll. Y.P. Sinha.

Diagnostic characters : Fastigium of vertex slightly concave; tegmina surpassing the hind knees by one-quarter to two-fifths of hind femora length; internal ventral surface of hind femora straw-coloured; hind tibiae light red; hind wing fasciae complete, with some dark pigments towards wing apex, basal area pale yellow.

Distribution : India : Nagaland, Andhra Pradesh, Assam, Karnataka, Maharashtra, Meghalaya, Sikkim, Uttar Pradesh, Tamil Nadu, West Bengal.

Elsewhere : Bangladesh; Borneo; China; Flores; Hong Kong; Japan; Java; Korea; Lombok; Malaya; Myanmar; New Guinea; Philippines; Sulawesi; Sumatra; Taiwan; Thailand; Vietnam.

Genus ***Heteropternis*** Stål, 1873

13. ***Heteropternis respondens*** (Walker)

1859. *Acrydium respondens* Walker, *Ann. Mag. nat. Hist.*, (3) **4** : 223.

1986. *Heteropternis respondens* : Bhowmick, *Tech. Mongr. Zool. Surv India*, No. **14** : 65-66.

Material examined : 10, Piphima and around, District Kohima, 16.iii.1993, coll. Y.P. Sinha.

Diagnostic characters : Antennae filiform; pronotum cut by the principal sulcus before the middle; hind margin of pronotum rectangular, rounded at apex; tegmina opaque at basal half, transverse veins in apical part erect, the cells square or oblong; wings without well-marked fasciae; hind tibiae red; internal calcaria generally unequal, the lower one much longer the other.

Distribution : India : Nagaland, Arunachal Pradesh, Bihar, Karnataka, Meghalaya, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal;

Elsewhere : Bangladesh; China; Indonesia; Japan; Java; Malaysia; Malacca; Myanmar; Nepal; Philippines; Sri Lanka; Sumatra; Taiwan.

Genus ***Pternoscirta*** Saussure, 1884

14. ***Pternoscirta bimaculata*** (Thunberg)

1815. *Grvllus bimaculatus* Thunberg, *Mem. Acad. Sci. St.-Peterb.*, **5**

1914. *Pternoscirta bimaculata* : Kirby, *Fauna Brit. India*, Orthopt. : 136.

Material examined : 1♂, Jharna Pani Farm and around, District Kohima, 18.iii.1993, coll. Y.P. Sinha; 12♂, 7♀, Inside the village, 10 kms from Medziphema town, District Kohima, 17.iii.1993, coll. Y.P. Sinha; 4♀, Piphima and around, District Kohima, 16.iii.1993, coll. Y.P. Sinha.

Diagnostic characters : Frontal ridge and punctured; pronotum short; tegmina brown, with two transverse whitish bands or spots, discoidal area hyaline beyond the middle; wings yellowish at base marginal half clouded with brown; hind tibiae black at base, followed by a white and black band, the rest blue.

Distribution : India : Nagaland, Andhra Pradesh, Bihar, West Bengal.

Elsewhere : Sri Lanka.

Genus ***Trilophidia*** Stål, 1873

15. ***Trilophidia annulata*** (Thunberg)

1815. *Gryllus annulatus* Thunberg, *Mem. Acad. Sci. St.-Peterb.*, **5** : 234.

1965. *Trilophidia* : annulata : Hollis, *Trans. R. ent. Soc. Lond.*, **117** (8) : 251.

Material examined : 1♀, Khomi village, 31 kms SW of Phek, 18.i.1990, coll. J.P. Sati; 1♂, Pherema and around, District Kohima, 14.iii.1993, coll. Y.P. Sinha; 1♀, Jharna Pani farm and around, District Kohima, 18.iii.1993, coll. Y.P. Sinha; 3♂, Rangapahar, Dimapur, 18.ix.1994, coll. R.S. Mirda & B. Mitra; 1♂, Longcham Forest Rest House, Mokokchung, 22.ix.1994, coll. S. Mitra; 1♂, 1♀, Teumarshiong, Mokokchung, 28.ix.1994, coll. P.H. Roy; 1♂, 2♀, Okha, 21.xi.1994, coll. R.S. Barman.

Diagnostic characters : Brown or grey with black markings, pubescent beneath; pronotum rugose, with high median carina, forming two teeth in front, and with lateral carinae; wings yellow at the base, and brown or dark brown beyond; hind tibiae brown, with a pale band towards base, and with a slight pale band beyond the middle.

Distribution : India : Widely distributed.

Elsewhere : Bangladesh; Borneo; Hong Kong; Japan; Java; Korea; Malaya; Mongolia; Myanmar; Sarawak; Singapore; Sri Lanka; Sumatra; Taiwan.

Subfamily HEMIACRIDINAE

Genus ***Spathosternum*** Karsch, 1877

16. ***Spathosternum prasiniferum prasiniferum*** (Walk)

1871. *Heteracris* (?) *prasinifera* Walker, *Cat. Derm. Salt. Br. Mus.*, **5** : 65.

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

Material examined : 1♂, 3♀, Kohima, 15.ix.197, coll. M.S. Shishodia; 2♂, Lanai river bed, District Phek, 14.ix.1981, coll. K.P. Singh; 1♂, Kiphire, melory Road, 16.ix.1981, coll. K.P. Singh; 1♂, 1♀, Jharna Pani Farm & Around, 18.iii.1993, coll. Y.P. Sinha; 1♂, 1♀, Mekokchung, 21.iii.1994, coll. P. Mukhopadhyay; 1♀ Rangapahar basti, Dimapur, 19.ix.1994, coll. B. Mitra; 1♂, Tuli village, 10, Longcham, Mokokchung, 22.ix.1994, coll. B. Mitra; 1♂, Chumukidima, 2.x.1994, coll. P.H. Roy; 8♂, 4♀, Kohima, 20.xi.1994, coll. R.S. Barman; 1♀ Rangapahar, Dimapur, 21.xi.1994, coll. R.S. Barman; 2♂, 1♀, Okha, 21.xi.1994, coll. R.S. Barman; 1♂, 1♀, Baghty, Kohima, 22.xi.1994, coll. R.S. Barman; 2♂, 1♀, Phek, 29, 30.xi.1994, coll. R.S. Barman; 1♀, Chizami, 30.xi.1994, coll. R.S. Barman.

Diagnostic characters : Body size small, generally green in colour, a broad dark-brown or blackish strip run behind the lower part of eye and below the lateral carinae of pronotum on either side; centra area of tegmina with a longitudinal black streak, generally obsolete in the male but well-developed in female, but very variable, sometimes being entire; tegmina reaching distal end of hind femora or slightly beyond it; wings well developed.

Distribution : It is widely distributed in India.

Elsewhere : Myanmar, SE China, Thailand and Vietnam.

Subfamily OXYINAE

Key to genera

1. Radial area of tegmen with transverse parallel stridulatory veinlets. ..... ***Gesonula*** Uvarov

– Radial area of tegmen without trace of transverse parallel stridulatory veinlets. 2

2. Tegmina normally abbreviated and not extended to the apex of abdomen, rarely fully developed ..... ***Caryanda*** Stål

– Tegmina fully developed ..... ***Oxya*** Serville

Genus *Gesonula* Uvarov, 1940

17. *Gesonula punctifrons* (Stål)

1860. *Acridium (Oxya) punctifrons* Stål, *Kongl. Freq. Eug. Resa Omkring Jorden,* Insecta : 336.

1965. *Gesonula punctifrons* : Mishchenko, *Locusts and Grasshoppers of U.S.S.R. and adjacent countries,* Catantopinae, Leningrad : 146.

Material examined : 1♂, Pherema and around, District Kohima, 14.iii.1993, coll. Y.P. Sinha; 1♂, Molvon and around, District Kohima, 15.iii.1993, coll. Y.P. Sinha; 1♂, Mokokchung, 27.xi.1994, coll R.S. Barman.

Diagnostic characters : Head conical; fastigium from above parabolic, slightly longer than broad, without median longitudinal carinula; frontal ridge sulcated; prosternal tubercle simple, conical with rounded apex; median carina weak, lateral carinae absent; tegmina and hind wings fully developed; male cercus curved apicallu; female ovipositor valves short, with short lateral and longer curved apical spines.

Distribution : India : Nagaland, Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Delhi, Goa, Himachal Pradesh, Kerala, Manipur, Meghalaya, Orissa, Tamil Nadu, Tripura.

Elsewhere : West Bengal; Borneo; China; Hainan; Japan; Java; Malacca; Myanmar; Philippines; Sri Lanka; Taiwan; Tongking, and Thailand.

Genus *Cavanda* Stål, 1878

Key to species

1. Lower inner area of hind femur and the hind tibia bright red; integument with more rugulose and matt surface; tegmina and hind wings rarely extended upto the apex of abdomen. ..... *diminuta* (Walk.)

– Lower inner area of hind femur and hind tibiae bluish green or ochraceous; integument smooth, shiny; tegmina extending to the posterior margin of 3rd abdominal tergite only. ..... *paravicina* (Willemse)

18. *Caryanda diminuta* (Walker)

1871. *Oxya diminuta* Walker, *Cat. Derm. Salt. Brit. Mus.,* **5** : Suppl. : 64.

1975. *Caryanda diminuta* : Hollis, *Bull. Br. Mus. nat. Hist.* (Ent.) **31** (6) : 217.

Material examined : 2♂, Aboi and around, 33 kms from Mon, 6.vi.1990, coll. Y.P. Sinha; 1♂, Tuensang, 18 kms from Wagal, 21.ix.1981, coll. K.P. Singh.

Diagnostic characters : Posterior margin of 10th abdominal tergite with a pair of rectangular projections medially; supra-anal plate rounded triangular; cercus conical with subacute apex; ventral surface of subgenital plate flate or convex, posterior margin without spines; ovipositor valves with tooth-like spines.

Distribution : India : North-East India, Andaman & Nicobar Islands.

Elsewhere : China; Cambodia; Laos; W. Malaysia; Myanmar; Singapore; Sumatra; Thailand and Vietnam.

19. *Caryanda paravicina* (Willemse)

1925. *Oxya paravicina* Willemse, *Tidjschr. Ent.,* **68** : 55.

1975. *Caryanda paravicina* : Hollis, *Bull. Br. Mus. nat. Hist.* (Ent.) **31** (6) : 218.

Material examined : 1♀, Settsu village and around, District Zunheboto, 12.vii.1991, coll. Y.P. Sinha; 2♀, F.R.H. campus, Dimapur, 10.ix.1994, coll. B. Mitra; 2♂, 1♀, Pulabedze Wild Life Sanctuary, Kohima, 14.ix.1994, coll. B. Mitra; 1♂, 1♀, Rangapahar, Dimapur, 18.ix.1994, coll. B. Mitra; 1♂, 2♀, F.R.H. Longcham, Mokochung, 22.ix.1994, coll. B. Mitra; 3♂, 2♀, Fazl Ali College campus, Mokokchung, 26.ix.1994, coll. P.H.Roy.

Diagnostic characters : Fastigium of vertex, from above, pentagonal, wider than long, without median longitudinal carinula; frontal ridge sulcated; prosternal tubercle conical with subacute apex; median carina of pronotum weak, lateral carinae absent, weakly crossed by three transverse sulci; tegmina and hind wings normally reduced to micropterous or brachypterous condition;

tegmina barely touching mid dorsal line; 10th abdominal tergite with a apair of small rounded furcula on hind margin; ventral surface of subgenital plate of female without lateral longitudinal carinulae.

Distribution : India : North-East India-Nagaland, Meghalaya, Sikkim.

Genus ***Oxya*** Serville, 1831

Key to species

1. Supra-anal plate of male with a tubercle on each side of a median apical process 2
- Supra-anal plate of male without lateral tubercle. ..... *velox* (Fabr.)
2. Male cercus laterally compressed, hardly narrowing towards, which is weakly bifurcated; ventral surface of subgenital plate of female almost completely flat, widen posteriorly..... *fuscovittata* (Marachall)
- Cercus conical of if compressed than narrowing towards apex, which is obtuse or truncate; ventral surface of subgenital plate of female flat or concave only in median posterior half, not widen posteriorly. .... *hyla* Serville

Key to Subspecies of *Oxya hyla*

1. Inner tooth-like pair of lophi of epiphallus usually well-developed; ventral surface of subgenital plate of female with two longtudinal ridges extending forwards from posterior margin and often toothed. .... *hyla hyla* Serville
- Inner tooth-like pair of lophi of epiphallus usually poorly developed; ventral surface of subgenital plate of female without longitudinal ridges or with only slight traces of them apically and not spined .... *hyla intricata* (Stål)

20. ***Oxya hyla hyla*** Serville

1831. *Oxva hyla* Serville, *Annle Sci. nat.* (Zool.) **22** : 287.

1971. *Oxya hyla hyla* : Hollis, *Bull. Br. Mus. nat. Hist.* (Ent.), **26** (7) : 287.

Material examined : 1♂, Piphima and around, District Kohima, 16.iii.1993, coll. Y.P. Sinha; 1♂, Mokokchung, 21.iii.1994, coll. P. Mukhopadhya; 1♂, 1♀, Kohima, 18.xi.1994, coll. R.S. Barman; 1♀, Rangapahar, Dimapur, 24.xi.1994, coll. R.S. Barman; 1♂, 1♀, Phek, 29, 30.xi.1994, coll. R.S. Barman.

Diagnostic characters : Supra-anal plate trapezoidal with triangular apical projection; small tubercle present on both sides of supra-anal plate; cercus subacute or very little notched at apex, lower part a little large; subgenital plate, in female, with two longitudinal ridges extending forwards from posterior margin; posterior margin notched in the middle.

Distribution : It is widely distributed in India.

Elsewhere : Afghanistan; Africa; Nepal; Pakistan; Persia and Sri Lanka.

21. ***Oxya fuscovittata*** (Marschall)

1836. *Gryllus fuscovittatus* Marschall, *Annin Wien. Mus Naturg.*, **1** : 24.

1971. *Oxya fuscovittata* : Hollis, *Bull. Br. Mus. nat. Hist.* (Ent.), **26** (7) : 289.

Material examined : 1♀, F.R.H. Campus, Dimapur, 10.ix.1994, coll. B. Mitra; 1♂ Rangapahar, Dimapur, 18.ix.1994, coll. M. Sil & B. Mitra; 1♀, Tuli village, Mokokchung, 21.ix.1994, coll. B. Mitra; 1♂, Kohima, 20.xi.1994, coll. R.S. Barman; 1♂, Mokokchung, 26.xi.1994, coll. R.S. Barman; 2♂, 1♀, Chizami, Phek, 29, 30.xi.1994, coll. R.S. Barman.

Diagnostic characters : Integument finely pitted and shiny; female large in size; cercus of male compressed, wide, weakly bifurcated; ventral surface of subgenital plate, in female, almost completely flat or weakly concave.

Distribution : India : Nagaland, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Afghanistan; Pakistan; U.S.S.R. (South West).

22. ***Oxya velox*** (Fabricius)

1787. *Gryllux velox* Fabricius, *Mantissa Insectorum*, **1** : 239.

1971. *Oxya velox* : Hollis, *Bull. Br. Mus. nat. Hist.* (Ent.), **26** : (7) : 297.

Material examined : 1♂, 1♀, Chizami, Phek, 30.xi.1994, coll. R.S. Barman.

Diagnostic characters : Size a little smaller than the preceding species; supra-anal with rounded triangular posterior projection; cercus conical, with subacute apex; female longer than male; subgenital plate of female in posterior half ventrally with a median longitudinal cavity, bordered on each side by a lateral longitudinal ridge.

Distribution : India : Nagaland; Assam, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Meghalaya, Orissa, Rajasthan, Tamil Nadu, West Bengal.

Elsewhere : Bangladesh; China; Myanmar; Pakistan; Thailand.

Subfamily COPTACRIDINAE

Key to genera

1. Frontal costa parallel sided, not wider between antennae than the vertex between eyes ..... ***Coptacra*** Stål
- Frontal costa distinctly widened between antennae and wider than the vertex between the eyes ..... ***Eucoptacra*** Bolivar

Genus ***Coptacra*** Stål, 1873

23. ***Coptacra foedata*** (Serville)

1839. *Acridium foedatum* Serville, *Hist. Nat. Ins. Orth.*, 662.

1873. *Coptacra foedata* : Stål, *Rec. Orth.*, **1** : 58.

Material examined : 1♀, Kiphire, Melory road, 16.ix.1981, coll. K.P. Singh.

Diagnostic characters : Size small, antennae darker apically; pronotum with small tubercles or rugosities; tegmina with irregular darker spots in the apical half; wings hyaline, faintly bluish at base, along apical and part of posterior margin infumate; hind femur with two indefinite brown or blackish-brown spots on the middle of superior area; inferior area on external side black, inner area red; hind tibiae red.

Distribution : India; Nagaland, Arunachal Pradesh, Sikkim.

Elsewhere : Ambon; China; French Indo-China; Japan; Jawa; Myanmar; Philippines and Taiwan.

Genus ***Eucoptacra*** Bolivar, 1902

Key to species

1. Tegmina with an oblique whitish fascia, formed by irregular venules, a little behind the middle ..... *binghami* Uvarov
- Tegmina without an oblique whitish fascia ..... *saturata* (Walker)

24. ***Eucoptacra binghami*** Uvarov

1921. *Eucoptacra binghami* Uvarov, *Ann. Mag. nat. Hist.*, *(9)* **7** : 503.

Material examined : 1♀, Totok village and around, 10 kms from Mon, District Mon, 5.vi.1990, coll. Y.P. Sinha; 2♀, Chungtia, 20 kms from Mokokchung, 23.iii.1994, coll. P. Mukhopadhya.

Diagnostic characters : Head rugulose; frontal ridge flat; last abdominal tergite, in male, well-developed furcula; posterior femora with a black spot before the middle externo-superior area; subgenital plate, in female, little triangularly extended at the hind margin.

Distribution : India : Nagaland, Meghalaya.

Elsewhere : Myanmar; Federation of Malaya State; Tonkin and Thailand.

25. ***Eucoptacra saturata*** (Walker)

1870. *Acridium saturatum* Walker, *Cat. Derm. Salt. Brit. Mus. nat. Hist.*, **4** : 628.

Material examined : 1♂, 12 kms SE Nec Road from Phek, 18.i.1990, coll. J. P. Sati.

Diagnostic characters : Head short, smooth; apex of vertex flat, nearly rounded; prothorax finely scabrous, slightly widening hindward; prosternal spine stout, slightly acute; hind femora black beneath, as long as the abdomen; hind tibiae red; tegmina a little shorter than the body, with numerous small marks formed by blackish bordered veins; hind wing hyaline or grey, tinged with blackish.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Madhya Pradesh Meghalaya, Orissa, Sikkim, Uttar Pradesh and West Bengal.

Subfamily TROPIDOPOLINAE

Key to genera

1. Size medium; fastigium of vertex parabolic, convex; frontal ridge almost flat; prosternal process strongly widened, with lateral margins raised, inclined backwards, touching mesonotum; wings rounded at apex, shorter than abdomen ..... ***Tristria*** Stål
- Size moderately stout; fastigium of vertex obtuse angular; frontal ridge somewhat somewhat sulcated; prosternal process conical, compressed laterally, inclined but not touching mesosternum; wings acute at apex, longer than abdomen. ..... ***Oxyrrhepes Stål***

Genus *Tristria* Stål, 1873

26. *Tristria* sp.

Material examined : 3 nymphs, Medzipheme and around, District Kohima, 12.iii.1993, coll. Y. P. Sinha.

Distribution : This specimen being nymph, could not be identified upto the specific level. The genus is distributed in India.

Elsewhere : Sri Lanka.

Genus *Oxyrrhepes* Stål, 1873

27. *Oxyrrhepes obtusa* (De Haan)

1842. *Acridium (Oxya) obtusum* De Haan, *Verh. Ned Overz. Bezitt. Orth.* : 155, 156.

1955. *Oxyrrhepes obtusa* : Willemse, *Publties natuurh Genoot. Limburg*, **8** : 32, 33.

Material examined : 1♂, Settsu village and around, District Zunheboto, 12.vii.1991, coll. Y.P. Sinha.

Diagnostic characters : Fastigium of vertex short, obtuse at tip, front moderately oblique; frontal ridge sulcated; prosternal tubercle conical, compressed laterally; wings pointed, twice as long as broad; hind femora about as long as the abdomen; genicular lobes triangular, no longer than the tip of femora; hind tibiae with an external spine.

Distribution : India : Nagaland, Arunachal Pradesh, Karnataka, Madhya Pradesh, Meghalaya, Orissa, Rajasthan, Sikkim, Tamil Nadu, West Bengal.

Elsewhere : Bali; Celebes; China; Indo-China; Java; Lombok; Myanmar; Sri Lanka; Sumatra; Taiwan, etc.

Subfamily CATANTOPINAE

Key to genera

1. Pronotum subcylidrical, slightly narrowing forwards; prosternal tubercle thick, cylindrical or slightly antero-posteriorly compressed with rounded apex. ..... ***Catantops*** Schaum
- Pronotum not subcylindrical; prosternal tubercle not cylindrical and never with rounded apex. 2
2. Pronotum constricted in the middle; prosternal tubercle conical. ..... ***Xenocatantops*** Dirsh & Uvarov
- Pronotum not constricted; prosternal tubercle laterally compressed. ..... ***Stenocatantops*** Dirsh & Uvarov

Genus *Catantops* Schaum, 1853

28. *Catantops pinguis innotabilis* (Walker)

1870. *Acridium innotabile* Walker, *Cat. Derm. Salt. Brit Mus. nat. Hist.*, **4** : 629.

1956. *Catantops pinguis innotabilis* : Dirsh, *Publcoes cult. Co. Diam. Angola,* **28** : 105.

Material examined : 1♀, Lanai river bed, District Phek, 14.ix.1981, coll. K.P. Singh; 1♀, Molvon and around, District Kohima, 15.iii.1991, coll. Y.P. Sinha; 1♂, 1♀, Piphima and around, District Kohima, 16.iii.1993, coll. Y.P. Sinha; 1♀, Inside the village, 10 kms from Medzephama town, District Kohima, 17.iii.1993, coll. Y.P. Sinha; 1♂, 1♀, Mokokchung, 21.iii.1994, coll. P. Mukhopadhya.

Diagnostic characters : Lateral lobe of pronotum without coloured pattern; tegmina exceeds the hind knee by more than the length of pronotum; external disc of hind femur without black median spot below the upper carinula (the spot of different size in the transient form); male cercus more upcurved, with more broadened apex and more projecting upper apical angle.

Distribution : India : Nagaland, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Jawa; Indo-China; Malaya; Myanmar; Philippines; Sri Lanka; Sumatra; Tibet; Thailand and Yunnan.

Genus ***Stenocatantops*** Dirsh & Uvarov, 1953

29. ***Stenocatantops splendens*** (Thunberg)

1815. *Gryllus splendens* Thunberg, *Mem. Acad. Sci. St.-Peterab.,* **5** : 236.

1953. *Stenocatantops eplendens* : Dirsh & Uvarov, *Tijdschr. Ent.,* **96** (3) : 237.

Material examined : 2♂, Lanai river bed, District Phek, 14.ix.1981, coll. K.P. Singh; 1♀, Mokokchung, 28.ix.1994, coll. P.H. Roy; 1♂, Chizami, Phek, 30.xi.1994, coll. R.S. Barman.

Diagnostic characters : Body slender; middle segments of antennae about two or three times as long as broad; prosternal strongly curved and inclined backwards in profile; subgenital plate of male, acutely conical.

Distribution : India : Nagaland, Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Delhi, Kerala, Madhya Pradesh, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : China; Hainan; Jawa; Korea; Malaya; Myanmar; New Guinea; Philippines and Sumatera.

Genus ***Xenocatantops*** Dirsh & Uvarov, 1953

30. ***Xenocatantops humilis*** (Serville)

1939. *Acridium humile* Serville, *Ins. Orth.,* 662.

1983. *Xenocatantops humilis* : Jago, *Trans. Amer. ent. Soc.,* **108** (3) : 454.

Material examined : 1♂, Tenlai village, 13 kms from Mon, District Mon, 7.vi.1990, coll. Y.P. Sinha; 1♀, Mokokchung, 21.iii.1994, coll. P. Mukhopadhya.

Diagnostic characters : Dark marking of pronotal side lobe indistinct; inner side of hind femur orange-red, or red, with brown or black markings; ratio of length to depth never less than 3.45; male cercus showing no clear bifurcation, but apically bilaterally compressed and slightly upcurved.

Distribution : India : Nagaland, Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh; Borneo; Jawa; Kei Island; Lombo; Malaya; Myanmar; Philippine Island; Sri Lanka; Thailand; S. Tibet and Vietnam.

31. ***Xenocatantops brachycerus*** (Willemse)

1932. *Catantops brachycerus* Willemse, *Netuurh. Maandblad,* **8** : 106.

1982. *Xenocatantops brachycerus* : Jago, *Trans. Amer. ent. Soc.,* **108** (3) : 453.

Material examined : 1♀, Tuensang, 21.ix.1981, coll. K. P. Singh; 1♀, 10 kms from Mokokchung, 28.ix.1981, coll. K. P. Singh; 1♂, Khomi village, 31 kms from Phek, 18.i.1990, coll. J. P. Sati; 1♂,

Piphime and around, District Kohima, 16.iii.1993, coll. Y. P. Sinha.

Diagnostic characters : Dark marking of pronotal aide lobe clearly demarcated; outside markings of hind femur similar to *X. humilis*, and inner side of hind femur and knee lobe orange-red; ratio of length to depth of hind femur never more than 3.45; male cercus very similar to *X. humilia*.

Distribution : India : North-East India, Nagaland, Sikkim.

Elsewhere : Bhutan; China; Nepal and Taiwan.

Subfamily EYPREPOCNEMIDINAE

Genus ***Choroedocus*** Boliver, 1914

32. ***Choroedocus robustus*** (Serville)

1839. *Acridium robustum* Serville, *Ins. Orth.*, : 647.

1921. *Choroedocus robustus* : Uvarov, *Trans. ent. Soc. Lond.*, **69** : 109.

Material examined : 1♂, Lanai river bed, Phek, 14.ix.1981, coll. K. P. Singh; 2♀, Rangapahar, Diamapur, 18.ix.1994, coll. B. Mitra.

Diagnostic characters : Body large and robust; antennae filiform; fastigium rounded infront, frontal ridge narrowing between antennae; prosternal tubercle gradually tapering apically, weakly incurved and pubescent; tegmina without spots; supra-anal plate tongue-shaped, apex broadly rounded; cercus wide, thick, strongly compressed, incurved and downcurved.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Meghalaya, Sikkim, Tripura, West Bengal.

Elsewhere : Bangladesh.

Subfamily CYRTACANTHACRIDINAE

Key to genera

1. Prosternal tubercle strongly curved backward, touching or almost touching mesosternum, inflated in the middle, with rounded apex... ..... ***Chondracris*** Uvarov

– Prosternal tubercle straight, not touching mesosternum, conical. ... ***Pachyacris*** Uvarov

Genus ***Chondracris*** Uvarov, 1923

33. ***Chondracris rosea*** (De Geer)

1773. *Acrydium roseum* De Geer, *Mem. Ins.*, **3** : 488.

1923. *Chondracris rosea* : Uvarov, *Bull. ent. Res.*, **14** : 39.

Material examined : 10, Kiphire, Melory road, 16.ix.1981, coll. K.P. Singh; 1, Tuensang, 21.ix.1981, coll. K.P. Singh; 10, Keviya V. colony, Dimapur, 17.ix.1994, coll. R.S. Mirda & B. Mitra.

Diagnostic characters : Body large and robust, coarsely punctumed; fastigium of vertex strongly sloping; facial keel slightly curved; median carina of pronotum strongly tectiform; tegmina exceeding the hind knees by one-fourth of their total length, uniformly green; wings rose coloured at base; hind tibiae and tarsi red. Subgenital plata, in male, elongate, acutely conical.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Goa, Himachal Pradesh, Madhya Pradesh, Orissa, Manipur, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh; China; Indonesia; Hainan Islands; Korea; Japan; Manchuria; Myanmar; Nepal; Taiwan; Thailand and Vietnam.

Genus ***Pachyacris*** Uvarov, 1923

34. ***Pachyacris vinosa*** (Walker)

1870. *Acridium vinosum* Walker, *Cat. Derm. Salt Brit Mus.*, **3** : 587.

1923. *Pachyacris vinosa* : Uvarov, *Ann. Mag. nat. Hist.*, (9) **11** : 478.

Material examined : 1♀, Lanai river bed, 22 kms SE Phek, 21.i.1990, coll. J. P. Sati; 1♀ Piphima and around, District Kohima, 16.iii.1993, coll. Y. P. Sinha.

Diagnostic characters : Fastigium of vertex almost flat, distinctly sloping; frontal ridge above the ocelli slightly dilated; median carina cut by

the principal sulcus; tegmina with oblique venation in apical part, transverse vein situated obliquely to principal vein; male cercus elongate, conical with acuminate apex.

Distribution : India : Nagaland, Assam, Bihar, Goa, Himachal Pradesh, Karnataka, Meghalaya, Orissa, Rajasthan, Uttar Pradesh, West Bengal.

Elsewhere : China; Myanmar; Nepal; Thailand and Tong King.

SUMMARY

34 species are reported here. All the species are new records to Nagaland State.

In all 14 species under 10 genera and 6 families have been included in the present work.

ACKNOWLEDGEMENT

We are grateful to the Director, Zoological Survey of India, for laboratory facilities. We are also thankful to Dr. R. K. Varshney, Additional Director (Retd.), Dr. J. K. Jonathan, Joint Director (Retd.) and Dr. S. K. Mitra, Jt. Director (Retd.), for helping us in many ways. We are also thankful to the Officer-in-charge, E. R. Stn., Shillong, who has sent the material of Acridoidea for study, and also to officers and staff of the Survey for the collection of these interesting material from Nagaland.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 111-125, 2006

INSECTA : COLEOPTERA : SILVANIDAE

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INTRODUCTION

The Silvanidae are a moderately large family of the section Clavicornia of the superfamily Cucujoidea. The silvanids are usually small (1.3-4.5mm), reddish-brown and occasionally with dorsal spots. They are largely associated with litter or vegetable debris and a good number of species are subcorticolous by habit. A few species cause considerable damage to stored food products of vegetable origin. The Silvanidae seem to be more diversely represented in the tropical and subtropical climates than in the temperate zones. The representatives of the family occur in all the main continental areas of the world, but so far, only a few species have been recorded from New Zealand and the oceanic islands. After Grouvelle (1908, 1912) the works of Pal and Sengupta (1977, 1979, 1984); Pal (1981, 1985); Pal, Sengupta and Crowson (1984); and Sengupta and Pal (1996) have contributed to the knowledge of the Silvanidae of India. Later, Pal and Halstead (1998) recorded *Acathartus* Grouvelle from Mizoram: India with a new species. However, no species of Silvanidae is hitherto known from Nagaland. The present work is based on the recent collection by the author, that represent 17 species under 7 genera.

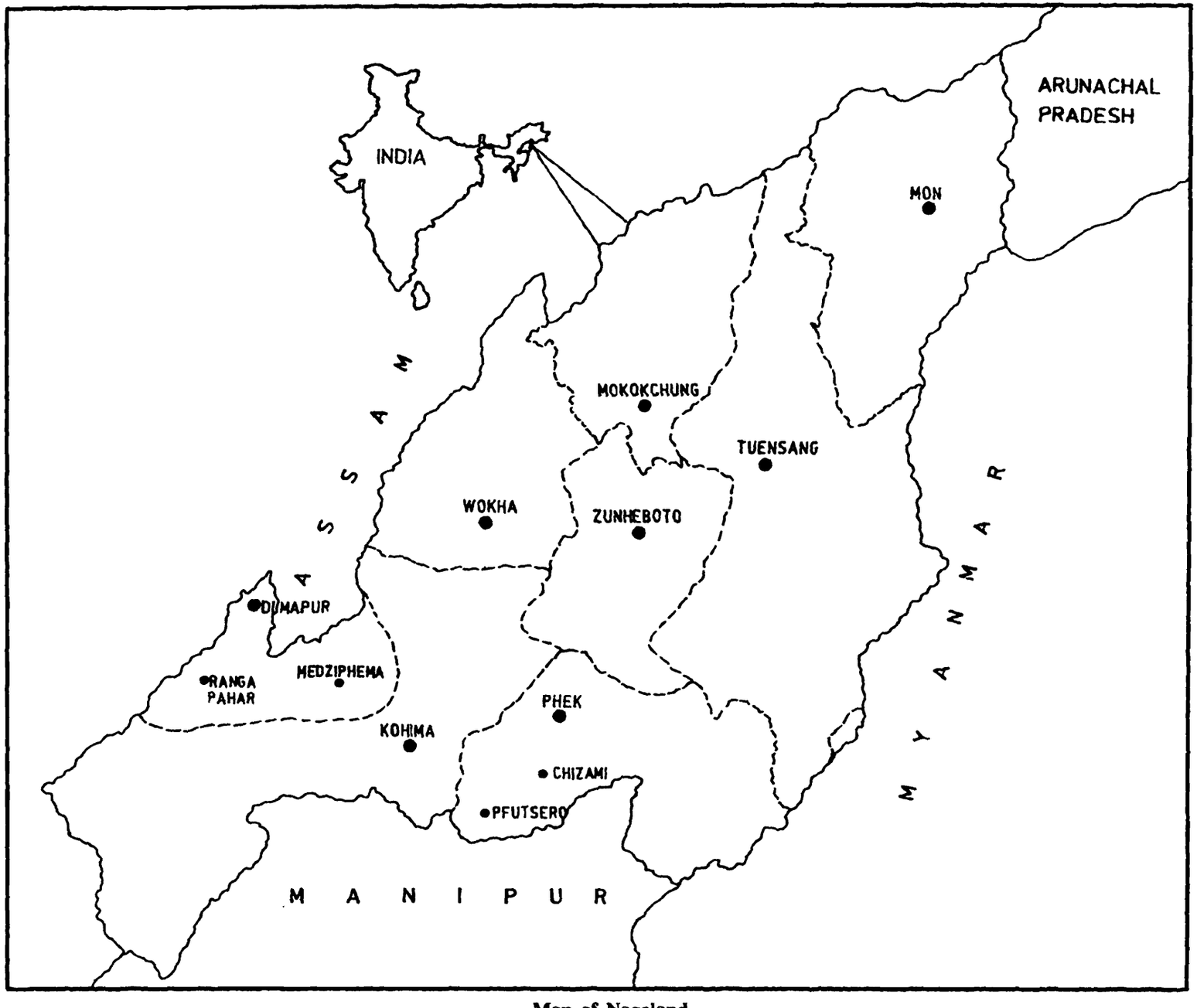
CHARACTER OF THE FAMILY SILVANIDAE

Body small to moderately large (1.3–11.5 mm), usually parallel-sided and somewhat flattened or sometimes ovoid and subconvex, elytral punctation in rows.

Head usually little elongate, sometimes transverse, usually with a transverse impressed line on vertex behind eyes, fronto-clypeal suture present or absent, antennal insertions hidden or exposed but never distinctly dorsal; gular sutures well separated, anterior part of gular region without longitudinal grooves, genal process normal; antenna 11-segmented, often with 3-sgmented club and sometimes without club; mandible with two or three apical teeth, well developed mola, sometimes with a large cavity on dorsal side, otherwise cavity reduced to a vestige and without dorsal tubercle; maxilla with distinct lacinia and galea, lacinia narrow and with or without apical spine, galea broad and its apex densely hairy, palpi with apical segment rarely securiform; labium with mentum transverse; palpi with apical segment rarely securiform or transverse or distinctly smaller than segment 2.

Prothorax usually elongated and sometimes transverse, side margins often serrated and sometimes with distinct teeth, pronotum without distinct prebasal impression, prosternum moderately broad with apical margin almost straight, front coxae usually closely and rarely widely situated, trochantins hidden; coxal cavities somewhat rounded, usually externally closed behind and rarely open.

Elytra punctured in regular rows and usually with 9 rows of punctures, rarely with scutellary striole, epipleura usually complete. Wing usually with single anal vein, sometimes with three or five anal veins; devoid of radial cell, R-m cross vein and subcubital fleck.



Map of Nagaland

Mesocoxae often closely situated, sternal fitting between mesocoxae usually in a straight line and sometimes with a narrow projection from metasternum, mesocoxal cavities broadly opened outwardly; hind coxae transverse and moderately widely separated; metendosternite often reduced and without lateral plates, sometimes well developed with anterior tendons.

Legs moderately long, trochanters short and simple, femora swollen towards middle, tibiae slightly broadened at apex and usually with two spurs, tarsal formula 5-5-5 in both sexes, tarsal segments 1-3 usually simple or slightly lobed below.

Abdomen covered by elytra, all ventrites freely articulated, ventrite 1 longest and ventrites 2-5 more or less equal in length, ventrite 1 sometimes with open femoral lines, intercoxal process variable. Aedeagus inverted cucujoid-type, median lobe usually broadly elongated and with a median strut, articulated parameres well developed. Ovipositor well developed with separate paraprocts, valvifers, coxites and styli.

LIST OF TAXA

Family SILVANIDAE

Subfamily SILVANINAE

1. *Silvanus lewisi* Reitter
2. *Silvanus difficilis* Halstead
3. *Silvanus rossi* Halstead
4. *Silvanoprus scuticollis* (Walker)
5. *Silvanoprus indicus* Pal & Sengupta
6. *Silvanoprus longicollis* (Reitter)
7. *Silvanoprus cephalotes* (Reitter)
8. *Silvanoprus angusticollis* (Reitter)
9. *Protosilvanus lateritius* (Reitter)
10. *Monanus concinnulus* (Walker)

Subfamily PSAMMOECINAE

11. *Psammoecus harmandi* Grouvelle
12. *Psammoecus trilochana* Pal
13. *Psammoecus bambusae* Pal
14. *Psammoecus trimaculatus* Motschulsky

Subfamily CRYPTAMORPHINAE

15. *Cryptamorpha kaszabi* Pal & Sengupta

Subfamily ULEIOTINAE

16. *Uleiota serricollis* (Candeze)
17. *Uleiota alticola* Pal, Sengupta & Crowson

Family SILVANIDAE

Subfamily SILVANINAE

Genus ***Silvanus*** Latreille

1804. *Silvanus* Latreille, *Histoire Naturelle, générale et particulière, des crustaces et des insectes*, **11** : 158 [Type species : *Ips unidentata* Olivier].

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely facetted, temple often flattened beneath eye, transverse impressed line on vertex behind eyes, 11- segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with 3 apical teeth, apical segments of maxillary and labial palpi fusiform; prothorax usually elongate, side margins finely serrated, front coxal cavities closed and prosternal process broad at apex, mesocoxae narrowly separated; wing with single aral vein; each elytron with 9 rows of strial punctures, tarsi of legs simple; intercoxal process of first abdominal ventrite broad and its apical margin broadly pointed, coxal lines marginal striae of hind coxal cavity.

1. ***Silvanus lewisi*** Reitter

1876. *Silvanus lewisi* Reitter, *Col. Hefte*, **15** : 76

1908. *Silvanus lewisi* : Grouvlle, *Annls. Soc. ent. Fr.* **77** 491.

1912. *Silvanus lewisi* : Grouvelle, *Annls. Soc ent Fr.* **81** : 338.

1973. *Silvanus lewisi* : Halstead, *Bull. Br. Mus Nat Hist (Ent.)*, **29(2)** : 52.

1977. *Silvanus lewisi*: Pal & Sengupta, *Oriental Ins.*, **11(2)** : 272.

Diagnosis : Yellowwish to reddish-brown and covered with short pubescence; eyes about half as long as head, temple shorter than one eye facet and its outer apical angle pointed, puncturation on vertex coarse and dense; elongated prothorax

with anterior spine about half as long as eye and its tip pointed, lateral depressions on pronotal disc slightly marked, puncturation on pronotum coarse and dense and almost similar to that of vertex of head, elytra about twice as long as wide, parallel-sided with margins little wavy, punctures deep and large. Length - 2.08-2.47 mm.

Material : 6 ex. India : Nagaland, Kohima, nr. Bible College, 1460 m., 27.x.1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Assam, Meghalaya, Sikkim, West Bengal, Himachal Pradesh, Uttaranchal, Tamil Nadu, Karnataka, Kerala, Andaman Is.

Elsewhere : Sri Lanka; Vietnam; Taiwan; Japan; Malaysia; Singapore; Indonesia; Philipines; New Guinea; Solomon Is.; Australia; Congo; Ghana.

2. *Silvanus difficilis* Halstead

1973. *Silvanus difficilis* Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.),* **29** (2) : 73.

1977. *Silvanus difficilis*: Pal and Sengupta, *Oriental Ins.,* **11** (2) : 279.

Diagnosis : Reddish-brown and covered with short pubescence; eyes slightly shorter than half of length of head, temple about as long as 1.5 to 2 eye facets with broad outer apical angle, puncturation on vertex coarse and dense; elongated prothorax, anterior spine about half as long as eye with slightly blunt tip, well developed lateral depressions on pronotal disc, puncturation on pronotum coarse and dense and almost similar to that of vertex of head; elytra little more than twice as long as broad, side margins little wavy, punctures deep and large. Length – 2.20-2.50 mm.

Material : 15 ex. India : Nagaland, Wokha District, Chukitong, 1300m., 10 km. N-0 Wokha, 1 ex., 15.x.1998, T.K. Pal & party, *ex.* under bark; Mokokchung District, Sunkhomeng, 1260 m., 14 ex., 18.x.1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Arunachal Pradesh, Manipur, Assam, Meghalaya, Mizoram, Sikkim, West Bengal, Himachal Pradesh, Uttaranchal, Madhya Pradesh, Maharastra, Karnataka, Kerala, Tamil Nadu, Andaman Is..

Elsewhere : Sri Lanka; Myanmar; Vietnam; Taiwan; Malaysia; Singapore; Indonesia; Philipines; Moluccas; I. Delcas; Solomon Is.; Samoan Is.; Australia; New Ireland; West Africa.

3. *Silvanus rossi* Halstead

1973. *Silvanus rossi* Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.),* **29**(2) : 54.

1977. *Silvanus rossi*: Pal & Sengupta, *Oriental Ins.* **11**(2) : 274.

Diagnosis : Reddish-brown and covered with short pubescence; eyes shorter than half as long as head, temple slightly longer than one eye facet with blunt outer apical angle, puncturation on vertex coarse and dense, basal two segments of antennal club transverse and apical segment about as broad as long; elongated prothorax slightly narrowed posteriorly; anterior spine moderately large, about half as long as eye, its inner margin slightly curved outwardly and apex bluntly pointed, lateral depressions on pronotum slightly marked near base, puncturation on pronotum coarse and almost similar to that of vertex of head; elytra about twice as long as broad, side margins little vary near middle, punctures deep and large. Length – 2.50-2.55mm.

Material : 3 ex. India : Nagaland, Kohima, nr. Bible College, 1460 m., 21.x.1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Uttaranchal, Himachal Pradesh.

Elsewhere : Thailand; New Guinea.

Genus *Silvanoprus* Reitter

1911. *Silvanoprus* Reitter, *Fauna Germanica,* **3** : 45 [Type species: *Silvanus fagi* Guérin–Méneville].

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely facetted, temple usually flattened beneath eye, vertex with a transverse impressed line behind eyes, 11-segmented antenna with 3-segmented

club, antennal insertions hidden under projection of frons, mandible with well developed mola and 3- apical teeth, apical segments of maxillary and labial palpi fusiform; prothorax usually elongate and rarely transverse, side margins finely serrated, front angles with more or less prominent spines, front coxal cavities closed and prosternal process broad at apex, mesocoxae closely situated; wing with single anal vein; each elytron with 9 rows of strial punctures; tarsal segment 3 of legs strongly lobed below; intercoxal process of first abdominal ventrite broad but narrowed towards apex and slightly pointed, coxal lines closed and usually narrowly separated from posterior margins of hind coxal cavities.

4. *Silvanoprus scuticollis* (Walker)

1859. *Silvanus scuticollis* Walker, *Ann. Mag. Nat. Hist.* (3) **3** : 53.

1886. *Silvanus triangulus* Reitter, *Col. Hefte*, **15** : 60.

1908. *Silvanus scuticollis* : Grouvelle, *Annls. Soc. ent. Fr.*, **77** : 491.

1912. *Silvanoprus scuticollis* : Grouvelle, *Annls. Soc. ent. Fr.*, **81** : 342.

1979. *Silvanoprus scuticollis* : Pal and Sengupta, *Entomologica Basiliensia*, **4** : 70

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes slightly shorter than half of length of head, temple about as long as one eye facet and its outer apical angle slightly pointed, puncturation on vertex coarse and dense; prothorax broader than long and distinctly narrowed posteriorly, widest across anterior spines, anterior spine about two-thirds as long as eye, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra slightly less than twice as long as broad, side margins little wavy, punctures deep and large. Length- 2.15-2.55 mm.

Material : 9 ex. India : Nagaland, Dimapur District, Kukidolong, 245 m., 8 km. O-Medziphema, 28.x.1998, T.K. Pal & Party, *ex.* haystack.

Distribution : India : Nagaland (New record), Manipur, Assam, Meghalaya, Mizoram, Sikkim, West Bengal, Bihar, Uttar Pradesh, Uttaranchal, Tamil Nadu.

Elsewhere : Sri Lanka; Malaysia; Indonesia; Japan; East Africa; Madagascar; France; Guyana; West Indies.

5. *Silvanoprus indicus* Pal and Sengupta

1979. *Silvanoprus indicus* Pal and Sengupta, *Ent. Basel.*, **4** : 71.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes less than half of length of head, temple about as long as 2 to 3 eye facets and its outer apical margin broad, temple not flattened beneath eye, puncturation on vertex coarse and dense; prothorax elongate, slightly narrowed posteriorly, anterior spine short and its tip broadly pointed, side margins curved and sinuate near extremities, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra about twice as long as broad, side margins little wavy, punctures deep and large. Length- 2.29 mm.

Material : 1 ex. India : Nagaland, Dimapur District, Kukidolong, 245 m., 8 km. O-Medziphema, 28.x.1998, T.K. Pal & Party, *ex.* beating bush.

Distribution : India : Nagaland (New record), Manipur, Assam, Meghalaya, Mizoram, Sikkim.

6. *Silvanoprus longicollis* (Reitter)

1876. *Silvanus longicollis* Reitter, *Col. Hefte*, **15** 60

1908. *Silvanus longicollis* Grouvelle (nec. Reitter), *Annls Soc. ent. Fr.*, **77** : 491.

1912. *Silvanoprus longicollis* Grouvelle (nec. Reitter), *Annls Soc. ent. Fr.*, **81** : 341.

1984. *Silvanoprus longicollis* : Pal, *Rec. zool. Surv. India*, **81**(3-4) : 339.

Diagnosis : Yellowish- to blackish-brown and covered with short pubescence; eyes short, temple long, slightly longer than length of eye and its outer margin slightly rounded, antennal scape large and about twice as long as broad, antennal

segments 2-8 narrow-elongate, puncturation on vertex coarse and ocellate; prothorax elongate and almost parallel-sided, anterior spine small, about half as long as eye and projected forward, puncturation on pronotum almost similar to that of vertex of head and little finer anteriorly, lateral depressions on pronotum indistinct; elytra about twice as long as broad, side margins little wavy, punctures deep and large. Length- 2.20 - 2.28mm.

Material : 5 ex. India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N-O Wokha, 3 ex., 15.x.1998, T.K. Pal & party, *ex.* haystack (2 ex.) and under bark (1 ex.); Dimapur District, Kukidolong, 245 m., 8 km. O- Medziphema, 2 ex., 28.x.1998, T.K. Pal & party, *ex.* haystack.

Distribution : India : Nagaland (New record), Manipur, Assam, Meghalaya, Mizoram, Sikkim. West Bengal, Uttar Pradesh, Uttaranchal, Tamil Nadu.

Elsewhere : Sri Lanka; Malaysia; Indonesia; China; Japan; Madagaskar; East Africa.

7. ***Silvanoprus cephalotes*** (Reitter)

1876. *Silvanus cephalotes* Reitter, *Col. Hefte,* **15** : 62.

1908. *Silvanus longicollis* : Grouvelle (nec. Reitter), *Annls. Soc. ent. Fr.,* **77** : 492.

1912. *Silvanoprus longicollis* : Grouvelle (nec.Reitter), *Annls. Soc. ent. Fr.,* **81** : 342.

1979. *Silvanoprus cephalotes* : Pal & Sengupta, *Ent. Basel.,* **4** : 70.

1984. *Silvanoprus cephalotes* : Pal, *Rec. zool. Surv. India,* **81** (3-4) : 339.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes slightly shorter than half as long as head, temple about as long as one eye facet and its outer apical angle slightly pointed, temple flattened beneath eye, puncturation on vertex coarse and dense and not ocellate-type; elongated prothorax widest near middle, anterior spine small, about one-fourth as long as eye or shorter and projected forward, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, side margins little wavy, punctures deep and large. Length – 2.20-2.40mm.

Material : 5 ex. India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N. O-Wokha, 3 ex., 15.x.1998, T.K. Pal & party, *ex.* haystack; Mokokchung District, Sunkhomeng, 1260 m., 1 ex., 18.x.1998, T.K. Pal & party, *ex.* beating bush; Dimapur District, Kukidolong, 245m., 8 km. O-Medziphema, 1 ex., 28.x.1998, T.K. Pal & party, *ex.* haystack.

Distribution : India : Nagaland (New record), Manipur, Assam, Meghalaya, Mizoram, Sikkim, West Bengal, Bihar, Uttar Pradesh, Uttaranchal, Delhi, Karnataka, Tamil Nadu.

Elsewhere : Bhutan; Nepal; Sri Lanka; Indonesia; Japan; China.

8. ***Silvanoprus angusticollis*** (Reitter)

1876. *Silvanus angusticolis* Reitter, *Col. Hefte,* **15** : 59.

1912. *Silvanoprus angusticollis*: Grouvelle, *Annls. Soc. ent. Fr.,* **81** : 341.

1979. *Silvanoprus angusticollis* : Pal & Sengupta, *Ent. Basel.,* **4** : 71.

Diagnosis : Reddish-brown and covered with short pubescence; eyes slightly shorter than half as long as head, temple shorter than one eye facet and its outer apical angle pointed, temple flattened beneath eye, puncturation on vertex coarse and dense; elongated prothorax widest across anterior spines, slightly narrowed posteriorly behind middle, anterior spine moderately long, slightly shorter than half as long as eye and projected antero-laterally, lateral depressions on pronotum slightly developed, puncturation on pronotun almost similar to that of vertex of head; elytra about twice as long as broad, side margins little wavy, punctures deep and large. Length – 2.55-2.75 mm.

Material : 2 ex. India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N-O Wokha, 1 ex., 15.x.1998, T.K. Pal & party, *ex.* haystack; Mokokchung District, Sunkhomeng, 1260 m., 1 ex., 18.x.1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Meghalaya, Mizoram, Sikkim, West Bengal

(Darjeeling district), Uttar Pradesh, Kashmir, Tamil Nadu.

Elsewhere : Bhutan; Nepal; Japan.

Genus ***Protosilvanus*** Grouvelle

1912. *Silvanus (Protosilvanus)* Grouvelle, *Annls. Soc. ent. Fr.*, **81** : 336.

1973. *Protosilvanus* Grouvelle: Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.)* **29**(2) : 89 [Type species : *Silvanus lateritius* Reitter].

Diagnosis : Elongated, parallel-sided, head devoid of fronto-clypeal suture, eyes large and coarsely facetted, temple flattened beneath eye and shelf-like, vertex with a distinct transverse impressed line behind eyes, 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with well developed mola and 3 apical teeth, maxillary lacinia without apical spines, segments 2 of both maxillary and labial palpi longer than apical segments; prothorax elongated, front angles with prominent spines, side margins finely denticulate, front coxae widely separated and coxal cavities closed behind, sterno-pleural suture extending to lateral margin, mesocoxae widely separated; wing with single anal vein; each elytron with 9 rows of strial punctures, interstice 7 more or less carinate; tarsi of legs simple; intercoxal process of first abdominal ventrite broad and broadly pointed at apex, coxal lines closed and marginal striae of hind coxal cavities.

9. ***Protosilvanus lateritius*** (Reitter)

1878. *Silvanus lateritius* Reitter, *Verh. Zool. Bot. Ges. Wien*, **28** : 194.

1908. *Silvanus lateritius*: Grouvelle, *Annls. Soc. ent. Fr.*, **77** : 490.

1912. *Silvanus (Protosilvanus) lateritius* : Grouvelle, *Annls. Soc ent. Fr.*, **81** : 336.

1973. *Protosilvanus lateritius* : Halstead, *Bull. Br. Mus. nat. Hist. (Ent.)*, **29**(2) : 96.

1984. *Protosilvanus lateritius* : Pal & Sengupta. *Oriental Ins.*, **18** : 237.

Diagnosis : Dorsally flattened, reddish-brown and covered with short pubescence; eyes about half as long as head, temple shorter than width of an eye facet and sloped downward, antennal segments 9 and 10 with apical spines, puncturation on vertex coarse and dense; elongated prothorax slightly narrowed behind middle, widest across anterior spines, lateral depressions on pronotum rather well developed, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, almost parallel-sided with side margins slightly wavy, punctures deep and large, interstice 7 strongly carinate and extending slightly more than anterior three-fourths. Length- 2.9-3.5 mm.

Material : 8 ex. India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N-0 Wokha, 3 ex., 15.x.1998, T.K. Pal & party, *ex.* under bark; Mokokchung District, Sunkhomeng, 1260m., 5 ex., 18.x.1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Arunachal Pradesh, Assam, Meghalaya, Mizoram, Sikkim, West Bengal, Bihar, Uttar Pradesh, Uttaranchal, Himachal Pradesh, Kerala, Tamil Nadu, Andaman Is.

Elsewhere : Nepal; Bangladesh; Myanmar; Sri Lanka; Thailand; Vietnam; Malaysia; Singapore; Indonesia; Philippines; Taiwan; China; Japan.

Genus ***Monanus*** Sharp

1879. *Monanus* Sharp, *Trans. Ent. Soc. Lond.*, **2** : 85 [Type species : *Monanus crenatus* Sharp].

1899. *Emporius* Ganglbauer, *Die Käfer von Mitteleuropa*, **3** : 429.

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely facetted, temple flattened beneath eye, no transverse impressed line on vertex behind eyes, 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with well developed mola and three apical teeth, apical segments of maxillary and labial palpi longer than other segments and fusiform, maxillary lacinia without apical spine; prothorax as broad as long, side margins with a few setose denticles, front coxae contiguous and coxal cavities closed behind, sterno-pleural suture extending usually to anterior denticle, mesocoxae

contiguous; wing with single anal vein; each elytron with 9 rows of strial punctures, alternate interstices with single and double rows of pubescence; tarsal segments 2 and 3 of legs strongly lobed below; intercoxal process of first abdominal ventrite broad and its apex slightly rounded, coxal lines almost marginal striae of hind coxal cavities.

10. ***Monanus concinnulus*** (Walker)

1858. *Monanus concinnulus* Walker, *Ann. Mag. Nat. Hist.*, (3) **2** : 207.

1867. *Silvanus signatus* Frauenfeld, *Verh. Zool. Bot. Ges. Wien*, **17** : 438.

1874. *Cryptamorpha fasciatus* Wollaston, *Entomologist's mon. Mag.*, **10** : 169.

1876. *Cryptamorpha concinnula* : Waterhouse, *Entomologist's mon. Mag.*, **13** : 122.

1899. *Emporius signatus* : Ganglbauer, *Die Käfer von Mitteleuropa*, **3** : 586.

1908. *Emporius concinnulus:* Grouvelle, *Annls. Soc. ent. Fr.*, **77** : 489.

1911. *Emporius concinnulus: Reitter, Fauna Germanica*, **3** : 48.

1912. *Monanus* (s. str.) *concinnulus* : Grouvelle, *Annls. Soc. ent. Fr.*, **81** : 371.

1981. *Monanus* (s. str.) *concinnulus* : Pal, *Oriental Ins.*, **15**(3) : 247.

Diagnosis : Moderately convex, rather shiny, yellowish- to reddish-brown and with black markings on elytra, covered with short pubescence; eyes shorter than one-third as long as head, temple about as long as 1.5 eye facets and its outer apical angle slightly pointed, antenna shorter than head and prothorax together, puncturation on vertex coarse and dense; quadrate prothorax slightly rounded anteriorly, side margin with about ten small and blunt denticles and each denticle bear an anteriorly directed seta, puncturation on pronotum almost similar to that of vertex of head; elytra shorter than twice as long as broad, side margins almost uniformly curved, a transverse black spot near middle and that extends towards apex along suture, punctures large. Length- 2.00–2.30 mm.

Material : 6 ex. India : Nagaland, Dimapur District, Kukidolong, 245 m., 8 km. O-Medziphema, 6 ex., 28.x.1998, T.K. Pal & party, *ex.* haystack.

Distribution : India : Nagaland (New record), Manipur, Meghalaya, Mizoram, Sikkim, West Bengal, Bihar, Uttar Pradesh, Uttaranchal, Delhi, Tamil Nadu, Karnataka. Outside India this species is widely distributed in both the Old and New World.

Subfamily PSAMMOECINAE

Genus ***Psammoecus*** Latreille

1829. *Psammoechus* Latreille, *Cuv. Regne Anim.* ed. 2, **5** : 135 [Type species : *Dermestes bipunctatus* (Fabricius)].

1830. *Crypta* Stephen, *Illustration of British Entomology: Mandibulata*, **3** : 103.

1846. *Psammoecus* : Erichson, *Naturgeschichte der Insekten Deutschlands* 1, Coleoptera, **3** : 329.

Diagnosis : Elongate, slightly ovoid; head with fronto-clypeal suture, two lateral longitudinal striae on vertex originating near bases of antennae, eyes small to moderately large and coarsely facetted, temple may or may not extend beneath eye, transverse impressed line on vertex behind eyes, 11-segmented antenna with no distinguishable club, antennal insertions somewhat dorso-lateral; mandible with large basal mandibular cavity and three apical teeth, apical segments of both maxillary and labial palpi securiform or transverse, maxillary lacinia without apical spine; prothorax usually transverse, side margins with more or less prominent denticles, front coxae contiguous and coxal cavities closed behind, apical margin of prosternal process little sinuate, sterno-pleural suture extending to lateral margin; wing with single anal vein; each elytron with 10 rows of strial punctures; tarsal segments 1-3 of legs lobed below; intercoxal process of first abdominal ventrite broad and its apical margin broadly pointed, femoral lines almost marginal striae of hind coxal cavities.

11. ***Psammoecus harmandi*** Grouvelle

1912. *Psammoeeus harmandi* Grouvelle, *Bull. Mus. Paris*, **28** : 413.

1985. *Psammoecus harmandi* : Pal. *Misc. Publ. Rec. zool. Surv. India, Occ. Pap.*, **71** : 19.

Diagnosis: Elongate-ovoid, moderately convex, slightly shiny, yellowish-to reddish-brown with blackish spots on elytra and antennal segments 9 and 10 blackish, covered with moderately long pubescence; eyes shorter than half of length of head, temple moderately long and slightly flattened beneath eye, antenna long and slender, scape moderately large and about twice as long as broad, segments 3 to 7 longer than pedicel, segments 8 to 11 slightly wider than segment 7, segment 11 elongate and slightly acuminate at apex, puncturation on vertex coarse and dense; prothorax transverse, anteriorly about as wide as head across eyes, front margin and side margins slightly rounded, side margin with six minute teeth, puncturation on pronotum almost similar to that of vertex of head; elytra about one and a half times as long as broad, widest near middle, punctures moderately large, interstices narrower than punctures, a more or less rounded blackish spot on each elytron near middle and a somewhat rounded sutural spot behind them. Length - 3.0 mm.

Material : 2 ex. India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N-O Wokha, 1 ex., 15.x.1998, T.K. Pal & party, *ex.* haystack; Mokokchung District, Sunkhomeng, 1260 m., 1 ex., 18.x.1998, T.K. Pal & party, *ex.* beating bush.

Distribution : India : Nagaland (New record), Arunachal Pradesh, West Bengal (Darjeeling district), Sikkim.

Elsewhere : Nepal.

12. ***Psammoecus trilochana*** Pal

1985. *Psammoecus trilochana* Pal, *Rec. zool. Surv. India, Occ. Pap.*, **71** : 29.

Diagnosis : Elongate-oval, moderately convex, slightly shiny, yellowish-brown, blackish spots on elytra and antennal segments 9 and 10 blackish, covered with moderately long and semierect pubescence; eyes slightly longer than one-third as long as head, temple moderately long and slightly flattened beneath eye, antenna long and slender, scape little longer than twice as long as broad, segments 3-7 longer than pedicel, segments 8-11 slightly wider than 7, segments 8 and 9 slightly elongate and segment 10 about as broad as long, segment 11 elongate and acuminate at apex. Puncturation on vertex coarse and dense; prothorax about as broad as long and narrower posteriorly, anterior margin rounded and with a few small denticles, side margin slightly sinuate at posterior half and with seven moderately large teeth, teeth about as broad as long and somewhat blunt, anterior and posterior angles obtuse and bearing teeth, puncturation on pronotum almost similar to that of vertex of head; elytra slightly less than one and a half times as long as broad, ovoid, punctures large and interstices narrower than punctures, lateral margin with longer and almost erect setae, a somewhat oblique blackish spot on each elytron near middle with extension along suture. Length- 3.16mm.

Material : 1 ex. India : Nagaland, Phek District, Kutsuru, 1800 m., 10 km. O- Pfutsero, 25.x.1998, T.K. Pal & party, *ex.* beating bush.

Distribution : India : Nagaland (New record), Himachal Pradesh.

Elsewhere : Nepal.

13. ***Psammoecus bambusae*** Pal

1985. *Psammoecus bambusae* Pal. *Misc. Publ. Rec zool Surv. India, Occ. Pap.*, **71** : 33.

Diagnosis : Elongate-ovoid, subdepressed, slightly shiny, yellowish-brown with blackish spots on elytra, apical part of clypeus and antennal segments 7 to 10 blackish, covered with long pubescence; eyes about half as long as head, temple moderately long and slightly flattened beneath eye, antenna long and slender, antennal structure almost similar to that in *P harmandi*, puncturation on vertex coarse and dense; prothorax distinctly transverse and narrowed posteriorly, anterior margin about as wide as head across eyes and sinuate on either side on middle, side margin slightly rounded bearing seven distinct denticles, puncturation on pronotum slightly denser than on vertex of head; elytra more than one and a half

times as long as broad, widest near middle, punctures large and interstices narrower than punctures, two elongated yellowish areas on both anterior and posterior halves of blackish elytra. Length – 3.6 mm.

Material : 5 ex. India : Nagaland, Mokokchung District, Sunkhomeng, 1260m., 18.x.1998, T.K. Pal & party, *ex.* beating bush.

Distribution : India : Nagaland (New record), Sikkim.

14. ***Psammoecus trimaculatus*** Motschulsky

1858. *Psammoecus trimaculatus* Motschulsky, *Etud. Ent.*, **7** : 45.

1859. ?*Cucujus incommodus* Walker, *Ann. Mag. Nat. Hist.*, (3) **3** : 53.

1876. *Psammoecus trimaculatus* : Waterhouse, *Entomologist's mon. Mag.*, **13** : 124.

1876. *Telephanus cruciger* Waterhouse, *Entomologist's mon. Mag.*, **13** : 125.

1879. *Psammoecus trimaculatus*: Reitter, *Verh. Zool. Bot. Ges. Wien*, **29** : 509.

1906. *Psammoecus trimaculatus*: Grouvelle, *Annls. Soc. ent. Fr.*, **75** : 125.

1908. *Psammoecus trimaculatus* : Grouvelle, *Annls. Soc. ent. Fr.*, **77** : 406.

1979. *Psammoecus trimaculatus* : Pal & Sengupta, *Ent. Basel.*, **4** : 75.

1984. *Psammoecus trimaculatus* : Pal, *Rec. zool. Surv. India*, **81**(3-4) : 352.

1985. *Psammoecus trimaculatus* : Pal, *Misc. Publ. Rec. zoo. Surv. India, Occ. Pap.*, **71** : 41.

Diagnosis : Elongate-oval, moderately convex, slightly shiny, yellowish-brown with blackish spots on elytra and antennal segments 7-10 blackish, elytra covered with moderately long pubescence; eyes slightly shorter than half as long as head, temple short and slightly flattened beneath eye, antenna long and slender, scape moderately large and elongate, segments 2-6 shorter, subequal and elongate, segments 7-11 slightly wider than segment 6, segment 7 slightly elongate, segments 8-10 about as broad as long or slightly transverse, segment 11 elongate and acuminate apically; prothorax transverse, anterior margin narrower than head across eyes, front margin and side margins feebly rounded, side margin with six or seven teeth of variable length, longest tooth in posterior half, slightly elongate and blunt apically, puncturation on pronotum coarse and dense, disc setose; elytra shorter than one and a half times as long as broad, widest near middle, punctures moderately large, interstices about as wide as or wider than punctures, a more or less rounded blackish spot on each elytron in posterior half and a longitudinal sutural spot present behind them. Length - 2.5 mm.

Material: 1 ex. India : Nagaland, Mokokchung District, Sunkhomeng, 1260 m., 18.x.1998, T.K. Pal & party, *ex.* beating bush.

Distribution : India : Nagaland (New record), Arunachal Pradesh, Manipur, Assam, Meghalaya, Mizoram, Sikkim, West Bengal, Bihar, Orissa, Uttaranchal, Uttar Pradesh, Jammu & Kashmir, Delhi, Karnataka, Tamil Nadu, Kerala.

Elsewhere : Nepal, Bhutan, Sri Lanka, Myanmar, Malaysia, Japan, Madagascar.

Subfamily CRYPTAMORPHINAE

Genus ***Cryptamorpha*** Wollaston

1854. *Cryptamorpha* Wollaston, *Insecta Maderensia* : 156 [Type-species : *Cryptamorpha musae* Wollaston = *desjardinsi* (Guérin-Meneville)].

1859. *Pseudophanus* Leconte, *Proc. Acad. Philadelphia* : 84.

1867. *Parabrontes* Redtenbacher, *Reise Novara Zool.*, **2** : 40.

Diagnosis : Elongated, subparallel; head with fronto-clypeal suture, two longitudinal grooves present on lateral sides and often united, additional longitudinal impressed lines originating from lateral grooves and extending posteriorly to outer margin, eyes usually large and coarsely facetted, temple slightly flattened beneath eye, no transverse impressed line on vertex behind eyes, 11-segmented antenna with no distinguishable club, antennal insertions partly hidden under projection of frons, anterior part of gular region with a transverse groove, mandible with a large basal mandibular cavity, right mandible with 3 and left mandible with 2 apical teeth, apical segments of

maxillary and labial palpi elongated and fusiform, maxillary lacinia without apical spine; prothorax elongated to transverse, front coxae contiguous and coxal cavities closed behind, apical margin of prosternal process little sinuate, sterno-pleural suture extending to lateral margin; mesocoxae contiguous; wing with 5 anal veins; each elytron with ten rows of strial punctures and a scutellary striole ; tarsal segments 1 and 2 of leg slightly lobed below, segment 3 bilobed; intercoxal process of abdominal ventrite 1 narrow and its apical margin slightly rounded, coxal lines almost marginal striae of hind coxal cavities, ventrites 2-5 shorter than 1 and subequal.

15. *Cryptamorpha kaszabi* Pal & Sengupta

1979. *Cryptamorpha kaszabi* Pal & Sengupta, *Ent. Basel.*, **4** : 78.

Diagnosis : Elongate, moderately depressed, yellowish-brown with apical three segments of antenna darker and blackish spots on elytra, covered with short pubescence; eyes about one-third as long as head, longitudinal grooves unite on posterior side of vertex and U-shaped, additional longitudinal impressed lines on vertex well marked; antenna long and slender, segments 9-11 slightly broader than preceding segments; puncturation on vertex fine and sparse, clypeus finely punctate and shiny; prothorax slightly elongate, convex, anterior half almost parallel-sided and broader than posterior half, transverse impressed line on pronotum near basal margin not distinct, puncturation on pronotum coarse and dense; elytra about twice as long as broad, almost parallel-sided but little wider below middle, punctures large and interstices narrower than rows of punctures, scutellary striole short and consists of about nine punctures. Length – 2.8-3.0 mm.

Material : 17 ex. India : Nagaland, Kohima, Puliebadze Wildlife Sanctuary, 1500 m., 10 ex., 12.x.1998, T.K. Pal & party, *ex.* beating bush; Kohima, 1470 m., 3 ex., 11.x.1998, T.K. Pal & party, *ex.* beating bush; Wokha District, Lungsang, 1340 m., 4 ex., 14.x.1998, T.K. Pal & party.

Distribution : India : Nagaland (New record), Meghalaya, West Bengal (Darjeeling District).

Subfamily ULEIOTINAE

Genus *Uleiota* Latreille

1796. *Uleiota* Latreille, *Precis des, caracteres generiques des Insectes disposes dans un orde naturel* : 46.

1801. *Brontes* Fabricius, *Systema eleutheratorum*, **2** : 97.

1804. *Uleiota* : Latreille, *Histoire Naturelle, generale et particuliere, des crustaces et des Insectes*, **11** : 257.

1807. *Uleiota* : Latreille, *Genera crustaceorum et Insectorum*, **3** : 26.

1846. *Brontes* : Erichson, *Naturgeschichte der Insekten Deutschlands*, **3** : 329.

1854. *Brontes* : Latreille, *Histoire Naturelle des Insektes*, **2** : 408.

1858. *Brontes* : Redtenbacher, *Fauna Austriaca- die Käfer*. ed., **2** : 353.

1879. *Hyliota* : Reitter, *Verh. Zool. bot. Ges. Wien*, **29** : 80.

1884. *Brontes* : Casey, *Trans. Am. ent. Soc.*, **11** : 97.

1885- 86. *Hyliota* : Reitter, *Francique Guillebeau* : *Tableaux Analytiques Determiner les Coleopteres europeins*, **1** : 8.

1888. *Hyleota* : Seidlitz, *Fauna Baltica, ed.* **2** : Gatt p 55

1899. *Uleiota* : Ganglebauer, *Die Käfer von Mitteleuopa*, **3** : 592.

1901. *Hyliota.* : Arrow, *Trans. ent. Soc. London*, 1901 : 593.

1908. *Uleiota* : Grouvelle, *Annls. Soc. ent. Fr.*, **77** : 459

1911. *Uleiota* : Kuhnt, *Illustrierte Bestimmungs tabellen der Käfer Deutschlands* : 459.

1911. *Uleiota* : Reitter, *Fauna Germanica*, **3** : 48

1930. *Uleiota* : Hetschko, *Coleopt. Cat.*, 109 :

1984. *Uleiota* : Pal, Sengupta & Crowson, *Oriental Ins* **18** : 217.

Diagnosis : Elongate, flat, with long antennae; head broader than long, without fronto-clypeal suture, eyes moderately large, temple flattened beneath eye and shelf-like, transverse impressed line on vertex behind eyes; antenna long, slender and filiform, 11-segmented, antennal insertions partly hidden under projection of frons, mandible with a large basal mandibular cavity and three apical teeth partly exposed and its outer margin with elongated discal area, maxillary lacinia without apical spine, apical segment of maxillary palpi elongate-fusiform, apical segment of labial

palpi somewhat securiform; prothorax transverse, lateral margins finely or distinctly dentate, pronotum flat and usually with lateral carinae; front coxal cavities open, coxae widely separated, prosternal process broad, sterno-pleural suture extending to lateral margin; mesocoxae widely separated and hind coxae slightly closer than mesocoxae; wing with three anal veins; each elytron with 9 rows of strial punctures, without scutellary striole; tarsi simple; intercoxal process of first abdominal ventrite broad at base, slightly narrowed and broadly rounded at apex, coxal lines almost marginal striae of hind coxae, a pair of small glandular cavity-like structure present behind hind coxal cavities.

16. *Uleiota serricollis* (Candeze)

1861. *Brontes serricollis* Candeze, *Mem. Soc. R. Sci. Leige,* (1) **16** : 341.

1863. *Brontes ? Ceylonicus*, Motschulsky, *Bull. Moscou,* **36** : 500.

1901. *Hyliota serricollis*: Arrow, *Trans. Ent. Soc. London,* 1901 : 569.

1930. *Uleiota serricollis*: Hetschko, *Coleopt. Cat.*, **109** : 7.

1984. *Uleiota serricollis*: Pal, Sengupta & Crowson, *Oriental Ins.*, **18** : 220.

Diagnosis : Elongate, parallel-sided, markedly flattened, little shiny, covered with short pubescence; head broader than long, eyes shorter than one-third as long as head, temple about as long as 3-4 eyes facets and its tip broad, transverse depression on vertex above antennal insertions prominent, antenna long, slender, all segments distinctly elongate, longer than the body; puncturation on vertex fine and dense; prothorax slightly broader than long, slightly wider near anterior angles, anterior margin slightly sloped near extremities, lateral margin slightly curved with 11-14 denticles, tip of denticles rather pointed, pronotum flat with sublateral ridges, puncturation coarser than that of vertex of head; elytra more than twice as long as broad, almost parallel-sided, punctures deep and moderately large, interstices wider than rows of punctures, 7th elytral interstices strongly carinate and extending almost up to apex. Length – 6.4 mm.

Material: 1 ex. India : Nagaland, Phek District, Kutsuru, 1800 m., 10 km. O- Pfutsero, 1 ex., 25.x.1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Kerala.

Elsewhere : Sri Lanka.

17. *Uleiota alticola* Pal, Sengupta & Crowson

1984. *Uleiota alticola*: Pal, Sengupta & Crowson, *Oriental Ins.*, **18** : 221.

1985. *Uleiota alticola*: Pal, *Rec. zool. Surv. India,* **82**(1-4) : 198.

Diagnosis : Elongated, parallel-sided, dorsally flattened, little shiny, covered with short pubescence; head broader than long, eyes shorter than one-third as long as head, temple about as long as four eye facets and its outer apical angle broad, a short longitudinal depression near base of antenna, antenna long, slender, about as long the body; puncturation on vertex moderately coarse and dense; prothorax broader than long, widest near anterior margin and slightly narrower posteriorly, anterior margin slightly sloped near extremities, lateral margin almost straight with 10-11 denticles, tip of denticles somewhat pointed, pronotum flat with shallow lateral depressions, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, nearly parallel-sided, punctures deep and large, interstices narrower than rows of punctures, alternate interstices slightly wider and narrower, 7th interstice strongly carinate. Length – 5.12mm.

Material : 1 ex. India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N-O Wokha, 15.x.1998, T.K. Pal & party, *ex.* rotting wood.

Distribution : India : Nagaland (New record), Arunachal Pradesh, Meghalaya, West Bengal (Darjeeling district).

Key to the subfamilies, genera and species of SILVANIDAE

1. Front coxal cavities externally widely open behind; tarsi simple; antennal scape markedly

long, antenna long and filiform; facies parallel-sided with dorsal surface markedly flattened ..... (ULEIOTINAE : *Uleiota* Latreille)....2

– Front coxal cavities externally closed behind; tarsi usually lobed; sometime simple; antennal scape moderately long, if markedly long and distinctly filiform antenna, then body ovoid; facies subconvex or ovoid, if markedly flattened and parallel-sided, then antenna clubbed. 3

2. Elytral interstices distinctly wider than rows of punctures; a transverse depression on vertex near base of antenna; antenna distinctly longer than body ..... *Uleiota serricollis* (Candeze)

– Elytral interstices narrower than rows of punctures; no transverse depression on vertex near antennal base; antenna about as long as body or shorter ..... *Uleiota alticola* Pal, Sengupta & Crowson

3. Head with distinct fronto-clypeal suture and a pair of longitudinal grooves or striae on vertex; antennal insertions somewhat exposed, antennal club not distinguishable 4

– Head without fronto-clypeal suture and devoid of longitudinal grooves or striae; antennal insertions hidden under projection of frons, antennal club more or less distinct ..... (SILVANINAE)....8

4. Apical segments of labial and maxillary palpi elongated and more and less fusiform; elytra more or less parallel-sided with distinct scutellary strioles; a curved transverse groove on anterior part of gular region of head; tarsal segment 3 bilobed and segments 1 and 2 unilobed. Longitudinal grooves of head unite on posterior side of vertex and forming an U-shaped structure; side margins of elongate prothorax widest near anterior margin, slightly sinuate near posterior angles; puncturation of head inconspicuous and sparse; elytral interstices distinctly narrower than width of punctures ..... CRYPTAMORPHINAE : *Cryptamorpha kaszabi* Pal & Segupta.

- Apical segments of labial and maxillary palpi securiform or strongly transverse; elytra ovoid and without scutellary strioles; head devoid of curved transverse groove on anterior part of gular region; tarsal segment -3 lobed below ..... PSAMMOECINAE : *Psammoecus* Latreille.....5

5. Teeth on lateral margin of prothorax minute, indistinct, either broader than long or about as broad as long. Lateral margin of prothorax gradually narrowed behind middle but not sinuate before posterior angles, sides of pronotum somewhat depressed in posterior half, antennal segments 9 and 10 blackish. ..... *Psammoecus harmandi* Grouvelle

– Teeth on lateral margin of prothorax partly long, distinct and longer than broad. 6

6. Antennal segments 9-10 blackish. Eyes small and about one-third as long as head; lateral sides of pronotum slightly depressed in posterior half; elytral interstices narrower than width of punctures ..... *Psammoecus trilochana* Pal

– Antennal segments 7 and 10 blackish.....7

7. Elytral pattern of four light regions on blackish base, dorsal surface subdepressed; front margin of prothorax sinuate on either side of middle. ..... *Psammoecus bambusae* Pal

– Elytra without pattern of four light regions, three blackish spots on yellowish-brown base, dorsal surface somewhat convex; front margin of prothorax slightly rounded ..... *Psammoecus trimaculatus* Motschulsky

8. Lateral margin of prothorax finely serrated and without large teeth or denticles; tarsi simple or only segment 3 lobed 9

– Lateral margin of prothorax with 8-10 denticles; tarsal segments 2 and 3 strongly lobed. Elytra ovoid, moderately convex, about twice as long as broad, transverse blackish

spot near middle of elytra .....
..... *Monanus concinnulus* (Walker)

9. Dorsal surface markedly flattened; sterno-pleural suture of prothorax extending to lateral margin, front coxae widely separated; apical segments of maxillary and labial palpi shorter than segment 2; antennal segments 9 and 10 with apical spines; 7th elytral interstice carinate .... *Protosilvanus lateritius* (Reitter)

– Dorsal surface moderately flattened; sterno-pleural suture of prothorax extending to anterior spine, front coxae less widely separated; apical segments of maxillary and labial palpi longest; antennal segments 9 and 10 devoid of spines; elytral interstices not carinate 10

10. Tarsi simple and not lobed .....
..... (*Silvanus* Laterille).... 11

– Tarsal segment 3 strongly lobed below.....
..... (*Silvanoprus* Reitter).... 13

11. Temple short and represented by a thin platform, length of temple shorter than width of one eye facet and its outer apical angle pointed. ..... *Silvanus lewisi* Reitter

– Temple distinct and thick, length of temple longer than width of one eye facet and its outer apical angle somewhat broad 12

12. Inner margin of anterior spine of prothorax distinctly curved outwardly; temple hardly as long as 1.5 eye facets .....
..... *Silvanus rossi* Halstead

– Inner margin of anterior spine of prothorax almost straight; temple hardly as long as 2 eye facets..... *Silvanus difficilis* Halstead

13. Prothorax broader than long, width of prothorax across anterior spines more than 1.5 times as broad as width across posterior angles, prothorax distinctly narrowed posteriorly, lateral margins almost straight, shape of prothorax somewhat triangular .....
..... *Silvanoprus scuticollis* (Walker)

– Prothorax longer than broad, width of prothorax across anterior spines less than 1.25 times as broad as width across posterior angles, prothorax slightly narrowed posteriorly behind middle, lateral margin distinctly sinuate, shape of prothorax different 14

14. Temple of head moderately long and not flattened beneath eye, about as long as two to three eye facets and inwardly notched ...
..... *Silvanoprus indicus* Pal & Sengupta

– Temple of head very short or long and distinctly flattened beneath eye, temple either short, thin with outer apical pointed, or long with outer apical margin rounded. 15

15. Temple of head short, about as long as one to two eyes-facets and its outer apical angle somewhat pointed; puncturation of head and prothorax raticulate-type, coarse and dense. 16

– Temple of head long, temple about as long as eye or longer than eye and its outer apical margin rounded; puncturation of head and prothorax ocellate-type, coarse and somewhat rugose ..... *Silvanoprus longicillis* (Reitter)

16. Front and middle femora with a distinct spine near middle; lateral margin of prothorax more or less uniformly curved outwardly; anterior spine of prothorax small, projected in front and about as long as one-fourth of eye .....
..... *Silvanoprus cephalotes* (Reitter)

– Front and middle femora devoid of any spine; lateral margin of prothorax distinctly wavy and sinuate across anterior third; anterior spine of prothorax larger, about half as long as eye and projecting somewhat outwardly
..... *Silvanoprus angusticollis* (Reitter)

SUMMARY

The paper deals with 17 species under 7 genera of 4 subfamilies from the State of Nagaland. All the species are recorded first time from the State as no study of Silvanidae was undertaken earlier from here. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The authors are indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 127-130, 2006

INSECTA : COLEOPTERA : INOPEPLIDAE

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INTRODUCTION

The Inopeplidae are a sufficiently distinct small family of the section Heteromera under the superfamily Cucujoidea. The inopeplids are often broadly elongate, flattened with abbreviated elytra, and are seen under bark or in decaying wood. The representatives of the family are mostly found in the tropical parts of the world. The constitution of the group has undergone changes till Crowson (1955). Hetschko (1930) listed 3 of 52 species under the genus *Inopeplus* Smith from India, while treating it under the family Cucujidae (Cucujinae: Inopeplinae). Blackwelder (1942) referred *Inopeplus* to the family Staphylinidae, because of apparent similarity of exposed abdominal segments. Crowson (*op. cit.*) recognised the distinct family status of Inopeplidae and include the genera *Inopeplus*, *Diagrypnodes* Waterhouse and *Aciphus* Oliff in it. Sengupta, Pal & Mukhopadhyay (1977) ascertained its systematic position and described 3 more species from India. Subsequently, Pal (1992a, b) added 3 more species from Eastern Himalaya. However, no species of Inopeplidae is hitherto known from Nagaland. The present work is based on the recent collection made by the author, that represent 3 species under 1 genus.

CHARACTER OF THE FAMILY INOPEPLIDAE

Body elongate, moderately broadened, largely flattened and glabrous. Head more or less prognathous, sometimes little rostrate, eyes entire and more or less emarginated, fronto-clypeal suture prominent, 11-segmented antenna without distinct club, antennal insertions partly hidden under frons, ventrally gular sutures widely separated, without antennal cavities; mandibles largely exposed, mola well developed, without any mandibular cavity; maxillary lacinia and galea well developed, palpi long and segments 2-4 elongate; mentum transverse, apical two segments of labial palpi elongate; labrum exposed. Prothorax transverse and narrowed towards base, side margin often with denticles, front coxae somewhat oblique with hidden trochantins, coxal cavities open. Mesothorax moderately large, mesocoxal cavities outwardly closed by sterna, metasternum usually without median impressed line, mesocoxae and hind coxae rather widely separated. Elytra truncate at apex, exposing a few abdominal tergites, epipleura narrow or incompete; hind wings usually lack radial cell or anal cell. Trochanters not distinctly heteromeroid, tibiae provided with apical spurs, tarsi usually 5-5-4. First two ventrites of abdomen may be connate. Aedeagus trilobed-type, with accessory lobes attached to fused parameres.

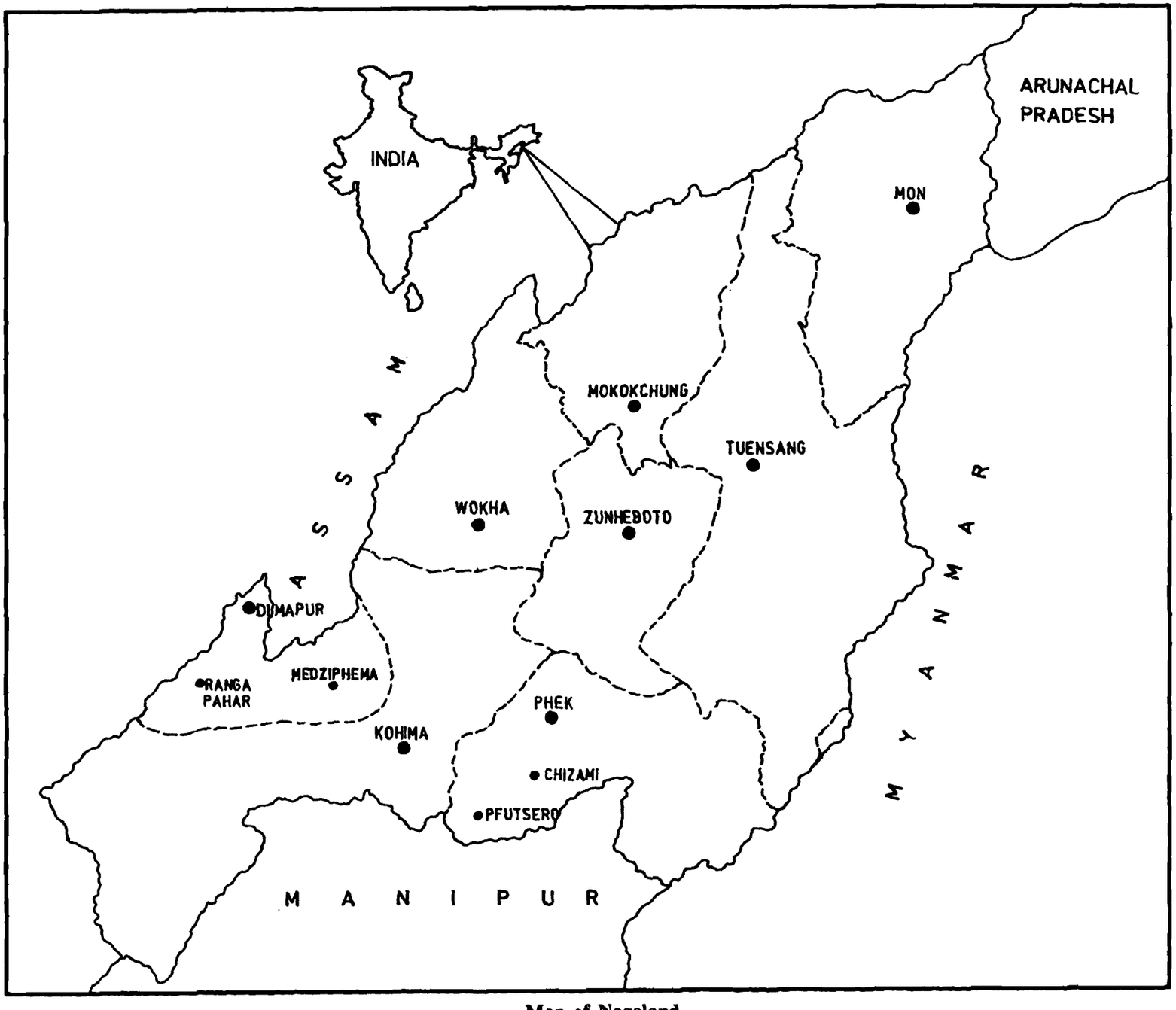
LIST OF TAXA

Family INOPEPLIDAE

1. *Inopeplus biocellatus* (Motschulsky)
2. *Inopeplus nitidus* Sengupta, Pal & Mukhopadhyay
3. *Inopeplus* sp. A

Key to the species of Inopeplidae

1. Head and prothorax orange to brownish-red 2



Map of Nagaland

- Head and prothorax dark brown or deep black. Lateral margin of prothorax smooth; two pairs of pale spots on blackish elytra- one in both anterior and posterior halves; at least last three abdominal segments exposed. .... *Inopeplus* sp. A

2. Elytra blackish with a whitish rounded spot on each elytron; head and pronotum finely punctuate. ..... *biocellatus* (Motschulsky)

- Elytra entirely blackish and devoid of any spot; head and pronotum rather coarsely punctuate .... *nitidus* Sengupta, Pal & Mukhopadhyay

Family INOPEPLIDAE

Genus *Inopeplus* Smith

1851. *Inopeplus* Smith. List. *Col. Brit. Mus.*, **1** : 4.

1853. *Ino* Castelnau, *Etud. ent.*, **1** : 135.

1859. *Euryplatys* Motschulsky, *Etud. ent.*, **8** : 195.

1869. *Pseudino* Fairmaire, *Annls. Soc. ent. Fr.*, **9**(4) : 208.

1908. *Inopeplus* : Grouvelle. *Annls. Soc. ent. Fr.*, **77** : 461.

1977. *Inopeplus* : Sengupta. Pal & Mukhopadhyay. *Oriental Ins.*, **11** : 397.

Diagnosis : Elongated, flat, soft-bodied, elytra truncate and exposing at least least two abdominal segments. Head transverse with moderately large eyes, distinct fronto-clypeal suture, 11-segmented antenna somewhat moniliform and not clubbed, antennal insertions partly hidden under projection of frons, mandible exposed and with two apical teeth, maxillary lacinia without apical spine, apical segment of maxillary palpi elongate and somewhat fusiform, mentum markedly transverse, apical segment of labial palpi elongate. Prothorax strongly transverse, broader anteriorly and narrowed posteriorly, side margin with or without denticles, front coxal cavities open and coxae moderately widely separated, hind coxae more widely separated than pro- and mesocoxae. Elytral epipleura narrow, puncturation irregular and often indistinct. Legs moderately long, trochanters simple, tibiae normal with two apical spurs, tarsal formula 5-5-4 in both sexes. Intercoxal process of first abdominal ventrite narrowed towards apex.

Inopeplus biocellatus (Motschulsky)

1859. *Euryplatus biocellatus* Motschulsky. *Etud. Ent.*, **8** : 98.

1908. *Inopeplus biocellatus* : Grouvelle. *Annls. Soc. ent. Fr.*, **77** : 46.

1992. *Inopeplus biocellatus* : Pal. *Rec. zool. Surv. India*, **91**(3-4) : 343.

Diagnosis : Broadly elongate, flattened, shiny, head and prothorax reddish brown, elytra black with whitish large round spot at middle, last two segments of abdomen completely exposed. Head transverse, clypeus truncate at apex with concave invagination, fronto-clypeal suture little concave, a short impressed median line present on vertex, punctation on vertex moderately large and closely arranged, eyes large and rather finely facetted, a short linear groove present below eye; antenna moderately long, scape and pedicel yellowish brown and segments 3-11 blackish; prothorax transverse, flattened, widest near middle, side margin with four denticles, posterior two denticles closely placed, sides finely bordered; elytra about as broad as long, widest near apex, an outwardly directed metathoracic spine present near middle of elytra, blackish elytra with a large oblong whitish spot. Length-5.2 mm.

Material : 1 ex. India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N-O Wokha, 15.x. 1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Arunachal Pradesh, Sikkim, West Bengal.

Inopeplus nitidus Sengupta, Pal & Mukhopadhyay

1977. *Inopeplus nitidus* Sengupta, Pal & Mukhopadhyay. *Oriental Ins.*, **11** : 400.

1992. *Inopeplus nitidus* : Pal, *Rec. zool. Surv India.* **91** (3-4) : 344.

Diagnosis : Elongated, flattened, shiny, head and prothorax reddish brown, remaining parts blackish brown, last three segments of abdomen exposed. Head broader than long, fronto-clypeal suture inwardly curved, punctation on vertex coarse and moderately dense with a small impunctate area at middle, eyes moderately large

and coarsely facetted, a semicircular depression surrounding inner margin of eye; antenna moderately long, scape and pedicel yellowish brown and segments 3-11 blackish; prothorax transverse, flattened, widest across second teeth from anterior side, side margin with four distinct denticles, anterior two denticles comparatively larger, sides narrowly bordered, punctation on pronotum slightly finer than that of vertex; elytra about as broad as long, widest near apex; an outwardly directed metathoracic spine near middle of elytra, punctation on elytra coarse and almost similar as on sides of pronotum, abdominal segment 2 party and 3-5 completely exposed. Length- 4.1mm.

Material : 1 ex. India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N-O Wokha, 15.x. 1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Arunachal Pradesh, Sikkim.

Inopeplus sp. A

Diagnosis : Elongated, flattened, blackish, shiny, elytra with pale spots, last three abdominal segments exposed. Head broader than long, eyes moderately large and coarsely facetted, a short oblique depression arises near antennal base, punctation on vertex moderately dense; antenna moderately long, scape and pedicel reddish-brown and rest of antenna dark brown; prothorax transverse, flattened, widest little below front margin and narrowed posteriorly, side margin of pronotum finely bordered and devoid of tooth, punctation of pronotum slightly finer and sparser than that of vertex; elongate elytra broader posteriorly, finely punctate; two oblique-elliptical pale spots on each elytron, one near humeral angle and other one near apex and close to suture. Length- 3.4 mm.

Material : 1 ex. ♀ India : Nagaland, Wokha District, Chukitong, 1300 m., 10 km. N-O Wokha, 15.x. 1998, T.K. Pal & party, *ex.* under bark.

Remaks: This species comes very close to *I. jairapurii* Pal in general facies, but differs slightly in the position of posterior pale spots on elytron. These spots are much closer and adjacent to suture in this species. The specific identification remained unascertained in absence of the male specimen and examination of the aedeagus.

SUMMARY

The paper deals with 3 species under 1 genus. All these species are recorded first time from Nagaland as no taxonomic study of this group was carried out earlier from this State. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 131-135, 2006

INSECTA : COLEOPTERA : EROTYLIDAE

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INTRODUCTION

The Erotylidae with about 2500 species from the world are a well defined large family of the section Clavicornia under the superfamily Cucujoidea. The representatives of Erotylidae are small to large, elongate-ovoid, generally brightly coloured and are commonly called as "pleasing fungus beetles" The Erotylidae have world-wide distribution, with more abundance in warmer parts of both the Old and New worlds and with a fewer representatives from the temperate regions. They are usually fungus feeders of certain basidiomycetes, with adults and larvae sometimes found together. Hosts may be mushrooms, bracket fungi, or soft hyphae filled bark. They are often found in moist woodland areas and adult beetles are generally gregarious, either on the host plant or in hiding.

Following the publication of Arrow's 'Fauna' in 1925 not much works have come out from the Indian subregion. Only recently, Pal (1992) described 2 species from Arunachal Pradesh and he (2003) recorded 3 species from Sikkim. The present account is based on some recent collection made by the author in different districts of Nagaland plus earlier material records from the State.

CHARACTERS OF THE FAMILY EROTYLIDAE

Facies ranging from suborbicular, hemispherical to elongate-elliptical, more or less convex, rarely pubescent.

Head transverse, eyes large, no fronto-clypeal suture, stridulatory files usually present and double; 11-segmented antenna usually with 3-segmented club, rarely club of more than 3 segments, antennal insertions dorso-lateral or lateral; on ventral side gular sutures widely separated, without antennal cavities; mandible with well developed mola and usually with two apical teeth; maxilla with well developed galea and lacinia, lacinia often with apical spine, apical segment of palpi may be elongate to transverse and securiform; labium with mentum variously shaped, ligula not well developed, apical segment of palpi elongate or transverse.

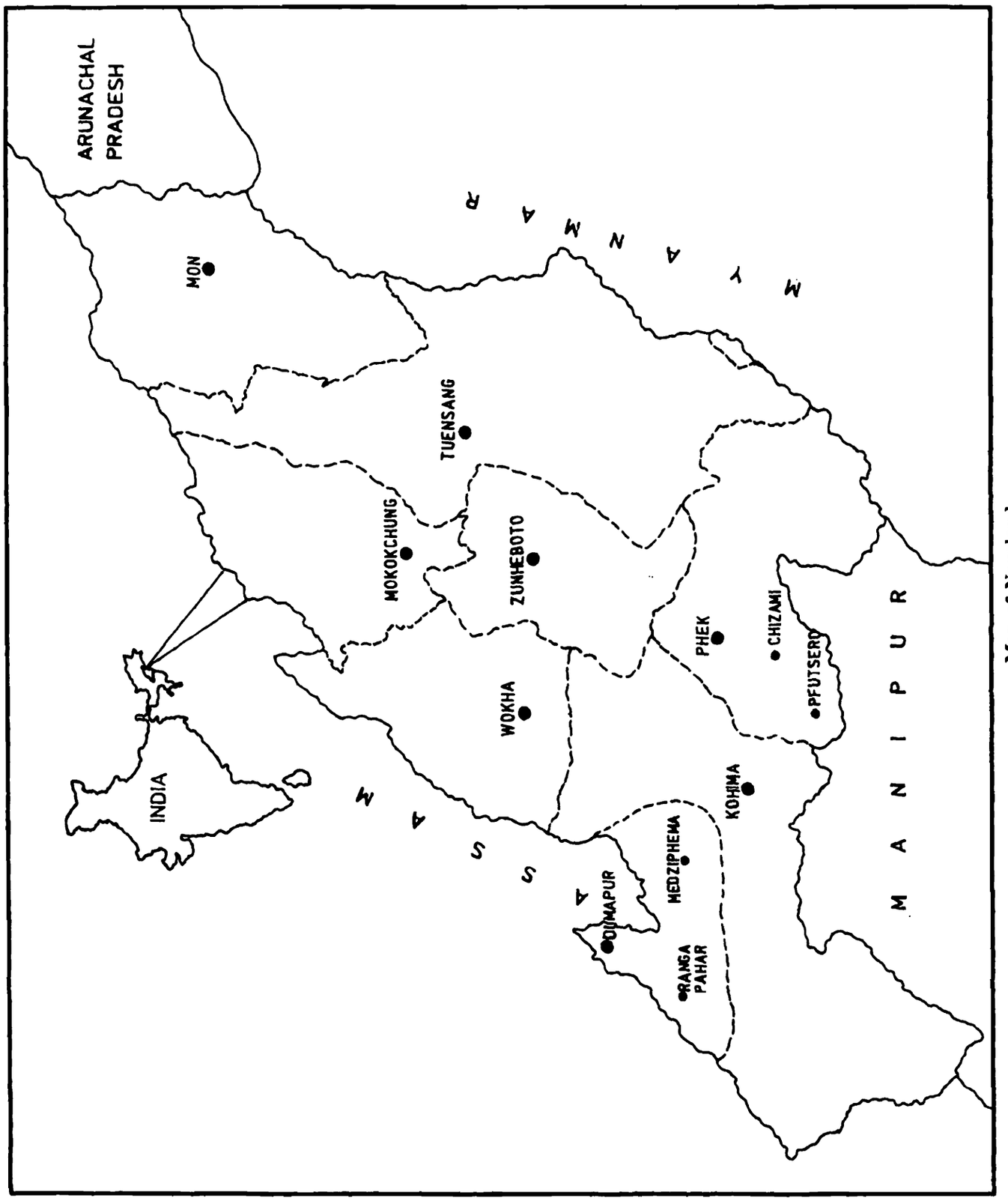
Prothorax usually transverse and narrowed in front, sides smooth, pronotum usually with prebasal impression, front coxal cavities more or less well separated, prosternal process broad, front coxal cavities closed with hidden trochantins.

Elytra often striato-punctate but occasionally with confused punctures, no scutellary striole, epipleura well developed. Wing usually with four anal veins, anal cell, radial cell, r-m cross vein and subcubital fleck.

Mesocoxae widely separated, coxal cavities closed laterally by sterna; metasternum often transverse and occasionally with coxal lines, metacoxae widely separated, metendosternite with moderately widely separated anterior tendons.

Legs moderately long, trochanters simple, tibiae often expanded apically, tarsal formula 5-5-5.

Abdomen fully covered by elytra, ventrites



Map of Nagaland

more or less equal in length, ventrite 1 sometimes with coxal lines. Aedeagus retracted on one side, with articulated parameres, median lobe bearing one or two struts. Ovipositor with well developed paraprocts, valvifers, coxites and styli.

Key to the subfamilies of EROTYLIDAE

1. Fourth tarsal segment scarcely reduced, subequal to third and attached in normal manner to end of third segment; apical segment of maxillary palpi cylindrical, not transverse or triangular; mentum strongly transvrse ..... DACNINAE
- Fourth tarsal segment strongly reduced, not more than half length of width of third, attached mediodorsally to third segment; apical segment of maxillary palpi strongly transverse or traingular; mentum not transverse. 2
2. Elytra nonstriate, confusedly punctate with large black punctures; prothorax at base little more than half as wide as greatest common elytral width ..... EROTYLINAE*
- Elytra regularly straite-punctate; prothorax at base subequal to greatest common elytral width.. TRIPLACINAE (= TRITOMINAE)

* Not recorded from Nagaland.

LIST OF TAXA

Family EROTYLIDAE

Subfamily DACNINAE

1. *Episcapha indica* Crotch

Subfamily TRITOMINAE

2. *Micreneaustes dehaani* Castelnau
3. *Tritoma duodecimnotala* Gorham
4. *Tritoma unifasciata* Motschulsky

Key to the genera of EROTYLIDAE of Nagaland

1. Mentum strongly transverse; terminal segment of maxillary palpi elongate and fusiform; three basal segments of palpi not widening from first to third. 4th tarsal segment reduced, antennal segment 3 not or marginally longer than segment 4 ..... ***Episcapha*** Lacordaire
- Mentum not transverse; terminal segment of maxillary palpi transverse and securiform; three basal segments of tarsi widening from first to third 2
2. Maxillary lacinia with two sharp teeth; sides of mouth-cavity carinate. Form elongate, abdomen devoid of coxal lines, prosternum with coxal lines ..... ***Micrencaustes*** Crotch
- Maxillary lacinia without teeth; sides of moth-cavity form flat plates or lobes. Antennal club 3-segmented, apical segment of antennal club narrower than preapical segment, head without stridulatory file ..... ***Tritoma*** Fabricius

Family EROTYLIDAE

Subfamily DACNINAE

Genus ***Episcapha*** Lacordaire

1842. *Episcapha* Lacordiare, *Monog. Erotyl.*, : 48 [Type-species : *Engis quadrimacula* Wiedemann].

Diagnosis : Oblong, often moderately pubescent, head partly inserted into prothorax; maxillary lacinia without spine, apical segment of palpi fusiform; mentum transverse, apex of ligula bilobed; front margin of prothorax emarginate, prosternum moderately broad; legs simple with tarsal segments 1-3 not broad, 4th segment smaller; elytral punctures confused or linear; no femoral lines on abdomen.

1. ***Episcapha indica*** Crotch

1876. *Episcapha indica* Crotch, *Cist. Ent.*, **1** : 408

1878. *Episcapha chapuisi* Dohrn, *Stettin Ent. Zig.*, **39** : 449.

1925. *Episcapha indica* : Arrow, *Fauna Brit India. Coleoptera : Clavicornia* : 43.

Diagnosis : Facies rather narrowly elongate, moderately convex, dorsal surface without pubescence; head with large and prominent eyes separated by about twice of their width, 11-segmented antenna with 3-segmented club, segment 3 about as long as 4; transverse prothorax

with lateral margins gently curved and converging in front, strongly elevated, front angles acute, puncturation on pronotum fine and rather closely arranged, more densely arranged at sides; scutellum transverse and bluntly angulate behind; elongate elytra little wider than prothorax, elytra finely punctured, no distinct longitudinal stria; blackish body with each elytron decorated with two transverse yellowish bands, one at base occupying humeral angle and encircling a blackish humeral spot, other band near posterior third, bands are rather irregular in outline. Length- 14.62 mm.

Material : 1 ex. India : Nagaland, Phek District, Kutsuru, 1800 m, 10 km-0-Pfutsero, 25.x.1998, T.K. Pal and Party, *ex.* beating bush.

Distribution : India : Nagaland (New record), West Bengal (Darjeeling district).

Elsewhere : Myanmar.

Subfamily TRITOMINAE

Genus ***Micrencaustes*** Crotch

1876. *Micreneaustes* Crotch, *Cist. Ent.*, **1** : 478 [Type-species : *Engis lunalata* Macleay].

1925. *Micreneaustes*: Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 77.

Diagnosis: Facies elongate-ovoid; head without stridulatory file, clypeus short and distinctly transverse, eyes large and coarsely facetted, 11-segmented antenna with 3-segmented club, 3rd antennal segmented longer than 4th; transverse prothorax with front margin emarginate; elytra not markedly broader than prothorax at base; prosternum produced in front into a compressed point and margined at sides; front coxae with coxal lines, mesocoxae and hind coxae without coxal lines.

2. ***Micreneaustes dehaani*** (Castelnau)

1840. *Engis dehaani* Castelnau, *Hist. Nat. Col.*, **2** : 15.

1842. *Encaustes dehaani* : Lacordaire, *Monog. Erotyl.*, : 43.

1918. *Micreneaustes dehaani* : Heller, *Arch. F. Nat.*, **84** : 10.

1925. *Micreneaustes dehaani* : Arrow, *Fauna Brit. India,* Coleoptera : Clavicornia : 82.

Diagnosis : Facies rather narrowly elongate, ovoid, entirely black and shining; head with short clypeus, vertex coarsely and densely punctate, eyes separated by about 1.5 times their width; front angles of prothorax bluntly produced, hind angles right angles and base broadly lobed at middle, pronotum rather finely punctate, with an irregular series of large punctures on either side extending from front to hind margin; scutellum transverse; elytra bear rows of punctures which diminish in size posterad; front and middle tibiae bear apical teeth. Length- 16-22 mm.

Distribution : India : Nagaland.

Elsewhere : Myanmar; Malaysia; Indonesia (Java).

Genus ***Tritoma*** Fabricius

1775. *Tritoma* Fabricius, *Systema Entomologicae* : 570 [Type-species : *Tritoma bipustulata* Fabricius].

1872. *Cytrotriplax* Crotch, *Ent. mon. Mag.*, **9** : 189.

1883. *Motrita* Westwood, *Tijdschrift Ent.*, **26** : 77.

1883. *Pseudotritoma* Gorham, *Notes Leyd. Mus.*, **10** : 137.

1901. *Triplacidea* Gorham, *Stettin Ent. Zeit.*, **62** : 191.

1918. *Ortitma* Heller, *Arch. f. Nat.*, **84** : 27.

1918. *Trimota* Heller, *Arch. f. Nat.*, **84** : 27.

1925. *Tritoma*: Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 119.

Diagnosis : Facies ovoid; head deeply inserted into prothorax, with two longitudinal stridulatory files, 11-segmented antenna with 3-segmented club, sides of mouth-cavity form hemispheric lobes, with antennal cavities, apical segment of maxillary palpi markedly transverse, ligula narrow, apical segment of labial palpi securiform; transverse prothorax with moderately widely separated coxae, prosternal process with anteriorly converging lines; elytra with linear punctures.

Key to the species of *Tritoma* Lacordaire

1. Bright orange-red, with twelve large round black spots on dorsal sides .... *duodecimnotata* (Gorham)

– Bright orange-red, with large black median

spot in anterior half of pronotum and a smaller one on either side of it; blackish elytra with a median reddish band .... *unifasciata* Motschulsky

3. *Tritoma duodecimnotata* (Gorham)

1896. *Cyrtotriplax duodecimnotata* Gorham, *Ann. Mus. Civ. Genova*, **36** : 287.

1925. *Tritoma duodecimnotata* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 134.

Diagnosis : Facies short, oval and convex, surface smooth and shining; bright reddish-orange; dorsum with twelve rather large black spots- one on either side of base of pronotum, a smaller one near middle of lateral margin, one occupying shoulder of each elytron and extending to front and lateral margins, a similar one behind the last and midway between it and apex, one midway between the last two but near suture, one almost touching suture and placed between the last and apex; head small, antenna short and slender, club darker; head and pronotum finely punctate. Length- 4mm.

Distribution : India : Nagaland, Arunachal Pradesh.

Elsewhere : Myanmar.

4. *Tritoma unifasciata* Motschulsky

1858. *Triplax unifasciata* Motschulsky, *Etud. Ent.*, 7 : 115.

1925. *Tritoma unifasciata*: Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 137.

Diagnosis : Facies narrowly oval, moderately convex, surface smooth and shining, with fairly long legs and antennae; dorsum bright reddish-orange, with a large black spot occupying middle of anterior half of pronotum and a smaller one on either side, elytra blackish except an irregular median reddish band, that extends from side to side and produced angularly backwards along suture and forward near middle of each elytron, antennal club darker; head small, eyes small and separated by about 5 times of their width; head and pronotum finely punctate; elytra with rows of fine punctures. Length- 3mm.

Distribution : India : Nagaland, Arunachal Pradesh.

SUMMARY

The paper deals with 4 species under 3 genera under 2 subfamilies, of which 1 species (*Episcapha indica* Crotch) is recorded for the first time from the State of Nagaland. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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Fauna of Nagaland, State Fauna Series 12 : 137-142, 2006

INSECTA : COLEOPTERA : ENDOMYCHIDAE

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INTRODUCTION

The Endomychidae with about 1300 species are a rather distinct family of the section Clavicornia under the superfamily Cucujoidea. The endomychids are small to large, broadly ovoid to elongate and narrow, strongly convex to moderately flattened, seldom brightly coloured and are commonly called as 'handsome fungus beetles' The Endomychidae have a worldwide distribution but are more diverse in tropical Asia. Endomychids consume mostly softer tissues of various fungi or are sap-feeders. They are often seen beneath bark or in rotten wood, decayed fruit refuse or in leaf litter, and in moist woodland areas.

Following the publication of Arrow's 'Fauna' in 1925, not many works have come out from the Indian region on this group. In recent past, Vazirani & Saha (1972) described 1 new species, and Strohecker (1974, 1975, 1982, 1983) described at least 11 new species and recorded a few more species from the Indian territory. Tomaszewska & Pal (2003) described 1 new species from Mizoram. Pal (2003, 2004) dealt with the endomychidae of Sikkim and Manipur States. The earlier workers recorded a few species from Nagaland. The present work is based on some recent collection made by the author in Nagaland plus earlier material records from this State. These represent 4 species under 3 genera.

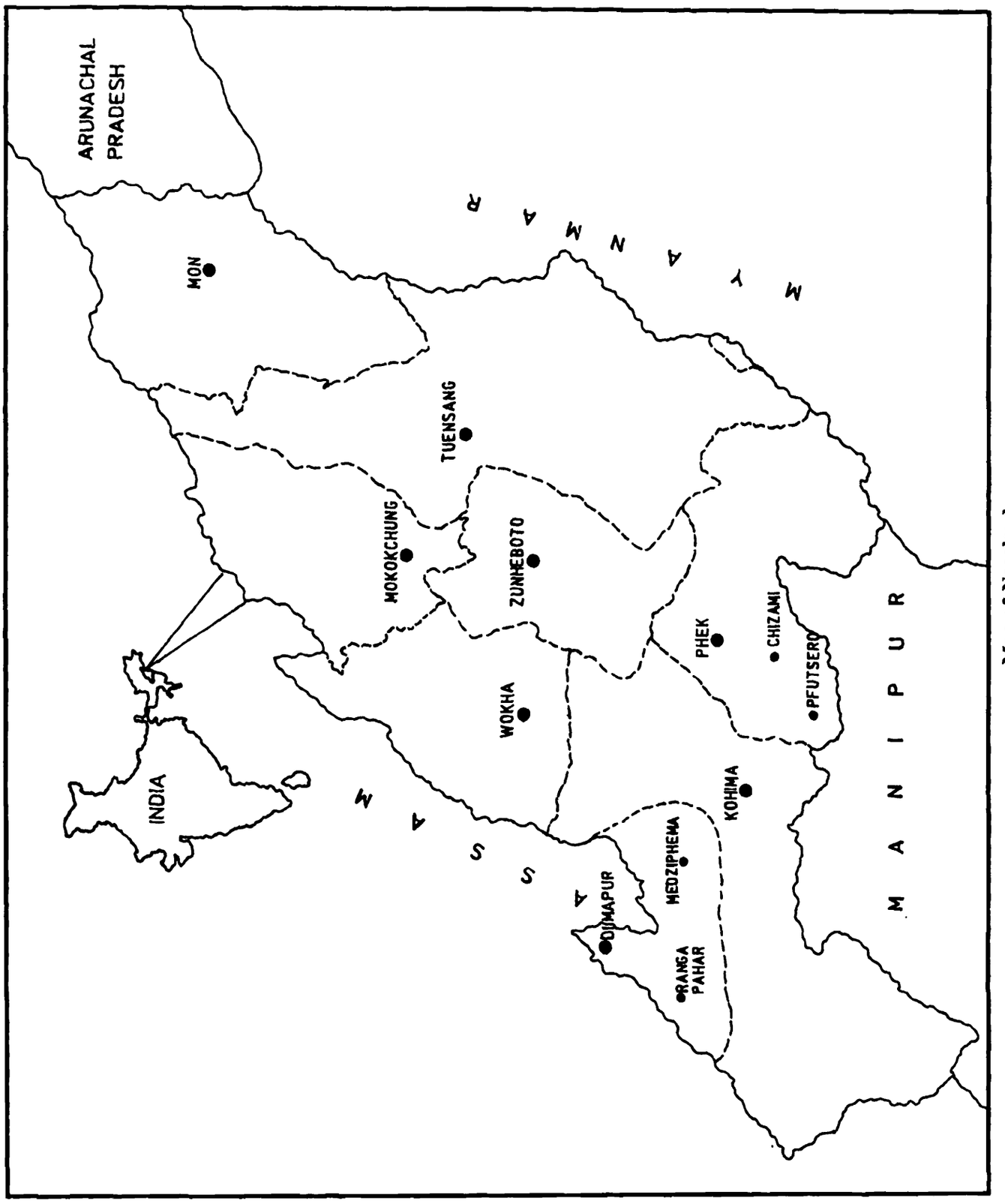
CHARACTERS OF THE FAMILY ENDOMYCHIDAE

Body broadly ovate to elongate and narrow, strongly convex to moderately flattened, glabrous but occasionally clothed with hairs, and often brightly coloured.

Head with fronto-clypeal suture, eyes moderately large, vertex sometimes bear stridulatory files, antennal insertions lateral or dorso-lateral; antenna 10- or 11-segmented with 3-segmented club, club rarely 4- or 5-segmented; mandibles usually well developed, apical teeth three or less in number, mola well developed; maxillary lacinia and galea well developed, lacinia with or without apical spine, apical segment of palpi elongated and more or less fusiform; labium is more subject to variation in form, mentum strongly chitinized, apical segment of labial palpi truncate apically.

Prothorax often transverse, side margins usually smooth and rarely serrulate, front edge sometimes has a stridulatory membrane; pronotal disc often with paired basal impressions, grooves or carinae, and a transverse prebasal groove; prosternum moderately long to very short, front coxae subglobular or slightly transverse with hidden trochantins.

Elytra entire, punctation usually confused, epipleura usually incomplete. Wing devoid of radial cell and usually without anal cell, with a trace of subcubital fleck.



Map of Nagaland

Mesosternum sometimes reduced and concealed, anteriorly excavate or bicarinate, mesocoxae narrowly to moderately widely separated, mesocoxal cavities narrowly open outwardly; metasternum transverse, rarely with femoral lines, hind coxae widely separated, metendosternite usually with widely separated anterior tendons.

Legs short to moderately long, trochanters simple or slightly heteromeroid, narrow tibia slightly broadened at apex and without prominent apical spurs, tarsal formula 4-4-4 or 3-3-3, tarsi either simple, or segment 3 reduced with segments 1 and 2 lobed.

Five abdominal ventrites freely articulated, ventrite 1 longer than others and sometimes with femoral lines, often with five pairs of spiracles. Aedeagus with or without articulated parameres, median lobe devoid of strut. Ovipositor with fused valvifers and coxites.

Key to the subfamilies of ENDOMYCHIDAE*

1. Size small, rarely more than 3 mm.; tarsi 3-segmented and linear, or distinctly 4-segmented. 2
- Size usually larger than 3 mm.; tarsi pseudotrimerous, penultimate segment minute and almost fused with apical segment, second segment lobed. 4
2. Antenna 8-11 segmented. 3
- Antenna 4- or 5-segmente. ..... TROCHOIDEINAE
3. Scutellum minute or invisible; metasternum extending laterally to anterior corner of elytral epipleura; first abdominal ventrite with femoral lines. ..... SPHAEROSOMINAE
- Scutellum plainly visible; metasternum separated from elytral epipleura by the epimeron. ..... MYCETAEINAE
4. Pronotum with a stridulatory membrane on its front margin ..... EUMORPHINAE
- Pronotum without a stridulatory membrane on its front margin ..... ENDOMYCHINAE

*Subfamilial classification is after Strohecker, 1953; Shaerosominae is at present considerd as a separate family, Sphaerosomatidae but not recorded from India

LIST OF TAXA

Family ENDOMYCHIDAE

Subfamily EUMORPHINAE

1. *Eumorphus andamanensis* Gorham
2. *Eumorphus assamensis* Gerstaecker
3. *Indalmus kirbyanus* (Latreille)
4. *Dapsa birmanica* Audisio & de Baise

Key to the genera of Eumorphinae

1. Prosternum not extending posteriorly beyond front coxae. 2
- Prosternum extending posteriorly beyond front coxae. Mesosternum broad, truncate with parallel sides; mandible without an internal tooth ..... ***Eumorphus*** Weber
2. Front coxae contiguous. Mesosternum short, narrow, extending to mid-length middle coxae; 3-segmented antennal club little wider than preceding segments .... ***Dapsa*** Latreille
- Front coax well separated. Antennal club not broad, little wider than preceding segments and flattened; last joint of labial palpi transverse ..... ***Indalmus*** Gerstaecker

Genus *Eumorphus* Weber

1801. *Eumorphus* Weber, *Observ. Ent.*, : 31 [Type-species : *Erotylus quadriguttatus* Illiger]

Diagnosis : Facies elongate, broadly ovoid; head with transverse eyes, 11-segmented antenna with 3-segmented club, segment 3 twice as long as segment 4, mandible with a sharp apical tooth and well developed prostheca, maxillary palpi well developed and its apical segment fusiform, labial palpi short and its apical segment hemispherical; transverse prothorax more or less flattened at sides, hind angles produced, pronotal base with a marginal sulcus and lateral foveae moderately

impressed, front coxae narrowly separated and prosternal process projecting little beyond coxae; with four yellow spots on elytra.

Key to the species of *Eumorphus* Weber

1. Dorsum opaque, sooty black; each elytron decorated with two small shining yellow round spots, spots placed near outer margin at an equal distance from each other and from those on other elytron .... *assamensis* Gerstaecker

– Dorsum black with purplish tint, with a stainy gloss above; each elytron decorated with two bright yellow transversely oval spots reaching outer margin, spots separated from each other by about twice their own width and from those on other elytron by about their length .... *andamanensis* Gorham

2. *Eumorphus assamensis* Gerstaecker

1857 *Eumorphus assamensis* Gerstaecker, *Archiv. f. Nat.*, **23** (1) : 229.

1857 *Eumorphus subguttalus* Gerstaecker, *Archiv. f. Nat.*, **23** (1) : 229.

1928 *Eumorphus assamensis* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 307.

Diagnosis : Facies moderately elongate with slender legs and antennae; dorsal surface sooty black and opaque, each elytron decorated with two small shining yellow round spots, little elevated above general surface, no visible punctures; transverse pronotum convex with sides flat, side margins rather irregular, converging in front and rather parallel behind, front angles rather sharp, hind angles very acute and base fits to elytra at shoulders; shoulders of elytra acutely carinate, side margins narrow, apex rounded. Length- 7- 11mm.

Distrbution : India : Nagaland, Meghalaya.

Elsewhere : Myanmar; Thailand; Vietnam; Indonesia; Malaysia.

1. *Eumorphus andamanensis* Gorham

1875. *Eumorphus andamanensis* Gorham, *Ent. Mon. Mag.*, **11** : 180.

1925. *Eumorphus andamanensis*, Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 305.

Diagnosis : Facies elongate, convex, with slender legs and antennae; dorsal surface black with purplish tint and glossy; each elytron decorated with two bright yellow, transversely oval spots reaching close to outer margin, separated from each other by about twice their own width and from those on other elytron by about their own length; apical half of femora reddish-yellow; transverse prothorax bisinuate at sides, front angles bluntly and hind angles acutely produced; elytra minutely punctured with narrow side margins. Length- 9.8 mm.

Material : 1 ex. India : Nagaland, Mokokchung Dist., Sungkomeng, 1260 m., 18.x.1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Andaman & Nicobar Is.

Genus ***Indalmus*** Gerstaecker

1858. *Indalmus* Gerstaecker, Monogr. Eudom. : 158 [Type-species: *Eumorphus kirbyanus* Latreille].

1876. *Mycella* Chapuis, *Gen. Coleopt.* 12 : 104.

Diagnosis : Facies elongate-ovoid, moderately convex, with slender legs and antennae; head with moderately large and prominent eyes, 11-segmented antenna with 3-segmented club, segment 3 about twice as long as segment 4, segments 4-8 gradually shorter in length, mandible bifid at tip, maxillary palp with last segment subulate, ligula composed of two narrow oblique lobes, last segment of labial palp transversely triangular; prothorax slightly transverse, front angles prominent, basal sulcus and lateral foveae well marked, prosternum not produced beyond posterior border of coxae, mesosternum longer than broad and emarginate behind; elytra oblong to ovoid.

3. *Indalmus kirbyanus* (Latreille)

1807. *Eumorphus kirbyanus* Latreille, *Gen.Crust. et Insect.*, **3** : 72.

1829. *Dapsa kirbyana* : Latreille, *Cuvier's Regne anim.* 2nd ed., **5** : 159.

1858. *Indalmus kirbyanus* : Gerstaecker, *Mongr. Endom.* : 186.

1925. *Indalmus kirbyanus* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 324.

2001. *Ancylopus nigrothorasica* Pal, *Fauna of Sikkim, State Fauna Ser.*, 9(Part 3) : 112.

Diagnosis : Facies elongate-ovoid, blackish, shining, elytra marked with two pairs of irregular transverse yellowish patches, anterior pair just below humerus and reaching almost outer margin, an extension from anterior patch approaches almost basal margin, posterior pair of patches never reach either inner or outer margin of elytron; eyes coarsely facetted; both anterior and posterior angles of prothorax rather sharp, pronotum moderately strongly punctured, lateral foveae extending near middle of pronotum, side margins gently bisinuate; elytra about as wide as prothorax near base, more strongly punctate than pronotum. In male front tibia armed with a spine on inner margin beyond middle, middle tibia distinctly curved inwards near extremity, abdominal ventrite 5 broadly excised behind. Length- 5.5 – 6.5 mm.

Material : 5 ex. India : Nagaland, Dimapur Dist., Kukidolong, 245 m.,8 km.-O-Medziphema, 28.x.1998, T.K. Pal & party, *ex.* beating bush.

Distribution : India : Nagaland (New record), Assam, Meghalaya, Manipur, West Bengal (Darjeelingm District), Sikkim, Tamil Nadu.

Elsewhere : Myanmar.

Genus ***Dapsa*** Laterille

1829. *Dapsa* Latreille *Cuvier's Régne Anim.*, 2ed. ed. 5 : 159 (Type-species : *Endomychus denticollis* Germ.).

1858. *Dapsa* : Gerstaecker, *Mon. Endom.* : 196.

1876. *Dapsa* : Chapuis, *Hist. Nat. des Insectes. Gen. Coleopt.*, 12 : 106.

1925. *Dapsa*: Arrow, *Fauna Brit. India. Coleoptera : Clavicornia* : 335.

Diagnosis : Facies elongate, subdepressed with slender legs and antennae, body pubescent. Head with prominent eyes, antennal segments loosely articulated, 3-segmented club slightly dilated; mandible with bifid apex, maxillary lacinia bifid at apex, inner margin setose, palpal segments elongate; ligula truncate apically, segments of palpi elongate; prothorax transverse with front margin slightly emarginate, pronotum finely margined, front coxae almost contiguous, prosternal process narrow spine-like; meso- and hind coxae more widely seperated, intercoxal process of first abdominal ventrite broad and truncate at apex; elytra elongate, sides slightly curved and apex separately rounded, epipleura extends up to posterior third, somewhat depressed below humeral angles.

4. ***Dapsa birmanica*** Audisio & de Baise

1995. *Dapsa birmanica* Audisio & de Baise, *Mem. Soc Entomol. Ital.*, 74 : 116.

Diagnosis: Elongate, moderately depressed, reddish-brown, shiny, punctate-pubescent. Eyes less than half as long as head, coarsely facetted, separated by more than three times of diameter; antenna long, slender, club slightly broader than preceding segments with loosely articulated segments, dorsum of head moderately coarsely and densely punctate, pubescent; prothorax distinctly transverse, broader in front, sides slightly arcuate in anterior half and rather parallel-sided posteriorly, front angles obtuse-round and hind angles acute and sharp, puncturation on pronotum slightly sparser than on vertex; elongate elytra wider than prothorax at base, sides gently curved, puncturation slightly coarser and denser than that of pronotum, elytral surface with darker oblique-elongate markings in anterior two-thirds from humeral angles posterad towards suture; metasternum with three pairs of postcoxal pits. Length–4.8 mm.

Material: 1 ex. ♀, India : Nagaland, Mokokchung District, Mingkong, 1250 m., 12 km.-O- Mokokchung, 19.x.1998, T.K. Pal & Party, *ex.* beating bush.

Distribution : India : Nagaland (New record).

Elsewhere : Myanmar.

Remarks: The specimen from Nagaland conform description of *birmanica* by Audisio &

de Baise (1995) except the elytral markings in detail.

SUMMARY

The paper deals with 4 species, under 3 genera of 1 subfamily of which 3 species are recorded first time from the State of Nagaland; 1 species (*Dapsa birmanica*) is recorded from India for first time. The species are systematically keyed and characterised.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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Fauna of Nagaland, State Fauna Series 12 : 143-149, 2006

INSECTA : COLEOPTERA : MONOTOMIDAE

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INTRODUCTION

The Monotomidae (= Rhizophagidae) with about 250 species are a moderately large family and are represented in all major biogeographic regions. The species of Monotomidae are found under bark of old logs, ascomycetes fungi, haystacks, decaying vegetation and are sometimes called 'root eating beetles' The concept of Monotomidae had undergone changes since Laporte (1840) and Redtenbacher (1845) until Crowson (1955) delineated the group (Rhizophagidae) in the present sense bringing Monotominae : Cucujidae to it. By the way, genera listed by Mequignon (1914) and Hetschko (1930) under the Rhizophagidae and the Monotominae : Cucujidae respectively were considered to belong to this family. Crowson (*loc. cit.*) transferred 3 genera to the families Smicripidae, Lyctidae, and Curculionidae, and divided the family into 4 subfamilies. Sengupta (1977, 1988) added 4 genera from India. Later, Pakaluk & Slipinski (1993) described a genus from South America; Sengupta and Pal (1995) described 7 genera from Africa and Southeast Asia; Pal (1996) described 1 more genus from India. Pakaluk *et al.* (1994) proposed change in the family group-name, 'Monotomidae' for 'Rhizophagidae' on the basis of priority. No species of Monotomidae is hitherto known from Nagaland. The present work is based on the recent collection made by the author, that represent 4 species under 4 genera.

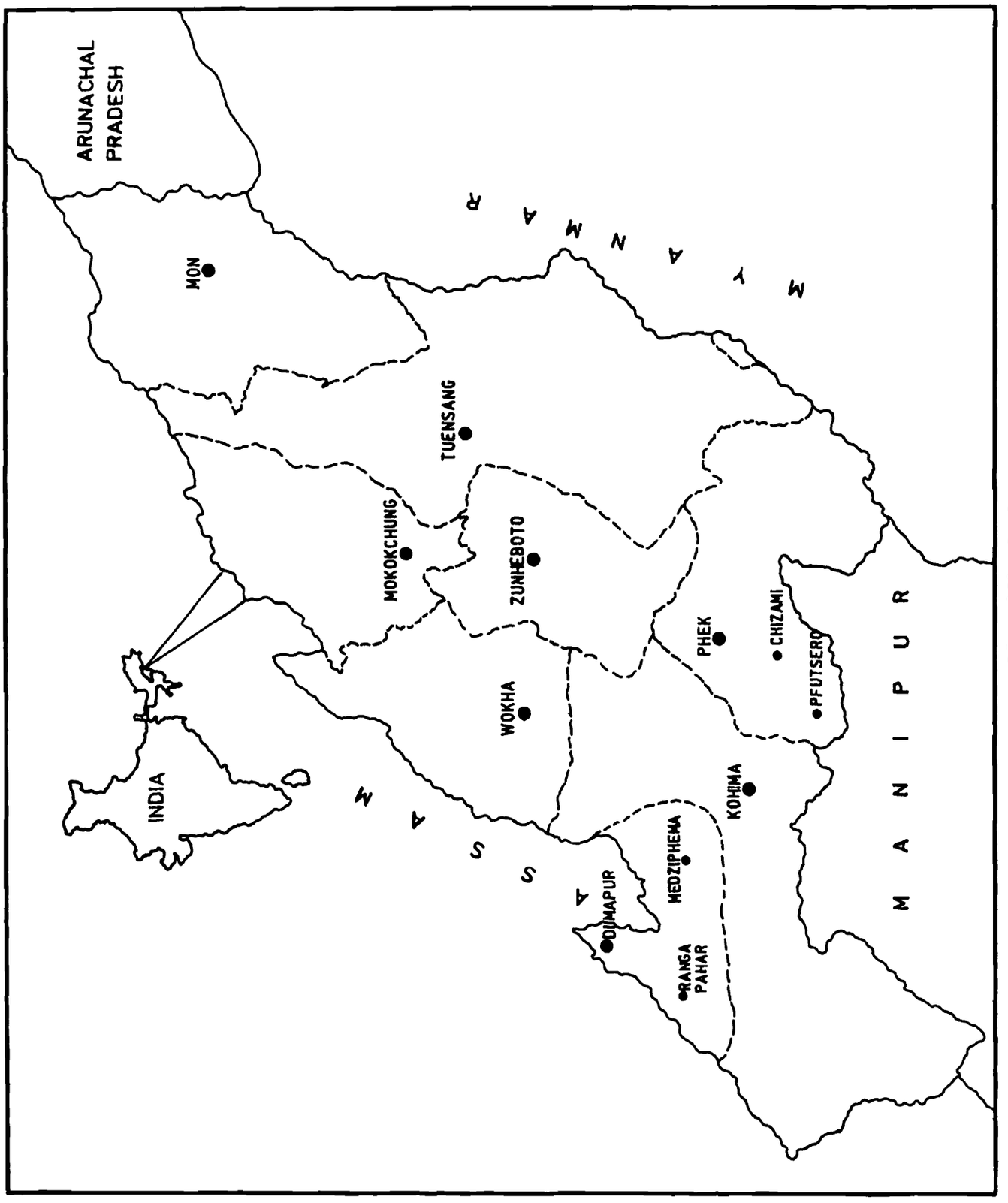
CHARACTERS OF THE FAMILY MONOTOMIDAE

Body elongated, somewhat parallel-sided, cylindrical to subdepressed, with short clubbed antenna and truncate elytra exposing tip of pygidium, light to dark brown in colour.

Head about as broad as long or little elongate, without fronto-clypeal suture, antennal insertions hidden under projection of frons, 10-segmented antenna with 1- or 2-segmented club, small to moderately large eyes not much protruding, often with distinct tempora, on ventral side often with strongly or weakly developed antennal cavities, anterior part of gular region often with transverse curved impressed line, gular sutures widely separated; mandible often partially exposed, with one or two apical teeth, mola well developed, rarely with mandibular cavity; maxilla with well developed lacinia but never with apical spine, galea slender, palpi with apical segment elongate, segments 2 and 3 subequal or rarely segment 2 markedly large *(Monotoma);* labium with mentum about as broad as long or little elongate, palpi often with apical segment elongate and sometimes with larger segrnent 2 than apical one *(Monotoma);* labrum usually not distinguishable.

Prothorax of variable proportion from distinctly elongate to little transverse, pronotal disc often more or less depressed, front coxal cavities usually rounded with hidden trochantins and rarely little transverse with partially exposed trochantins, coxal cavities broadly closed behind, prosternal process more or less broad at apex.

Meso-metathorax : Mesocoxae closely situated, mesocoxal cavities open outwardly (rarely closed), sternal fitting between mesocoxae often with a projection from metasternum; metasternum



Map of Nagaland

transverse, with median impressed line, hind coxae closely situated or little widely separated.

Elytra somewhat parallel-sided, punctures usually in linear rows, without scutellary striole, epipleura narrow and often complete up to apex. Hind wing with 1 to 3 anal veins, no radial cell, often with r-m cross vein or its trace.

Legs moderately long, trochanters usually simple, femora more or less swollen, tibiae broadened at apex with two apical spurs; tarsal formula 4-4-4, or 5-5-4 in male and 5-5-5 in female, or 5-5-5 in both sexes.

Abdomen narrow-elongate, ventrities freely articulated, ventrite 1 longer than others, intercoxal process narrow with pointed apex to broad with truncate apex, femoral lines present or absent. Aedeagus uninverted cucujoid-type, temgmen complete or incomplete, no distinct parameres, often with a pair of thread-like median strut. Ovipositor with separate paraprocts, valvifers, coxites and styli.

Key to the subfamilis of MONOTOMIDAE

1. Tarsi 5-5-5 in both sexes; antennae retractable into very deep recess below and behind eyes; front coxal cavity small, rounded; middle coxal cavity closed. ..... LENACINAE
- Tarsi heteromerous in male or 4-4-4 in both sexes; antennae not retractable into such deep recesses 2
2. Tarsi 4-4-4 in both sexes; form cylindrical; middle coxae rather large, their cavities not closed outwardly by sterna; front coxal cavities round. ..... THIONINAE
- Tarsi heteromerous in male, 5-5-5 in female, shape less cylindrical 3
3. Middle coxal cavities not closed outwardly by sterna; front coxal cavitie with angular external prolongations exposing trochantins ..... RHIZOPHAGINAE
- Middle coxal cavities closed outwardly by sterna; front coxal cavities rounded, trochantins hidden ..... MONOTOMINAE

LIST OF SPECIES

Family MONOTOMIDAE

Subfamily MONOTOMINAE

1. *Monotoma picipes* Herbst
2. *Mimemodes bhutus* Sengupta
3. *Monotomopsis andrewesi* Grouvelle
4. *Tarunius* sp.

Key to the genera and species of Monotomidae

1. Segment 2 of both maxillary and labial palpi markedly large and longer than apical segment of both; sides of prothorax little explanate, crenulate, setiferous; 1- segmented antennal club ..... *Monotoma picipes* Herbst
- Segment 2 of both maxillary and labial palpi moderately large and shorter than apical segment of both; sides of prothorax little serrate, setiferous or glabrous; 1- or 2-segmented antennal club 2
2. 2-segmented antennal club, prothorax elongate ..... *Monotomopsis andrewesi* Grouvelle
- 1- segmented antennal club, prothorax broader than long or elongate 3
3. Head large, at least as wide as prothorax (female) or wider (male); short femoral lines on abdominal ventrite 1; prothorax broader than long. Scoop upon tempora distinct and somewhat large ..... *Mimemodes bhutus* Sengupta
- Head normal, not wider than prothorax ; no femoral lines on abdominal ventrite 1; prothorax elongate. Elongate impressed area on middle of pronotal disc; eyes shorter than tempora ..... *Tarunius* sp.

Subfamily MONOTOMINAE

Genus ***Montoma*** Herbst

1793. *Monotoma* Hebst, *Käfer* **5** : 22 [Type-species *Monotoma picipes* Herbst]

Diagnosis : Elongated, moderatly depressed, somewhat elliptical, narrower anteriorly, densely

setose and dull. Head elongate, eyes moderately large, tempora well developed, transverse impressed line on vertex behind eyes, 10-segmented antenna moderately long with 1-segmented club, mandible with bifid apical teeth, maxillary galea narrow and finger-like, segment 2 of maxillary palpi markedly large, segment 3 transverse, apical segment short; labium with transverse mentum, segment 2 of labial palpi large and apical segment minute. Prothorax usually elongate, sides serrate, pronotum more or less excavated, front coxal cavities closed behind, prosternal process broader apically than between coxae; mesocoxae moderately widely separated; elytra exposes at least one abdominal segment, striate-punctate; tarsi 5-5-4 in male and 5-5-5 in female; intercoxal process of first abdominal ventrite broad and truncate apically, no femoral lines.

1. ***Monotoma picipes*** Herbst

1793. *Monotoma picipes* Herbst, in Jablonsky, *Nat. Ins. Käfer.* **5** : 24.

Diagnosis : Elongated, reddish-brown, head and pronotum coarsely punctate, pubescent, 10-segmented antenna with 1-segmented club, temple shorter than half of lenth of eye; pronotum elongate, wiedest posteriorly, tapering anteriorly in a gentle curve, sides serrated, anterior tooth moderately large and blunt, one of teeth near base larger than neighbouring ones, disc with two shallow prebasal foveae; elytra with setiferous punctures; tergite of last abdominal segment exposed. Length- 2.05- 2.25mm.

Material : 3 ex. India : Nagaland, Dimapur District, Kukidolong, 8 km. O- Medziphema, 28.x.1998, T.K. Pal & party, *ex.* haystack.

Distribution : India : Nagaland (New record).

Elsewhere : Japan; Thailand; North America; Europe; Canary Is.; St. Helena; Reunion Is.; New Zealand.

Genus ***Monotomopsis*** Grouvelle

1896. *Monotomopsis* Grouvelle, *Ann. Mus. Genova* (2) **16** (36) : 38 [Type-species : *Monotomopsis monotomoides* Grouvelle].

Diagnosis : Elongated, moderately depressed, shiny and coarsely punctate. Head elongate, eyes moderately large, tempora well developed, neck constriction well marked, 10-segmented antenna moderately long with 2-segmented club, mandible apically bidentate; maxillary galea narrow and finger-like, segments 2 and 3 short and subequal, apical segment longer and apically narrower; labium with slightly elongate mentum, apical segment of palpi large and elongate. Prothorax elongate, sides finely serrate, pronotum with coarse punctures, disc of pronotum medially depressed, front coxal cavities moderately widely separated and close behind, prosternal process broader apically; mesocoxae rather widely separated; elytra exposes at least one abdominal segment, striate-punctate; tarsi 5-5-4 in male and 5-5-5 in female; intercoxal process of first abdominal ventrite broad and truncate apically, with well developed femoral lines.

3. ***Monotomopsis andrewesi*** Grouvelle

1908. *Monotomopsis andrewesi* Grouvelle, *Ann. Soc. Ent. Fr.* **77** : 494.

Diagnosis : Elongated, subparallel, dark brown, dorsal surface moderately strongly punctate and with scanty pubescence; anterior clypeal margin of head arcuate, temple about half as long as eye, antennal segments 4-8 more or less transverse, club elongate-oblong, segment 9 short and transverse, apical segment longer than preceding one and slightly elongate, frons weakly excavate, puncturation on vertex coarse and moderately dense, puncturation on frons and clypeus fine and sparse; prothorax nearly subparallel, front angles acute and hind angle rounded; pronotum with a broad, elongated median foveolate area, pronotal punctures more densely arranged than on vertex, medial elongate part of foveolate area impunctate and glossy; elytra more than 1.5x as long as broad, sides little arched. Length- 2.3mm.

Material : 1 ex. India : Nagaland, Wokha District, Chukitong, 10 km. N. O- Wokha, 15.x.1998, T.K. Pal & party, *ex.* under bark.

Distribution : India : Nagaland (New record), Tamil Nadu.

Genus *Mimemodes* Reitter

1876. *Mimemodes* Reitter. *Deutsche ent. Zeitschr.* **20** : 296 [Type-species: *Bactridium monostrosum* Reitter].

Diagnosis : Elongated, dorsally depressed, subparallel with scanty pubescence and moderately shiny. Exposed part of head slightly transverse, with distinct neck constriction. eyes moderately large, tempora well developed, transverse impressed line on vertex behind eyes, 10-segmented antenna with 1-segmented club, mandible with bifid apical tooth and with dorsal cavity near base; maxillary lacinia sword-like and setose, apical segment of maxillary palpi longest and fusiform; labium with mentum slightly elongate and somewhat triangular, apical segment of labial palpi longest and somewhat fusiform. Prothorax slightly transverse and little narrowed psoteriorly, sides finely serrate, pronotum not excavate, front coxal cavities closed behind and intercoxal process broad at apex, mesocoxae separated about as wide as front coxae, mesocoxal cavities narrowly closed; elytra exposes one abdominal segment, striate-punctate; tarsi 5-5-4 in male and 5-5-5 in female; intercoxal process of first abdominal ventrite rather narrow and rounded apically, with short femoral lines.

4. *Mimemodes bhutus* Sengupta

1976. *Mimemodes bhutus* Sengupta, *J. Zool. Soc. India*, **28**(1&2) : 71.

Diagnosis : Elongated, subparallel, dorsal surface moderately strongly punctate and sparsely setose; clypeal margin of head little indented, sides of frons below antennal bases excavated; temple shorter than eyes and angulate, scooped laterally, antennal scape large, segments 2-9 distinctly narrower than scape, segment 4-9 more or less transverse, club elongate-oblong, puncturation on vertex moderately coarse with interspaces about as wide as punctures or wider, transverse prothorax little narrowed posteriorly, front angles almost right angles and hind angles rounded, pronotum moderately coarsely and densely punctate, interspaces of punctures much wider mesally; elytra more than 1.5x as long as broad, sides slightly arched, punctures moderately large. Length- 2.56 mm.

Material : 1ex. India : Nagaland, Phek District, Surhoba, 1250 m., 10 km. O- Phek, 23.x.1998, T.K. Pal & party, *ex.* beating bush.

Distribution : India : Nagaland (New record), Assam.

Genus *Tarunius* Sengupta

1977. *Tarunius* Sengupta, *Orient. Ins.*, **11** (4) : 532 [Type : *Tarunius punctatus* Sengupta, by original designation and monotypy].

Diagnosis : Elongated, moderately depressed, glabrous; head with partly exposed mandibles, non-projecting eyes, well developed tempora, 10-segmented antenna with 1-segmented club; elongated pronotum medially foveolate, serrated margins; front coxal cavities broadly closed behind, mesocoxal cavities open, hind coxae rather closely situated; intercoxal process of first abdominal ventrite moderately narrow and rounded apically; without coxal (femoral) lines on metasternum and abdominal ventrite; elytra striate-punctate, epipleura narrow and short.

Tarunius sp.

General appearance (Fig. 1) elongate, subdepressed, deep reddish-brown, dorsal puncturation rather coarse, cuticle rather shiny and glabrous, apical tergite of abdomen exposed. Head (between apex of clypeus and hind part of tempora) slightly transverse, widest across eyes, eyes rather small, shorter than one-fourth as long as head, finely facetted, tempora well developed and about 1.5x as long as eyes, sides of head above antennal bases somewhat raised; puncturation on vertex rather coarse (punctures separated by 0.75-4.0 diameter), becoming gradually finer on frons and clypeus and above antennal bases; clypeus emarginated; posterior border of vertex and neck constriction prominent. Antenna slightly longer than head, scape moderately large and slightly elongate, pedicel shorter and narrower than scape, segment 3 little elongate, segments 4-9 shorter, subequal and

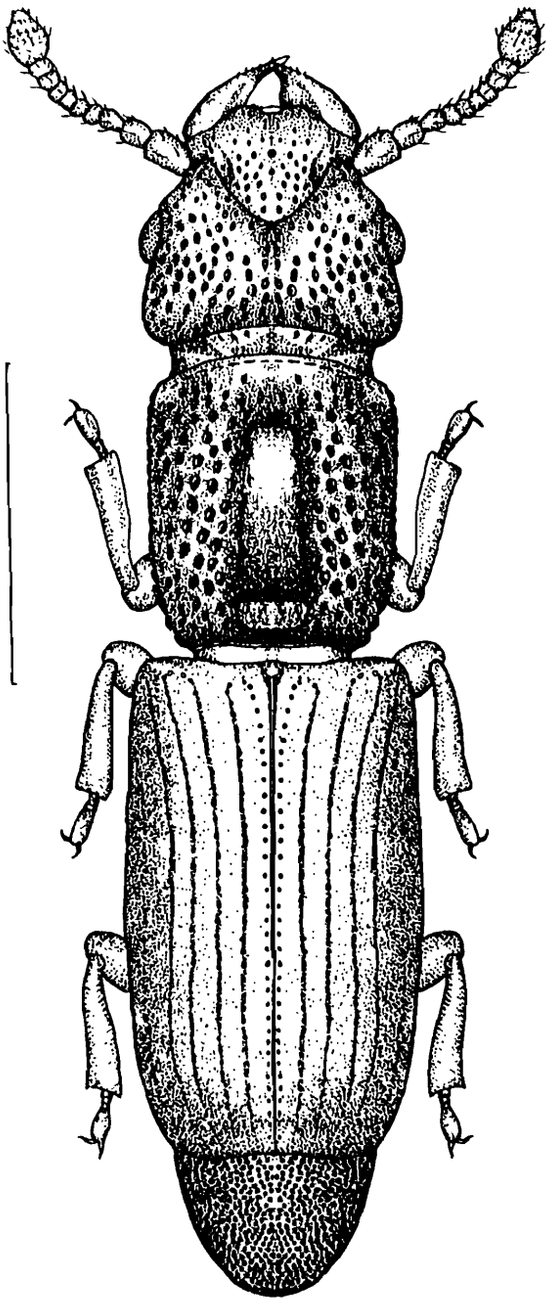


Fig. 1. *Tarunius* sp., Dorsal view (scale= 1.0 mm.).

transverse, segment 10 (club) elongate and about as long as preceding three segments. Pronotum elongate (1.2 : 1.0), somewhat parallel-sided and about as wide as head, front angles obtuse, hind angles rounded and not well marked, sides and base finely bordered, sides finely serrulate; front margin rounded, finely bordered by striate punctures; disc with a shallow median elongate fovea which broadened and more depressed posterad; puncturation on disc coarse and rather dense (punctures separated by 1.0-1.8 diameter), becoming finer anterad and posterad, large part of median fovea impunctate. Scutellum transverse, glabrous and apical margin rounded. Elytra about 1.8x as long as broad, sides feebly arched, apex of each elytron slightly rounded, small punctures in eight regular rows along fine impressed strial lines, interstices not raised or ribbed, pygidium with coarse and dense punctures. On ventral side prosternum with feeble transverse striations and moderately coarse and sparse punctures; metasternum medially impunctate, rather coarse punctures on sides; abdomen with fine and sparse punctures except the last ventrite which bears dense punctures.

Measurements : Total length (apex of mandible to tip of pygidium) 4.0 mm., width of head across eyes 0.80 mm., length of antenna 0.81 mm., length and width of prothorax 0.90 mm. and 0.80 mm., length and width of elytra 1.62 mm. and 0.88 mm.

Material : 1♀, India : Nagaland, Phek District, Sürhoba, 1250 m., 12 km. O-Phek, 23.x.1998, T.K. Pal & party, *ex.* beating bush.

Remarks : This species differs from other lone species of the genus, *Tarunius punctatus* Sengupta by its shorter eyes (0.23x head length vs. 0.48x head length in *punctatus*), longer tempora (1.56x ocular length vs. 0.5x ocular length in *punctatus*); a considerable portion of the median elongate fovea of pronotum impunctate and fovea broadened posterad; puncturation on vertex and pronotal disc sparser, less uniformly distributed than in *punctatus* and elytral punctures distinctly finer; and species longer in size (4.0 mm. vs. 2.35 mm. in *punctatus*).

SUMMARY

The paper deals with 4 species under 4 genera of 1 subfamily. All these species are recorded first time from Nagaland as no taxonomic study of Monotomidae was carried out earlier from this State. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 151-157, 2006

INSECTA : COLEOPTERA : DISCOLOMIDAE

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INTRODUCTION

The Discolomidae, otherwise referred to as Notiophygidae, are a moderately large family of Cucujoid beetles comprising about 400 species under 18 genera. The speceis of Discolomidae have been found under bark and on fungi grown upon log. Though the representatives of the family occur in tropical and subtropical parts of both the Old and New worlds but are more diversely represented in the eastern hemisphere. They are known from South America, Africa, Southeast Asia, China, Japan, and Pacific Islands to Australia, but are to be recorded from Europe and New Zealand. Horn (1878) established this family for *Discoloma* Erichson, Matthews (1887) proposed a family, Pseudocorylophidae for *Aphanocephalus* Wollaston to exclude it from Corylophidae. Sharp (1895) included *Holophygus* Sharp, *Notiophygus* Gory with *Discoloma* in Discolominae, thence treated under Colydiidae. Scott (1908) considered *Fallia* Erichson, *Discoloma*, *Notiophygus*, *Holophygus* and *Aphancoephalus* together in Discolomidae. John (1994) used the family–name 'Notiophygidae' instead of 'Discolomidae for the assemblage. He afterwards (1958 onwards) continued to use the name 'Discolomidae' for the family. John (1959) subdivided the family into five subfamilies. Pal (1992, 1996, 2000) described six species from Arunachal Pradesh, Sikkim and Mizoram. No species of Discolomidae is hitherto recorded from Nagaland.The present work is based on the recent collection made by the author, that represent 3 species under 1 genus.

CHARACTERS OF THE FAMILY DISCOLOMIDAE

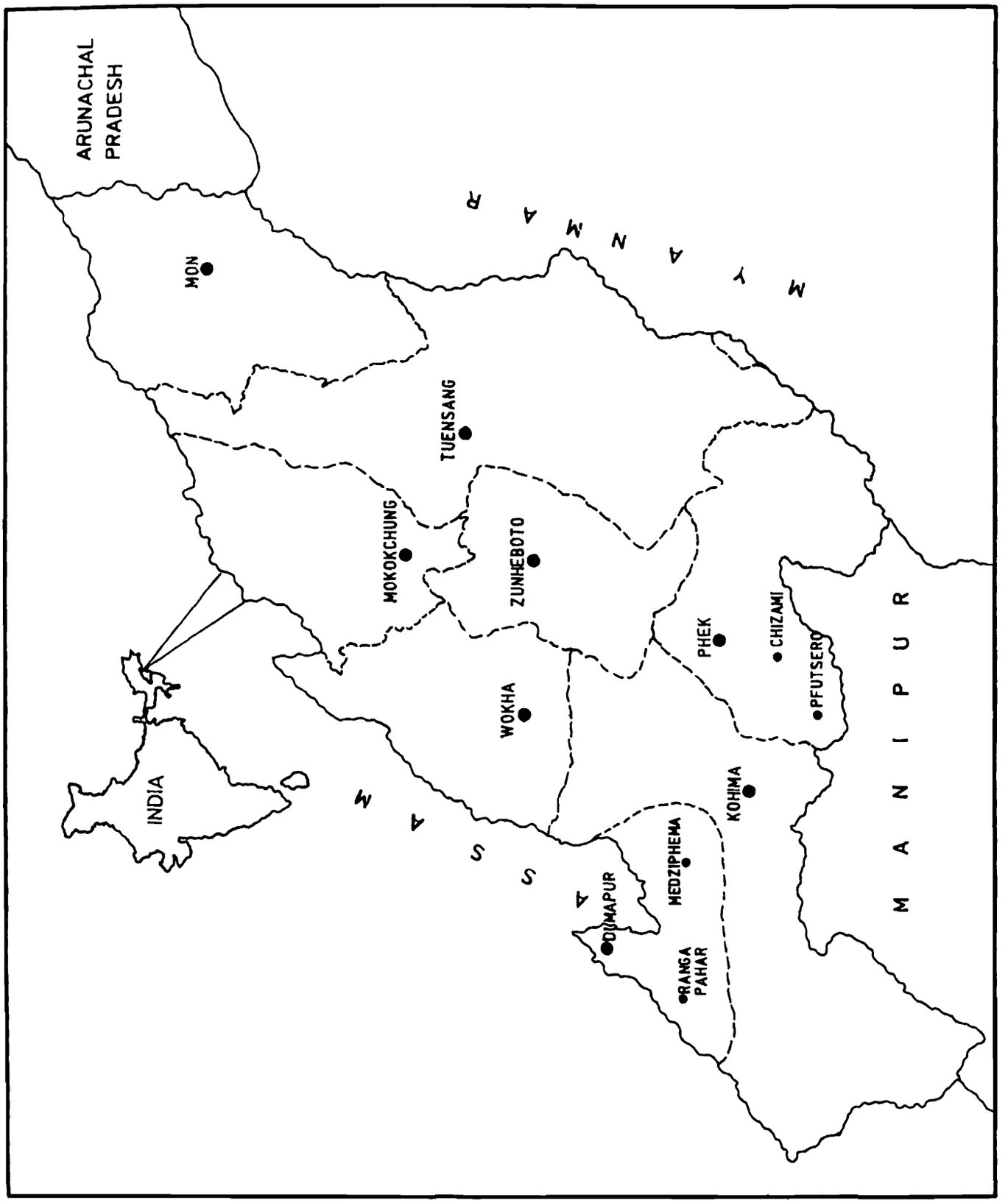
Facies broad, elongate-oblong to oval or rounded; dorsally convex, surface tuberculate or smooth.

Head small in comparison to large prothorax, often inserted under pronotum, eyes small to moderately large, usually with a fronto-clypeal suture, without transverse line on vertex behind eyes, antennal insertions dorso-lateral or dorsal but not wide anteriorly; on ventral side gular sutures widely separated, no antennal cavities; antenna 8- to 10-segmented with 1-segmented large club. Mandible with 3 apical teeth, prostheca and mola well developed; maxillary lacinia without apical spine, segment 2 of maxillary palpi elongate and narrowed towards apex; mentum of labium normal, ligula broadly triangular, segments 2 and 3 of palpi large and elongate.

Prothorax transverse, narrowed in font, sides smooth or wavy, no prebasal impression on pronotum, front coxae rounded, coxal cavities closed or narrowly open.

Elytra broad, convex, punctures irregular, epipleura broad and complete. Species may be apterous or winged, no anal vein on wing, cubitus bifurcate at tip.

Mesocoxae widely seprated, mesocoxal cavities closed, sternal fitting between mesocoxae not with knob-like projections, metasternum usually without median impressed line, metendosternite short and represented by two appophyses.



Map of Nagaland

Metacoxae widely separated, rounded, lateral prolongation hidden.

Legs moderately long, trochanters simple or slightly heteromeriod, tarsal frmula 3-3-3 in both sexes, tarsi simple or slightly incrassate.

Abdomen short and broad, ventrites freely articulated, ventrite 1 longest and without femoral lines. Aedeagus in resting condition turned on one side, no distinct parameres.

Key to the subfamilies of DISCOLOMIDAE

1. Body distinctly tuberculate, tubercles often form thick lumps on edges and giving rise to more or less waved contour; edge of pronotum and edge of elytra form an obtuse angle when viewed from side ..... NOTIOPHYGINAE*
- Body smooth or only slightly tuberculate; edge of pronotum and edge elytra form almost a straight line or slightly angulate. 2
2. Body contour with almost parallel-sided elytra; hair on body party clubbed or split-lip ..... PONDONATINAE*
- Body contour greatly arched oval with side of elytra rounded; hairs if present not like above 3
3. Body strikingly coloured with yellow and black; with two hair forms of different length ..... CEPHALOPHANINAE*
- Body not strikingly bicoloured; without hair forms as above.....4
4. Body greatly convex with narrow ridge or crest-like edge area; surface almost shining bright, hair pits and pseudopores very minute ..... APHANOCEPHALINAE
- Body flat-convex, with wide edge area as well as a smooth contour; tubercles on body not or little raised, their gland ducts often visible. ..... DISCOLOMINAE*

*Subfamilies not recorded from Nagaland.

LIST OF TAXA

1. *Aphanocephalus johni* Pal
2. *Aphanocephalus superbus* Pal
3. *Aphanocephalus sp.*

Subfamily APHANOCEPHALINAE

Genus *Aphanocephalus* Wollaston

1873. *Aphanocephalus* Wollaston, *Ent. Mon. Mag.*, **9** : 278. (Type species : *Aphanocephalus hemisphaericus* Wollaston).

1887. *Aphanocephalus* : Matthews, *Ann. Mag. Nat. Hist.*, **19**(5) : 114.

1899. *Aphanocephalus* : Ganglbauer, *Die Käfer Von Mitteleuropa*, **3** : 845.

1900. *Aphanocephalus* : Dodero, *Ann. Mus. Civ. Genova*, **40** : 560.

1912. *Aphanocephalus* : Grovelle, *Trans. Ent. Soc. London*, 1918 : 48.

1941. *Aphanocephalus* : John, *Zool. Med.*, **42** 11

1992. *Aphanocephalus* : Pal, *Hexapoda*, **4**(1) 46.

Diagnosis : Body broadly ovoid, strongly convex dorsally and flattened ventrally, glabrous vestiture consisting of minute setae not generally visible at lower magnification; transverse head with small eyes, 9-segmented antenna with a large club; strongly transverse prothorax with weakly rounded and smooth lateral sides, front coxal cavities closed and sternal fitting between mesocoxae in almost straight line, hind coxae widely separated, femora of legs broadened near middle and devoid of any tooth; abdomen with broad intercoxal process and freely articulated ventrites.

1. *Aphanocephalus johni* Pal

1992. *Aphanocephalus johni* Pal, *Hexapoda*, **4** 48

Diagnosis : Body (Fig. 1) oblong-ovate, about 1.2x longer than broad, convex, shiny, finely punctate-pubescent, uniformly dark reddish-brown except for paler front margin of pronotum. Exposed part of head markedly transverse, largely concealed from above by pronotum, fronto-clypeal suture situated in front of antennal bases, frontal and clypeal part with pubescence denser

and more distinct than on pronotum; eyes small, visible from ventral side; antennae shorter than pronotal length, club large, elongate, about one-third as long as antenna, with two preapical annulations and appearing a compact three-segmented structure; prothorax transverse (1.0 : 2.0), narrowed in front, front margin slightly concave, front angles bluntly rounded, side margins feebly rounded and finely bordered, two lateral pits situated close to antero-lateral and posterior angle; posterior angles acute, basal margin almost rounded and sinuated near extremities, punctation fine and sparse; elytra about as broad as long and about 3x longer than prothorax, sides evenly rounded and finely bordered, punctures simple, point-like impression on cuticle, sparse. Aedeagus (Fig. 1c) with distal end of median lobe narrowed and rather broadly pointed. Length- 2.08-2.48 mm.

Material : 25 ex. India : Nagaland, Dimapur District, Rangapahar Wildlife Sanctuary, 130 m., 31.x.1998 T.K. Pal, *ex.* under bark.

Distribution : India : Nagaland (New record), Arunachal Pradesh.

2. ***Aphanocephalus superbus*** Pal

1997. *Aphanocephalus superbus* Pal, *Hexapoda,* **8**(1) : 15.

Diagnosis : Body (Fig. 2a) oblong-ovate, finely punctate-pubescent, uniformly dark reddish-brown except antennae and legs. Exposed part of head markedly transverse, largely concealed from above by pronotum, fronto-clypeal suture situated considerably in front of antennal bases, frontal and clypeal part with pubescence denser and more distinct than on pronotum, eyes moderately large and partly visible from dorsal side, antennae little longer than pronotum, club about one-fourth as long as antenna and with single preapical annulation; prothorax 1.9x as broad as long, narrowed in front, front margin deeply emarginate, front angles broadly pointed, side margins feebly rounded and finely bordered, one pair of lateral pits visible on front angles, posterior angle acute, basal margin convex and deeply sinuate near extremities, pronotum uniformly dark reddish-brown throughout, punctation fine and sparse; elytra about broad as long and about 2.5x longer than prothorax, sides evenly rounded and finely bordered, punctures simple, point-like impression

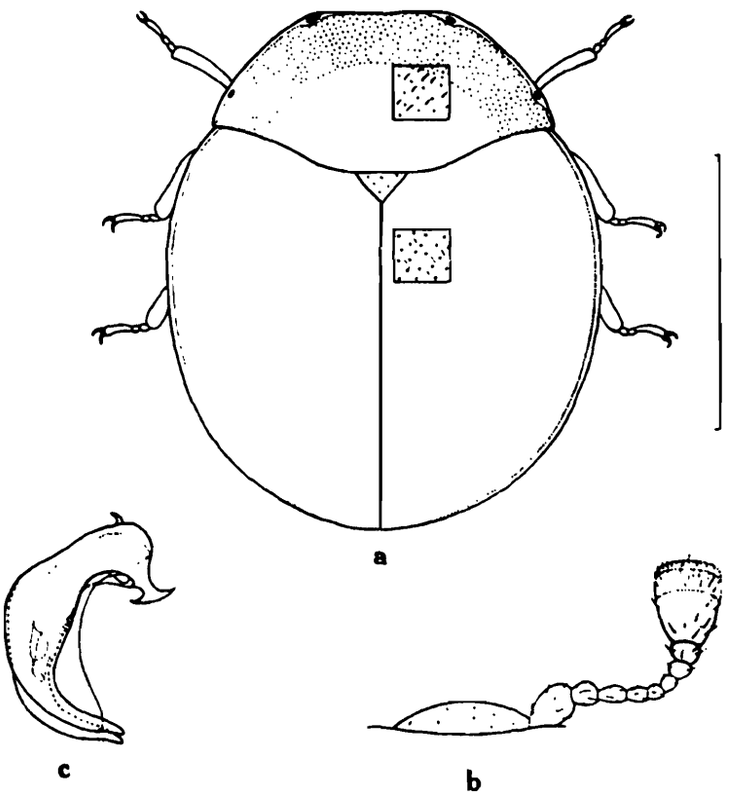


Fig. 1. *Aphanocephalus johni* Pal: a, Dorsal view (scale= 1.0 mm.); b, Exposed part of head and antenna (scale= 0.5 mm.); c, Aedeagus, Lateral view.

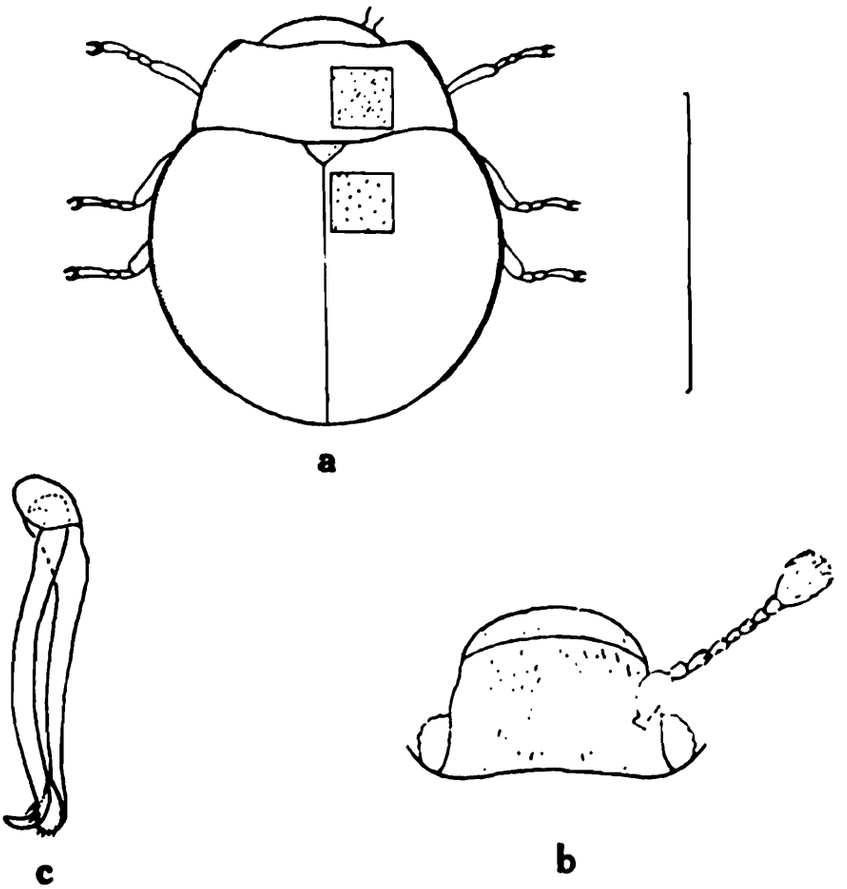


Fig. 2. *Aphanocephalus superbus* Pal: a, Dorsal view (scale= 1.0 mm.); b, Exposed part of head and antenna (scale= 0 5 mm.); c, Aedeagus, Lateral view.

on cuticle and little coarser than on pronotum. Aedeagus (Fig. 2c) with distal end of median lobe recurved, proximal end recurved and pointed, distal edge of tegminal cap spatulate and beset with hairs. Length – 1.18 mm.

Material: 9 ex. India : Nagaland, Phek District, Phek, nr. NAP Campus, 1250 m., 24.x.1998 T.K. Pal, *ex.* flowering plants.

Distribution : India : Nagaland (New record), Sikkim, Manipur.

3. *Aphanocephalus* sp.

General appearance (Fig. 3a) oblong, ovate, about 1.45x as long as broad, convex dorsally and flattened ventrally, little shiny, finely punctate-pubescent; dark brown except paler narrow antero-lateral part of pronotum; antennae little lighter than dorsum. Head small, exposed part distinctly transverse, partly concealed from above by pronotum; fronto-clypeal suture situated just in front of antennal insertions, less distinctly impressed; clypeus with pubescence denser and more distinct than on pronotum; eyes moderately large but partly visible from dorsal side. Antenna (see Fig. 3b) short. shorter than pronotum, scape moderately large, pedicel and segment 3 narrower and little elongate, segments 4-7 short and subequal, segment 8 little wider than 7; club large, elongate, little shorter than one-fourth as long as antenna, with single preapical annulation. Prothorax strongly transverse (1.0 : 2.3), narrowed in front, front margin feebly emarginate, front angles bluntly rounded, lateral margin arched and finely bordered, two lateral pits situated close to anterior angle and at posterior third, posterior angles acute, basal margin distinctly sinuate on either side of middle, antero-lateral part of pronotum with a narrow short pale strip; puncturation fine and sparse, pubescence short and scanty. Elytra little elongate (1.1 : 1.0), more than thrice (3.2 : 1.0) as long as prothorax, basal margin emarginate and fitting closely with prothorax, humeral angles blunt, widest near

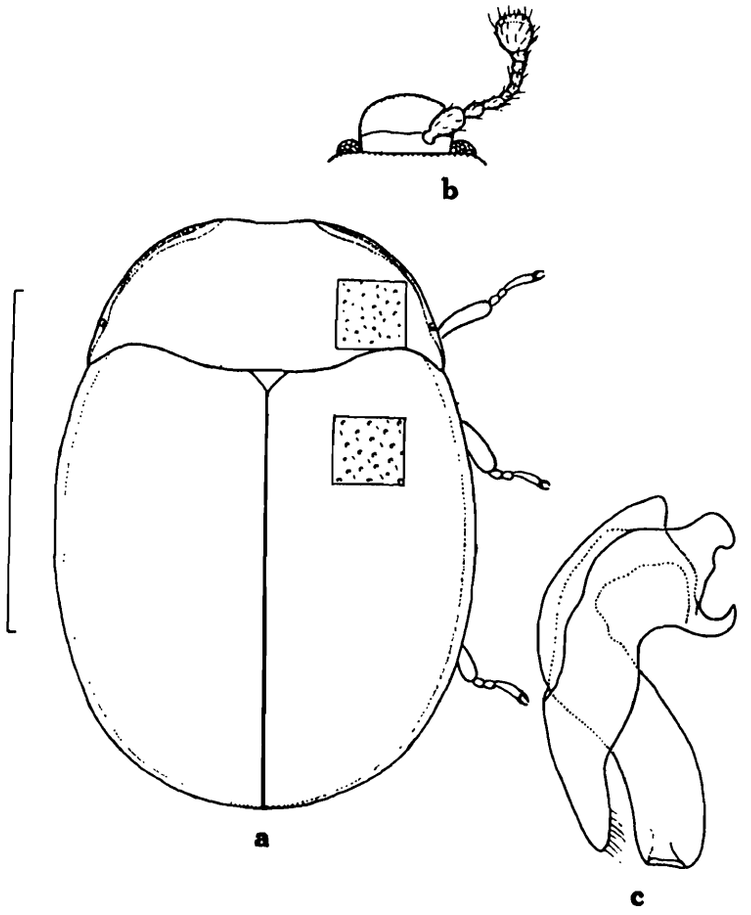


Fig. 3. *Aphanocephalus* sp.: a, Dorsal view (scale= 1.0 mm.); b, Exposed part of head and antenna (scale= 0.5 mm.); c, Aedeagus, Lateral view.

middle, sides evenly rounded, bordered and little explanate, unicolourous, punctures simple, point-like impressions on cuticle, sparse, pubescence short and scanty, six large pit-like punctures arranged along elytral border. Ventral side little paler, prosternum indistinctly punctate and finely pubescent; metasternum with moderately large and dense punctures, little weaker mesally; punctation on abdominal ventrites almost similar to that of metasternum; legs yellowish-brown with apical third of femora and tibiae lighter; epipleura flat, broad basally and acute for entire length. Aedeagus (Fig. 3c) on one side, median lobe forming a tube with distal end broad and blunt; tegmen forming a cap-piece enveloping median lobe, its proximal end broad with a kook-like projection, distal end of tegminal cap spatulate and beset with hairs.

Measurements : Total length 1.66 mm., width of head across eyes 0.42 mm., length of antenna 0.52 mm., length and width of prothorax 0.47 mm. and 0.92 mm., length and width of elytra 1.28 mm. and 1.10 mm.

Material : 5 ex. India: Nagaland, Dimapur District, Rangapahar Wildlife Sanctuary, 130 m., 31.x.1998 T.K. Pal, *ex.* under bark.

Remarks : This species shows certain resemblances with the Nepalese species, *Aphanocephalus gorkhus* Schwaller in facies and aedeagal features. But it differs from *gorkhus* in having a narrow pale band from antero-lateral part of pronotum posterad towards middle; proximal part of tegmen with a hook-like projection, and distally median lobe extended little beyond the tip of tegmen.

Key to the species of *Aphanocephalus* Wollaston From India

1. Front margin of prothorax rather deeply and widely emarginate, antero-lateral margin of pronotum not paler than remaining part, one pair of lateral marginal pits of pronotum present near humeral angles and those near basal third absent ..... *superbus* Pal

– Front margin of prothorax either unemarginate or slightly emarginate, antero-lateral margin of pronotum paler (reddish-brown) than remaining part (blackish-brown), two pairs of lateral marginal pits near humeral angles and near basal third present 2

2. Antennal club segment with single preapical annulation 3

– Antennal club segment with two preapical annulations 5

3. A pair of median hemispherical paler spots on elytra .....*maculipennis* Pal

– Elytra devoid of hemispherical paler spots and dark throughout, margins narrowly paler occasionally 4

4. Front and side margins of pronotum with broad, uninterrupted paler band; aedeagus with distal end of tegmen bifid, distal end of median lobe foot-shaped ..... *convexus* Pal

– Narrow paler bands on antero-lateral part of pronotum which extend posterad towards middle; aedeagus with distal end of tegmen spatulate and beset with setae, median lobe tubular with truncate distal end. .....
.....***Aphanocephalus*** sp.

5. Antero-lateral pale border of pronotum uninterrupted and continuous throughout its length; aedeagus with distal end of median lobe narrowed and rather broadly pointed.
.....*johni* Pal

– Antero-lateral border of pronotum interrupted near middle, along front margin; aedeagus with distal end of median lobe broad and blunt. .....*sikkima* Pal

SUMMARY

The paper deals with 3 species under 1 genus of the subfamily Aphanocephalinae which form the first record of Discolomidae from the State of Nagaland. The species are characterised and a key to the Indian species (6 spp.) is appended.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India, for providing necessary facilities for the work.

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INSECTA : COLEOPTERA : LANGURIIDAE

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INTRODUCTION

The Languriidae are a moderately large, well-defined family of the section Clavicornia under the superfamily Cucujoidea. The languriids are small to large, elongate-oval to narrow-elongate, slightly flattened and often glabrous. They are usually bicoloured or metallic and are commonly called 'lizard beetle' The family with about 900 species have world-wide distribution but are found more commonly in the tropical parts of both the Old and New worlds. Larvae of many species are stem borers and their adults feed on pollen or the foliage of host plants.

Following the publication of Arrow's 'Fauna' in 1925, not many works on this family have come out from the Indian subcontinent. Only recently, Sengupta and Mukherjee (1977, 1979 and 1985) have dealt with the languriines of Himalaya and described a new genus from this part. Subsequently, Pal (1992) recorded some species from Arunachal Himalaya. Pal (2003, 2004) dealt with the Languriids of Sikkim and Manipur States. The earlier workers recorded a few species from Nagaland. The present work is based on some recent collection made by the author in Nagaland plus earlier material records from this State.

CHARACTERS OF THE FAMILY LANGURIIDAE

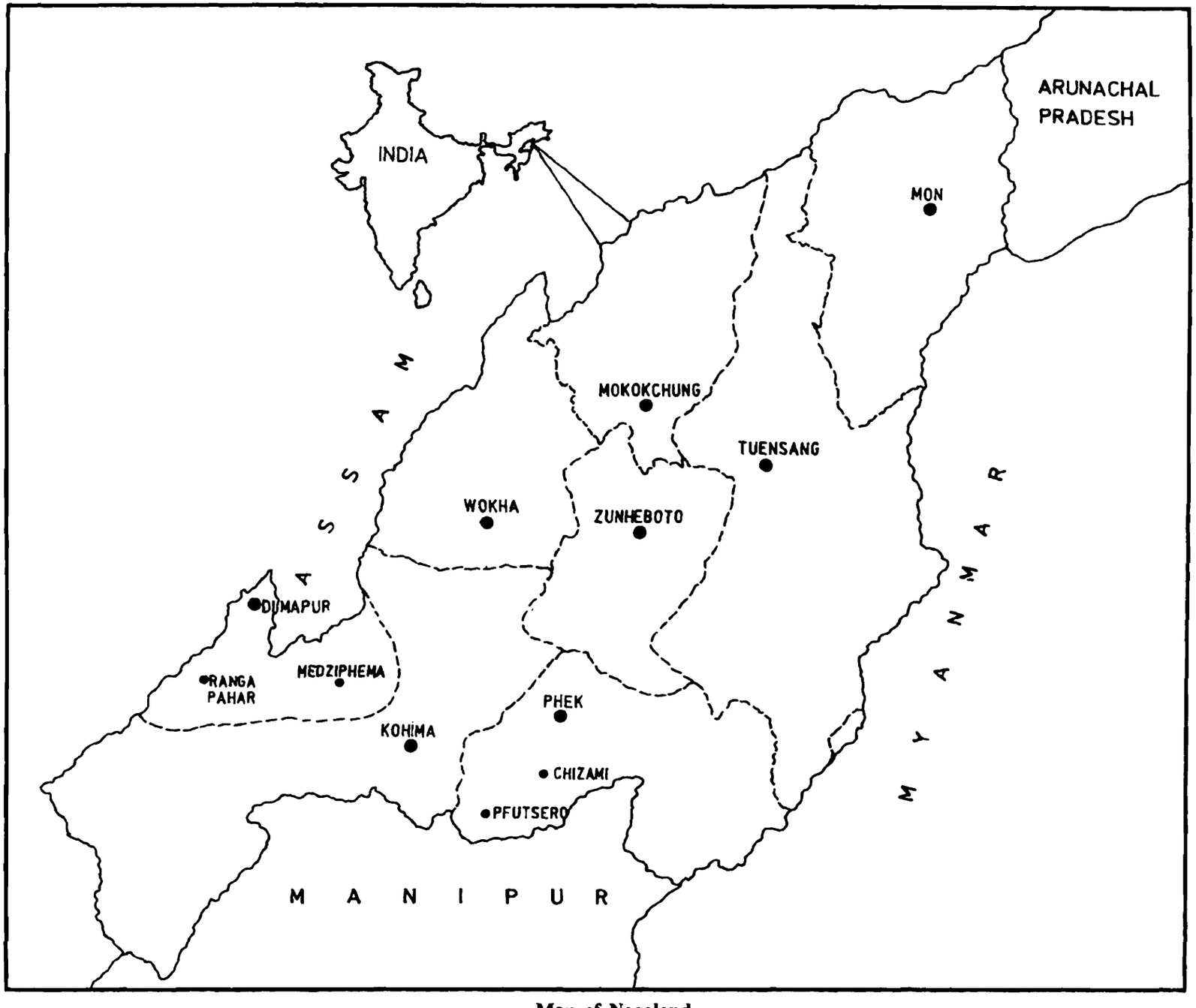
Head usually transverse, rarely with distinct tempora, vertex often with a pair of stridulatory files or occasionally single, often with transverse impressed line on vertex behind eyes, often with fronto-clypeal suture, eyes moderately large, gular sutures well separated, antenna 11-segmented with variable club, antennal insertions somewhat exposed; mandible usually with two apical teeth, mola more or less developed; maxilla with well developed lacinia, galea and palpi, lacinia often bears three apical spines, apical segment of palpi elongate and never securiform; mentum often transverse, ligula often bilobed, apical segment of labial palpi usually with truncated tip and rarely elongate-fusiform.

Prothorax a little elongate to slightly transverse, side margins often smooth, occasionally crenulate, pronotum usually bears prebasal impressions and sometimes a basal transverse groove, front coxae slightly transverse, intercoxal process moderately broad, coxal cavities usually open and occasionally closed.

Elytra striate-punctate, with or without scutellary striole, epipleura complete. Wing often with four anal veins and sometimes less in number, often with anal cell when wing possesses four anal veins, devoid of anal cell if with less number of anal veins, usually with subcubital fleck.

Mesocoxae moderately to widely separated, mesocoxal cavities closed outwardly by sterna, mesepimeral pockets usually present. Metasternum sometimes with femoral lines, metacoxae rather narrowly to moderately widely separated; metendosternite usually with moderately widely separated anterior tendons.

Legs moderately long, trochanters usually broadly elongate but never heteromeroid, tibiae



Map of Nagaland

often little broadened apically and with two normal spurs, tarsal formula 5-5-5 with segment 4 often reduced.

Abdomen covered by elytra, five ventrites freely articulated and more or less equally long, ventrite 1 often with femoral lines. Aedeagus on one side when retracted, with articulated parameres, median lobe bears long struts. Ovipositor often with apically pointed coxites and with styli attached laterally.

Key to the subfamilies of LANGURIIDAE

1. Front coxal cavities externally as well as internally closed; elytra without scutellary striole; stridulatory file on head if present, single and median; first anal vein of wing may or may not run into subcubital fleck ..... CRYPTOPHILINAE*

– Front coxal cavities externally open behind, if closed then internally open and elytra with scutellary striole; stridulatory file on head if present, double in number; first anal vein not running into subcubital fleck. 2

2. Trochanters narrow and distinctly elongate; sternal fitting between mesocoxae with two knobs; scutellary striole of elytra and stridulatory files on head absent; wing with less than four anal veins. .. TORAMINAE*

– Trochanters not very narrow-elongate, sternal fitting between mesocoxae with single knob, rarely in straight line; elytra with scutellary striole and stridulatory files on head present; wing usually with four anal veins 3

3. Antennal club 2-segmented .... SETARIOLINAE*

– Antennal club with more than two segments. 4

4. Antennal club often with more than three segments, antennal insertions dorso-lateral, head with fronto-clypeal suture; maxillary galea short and broad, mandibular mola poorly developed; front coxal cavities internally closed behind ... LANGURIINAE

– Antennal club 3-segmented, antennal insertions lateral, fronto-clypeal suture absent; maxillary galea narrow-elongate, mandibular mola well developed and projecting; front coxal cavities internally open behind. ..... LOBERINAE*

LIST OF TAXA

Family LANGURIIDAE

Subfamily LANGURIINAE

1. *Megalanguria melancholia* Arrow
2. *Pachylanguria elongata* Fabricius
3. *Pachylanguria impressicollis* Kraatz
4. *Pachylanguria* sp.
5. *Caenolanguria lugubris* Gorham
6. *Doubledaya ustulata* Arrow
7. *Doubledaya ruficollis* Kraatz
8. *Anadastus dohertyi* Arrow
9. *Anadastus wiedemanni* Gorham
10. *Thallisellodes transversus* Gorham

Family LANGURIIDAE

Subfamily LANGURIINAE

Key to the genera of LANGURIINAE

1. Club of antenna asymmetrical, consisting of three or more segments; body generally narrow-elongate 2

– Club of antenna symmetrical, consisting of three segments; body elongate but less narrow. Front angles of prothorax produced ..... ***Thallisellodes*** Arrow

2. Elytral epipleura indistinct 3

– Elytral epipleura well defined 4

3. Antennal club distinctly broad and abrupt. ..... ***Megalanguria*** Arrow

– Antennal club less broad and not very abrupt. Pronotum margined at base. Elytra not acuminate at apex; scutellum angulate behind ..... ***Pachylanguria*** Crotch

* Subfamiles not recorded from Nagaland

4. Eyes finely facetted 5

– Eyes coarsely facetted. Elytra with prominent humeral angles ..... ***Caenolanguria*** Gorham

5. Head dilated in front of eyes, asymmetrical in female. Shoulders of elytra not tuberculate ..... ***Doubledaya*** White

– Head not dilated in front of eyes and symmetrical in both sexes. Elytral apices not separately rounded ..... ***Anadastus*** Gorham

Genus ***Megalanguria*** Arrow

1925. *Megalanguria* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 168 [Type species : *Pachylanguria metasternalis* Crotch].

Diagnosis : Broad elongate; head large with finely facetted eyes situated wide apart, vertex with a pair of stridulatory files near middle, 11-segmented antenna with 4-segmented club, long mandible with bifid apex, apical segment of maxillary palpi fusiform, apical segment of labial palpi elongate; transverse prothorax distinctly rounded at sides, prosternal process bluntly bilobed at apex and deeply sulcate on each side; elytra broader at shoulders than prothorax, rounded at apex, epiplurae not distinct.

1. ***Megalanguria melancholia*** Arrow

1925. *Megalanguria melancholia* Arrow, *Fauna Brit. India, Coleoptera: Clavicornia* : 171.

Diagnosis : Facies broadly elongate; black with elytra very dark blackish-purple, pronotum decorated just beyond middle with a very irregular blood-red transverse band narrow or interrupted in the middle, metasternum also bears irregular blood-red patch on either side; head distinctly punctate and more densely on clypeus; pronotum transverse, sides rounded, front angles blunt and hind angles acute, base finely margined, lateral foveae minute but distinct, finely punctured in middle and smooth at sides; elytra with slight swellings behind middle, sides rather straight and gently converging from shoulders, shoulders prominent, minutely punctured with distinct rows of stronger punctures. Length- 5.5-6.5 mm.

Distribution : India : Nagaland, Meghalaya, Manipur.

Genus ***Pachylanguria*** Crotch

1876. *Pachylanguria* Crotch, *Cist. Ent.*, **1** : 377 [Type species : *Pachylanguria paivae* Wollaston]

1876. *Tetralanguria* Crotch, *Cist. Ent.*, **1** : 378.

1887. *Metabelus* Gorham, *Proc. Zool. Soc. Lond.*, 1887 : 361.

1887. *Languriomorpha* Gorham, *Proc. Zool. Soc. Lond.*, 1887 : 361.

Diagnosis : Facies elongate with short antennae, head with finely facetted eyes, vertex with or without a pair of stridulatory files, 11-segmented antenna with 4-segmented club, mandible with bifid apex, maxillary lacinia tridentate, apical segment of maxillary palpi elongate, ligula broadly bilobed and apical segment of labial palpi broad; transverse prothorax with distinctly entire basal margin, front coxae moderately widely separated, prosternal process little produced behind coxae and with a pair of lateral grooves; elytra narrower posteriorly but not acuminate at apex, epipleura not distinct, first abdominal ventrite with femoral lines.

Key to the species of *Pachylanguria* Crotch

1. Shoulders of elytra not prominent, embraced by hind angles of prothorax. Ventral surface of body reddish with terminal abdominal segment blackish ..... *elongata* (Fabricius)

– Shoulders of elytra prominent, not embraced by hind angles of prothorax 2

2. Transvers prothorax narrowing from base to front margin; short parallel coxal lines on abdominal ventrite 1; mesosternum blackish ..... *impressicollis* (Kraatz)

– Transvers prothorax widest little beyond middle, slightly narrowed both anteriorly and posteriorly; no coxal line on abdominal ventrite 1; mesosternum reddish ..... *Pachylanguria* sp.

2. ***Pachylanguria elongata*** (Fabricius)

1801. *Trogosita elongata* Fabricius. *Systema Eleutheratorum*, **1** : 152.

1823. *Languria tripunctata* Wiedemann, *Zool. Mag.*, **2**(1) : 46.

1823. *Languria splendens* Wiedemann, *Zool. Mag.*, **2** (1) : 46.

1825. *Languria pyramidalis* Macleay, *Annulosa Javan.*, : 44.

1860. *Languria angularis* Motschulsky, *Schrenck's Reisen un Amurl.*, **2** : 243.

1896. *Tetralanguria elongata* : Gorham, *Ann. Mus. Civ. Genova*, **36** : 259.

1925. *Pachylanguria elongata* : Arrow, *Fauna Brit. India, Coleoptera : Clavicomia* : 173.

Diagnosis : Facies narrow elongate, dark metallic blue or coppery in colour with prothorax reddish, shiny; head with antennal segment 3 rather long, club segments of antenna transverse and closely set, vertex closely and densely punctate; prothorax with sides nearly parallel, front angles blunt, hind angles acutely produced and closely applied to elytral shoulders, pronotum coarsely punctate near middle and more feebly towards sides, a roundish depression in middle of pronotal base and minute lateral foveae; scutellum transverse and pointed at apex; elytral shoulders not prominent, with distinct lines of punctures and interspaces with fine punctures, sides straight and little convergent posteriorly, apex finely serrated; ventral surface largely reddish. Length-12-17 mm.

Material : 2 ex. India : Nagaland, Kohima, Above Forest Colony, 1470 m., 1 ex., 11.x. 1998, T.K. Pal & party, *ex.* beating bush; Dimapur District, Kukidolong, 8 km. 0- Medziphema, 245 m., 1 ex., 28.x.1998, T.K. Pal & party, *ex.* beating bush.

Distribution : India : Nagaland (New record), Sikkim, West Bengal (Darjeeling District).

Elsewhere : Bangladesh; Myanmar; Thailand; Malaysia; Indonesia.

3. ***Pachylanguria impressicollis*** (Kraatz)

1899. *Tetralanguria impressicollis* Kraatz, *Deutsche Ent. Zeitschr.*, **1899** : 350.

1925. *Pachylanguria impressicollis* : Arrow, *Fauna Brit. India, Coleoptera : Clavicomia* : 177.

Diagnosis : Facies elongate, moderately narrowed behind; dorsally bright coppery-green, shining; sides of prothorax and ventral surface, except mesosternum and last abdominal ventrite reddish; vertex of head strongly but moderately densely punctate; prothorax transverse, sides converge from base towards apex, front angles blunt, hind angles acute but not much produced, base of pronotum clearly impressed between lateral foveae, puncturation on pronotum almost similar to that of vertex of head; scutellum angulate behind; elytral shoulders not distinctly prominent and not closely embraced by hind angles of prothorax, sides straight and little convergent posteriorly, apices jointly rounded, distinctly and unequally punctured in linear rows. Length-16 mm.

Distribution : India : Nagaland.

4. ***Pachylanguria*** sp.

Facies (Fig. 1) narrow-elongate, dorsally bright coppery-green, shining, sides of pronotum little lighter, glabrous, lower surface except apical part of the last abdominal ventrite reddish. Head moderately large, transverse, no fronto-clypeal suture; puncturation on vertex moderately small, interspaces at least 4x as wide as punctures and those on clypeus little closer. Eyes moderately large, not projecting, finely facetted; vertex extended beneath eye like shelf, lateral margin of vertex bordering eyes finely bordered. Antenna moderately long, shorter than head and prothorax together, scape moderately large, pedicel slightly shorter and narrower than scape, segment 3 longer than segment 2 and subequal; segments 4-7 shorter than segment 3 and subequal; club 4-segmented, little asymmetrical, basal segment (segment 8) about as broad as long or little elongate, apical segments (segments 9-11) wider than basal one and transverse. Prothorax transverse (1.0 : 1.2), widest little beyond middle and slightly narrowed both anteriorly and posteriorly, sides feebly arched, front angles obtuse and blunt, hind angles sharp and almost right angles, sides and base narrowly bordered, front non-bordered; pronotum finely punctate, almost similar to that of vertex of head; lateral foveae from the base of pronotum moderately long (shorter than one-fourth of

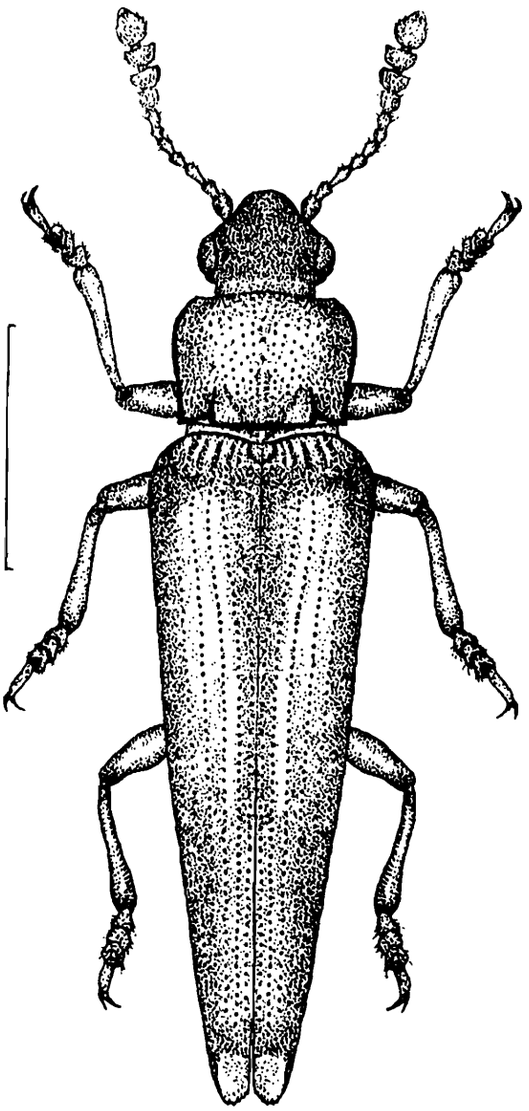


Fig. 1. *Pachylanguria* sp., Dorsal view (Scale = 2.5 mm.).

pronotal length), base clearly impressed between lateral foveae. Scutellum smooth, little transverse and acutely pointed apically. Elytra distinctly elongate (3.1 : 1.0), rather convex and narrowed from base to apex, base wider than prothorax and little emarginate medially, shoulder little carinate, without humeral carina, sides nearly straight, apical margins separately rounded and finely serrated, punctures on striae coarser than those on vertex and pronotum and usually separated by more than their diameter, scutellary striole present and about one-fifth as long as elytra. On ventral side pro-, meso- and metasternum almost impunctate and abdominal ventrites very minutely and sparsely punctate, thorax and abdomen devoid of any coxal line, ventral surface entirely reddish except darker apical half of abdominal ventrite 5. Legs ventrally reddish and dorsally darker, apex of femora and base of tibia darker, tarsi darker.

Measurements : Total length 12.96 mm., width of head across eyes 1.92 mm., length of antenna 3.12 mm., length and width of prothorax 2.16 mm. and 3.0 mm., length and width of elytra 10.02 mm. and 3.24 mm.

Material : 1 ex. India : Nagaland, Kohima, Above Forest Colony, 1470 m., 11.x.1998, T.K. Pal & party, *ex.* beating bush.

Remarks : This species comes close to *Pachylanguria impressicollis* (Kraatz) but can be distinguished by its transverse prothorax widest little beyond middle, little narrowed both anterad and posterad; no coxal line on abdominal ventrite 1, and mesosternum not dark coloured but uniformly reddish.

Genus ***Caenolanguria*** Gorham

1887. *Caenolanguria* Gorham, *Proc. zool. Soc. Lond.*, 1887 : 361. [Type-species : *Languria coarctata* Crotch].

Diagnosis : Facies elongate with moderately slender legs and antennae; head without stridulatory files, coarsely facetted prominent eyes, 11-segmented antenna with 3-segmented club (rarely 4- to 5-segmented), mandible with bifid tip, maxillary lacinia tridentate, apical segment of maxillary palpi elongate, ligula bilobed and apical segment of labial palpi securiform; prothorax contracted towards base, pronotum margined laterally and basally, front coxae not widely separated and prosternal process produced behind coxae; elytra rather parallel in anterior half and then gradually narrowed posteriorly, epipleurae distinct, first abdominal ventrite with acutely pointed intercoxal process.

5. ***Caenolanguria lugubris*** (Gorham)

1896. *Stenodastus lugubris* Gorham, *Ann. Mus. Civ. Genova*, **36** : 269.

1925. *Caenolanguria lugubris* : Arrow, *Fauna Brit. India, Coleoptera: Clavicomia* : 239.

Diagnosis : Facies elongate, chocolate-brown with slight metallic tint, legs and antennae darker

than dorsal colour, extremities of elytra blackish; head with antennal segments 1-7 little elongate, 3-segmented club moderately broad, vertex moderately coarsely and moderately densely punctate, eyes moderately large; prothorax slightly transverse, sides rounded and little sinuate before hind angles, pronotal base somewhat depressed, lateral foveae short, pronotal punctures finer than on vertex of head; scutellum slightly transverse; elytral base not wider than pronotal base, tapering posteriorly with apical margins separately rounded, rows of small and closely set punctures. Length- 7.2-9.6 mm.

Material : 3 ex. India : Nagaland, Kohima, Puliebadze Wildlife Sanctuary, 1500 m., 1 ex., 12.x.1998, T.K. Pal & party, *ex.* beating bush; Wokha District, Chukitong, 10 km. N.-0- Wokha, 1 ex, 15.x.1998, T.K. Pal & party; Wokha, Lungsang, 1340 m., 1 ex., 14.x.1998, T.K. Pal & party.

Distribution : India : Nagaland (New record).

Elsewhere : Myanmar.

Genus ***Doubledaya*** White

1850. *Doubledays* White, *Proc. Ent. Soc. Lond.*, 1850 : 13. [Type : *Doubledaya viator* White].

1876. *Languriosoma* : Crotch, *Cist. Ent.*, I : 379.

1896. *Coptolanguria* Gorham, *Ann. Mus. Civ. Genova*, **36** : 261

1899. *Cosmolanguria* Kraatz, *Deutsche Ent. Zeitschr.*, 1899 : 352.

1908. *Glyphilanguria* Fowler, *Wytsman's Gen. Insect.*, Languriinae : 14.

Diagnosis : Facies elongate; head dilated beneath laterally making eyes little bit dorsal in position, eyes finely facetted, 11-segmented antenna with 3- or 4-segmented club, mandible with bifid tip, maxillary lacinia tridentate, apical segment of maxillary palpi narrow-elongate, apical segment of labial palpi securiform; prothorax may be of different proportions, front coxae not widely separated and prosternal process produced behind coxae; elytra more or less convergent posteriorly, epipleurae distinct; first abdominal ventrite with narrow intercoxal process.

Key to the species of *Doubledaya* White

1. Apices of elytra produced and finely fringed. Head dark and antennal club 3-segmented ..... *rufucollis* Kraatz

– Apices of elytra not produced or finely fringed. Pronotum not longitudinally sulcate; body reddish-brown with apex of elytra blue-black ..... *ustulata* Arrow

6. ***Doubledaya ruficollis*** Kraatz

1899. *Cosmolanguria ruficollis* Kraatz, *Deutsche Ent. Zeitschr.*, 1899 : 351.

1886. *Doubledaya varians* Fowler, *Trans. Ent. Soc. Lond.*, 1886 : 24 (Part).

1908. *Cosmolanguria kraatzi* Fowler, *Wytsman's Genera Insectorum*, Languriinae : 13.

1925. *Doubledaya ruficollis* : Arrow, *Fauna Brit. India. Coleoptera : Clavicornia* : 196.

Diagnosis : Facies moderately elongate, with slender legs and short antennae, deep metallic blackish-green with anterior part of head and pronotum reddish, ventrally sides of the body and abdomen reddish, very shiny; head with antennal segments 1-8 elongate, antennal club compact and 3-segmented, vertex almost devoid of punctures; prothorax contracted behind, pronotum with a longitudinal median groove and deeply impressed basal foveae, basal margin narrow, hind angles acute, pronotal surface almost similar to that of vertex; scutellum rather transverse and obtusely pointed behind; elytra with closely set rows of large punctures. Length-14-20 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Meghalaya, Sikkim.

Elsewhere : Vietnam.

7. ***Doubledaya ustulata*** Arrow

1925. *Doubledaya ustulata* Arrow, *Fauna Brit. India. Coleoptera : Clavicornia* : 191.

Diagnosis : Facies elongate, slender, brick-red with tip of elytra blue-black, and eyes, antennae and legs blackish; head with short antenna bearing an abrupt 4-segmented club, vertex very finely and sparsely punctate; prothorax about as broad

as long (male) or transverse, narrowed towards base, pronotum with a short median groove near base, lateral foveae well marked and divergent anteriorly, pronotum with minute and very sparse punctures; elytra narrowed posteriorly, apices truncate, with closely set rows of coarse and deep punctures. Length-15 mm.

Distribution : India : Nagaland, Sikkim, West Bengal (Darjeeling District).

Elsewhere : Bangladesh, Myanmar; Laos.

Genus ***Anadastus*** Gorham

1887. *Anadastus* Gorham, *Proc. Zool. Soc. Lond.*, 1887 : 362 [Type species : *Languria cambodiae* Crotch].

1887. *Neolanguria* Gorham, *Proc. Zool. Soc. Lond.*, 1887 : 361.

1887. *Stenodastus* Gorham, *Proc. Zool. Soc. Lond.*, 1887 : 362.

Diagnosis : Facies elongated; head not dilated beneath laterally, eyes finely facetted, 11-segmented antenna with 3- or 5-segmented club, mandible with a blunt tooth just behind sharp apical tooth, maxillary lacinia with an apical spine; apical segment of maxillary palpi fusiform, apical segment of labial palpi globular; prothorax somewhat quadrate, front coxae not widely separated and prostemal process produced behind coxae; intercoxal process of first abdominal ventrite moderately narrow and its tip pointed, with a paired (femoral) lines; elytra somewhat parallel; epipleurae distinct.

Key to the species of *Anadastus* Gorham

1. Antennal club 5- segmented, club segments loosely arranged and not broad. Abdomen reddish ..... *dohertyi* Arrow

– Antennal club 4- segmented, broad and compact. Abdomen dark coloured; femoral lines on ventrite 1 not extended beyond middle of ventrite ..... *wiedemanni* Gorham

8. ***Anadastus dohertyi*** Arrow

1925. *Anadastus dohertyi* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 216.

Diagnosis : Facies elongate, rather parallel-sided; metallic bluish-black with head and prothorax reddish, legs and antenna blackish; head with eyes moderately large, antennal club 5-segmented and rather loosely articulated, vertex with moderately coarse and sparse punctures; prothorax little transverse, sides feebly rounded and little narrowed posteriorly, front angles blunt and hind angles acute, pronotal base little depressed near middle and coarsely punctate, lateral foveae divergent in front, pronotal punctures little finer than on vertex; elytral shoulders little prominent, with regular rows of moderately coarse punctures, apex not distinctly truncate. Length-3.80-4.25 mm.

Material : 1 ex. India : Nagaland, Phek District, Surhoba, 1250m., 10 km. 0- Phek, 23.x.1998, T.K. Pal, *ex.* beating bush.

Distribution : India : Nagaland (New record), Sikkim, Arunachal Pradesh.

9. ***Anadastus wiedemanni*** Gorham

1896. *Anadastus wiedemanni* Gorham, *Ann. Mus. Civ. Genova*, **36** : 271.

1925. *Anadastus wiedemanni* : Arrow, *Fauna Brit. India, Coleoptera : Clavicomia* : 222.

Diagnosis : Facies moderately narrow, elongate, with slender legs and stout antennae; bright red with elytra dark-blue, and antenna (except base), legs (except trochanter) and ventral surface (except head and prothorax) black; head with small eyes, antennal segments 1-5 elongate, segment 6-7 little thickened, segments 8-11 form a broad and abrupt club; prothorax transverse, sides rounded and little dilated in front, contracted behind, basal foveae on pronotum deep and divergent, base depressed and strongly punctured between foveae, head and pronotum well punctured; elytral sides parallel in front and little rounded behind, extremities truncate, strong, deep punctures in rows. Length 8-9 mm.

Distribution : India : Nagaland, Meghalaya, Manipur.

Elsewhere : Myanmar.

Genus ***Thallisellodes*** Arrow

1925. *Thallisellodes*: Arrow, *Fauna Brit. India, Coleoptera: Clavicomia* : 256 [Type species : *Thallis transversus* Gorham].

Diagnosis : Body elongate-oval; head with large coarsely facetted eyes, 11- segmented antenna with 3-segmented loose club, apical segment of maxillary palpi fusiform, maxillary lacinia with two apical spines, apical segment of labial palpi transverse; prothorax transverse, rounded at sides, front angles little produced, pronotal base without lateral foveae, prosternal process somewhat broad and apical margin concave; elytral shoulders not prominent, fit closely with pronotal base, distinct epipleurae, elytral apices rounded; tarsal segments 1-3 lobed.

10. ***Thallisellodes transversus*** Gorham

1895. *Thallis transversus* Gorham, *Ann. Soc. Ent. Belg.*, **39** : 325.

1925. *Thallisellodes transversus* : Arrow, *Fauna Brit. India, Coleoptera : Clavicomia* : 258.

Diagnosis : Facies elongate-oval, not very long, reddish-brown, antennal club darker; head with large eyes separated by more than three times the width of eye, antenna moderately long with segment 1-7 more or less elongate, club not broad, puncturation on vertex moderately coarse and not densely arranged; prothorax rather convex, sides and base bordered, base of pronotum transversely depressed at middle, no lateral foveae; puncturation almost similar to that of vertex of head; elytra with regular rows of small punctures, apices separately rounded. Length- 3.4- 4.0 mm.

Material : 3 ex. India : Nagaland, Mokokchung District, Minkong, 1250 m., 12 km. O-Mokokchung, 2 ex., 19.x.1998, T.K. Pal & party, *ex.* beating bush; Wokha District, Wokha, Lungsang, 1340 m., 1 ex., 14.x.1998, T.K. Pal & party.

Distribution : India : Nagaland (New record), Tamil Nadu.

SUMMARY

The paper deals with 10 species under 6 genera of the subfamily Languriinae of which 4 species are recorded first time from Nagaland. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work

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INSECTA : DIPTERA

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INTRODUCTION

The State of Nagaland came into being in 1971. So Nagaland by name was never registered anywhere in the literature before this. The Diptera fauna of this remote state is pratically unknown because of the lack of systematic exploration. Only some stray works were done by Brunetti (1908) on Syrphidae and described 2 species from Kohima. Recently Nandi (1989) surveyed this state thoroughly and recorded (19) species of Sarcophagidae. Barring these two families members of the other 8 families (17 species) are the first record from the state and marked with asterisk. Families like Syrphidae, Muscidae and Tachinidae are however, dealt with separately.

Virtually the National Collection of Zoological Survey of India has no representation of specimens from the state. Recently several collection trips were undertaken by the scientists J.P. Sati (1990), Y.P. Sinha (1991), P. Mukhopadhya (1994), P.H. Roy (1994), B. Mitra (1994), R.S. Mridha and M. Sil (1994) of this department.

This present communication incorporates 36 species under 25 genera belonging to the families : Bibionidae, Sciaridae, Tabanidae, Asilidae, Sciomyzidae, Sepsidae, Celyphidae, Chloropidae, Calliphoridae, Sarcophagidae.

MATERIALS AND METHODS

Datta, Parui and Mukherjee (1977) laid down the general method of collecting dipteran specimens from their habitats and of preserving them in proper manner for taxonomic studies.

LIST OF TAXA

Order DIPTERA

A. Family BIBIONIDAE

*1. *Penthetria brunetti* Hardy

*2. *Penthetria japonica* Wiedemann

B. Family SCIARIDAE

*3. *Bradysia asiatica* Steffan

C. Family TABANIDAE

*4. *Chrysops dispar* (Fabricius)

*5. *Tabanus (Tabanus) orientis* Walker

*6. *Tabanus (Tabanus) striatus* Fabricius

D. Family ASILIDAE

*7. *Clephydroneura sundaica* (Jaennicke)

*8. *Machimus khasiensis* Ricardo

*9. *Machimus ricardoi* (Bromley)

*10. *Philodicus femoralis* Ricardo

E. Family SCIOMYZIDAE

*11. *Sepedon ferruginosa* Wiedemann

F. Family SEPSIDAE

*12. *Decachaetophora aeneipes* (de Meijere)

*13. *Dicranosepsis bicolor* Wiedemann

*14. *Sepsis indica* Widemann

G. Family CELYPHIDAE

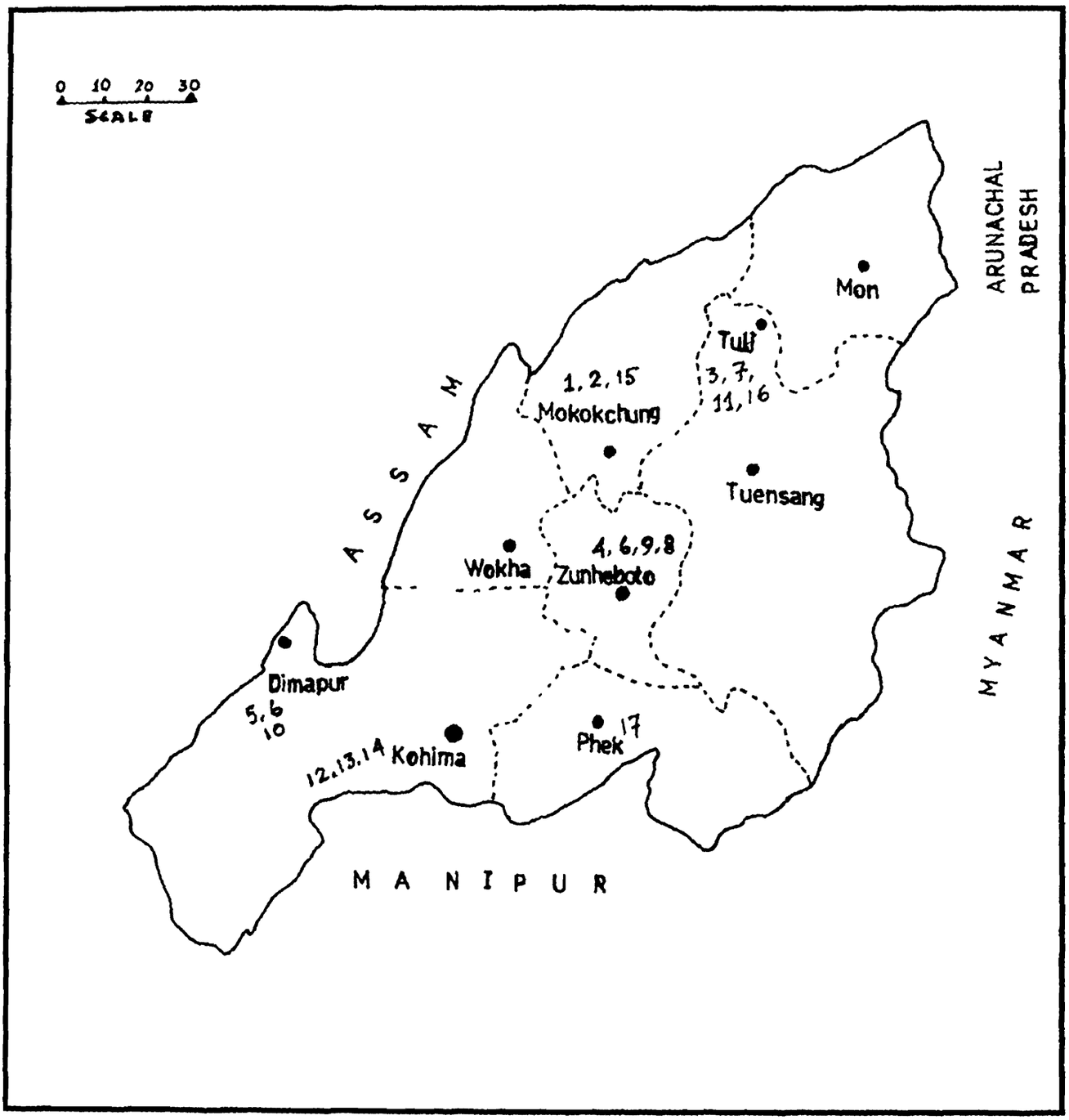
*15. *Spaniocelyphus scutatus* (Wiedemann)

H. Family CHLOROPIDAE

*16. *Pachylophus refescens* (de Meijere)

I. Family CALLIPHORIDAE

*17. *Lucilia porphyrina* (Walker)



Map 1 : Districtwise distribution of the dipteran species in Nagaland

J. Family SARCOPHAGIDAE

18. *Bercaea cruentata* (Meigen)
19. *Boettcherisca peregrina* (Robineau Desvoidy)
20. *Lioproctia (Coonooria) pattoni* (Senior- White)
21. *Parasarcophaga (Liopygia) ruficornis* (Fabricius)
22. *Parasarcophaga (Liosarcophaga) brevicornis* (Ho)
23. *Parasarcophaga (Liosarcophaga) dux* (Thomson)
24. *Parasarcophaga (Liosarcophaga) jaipurensis* (Nandi)
25. *Parasarcophaga (Curanea) scopariiformis* (Senior- White)
26. *Parasarcophaga (Parasarcophaga) albiceps* (Meigen)
27. *Parasarcophaga (Parasarcophaga) sericea* (Walker)
28. *Parasarcophaga (Parasarcophaga) macroauriculata* (Ho)
29. *Parasarcophaga (Parasarcophaga) misera* (Walker)
30. *Robineauella (Jantiella) doleschdlli* (Johnston & Tiegs)
31. *Rosellea khasiensis* (Senior-White)
32. *Sarcorohdendorfia pusana* (Senior- White)
33. *Pierretia (Ascelctella) calcifera* (Boettcher)
34. *Harpagophalla kempi* (Senior-White)
35. *Iranihindia martellata* (Senior-White)
36. *Seniorwhitea reciproca* (Walker)

Key to the families

1. Adult antennae having more than 5 segments which are not fused into a solid structure.....2
- Adult antennae either fewer than 5 segments (generally 3) or with segments of flagellum fused into a solid structure, usually surmounted by a style or arista 3
2. Antennae typically shorter than thorax and inserted beneath eyes; pulvilli present .... BIBIONIDAE
- Antennae typically longer than thorax and inserted between compound eyes; pulvilli very thin or absent ..... SCIARIDAE
3. Third antennal segment with apical arista, vertex depressed in between the eyes 4
- Third antennal segment with dorsal arista, vertex not depressed in between the eyes..5
4. Third antennal segment with rings ....TABANIDAE
- Third antennal segment with an elongate style or bristle ..... ASILIDAE
5. Antennal segment 2 above without a distinct external groove; theca not developed at the base of proboscis 6
- Antennal segment 2 above with a distinct external groove; theca developed at the base of proboscis 9
6. Costa complete.....7
- Costa more or less interrupted either at the end of Sc or R_1 ....CHLOROPIDAE
7. Vibrissiae present, palpi reduced.....SEPSIDAE
- Vibrissae absent 8
8. Antennal socket absent; scutellum normal... ..... SCIOMYZIDAE
- Antennal socket present; scutellum enlarged, covering abodomen ..... CELYPHIDAE
9. Arista of antenna pubescent or with feathering not extending much beyond middle; body dull black or stripped grey and black .... SARCOPHAGIDAE
- Arista feathered to tip or body entirely metallic blue or green .....CALLIPHORIDAE

SYSTEMATIC ACCOUNT

Family BIBIONIDAE

Genus ***Penthetria*** Meigen

1803. *Penthetria* Meigen, *Magain Inseki Kde.* **2** 264
Type-species : *Penthetria holosericea* Meigen

Diagnosis : Antenna 12 jointed, first two segments short and normal shape, first flagellar

joint long; third longitudinal vein forked almost immediately beyond anterior cross vein, fourth longitudinal vein forked at or after the anterior cross-vein.

Key to the species

1. Fourth longitudinal vein branched at the contact of anterior cross-vein..... .....*japonica* Wiedemann

– Fourth longitudinal vein branched a little beyond the anterior cross-vein..... ..... *brunettii* Hardy

*1. ***Penthetria brunetti*** Hardy

1948. *Penthetria atra* Brunetti, *J. Kans. ent. Soc.*, **21** : 36.

Material examined : 1♀, Mokokchung district, Mingong Forest rest house, 27.ix.1994; Coll. P.H. Roy.

Distribution : India : Nagaland, Uttar Pradesh.

Elsewhere : Nepal.

*2. ***Penthetria japonica*** Wiedemann

1830. *Penthetria japonica* Wiedemann, *Aussereurop Zweifl. Insekt.*, **2** : 618.

Material examined : 1♀, Mokokchung district, Mingong Forest rest house, 22.iii.1994; Coll. P. Mukhopadhya.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : China, Myanmar, Nepal, Taiwan, Japan, Siberia.

Family SCIARIDAE

Genus ***Bradysia*** Winnertz

1867. *Bradysia* Winnertz, *Monogr. Sciarinen*, : 180. Type-species : *Bradysia angustipennis* Winnertz, *by* designation of Enderlein 1911 : 127.

Diagnosis : Face short; palpi 4-jointed, the first very short and not always differentiated from the second; antenna 2 plus 14 joined; 3 ocelli, the laterals remote from the eye margin; thorax moderately arched; legs slender, tarsal claws not toothed; wings microscopically setulose, not hairy, cubitus and medius with no setae.

*3. ***Bradysia asiatica*** Steffan

1912. *Sciara orientalis* Brunetti, *Fauna Brit. India, Dipt. Nematocera*, : 135.

Material examined : 2♀♀, Mokokchung district, Tuli forest rest house, 29.ix. 1994., coll. P.H. Roy.

Diagnosis : Black species; colour of the legs varies from pale yellow to dark brown or black; wing yellowish brown to yellowish grey, first longitudinal vein ends some little distance before the fork of fourth vein, petiole of fourth vein as long as or little longer than the branches.

Distribution : India : Nagaland, Assam.

Elsewhere : Myanmar, Borneo, Sri Lanka, Bangladesh, Philippines.

Family TABANIDAE

Key to the subfamilies

1. Ocelli well-developed; hind tibiae with paired apical spurs ..... CHRYSOPSINAE

– Ocelli rudimentary or absent, hind tibial spurs absent..... TABANINAE

Subfamily CHRYSOPSINAE

Genus ***Chrysops*** Meigen

1803. *Chrysops* Meigen, *Magazin Insekt Kde.*, **2** : 267. Type-species : *Tabanus caecutiens* Linnaeus, by monotypy.

Diagnosis : Small, slender flies with large angular spots or variegated dark markings on eyes; long antennae, often as long as head and thorax together; wings banded.

*4. ***Chrysops dispar*** (Fabricius)

1798. *Tabanus dispar* Fabricius, *Ent. Syst. Suppl.* : 567.

Material examined : 1♂, Zunheboto district, Hoshepur village, 25.Vii.1991, coll. Y.P. Singh.

Diagnosis : Abdomen with inverted black markings on tergum 2, arms extending to 3 and

sometimes 4 also; wing with posterior cell 5 having a large hyaline area up to hind margin; tibia never swollen; abdomen extensively yellowish.

Distribution : India : Nagaland, Tripura, West Bengal.

Elsewhere : Borneo, China, Taiwan, Hainan, Laos, Malaya, Myanmar, Nepal, Philippines, Sumatra, Thailand, Vietnam.

Subfamily TABANINAE

Genus ***Tabanus*** Linnaeus

1758. *Tabanus* Linnaeus, *Syst. Nat. Ed.*, **10** : 601.

Type-species : *Tabanus bovinus* Linnaeus.

Diagnosis : Generally robust flies with colourful eyes in life; vertex without a distinct ocellar tubercles in males; if present, entirely pollinose; eye bare.

Subgenus ***Tabanus*** Linnaeus

Diagnosis : Head hemispherical; vertex smoothly flat or slightly concave; post-occular rim present; banding on eyes often present; frons usually much narrow; antennal scape nearly as long as wide, hairy.

Key to the species

1. Abdomen blackish or reddish brown with 4 grey median and lateral strips almost of same length; scutellum reddish with black pubescence and white hairs .... *striatus* Fabricius
- Abdomen reddish yellow, darker at apex, with narrow yellowish white segmentations and median spots; scutellum black with pale yellow hairs ..... *orientis* Walker

***5. Tabanus (*Tabanus*) *orientis* Walker**

1848. *Tabanus orientis* Walker, *List Dipt. Colln Br. Mus.*, **1** : 152.

Material examined : 1♂, Kohima district, Pathar village, 31.iii. 1994. coll. P. Mukhopadhya.

Distribution : India : Nagaland.

Elsewhere : Myanmar, China, Nepal, Pakistan, Taiwan, Japan.

***6. Tabanus (*Tabanus*) *striatus* Fabricius**

1787. *Tabanus striatus* Fabricius, *Mantissa Insect*, **2** : 356.

Material examined : 1♂, Zunheboto district, Aghumato village, 19.Vii.1991, coll Y.P. Singh; 1♀, Kohima district, Rangapahar forest rest house, 30.iii.1994. Coll. P. Mukhopadhya.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, J & K, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur Meghalaya, Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh, Bhutan, Cambodia, China, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand; Vietnam.

Family ASILIDAE

Key to the genera

1. Submarginal cells 3 ..... ***Philodicus*** Loew
- Submarginal cells 2 2
2. Fourth posterior cell bulged forward so that the discal cell strongly constricted, in male marginal and submarginal cells usually bulged onwards with costa; ovipositor strongly compressed laterally .... ***Clephydroneura*** Becker
- Fourth posterior cell not bulged forward, discal cell not constricted; ovipositor of different pattern ..... ***Machimus*** Engel

Genus ***Clephydroneura*** Becker

1925. *Clephydroneura* Becker, *Ent. Mitt.* **14** : 68.

Type-species: *Asilus xanthopus* Wiedemann.

***7. *Clephydroneura sundaica* (Jaennicke)**

1867. *Asilus sundaica Jaennicke,Abh. Senekenb. Naturf Ges. Wien*, **6** : 363.

Material examined : 1♀, Tuensang district, Tuli village, 21.ix.1994. Coll. M. Sil.

Diagnosis : Yellowish species; mesonotum yellow with 2 widely separated black stripes which spread out behind the humeri into a pair of lateral black areas; abdomen with lateral dark patches which in the anterior segments form transverse bands being united; legs yellow with black knees; wing infuscated at tip which extends posteriorly into the fifth posterior cell.

Distribution : India : Nagaland.

Elsewhere : Jawa, Malaya, Thailand.

Genus ***Machimus*** Loew

1849. *Mechimus* Loew, *Linn. Ent.*, **4** : 1.

Type-species : *Asilus chrysitis* Meigen.

Key to the species

1. Eight sternite highly produced, bearing long hairs; femora ventrally bears pale hairs..... ..... *khasiensis* Ricardo

– Eight sternite not produced, but bears long hairs; femora ventrally bears a row of elongate pale yellow hairs..... *ricardoi* (Bromley)

*8. ***Machimus khasiensis*** Ricardo

1919. *Machimus khasiensis* Ricardo,*Ann. Mag. nat. Hist.* (9) **3** : 51.

Material examined : 1♂, Zunhebota district, Pagola river near to Abor mandir, 16.vii.1991, coll Y.P. Singh.

Distribution : India : Nagaland, Assam.

Elsewhere : None.

*9. ***Machimus ricardoi*** (Bromley)

1935. *Asilus ricardoi* Bromley, *Rec. Indian. Mus.*, **37** : 219.

Material examined : 1♂, Zunheboto district, Arukhatu & surrounding, 17. Vii. 1991, coll Y.P. Singh.

Distribution : India : Nagaland, Himachal Pradesh, Sikkim, Uttar Pradesh, West Bengal.

Elsewhere : None.

Genus ***Philodicus*** Loew

1848. *Philodicus* Loew, *Linn. Eat.*, **3** : 391.

Type-species : *Asilus javanus* Wiedemann.

*10. ***Philodicus femoralis*** Ricardo

1921. *Philodicus femoralis* Ricardo,*Ann. Mag. Nat. Hist.*, (9) **8** : 190.

Material examined : 1♂, Kohima district, Ranga Pahar wild life sanctuary, 18.xi. 1994. Coll. R.S. Mridha.

Diagnosis : Mystax pale yellow with a few black bristles on lower side; thorax dark brown, mesonotum with a medio-longitudinal dark brown stripe; scutellum with the disc bearing sparse black hairs, hind border with two black bristles; legs dark brown with femora comparatively lighter coloured, fore femora bare of birstles, mid and hind femora with two rows of bristles; wing medially hyaline and rest brownish; abdomen dark brown with hind border of tergites gray; male genitalia black with a few pale yellow bristles.

Distribution : India : Nagaland, Arunachal Pradesh, Bihar, Goa, Gujarat, Kerala, Meghalaya, Orissa, West Bengal.

Elsewhere : Myanmar.

Family SCIOMYZIDAE

Genus ***Sepedon*** Latreille

1804. *Sepedon* Latreille, *Nouv. Dict. Hist. Nat.*, **24** : 196. Type-species : *Syrphus sphegeus* Fabricius.

Diagnosis : Slender flies with a median longitudinal depression in lieu of mid-frontal stripe; anterior orbital and ocellar setae absent; antennal segment 2 nearly rod-shaped; thorax without humeral, presutural, 1 post alar, 1 or both dorsocentrals, prescutellar acrostichal and 1 pair of scutellar setae; prosternum haired and all parts of pleura with shorthairs, sub alar setae absent, hind coxa short haired at inner posterior margin; cerci in male genitalia usually long and exposed.

*11. ***Sepedon ferruginosa*** Wiedemann

1824. *Sepedon ferruginosa* Widemann, *Analecta Ent.*, : 56.

Material examined : 1♂, Tuensang, Tuli, 29.ix. 1994, coll. P.H. Roy.

Diagnosis : Generally all the coxae bright yellow or reddish yellow, may or may not be shimmered; thorax and abdomen ferruginous.

Distribution : India : Nagaland, Andhra Pradesh, Assam, Bihar, Tamil Nadu, West Bengal.

Elsewhere : Malaya, Nepal, Pakistan, Philippines, Thailand.

Family SEPSIDAE

Key to the genera

1. Humeral bristles absent ..... ***Decachaetophora*** Duda
- Humeral bristles present 2
2. Abdomen of both sexes without distinct macrochaetae; wing without a dark spot on vein R_{213} apically; hypopygial process bifurcate apically ..... ***Dicranosepsis*** Duda
- Abdomen in males and often in females also, with distinct macrochaetae; wing with or without a dark spot on vein R_{2+3} apically; hypopygial process never bifurcate apically ..... ***Sepsis*** Fallen

Genus ***Decachaetophora*** Duda

1926. *Decachaetophora* Duda. *Annls. naturh. Mus. Wien*, **39** (1925) : 27.

Type-species : *Sepsis aenipes* de Meijere.

*12. ***Decachaetophora aeneipes*** (de Meijere)

1913. *Sepsis aeneipes* de Meijere *Annlshist.nat.Mus. natn. Hung.*, **11** : 119.

Material examined : 1♂, Kohima district, Pule Badze wildlife sanctuary, 14.ix.1994, coll. B. Mitra.

Diagnosis : Blackish fly with duplicate vibrissae; supra alar & outer vertical bristles present; fore femur in males with complicated setae and fore tibia with ventral emargination beset with a scraper-like tooth in mid-line; abdomen normal and not constricted between segments 2 and 3.

Distribution : India : Nagaland, Assam, Himachal Pradesh, Meghalaya, Mizoram, Punjab, Sikkim, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : China, Nepal, Pakistan, Sri Lanka, Taiwan, Japan; Nearctic Region.

Genus ***Dicranosepsis*** Duda

1926. *Dicranosepsis* Duda, *Annln naturh. Mus. Wien*, **39** : 43. (As subgenus of *Spesis* Fallen).

Type-species : *Sepsis bicolor* Wiedemann.

*13. ***Dicranosepsis bicolor*** (Wiedemann)

1830. *Sepsis bicolor* Wiedemann, *Aussereurope. Zweifl. Insekt.*, **2** : 468.

Material examined : 5♂♂, Kohima district, Pule Badze wildlife sanctuary, 14.ix.1994. coll. B. Mitra.

Diagnosis : Sternopleuron shining antero-ventrally; fore femur without a postero-ventral seta sub-basally, hind tibia without a distinct osmeterium and metatarsus without antero-ventral setae in males.

Distribution : India : Nagaland, Andhra Pradesh, Arunachal Pradesh, Assam, Maharashtra, Meghalaya, Mizoram, Punjab, Sikkim, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Other parts of Oriental region; Japan and Australian region.

Genus ***Sepsis*** Fallen

1810. *Sepsis* Fallen, *Sp. Ent. nov. Dipt.* 117.

Type-species: *Musca cyanipsea* Linnaeus.

*14. ***Sepsis indica*** Wiedemann

1824. *Sepsis indica* Wiedemann, *Analecta Ent.* : 57

Material examined : 1♂, Kohima district, Pule Badze wildlife sanctuary, 14.ix.1994, coll. B. Mitra, 1♂, Dimapur forest office complex, 11.ix.1994, coll. B. Mitra.

Diagnosis : Frons and face varying from reddish to nearly black; proboscis yellow; thorax reddish yellow with a broad black longitudinal stripe, the stripe sometimes reduced, lateral

margins with a broad whitish shimmering band across the sternopleuron; scutellum and metanotum reddish yellow; legs yellow, fore femur in male with a peg like bump in the middle bearing 3-4 short spines followed by a leaf-shaped appendage, fore tibiae slightly enlarged just below base and again on apical half where it bears a row of stiff short spiny bristles; wing clear; abdomen reddish yellow, 3-4 tergites bears 4 strong spiny bristles; genitalia reddish yellow with 2 strong bristles.

Distribution : India : Nagaland, Assam, Kerala, Maharashtra, West Bengal.

Elsewhere : Celebes, China, Jawa, Lesser Sunda Islands, Malaya, Myanmar, Nepal, Philippines, Sumatra, Taiwan, Vietnam; Australia.

Family CELYPHIDAE

Genus ***Spaniocelyphus*** Hendel

1914. *Spaniocelyphus* Hendel, *Supplta ent.*, **1** : 92.

Type-species : *Celyphus scutatus* Wiedemann.

Diagnosis : Head with carinate vertex margin; postvertical bristles minute or absent. Palpus slender and slightly expanded apically; antennal arista flattened and widened at least on basal half; scutellum longer than broad; wing with discal cell separated by a cross-vein that may be incomplete or very faint; abdomen with segments 1-6 with terga divided into 3 parts, a dorsal plate and 2 way large lateral plates; terga 1-2 dorsally fused but separated laterally.

*15. ***Spaniocelyphus scutatus*** (Wiedemann)

1830. *Celyphus scutatus* (Wiedemann), *Aussereurop. zweifl. Insekt.*, **2** : 601.

Material examined : 1 ♀, Mokokchung district, Minkong protected forest, 22.iii.1994, 1350 m., coll. P. Mukhopadhya.

Diagnosis : In the male genetalia gonopod in lateral view with a bump at dorsoapical region, surstyli at ventral view curved at apex.

Distribution : India : Nagaland, Karnataka.

Elsewhere : None.

Family CHLOROPIDAE

Genus ***Pachylophus*** Loew

1858. *Pachylophus* Loew, *Berl. nnt. Z.* **2** : 121.

Type-species : *frontalis* Loew.

Diagnosis : Antennal arista somewhat thickened at least with long dense hairs; hind femur thickened, hind tibia correspondingly curved.

*16. ***Pachylophus refescens*** (de Meijere)

1904. *Mymemorpha rufescens* de Meijere, *Bijdr. Dierk.* **17-18** : 113.

Material examined : 1 ♂, Tuensang, Tuli, 29.ix. 1994, coll. P.H. Roy.

Diagnosis : Frons not projecting beyond eye in front, frons concolourous with frontal triangle; thorax smooth, with 1 posterior notopleural bristle; halteres white; distance between 2 cross veins only a little more than of posterior cross-vein; edile triangular in male genetalia.

Distribution : India : Nagaland, Assam, Bihar, Himachal Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh, Cambodia, China, Taiwan, Jawa, Myanmar, Nepal, Philippines, Sri Lanka, Sumatra, Thailand, Vietnam; Australia.

Family CALLIPHORIDAE

Genus ***Lucilia*** Robineau-Desvoidy

1830. *Lucilia* Robineau-Desvoidy, *Mem. pres. div. Sav. Acad. Sci. Inst. Fr.*, : 452.

Type-species : *Musca ceser* Linnaeus.

Diagnosis : Metallic coloured flies of medium size; eyes bare; arista long-plumose; jowls 1/3rd of eye height; humerals 3-4, notopleurals 2, acrostichals 2:3:2:3, dorsocentrals 3:3, marginal scutellars 4; third longitudinal vein bristly both above and below upto anterior crossvein; legs brown to black, middle tibia usually with 1 to 2-3 antero-dorsal bristles.

*17. ***Lucilia porphyrina*** (Walker)

1856. *Musca porphyrina* Walker, *J. Proc. Linn. Soc. Lond. Zool.*, 1 : 24.

Material examined : 1♂, Phek Town, Phek, 18.i.1990, coll. J.P. Sati.

Diagnosis: Parafrontalia in a fine line; third antennal segment 5 times as long as second; thorax green to purple coloured, postsutural acrostichals lie in front of postsutural dorsocentrals; wing faintly tinged brown which deepens slightly at base, subcostal sclerite with stiff black hairs; legs dark brown, antero-dorsal bristle at middle tibia.

Distribution : India : Nagaland.

Elsewhere : China, Malaya, Nepal, Philippines, Sri Lanka.

Family SARCOPHAGIDAE

Key to the genera

1. Acrostichal bristles usually absent 2
– Acrostichal bristles present 3
2. Apex of phallosome long, bifurcate at tip and with no lateral process; first genital segment without median marginal bristles ..... ***Robineauella*** Enderlein
– Apex of phallosome short, blunt and with a short lateral process; first genital segment with median merginal bristles ..... ***Bercaea*** R-D
3. Propleuron bare 4
– Propleuron haired 7
4. Inner forceps with setae or tuft of short sub apical pile; 5th sternite with protuberance on inner arm 5
– Inner forceps without setae or tuft of hairs; fifth sternite without protuberance on inner arm, apical part of paraphallus always long and broad; ventralia pedunculate ..... ***Parasarcophaga*** J & T
5. Inner forceps with tuft of piles; apical plate of paraphallus curved anteriorly 6
– Inner forceps with setae; apical plate of paraphallus curved posteriorly ..... ***Iranihindia*** Rohdendorf
6. Apical plate of paraphallus with long slender pointed cruciate process ..... ***Harpagophalla*** Rohdendorf
– Apical plate of paraphallus with short process ..... ***Seniorwhitea*** Rohdendorf
7. Postsutural dorsocentrals 3; inner forcep slightly curved ..... ***Pieretia*** R-D
– Postsutural dorsocentrals 4-5 8
8. Postsutural dorsocentrals 4; 4th abdominal sternite usually with a patch of spine like bristles prosteriorly ..... ***Sarcorohden dorfia*** Baranov
– Postsutural dorsocentral 4-5 9
9. 5th sternite with a prominent conical protuberance in the middle part ..... ***Rosellea*** Rohdendorf
– 5th sternite without a prominent conical protuberance in the middle part 10
10. Hind tibia without fringe; ventralia globose and with numerous spines ..... ***Boettcherisca*** Rohdendorf
– Hind tibia with fringe; ventralia without spine ..... ***Lioproctia*** Enderlein

Genus ***Bercaea*** Robineau-Desvoidy

1863. *Bercaea* Robineau-Desvoidy, *Hist. nat. Dipt Paris*, 2 : 549.

Type-species : *Musca haemorrhoidalis*

18. ***Bercaea cruentata*** (Meigen)

1826. *Sarcophaga cruentata* Meigen, *Syst. Beschr europ Zweuf. Insekt.*, 5 : 28.

Diagnosis : Antenna and palpus black; propleuron bare; posterior dorsocentrals 6, anterior 4 weak; abdominal segment 2 without marginal bristles; costal segment 3 and 5 equal; mid femur with comb but no basal fringe; hind tibia double-fringed; genital tergites orange.

Distribution : India : Nagaland, Aruanchal

Pradesh, Assam, Bihar, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Punjab, Sikkim, Uttar Pradesh, West Bengal.

Elsewhere : Bhutan, Bulgeria, China, Nepal, Baluchisthan; Denmark, England, France, Germany, Hawaii, Hungary, Ireland, Italy, Japan, Korea, Madagascar, Portugal, Rumania, Seychelles, Spain, Sweden, Austria; North America; USSR; Africa.

Genus ***Boettcherisca*** Rohdendorf

1937. *Boettcherisca Rohdendorf, Fauna USSR, Dipt.*, **19**(1) : 270.

Type-species : *Myophora peregrina* Robineau-Desvoidy.

19. ***Boettcherisca peregrina*** Robineau-Desvoidy

1830. *Myophora peregrina* Robineau-Desvoidy, *Mem.pres. Acad. Sci. Inst. Fr.*, (2) **2** : 356.

Diagnosis : Frons in male half width of an eye; lateral vertical absent; costal segment 3 longer than 5; hind femur with postero-ventral macrochaetal row, mid tibia bare, hind tibia with apical fringe; spines on apical part of inner forceps not extending to dorsal side.

Distribution : India : Nagaland, Andaman Islands, Assam, Bihar, Himachal Pradesh, Maharashtra, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Bhutan, Indonesia, Malaysia, Myanmar, Nepal, South China, Sri Lanka, Taiwan, Thailand; Hainan Islands; Australia, Fiji, Gilbert Island, Hawaii, Japan, Korea, Mariana Islands, New Britain, New Guinea, Ogasawara, Samoa, Seychelles, Society Islands.

Genus ***Lioproctia*** Enderlein

1928. *Lioproctia* Enderlein, *Arch. Klass. phyl. Ent.*, **1**(1) : 26.

Type-species : *Lioproctia aurifrons* Doleschall.

Sugenus ***Coonooria*** Fan

1864. *Coonooria* Fan, *Acta zootax. sin.*, **1**(2) : 305.

Type-species : *Sarcophaga pattoni* Senior-White.

Diagnosis : Propleura hairy dorsally; inner forceps straight with slight groove at the end and short haires posteriorly; 5th sternite without protuberance but with strong spines laterally; apical plate of paraphallus as long as styli.

20. ***Lioproctia (Coonooria) pattoni*** (Senior-White)

1924. *Sarcophaga pattoni* Senior-White, *Rec. Indian Mus.*, **26**(3) : 242.

Diagnosis : Frons in males as wide as half an eye; parafacialia with many irregular rows of fine black hairs; mesonotum greyish, with 3 black longitudinal stripes; wing with costal segment 3 greater than 5; R_{4+5} with a row of dorsal setae; abdominal sternite 3 with short hairs but 4 with sparse hairs; genital tergite brownish orange; inner forceps broad and beak-like apically, anterior margin with some spines medially.

Distribution : India : Nagaland, Mizoram, Sikkim, Tamil Nadu, Tripura.

Elsewhere : Malaysia, Nepal, South China, Indonesia, Philippines, Singapore, Taiwan, Thailand, Vietnam.

Genus ***Parasarcophaga*** Johnston & Tiegs

1921. *Parasarcophaga* Johnston & Tiegs, *Proc. R. Soc. Qd;* **33** : 86.

Type-species : *Sarcophaga omega* Johnston & Tiegs.

Key to the subgenera

1. Lateral plate of paraphallus in form of an unpaired pedunculate process ..... ***Parasarcophaga***
– Lateral plate of paraphallus in many forms other than pendunculate process 2
2. Lateral plate of paraphallus in form of narrow stout process extending forward ... ***Curranea***
– Lateral plate of paraphallus with a pair of process other than this shape 3
3. Lateral plate of paraphallus in form of rudimentary process, its apical part with 2 lateral process ..... ***Liopygia***

– Lateral plate of paraphallus with a single pair of lamellate process and apical part with no lateral process ..... ***Liosarcophaga***

Subgenus ***Liopygia*** Enderlein

1928. *Liopygia* Enderlein, *Arch. klass. phyl. Ent.*, **1**(1) : 41.
Type-species : *Musca ruficornis* Fabricius.

21. *Parasarcophaga (Liopygia) ruficornis* (Fabricius)

1794. *Musca ruficornis* Fabricius, *Ent. Syst.*, **4** : 314.

Diagnosis : Antenna and palpus orange; propleuron bare, only prescutellar acrostichal present, posterior dorsocentrals 5, anterior 4 weak; mid femur with comb and a few long basal setae; genital tergites orange.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Assam, Bihar, Delhi, Darda Nagar Haveli, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere : Andalas, China, Malaya, Pakistan, Philippines, Ryukyu Islands, Sri Lanka, Taiwan, Thailand; Africa, Brazil, Hawaii, Japan, Madagascar, Mariana Islands, Moluccas, Samoa, Socotra.

Subgenus ***Liosarcophaga*** Enderlein

1928. *Liosarcophaga* Enderlein *Arch. klass. phyl. Ent.*, **1** (1) : 18.
Type-species : *Cynomyia madeirensis* Schiner.

Key to the species

1. Ventralia elongated and bilobed; posterior paramere and lateral plate of paraphallus pointed at end .....*jaipurensis* Nandi
– Ventralia not elongated and single 2
2. Anterior paramere slender, gradually pointed and almost straight at apex ..... *brevicornis* (Ho)
– Anterior paramere uniform and straight..... ..... *dux* (Thomson)

22. *Parasarcophga (Liosarcophaga) brevicornis* (Ho)

1934. *Sarcophaga brevicornis* Ho, *Bull. Fan Mem. Inst. Biol.*, **5**(1) : 33.

Distribution : Nagaland, Arunachal Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Meghalaya, Mizoram, Orissa, Rajasthan, Tamil Nadu, Tripura, West Bengal.

Elsewhere : Hainan Island, Kalimantan, Malaysia, Ryukyu Islands, South China, Sir Lanka, Taiwan, Thailand; Korea, Japan, North China.

23. *Parasarcophga (Liosarcophaga) dux* (Thomson)

1868. *Sarcophaga dux* Thomson, *K. Sevenska Vetensk Akad. Fregatten Eugenies Resa. Dipt.*, **2**(1) : 534.

Material examined : 1 ♂, Mokokchung district: Tuli, 28.iii. 1994, coll. P. Mukhopadhya.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Delhi, Gujarat, Goa, Haryana, Himachal Pradesh, J & K, Kerala, Maharashtra, Meghalaya, Mizoram, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Bangladesh, China, Hainan Islands, East Malaysia, Jawa, Kalimantan, Ryukyu Islands, Sri Lanka, Taiwan; Australasian; Hawaii; Japan; Korea; New Guinea.

24. *Parasarcophga (Liosarcophaga) jaipurensis* (Nandi)

1990. *Parasarcophaga (Liosarcophaga) jaipurensis* Nandi, *J. Bengal nat. Hist. Soc.*, **9**(1) : 50.

Distribution : India : Nagaland, Himachal Pradesh, Manipur, Mizoram, Rajasthan.

Elsewhere : None.

Subgenus ***Curranea*** Rohdendorf

1937. *Curranea* Rohendorf, *Fauna USSR. Dipt.*, **19** (1) 255, 452.
Type-species : *Sarcophaga beckeri* Villeneuve, 1908=(*Sarcophaga tibialis* Macquart).

25. *Parasarcophaga (Curranea) scopariiformis* (Senior-White)

1927. *Sarcophaga scopariiformis* Senior-White, *Spolia. Zeylan.*, **14** : 82.

Diagnosis : Frons in males as wide as two-fifth of an eye; thorax with 6 dorsocentral weak bristles prosteriorly; hind tibia without fringe of hairs; genital segment 1 very dark grey and 2 shining black; apical plate of paraphallus curved and bifurcate, with a short basal apophysis; lateral plate of paraphallus with a curved and pointed apex; styli of glans short, serrate anteiorly; ventralia somewhat membranous, with 2 curved, elongate processes.

Distribution : India : Nagaland, Assam, Karnataka, Kerala, Manipur, Mizoram, Tamil Nadu, West Bengal.

Elsewhere : China, Hainan Island, Laos, Sri Lanka, Taiwan, Thailand.

Subgenus ***Parasarcophaga*** Johnston and Tiegs

1921. *Parasarcophaga* Johnston & Tiegs, *Proc. R. Soc. Qd*; **33**(4) : 86.

Type-species : *Sarcophaga omega* Johnston & Tiegs.

Key to the species

1. Hind tibia with bristles on anteroventral surface 2
- Hind tibia without bristles on anteroventral surface; apical plate of paraphallus slender and sharply pointed at end ..... *seriea* (Walker)
2. Apical plate of paraphallus long and sharply pointed at end; inner forceps moderately stout and broad 3
- Apical plate of paraphallus short and almost blunt at end ; inner forceps long and slender ..... *misera* (Walker)
3. Inner forceps without protuberance at middle part but without spines at the inner surface of subapical end ..... *albiceps* (Meigen)
- Inner surface with protuberance at middle part and with a few spines at the inner surface of subapical end ..... *macroauriculata* Ho

26. *Parasarcophaga (Parasarcophaga) albiceps* (Meigen)

1826. *Sarcophaga albiceps* Meigen, *Syst. Beschr. Europ. Zweifl. Insekt.*, **5** : 22.

Distribution : India : Nagaland, Andaman and Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : China; Kalimantan; Malaysia; Nepal, Philippines, Ryukyu Islands; Taiwan, Thailand; Bismarck Archipelago, Europe, Hawaii; Israel, Japan; Korea ; New Britain, New Guinea, Solomon Island, Turkey.

27. *Parasarcophaga (Parasarcophaga) sericea* (Walker)

1852. *Sarcophaga sericea* Walker, *In. Saunders. Dipt.*, **4** : 326.

Distribution : India : Nagaland, Andaman Islands, Assam, Bihar, Chandigarh, Daman Diu, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bental.

Elsewhere : Bali, Borneo, Myanmar, Sri Lanka, China, Hainan Island, Jawa, Malaya, Nepal, Philippines; Australia, Caroline Islands, Korea, Mariana Islands, Marshall Islands, New Guinea, Society Islands.

28. *Parasarcophaga (Parasarcophaga) macroauriculata* (Ho)

1932. *Sarcophaga macroauriculata* Ho, *Bull. Fan. Mem. Inst. Biol.*, **3** (1) : 347.

Distribution : India : Nagaland, Manipur, Meghalaya, Sikkim, Uttar Pradesh, West Bengal.

Elsewhere : China, Nepal, Pakistan; Japan; Korea; Russia.

29. ***Parasarcophaga (Parasarcophaga) misera*** (Walker)

1849. *Sarcophaga misera* Walker, *List. dipt. Br. Mus.*, **4** : 829.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Assam, Arunachal, Bihar, Chandigarh, Daman Diu, Dadra Nagar Haveli, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Laksha dweep, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Orissa, Pondicherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Borneo, Myanmar, Sri Lanka, China, Formosa, Hainan Island, Jawa, Philippines, Rhukyu Islands, Sumatera, Thailand; Wide spread Pacific to New Guinea and Australia.

Genus ***Robineauella*** Enderlein

1928. *Robineauella* Enderlein, *Arch. klass. phyl. Ent.*, **1**(1) : 23.

Type-species : *Sarcophaga scoparia* Pandelle.

Subgenus ***Jantiella*** Rohdendorf

1937. *Jantiella* Rohendorf, *Fauna USSR,Dipt.*, **1**(1) : 501. Type-species : *Parasarcophaga ajakonovi* Rohdendorf.

Diagnosis : Apical plate of paraphallus sclerotized and its tip-with bifurcated process, lateral plate of paraphallus short and pointed at apex; styli of glans moderately short, genital tergites bare of marginal bristles.

30. ***Robineauella (Jantiella) doleschalli*** (Johnston & Tiegs)

1921. *Sarcophaga doleschalli* Johnston & Tiegs, *Proc. R. Soc. Qd.*, **33** (4) : 73.

Diagnosis : Antennal arista long plumose along its basal 3/4th. Upper part of propleuron usually bare; ac 0+1, prescutellar and discscutellar bristles one pair each; vein R1 bare; phallosome straight or angular on posterior margin, apical part of paraphallus very large, divided into two large lateral processes, 2 pairs of ventralia present.

Distribution : India : Nagaland, Arunachal Pradesh, Manipur, Mizoram, Sikkim, West Bengal.

Elsewhere : China, Indonesia, Malaysia, Moluccas Island, Nepal, Pakistan, Thailand, Vietnam.

Genus ***Rosellea*** Rohdendrof

1937. *Rosellea* Rohdendrof, *Fauna USSR, Dipt.*, **19**(1) : 242.

Type-species : *Sarcophaga aratrix* Pandelle.

31. ***Rosellea khasiensis*** (Senior-White)

1924. *Sarcophaga khasiensis* Senior-White, *Rec. Indian Mus.*, **26** (3) : 246.

Diagnosis : Frons more than half of eye width; flagellomere 1 brownish; presutural acrostichal absent, notopleural 3, disc and lateral margin of scutellum each with 1 pair of bristles; costal segment iii longer than v; fore femur with 2 rows of bristles posterodorsally and hind femur with 2 rows of bristles antero-dorsally; apical plate of paraphallus curved downwards and its lateral plate curved upwards.

Distribution : India : Nagaland, Assam, J & K, Manipur, Meghalaya, Sikkim, Kashmir.

Elsewhere : Bhutan, Nepal, Thailand.

Genus ***Sarcorohdendorfia*** Baranov

1938. *Sarcorohdendorfia,Vet. Arch. Zagreb*, **8**(4) 173 Type-species : *Sarcorohdendorfia adiscalis* Baranov = *Notochaeta indusa* Curran.

32. ***Sarcorohdendorfia pusana*** (Senior-White)

1924. *Sarcophaga pusana* Senior-White, *Rec. Indian Mus.*, **26**(3) : 245.

Diagnosis : Frontal vitta greyish black; antennae blackish brown, first and second segment black, third brownish with silver pollen; thorax greyish with silver pollen, with three black longitudinal stripes, ac 4 : 1, dc 5 : 4; prostigmatic and propleural bristles well developed accompanied with long hairs; apicoscutellar and discoscuteller bristles 1 pair each; legs black, fore femur with a pair of rows of bristles posterodorsally, hind femur with a pair of rows of

bristles anterodorsally, rows of bristles absent in tibiae; wing with vein R_1 bare, R_{4+5} with a row of short setae dorsally, costal segment v shorter than iii; fifth abdominal tergite with a row of 24 marginal bristles, fifth sternite V-shaped with long hairs terminally, apical plate of paraphallus long, curved, pointed at apex.

Distribution : India : Nagaland, Bihar, West Bengal.

Elsewhere : Sri Lanka.

Genus ***Pierretia*** Robineau-Desvoidy

1863. *Pierretia* Robineau-Desvoidy, *Hist. nat. Dipt., Paris,* **2** : 422.

Type-species: *Sarcophaga praecos* Robineau-Desvoidy, = *Sarcophaga nigriventris* Meigen, by designation of Townsend (1916:8)

Subgenus ***Ascelotella Enderlein***

1928. *Ascelotella* Enderlein, *Arch, klass. phyl. Ent.,* **1**(1) : 50.

Type-species : *Ascelotella formosana* Enderlein.

Diagnosis : Vein R_1 with short setae; paraphallus filliform, apical plate of paraphallus slender; fifth sternite v-shaped.

33. ***Pierretia (Ascelotella) calcifera*** (Boettcher)

1912. *Sarcophaga calcifera* Boettcher, *Ent Mitt.,* **1** : 169.

Diagnosis : Frontal vitta black; antennae brown, arista long, plumose along basal two-thirds; thorax with three longitudinal black stripes; ac 0 : 4, dc 4 : 4, upper part of propleuron bare, prostigmatic and propleural bristles well developed accompanied by short hairs; fore femur with a pair of rows of bristles along posterodorsal surface, mid femur with a row of bristles along middle portion of anterolateral surface, hind femur with a pair of rows of bristles along anterodorsal surface; fore tibia with a row of 3 bristles only, mid tibia with a row of birstle on anterodorsal surface, hind tibia with a bristles on anterodorsal surface; vein R_1 with short setae, R_{4+5} with a row of 9-10 short setae dorsally, fifth costal segment longer than third; fifth tergite with a row of about 14 marginal bristles; fifth sternite V-shaped with short spines laterally and 1-2 long hairs apically, apical plate of paraphallus curved and pointed at apex.

Distribution : India : Nagaland.

Elsewhere : Sri Lanka, Formosa, Philippines, Ryukyu Islands, South China.

Genus ***Harpagophalla*** Rohdendorf

1937. *Harpagophalla* Rohdendorf, *Fauna. USSR., Dipt.,* **19**(1) : 276.

Type-species : *Sarcophaga sera* Rohdendorf = *Sarcophaga kempi* Senior-White.

34. ***Harpagophalla kempi*** Senior-White

1924. *Sarcophaga kempi Senior-White, Rec. Indian Mus.,* **26** : 247

Diagnosis : Frons narrow, half an eye-width; antenna black, segment 3 grey pollinose; lateral vertical bristle absent; pre-scuteller acrostichal bristles only; posterior dorsocentral bristles 5; segment iii of costa equal to v; mid femur with comb and basal fringe, hind femur with lower hind macrochaetal row and fringe; mid tibia bare, hind tibia double-fringed; accessory forceps in male genitalia with internal apical serrate lobes.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Kerala, Manipur, Meghalaya, Mizoram, Sikkim, Tripura, West Bengal.

Elsewhere : China, Hainan Island, Jawa, Laos, Myanmar, Sri Lanka, Thailand; New Guinea.

Genus ***Iranihindia*** Rohdendorf

1961. *Iranihindia* Rohdendorf, *Stutt. Beit. Natruk.,* **58** : 2. Type-species : *Sarcophaga futilis* Senior-White.

35. ***Iranihindia martellata*** (Senior-White)

1924. *Sarcophaga martellata* Senior-White, *Rec. Indian Mus.,* **26** : 247.

Diagnosis : Frontal width two-third of an eye; antennae yellow-red; palpi yellow; propleural bare, prescutellar acrostichals 1, post dc 5; mid femur with fringe and very short comb, hind femur with fringe and lower hind macrochaetal row; mid tibia bare, hind tibia fringed on inside only; fifth

sternite V-shaped with brush of spines laterally and long hairs terminally on arms, apical plate of paraphallus membranous not so curved but plough shaped at end; vein R_1 bare, R_{4+5} with a row of 8-9 short setae dorsally, costal segment v shorter than iii.

Distribution : India : Nagaland, Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Mizoram, Orissa, Tamil Nadu, West Bengal.

Elsewhere : Sri Lanka.

Genus ***Seniorwhitea*** Rohdendorf

1937. *Seniorwhitea* Rohdendorf, *Fauna. USSR. Dipt.*, **19**(1) : 297.

36. ***Seniorwhitea reciproca*** (Walker)

1856. *Sarcophaga reciproca* Walker, *J. Proc. Linn. Soc. Lond. zool.*, **1** : 22

Material examined : 1♂, Kohima district, Rangapahar wild life sanctuary, 31.iii.1994, coll. P.Mukhopadhya.

Diagnosis : Antennal arista plumose on basal two-thirds; acrostichals only present prescutellars; ventralia curved apically.

Distribution : India : Nagaland, Assam.

Elsewhere : China, Taiwan, Hainan Islands, Laos, Malaya, Myanmar, Nepal, Singapore, Sri Lanka, Thailand, Hawaii.

SUMMARY

A comprehensive account of the Diptera fauna of Nagaland is given in the paper. 36 species under 25 genera of 10 families are reported from this state; and 17 species are recorded for the first time. Keys and diagnostic characters to the identification of families, genera and species are reported here. Among the 36 species reported here, 5 species confined to India, 15 species spread only in the boundary of Oriental region, 4 species upto Palaearctic region, 12 species extends their range of distribution beyond the Oriental and Palaearctic (5 species, Australian, 2 species, Nearctic, and 5 species cosmopolitan in distribution).

ACKNOWLEDGEMENT

We are thankful to the Director, and Dr. A.K. Hazra, Joint Director & In-charge of Entomology division, Zoological Survey of India, Kolkata, for placing the material at our disposal for study and their constant encouragement.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 185-192, 2006

INSECTA : DIPTERA : SYRPHIDAE

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INTRODUCTION

Nagaland is a small state of North East India, covering an area of about 16,57,900 hectares and comprises of seven districts *viz.*, Kohima, Mokokchung, Tuensang, Wokha, Zunheboto, Phek and Mon (Map-1). The state lies in between 25°6′ and 27°4′ North latitudes and between 93°20′ and 95°15′ East longitudes. It is bounded by Assam in the North and West, Myanmar and Arunachal Pradesh in the East and Manipur in the South.

Our knowledge about faunal richness of the state was absolutely nil. However, Brunetti (1908) recorded only two species *Brachypalpus dives* and *Xylota assamensis*. Recently several collection trips were organised by the scientists of Zoological Survey of India in all the districts to revaluate the faunal components after the gap of 80 years. These trips that brought material for this study, were lead by the following personalities : B. C. Das (March, '89), Y. P. Sinha (July, '91), P. Mukhopadhya and S. K. Chatterjee (March '94), Bulganin Mitra (September, '94). It has already been mentioned that only 2 species graced the family from the state in the National Zoological Collection. As a result of this study 11 species under 10 genera are hitherto known vis-a-vis 264 species under 62 genera in India.

The classification is followed after Vockeroth (1969) and Thompson (1972).

MATERIAL AND METHODS

The methods for collecting, killing and preserving the adult species prescribed by Datta (1998), were adapted here.

MORPHOLOGY AND TERMINOLOGY

The reader may be referred to Datta (1998) for a comprehensive knowledge on the morphology and terminology of the fly dealt with here.

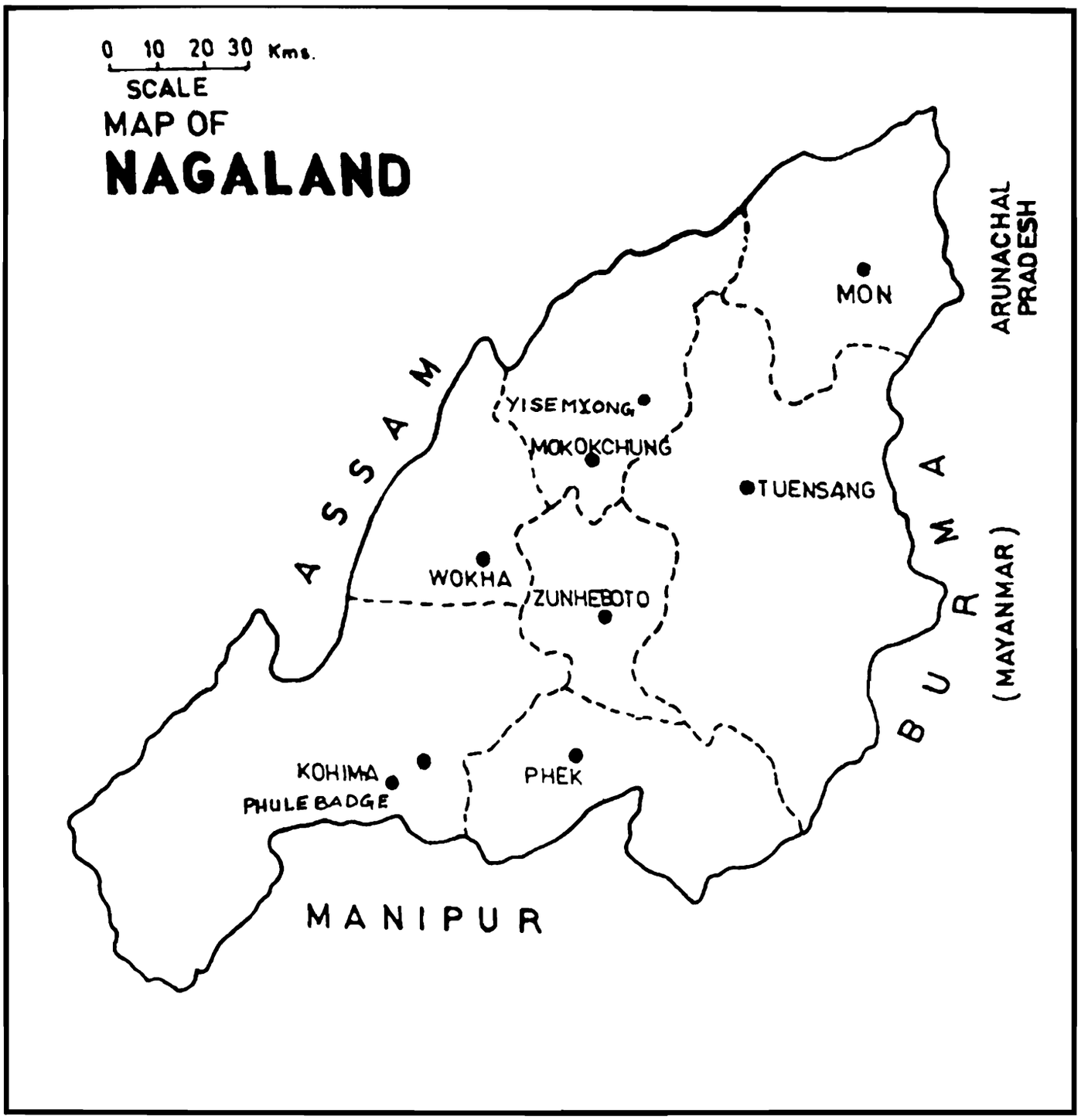
ZOOGEOGRAPHICAL REMARKS

The Syrphidae fauna of Nagaland comprise of 2 subfamilies-Syrphinae, consisting of tribes Syrphini, Melanostomatini and Milesiinae pertaining the tribes Eristalini, Cheilosiini and Milesiini.

The tribe Syrphini is represented by 4 species-viz. *Asarkina ericetorum* (Fabr.) *Betasyrphus serarius* (Wied.), *Episyrphus balteatus* (Degeer) and *Metasyrphus latifasciatus* (Macq.). Of these the first 3 species are widespread in the Orient and even crossed its border and the rest one although the Palaearctic in origin was recorded from Himachal Pradesh earlier and now from Nagaland from India.

The *Melanostoma orientale* (Wied.) is not only widely distributed in India but also in the other parts of the Orient and even found to occur in the Palaearctic region.

Eristalini is represented by 3 speceis under 2 genera - *Eristalinus* and *Eristalis*. The genus *Eristalinus* contain single species *E. quinquestriatus* (Fabr.) has a widely distributed record in the Orient but has remain unrecorded even from some adjoining states of Nagaland. The genus *Eristalis* has 2 species *E. tenax* (Linnaeus) and *cerealis* (Fabr.) of which the distribution of latter species is scanty than the



Map showing different collection localities (●) in the State of Nagaland

former in India, is evident from Datta (1998). In tribe Cheilosiini the only species *Rhingia cincta* de Meijere has so far been recorded only from the North eastern part of India.

The *Milesiini* has 2 species *Brachypalpus dives* Brunetti and *Xylota assamensis* Brunetti and they have not extended the distributional range beyond the limit of North east India.

LIST OF TAXA

Subfamily SYRPHINAE

Tribe **Syrphini**

1. *Asarkina (Asarkina) ericetorum* (Fabricius)
2. *Betasyrphus serarius* (Wiedemann)
3. *Episyrphus balteatus* (De Geer)
4. *Metasyrphus (Metasyrphus) latifasciatus* (Macquart)

Tribe **Melanostomatini**

5. *Melanostoma orientale* (Wiedemann)

Subfamily MILESIINAE

Tribe **Cheilosiini**

6. *Rhingia cincta* de Meijere

Tribe **Eristalini**

7. *Eristalinus (Eristalinus) quinquestriatus* (Fabricius)
8. *Eristalis (Eoseristalis) cerealis* Fabricius
9. *Eristalis (Eristalis) tenax* (Linnaeus)

Tribe **Milesiini**

10. *Brachypalpus dives* Brunetti
11. *Xylota assamensis* Brunetti

SYSTEMATIC ACCOUNT

Family SYRPHIDAE

Key to Subfamilies

1. Pronotum bare (excepting a few long hairs occassionally in Baccha); abdomen with 5 pregenital segments in male.. SYRPHINAE.
- Pronotum pilose; abdomen with 4 pregenital segments in male ..... MILESIINAE

Subfamily SYRPHINAE

Key to the tribes

1. Face and scutellum entirely black, anterior flat portion of mesopleuron with only microscopic pubescence; aedaegus undivided, strongly swollen basally and slender tube-like apically ..... **Malanostomatini**.
- Face and scutellum usually yellow or yellowish brown; mesopleural hairing variable; aedeagus nearly always 2 segmented with complex associated structures ..... **Syrphini**.

Tribe **Syrphini**

Key to the genera

1. Mesopleuron at its anterior flat portion with long, fine, erect or suberect hairs at least posterodorsally; male terminalia with broad and somewhat flat surstylus, superior lobe with a short tooth apically .... ***Episyrphus*** Matsumura & Adachi.
- Mesopleuron at its anterior flat portion with only microscopic pubescence or pollinose; male terminalia of different types 2
2. Metasternum haired 3
- Metasternum bare; wing membrane almost densely and uniformly trichose at least beyond level of end of spurious vein .... ***Betasyrphus*** Matsumura.
3. Frons less abruptly produced into an antennal prominence; mouth opening short and oval; ocelli placed near vertex; tuft of short hairs on metathoracic epimeron absent .... ***Metasyrphus*** Matsumura.
- Frons rather abruptly produced into an obtuse antennal prominence; mouth opening narrower and linear; ocelli placed little below vertex; tuft of short hairs on meta thoracic epimeron present ..... ***Asarkina*** Macquart.

Genus ***Asarkina*** Macquart

1842. *Asarkina* Macquart, *Dipt. Exot.*, **2** (2) : 77(137).

Type species : *Scaeva rostrata* Wiedemann

Subgenus ***Asarkina*** Macquart

Diagnosis : Mesonotum with dense anterior collar of long erect hairs; vein R_{4+5} distinctly dipped into cell R_{4+5}; surstylus strongly convergent and nearly transvers in position.

1. ***Asarkina (Asarkina) ericetorum*** (Fabricius)

1781. *Syrphus ericetorum* Fabricius, *Spec. Insect,* **2** : 425.

Material examined: 2♂♂, Akhutola, 11.VII.1991, coll. Y. P. Sinha.

Diagnosis : Male frons bright sulphur yellow with long black erect pubescence; a semicircular shining blackish brown spot on upper side of small antennal prominence; female frons at vertex about one-ninth of head rather rapidly widening to double that width at level of antenna; surstylus broad basally, only slightly narrowed to subtruncate apex.

Distribution : Nagaland (Akhutola), Arunachal Pradesh, Assam, Meghalaya, Mizoram, Jammu & Kashmir, Sikkim, Tripura, Tamil Nadu and West Bengal.

Elsewhere : Other parts of the Oriental region; Africa, Australia, Fiji, Moluccas, New Guinea and Samoa.

Genus ***Betasyrphus*** Matsumura

1917. *Betasyrphus* Matsumura, *Ent. Mag. Kyota,* **2** : 143.

Type-species : *Syrphus serarius* Wiedemann.

2. ***Betasyrphus serarius*** (Wiedemann)

1830. *Syrphus serarius* Wiedemann, *Aussereurop. Zweifl. Insekt.,* **2** : 128.

Material examined: 1♂, 1♀, Kohima, 18.III.1994, coll. S. K. Chatterjee; 1♂, 1♀, Mokokchung Dist. Mokokchung. 23.III.1989, coll. B. C. Das.

Diagnosis : Eye densely haired; face orange with blackish tinge; antenna black, base of antennal segment 3 dull orange; mesonotum shining black; yellow haired anteriorly and black haired posteriorly at wing base along lateral margin; scutellum dull yellow with yellow hairs basaly and rest black; lower lobe of squama with few erect, fine, white hairs above; greyish pollinose abdominal markings; aedaegus in male terminalia tubular not produced apically and not with setulae.

Distribution : Nagaland (Kohima, Mokokchung), Arunachal Pradesh, Assam, Bihar, Karnataka, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Other parts of the SE Asia; Australia, Japan, Korea and New Guinea.

3. ***Episyrphus balteatus*** (De Geer)

1776. *Musca balteata* De Geer, *Mem. Pour Serv. Hist. Ins.,* **6** : 116.

Material examined: 1♂, 3♀♀, Mokokchung Dist., Yisemyong, 21.III.1994, coll. P. Mukhopadhay; 1♀, Kohima Dist., Phulebadge, 14.IX.1999, coll. B. Mitra.

Diagnosis : Eye bare; face orange with orange hairs; base of antenna with a black dot above; mesonotum black with a narrow median and 2 lateral greyish stripes; posterior margin of wing with a series of sclerotized dots; abdomen linear, orange, tergites 3 and 4 mostly yellow with narrow subbasal and broad apical black bands; surstylus in male terminalia straight, not more than twice as long as broad; superior lobe stout with ventro-laterally directed tooth apically; dorsal portion of aedaegus not expressed apically.

Distribution : Nagaland (Mokokchung, Kohima), Arunachal Pradesh, Assam, Jammu & Kashmir, Kerala, Meghalaya, Mizoram, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : China, Malaya and other parts of the Oriental region; Australia, Bonin Island and Palaearctic region.

Genus ***Metasyrphus*** Matsumura

1917. *Metasyrphus* Matsumura, *Ent. Mag. Kyota,* **2** : 147.

Type-species : *Scaeva corollae* F.

Subgenus ***Metasyrphus*** Matsumura

Diagnosis : Wing with veins R_{4+5} straight or

nearly so; sternite 9 in male terminalia without lateral and dorsolateral grooves.

4. *Metasyrphus latifasciatus* (Macq.)

1848. *Syrphus latifasciatus* Macquart, *Rec. Soc. Sci. Lille.* : 242.

Material examined : 1 ♀, Kohima, 18.III.1994, coll. S. K. Chatterjee.

Diagnosis : Frons in male with black pubescence, in female frons shining black with dense black pubescence; antenna usually reddish brown, thorax shining black with yellow side margins; scutellum bright yellow with yellow pubescence, legs orange yellow, femora black basally to a varying extent both in male and female except in female hind femur wholly yellow; wing pale grey, stigma pale yellow; abdomen shining black, second segment with a pair of triangular or oval yellow spots but not well separated, third and fourth segments with a broad orange yellow band just behind anterior margin with slight emarginations both in front and behind, fifth segment orange with a small black spot at the centre, sixth segment entirely orange.

Distribution : Nagaland (Kohima) and Himachal Pradesh.

Elsewhere : France.

Tribe **Melanostomatini**

Genus *Melanostoma* Schiner

1860. *Melanostoma* Schiner, *Wien. Ent. Mschr.*, 4 : 213.

Type-species : *Musca mellima* L.

5. *Melanostoma orientale* (Wiedemann)

1824. *Syrphus orientalis* Wiedemann, *Analecta Ent.*: 36.

Material examined : 1 ♀, Kohima, 16.III.1989. coll. B. C. Das; 2 ♂♂, 4 ♀♀, Kohima, 17.III.1989, coll. B. C. Das.

Diagnosis : Eye bare in male; face and lower part of head aeneous; antennae blackish, segment 3 to some extent brownish orange; thorax and scutellum shining blackish, with yellowish to greyish pubescence; legs in male orange except about basal half of anterior femora and hind femora wholly black except in female legs all orange with an indistinct brownish median band on hind tibia and upper side of tarsi towards apex; wing with yellowish stigma; abdomen moderately shining, in male second segment with a pair of orange yellow spots, rounded on inner side, third and fourth segment with a pair of quadrate to oblong orange yellow spots, in female second segment with spots often elongate and diagonally placed to indistinct, spots on third and fourth segments subtriangular and placed on anterior margin, fifth segment with a pair of well separated narrow spots on anterior corner.

Distribution : Nagaland (Kohima) and Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Meghalaya, Mizoram, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : Bhutan, Nepal, Pakistan, Sri Lanka and other parts of the Oriental region; Palaearctic region.

Subfamily MILESIINAE

Key to the Tribes

1. Hind femur with well developed anterior basal patch of setulae; anterior portion of mesopleuron bare ..... **Eristalini**

– Hind femur without basal patch of setulae, anterior portion of mesopleuron pilose, if with basal patch of setulae on hind femur.... 2

2. Wing usually with perpendicular anterior cross-vein (r-m) before middle of discal cell, (neither greatly slanted nor extended to outer third of cell, except hind femur fore and mid femora with ventral spine), if located at the middle point of cell, then either thorax with bristles or except hind femur, the other femora with ventral spine ..... **Cheilosiini**

– Wing usually with slanted anterior cross-vein usually beyond middle of discal cell, if located at mid point of cell, then either thorax without bristles or fore and mid femora without ventral spines ..... **Milesiini**

Tribe **Cheilosiini**

Genus ***Rhingia*** Scopoli

1763. *Rhingia* Scopoli, *Ent. Carniolica* : 358.

Type-species : *Conops rostrata* Linnaeus.

Diagnosis : Head slightly broader, eyes bare, face descending perpendicularly from below antenna, with epistome produced into a long conical snout; third antennal joint elongate with bare arista; thorax more or less densely pubescent, scutellum nearly semicircular, wings as in Syrphus, third longitudinal veins with a few hairs along base; abdomen nearly oral.

6. ***Rhingia cincta*** de Meijere

1904. *Rhingia cincta* de Meijere, *Bijdr. Dierk.*, XVIII : 101.

Material examined : 1♀, Kohima Dist., Phulebadge, 14.IX.1994, coll. B. Mitra.

Diagnosis : Antenna brownish orange; dorsum of thorax olive green except lateral region with a longitudinal black stripe on each side; pleura wholly brownish orange; scutellum orange brown with black pubescence, hind margin with a row of black bristly hairs and a fringe of yellow hairs; legs orange with pale yellow pubescence, hind tibia with a little area with a short black bristly pubescence; wings pale yellowish; abdomen mainly black, first and second segments at sides anteriorly orange, third segment in male with an elongate dull orange spot at middle of each side margin, fourth segment almost wholly black.

Distribution : Nagaland (Kohima), Assam, Meghalaya and West Bengal.

Elsewhere : Jawa and Taiwan.

Tribe **Eristalini**

Key to the genera

1. Antennal arista practically bare, if with microscopic pubescence at base then abdominal tergites with transversely located spots ..... ***Eristalinus*** Rondani.

– Antennal arista plumose at least on basal half, if bare then eye invariebly with 2 distinct bands of dense, coloured piles .... ***Eristalis*** Latreille

Genus ***Eristalinus*** Rondani

1845. *Eristalinus* Rondani, *Nouvi Annali Sci. nat. Bologna*, **2** (2) : 453.

Type species : *Musca sepulchralis* L.

Subgenus ***Eristalinus*** Rondani

Diagnosis : Subscutellar fringe absent; metathoracic spiracle at its front without any patch of hairs; hind femur normal and never dialated.

7. ***Eristalinus (Eristalinus) quinquestriatus*** (Fabricius)

1794. *Syrphus quinquestriatus* Fabricius, *Ent. Syst.*, **4** : 289.

Material examined : 1♂, Mokokchung, 29.IX.1994, coll. P. H. Roy.

Diagnosis : Eye with minute black spots specially on underside, frons and face with yellow pubescence; antenna brownish orange except third segment narrowly blackish at base; scutum yellowish with 4 longitudinal black stripes; femora black almost narrowly pale apically, front tibia on basal half, middle pair nearly at tip and hind pair at base pale, rest black, tarsai with tarsomeres 1 and 2 entirely and 3 basally yellowish; wings nearly clear, stigma pale brown with a minute dark brown spot; abdomen with transverse bands or spots.

Distribution : Nagaland (Mokokchung), Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Orissa, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : China and other parts of the Oriental region; Japan.

Genus ***Eristalis*** Latreille

1804. *Eristalis* Latreille, *Nouv. Dict. Hist. Nat.*, **24** : 194.

Type-species : *Musca tenax* L.

Key to the sub genera

1. Meropleuron at its upper edge (barrette) pilose; antennal arista bare ..... ***Eristalis***
- Meropleuron entirely bare; antennal arista plumose on basal half ..... ***Eoseristalis***

Sub genus ***Eoseristalis*** Kanervo

1938. *Eoseristalis* Kanervo, *Annls. Univ. fenn. abo.*, (A) **6** : 12.

Type-species : *Eristalis cerealis* F.

8. ***Eristalis (Eoseristalis) cerealis*** Fabricius

1805. *Eristalis cerealis* Fabricius, *Syst. Antliat.*, : 232.

1849. *Eristalis solitus* Walker, *List. Dipt. Colln. Br. Mus.*, **3** : 619.

Material examined : 1♂, Mokokchung Dist., Yisemyong, 21.III.1994, coll. P. Mukhopadhay; 1♂, 1♀, Kohima, 16.III.1989, coll. B. C. Das.

Diagnosis : Eyes distinctly pilose, upper facets distinctly larger than lower ones; mesonotum with a transverse stripe of greyish pubescence, along suture; scutellum brownish yellow with long dense pubescence varying from yellow to brownish-yellow; femora shining black except tips yellow or orange; tibiae yellow or orange on basal half, rest black, tarsi wholly black except anterior one being orange at base; abdominal tergite 3 in males with a triangular or oblong spot on anterior margin, reaching laterally, in females spots smaller and narrower but always on anterior margin.

Distribution : Nagaland (Mokokchung, Kohima), Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : China Myanmar and other parts of the Oriental region; Japan, Korea and Sakhalin.

Sub genus ***Eristalis*** Latreille

9. ***Eristalis (Eristalis) tenax*** (L.)

1758. *Musca tenax* Linnaeus, *Syst. Nat. Ed.*, **10** : 591.

Material examined : 1♂, Kohima, 14.III.1989, coll. B. C. Das.

Diagnosis : Eyes brown haired with 2 longitudinal bands of dense hairs; antenna usually brownish black, arista bare; mesonotum shining brownish black; scutellum brownish yellow, subscutellar fringe absent; abdominal colourations bright reddish yellow to black.

Distribution : Nagaland (Kohima), nearly cosmopolitan.

Tribe **Milesiini**

Key to the genera

1. Densely haired species with sub-scutellar fringe ..... ***Brachypalpus*** Brunetti
- Thinly and inconspicuously haired species without subscutellar fringe ... ***Xylota*** Meigen

Genus ***Brachypalpus*** Brunetti

1834. *Brachypalpus* Macquart, *Hist. Nat. Ins. Dipt.*, **1** : 523.

Type-species : *Brachypalpus tuberculatus* Macquart=vagus (Panzer).

10. ***Brachypalpus dives*** Brunetti

1908. *Brachypalpus dives* Brunetti, *Rec. Indian Mus.*, **2** : 86.

Diagnosis : Male head at its hind margin entirely encircled by a fringe of bright yellow hairs; scutellar edge ridged all around; hind femur slightly thickened and with a tooth ventraly at apex, followed by a semicircular protuberance; abdomen brilliantly shining golden yellow with golden yellow hairs.

Distribution : Nagaland (Kohima), Assam and Meghalaya.

Genus ***Xylota*** Meigen

1822. *Xylota* Meigen, *Syst. Beschr. europ. Zweifl Insekt.*, **3** : 211.

Type-species : *Musca sylvarum* L.

11. ***Xylota assamensis*** Brunetti

1908. *Xylota assamensis* Brunetti, *Rec. Indian. Mus.*, **2** : 79.

Diagnosis : Frons Shining black, face below antenna reddish yellow with minute silver white pubescence; antenna brown; eyes with a fringe of yellowish hair behind at sides; thorax dull violet-bronze, scutellum unicolours with thorax with yellow hairs at border; legs bright reddish yellow, hind femora compressed on outerside at tip with a trace of a brown mark in middle of upper side; abdomen shining purple.

Distribution : Nagaland (Kohima) and Assam.

SUMMARY

The physiography of Nagaland as one of the seven sister states appears alike. It is therefore expected the uniformity of distribution of fauna throughout. But in reality it is the poorest state as regards records of the dipteran fauna in general and Syrphidae in particular. The state of Nagaland records only 11 species under 10 genera of which only *Xylota assamensis* and *Brachypalpus dives* have still remained confined in the states of Assam. Meghalaya and Nagaland and rest species have even crossed the boundary of the Oriental Region.

ACKNOWLEDGEMENT

We are very much thankful to the Director, and Dr. S.K. Mitra, Scientist-SF, of the Entomology Division of the Zoological Survey of India, Kolkata, for placing the material at our disposal for study.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 193-197, 2006

INSECTA : DIPTERA : MUSCIDAE

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INTRODUCTION

The family Muscidae is cosmopolitan in distribution and one of the highly specialized group in Calyptrate Diptera having 3800 species in the world (Skidmore, 1985) and 258 species in India. They are small to medium sized flies, metallic or non-metallic in colour. These insects are easily recognized by their licking and sucking mouth parts and absence of hypopleural bristles.

Adults virtually occur in all biotopes except for the most arid, and are often extreamly numerous. A number of species are of well known medico-veterinary importance (Stomoxyinae and some Muscinae), but the majority of the species come into direct contact with man or his domestic animals. Females are typically oviparous, a few are larviparous. Larvae have varied habits being saprophagous, parasitic and phytophagous. A considerable number of papers have been published on the muscid fauna of India. But there is no published account on this group from Nagaland. A total of 6 species belonging to 3 genera under 2 subfamilies have been reported for the first time from this state. The classification, taxonomical keys of subfamilies, genera etc. have been followed after Vockeroth (1972), Pont (1977) Shinonaga and Singh (1994). General morphology and materials & methods have been dealt in detail by the author in Fauna of Tripura (2000).

LIST OF SPECIES

A. Subfamily MUSCINAE

1. *Musca (Byomya) conducens* Wiedemann
2. *Musca (Musca) domestica* Linnaeus
3. *Musca (Viviparomusca) bezzi* Patton & Cragg
4. *Orthellia lauta* (Wiedemann)
5. *Orthellia indica* (Robineau-Desvoidy)

B. Subfamily STOMOXYINAE

6. *Stomoxys calcitrans* (Linnaeus)

SYSTEMATIC ACCOUNT

Key to Subfamilies

1. Proboscis elongate strongly sclerotized, adopted for piercing, tapering from a broad base to a slender apex and with atrophied labella; propleuron haired, vein M_{1+2} gradually curved forward apically from about middle of last section ..... STOMOXYINAE.

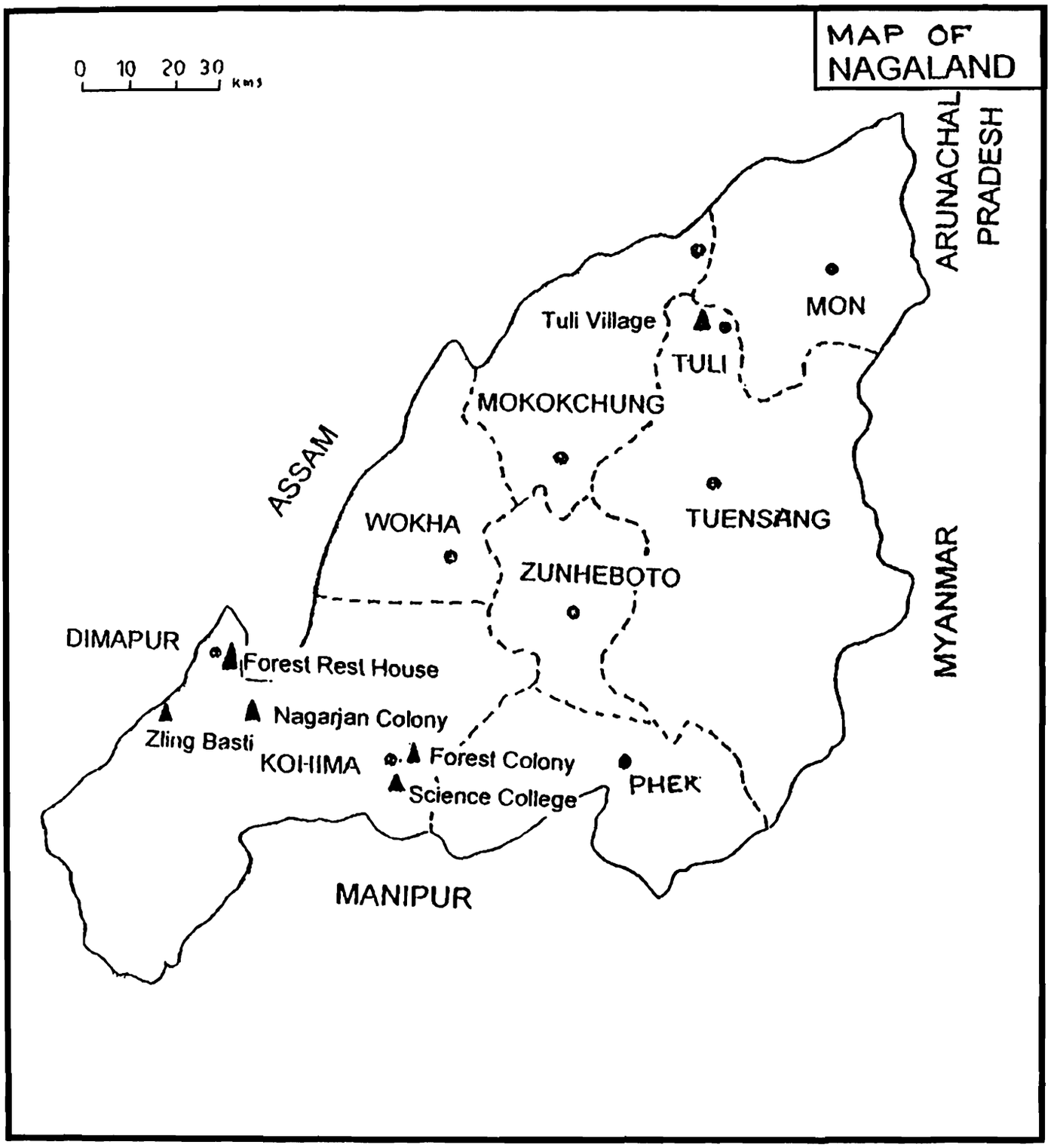
– Proboscis elongate weakly sclerotized, not distinctly tapering to apex and with well developed and often fleshy labella, pteropleuron haired or bare, vein M_{1+2} variable, often straight or sharply curved forward near middle of last section ..... MUSCINAE.

A. Subfamily MUSCINAE

Key to the genera

1. Suprasquamal ridge with black setulose hairs on posterior part; bend of vein M_{1+2} angular or in a gentle curve .... ***Orthellia*** Robineau-Desvoidy

– Suprasquamal ridge bare bend of vein M_{1+2} subangular ..... ***Musca*** Linnaeus



Map showing the different collection localities (▲) in the State of Nagaland

Genus ***Musca*** Linnaeus

1758. *Musca* Linnaeus, *Syst. Nat. Ed.* **10** : 589.

Type-species : *Musca domestica* Linnaeus.

Key to the sub genera

1. Propleural depression hairy .... ***Musca*** Linnaeus
- Propleural depression bare 2
2. Suprasquamal ridge bare ....***Byomya*** Robineau-Desvoidy
- Suprasquamal ridge setulose .... ***Viviparomusca*** Townsend

Subgenus ***Byomya*** Robineau-Desvoidy

1830. *Byomya* Robineau-Desroidy, *Mem. Pres. div. Sav. Acad. Sci. Inst. Fr.*, **2** : 392.

Type species : *Byomya viotacea* Robineau-Desvoidy

1. ***Musca (Byomya) conducens*** Walker

1859. *Musca (Byomya) conducens* Walker J. *Proc. Linn. Soc. Lond. Zool.*, **4** : 138.

Material examined : 2♂, 3♀, Forest rest house complex, Dimapur, Alt-195 mts., 10.IX.1994, coll. B. Mitra.

Diagnosis : Thorax fuscous black, two undusted vittae on either side rather close together towards and behind suture, first abdominal segment largely dark on dorsum, second & third orange in male except for a black median vittae.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Assam, Madhya Pradesh, Orissa, Punjab, Uttar Pradesh, West Bengal.

Elsewhere : China, Indonesia, Flores Island, Malayasia, Nepal, Philippines, Ryukyu Islands, Thailand; Ethiopian; New Guinea and S. Palaearctic.

Subgenus ***Musca*** Linnaeus

1915. *Promusca* Townsend, *J. Wash. Acad. Sci.*, **5** : 434.

Type-species : *Musca domestica* Linnaeus

2. ***Musca (Musca) domestica*** Linnaeus

1758. *Musca domestica* Linnaeus, *Syst. Nat. Ed.*, **10** : 589.

Material examined : 2♂, Zling Basti, Dimapur, Alt-195 mts., 12.IX.1994, coll. B. Mitra; 5♀, Forest colony, Kohima, Alt-1300 mts., 13.IX.1994. coll. B. Mitra.

Diagnosis : Four black vittae on thorax, inner pair terminating towards posterior end; propleural depression with fine setulose hairs; suprasquamal ridge without black setulae, all post dc strong; mid tibia without av and ad setae.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Assam, Bihar, Goa, Gujarat, Himachal Pradesh, Karnataka, Kashmir, Maharastra, Manipur, Punjab, Tripura, Sikkim; Cosmopolitan.

Subgenus : ***Viviparomusca*** Townserd

3. ***Musca* (Viviparomusca) *bezzi*** Patton & Cragg

1913. *Musca bezzi* Patton & Cragg, *J. med. Res.*, **1** : 19.

Material examined : 3♂, 1♀, Science College area, Kohima, Alt-1500 mts., 15.IX.1994, coll. B. Mitra; 6♂, Nagarjan colony, Dimapur, Alt-190 mts., 17.IX.1994. coll. B. Mitra.

Diagnosis : Eyes distinctly hairy, thorax densely dusted whitish to cinereous-grey with four (especially in male) black vittae, median vitta of second tergite strongly dilated along fore margin, otherwise almost parallel sided, and at hind margin never dilated, but as a rule slightly narrowed, moderately broad, stem vein with 4-7 setulae an hind side of dorsal surface.

Distribution : India : Nagaland, Assam, Himachal Pradesh, Kashmir, Punjab, Sikkim, Tamil Nadu, Uttar Pradesh, Meghalaya.

Elsewhere : Nepal; East Palaearctic.

Genus ***Orthellia*** Robineau-Desvoidy

1863. *Orthellia* Robineau-Desvoidy, *Hist. nat. Dipt env Paris*, **12** : 837.

Type-species : *rectinervis* Robineau-Desvoidy.

Key to the species

1. Thorax without prst dc, anterior mesopleural

absent; prst acr absent; parafrontalia polished, interfrontalia narrower than parafrontalia in female ..... *lauta* (Wiedemann).

– Thorax without prst acr; interfrontalia wider than a parafrontale, the later more or less dusted ..... *indica* (Robineau-Desvoidy).

4. ***Orthellia indica*** (Robineau-Desvoidy)

1830. *Lucillia indica* Robineau-Desvoidy, *Mem. Pres. div. Sav. Acad. Sci. Inst. Fr.*, **2** : 453.

Material examined : 3♂, 6♀, Forest rest house complex, Dimapur, Alt-195 mts, 10.IX.1994, coll. B. Mitra.

Diagnosis : Bronze green to bluish green, anterior part of mesonotum almost always with a conspicuous brassy or bronze tinge, second segment of antenna ferruginous, mid tibia with an ad seta between apical fifth & fourth.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Manipur, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Indonesia, Laos, Malaysia, Myanmar, Philippines, Ryukyu Island and Thailand.

5. ***Orthellia lauta*** (Wiedemann)

1830. *Musca lauta* Wiedemann, *Aussereurop. Zweifl. Insekt.*, **2** : 410.

Material examined: 3♂, 2♀, Tuli village, Tuensang, Alt-200 mts, 2.IX.1994. coll. B. Mitra.

Diagnosis: Metallic green or blue green, usually more or less purple, bend of wing subangular, m-m closer to bend than r-m, base of wings yellowish, calyptrae not or lightly browned, halteres fuscous, palpi & antennae brownish orange, discal cell without hairs, black colouration of articulating surface somewhat extended over base of segment on other side of median line of abdominal segments two & three.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Assam, Bihar, Karnataka, Madhya Pradesh, Manipur, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere : China, East Malayesia, Flores Island, Iran, Indonesia, Kalimantan, Laos, Myanmar, Nepal, Pakistan, Philippines, Ryukyu Island, Sri Lanka, Taiwan and Thailand; Australia.

B. Subfamily STOMOXYINAE

Genus ***Stomoxys*** Geoffroy

1762. *Stomoxys* Geoffroy, *Hist. abreg. Ins.* Paris., **2** : 449, 538.

1758. *Conops calcitrans* Linnaeus, *Syst. Nat., Ed.* 10, **1** : 604.

6. ***Stomoxys calcitrans*** (Linnaeus)

Type-species : *calcitrans* (Linnaeus).

Material examined : 3♂, Tuli village, Tuensang, Alt-200 mts, 2.IX.1994. coll. B. Mitra.

Diagnosis : Propleural depression and hypopleuron embossed with errect setulose hairs, apex of proboscis slender; stpl 0+1; arista pectinate dorsally.

Distribution : India : Nagaland, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Kerala, Maharashtra, Manipur, Mizoram, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elswhere : Bangladesh, China, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Simeule Island, Sri Lanka, Taiwan, Thailand, Vietnam; Cosmopolitan.

ACKNOWLEDGEMENT

The author is grateful to the Director, Zoological Survey of India, Calcutta for the facilities provided. Thanks are also due to Dr. S.K. Mitra, Scientist 'SF' (Retd.) for critically going through the manuscript of the paper.

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INSECTA : DIPTERA : TACHINIDAE

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INTRODUCTION

No record of a tachinid species in Nagaland is available in literature, although a number of them have been reported from 'Assam' province and neighbouring Bangladesh by Crosskey (1977) and from the adjacent states of Tripura, Manipur and Mizoram by Lahiri (1999).

The present study is based on tachinid material available in the collection of the Zoological Survey of India, Calcutta procured during faunistic survey of Nagaland state undertaken by the department under the leadership of Dr. T.K. Pal and party (March, 1989 and October, 1996), Dr. Y.N.P. Sinha and party (June, 1990), Dr. P. Mukherjee and party (March, 1994), Sri P. H. Roy and party (September, 1994) and Sri B. Mitra (September-October, 1994).

MATERIAL AND METHOD

Adult tachinid flies were collected, pinned and processed by the method prescribed by Datta, Parui and Mukherjee (1977). A brief account of taxonomically important characters of these insects has been provided by Lahiri (1999).

CLASSIFIED LIST OF SPECIES

Subfamily PROSENINAE

Tribe **Prosenini**

1. *Dexia prakritiae* sp. nov.
2. *Dexia quadristriata* sp. nov.

Subfamily TACHININAE

Tribe **Linnaemyini**

3. *Linnaemyia atriventris* (Malloch)

Tribe **Nemoraeni**

4. *Nemoraea grandis* (Walker)

Tribe **Thelairini**

5. *Thelaira macropus* Wiedemann

Tribe **Tachinini**

6. *Cuphocera varia* (Fabricius)
7. *Mikia apicalis* (Matsumura)
8. *Tachina (Servillia) fulva* (Walker)

Subfamily GONIINAE

Tribe **Sturmiini**

9. *Blepharella lateralis* Mac Lachlan
10. *Blepharipa zebina manipurensis* Lahiri
11. *Paradrino pilifacies* sp. nov.

Tribe **Ethillini**

12. *Phorocerosoma vicarium* (Walker)

Tribe **Carcellini**

13. *Carcelia Carcelliela pillosella* Baranov

Tribe **Erycliini**

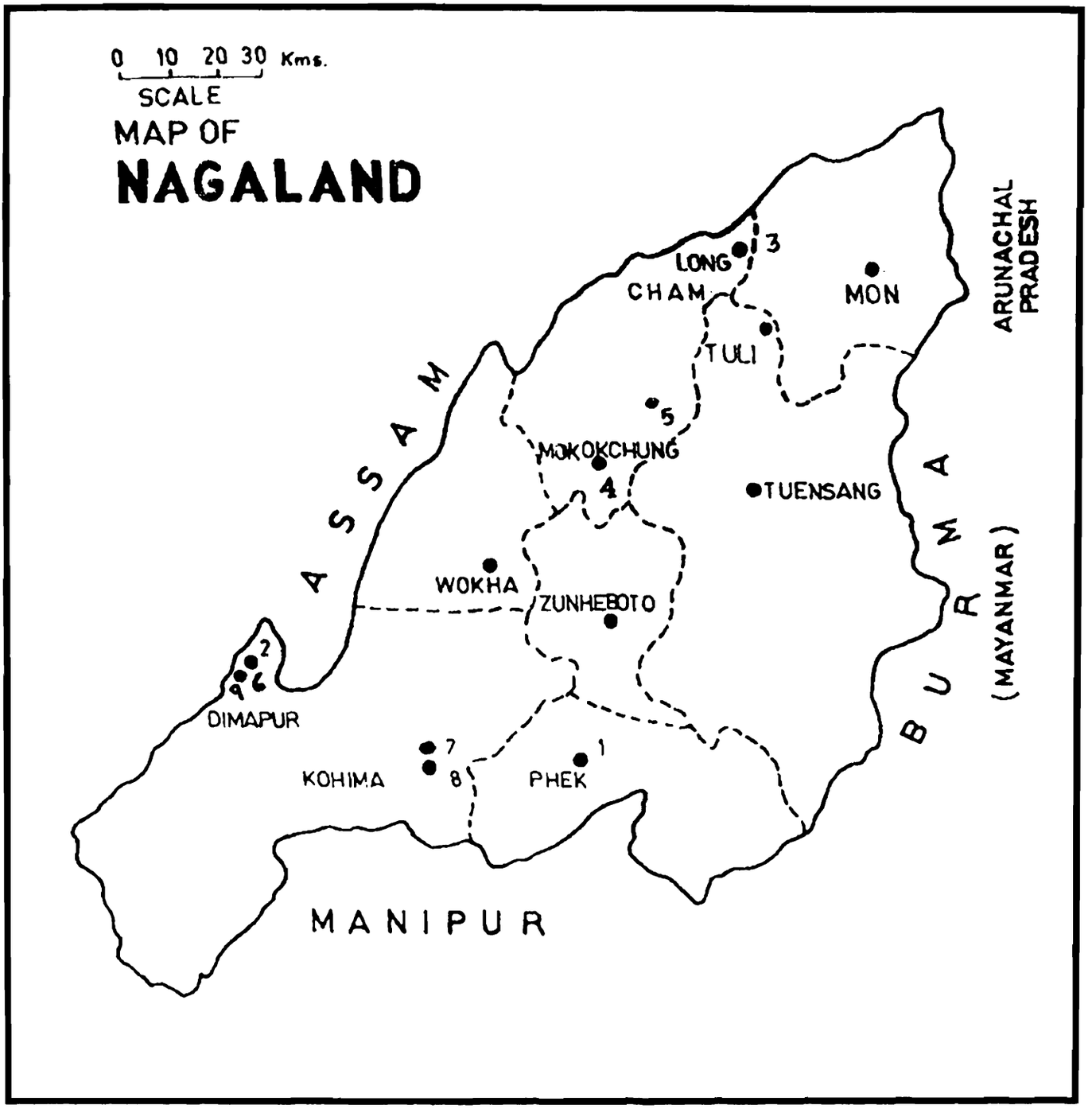
14. *Anegomena lucifera* (Walker)

Tribe **Exoristini**

15. *Phorinia nigra* sp. nov.

Tribe **Blondeliini**

16. *Eophyllohila includens* (Walker)



Map-1 : Showing collection localities

1. Kutsuru, 2. Mingkong, 3. Longchang, 4. Mokokchung, 5, Tsemenyu, 6. Dimapur, 7. Phulebadze, 8. Kohima, 9. Rangapahar, 10. Wakenong

SYSTEMATIC ACCOUNT

Family TACHINIDAE

Key to the subfamilies

1. Prosternum setulose ..... GONIINAE (part)
- Prosternum bare 2
2. Face raised into a heavy fusiform or broad roof-like facial carina, the carina partly or almost wholely visible when head is seen in profile and often separating deeply excavate antennal foveae .. PROSENINAE (Dexiinae)
- Face not raised into a definite facial carina, nearly always flattened or sunken and invisible in profile 3
3. Facial ridge with few setae around vibrissae ..... TACHININAE
- Facial ridge setose on its whole height .... GONIINAE (part)

Subfamily PROSENINAE (DEXIINAE)

Tribe **Prosenini**

Diagnostic characters : Head not conspicuously subtriangular, as long as or nearly as long as at the epistomal axis as at the antennal axis; facial carina usually present. Postalar callus with two strong setae; suprasqumosal ridge and postalar wall bare; posteroventral declivity of the thorax membraneous medially, the hind coxae and abdominal base not widely separated; scutellum with three pairs of marginal setae.

Genus *Dexia* Meigen

1825. *Dexia* Meigen, *Systematische Beschreibung der bekannten europaischen zweiflu-Geligen Insekten*, **5** : 33.

1976. *Dexia*, Crosskey, *Bull. Brit. Mus. (nat. Hist) Ent.*, **26** (Suppl.) : 46.

Diagnostic characters : Head with a strong facial carina; palpi well developed; proboscis shorter than head height; palpi not flattened. Humeral callus with two strong setae; pteropleural seta present; propleuron usually bare; pleural hairing dark; usually three *post dc* setae. Legs extremely elongate. Wing with cell R_5 open or closed just at the wing margin; bend of vein *M* usually much closer to the wing margin than to *m-cu;* second costal sector haired ventrally. T_{1+2} excavate to its hind margin or almost so.

Distribution : China, India, Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan.

Key to the species

1. Larger species (Length : body > 19.00 mm, wing > 17.00 mm)..... *prakritiae* sp. nov.
- Smaller species (Length : body : 14.00 mm, wing < 13.00 mm)..... *quadristriata* sp. nov.

1. *Dexia prakritiae*[2] sp. nov.
(Fig. 3)

Description : Female : Moderately large (Length : body : 19.50 mm, wing : 17.00 mm). Abdomen narrowly elongate, segments somewhat drawn out. Head yellow, but distal half of proboscis and interfrons black; about 13 frontal setae; ocellar setae strong. Scutum yellow somewhat brownish behind the wing base, dorsum with a pair of complete, moderately broad black stripes between mid-dorsum and humeral callus falling short of scutellum and narrowly interrupted at the suture; 2+1 *acro*, 1+1 *dorso* and 1+1 *ia* setae; 4 sternopleural setae; 2 strong humerals; no scutellar discals; scutellum yellow but blackish on dorsum. Wings enfumed in apical half, cell R_5 open at wing margin; calypter creamy. Legs yellow, tarsi black. Abdomen yellow marked by a broad mid-dorsal stripe that extends both at base and apex of T_{1+2} but from segment T_3 onwards gradually expands from base to apex of segments; 2, 4 and about 10 marginal setae along apical border of segments T_{1+2} T_3 and T_4 respectively; only T_4 with about 4 scattered discal setae. All setulae black.

Material examined : Holotype ♀, Phulebadze, 10.ix.1994, coll B. Mitra (Z.S.I. Regd. No. 8468/ H6).

[2] The species is named in memory of my beloved mother Prakriti

Remarks : This species differs from *Dexia quadristriata* sp. nov. and other related species in being larger in size and in having only one pair of moderately broad longitudinal stripes on dorsum of scutum.

Distribution : India : Nagaland (Kohima district).

2. ***Dexia quadristriata***[3] sp. nov.
(Figs. 1 and 2)

Description : Male : Medium in size (Length : body : 14.00 mm, wing : 12.50 mm). Abdomen not much elongated, somewhat fusiform. Head yellow, but distal half of proboscis and interfrons black; about 13 frontal setae, ocellar setae strong. Scutum blackish grey, paler on sides, dorsum with a pair of narrow, parallel longitudinal stripes on either side between mid-dorsum and humeral callus, falling short of scutellum and narrowly interrupted at the suture; 1+3 *acro*, 2+3 *dorso* and 1+1 *ia* setae; 3 stemopleural setae; scutellum yellow, but brownish along its base; scutellum with a pair of discal setae. Wings palely enfumed in apical half, cell R_5 open at wing margin; calypter creamy. Legs yellow but intersegmental joints variably black. Abdomen yellow but turning to black from apical third of segment T_4 to end and marked by a mid-dorsal stripe that is somewhat narrowing from base to apex of segment T_{1+2} but somewhat broadening from base to apex on segments T_3 and T_4; 4 and 5 marginal setae along apical border of segment T_3 and T_4 respectively; a pair of median discal setae on segment T_3, 6 median discals arranged in two rows on segment T_4.

Material examined : Holotype ♂, Kohima, 15.iv.1994, coll M. Sil (Z.S.I. Regd. No. 8467/H6).

Remarks : This species differs from other related species in the shape of the male genitalia. It differs from *Dexia prakritiae* sp. nov. in being smaller in size and in having two pairs of narrow longitudinal stripes on dorsum of scutum.

Distribution : India : Nagaland (Kohima district).

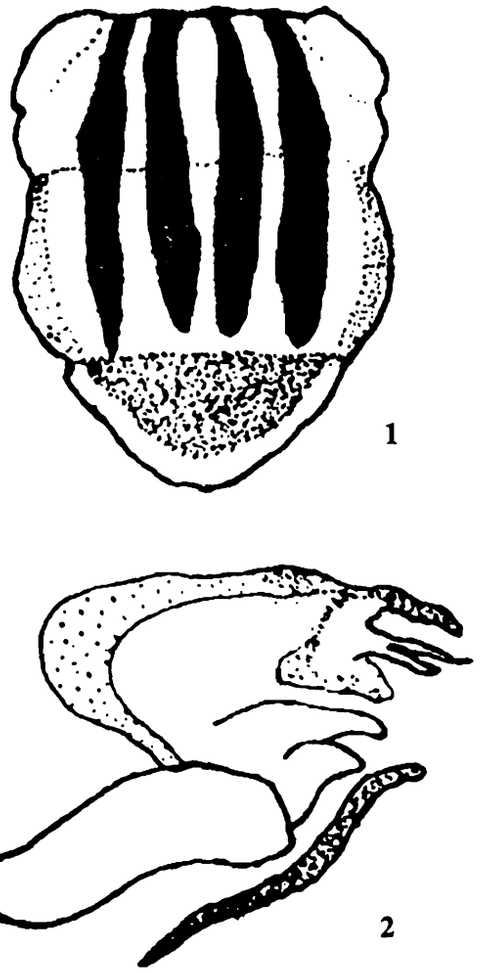


Fig. 1 & 2 : *Dexia quadristriata* sp. nov. 1. Thorax in in dorsal view, showing nature of Marking
2. Male genitalia

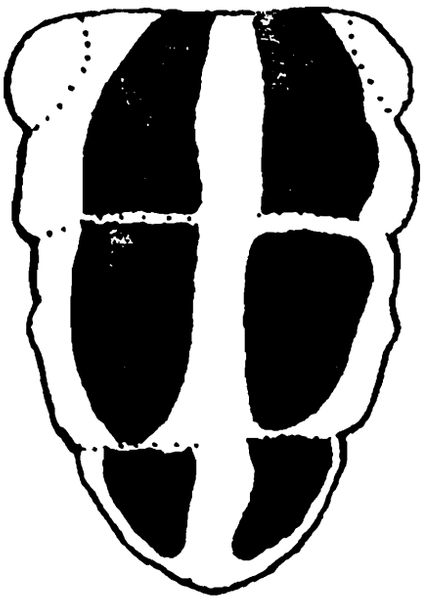


Fig. 3 : *Dexia prakritiae* sp. nov., thorax in dorsal view showing nature of marking.

[3] The name of the species is derived from the scutal pattern comprising four black stripes.

Subfamily TACHININAE

Key to the tribe

1. Hind coxa with fine soft hair on posterodorsal surface ..... **Tachinini**
- Hind coxa entirely bare on posterodorsal surface 2
2. Fore coxa haired on the whole (or almost the whole) of the inner anterior surface 3
- Fore coxa bare on its inner anterior surface 4
3. Vein R_1 setulose half way upto apex and vein R_{4+5} setulose upto *r-m* ..... **Thelairini**
- Vein R_1 bare and setulae on vein R_{4+5} confined only to basal node ..... **Nemoraeini**
4. Scutellum with two or three pairs of marginal setae. Humeral callus with two or three setae ..... **Leskiini**
- Scutellum with four or more pairs of marginal setae. Humeral callus with four or more pairs of marginal setae ..... **Linnaemyini**

Tribe **Linnaemyini**

Genus ***Linnaemya*** Robineau-Desvoidy

1830. *Linnaemya* Robineau-Desvoidy, *Mem. pres. Div. Sav. Acad. Sci. Inst. Fr.*, **2** : 52.

1976. *Linnaemya*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.* **26** (Suppl.) : 203.

Diagnostic characters : Eyes hairy; palpi vestigeal and if present, much shorter than the third antennal segment. Hind coxae entirely bare on posterodorsal surface; 3 *post dc* setae; setulae on vein R_{4+5} confined to basal node or extending half way to *r-m;* bend of vein *M* with an M_2 appendix.

Distribution : Pacaearctic; Oriental; Philippines.

3. ***Linnaemya atriventris*** Malloch

1935. *Palpina atriventris* Malloch, *Ann. Mag. nat. Hist., (10)* **16** : 580.

1976. *Linnaemya atriventris*, Crosskey, *Bull. Brit. Mus. (nat. Hist) Ent.* **26** (Suppl.) : 20 : 204.

Material examined : 1 ex, Mingkong Private Forest, 22.iii.1994, coll. P. Mukherjee.

Diagnostic characters : Medium in size (Length : body : 10.50 mm, wing : 8.00 mm). Black but face, paraface, interfrons and humeral callus yellowish; thorax and abdomen with blackish grey pollinosity. Proboscis longer than head height, palpi vestigeal; 2 *pr.cl.* orbital setae; epistome prominent, vibrissae situated above epistomal margin. Humeral setae 4-5 with main 3 situated in a curve; 3+3 *acro*, 3+3 *dc*, 1+3 *ia* and 3 *stpl* setae; scutellar setae total 4, apical crossing, shorter than the subapicals which are parallel; wing hyaline; vein R_{4+5} bare; cell R_5 open to wing margin; bend of vein *M* about equidistant between *m-cu* and wing margin. T_{1+2} excavate upto apex; T_3 and T_4 with a pair of median discal setae.

Distribution : India : Nagaland (Mokokchung district).

Elsewhere : Indonesia, Malaysia,? Myanmar,? Philippines.

Tribe **Nemoraeini**

Genus ***Nemoraea*** Robineau-Desvoidy

1830. *Nemoraea* Robineau-Desvoidy, *Mem. pres Div. Sav Acad. Sci. Inst. Fr.*, **2** : 71.

1976. *Nemoraea*, Crosskey, *Bull. Brit. Mus. (nat Hist.) Ent.*, **26** (Suppl.) : 197.

Diagnostic characters : Eyes haired. Scutellum with four or more pairs of marginal setae. Fore coxae haired on the whole (or almost the whole) of the inner anterior surface; hind coxae entirely bare on posterodorsal surface. Vein R_1 bare; setulae on R_{4+5} confined to basal node.

Distribution : India : Nagaland.

Elsewhere : Africa, Australia, Bangladesh, Bhutan, China, Europe, Indonesia, Myanmar, Nepal, Thailand, Vietnam.

4. ***Nemoraea grandis*** (Walker)

1852. *Tachina grandis* Walker, *Insecta Saundersiana*, **1** : 278.

1976. *Nemoraea grandis*, Crosskey, *Bull. Brit. Mus. (nat Hist) Ent.*, **26** (Suppl.) : 198.

Material examined : 1 ex (♀), Dimapur, 10.ix.1994, coll. M. Sil.

Diagnostic characters : Moderately large (Length : body : 14.00-16.50 mm, wing : 12-50-15.50 mm). Female black with face, genae, antennae, palpi and scutellum yellowish; (in male paraface, back of head and a bdomen also yellow, with a mid-dorsal black stripe extending over segments T_{1+2}, T_3 and T_4). Proboscis shorter than head height with palpi relatively large and lanceolate in female (filliform in male); parafrons very narrow without *pr. cl.* orbital setae in male (comparatively wider with 4 *pr.cl.* orbital setae in female); genae large, its depth greater than the width of profrons; epistome prominent, vibrissae situated above epistomal margin. Humeral setae 4-5 arranged in a curve; 3+3 *acro*, 3+4 *dc*, 1+3 *ia* and 3 *stpl* setae; scutellar total 4 or 5, apical converging, subapicals slightly diverging and a little longer than apicals. Wings hyaline, but a little darker along costal margin, cell R_5 open to wing margin; R_{4+5} setulose in basal third; lower calypter hairy along hind margin; M_2 apendix present, short. T_{1+2} excavate to hind margin.

Distribution : India : Nagaland (Kohima district), Assam, Uttar Pradesh.

Elsewhere : Myanmar, Nepal, Thailand.

Tribe **Thelairini**

Genus ***Thelaira*** Robineau-Desvoidy

1830. *Thelaira* Robineau-Desvoidy, *Mem. pres. Div. Sav. Acad. Sci. Inst. Fr.*, **2** : 214.

1976. *Thelaira*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 214.

Diagnostic characters : Face wider than frons with margins parallel or even widening towards epistome, antennae shorter than the horizontal diameter of the eye and with the third segment less than three times as long as the second segment; arista short, plumose; at most two pairs of proclinate orbital setae or not at all; vibrissae situated at about the level of epistomal margin. Scutellum with a pair of recumbent discal setae and three or more pairs of marginal setae of which the apicals are crossing and subapicals separated by a distance greater than that between either and its corresponding basal corner of scutellum; second costal sector haired ventrally. Abdominal segment T_{1+2} excavate nearly upto its hind margin that is furnished with median marginal setae while segments T_3 and T_4 bears median discal setae.

Distribution : India.

Elsewhere : Northern Asia, China, Europe, Indonesia, Japan, Malaysia, Myanmar, New Guinea, Pakistan, Sri Lanka.

5. ***Thelaira macropus*** Wiedemann

1830. *Thelaira macropus* Wiedemann, *Aussereuropaische zweiflugelige Insekten.*, **2** : 375.

1976. *Thelaira macropus*, Crosskey, *Bull Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 192.

Material examined : 1 ex, Wakenong, 7.vi.1990, coll. Y.N.P. Sinha.

Diagnostic characters : Medium size (Length : body : 11.50-15.00 mm, wing : 9.00-16.50 mm). Black, subdorsum and sides of abdomen from near base to middle of T_4 yellow. Proboscis shorter than head height; palpi filliform, extending to epistome; parafacial bare; orbitals not differentiated; arista plumose. Scutellar total 3, apicals raised, subapicals little longer than apicals; 3+3 *ac*, 3+3 *dc* and 1+3 *ia* setae. R_1 more than half way to apex and R_{4+5} upto *r-m* setulose. Abdominal segments T_{1+2} and T_3 each with a pair of submedian raised marginals, T_3 and T_4 each with a pair of raised discals.

Distribution : India : Nagaland (Kohima district), Assam, Himachal Pradesh, Mizoram, Kashmir, West Bengal.

Elsewhere : Indonesia, Malaysia, New Guinea,? Sri Lanka, Thailand.

Tribe **Tachinini**

Key to the genera

1. Parafacial armed with two or three strong setae at its lower end. Palpi absent ..... ***Cuphocera*** Macquart

– Parafacial uniformly haird and without any strong setae. Palpi present.....2

2. Abdominal T_{1+2} without median marginal setae. Bend of vein *M* with a M_2 appendix ..... ***Mikia*** Kowarz

– Abdominal T_{1+2} with erect marginal setae. Bend of vein *M* without M_2 Appendix .... ***Servillia*** Robineae-Desvoidy

Genus *Cuphocera* Macquart

1845. *Cuphocera* Macquart, *Annals. Soc. Ent. Fr.*, (2) : 267.

1976. *Cuphocera*, Crosskey, *Bull. Brit. Mus. (nat. Hist).*, **26** (Suppl.) : 205.

Diagnostic characters : Palpi vestigial; epistome raised; vibrissae situated a little above epistomal margin; parafacial armed with two or three strong setae at its lower end. Three *stpl*, three *post ia* and two *sa* setae present; hind coxae haired on posterodorsal surface; lower calypter large and projecting far beyond upper calypter; setulae confined on basal node of R_{4+5}; cell R_5 open; vein *M* usually without a definite appendix. T_{1+2} without bunch of marginal setae.

Distribution : Australia, China, Europe, New Guinea, Oriental, Philippines.

6. *Cuphocera varia* (Fabricius)

1794. *Cuphocera varia* Fabricius, *Entomologia systematica*, **4** : 327.

1976. *Cuphocera varia* Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 205.

Material examined : 1 ex, Longcham river forest, 2.ix.1994, coll. R.S. Mridha.

Diagnostic characters : Medium in size (Length : body : 13.00 mm, wing : 9.00 mm). Head mostly shiny white but eyes, antennae and interfrons dark, brownish; thorax and abdomen blackish, sides of thorax, base of scutellum and sublateral patches on abdomen pruinosed. Antennae falling short of epistome; 3 strong proclinate and 2 smaller reclinate orbitals; ocellar setae not prominent but postocular row of black setae quite prominent 6 humrals of which 4 main anteriors situated in a curve; 4+3 *ac*, 4+4 *dc* and 1+2 *ia* setae; scutellar total 4, subapicals converging, nearly twice as long as apicals which are crossing; about 6 subapical semierect discal scutellar setae. T_{1+2} excavated to hind margin; T_3 and T_4 with a pair of median marginals.

Distribution : India : Nagaland (Mokokchung district), Assam, Kerala, Manipur, Kerala, Sikkim, Tamil Nadu, Tripura and West Bengal.

Elsewhere : China, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Papua, Sri Lanka, Taiwan, Thailand and Queensland.

Genus *Mikia* Kowarz

1885. *Mikia*, Kowarz, *Wien. Ent. Zig.*, **4** : 51.

1976. *Mikia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 206.

Diagnostic characters : Palpi clubbed; parafacial without strong setae. R_1, R_{4+3} bare except at basal node of R_{4+5}; cell R_5 open at wing margin; bend of vein *M* wuth a definite appendix; propleuron haired; T_{1+2} without median marginal setae.

Distribution : China, India, Indonesia, Taiwan, Laos, Malaysia, Taiwan.

7. *Mikia apicalis* (Matsumura)

1916. *Bombyliomyia apicalis* Matsumura, *Thousand Insects of Japan.*, Additamenta, **2** : 389.

1976. *Mikia apicalis* Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 206.

Material examined : 1 ex, Rangapahar wildlife sanctuary, Kohima, 31.x.1998, coll. T. K. Pal.

Diagnostic characters : Moderately large in size (Length : body : 14.00 mm, wing : 11.50 mm). Black, but abdomen somewhat pale and yellowish brown; scutum sub laterally, scutellum and apical half of abdominal segments T_3, T_4 and T_5 pruinosed white. Palpi moderately clubbed, longer than third antennal segment; parafacial setose with fine hairs. Total humeral setae 6 of which the three main and larger ones are situated in curve, 3 + 2 *ac*. 3+4 *dc* and 1 + 2 *ia* setae; only 2 *stpl* setae; scutellar setae total 3, the spicals crossing and the subapicals parallel and longer than the apicals. T_{1+2} excavate upto apex; T_4 with a pair of median erect marginals; T_4 with 5-6 erect marginal setae.

Distribution : India : Nagaland (Kohima district), Tamil Nadu.

Elsewhere : China, Indonesia, Taiwan.

Genus ***Servillia*** Robineau-Desvoidy

1830. *Servillia* Robineau-Desvoidy, *Mem. pres. div. Sav. Acad. Sci. Fr.*, **2** : 49.

1976. *Servillia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 207.

Diagnostic characters : Non metallic in colour. Eyes bare; palpi filliorm; entire facial region pollinose; antennae falling short of epistome. Propleuron haired; 2 or more *post dc* and *post ia* setae; 2-3 *stpl* setae; hind coxae haired on posterodorsal surface; tarsi partly or entirely pale, yellow, orange or red; humeral callus with five or more setae; bend of vein *M* without definite appendix; R_1 and R_{4+5} bare except at basal node of R_{4+5}; cell R_5 open at wing margin. Abdominal segments without discal setae.

Distribution : India.

Elsewhere : Afghanistan, China, Europe, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Taiwan, Thailand, U.S.S.R., Vietnam.

8. ***Servillia fulva*** (Walker)

1852. *Tachina fulva* Walker, *Insecta Saundersiana.*, **1** : 253.

Material examined : 1 ex, Kohima, 12.x.1996, coll. T. K. Pal.

Diagnostic characters : Moderately large in size (Length body : 12.00-13.00 mm, wing : 11.00-12.00 mm). Blackish, but dorsum of head but for the eyes and interfrons shiny white, thorax on dorsum and basal half of abdominal segments T_3, T_4 and T_5 yellowish brown, palpi, tibiae and tarsi yellow. Subovate in shape with abdomen in dorsal view decidedly longer than thorax. Palpi plumose with short fine hairs. Humeral setae total 6 disposed in 2 parallel curve lines; only 2 *stpl* setae; 3 + 3 *ac*, 4 + 4 *dc* and 1 + 2 *ia* setae; scutellar setae total 4, apicals crossing, subapicals a little diverging, longer than apicals. T_{1+2} excavate upto apex, each abdominal segment with row of apical marginal setae, those on T_3 extending to nearly apex of the segment. Entire body covered with moderately long golden hairs.

Ramark : The specimen studied has here been referred to *Servillia. fulva* (Walker) at the instance of Dr. H. Shima, although Crosskey (1976) considered *Tachina fulva* (Walker) a synonym of *Servillia ursinoidea* Tothill.

Distribution : India : Nagaland (Kohima district).

Subfamily GONIINAE

Key to the tribes

1. Pre-alar seta short and weak, usually shorter than first *post ia* seta and much shorter than first *post dc* seta 2

– Pre-alar seta moderately or very strong in relation to the size of other mesonotal setae, much longer than the first *post ia* seta and usually longer than the first *post dc* seta... 3

2. Bend of vein *M* abrupt and with M_2 appendix ..... **Exoristini**

– Bend of vein *M* evenly rounded without M_2 appendix ..... **Blondeliini**

3. Eyes very large, occupying almost the whole side of the head, the gena reduced to a narrow strip below the eye that is not as deep as the width of the third antennal segment .... **Carceliini**

– Eyes relatively smaller, genal depth usually at least as much as the width of the third antennal segment 4

4. Vibrissae situated above the level of epistome 5

– Vibrissae situated at about the level of epistome ..... **Ethiliini**

5. Profrons wider than genae. 4 humeral setae ..... **Sturmiini**

– Profrons narrower than genae. Only 3 humeral setae ..... **Eryciini**

Tribe **Sturmiini**

Key to the genera

1. Prosternum bare. Facial ridges with strong downcurved setae on most of their height... ..... ***Blepharella*** Macquart

- Ptostermum setulose. Facial ridges bare or at most with small weak setulae to the lower two-fifths or less 2

2. Eyes desnely haired. Apical and subapical scutellar setae directed upwards .... ***Paradrino*** Mesnil

- Eyes bare or almost so. Apical and subapical scutellar setae not directed upwards .... ***Blepharipa*** Rondani

Genus ***Blepharella*** Macquart

1851. *Blepharella* Macquart, *Mem. Soc. Sci. Agric. Lille*, 1850 : 176.

1976. *Blepharella*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 234.

Diagnostic characters : Head with two or three pairs of reclinate orbital setae; eyes bare; facial ridge with strong downcurved setae on most of their height. Prosternum bare; 2 or 3 sternopleural setae; and mid-tibia with one *ad* setae.

Distribution : India.

Elsewhere : Amboyna, Australia, China, Indonesia, Malaysia, New Guinea, Sri Lanka Solomons, Taiwan, Vietnam.

9. ***Blepharella lateralis*** Macquart

1976. *Blepharella lateralis*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 234.

Material examined : 2 exs., Dimapur, Rangapahar, 18.ix.1994, coll. B. Mitra.

Diagnostic characters : Medium size (Length : body : 9.00-10.50 mm, wing : 7.50-9.00 mm). Blackish, scutellum ferruginous; face, frons, fine basal rings on T_3 and T_4 and basal half of T_5 pruinosed. Proboscis shorter than head height; palpi subequal to third anternnal segment, antennae with third segment the longest. 4 humeral setae of which main three situated almost in a line, the fourth one placed a little forward; 3+3 *ac*, 3+4 *dc* and 1+3 *ia* setae; 5 scutellar marginal setae; the apical short, stumpy; subapical much longer, subparallel, their distance being shorter than the distance between one subapical and corresponding base; no scutellar discal setae; cell R_5 open; bend of vein *M* without appendix; setulae on R_{4+5} confined to basal node T_{1+2} excavated to hind margin.

Distribution : India : Nagaland (Dimapur district), Andhra Pradesh, Assam, Karnataka, Kerala, Mizoram, Pondicherry, Sikkim, Tamil Nadu, Uttar Pradesh.

Elsewhere : As for genus.

Genus ***Blepharipa*** Rondani

1856. *Blepharipa* Rondani, *Dipterologiae italicae prodrumus.*, **1** : 71.

1976. *Blepharipa*, Crosskey, *Bull. Bull. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 235.

Distribution : Molucca, Oriental Palaearctic, Philippines, Oriental.

10. ***Blepharipa zebina manipurensis*** Lahiri

2000. *Blepharipa zebina manipurensis* Lahiri, *Diptera :Tachinidae in State fauna of Manipur*, P Zoological Survey of India, Calcutta (in press).

Remark : Lahiri ( ) described this subspecies with remarks on its differences from the nominate species.

Genus ***Paradrino*** Mesnil

1949. *Paradrino* Mesnil, *Bull. Inst. R. Sci. nat. Belg.* 25(42), **8** : 35.

1976. *Paradrino*, Crosskey, *Bull. Brit. Mus. (nat Hist) Ent.*, **26** (Suppl.) : 240.

Distribution : Africa, Australia, India, Indonesia, Malaysia, Nepal, New Guinea, Taiwan.

11. ***Paradrino ptilifacies***[4] sp. nov.
(Fig. 4)

Description : Male : Moderate in size (Length : body : 10.50 mm, wing : 10.00 mm). Black, face, paraface and frons shiny, thorax thinly pruinosed, T_3 and T_4 of abdomen pale brownish sublaterally. Proboscis shorter than head height; palpi yellow, strongly clubbed, shorter than third antennal segment; facial ridge hairy on lower third. Humeral setae 3, situated in curve; 3+3 *ac*, 3+4 *dc* and 1+3 *ia* setae; scutellar total 4, subapical

[4] The name of the species is derived from the facial ridge with setae on two third of its height.

and apical raised, subapical crossing and a little longer than apical which are parallel; 4(3+1) *stpl* setae; basal node of R_{4+5} with 2-3 small setulae. T_{1+2} excavated to hind margin; T_4 and T_5 with closely set black setulae on dorsum and sides.

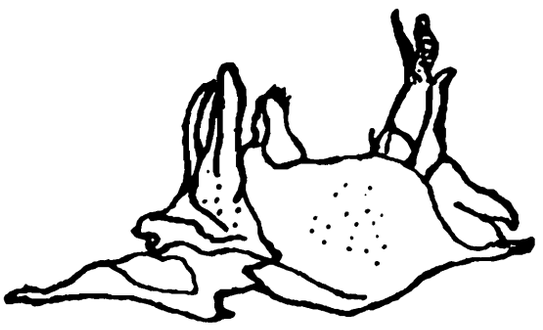


Fig. 4 : *Paradrino pilifacies* sp. nov., male genitalia.

Material studied : Holotype ♂, Phulebadze wildlife sanctuary, Kohima, 14.ix.1994, coll. B. Mitra (Z.S.I. Regd No. 8469/H 6).

Remark : *Paradrino pilifacies* sp. nov. differs from other species of the genus in the shape of the male genitalia and in having partially setose facial ridge.

Distribution : India : Arunachal Pradesh (Kohima district).

Tribe **Ethillini**

Genus ***Phorocerosoma*** Townsend

1927. *Phorocerosoma* Townsend, *Supplta Ent.*, **16** : 61.

1976. *Phorocerosoma*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 225.

Diagnostic characters : Eyes hairy; vibrissae inserted about on a level with the epistomal margin; upper occiput without black setulae behind the postocular row; inner vertical setae converging and crossing before apices. Scutellum with four pairs of marginal setae; humeral callus with three main setae standing in a triangle; prealar setae longer and stronger than first *post-ia* seta; mid-tibia normally with two or more *ad* setae. Abdominal T_{1+2} and T_3 with median marginal setae.

Distribution : India : Nagaland.

Elsewhere : Africa, Australia, China, India, Indonesia, Japan, Malaysia, Moluccas, Nepal, Singapore, Solomons, Taiwan.

12. ***Phorocerosoma vicarium*** (Walker)

1856. *Masicera vicarium* Walker, *J. Proc. Linn. Soc. Lond.*, **1** : 20.

1976. *Phorocerosoma vicarium*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 225.

Material examined : 1 ex, Mokokchung, 29.ix.1994, coll. P. H. Roy.

Diagnostic characters : Medium in size (Length : body : 13.00 mm, wing : 8.00 mm). Black; face, paraface and frons shiny. Scutum and abdomen variably pruinosed; scutellum pale, tawny. T_4 and T_5 with moderately developed hair follicle. Four scutellar total, apical and subapical converging, subapical longer than apical. Lower calypter with its posterior angle gently rounded and well separated from scutellum.

Remark : Lahiri (200) reported this species for the first time from India (Tripura).

Distribution : India : Nagaland (Mokokchung district), Tripura.

Elsewhere : China, Indonesia, Japan, Singapore.

Tribe **Carceliini**

Genus ***Carcelia*** Robineau-Desvoidy

1830. *Carcelia* Robineau-Desvoidy, *Mem. pres. Civ. Sav. Acad. Sci. Inst. Fr.*, **2** : 176.

1976. *Carcelia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 228.

Diagnostic characters : Eyes hairy. 3 or 4 *post dc;* Scutellum with apical setae horizontal or directed upwards; scutellar discal pri-apical setae present; 2 or 3 *stpl* setae; hind coxae bare or even hairy on posterodorsal surface.

Distribution : India : Nagaland.

Elsewhere : Australia, China, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Taiwan, Tanzania, Thailand.

Subgenus ***Carceliella*** Baranov

1934. *Carceliella* Baranov, *Trans. R. ent. Soc. Lond.*, **82** : 398.

1976. *Carcelia carceliella* , Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 229.

Diagnostic characters : Mid-tibia without a submedian *v* setae. Humeral callus with the three main setae standing in a line or almost so. Hind coxae with one or more long fine setulae on posterodorsal surface. Intermediate abdominal tergites without discal setae.

Distribution : India : Nagaland.

Elsewhere : Malaysia, Sri Lanka, Taiwan.

13. *Carcelia Carceliella pilosella* Baranov

1931. *Carcelia pilosella* Baranov, *Arb. Parasit. Abt. Inst. Hyg. Zagreb.*, **3** : 37.

1976. *Carcelia carceliella pilosella*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 230.

Material examined : 1 ex, Dimapur Reserve forest, 18.ix.1994, coll. B. Mitra.

Diagnostic characters : Small in size (Length : body : 8.00 mm, wing : 7.00 mm). Black, abdominal segment T_3 pale and brownish sublaterally. Proboscis shorter than head height, arista bare, long, at the base of third antennal segment; 2 *pr. cl* and 1 *re.cl.* orbital setae. 3 *stpl* setae; 3+4 *ac*, 3+4 *dc* and 1+3 *ia* setae; 4 scutellar total, apical crossing. T_{1+2} excavated to hind margin; T_3 and T_4 with erect marginal setae.

Distribution : India : Nagaland (Kohima district).

Elsewhere : Taiwan.

Tribe **Eryciini**

Genus ***Anegomena*** Bauer & Bergenstamm

1891. *Anegomena* Brauer & Bergenstamm. *Denkschr. Akad. Wiss, Wien.*, **58** : 385.

1976. *Anegomena*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 246.

Diagnostic characters : Head shape normal, not strongly triangular, profrons not wider than depth of the gena; parafacial bare. Three *post dc* setae. Second costal sector bare ventrally.

Distribution : India : Nagaland.

Elsewhere : Bangladesh, Philippines, Ryukyu Island, Sri Lanka, Taiwan.

14. *Anegomena lucifera* Walker

1852. *Tachina lucifera* Walker, *Insecta Saundersiana.*, **1** : 282.

1976. *Anegomena lucifera*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 246.

Material examined : 1 ex, Kohima Reserve forest, 4.ix.1994, coll. R.S. Mridha.

Diagnostic characters : Medium in size (Length : body : 10.00 mm, wing : 7.00 mm). Black; face, yellowish, abdominal segments T_4 and T_5 with sublateral pruinosed patches. Proboscis short; 2 *pr.cl* and 1 *re.cl.* orbital setae. Three humeral setae situated in a curve; three *stpl* setae; scutellar total four, apical and subapical converging and crossing, subapical longer than apical.

Distribution : India : Nagaland (Kohima district), Bihar.

Tribe **Exoristini**

Genus ***Phorinia*** Robineau-Desvoidy

1830. *Phorinia* Robineau-Desvoidy, *Mem. pres. div. Sav Acad. Sci. Inst. Fr.*, **2** : 118.

1976. *Phorinia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 224.

Diagnostic characters : Vibrissae inserted at about the level of the epistomal margin; epistome not very strongly warped forwards; eyes densely hairy; facial ridges with strong downcurved setae on almost their height; ocellar setae strong; occipital region of head flat; upper occuput without black setulae behind the postoculaer row. Four *post dc* setae; apical scutellar setae directed strongly upwards. Cross vein *m-cu* not unusually oblique and not very remote from wing margin; last section of vein Cu_1 subequal in length to *m-cu;* cell R_5 open.

Distribution : India : Nagaland.

Elsewhere : France, Malaysia, Nepal, Thailand, Vietnam.

15. ***Phorinia nigra***[5] sp. nov.
(Fig. 5)

Description : Male : Small in size (Length : body : 7.00 mm, wing 5.50 mm). Black. Proboscis nearly as long as head height palpi clubbed at apex, shorter than third antennal segment;

Fig. 5 : *Phorinia nigra* sp. nov., male genitalia.

epistome prominently visible laterally; vibrissae situated a little above epistomal margin; ocellar setae strong, proclinate. Three humeral setae situated in a curve; four scutellar total, the apical directed straight upwards, the subapicals parallel, directed backwards and very long, almost twice as long as the length of the scutellum; three *stpl* setae Abdominal segments dorsally clothed with thickly set setulae; T_{1+2} and T_3 with a pair of marginal setae on apical border T_4 and T_5 with more than one pair of such marginal setae.

Material studied: Holotype ♂. Tuli (Mokokchung), 26.iii.1994, coll. P. Mukherjee (Z.S.I. Regd. No. 8470/H 6).

Remark: This species differs from other species of the genus in colouration and in the shape of the male genitalia.

Distribution : India : Nagaland (Mokokchung district).

[5] The species is named after its entirely black appearence

Tribe **Blondeliini**

Genus ***Eophyllophila*** Townsend

1926. *Eophyllophila* Townsend, *Supplta. Ent.*, **14** : 19.

1976. *Eophyllophila*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 215.

Diagnostic characters : Eyes bare; facial ridge bare on most of its heitht; parafacial bare; arista thickened on less than its basal half and with very long plumosity, hairs on each side about as long as the width of the third antennal segment; genae narrow, its width less than half the eye height. Prescutal pattern consisting of three broad black vittae, all reaching transverse suture and separated by two parallel sided silvery dorsocentral setae; propleuron bare; 2+3 *stpl* setae; prosternum setose; mid-tibia without a submedian *v* seta. Wing with cell R_5 open to the wing margin. Abdominal T_{1+2} with excavation confined to basal half.

Distribution : India.

Elsewhere : Indonesia, Malaysia, Taiwan.

16. ***Eophyllophila includens*** (Walker)

1859. *Dexia includens* Walker, *J. Proc. Linn. Soc. Lond.*, **4** : 130.

1976. *Eophyllophila includens*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 215.

Material examined: 1 ex, Tsemenyu, 18.iii.1998, coll. T. K. Pal.

Diagnostic characters: Medium in size (Length : body : 10.00 mm, wing : 8.50 mm). Black, but silvery white on face, paraface, a pair of mid-dorsal vittae on prescutum, sides of thorax, apical third of femora and basolateral large spots of T_3 T_4 and T_5. Proboscis small and much shorter than third antennal segment; vibrissae almost at epistomal margin. 2 *stpl* and total three scutellar setae of which the apical and subapicals are parallel. Three pairs of marginal setae on T_{1+2}, T_3 and T_4, many on T_5; one pair of discal setae on T_3 and T_4 and a few lateral setae on T_{1+2}.

Distribution : India : Nagaland (Mokokchung district).

Elsewhere : Indonesia.

DISCUSSION

The distribution of various tachinid species so far known from Nagaland shows that, of these 4 (i.e. 25% of total 16) are endemic to the state 6 species (i.e. approximately 35% of total 16) are known also from some of states of eastern India i.e., erstwhile 'Assam' province, Mizoram, Manipur, Tripura, Sikkim and/or West Bengal. 4 of the species (i.e. 25% of total 16) are known also from Nepal and different states of north India as well, but comparatively a lesser number of only 3 soecies (i.e., approximately 19% of total 16) are common to different parts of southern India. Outside India, 3 of the species known from the state (i.e., approximately 19% of total 16) are common to Vietnam, Myanmar and Thailand, but a maximum number of 7 species (i.e., approximately 53% of total 16) found in Nagaland is noticed to be common with different parts of Indonesia and Malaysia. Only 1 species found in the state (i.e., approximately 6% of total 16) is found common with north-west India. 2 species (i.e., approximately 13% of total 16) are common to Australia and Philippines. None of the species found in Nagaland is known from Europe, Africa or America, while *Blepharella lateralis* Mac Lachlan appear to be the most widely distributed species found in the state of Nagaland.

SUMMARY

Four new species *viz., Dexia prakritiae, Dexia quadristriata, Paradrino pilifacies* and *Phorinia nigra* have been described from Nagaland state of Indian union and another eleven species, *viz., Linnaemyia atriventris* (Malloch), *Nemoraea grandis* (Walker), *Thelaira macropus* Wiedemann, *Cuphocera varia* (Fabricius), *Mikia opicalis* (Matsumura), *Tachina (Servillia) fulva* (Walker), *Blepharella lateralis* Mac Lachlan, *Phorocerosoma vicarium* (Walker), *Carcelia carcelliella pillosella* Baranov, *Anegomena lucifera* (Walker) and *Eophyllophila includens* (Walker) have been recorded for the first time from the area Keys for identification/diagnostic characters for various taxa and their outline distribution have been provided in the text.

ACKNOWLEDGEMENT

The author is thankful to the Director, Zoological Survey of India, for his kind permission to undertake the present study. Thankful acknowledgement is due to Dr. S.K. Mitra, Sc F (Retd.) and Dr. M. Datta, Sc E (Retd.) for their encouragement and various guidance in course of carrying out the work. Kind and sincere thanks are due to Dr. H. Shima of Kyushu University, Japan, for his considered openion on the identity of various species reported in this paper.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 213-262, 2006

INSECTA : LEPIDOPTERA : NYMPHALIDAE

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INTRODUCTION

Of the more than 17,000 species of butterflies known in the world, 1500 occur in India. The state of Nagaland alone abounds more than 400 species, of which 123 are represented by six subfamilies, *viz.*, Acraeinae, Calinaginae Morphinae, Libytheinae, Charaxinae and Nymphalinae of the family Nymphalidae.

The earlier well known works on butterflies of India of the family Nymphalidae are by De Nicèville (1886), Bingham (1905), Evans (1932), Talbot (1947) and Wynter-Blyth (1957). The significant contributions to the butterfly fauna, particularly, from Nagaland are due to Elwes (1891), Tytler (1911, 1914, 1915). The present studies on nymphalids are based on the collections made over the last 40 years by several survey parties of the Zoological Survey of India. The specimens available in the old collections of Zoological Survey of India have also been examined.

The caterpillars or larvae of these butterflies feed upon several food plants. The increasing pressure of human population and its growing demands have led to deforestation thereby causing loss of their natural habitats and food. Consequently, there has been decline in their population and diversity. A number of species referred in literature and their specimens available in the old collections of musea are not represented among the butterflies collected during the recent surveys of the state. Such not collected or observed species have become rare and endangered. Thus, these butterflies of the latter category along with their habitats need protection. Accordingly, the Wildlife (Protection) Act of 1972 amended from time to time includes species which require protection. Of the 123 species, 24 spp. listed are in Schedule-1, Part–4 (11 spp.); Schedule-II, Part -2 (13 spp.).

Altogether, 123 species/subspecies spread over 62 genera and six subfamilies have been dealt with from Nagaland and the keys to their identification have been provided. The common name, fore wing length, distribution and remarks for each species/subspecies have been included.

SYSTEMATIC ACCOUNT

Family NYMPHALIDAE

Antennae completely or partially scaled. Palpi not more than twice as long as the head execpt in Libytheinae. Fore-wing with all the 1_2 veins present, one vein usually dilated at base, R_2 arising nearer apex of cell of wing, vein 1A+2A may or may not be bifurcated at base. Hind wing cell closed by a tubular or non-tubular vein, precostal vein present. Fore legs imperfect in both sexes and not used for walking except in the female of Libytheinae. In male, fore tarsus always reduced to a single segment clothed with hair like scales resembling a small brush; in female fore tarsus with a variable number of segments.

Corbet and Pendleburry (1992) have been followed for treating subfamilies under the family Nymphalidae. At present, following six subfamilies have been dealt with from Nagaland.

Subfamily MORPHINAE
Subfamily CALINAGINAE
Subfamily ACRAEINAE
Subfamily NYMPHALINAE
Subfamily CHARAXINAE
Subfamily LIBYTHEINAE

Subfamily MORPHINAE

The subfamily includes very large and showy species. The majority of the species have enormous size of wings as compared to that of the body. The subfamily has three tribes, *viz.*, Morphini, Brassolini and Amathusiini. Only the tribe Amathusiini is represented in the tropics of the Oriental Region (including the Papuan subregion).

Tribe **Amathusiini**

Eyes smooth; labial palpi usually long, prominent and laterally compressed; termen of wings usually entire, underside of hind wing usually with submarginal ocellus in each of areas Cu_{1b} and M_1; fore legs imperfect in the both sexes.

The tribe is represented in India by 24 species and subspecies belonging to eight genera. Of these, 10 species and subspecies in seven genera are dealt with from Nagaland.

Key to genera

1. Fore wing with discocellular veins tubular throughout. Hind wing with vein 3A longer than abdomen. In male, abdomen not compressed 2
– Fore wing with middle discocellular vein absent. Hind wing with vein 3A shorter than abdomen. In male, abdomen basally at base ventrally compressed 6
2. In hind wing, cell more or less closed ..... ***Amathuxidia*** *Staudinger*
– In hind wing, cell completely open 3
3. In fore wing, vein Cu_{1a} arising about midway between Cu_{1b} and M_3; M_3 not strongly curved proximad 4
– In fore wing, vein Cu_{1a} arising much nearer M_3 than to Cu_{1b}, M_3 strongly curved proximad 5
4. In fore wing, R_1 and Sc anastomosed ..... ***Aemona*** Hewitson
– In fore wing, R_1 and Sc free ..... ***Faunis*** Huebner
5. In fore wing, R_2 absent, veins R_1 and Sc free..... ***Stichophthalma*** C.& R. Felder
– In fore wing, R_2 and R_1 anastomosed with Sc ***Thaumantis*** Huebner
6. In fore wing, veins R_2 and R_1 anastomosed with Sc. In male, upperside of hind wing with rounded discal black brand extending into areas Cu_{1b}, Cu_{1a} and M_3 ..... ***Discophora*** Boisduval
– In fore wing, vein R_2 absent, R_1 anastomosed with Sc. In male, upperside of hind wing with area of cell strongly hairy ..... ***Enispe*** Doubleday

I. Genus ***Amathuxidia*** Staudinger

1887. *Amathuxidia* Staudinger, *Exot. Schmett.*, **1** : 188.

This genus is represented in India by the nominate subspecies, *Amathuxidia amythaon amythaon* (Doubleday).

1. ***Amathuxidia amythaon amythaon*** (Doubleday)

1847. *Amathusia amythaon* Doubleday, *Ann. Mag. nat. Hist.*, **19** : 175 (GE Sylhet).

1911. *Amathusia amythaon* Doubleday: Tytler, *J. Bombay nat. Hist. Soc.*, **21 (1)** : 54.

1947. *Amathuxidia amythaon amythaon* (Doubleday): Talbot, *Fauna of British India*, (Butterflies), **2** : 113.

Material examined : Nil.

Wing expanse : 110-130 mm.

Distribution : India : Nagaland, Sikkim.

Elsewhere : Malaya and Myanmar.

Remarks : The upperside of wings is dark brown and fore wing bearing a broad pale blue band in male but yellow band in female. The underside of wings is pinkish lavender marked with prominent dark lines, and two ocelli are present on hind wing. This nominate subspecies previously known from Naga Hills is rare in status and it has been listed in Schedule II (Part-2) of the Indian Wildlife (Protection) Act.

II. Genus *Aemona* Hewitson

1868. *Aemona* Hewitson, *Exot. Butts*, **4** : pl. figs. 3, 4.

There is only a nominate subspecies, *Aemona amathusia amathusia* (Hewitson) known from India.

2. *Aemona amathusia amathusia* (Hewitson) (Yellow Dryad)

1867. *Clerome amathusia* Hewitson, *Trans. ent. Soc. Lond.*, **5** (3) : 566, female.

1911. *Aemona amathusia* (Hewitson) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 54.

1947. *Aemona amathusia amathusia* (Hewitson) : Talbot, *Fauna of British India*, (Butterflies), **2** : 113.

Material examined : Nil.

Wing expanse : 75-90 mm.

Distribution : India : Nagaland, Assam, Manipur and Sikkim.

Elsewhere : Northern Myanmar.

Remarks : This nominate subspecies earlier known from Nagaland is rare in status, particularly the female. This butterfly has been listed in Schedule–II (Part–2) of the Indian Wildlife (Protection) Act.

III. Genus *Faunis* Huebner

1819. *Faunis* Huebner, *Verz. bekant. Schmett.*, : 55.

This genus is represented in India by two species, *viz.*, *Faunis canens* Huebner and *F. eumeus* (Drury), of which the former is treated from Nagaland.

3. *Faunis canens arcesilas* (Stichel) (Common Faun)

1933. *Faunis canens arcesilas* Stichel, *Lep. Cat.*, **54** : 73.

1947. *Faunis canens arcesilas* Stichel : Talbot, *Fauna of British India*, (Butterflies), **2** : 409.

Material examined : Nil.

Wing expanse : 65-75 mm.

Distribution : India : Nagaland and Sikkim.

Elsewhere : Bhutan, Malaya, Myanmar, Sumatra, Thailand (Siam) and Tonkin.

Remarks : Tytler (1911) mentioned about its earlier record from Naga Hills.

IV. Genus *Stichophthalma* C. & R. Felder

1862. *Stichophthalma* C. & R. Felder, *Wien. Ent. Mon.*, **6** : 261.

The genus is represented in India by three species of which only *Stichophthalma nourmahal* (Westwood) is dealt with from Nagaland.

4. *Stichophthalma nourmahal nourmahal* (Westwood) (Chocolate Jungle Queen)

1851. *Thaumantis nourmahal* Westwood, In Doubleday, Hewitson, *Gen. diurn. Lep.*, : 337.

1914. *Sticophthalma* (sic) *nourmahal* (Westwood): Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 227.

1947. *Stichophthalma nourmahal nourmahal* (Westwood) : Talbot, *Fauna of British India*, (Butterflies), **2** : 417.

Material examined : Nil.

Forewing length : 44 mm.

Distribution : India : Nagaland, Assam, Sikkim and West Bengal.

Elsewhere : Myanmar.

Remarks : Only the nominate subspecies occurs in India. Tytler (1914) collected its specimens from Kirbari, Naga Hills, at altitude 1835m in July-September and he also took a few specimens at Takabama, 46 km east of Kohima, in August. Its status is rare and it has been included in Schedule II (Part–2) of the Indian Wildlife (Protection) Act.

V. Genus *Thaumantis* Huebner

1826. *Thaumantis* Huebner, *Samml. Exot. Schmett.*, **2** Pl. 61.

This genus is represented in India by the nominate subspecies, *Thaumantis diores diores* (Doubleday).

5. *Thaumantis diores diores* Doubleday (Jungle Glory)

1845. *Thaumantis diores* Doubleday, *Ann. Mag. nat. Hist.*, **16** : 234.

1911. *Thaumantis diores* Doubleday : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 54.

1947. *Thaumantis diores diores* Doubleday : Talbot, *Fauna of British India*, (Butterflies), **2** : 427.

Material examined : Nil.

Forewing length : 49–56 mm.

Distribution : India : Nagaland, Sikkim and Arunachal Pradesh.

Remarks : Tytler (1911) collected two males at low elevations in the months of May and November in Naga Hills.

VI. Genus *Discophora* Boisduval

1836. *Discophora* Boisduval, (Roret's Suite a Buffon), *Hist. nat. Inst. Consid., Gen. Lepid*, **1**: pl. 4 (–4a) fig. 2. (larva et pupa) as (*Discophorus*) pl. 12 (–8B), fig. 3 (as *Discophora*).

Of the five species of this genus occurring in India, two—*Discophora deo* de Niceville and *Discophora sondaica* Boisduval are dealt with from Nagaland.

Key to species

- Upperside of fore wing marked with ochraceous spots ..... *deo* de Niceville
- Upperside of wing marked with blue spots. ..... *sondaica* Boisduval.

6. *Discophora deo deodoides* Tytler

1914. *Discophora deo* de Niceville, Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 229.

1939. *Discophora deo deodoides* Tytler, *J. Bombay nat. Hist. Soc.*, **41** : 252.

1947. *Discophora deo deodoides* Tytler : Talbot, *Fauna of British India*, (Butterflies), **2** : 451.

Material examined : Nil.

Forewing length : 40-45mm.

Distribution : India : Nagaland and Assam.

Elsewhere : Myanmar.

Remarks : Tytler (1939) collected a few specimens of this subspecies from Nagaland and Mynamar and found those specimens differing from the nominate subspecies by large wing expanse and fore wing bearing two large distal yellow spots.

7. *Discophora sondaica zal* Westwood (Common Duffer)

1851. *Discophora zal* Westwood, In Doubleday & Westwood, *Gen. diurn. Lep.*, **2** : 331.

1911. *Discophora tullia* (Cramer) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 55.

1947. *Discophora sondaica zal* Westwood : Talbot, *Fauna of British India*, (Butterflies), **2** : 448.

Material examined : Nil.

Forewing length : 40-43 mm.

Distribution : India : Nagaland, Sikkim and West Bengal.

Elsewhere : Myanmar.

Remarks : Tytler (1911) found this subspecies being common at elevations from March to October..

VII. Genus *Enispe* Doubleday

1848. *Enispe* Doubleday, *Gen. diurn. Lep.* (**2**) : pl. 40, fig. 2.

Two species, *viz.*, *Enispe cycnus* Westwood and *Enispe euthymius* (Doubleday) of this genus found in India are treated from Nagaland.

Key to species

- Upperside of wings blackish brown, fore wing with a bluish white band .... *cycnus* Westwood
- Upperside of wings bright ochraceous with blackish brown markings .... *euthymius* (Doubleday)

8. ***Enispe cycnus cycnus*** Westwood (Blue Caliph)

1851. *Enispe cycnus* Westwood, In Doubleday & Westwood, *Gen. diurn. Lep.*, **2** : 330.

1911. *Enispe cycnus* Westwood: Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 55.

1947. *Enispe cycnus cycnus* Westwood : Talbot, *Fauna of British India*, (Butterflies), **2** : 458.

1997. *Enispe cycnus cycnus* : Gupta, *Fauna of West Bengal, State Fauna Series* **3** (Part-7) : 541-542. *Zool. Surv. India.*

Material examined : Nil.

Wing expanse : 80-95 mm.

Distribution : India : Nagaland, Sikkim and West Bengal.

Elsewhere : Bangladesh and Northern Myanmar.

Remarks : The nominate subpecies differs from its counterpart, *E. cycnus verbanus* Fruhstorfer from Assam and Bhutan, by upperside of fore wing bearing a broader bluish white band and in male hind wing is devoid of yellow spots. D'Abrera (1985) retained Bhutan only as abode of *E. cycnus verbanus*. Tytler (1911) obtained male and female specimens of this subspecies at an altitude of 1835 m during September and October, in Naga Hlls. Evans (1932)) and Talbot (1947) mentioned its status rare. It has been listed in Schedule-II (Part-2) of the Indian Wildlife Protection Act.

9. ***Enispe euthymius euthymius*** (Doubleday)

1845. *Adolias euthymius* Doubleday, *Ann. Mag. nat. Hist.*, **16** : 129.

1911. *Enispe euthymius* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 54.

1914. *Enispe euthymius* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 228.

1947. *Enispe euthymius euthymius* (Doubleday) : Talbot, *Fauna of British India*, (Butterflies), **2** : 113.

Material examined : Nil.

Forewing length : 38-41 mm.

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Myanmar.

Remarks : Only the nominate subspecies occurs in India. Tytler (1911) obtained two males of form *tessellata* Moore at an altitude of 610 m in Naga Hills. Talbot (1947) mentioned its two forms, *viz.*, *tessellata* Moore and *melaena* Tytler, all these forms occurring in Assam. Its status is not rare.

Subfamily CALINAGINAE

Thorax clothed in part with orange or red hairs. Both fore and hind wing with cells closed; in fore wing, vein R_2 arising from R_1; in hind wing, prediscoidal cell present.

Two genera, *viz*; *Calinaga* Moore and *Penthema* Doubleday represent this subfamily in India.

Key to genera

Eyes hairy. Antennae equal to one-third the length of costa of fore wing. Fore wing with lower discocellular vein straight. Hind wing with vein Sc + R_1 ending before apex..... ..... ***Calinaga*** Moore

– Eyes not hairy. Antennae equal to one half the length of costa of fore wing. Fore wing with lower discocellular vein curved. Hind with with vein Sc+R_1 ending, as usual, at apex ***Penthema*** Doubleday.

VIII. Genus ***Calinaga*** Moore

1857. *Calinaga* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 162.

Of the three species of this genus occurring in India, only *Calinaga buddha* Moore is dealt with from Nagaland.

10. ***Calinaga buddha brahma*** Butler (Freak)

1851. *Calinaga brahma* Butler, *Ann. Mag. nat Hist* (5) **16** : 309.

1905. *Calinaga buddha* race *brahma* Butler : Bingham, *Fauna of British India*, (Butterflies), **2** : 466.

1911. *Calinaga brahma* Butler : Tytler, *J. Bombay nat Hist. Soc.*, **21**(1) : 64.

1932. *Calinaga buddha brahma* Butler : Evans, *Identification of Indian Butterflies* : 149.

1994. *Calinaga brahma* Butler : Varshney, *Oriental Insects*, **28** : 163.

Material examined : Nil.

Forewing expanse : 90-105mm.

Distribution : India : Nagaland.

Remarks : Tytler (1911) collected five males and a female of this species in a garden at Kohima in April and May. This subspecies differs from *C. buddha buddha* Moore found from Pakistan (Murree) to India (Uttar Pradesh- Kumaon), *C. buddha gautama* Moore in Sikkim and *C. buddha aborica* Tytler in Abor Valley by the upperside of whole thorax being orange, dark with reduced pale markings and hind wing underside pale slate. Varshney (1994) treated the subspecies *C. buddha buddha* Moore, *C. buddha gautama* Moore, *C. buddha aborica* Tytler as distinct species *C. buddha* Moore, *C. gautama* Moore, *C. aborica* Tytler, respectively, without any reference to *Calinaga buddha brahma* Butler.

IX. Genus ***Penthema*** Doubleday

1848. *Penthema* Doubleday, *Gen. Diurn. Lep.*, **(2)** : pl. 39, fig. 3

This genus is known in India by a single species, *Penthema lisarda* (Doubleday).

11. ***Penthema lisarda lisarda*** (Doubleday) (Yellow Kaiser)

1845. *Diadema lisarda* Doubleday, *Ann. Mag. nat. Hist.* (1), **16** : 233.

1911. *Penthema lisarda* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 63.

1932. *Penthema lisarda lisarda* (Doubleday) : *Identification of Indian Butterflies* : 149.

1994. *Penthema lisarda* (Doubleday) : Varshney, *Oriental Insects*, **28** : 163.

Material examined : Nil.

Forewing length : 63-65 mm.

Distribution : India : Nagaland, Sikkim, Manipur and Meghalaya.

Remarks : Only the nominate subspecies occurs in India. This nominate subspecies previously known from Nagaland is rare in status and it has been included in Schedule-II (Part-2) of the Indian WildlIfe (Protection) Act.

Subfamily ACRAEINAE

Wings sparsely scaled and spotted; cell of fore wing and hind wing closed by tubular veins; hind wing flat; and fore legs imperfect in both sexes.

The subfamily is represented by a single genus *Acraea* Fabricius in India.

X. Genus ***Acraea*** Fabricius

1807. *Acraea* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 284.

This genus is represented in India by two species, viz., *Acraea violae* (Fabricius) and *A. issoria* (Huebner), and the latter is dealt with from Nagaland.

12. ***Acraea issoria issoria*** (Huebner) (Yellow Coster)

1818. *Telchinia issoria* Huebner, *Zutr. Z. Samml. exot. Schmett.*, **1** : 27.

1911. *Pareba vesta* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 64.

1947. *Acraea issoria issoria* (Huebner) : Talbot, *Fauna of British India, (Butterflies)*, **2** : 113.

Material examined : Nagaland : Mon Mon District, near Tennang river and arround Ekmist. 1 ex., 4.vi.1990, (Coll. Y.P.Sinha and Party); Officer Colony, 4 exs., 5.vi.1990, 7.ix.1991; Pulebadze, Wildlife Sanctuary, alt. 1490 m. 12 exs., 14.9.1994. Kohima District, Science College area Kohima, alt. 500 m. 5 exs., 15.ix.1994, (Coll. B.Mitra and Party); Kohima Forest B.Garden 1 ex., 22.ix.1994, (P.H.Roy and Party).

Forewing length : 35-38 mm.

Distribution : India : Nagaland (Kohima, Mon Mon), Assam, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan and Myanmar.

Remarks : The nominate subspecies differs

from its counterpart, *A. issoria anomala* Kollar from Kulu (Jammu & Kashmir) to Kumaon (Uttaranchal) mainly by its larger wing expanse. It exhibits sexual dimorphism as black markings on upperside of fore wing seen in male are broadened in female.

Subfamily NYMPHALINAE

Butterflies of medium to large size; antennae always at best partly scaled, with two grooves separated by a central ridge and bordered by two lateral carinae on the ventral surface; wings with terminal margins may be scalloped, crenulate or dentate, hind wing may be caudate; fore tarsi imperfect, brush like and useless for walking in both sexes, although usually longer and several segmented, often spined and rarely clawed in female; male secondary sexual characters not strongly developed except in Heliconiini.

These nymphalids have ground colour of wings bright brown or yellowish brown, some with striking or beautiful colour patterns. These are sun lovers and are often seen at flowering plants in the garden and forest. Some larger species are attracted by over ripe fruits, toddy, excreta of animals, etc.

There is no accord on the higher classification of the subfamily Nymphalinae but the widely accepted arrangement into tribes has been followed after Corbet and Pendleburry (1992). The following tribes are represented in Sikkim.

Tribe **Biblidini**
Tribe **Heliconiini**
Tribe **Nymphalini**
Tribe **Cyrestini**
Tribe **Limenitidini**
Tribe **Pseudergolini**
Tribe **Apaturini**

Tribe Biblidini

The tribe is represented in India by two genera, viz., *Ariadne* Horsfield and *Byblia* Huebner of which the former is treated from Nagaland.

XI Genus *Ariadne* Horsfield

1829. Ariadne Horsfield, *Descr. Cat Lep. Ins. Mus. East India Coy.*, (2) : 33.

This genus is known in India by two species, viz., *Ariadne ariadne* (Linnaeus) and *A. merione* (Cramer) and both are reported from Nagaland

Key to species

Upperside of wings with a single discal line just beyond cell, being regular. Outer margin of fore wing concave between vein Cu_{1a} and M_2 ..... *ariadne* (Linnaeus)

– Upperside of wings with a double discal line just beyond cell, being highly irregular. Outer margin of fore wing faintly concave between veins Cu_{1a} and M_2 ..... *merione* (Cramer)

13. *Ariadne ariadne pallidior* (Fruhstorfer) (Angled Castor)

1911. *Ergolis pallidior* Fruhstorfer, *Berl. Ent. Zschr.*, **44** : 90.

1911. *Ergolis ariadne* Johanssen: Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 64.

1932. *Ergolis ariadne pallidior* (Fruhstorfer) : Evans, *Identification of Indian Butterflies* : 149.

2003. *Ergolis ariadne pallidior* (Fruhstorfer) : *Zool. Surv. India, Fauna of Sikkim, State fauna Series* **9**(Part-3) : 34.

Material examined : Nagaland : Dimapur District, Ranga Pahar, 1 ex., 18.3.1997, (Coll. A. K. Hazra and party).

Forewing length : 23-25 mm.

Distribution : India : Nagaland (Dimapur District), Arunachal Pradesh, Sikkim and Uttar Pradesh.

Elsewhere : Myanmar.

Remarks : This subspecies differs from its conterpart, *A ariadne indica* (Moore) from South India to Bengal by upperside of hind wing with veins M_2 and M_1 not conspicuously white and discal lines run to costa. Tytler (1911) mentioned that the subspecies was not uncommon at low elevations in February.

14. ***Ariadne merione assama*** (Evans)

1911. *Ergolis merione* Cramer: Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 64.

1924. *Ergolis merione assama* Evans, *J. Bombay nat. Hist. Soc.*, **30** : 95.

1932. *Ariadne merione assama* (Evans):, Evans, *Identification of Indian Butterflies* : 149.

Material examined : Nil.

Forewing length : 29 mm.

Distribution : India, Nagaland, Sikkim, Arunachal Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : This subspecies prefers forested areas and is distinguished from the nominate subpecies (South India to Maharashtra) by underside of hind wing with upper part of disc being not darkened and bands distinct, and from *A. merione tapestrina* (Moore) (Central Provinces to Orissa and Jammu & Kashmir to Uttar Pradesh) by its large wing expanse of 50-60 mm and dry season form never variegated. Tytler (1911) collected a single female specimen at an altitude of 915m near Kohima.

Tribe **Heliconiini**

Labial palpi with second segment inflated. Fore wing vein not dilated at base, R_2 arising from R_5 or cell, apex of cell and origin of Cu_{1a} equidistant from wing base or former more distant; hind wing precostal vein arising beyond origin of vein.

This tribe represented in India by eight genera of which seven are dealt with from Nagaland.

Key to genera

1. Tarsal claws very long and without appendages ..... ***Cethosia*** Fabricius
– Tarsal claws normal and with appendages... 2
2. Fore wing with lower discocellular vein, if present, ending beyond origin of vein Cu_{1a}. ..... ***Argynnis*** Fabricius
– Fore wing with lower discocellular vein ending before/at or only just beyond origin of vein Cu_{1a} 3
3. Fore wing vein R_2 arising from cell, R_3 ending on apex behind a line joining ends of veins R_4, R_3 and M_1 4
– Fore wing vein R_2 arising from R_5, R_3 ending on costa and R_2 behind a line joining ends of R_5 and M_1 5
4. Antennae longer than half the length of costa, club gradual. Fore wing with lower discocellular vein ending at or just beyond origin of vein Cu_{1a} ..... ***Vindula*** Hemming
– Antennae equal to half the length of costa, slender and clubless. Fore wing with lower discocellular vein ending before origin of vein Cu_{1a} ..... ***Cirrochroa*** Doubleday
5. Antennal club absent. Fore wing vein R_2 arising well beyond origin of R_5, R_4 very short; hind wing cell open ..... ***Cupha*** Billberg
– Antennal club moderate. Fore wing vein R_2 arising just beyond origin of vein R_5; hind wing cell closed 6
6. Hind wing with a spur from the angle of vein M_3 towards M_2 ..... ***Vagrans*** Hemming
– Hind wing without any spur from the angle of vein M_3 ..... ***Phalanta*** Horsfield

XII genus ***Cethosia*** Fabricius

1806. *Cethosia* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 280.

This genus is represented in India by three species of which two, *viz.*, *Cethosia cyane* (Drury) and *C. biblis* (Drury) are known from Nagaland.

Key to species

Upperside of fore wing, in both sexes, marked with a broad oblique discal white or yellowish band ..... *cyane* (Drury)
– Upperside of fore wing, in either sex, without a broad oblique discal white or yellowish band ..... *biblis* (Drury)

15. *Cethosia cyane* (Drury) (Leopard Lacewing)

1770. *Papilio* cyane Drury, *Ill. exot. Ent.*, **1** : Pl. 4. fig. 1.

1911. *Cethosia cyane* (Drury) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 63.

1932. *Cethosia cyane* (Drury) : Evans, *Identification of Indian Butterflies*: 149.

1997. *Cethosia cyane* (Drury) : Gupta, *Zool. Surv. India, Fauna of West Bengal, State Fauna Series* **3** (Part-7) : 563.

Material examined : Nagaland : Zunhebeto District, Old Juluchie, 45 km. S. E. of Jharnapani, alt. 410 m. 1 ex., 2.1.1990 (Coll. J.P. Sinha and Party); DimapurDistrict, Hanki R.F. 1 ex., 18.3.1997, (Coll. A.K. Hazra and Party).

Forewing length : 40-42 mm.

Distribution : India : Nagaland (Dimapur District), Sikkim, Arunachal Pradesh, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : Earlier, this species was recorded from Nagaland by Tytler (1911). Evans (1932) mentioned its status 'not rare.'

16. *Cethosia biblis tisamena* Fruhstorfer (Red Lacewing)

1909. *Cethosia tisamena* Fruhstorfer, In Seitz *Macrolepidoptera of the world*, **9** : 725.

1911. *Cethosia biblis* Drury : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 63.

1932. *Cethosia biblis tisamena* Fruhstorfer : Evans, *Identification of Indian Butterflies*: 149.

1997. *Cethosia biblis tisamena* : Gupta, *Zool. Surv. India, Fauna of West Bengal, State Fauna Series* **3** (Part-7) : 563.

Material examined: Nagaland : Zunhebeto District, Old Juluchie, 45 km. S. E. of Jharnapani, alt. 410 m. 1 ex., 2.1.1990 (Coll. J.P. Sinha and Party); Zunhebeto District, Settsu and arround , 1 ex., 12.7.1991, (Coll. Y.P. Sinha and Party); Mokokchung District, Minkong Protec. Forest alt. 1350 m. 1 ex., 22.3.1994, (Coll. P. Mukharjee); Pulebadze, W.L. Sanctuary, alt. 1490 m., 3 exs., 14.9.1994, (Coll. B. Mitra and Party). Sungkomen, alt. 1260 m. 1 ex., 18.10.1998, (Coll. T. K. Pal and Party) Kohima District, Kohima Forest B. Garden, 2 exs., 22.9.1994, (Coll. P.H. Roy and Party); Kohima above Forest Colony, alt. 1470 m. 1 ex., 11.10.1998. (Coll. T.K. Pal and Party). Phek District, Surhatra, 10 km-O-Phek, alt. 1200 m., 1 ex., 28.10.1998, (Coll. T.K. Pal and Party).

Forewing length : 31-38 mm.

Distribution : India : Nagaland (Kohima, Mokokchung, Phek, Zunhebeto Districts), Sikkim, Arunachal Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : Previously, occurrence of this subspecies was reprted by Tytler (1911). This subspecies is distinguished from its two counterparts, *viz.*, *C. biblis andamana* Stichel found in Andaman, *C. biblis nicobarica* Felder occurring in Nicobars by upperside of fore wing bearing a complete discal row of white horseshoes from area Cu_{1b} or Cu_{1a} to M_1; female varying from red, as in male to moss green. Its status is not rare.

XIII. Genus *Argynnis* Fabricius

1807. *Agrynnis* Fabricius, *Mag. f. Insekteni* (Illiger) **6**: 283

Of the 14 species occurring in India, only two, viz., *Argynnis hyperbius* (Linnaeus) and *A. childreni* Gray are dealt with from Nagaland.

Underside of hind wing ochreous and olive brown ..... *hyperbius* (Linnaeus)

– Underside of hind wing dark green .... *childreni* Gray

17. *Argynnis hyperbius hyperbius* (Linnaeus) (Indian Fritillary)

1764. *Papilio hyperbius* Linnaeus, *Amoen acad.*, **6** : 408. female.

1882. *Argynnis (Acidalia) niphe* Linnaeus : De Nicéville, *J. Asiat. Soc. Beng.*, **51(2-3)** : 57.

1911. *Argynnis hyperbius* Johanssen: Tytler, *J. Bombay nat Hist. Soc.*, **21(1)**: 64.

1932. *Argynnis hyperbius hyperbius* (Linnaeus) : Evans, *Identification of Indian Butterflies*, : 182.

Material examined : Nagaland : Mokokchung

District, Sungkomen, alt. 1260 m. 1 ex., 18.10.1998, (Coll. T.K. Pal and Party).

Forewing length : 35-37 mm.

Distribution : India : Nagaland (Mokokchung District) and, Sikkim.

Elsewhere : North Myanmar and Pakistan.

Remarks : This nominate subspecies is distinguished from other two Indian subspp., viz., *castesi* Oberthuer found in Tranvancore and Palni hills, *hyrida* Evans occurring in Nilgiris by the much produced apex of fore wing in male and in female termen concave is in the middle. Corbet & Pendlebury (1992), Haribal (1992) and Varshney (1994) treated this taxon under the genus *Argyreus* Scopoli.

18. ***Argynnis childreni childreni*** Gray (Large Silver Stripe)

1831. *Argynnis childreni* Gray, *Zool. Misc.*, **1** : 33.

1911. *Argynnis childreni* Gray : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 64.

1932. *Argynnis childreni childreni* : Evans, *Identification of Indian butterflies*, : 182.

Material examined : Nagaland : Zunhebeto District, Settsu and arround 2 exs., 12.7.1991, (Coll. Y. P. Sinha and Party); Reg. No. 34649, 1 ex., 9.7.1997.

Forewing length : 42 mm.

Distribution : India : Nagaland (Zunhebeto District) Arunachal Pradesh, Uttar Pradesh and West Bengal.

Elsewhere : North Myanmar.

Remarks : This nominate subspecies is distinguished from *A. childreni sakontala* Kollar [Pakistan (Chitral)—India (Kumaon)] by its wing expanse more and upperside of hind wing with marginal blue suffusion broad and prominent. Varshney (1994) treated this species under the genus *Childrena* Hemming.

XIV Genus ***Vindula*** Hemming

1934. *Vindula* Hemming, *Entomologist*, **67** : 77.

Only a single species, *Vindula erota* (Fabricius) occurring in India is reported from Nagaland.

19. ***Vindula erota erota*** (Fabricius) (Cruiser)

1773. *Papilio erota* Fabricius, *Ent. Syst.*, **3** (1) : 76.

1911. *Cynthia erota* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 63.

1932. *Cynthia erota* (Fabricius) : Evans, *Identification of Indian Butterflies* : 149.

1997. *Vindula erota* (Fabricius) : Gupta, *Zool. Surv. India, Fauna of West Bengal, State Fauna Series*, **3** (Part-7) : 567.

Material examined : Nil.

Forewing length : 46-48 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : The nomimate subspecies differs from its two counterparts *viz., V. erota saloma* Swinhoe found in South India and *V. erota pallida* Staudinger occurring in Andamans by its seasonal forms very-sharply marked, in female hind wing upperside bases green, discal band running from costa to vein Cu_{1b}, marginal area broad and ochreous brown. Tytler (1911) reported occurrence of the nominate subspecies in Nagaland.

XV. Genus ***Cirrochroa*** Doubleday

1847. *Cirrochroa* Doubleday, *Gen. duirn. Lep.* (1) : pl. 21, fig. 2.

Of the four species of this genus occurring in India, two *viz., C. aoris* Doubleday and *C. tyche* Felder are dealt with from Nagaland.

Key to species

– Fore wing with apex truncated .... *aoris* Doubleday

– Forewing with apex rounded ... *tyche* Felder

20. ***Cirrochroa aoris aoris*** Doubleday (Large Yeoman)

1847. *Cirrochroa aoris* Doubleday, In Doubleday, *Gen. diurn. Lep,.* : (1) 157, pl. 21, fig. 2, female.

1911. *Cirrochroa aoris* Doubleday : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 64.

1932. *Cirrochroa aoris aoris* Doubleday : Evans, *Identification of Indian Butterflies* : 149.

1997. *Cirrochroa aoris aoris* : Gupta, *Zool. Surv. India, Fauna of West Bengal, State Fauna Series*, 3(Part-7) : 568.

Material examined : Nagaland : Kohima District, Ruzephema, 16 km. North-East of Jharnapani, alt. 575 m. 1ex., 2.1.1990, (Coll. J. P. Sati and Party).

Forewing length : 37-40 mm.

Distribution : India : Nagaland (Kohima District), Sikkim Arunachal Pradesh and West Bengal.

Remarks : Only the nominate subspecies occurring in India was recorded from Nagaland by Tytler (1911).

21. ***Cirrochroa tyche mithila*** Moore (Common Yeoman)

1872. *Cirrochroa mithila* Moore, *Proc. zool. Soc. London.*: 558.

1911. *Cirrochroa mithila* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 64.

1932. *Cirrochroa tyche mithila* : Evans, *Identification of Indian Butterflies*, : 188.

Material examined : Nil.

Wing expanse : 65-75 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Meghalaya, Sikkim and West Bengal.

Elsewhere : Myanmar.

Remarks : Tytler (1911) observed it in Nagaland. Varshney (1994) treated *tyche* (Cramer) and *mithila* Moore as separate species under the genus *Cirrochroa*.

XVI Genus ***Cupha*** Billberg

1820. *Cupha* Billberg, *Enum. Ins. Mus. Billb.*, : 79.

Only a single species, *Cupha erymanthis* (Drury) occurring in India is dealt with from Nagaland.

22. ***Cupha erymanthis lotis*** Sulzer (Rustic)

1776. *Cupha lotis* Sulzer, *Gesch. Insect.* : Pl. 16, fig. 6.

1911. *Cupha erymanthis* (Drury) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 64.

1932. *Cupha erymanthis lotis* Sulzer : Evans, *Identification of Indian Butterflies* : 149.

Material examined : Nil.

Forewing length : 26 mm.

Distribution : India : Nagaland, Sikkim, Uttar Pradesh (Mussorie) to Arunachal Pradesh.

Elsewhere : Myammar.

Remarks : This subspecies is distinguished from other three subspecies, *viz*., *maja* Fruhstorfer found in South India, *andamanica* Moore occurring in Andamans and *nicobarica* Felder confined to Nicobars by the upperside of the fore wing with a black spot in space $1_A + 2_A$ much larger than spots in spaces Cu_{1b} and Cu_{1a}, yellow spots on black apex; underside markings in cells pale and conjoined.

XVII. Genus ***Vagrans*** Hemming

1934. *Vagrans* Hemming, *Entomologist*, **67** : 77.

This monotypic genus is represented in India by a single species, *Vagrans egista* (Cramer).

23. ***Vagrans egista sinha*** (Kollar) (Vagrant)

1844. *Terinas sinha* Kollar, *Huegel's Kaschmir*, **4** (2) : 438.

1911. *Issoria sinha* (Kollar): Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 63.

1932. *Issoria sinha* (Kollar) : Evans, *Identification of Indian Butterflies* : 149.

1994. *Vagrans egista sinha* (Kollar) : Varshney, *Oriental Insects*, **28** : 172.

Material examined : Nil.

Wing expanse : 55-65 mm.

Distribution : India : Nagaland, Sikkim, "Bengal" and Orissa.

Elsewhere : Myanmar.

Remarks : Evans (1932)) treated this taxon under the genus *Issoria* Moore.

XVIII. Genus ***Phalanta*** Horsfield

1829. *Phalanta* Horsfield, *Descr., Cat. Lep. Ins. Mus. East India Coy.*, (2) : Pl. 17.

Of the two species, viz., *Phalanta phalantha* (Drury) and *P. alcippe* (Cramer) of this genus found in India, the former is dealt with from Nagaland.

24. ***Phalanta phalantha phalantha*** (Drury) (Common Leopard)

1770. *Papilio phalantha* Drury, *Exot. Inst.*, **1** : 41, pl. 21. figs. 1, 2.

1911. *Atella phalantha* (Drury) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 63.

1932. *Atella phalanta* (Drury) : Evans, *Identification of Indian Butterflies*, : 187.

1997. *Phalanta phalantha phalantha* (Drury) : Gupta, *Zool. Surv. India, Fauna of West Bengal, State Fauna Series*, 3(Part-7) : 569.

Material examined : Nil.

Forewing length : 25–26 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, Madhya Pradesh, Maharasthra, Nicobar Island, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Myamnar and Pakistan.

Remarks : Only the nominate subspecies known in India was reported from Nagaland by Tytler (1911).

Tribe **Nymphalini**

Fore wing termen and dorsum subequal, fore wing vein Sc not dilated at base, R_2 arising from end cell, R_5 equidistant between R_2 and M_1 or only a little closer to M_1, R_4 arising well beyond origin of R_1 and ending at apex or termen. Hind wing precostal vein arising beyond origin of Sc. Female fore tarsus normal and not clawed.

The tribe is represented in India by 11 genera of which 10 are dealt with from Nagaland.

Key to genera

1. Palpi smooth and abnormally long 2
– Palpi not abnormally long and usually more or less hairy 5
2. Hind wing not tailed.. ***Hypolimnas*** Huebner
– Hind wing tailed 3
3. Hind wing shortly tailed at vein 4 and lobed at vein 1 ..... ***Rhinopalpa*** Felder
– Hind wing with along tail at vein only 4
4. Cells open in fore- and hind wing ..... ***Doleschallia*** Felder
– Cells closed in fore- and hind wing ..... ***Kallima*** Boisduval
5. Fore wing with endings of veins 6, 7, 8, and 9 in a straight line 6
– Fore wing with endings of veins 6, 7, 8, and 9 not in a straight line 9
6. Antennae longer than half the length of the costa, club gradual or sharply spatulate. Eyes smooth. Palpi smooth. Cells open in forewing and hind wing ..... ***Junonia*** Huebner
– Antennae longer than half the length of the costa, club gradual or sharply spatulate. Eyes smooth. Palpi smooth. Cells open in forewing and hind wing 7
7. Hind wing termen produced at M3 ..... ***Kaniska*** Moore
– Hind wing termen not produced and angled at M3 8
8. Upperside pinkish red, base golden brown, fore wing with three central black spots on the red area. ..... ***Cynthia*** Fabricius
– Upperside dark brown with a red central band on fore wing and a black spotted red marginal band on underside of hing wing ..... ***Vanessa*** Fabricius
9. Palpi hairy ..... ***Araschnia*** Huebner
– Palpi smooth ..... ***Symbrenthia*** Huebner

XIX Genus ***Hypolimnas*** Huebner

1819. *Hypolimnas* Huebner, *Verz. bekannt. Schmett.*, (3) : 45.

This genus is represented in India by two species, *viz.*, *Hypolimnas bolina* (Linnaeus) and *H. misippus* (Linnaeus), of which the former is dealt with from Nagaland.

25. ***Hypolimnas bolina*** (Linnaeus) (Great Eggfly)

1758. *Papilio bolina* (Linnaeus), *Syst. Nat.* (ed. 10), 1 : 479.

1911. *Hypolimnas bolina* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 54.

1932. *Hypolimnas bolina* (Linnaeus) : Evans, *Identification of Indian Butterflies* : 149.

Material examined : Nil.

Forewing length : 38-48 mm.

Distribution : India : Nagaland, Sikkim, Andaman & Nicobar Islands, Arunachal Pradesh, Madhaya Pradesh, Meghalaya, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar, Pakistan and Sri Lanka.

Remarks : Tytler (1911) recorded species from Nagaland. Evans (1932) and Wynter –Blyth (1957) considered its status common but in 1981 this species was listed in a title 'Rare and Endangered Animals of India' issued by the Director, Zoological Survery of India.

XX. Genus ***Rhinopalpa*** Felder

1860. *Rhinopalpa* Felder, *Wien. Ent. Monatsch.* 4 : 399.

This genus is represented in India by a single species, *Rhinopalpa polynice* Cramer which is treated from Nagaland.

26. ***Rhinopalpa polynice birmana*** Fruhstorfer

1897. *Rhinopalpa polynice birmana* Fruhstorfer, *Berl. Ent. Zschr.* : 331.

1911. *Rhinopalpa polynice birmana* Fruhstorfer : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 63.

1932. *Rhinopalpa polynice birmana* Fruhstorfer : Evans, *Identification of Indian Butterflies* : 174.

Material examined : Nil.

Forewing length : 26–28 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : Only this subspecies occurring in India was earlier reported from Nagaland by Tytler (1911).

XXI. Genus ***Doleschallia*** Felder

1861. *Doleschallia* Felder, *Ein Neues Lep.*, : 14.

This genus is represented in India by a single species, *Doleschallia bisaltide* (Cramer).

27. ***Doleschallia bisaltide indica*** Moore (Autumn Leaf)

1900. *Doleschallia indica* Moore, *Lep. Ind.*, **4** : 155, pl. 336, fig. 1, 1a-1c, & 2, 2a, 2b, male, female, larve and pupa.

1911. *Doleschallia continentalis* Fruhstorfer : Tytler, *J Bombay nat. Hist. Soc.*, **21(1)** : 63.

1932. *Doleschallia bisaltide indica* Moore : Evans, *Identification of Indian Butterflies*: 149.

1992. *Doleschallia bisaltide indica* Moore : Haribal, *Butterflies of Sikkim Himalaya* : 169.

Material examined : Nagaland : Kohima District, Old juluchie, 45 km. South East o Jharnapani, alt. 410 m. 1 ex., 2.1.1990, (Coll. J. P. Sinha and party).

Forewing length : 38-40 mm.

Distribution : India : Nagaland (Kohima District), Sikkim and Arunachal Pradesh.

Elsewhere : Myanmar.

Remarks : Tytler (1911) mentioned its occurrence in Nagaland.

XXII Genus ***Kallima*** Doubleday

1849. *Kallima* Doubleday, In Doubleday, Westwood & Hewitson, *Gen. diurn. (paralekta) Lep.*, : 324, pl 52, fig. 2.3..

This genus is represented in India by four species of which two–*Kallima inachus*

(Boisduval) and *K. alompra* Moore are dealt with from Nagaland.

Key to species

- Upperside fore wing with dark basal area extendingbeyond end cell .... *inachus* Boisduval
- Upperside fore wing the dark basal area not extending beyond end cell .... *alompra* Moore

28. *Kallima inachus inachus* (Boisduval) (Orange Oakleaf)

1836. *Paphia inachus* Boisduval, In Crochard's ed., *Curv. Reg. Anim. Ins.* **2** : pl. 139, fig. 3 (female).

1911. *Kallima inachus* (Boisduval) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 63.

1992. *Kallima inachus inachus* (Boisduval) : Haribal, *Butterflies of Sikkim Himalaya* : 169.

Material examined : Nil.

Forewing length : 39-41 mm.

Distribution : India : Nagaland, Sikkim and Assam.

Remarks : This nominate subspecies is distinct from its counterpart, *K. inachus huegeli* (Kollar) found from (Jammu & Kashmir) Kashmir to (Uttaranchal) Kumaon inhaving dry season form not much paler than the wet season form which is darker.

29. *Kallima alompra* Moore (Scarce Blue Oakleaf)

1879. *Kallima alompra* Moore, *Trans. ent. Soc. Lond.*, : 14.

1886. *Kallima knyvetti* De Nicèville, *Butterflies of India, Burmah and Ceylon*, **2** : 267

1911. *Kallima knyvetti* De Nicèville : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 63.

1932. *Kallima alompra* Moore : *Identification of Indian Butterflies* : 176.

Material examined : Nil.

Wing expanse : 95-110 mm.

Distribution : Nagaland, Sikkim.

Elsewhere : Myanmar.

Remarks : Previously, this species was recorded from Nagaland by Tytler (1911).

XXIII Genus *Junonia* Huebner

1816. *Junonia* Huebner, *Verz., beck. Sehmett.* : 34.

Six species representing this genus in India are dealt with from Nagaland.

Key to species

1. Upperside of fore wing with a black spot of variegated ocellus in space Cu_{1b} 2
- Upperside of fore wing without any ocellus in space Cu_{1b} ..... *iphita* (Cramer)
2. Upperside of hind wing with a black spot in space Cu_{1b} ..... *hierta* (Fabricius)
- Upperside of hind wing with a variegated ocellus in space Cu_{1b} 3
3. Upperside of fore wing and hind wing with submarginal ocelli in all spaces .... *atlites* (Linnaeus)
- Upperside of fore wing and hind wing without submarginal ocelli in space Cu_{1a} and M_1 4
4. Upperside of fore wing with a whitish subapical band ..... *orithya* (Linnaeus)
- Upperside of fore wing without any whitish subapical band 5
5. Uperside of fore wing brown with pale yellow spots ..... *lemonias* (Linnaeus)
- Upperside of fore wing fulvous orange and without pale yellow spots .... *almana* (Linnaeus)

30. *Junonia iphita iphita* (Cramer) (Chocolate Pansy)

1779. *Papilio iphita* Cramer, *Pap. exot.*, **3** : pl. 209, fig. C, D.

1881. *Junonia iphita* (Cramer), De Nicèville, *J. Asiat. Soc. Beng.*, **50** (1) : 50.

1882. *Precis iphita* (Cramer) : De Niceville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 57.

1911. *Junonia iphita* (Cramer) : Tytler, *J. Bombay nat. Hist. Soc.*, **21 (1)** : 61.

1932. *Precis iphita iphita* (Cramer) : Evans, *Identification of Indian Butterflies* : 149.

1992. *Junonia iphita* (Cramer) : Corbet & Pendlebury, *Butterflies of Malaya Peninuala* : 159.

Material examined : Nil.

Forewing length : 29-30 mm.

Distribution : India : Nagaland. Sikkim, Arunachal Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : This nominate subspecies differs from its two other counterparts, *viz., siccata* Stichel found from (Jammu & Kashmir) Kashmir to (Uttaranchal) Kumaon and *pluviatalis* Fruhstorfer occurring in Central and South India, Maldives and Sri Lanka, by its larger wing expanse, darker colouration and dry season form may be variegated.

31. ***Junonia hierta magna*** (Evans) (Yellow Pansy)

1911. *Junonia hierta* Fabricius : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 62.

1926 *Precis hierta magna* Evans, *J. Bombay nat. Hist. Soc.*, **31** : 715.

1932. *Precis hierta magna* Evans : Evans, *Identification of Indian Butterflies* : 149.

1994 *Junonia hierta* Fabricius : Varshney, *Oriental Insects*, **28** : 176.

Material examined : Nagaland : Mokokchung District, Tulu F.R.H. campus, 1 ex., 28.3.1994, (Coll. P. Mukharjee and party).

Forewing length : 24-26 mm.

Distribution : India : Nagaland (Mokokchung), Sikkim, Andaman & Nicobar Islands and Arunachal Pradesh.

Elsewhere : Myanmar.

Remarks : This subspecies differs from the nominate subspecies by larger wing expanse and brighter colouration.

32. ***Junonia atlites*** (Linnaeus) (Grey Pansy)

1763. *Papilio atlites* Linnaeus, *Centur. Ans.*, : 24.

1911. *Junonia atlites* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 61.

1932. *Precis atlites atlites* (Linnaeus):,Evans, *Identification of Indian Butterflies*: 149.

1994. *Junonia atlites* (Linnaeus) : Varshney, *Oriental Insects*, **28** : 176.

Material examined : Nagaland : Zunhebeto District, Hoshepu village and arround. 1 ex., 25.7.1991, (Coll. Y. P. Sinha and Party).

Forewing length : 26 mm.

Distribution : India : Nagaland (Zunhebeto), Sikkim and widely distributed in India.

Remarks : Tytler (1911) recorded this species from Nagaland.

33. ***Junonia orithya ocyale*** (Huebner) (Blue Pansy)

1819. *Papilio ocyale* Huebner, *Verz., bekannt. Schmett.*, 34.

1911. *Junonia orithya* (Linnaeus) : Tytler, *J. Bombay nat Hist. Soc.*, **21(1)** : 61.

1932. *Precis orithya ocyale* (Huebner) : Evans, *Identification of Indian Butterflies* : 149.

1994. *Junonia orithya* (Linnaeus) : Varshney, *Oriental Insects*, **28** : 176.

Material examined : Nagaland : Zunhebeto District, Hoshepu village, 1ex, no date, *(De Nicèville Coll.)*.

Forewing length : 22 mm.

Distribution : India : Nagaland (Zunhebeto), Sikkim, Andaman & Nicobar Islands, Arunachal Pradesh, West Bengal.

Elsewhere : Myanmar.

Remarks : This subspecies differs from its counterpart, *J. orithya swinhoei* Butler found in other parts of India, Baluchistan and Sri Lanka, by its wing expanse larger and underside darker.

34. *Junonia lemonias lemonias* (Linnaeus) (Lemon Pansy)

1758. *Papilio lemonias* Linnaeus, *Syst. Nat.* (ed. **10**) : 473.

1911. *Junnonia lemonias* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 61.

1932. *Precis lemonias lemonias* (Linnaeus) : Evans, *Identification of Indian Butterflies* : 149.

1994. *Junonia lemonias* (Linnaeus) : Varshney, *Oriental Insects*, **28** : 176.

Material examined : Nil.

Wing expanse : 50-60 mm.

Distribution : India : Nagaland, Sikkim and Arunachal Pradesh.

Elsewhere : Myanmar.

Remarks : This nominate subspecies differs from other two subspp. *viz.*, *vaisya* Fruhstorfer occurring in Central and South India and Sri Lanka, and *persicaria* Fruhstorfer found from Kashmir (Jammu & Kashmir) to Kumaon (Uttaranchal), by wing expanse larger, very variable dry season form and underside often rosy.

35. *Junonia almana almana* (Linnaeus) (Peacock Pansy)

1758. *Papilio almana* Linnaeus, *Syst.. Nat.* (ed. 10) : 472.

1911. *Junonia almana* (Linnaeus) Doubleday : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 62.

1932. *Precis almana almana* (Linnaeus) : Evans, *Identification of Indian Butterflies* : 149.

1992. *Junonia almana* (Linnaeus) : Varshney, *Oriental Insects*, **28** : 176.

Material examined : Nagaland: Zunhebeto District, Akhulota , 3 exs ., 11.7.1991, (Coll. Y.P. Sinha and Party); Hoshepu village and arround. 1 ex., 25.7.1991, (Coll. Y. P. Sinha and Party); Mokokchung District, Yisemyong Agric. Res. Centre Compels, 16 km. from Mokokchung, alt. 1325 m. 1 ex., 21.3. 1994, (Coll. P. Mukharjee and Party); 45 km. North of Changuta, on the way to Mokokchung from Tuarsang, alt., 945m 1 ex., 22.3. 1998, (Coll. T. K. Pal and Party).

Forewing length : 25 mm.

Distribution : India : Nagaland (Mokokchung, Zunhebeto), Sikkim and widely distributed in India.

Elsewhere : Myanmar and Sri Lanka.

Remarks : This nominate subspecies differs from its counterpart *nicobariensis* Felder found in Car Nicobar mainly by its larger wing expanse.

XXIV. Genus *Kaniska* Moore

1899. *Kaniska* Moore, *Lep. Ind.*, **2** (14) : 42.

This genus is represented in India by a single species *Kaniska canace* (Linnaeus)

36. *Kaniska canace canace* (Linnaeus) (Blue Admirable)

1763. *Papilio canace* Linnaeus, *Centur. In.*, : 23.

1911. *Vanessa canace* (Johanssen): Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)**: 62.

1932. Vanessa canace canace (Linnaeus) : Evans, *Identification of Indian Butterflies*, : 178.

1992. *Kaniska canace canace* (Linnaeus) : Haribal, *Butterflies of Sikkim Himalaya*, : 166

Material examined : Nil.

Forewing length : 31-32 mm.

Distribution : India : Nagaland, Sikkim, Meghalaya, Nagaland and West Bengal.

Elsewhere : Myanmar.

Remarks : This nominate subspecies differs from other two Indian subspp., *viz.*, *himalaya* Evans found from Pakistan (Chitral) to India (Uttaranchal: Kumaon) and *viridis* Evans occurring in South India by wing expanse larger, postdiscal band blue and wider.

XXV. Genus *Cynthia* Fabricius

1807. *Cynthia* Fabricius, *Mag. f. Insektenk* (Illiger), **6**: 281.

Only a single species, *Cynthia cardui* (Linnaeus) represents this genus in India.

37. *Cynthia cardui* (Linnaeus) (Painted Lady)

1758. *Papilio cardui* Linnaeus, *Syst. Nat.* (ed. 10), **1** : 475.

1883. *Pyrameis cardui* (Linnaeus) : De Nicèville, *J. Asiat. Soc. Beng.*, **52** (2-4) : 94.

1911. *Vanessa cardui* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 62.

1932. *Vanessa cardui* (Linnaeus) : Evans, *Identification of Indian Butterflies* : 149.

1997. *Cynthia cardui* (Linnaeus) : Gupta,. *Zool. Surv. India, Fauna of West Bengal, State Fauna series,* 3(Part-7) : 552.

Material examined : Nil.

Forewing length : 26 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, Jammu & Kashmir.

Elsewhere : Worldwide except South America and Antarctica.

Remarks : The species is migratory in habit. It was treated earlier under the genus *Vanessa* Fabricius but Field (1971) resurrected the genus *Cynthia* Fabricius and held *Cynthia cardui* (Linnaeus) a valid species and followed subsequently by others.

XXVI. Genus *Vanessa* Fabricius

1807. *Vanessa* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 281.

Only a single species, *Vanessa indica* (Herbst) occurs in India.

38. *Vanessa indica indica* (Herbst) (Indian Red Admirable)

1794. *Papilio atlanta indica* Herbst, *Nat. Syst. Schmett.*, **7** : 171, pl. 180, fig. 1, 2.

1911. *Vanessa indica* (Herbst) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 62.

1932. *Vanessa indica indica* (Herbst) Evans, *Identification of Indian Butterflies* : 149.

1997. *Vanessa indica indica* (Herbst) : Gupta, *Zool. Surv. India, Fauna of West Bengal, State Fauna Series,* 3(Part-7) : 554.

Material examined : Nagaland: Kohima District, B.Garden, Kohima, 1 ex., 23.3.1997, (Coll. A.K. Hazra and Party).

Forewing length : 25–26 mm.

Distribution : India : Nagaland (Kohima District), Sikkim, Arunachal Pradesh and Jammu & Kashmir.

Elsewhere : North Myanmar.

Remarks : This nominate subspecies differs from its counterpart, *V. indica pholoe* Fruhstorfer found in South India by upperside dark brown areas with a golden gloss, fore wing bearing a discal band much wider and paler, and lower of two central spots detached; underside fore wing with bluish spots at end cell large and prominent, hind wing termen red.

XXVII. Genus *Araschania*

1819. *Araschnia* Huebner, *Verz. bekannt. Schmett.* (3) : 37

Only a single species - *Araschnia prorsoides* Blanchard of this genus occurs in India.

39. *Araschania prorsoides dohertyi* Moore

1899. *Araschnia dohertyi* Moore, *Lep. Ind.* **4** : 108, pl. 320, figs. 3, 3a, 3b, male, female.

1911. *Araschnia dohertyi* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 62.

1932. *Araschnia prorsoides dohertyi* Moore : Evans, *Identification of Indian Butterflies* : 149.

Material examined : Nil.

Forewing length : 26–28 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : Only this subspecies occurring in India was earlier recorded from Nagaland by Tytler (1911).

XXVIII. Genus *Symbrenthia* Huebner

1819. *Symbrenthia* Huebner, *Verz., bekannt. Schmett* (3) 43.

All the four species of this genus occurring in India are dealt with from Nagaland.

Key to species

1. Underside of fore and and hind wings marked with black tesselations 2

– Underside of fore and hind wings marked with ferruginous markings; black tesselations absent ..... *lilaea* De Nicèville

2. Underside of hind wing with subterminal lunules metallic cerulean blue .... *silana* De Nicèville

– Underside of hind wing with subterminal lunules metallic green 3

3. Upperside of fore wing with preapical oblique fulvous or yellow irregular short band extended to costal margin....*niphanda* Moore

– Upperside of fore wing with preapical oblique fulvous or yellow irregular short band not extended to costal margin ... *hypselis* Godart

40. ***Symbrenthia lilaea khasiana*** Moore (Common Jester)

1874. *Symbrenthia khasiana* Moore, *Proc. zool. Soc. Lond.*, : 569.

1885. *Symbrenthia hippocla* (sic) (Cramer) : De Nicèville, *J. Asiat. Soc. Beng.*, **54** (1) : 2.

1911. *Symbrenthia lucina Cramer* : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 62.

1932. *Symbrenthia hippoclus* (Cramer) : Evans, *Identification of Indian Butterflies* : 149.

1992. *Symbrenthia lilaea khasiana* Moore : Haribal, *Butterflies of Sikkim Himalaya* : 167.

Material examined : Nil.

Forewing length : 22-23 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, Eastern Ghats and Jammu & Kashmir.

Elsewhere : Myanmar.

Remarks : Evans (1932), Wynter-Blyth (1957) and Gupta (1988, 1997) referred this species/ subspecies as *Symbrenthia hippoclus / S. hippoclus khasiana* Moore.

41. ***Symbrenthia silana*** De Nicèville (Scarce Jester)

1885. *Symbrenthia silana* De Nicèville, *J. Asiat. Soc. Beng.*, **54** (2) : 117.

1911. *Symbrenthia silana* De Nicèville: Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 54.

1914. *Symbrenthia silana* De Nicèville: Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 511.

1932. *Symbrenthia silana* De Nicèville : Evans, *Identification of Indian Butterflies* : 149.

1994. *Symbrenthia silana* : Varshney, *Oriental Insects*, **28** : 173.

Material examined : Nil.

Forewing length : 25-27 mm.

Distribution : India : Nagaland, Sikkim, Manipur.

Elsewhere : Bhutan.

Remarks : Bingham (1905) treated this species as a race of *S. niphanda* Moore whereas Evans (1932) and Varshney (1994) maintained its species status. Its status is very rare and it has been included in Schedule–1 (Part–4) of the Indian Wildlife (Protection) Act.

42. ***Symbrenthia niphanda niphanda*** Moore (Bluetail Jester)

1872. *Symbrenthia niphanda* Moore, *Proc. zool. Soc. Lond.*, : 559.

1911. *Symbrenthia niphanda* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 62.

1932. *Symbrenthia niphanda* Moore : Evans, *Identification of Indian Butterflies* : 149.

Material examined : Nil..

Forewing length : 25-27 mm.

Distribution : India : Nagaland, Sikkim and Assam.

Remarks : The nominate subspecies occurs from Sikkim to Assam. However, Haribal (1992) mentioned its distribution from Kashmir to Assam which is doubtful. Its status is rare and it has been included in Schedule–II (Part–2) of the Indian Wildlife Protection Act.

43. ***Symbrenthia hypselis cotanda*** Moore (Spotted Jester)

1874. *Symbrenthia cotanda* Moore, *Proc. zool. Soc. Lond.*, : 569, pl.

1911. *Symbrenthia hypselis* Godart: Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 62.

1932. *Symbrenthia hypselis cotanda* Moore : Evans, *Identification of Indian Butterflies* : 149.

1997. *Symbrenthia hypselis cotanda* Moore : Gupta, *Zool. Surv. India, Fauna of West Bengal, State Fauna Series* 3(Part-7) : 571.

Material examined : Nil.

Forewing length : 22–25 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : Evans (1932) treated two subspecies of *S. hypselis* Godart, viz., *cotanda* Moore and *brabira* Moore. Bingham (1905) and Varshney (1994) treated *brabira* as distinct species.

Tribe Cyrestini

Both fore and hind wings marked with transverse and stripes running across their surfaces. Fore wing with vein S_c not dilated at base, R_4 ending on costa; hind wing with precostal vein arising beyond origin of S_c.

This tribe is known in India by two genera, *viz., Cyrestis* Boisduval and *Chersonesia* Distant.

Key to genera

- Fore wing with vein R_2 arising directly from cell ..... ***Cyrestis*** Boisduval
- Fore wing with vein R_2 arising from vein R_5 ..... ***Chersonesia*** Distant

XXIX. Genus *Cyrestis* Boisduval

1832. *Cyrestis* Boisduval, *Voy. Astrolabe*, : 117.

Of the three species occurring in India, only *C. thyodamas* Boisduval is treated from Nagaland.

44. *Cyrestis thyodamas thyodamas* Boisduval (Common Map)

1836. *Cyrestis thyodamas* Boisduval, *Cuv. Reg. Anim Ins.*, 2 : pl 138, Fig. 4.

1911. *Cyrestis thyodamas* Boisduval: Tytler, *J. Bombay nat. Hist. Soc.*, 21(1) : 61.

1932. *Cyrestis thyodamas* Boisduval: Evans, *Identification of Indian Butterflies* : 149.

1992. *Cyrestis thyodamas thyodamas* : Haribal, *Butterflies of Sikkim Hamalaya* : 170.

Material examined : Nil.

Forewing length : 26–28 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : The nominate subspecies is characteristically nearly always white on upperside of wings and fore wing with apical and terminal dark areas much broader and brown, thus, differs from other counterparts, *indica* Evans from south India, *ganescha* Kollar from Kashmir to Kumaon and *andamanica* Wood-Mason from Andamans.

XXX. Genus *Chersonesia* Distant

1883. *Chersonesia* Distant, *Rhop. Malay.* : 142.

The genus is known in India by two species, *viz., Chersonesia rahria* Moore and *C. risa* (Doubleday & Hewitson) of which the latter is dealt with from Nagaland.

Key to species

- Fore wing with sixth line from base, as all others, quite, straight throughout and parallel to the rest ..... *risa* Doubleday & Hewitson
- Fore wing with sixth line from base sinuous, much curved at upper end ..... *rahria* Moore

45. *Chersonesia risa* (Doubleday & Hewitson) (Common Maplet)

1850. *Cyrestis risa* Doubleday & Hewitson, In. Doubleday's Westwood & Hewitson, *Gen. diurn. Lep.* 2 : 262. pl 32, fig. 4.

1911. *Chersonisa risa* (? Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, 21(1) : 61.

1932. *Chersonisa risa* (Doubleday) : Evans, *Identification of Indian Butterflies* : 149.

1994. *Chersonisa risa* (Doubleday & Hewitson) : Varshney, *Oriental Insects*, 28 : 178.

Material examined : Nil..

Forewing length : 20–21 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and Uttar Pradesh.

Elsewhere : Bhutan, Myanmar and Nepal.

Remarks : Tytler (1911) reported it from Nagaland. Bingham (1905) and Evans (1932) mentioned its occurrence from Uttar Pradesh (Kumaon) to Myammar whereas Haribal (1992) provided its distribution from Nepal to Myanmar.

46. ***Chersonesia rahria rahroides*** Moore

1899. *Chersonisa rahroides* Moore, Lep. Ind. : 56, pl. 307, fig. 4, 4a.

1914. *Chersonisa rahria rahroides* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, : 510.

1932. *Chersonisa rahria rahroides* Moore : Evans, *Identification of Indian Butterflies*: 173.

1994. *Chersonisa rahroides* Moore: *Oriental Insects*, **28** : 178.

Material examined : Nil..

Forewing length : 35-42mm.

Distribution : India : Nagaland, Manipur, Sikkim, Arunachal Pradesh and Uttar Pradesh.

Elsewhere : Bhutan, Myanmar and Nepal.

Remarks : Tytler (1914) reported it from Nagaland. Bingham (1905) and Evans (1932) mentioned its occurrence from India (Uttaranchal : Kumaon) to Myammar.

Tribe **Limenitidini**

Fore wing with vein Sc not dilated at base, R_2 arising before end cell, origin of R_4 opposite or beyond end of R_1, R_4 ending at apex or on termen, R_5 arising close to M_1 than R_2; termen and dorsum subequal. Hind wing precostal vein arising opposite or beyond origin of vein $S_C + R_1$.

This tribe is represented in India by 21 genera, of which 17 are dealt with from Nagaland.

Key to genera

1. Hind wing precostal vein arising at or before the origin of vein S_C 2
- Hind wing precostal vein arising beyond the origin of vein S_C 10
2. Hind wing with vein S_C ending on costa or, if ending on termen (*Phaedyma* only), veins M_1, Rs and S_C ending close together, and M_1 remote from M_2 3
- Hind wing with vein S_C reaching termen in both sexes, ending of veins M_2, M_1, R_S and S_C more or less equidistant 6
3. Fore wing with vein R_2 arising from vein R_5 ..... ***Pantoporia*** Huebner
- Fore wing with vein R_2 arising from the cell 4
4. Hind wing with vein S_C ending on termen in male; precostal vein with a spur directed basad ..... ***Phaedyma*** Felder
- Hind wing with vein S_C ending on costa in male; precostal vein with a long spur directed distad 5
5. Mostly small orange species with two submarginal lines on fore wing or fuliginous species with small subcostal spots above the end of cell streak ..... ***Lasippa*** Moore
- Mostly black and white species; if orange, with only a single submarginal line on fore wing; if fuliginous, then without subcostal spots above the end of cell streak ..... ***Neptis*** Fabricius
6. Hind wing cell open 7
- Hind wing cell closed 9
7. Fore wing lower discocellular vein ending well beyond origin of Cu_{1a} ..... ***Moduza*** Moore
- Fore wing cell open or, if closed, with lower discocellular vein ending close to vein Cu_{1a} 8
8. Proximal end of abdomen with pale band (except in *selenophora* male), the latter with a longitudinal whitish cell streak on underside of fore wing ..... ***Athyma*** Westwood
- Abdomen not pale-banded. Underside of fore wing without any whitish cell streak ..... ***Parasarpa*** Moore
9. Upperside of fore wing with a highly zigzagged postdiscal double line ..... ***Bhagadatta*** Moore

– Upperside of fore wing without any zigzagged postdiscal double line ..... ***Auzakia*** Moore

10. Fore wing with vein R_4 arising before end of R_2 11

– Fore wing with vein R_4 arising beyond end of R_2 13

11. Antennae almost equal to half the length of costa of fore wing ..... ***Neurosigma*** Butler

– Antenae more than half the length of costa of fore wing 12

12. Labial palpi with thin long hairs. Fore wing with vein R_3 distorted, hind wing with precostal vein forked at end ..... ***Parthenos*** Huebner

– Labial palpi smooth. Fore wing with vein R_3, R_2, R_1 distorted but R_3 arising well before R_4; hind wing precostal vein not forked ..... ***Lebadea*** Felder

13. Cells of fore- and hind wing open 14

– Cell of fore wing closed... 15

14. Thorax relatively slender. Fore wing with veins R_1 and S_C anastomosed in both sexes, in female R_3 arising approximately mid-way between apex of cell and origin of R_4 ..... ***Tanaecia*** Butler

– Thorax robust. Fore wing with veins R_1 and S_C free in male; free or anastomosed in female and with R_3 arising close to cell apex and remote from R_4 ..... ***Euthalia*** Huebner

15. Fore wing lower discocellular vein ending well beyond origin of vein of Cu_{1a}; veins R_1 and S_C anastomosed in one or both sexes. Underside of fore wing with two continguous central cell spots echeloned one below the other... ..... ***Lexias*** Boisduval

– Fore wing lower discocellular vein ending close to origin of vein Cu_{1a}; veins R_1 and S_C free in both sexes. Underside of fore wing with central cell spot undivided 16

16. Underside of hind wing with usual oval markings at bases of spaces 6 and 7; hind wing cell strongly closed ..... ***Bassarona*** Moore

– Underside of hind wing without markings at bases of spaces 6 and 7; hind wing cell open or weakly closed ..... ***Dophla*** Moore

XXXI. Genus ***Pantoporia*** Huebner

1819. *Pantoporia* Huebner, *Verz. bekannt. Schmett* (3) 44.

This genus is represented in India by five species of which two species, viz., *Pantoporia hordonia* (Stoll) and *P. beiti* Oberthuer are treated from Nagaland.

Key to species

Underside of wings more or less striated or variegated ..... *hordonia* (Stoll)

– Underside of wings not striated or variegated ..... *beiti* (Oberthuer)

47. ***Pantoporia hordonia hordonia*** (Stoll) (Common Lascar)

1790. *Papilio hordonia* Stoll, In Cramer, *Pap. exot. Suppl.*, 3 pl. 33. fig. 4, 4D.

1911. *Rahinda hordonia* (Stoll) : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 61.

1932. *Neptis hordonia* (Stoll) : Evans, *Identification of Indian Butterflies* : 172.

1969. *Pantoporia hordonia hordonia* (Stoll) : Eliot, *Bull. Br. Mus. nat. Hist. Suppl.*, **15** : 33.

Material examined : Nil.

Forewing length : 45-50 mm.

Distribution : India : Nagaland, Sikkim Arunachal Pradesh, Orissa, South India and West Bengal.

Elsewhere : Myanmar, Malaya, Thailand (Siam), North and South Vietnam.

Remarks : This nominate subspecies differs from its counterpart *cnalis* Hewitson found in Andamans by the upperside of hind wing subbasal band ochraceous orange.

48. ***Pantoporia beiti paona*** (Tytler)

1914. *Rahinda paona* Tytler, *J. Bombay nat. Hist. Soc.* **23** : 510

1932. *Neptis paona* Tytler : Evans. *Identification of Indian Butterflies*: 171.

1969. *Pantoporia beiti paona* Tytler, : Eliot, *Bull. Br. Mus.nat. Hist. Suppl.*, **15** : 39.

Material examined : Nil.

Fore wing length : 45-50 mm.

Distribution : India : Nagaland.

Remarks : Only this nominate subspecies occurring in India was recoded from Nagaland.

XXXII. Genus ***Phaedyma*** Felder (C.)

1961. *Phaedyma* Felder, *Nova Acta Acad. Caesar, Lemp. Carol.*, **28** : 1-50, 1 pl.

The genus is represented in India by two species, *viz.*, *Phaedyma aspasia* (Leech) and *P. columella* Cramer of which the former is dealt with from Nagaland.

49. ***Phaedyma aspasia*** Leech

1890. *Neptis aspasia* Leech, *Entomologis* **23**: 118

1914. *Neptis aspasia* Leech: Tytler, *J. Bombay nat. Hist. Soc.*, **23**: 509.

1932. *Neptis aspasia* Leech: Evans, *Identification of Indian Butterflies*: 169.

1969. *Phaedyma aspasia* : Eliot, *Bull. Br. Mus. nat. Hist. Ent., Suppl.* **15** : 120.

Material examined : Nil.

Forewing length : 32-34 mm.

Distribution : India : Nagaland.

Elsewhere : North Myammar.

Remarks : This species was previously reported from Nagaland by Tytler (1914).

XXXIII. Genus ***Lasippa*** Moore

1898. *Lasippe* Moore, *Lep. Indica*, **3** : 146.

This genus includes two species, *viz.*, *Lasippa viraja* (Moore) and *L. tiga* (Moore) from India and the former is dealt with from Nagaland.

50. ***Lasippa viraja viraja*** (Moore) (Yellow Jack Sailer)

1872. *Neptis viraja* Moore, *Proc. zool. Soc. London*, : 563, pl. 32, fig. 6. male, G, E N.E. Bengal.

1911. *Neptis viraja* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 61.

1932. *Neptis viraja* Moore : Evans, *Identification of Indian Butterflies* : 149.

1969. *Lasippa viraja viraja* (Moore) : Eliot, *Bull. Br. Mus. nat. Hist. Ent., Suppl.* **15** : 120.

Material examined : Nil.

Forewing length : 28-32 mm.

Distribution : India : Nagaland, Sikkim, Assam, "Bengal" and Orissa.

Elsewhere : Myanmar, Bhutan.

Remarks : This nominate subspecies is distinguished from *L. viraja kanara* (Evans) found in South India by upperside of wings with bands narrower and underside darker bearing sharply defined edges.

XXXIV. Genus ***Neptis*** Fabricius

1807. *Neptis* Fabricius, *Mag. f. Insektenk* (Illiger) : 282.

The genus is represented in India by 30 species of which 14 are found in Nagaland of 14 species, two namely *Neptis cydippe* Leech and *N. armandia* (Oberthuer) not included under 'key to species' are treated, separately.

Key to species

1. Fore wing with subcostal spots internal to the upper postdiscal band 2

– Fore wing without subcostal spots internal to the upper postdiscal band.....6

2. Fore wing postdiscal spot in space Cu_{1a}, if present, placed above the spot in Cu_{1a} or, at most, only slightly shifted in 3

– Fore wing post discal spot in space Cu_{1a} much shifted in, often touching the streak beyond cell, so that cell streak, streak beyond cell and lower postdiscal band form a continuous hockey stick 4

3. Fore wing with subcostal spot in space. Underside hind wing variegated with mauve markings; no basal or sub-basal streaks .... *radha* Moore

– Fore wing without subcostal spot in space. Underside hind wing with basal or subbasal streaks; no mauve markings .... *narayana* Moore

4. Underside hind wing with a subbasal streak, basal streak not reaching vein S_C+R_1 7

– Underside hind wing without subbasal streak, basal streak reaching vein S_C+R_1 near its origin 5

5. Fore wing with prominent postdiscal spot in space Cu_{1a} ..... *cartica* Moore

– Fore wing with post-discal spot in space Cu_{1a} absent or, at most, forming merely a narrow continuation of the spot in Cu_{1b} across vein Cu_{1a} 8

5. Upperside markings broader and paler, cilia very obscurely chequered. Female with fore wing upper and lower postdiscal bands well separated ..... *ananta* Moore

– Upperside markings narrower and richer orange, cilia narrowly but clearly chequered with white. Female with fore wing upper and lower post discal bands narrowly united by an orange line ..... *namba* Tytler

6. Underside hind wing discal fascia obsolete or much closer to the discal than to the postdiscal band and outwardly edged, or partly obscured, by a dark band or series of blochy spots 8

– Underside hind wing with discal fascia placed centrally between the discal and postdiscal bands, usually whitish and prominent (except in some dry season forms, in which it is obsolescent) 9

7. Upperside markings orange. Underside hind wing with v-or-u shaped mark nearly always present ..... *miah* Moore

– Upperside markings white or pale yellow. Underside hind wing without a v-or-u shaped mark under vein M_2 near inner edge or discal band ..... *sankara* Kollar

8. Upperside fore wing cell streak without indications of a transverse line. Hind wing cilia narrowly chequered, the white patches smaller than the darker ones, post discal band inwardly almost even-edged...*yerburii* Butler

– Upperside fore wing usually with indications of a dark line across the cell close to the discocellular bar. Hind wing cilia chequered with white patches at least as wide as the dark patches; spots of post discal band, particularly those in spaces M_2 and M_3, with their inner edges more or less rounded ... 10

9. Underside with some shade of yellow to reddish ochreous, with the hind wing discal band and usually most of the other white markings outlined by black linesh .... *hylas* Linnaeus

– Underside always more reddish, with the white markings more weakly or not outlined in black 11

10. Underside of hind wing with the discal band usually weakly outlined black .... *sappho* Pallas

– Underside of hind wing the discal band not outlined by black 12

12. Upperside white markings with a creamy tinge ..... *soma* Moore

– Upperside white markings without a creamy tinge ..... *nata* Moore

46. *Neptis radha radha* Moore
(Great Yellow Sailer)

1857. *Neptis radha* Moore, *Cat. Lep. Ins. Mus. East India Coy.*, : 165, pl. 4a, fig. 2.

1911. *Neptis radha* Moore : Tytler, *J. Bombay nat. Hist Soc.*, **21(1)** : 61.

1932. *Neptis radha* Moore : Evans, *Identification of Indian Butterflies* : 149.

1992. *Neptis radha radha*, Haribal, *Butterflies of Sikkim Himalaya*, : 174.

Material examined : Nil.

Forewing length : 30-31 mm.

Distribution : India : Nagaland, Sikkim, Assam, and Uttar Pradesh.

Elsewhere : North-East Myanmar.

Remarks : Its status is rare and its has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

47. ***Neptis narayana nana*** De Nicéville

1888. *Neptis nana* De Nicéville, *J. Asiat. Soc. Beng.*, **57** (2) : 273-293, 2 pls.

1914. *Neptis narayana nana* De Nicéville. : Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 509.

1932. *Neptis narayana nana* De Nicéville : Evans, *Identification of Indian Butterflies* : 149.

1992. *Neptis narayana nana*, Haribal, *Butterflies of Sikkim Himalaya* : 174.

Material examined : Nil.

Forewing length : 30 mm.

Distribution : India : Nagaland, Sikkim, Assam and Manipur.

Elsewhere : Bhutan.

Remarks : This subspecies is distinguished from the nominate one from Kulu to Kumaon by the yellow markings on upperside of wings. Its status is rare and it has been listed in Schedule-II (Part–2) of the Indian Wildlife (Protection) Act.

48. ***Neptis cartica cartica*** Moore (Plain Sailer)

1872. *Neptia cartica* Moore, *Proc. zool. Soc. Lond.*, : 562.

1911. *Neptia cartica* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 61.

1932. *Neptia cartica* Moore : Evans, *Identification of Indian Butterflies* : 149.

1992. *Neptis cartica cartica*, Haribal, *Butterflies of Sikkim Himalaya*, : 173.

Material examined : Nil.

Forewing length : 28-30 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, Assam.

Elsewhere : North Myanmar, Nepal and Tonkin.

Remarks : This nominate subspecies differs from its counterpart *N. cartica burmana* De Nicéville occurring in South Myanmar and North Thailand (Siam) by upperside markings broad.

49. ***Neptis ananta ochracea*** Evans (Yellow Sailer)

1911. *Neptis ananta* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 61.

1924. *Neptis ananta ochracea* Evans, *J. Bombay nat. Hist. Soc.*, **30** : 79.

1932. *Neptis ananta ochracea* Evans : Evans, *Identification of Indian Butterflies* : 149.

1992. *Neptis ananta ochracea*, Haribal, *Butterflies of Sikkim Himalaya*, : 173.

Material examined : Nagaland.

Wing expanse : 28 mm.

Distribution : India : Nagaland, Sikkim (North Sikkim), Manipur, Meghalaya, Nagaland and West Bengal.

Elsewhere : Bhutan, Myanmar and Nepal.

Remarks : This subspecies is distinguished from the nominate one found from Himachal Pradesh (Chamba) to Uttar Pradesh (Kumaon) by the underside markings dark ferruginous ochreous. Its status is rare and it is included in Schedule-II (Part-2) of the Indian Wildlife Protection Act.

50. ***Neptis namba namba*** Tytler (Yellow Sailer)

1914. *Neptis namba* Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 510, pl. 3, fig.

1932. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies*, : 169.

1969. *Neptis namba namba* : Eliot, *Bull. Brit. Mus. (Nat. Hist.) London, Suppl.* **15** : 100.

Material examined : Nil.

Wing expanse : 55-70 mm.

Distribution : India : Nagaland, Sikkim, Assam, (North East India).

Elsewhere : North Myanmar and Tonkin.

Remarks : Tytler (1911) mentioned its occurrence Nagaland. Its status is rare.

51. *Neptis miah miah* Moore
(Small Yellow Sailer)

1857. *Neptis miah Moore, Cat. Lep. Mus. East India. Coy.*, **1** : 164, pl. 4a, fig. 1.

1911. *Neptis miah* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 61.

1932. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies* : 169.

1992. *Neptis miah miah* : Haribal, Butterflies of Sikkim Himalaya, : 173.

Material examined : Nil.

Forewing length : 25-27 mm.

Distribution : India : Nagaland, Sikkim, Assam.

Elsewhere : Bhutan.

Remarks : Only the nominate subspecies is represented in India. Tytler (1911) reported it from Nagaland. Its status is not rare.

52. *Neptis sankara amba* Moore
(Broad Banded Sailer)

1858. *Neptis amba* Moore, *Proc. zool. Soc. Lond.*, : 7, pl. 49, fig. 4 male.

1911. *Neptis quilta* Swinhoe : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 61.

1932. *Neptis sankara quilta* Swinhoe : Evans, *Identification of Indian Butterflies*, : 167.

1969. *Neptis sankara amba* Moore : Eliot, *Bull. Brit. Mus. (nat. Hist.)*, London, Entomology, *Suppl.*, **15** : 91.

Material examined : Nil.

Forewing length : 32-37 mm.

Distribution : India : Nagaland, Sikkim, Assam.

Elsewhere : Myanmar.

Remarks : Tytler (1911) reported it from Nagaland.

53. *Neptis yerburii pandoces* Eliot
(Yerbury's Sailer)

1911. *Amathusia yerburrii* Butler : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 61.

1932. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies*, : 169.

1969. *Neptis yerburii pandoces* Eliot, *Bull. Brit. Mus* (nat Hist.), London, *Suppl.* **15** : 69.

Material examined : Nil.

Wing expanse : 29-30mm.

Distribution : India : Nagaland, Sikkim, Meghalaya and West Bengal.

Elsewhere : North East Myanmar and West Thailand (Siam).

Remarks : Eliot (1969) described this subspecies on the basis of specimens collected from localities as mentioned under distribution.

54. *Neptis hylas varmona* Moore
(Common Sailer)

1872. *Neptis varmona* Moore, *Proc. zool. Soc. Lond.* 561

1881. *Neptis aceris* Lepechin : De Nicèvillie, *J. Asiat. Soc Beng.*, **50** (2-3) : 58.

1882. *Neptis varmona* Moore : De Nicèvillie, *J. Asiat. Soc. Beng.*, **51** (2-3) : 58.

1911. *Neptis varmona* Moore : Tytler, *J. Bombay nat. Hist Soc.*, **21** : 61.

1932. *Neptis hylas varmona* Moore: Evans, *Identification of Indian Butterflies*, : 166.

1969. *Neptis hylas varmona* Moore : Eliot, *Bull Brit Mus. (nat. Hist.), Entomology. Suppl.*, **15** : 61.

Material examined : Nil.

Forewing length : 26-28mm.

Distribution : India : Nagaland, Sikkim, Himachal Pradesh, South India to Uttar Pradesh.

Elsewhere : Sri Lanka.

Remarks : This subspecies differs from its allies, *viz.*, *kamarupa* Moore found in North India, Myanmar, Thailand, North and South Vietnam; *andamana* Moore occurring in Andamans and *nicobarica* Moore found in Car and Central Nicobars by the hind wing upperside bearing evenly curved submarginal band and two submarginal lines obsolete. Tytler reported it from Nagaland. However, Eliot (1969) considered it to be confined to Peninsular India and Sri Lanka.

55. *Neptis sappho astola* Moore (Common Sailer)

1872. *Neptis astola* Moore, *Proc. zool. Soc. Lond.*, : 560.

1882. *Neptis emodes* Moore : De Nicéville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 58.

1911. *Neptis astola* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 61

1932. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies* : 169.

1969. *Neptis sappho astola* Moore : Eliot, *Bull. Brit. Mus. (nat. Hist.)*, Entomology, Suppl, **15** : 6.

Material examined : Nil.

Forewing length : 25-26 mm.

Distribution : India : Nagaland, Sikkim, Jammu and Kashmir to Arunachal Pradesh,

Elsewhere : Myanmar (Karen Hills).

Remarks : Eliot (1969) distinguished *N. sappho* (Pallas) from *N. hylas* (Linnaeus). Now, *N. sappho* is represented in India by a single subspecies, *astola* Moore.

56. *Neptis soma soma* Moore (Sullied Sailer)

1858. *Neptis soma* Moore, *Proc. zool. Soc. Lond.*, : 9, pl. 49, fig. 6.

1911. *Neptis soma* Moore: Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 61.

1932. *Neptis yerburyi sikkima*, Evans, *Identification of Indian Butterflies*, : 167.

1992. *Neptis soma soma* Moore : Haribal, *Butterflies of Sikkim Himalaya*, : 172.

Material examined : Nil.

Forewing length : 29-30 mm.

Distribution : India : Nagaland, Sikkim, Eastern Himalaya and Assam.

Remarks : This nominate subspecies differs from *N. soma palnica* Eliot found in South India (Palni Hills, Travancore and Trichinopoly) by white markings with creamy tinge wider especially the cell streak and streak beyond cell. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

57. *Neptis nata adipala* Moore (Sullied Sailer)

1872. *Neptis adipala* Moore, *Proc. zool. Soc London* : 563, pl. 32. fig. 8, male, Khasia Hills.

1911. *Neptis soma* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 61.

1932. *Neptis soma soma* Moore : Evans, *Identification of Indian Butterflies* : 166.

1969. *Neptis nata adipala*, Eliot, *Bull. Brit. Mus. (nat. Hist.)* Entomology, *Suppl* **15** : 73.

Material examined : Nil.

Forewing length : 25-27 mm.

Distribution : India : Nagaland, Sikkim, Assam, Uttar Pradesh and Eastern Himalaya.

Elsewhere : Laos, Myanmar, South Yannan, Tonkin and Thailand.

Remarks : This subspecies is distinguished from its counterparts, *viz., peilei* Eliot occurring in North West Himalaya, *hampsoni* Moore in South India and *evansi* Eliot in Andamans by upperside hind wing postdiscal spots conjoined.

58. *Neptis cydippe kirbariensis* Tytler

1914. *Neptis kirbariensis* Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 61.

1932. *Neptis kirbariensis* Tytler : Evans, *Identification of Indian Butterflies*, : 169.

1969. *Neptis cydippe kirbariensis* Tytler: Eliot, *Bull. Brit. Mus. (nat. Hist.)* Entomology, *Suppl* **15** :

Material examined : Nil.

Forewing length : 23-30mm.

Distribution : India : Nagaland.

Remarks : Only this subsecies occurring in India was recorded from Nagaland by Tytler (1914).

59. *Neptis armandia gafuri* Tytler

1915. *Neptis antilope* Tytler (nec Leech), *J. Bombay nat. Mist. Soc.*, **23** : 509.

1932. *Neptis antilope antilope* Evans (nec Leech), *Identification of Indian Butterflies*, : 169.

1940. *Neptis melba gafuri* Tytler, *J. Bombay nat. Hist.*, **42** : 118.

1969. *Neptis armandia gafuri* Tytler : Eliot, *Bull. Brit. Mus. (nat. Hist.)* London, Suppl. **15** : 105.

Material examined : Nil.

Distribution : India : Nagaland.

Remarks : This subspecies differs from *N. armandia melba* Evans found in Sikkim by the upperside of wings with yellow markings. Tytler (1915) obtained its two males and two females at Kirbari Naga Hills at 2100 m in June and July.

XXXV. Genus *Moduza* Moore

1881. *Moduza* Moore, *Lep. Ceylon*, **1** (2) : 47.

A single species, *Moduza procris (Cramer)* represents this genus in India.

60. *Moduza procris procris* (Cramer) (Commander)

1777. *Papilio procris* Cramer, *Pap. exot.*, **2** : pl. 106, figs. E.F.

1911. *Moduza procris* (Cramer): Tytler, *J. Bombay nat. Hist. Soc.*, **21(1)** : 59.

1932. *Limenitis procris* (Cramer) : Evans, *Identification of Indian Butterflies*, : 169.

2003. *Moduza procris procris* (Cramer) : Gupta, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9** (Part-4) : 61.

Material examined : Nil.

Forewing length : 31-33 mm.

Distribution : India : Nagaland, Sikkim, Uttar Pradesh to Arunachal Pradesh.

Elsewhere : Myanmar.

Remarks : This nominate subspecies differs from *M. procris undifragus* (Fruhstorfer) occurring in South India and *M. procris anarta* (Moore) in Andamans by the presence of a large white spot at end cell, wider bands on upperside of wings and, underside of wings paler and more irrorated with violet. This nominae subspecies was reported from Nagaland by Tytler (1911).

XXXVI. Genus *Athyma* Westwood

1850. *Athyma* Westwood, In Doubleday's : *Gen. Diurn. Lep.*, : (2) 272.

Of the 13 species of this genus occurring in Inda, ten are dealt with from Nagaland.

Key to species

1. Cell closed in fore wing 2
– Cell open in fore wing 8
2. Eyes smooth 3
– Eyes hairy 7
3. Sexes dissimilar. In male, upperside of fore wing with discal spots from dorsum to spaces Cu_{1b} or Cu_{1a} conjoined and directed to apex or costa 4
– Sexes similar. On upperside of fore wing discal spot in space Cu_{1b} well separated from spot in interspace $1_A + 2_A$, no discal spot in interspace Cu_{1a}, lower part of discal band directed to mid termen ..... *kanwa* Moore
4. Upperside of fore wing without a prominent discal spot in space Cu_{1a}. In female, upperside of wings with broad orange markings normally arranged 5
– Upperside of fore wing with prominent discal spot in interspace Cu_{1a}. In female, upperside of wings with white or sullied brownish bands 6
5. In male, underside of fore wing with discal streak much broken. In female, discal spots in spaces M_1, M_2 forming a continuous and even edged apical band ..... *nefte* (Cramer)
– In male, underside of fore wing with the discal streak continuous but upper edge irregular. In female, a small discal spot in interspace M_1 and against outer edge spot in space Cu_{1b} ..... *cama* (Moore)
6. Underside of fore wing with the discal streak twice divided by a brown line across cell; a triangular spot, at base of space M_2 beyond cell well separated ..... *selenophora* (Kollar)
– Underside of fore wing with the discal streak entire and hardly separated from the spot at end cell in interspace M_1 *zeroca* (Moore)

7. Upperside of fore wing with a large triangular white spot just beyond apex of cell .... *opalina* (Kollar)

– Upperside of fore wing without a larger triangular white spot just beyond apex of cell ..... *ranga* (Moore)

8. Upperside of fore wing without discal spot in space in 3 ..... *larymna*

– Upperside of fore wing with discal spot in space in 3 9

9. Upperside of fore wing with discoidal streak divided ..... *perius* (Linnaes)

– Upperside of fore wing discoidal streak not divided ..... *asura* Moore

61. ***Athyma selenophora selenophora*** (Kollar) (Small Staff Sergeant)

1848. *Limenitis selenophora* Kollar, Huegel's Kaschmir, **4** (2) : 426, pl. 7, figs. 1, 2, male.

1911. *Pantoporia selenophara* (Kollar) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 60.

1932. *Pantoporia selenophara* (Kollar) : Evans, *Identification of Indian Butterflies*, : 162.

1997. *Athyma selenophra selenophora (kollar)* : Gupta, *Fauna of West Bengal. State Fauna Series*, **3**(Part-7) : 587.

Material examined : Nil.

Forewing length : 28-32mm.

Distribution : India : Nagaland, Sikkim, Uttar Pradesh to Arunachal Pradesh.

Elsewhere : Myanmar.

Remarks : The nominate subspecies differs from *A. selenophora kanara* Evans found in South India by upperside of wings markings darker and bearing narrow bands in male and broad white markings in female.

62. ***Athyma zeroca*** Moore (Small Staff Sergeant)

1872. *Athyma zeroca* Moore, *Proc. zool. Soc. Lond.*, : 564.

1911. *Pantoporia zeroca* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 60.

1932. *Pantoporia zeroca* (Moore) : Evans, *Identification of Indian Butterflies*, : 162.

1992. *Parathyma zeroca* (Moore) : Haribal, *Butterflies of Sikkim Himalaya*, : 177

1997. *Athyma zeroca* : Gupta : *Zool. Surv. India, Fauna of West Bengal, State Fauna Series*, **3**(Part-7) : 587-588.

Material examined : Nil.

Forewing length : 26-29 mm.

Distribution : India : Nagaland, Sikkim, Uttar Pradesh to Arunachal Pradesh.

Elsewhere : Myanmar.

Remarks : Tytler (1911) recorded this subspecies from Nagaland.

63. ***Athyma nefte inara*** (Doubleday) (Colour Sergeant)

1850. *Limenitis inara* Doubleday, In Doubleday, *Gen. diurn. Lep.*, **2** : pl. 34, fig. 30.

1882. *Athyma inara* (Doubleday & Hewitson): de Nicéville, *J. Asiat. Soc. Beng.*, **52** (2-3) : 54.

1911. *Pantoporia inara* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 60.

1932. *Pantoporia nefte inara* (Doubleday) : *Identification of Indian Butterflies*, : 162.

1997. *Athyma nefte inara*. Gupta, *Zool. Surv. India, Fauna of West Bengal, State Fauna Series*, **3**(Part-7) : 588.

Material examined : Nil.

Distribution : India : Nagaland, Sikkim, (East Sikkim), Orissa, Sikkim to Arunachal Pradesh, South India and West Bengal.

Elsewhere : North Myanmar.

Remarks : Previously, this species is known from Nagaland.

64. ***Athyma cama*** Moore (Orange Staff Sergeant)

1857. *Athyma cama* Moore, *Cat. Lep. Ins. Ms. East India Coy*, **1** : 174, pl. 5, fig. 5, male, female.

1911. *Pantoporia cama* (Moore): Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 60.

1932. *Pantoporia cama* (Moore) : Evans, *Identification of Indian Butterflies*, : 162.

1997. *Athyma cama* : Gupta, *Fauna of West Bengal, State Fauna Series*, 3(Part-7) : 588.

Material examined : Nil.

Forewing length : 30-32 mm.

Distribution : India : Nagaland, Sikkim, Uttar Pradesh to Arunachal Pradesh, West Bengal.

Elsewhere : North Myanmar.

Remarks : Tytler (1911) recorded it from Nagalnd.

65. ***Athyma opalina orientalis*** Elwes (Himalayan Sergeant)

1888. *Athyma orientalis* Elwes, *Trans. ent. Soc. Lond.*, : 354, pl. 9, fig. 4.

1911. *Pantoporia orientalis* (Elwes) : Tytler, *J. Bombay nat. Hist. Soc.*, 21(1) : 60.

1932. *Pantoporia opalina orientalis* (Elwes) : Evans, *Identification of Indian Butterflies* : 163.

1997. *Athyma opalina orientalis* : Gupta, *Fauna of West Bengal, State Fauna Series*, 3(Part-7) : 589. *Zool. Surv. India.*

Material examined : Nil.

Forewing length : 30-33 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, West Bengal.

Elsewhere : Myanmar.

Remarks : This subspecies is distinguished from the nominate subspecies occurring from Jammu & Kashmir to Uttar Pradesh by the presence of often sullied narrow white bands on upperside of wings.

66. ***Athyma ranga ranga*** Moore (Blackvein Sergeant)

1857. *Athyma ranga* Moore, *Cat. Lep. Ins. Mus. East India Coy*, 1 : 175, pl. 5a, fig. 6 (male)

1881. *Athyma mahesa* Moore : De Nicéville, *J. Asiat. Soc. Beng.*, 50(1) : 58.

1911. *Pantoporia ranga* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, 21(1) : 60.

1932. *Pantoporia ranga ranga* (Moore) : Evans, *Identification of Indian Butterflies*, : 163.

Material examined : Nil.

Forewing length : 30-33mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : In this nominate subspecies, the upperside of hind wing in male bears sullied postdiscal and marginal spots, whereas in *A. ranga karwara* Fruhstorfer found in South India, only discal band is present but post discal band is absent in hind wing of male. Evans (1932) mentioned its status 'rare' It has been included in Schedule-II (Part–2) of the Indian Wildlife Protection Act.

67. ***Athyma perius*** (Linnaeus) (Common Sergeant)

1758. *Papilio perius* Linnaeus, *Syst. nat.* 10 : 471.

1911. *Athyma perius* (Linnaeus : Tytler, *J. Bombay nat Hist. Soc.*, 21(1) : 60.

1932. *Pantoporia perius* (Linnaeus) : Evans, *Identification of Indian Butterflies*, : 164.

1992. *Parathyma perius* (Linnaeus) : Haribal, *Butterflies of Sikkim Himalaya*, : 176.

1997. *Athyma perius* (Linnaeus) Gupta, *Fauna of West Bengal, State Fauna Series*, 3(Part-7) : 587. *Zool. Surv. India*

Material examined : Nil.

Forewing length : 31mm.

Distribution : India : Nagaland, Sikkim, Himachal Pradesh.

Elsewhere : Myanmar and Nepal.

Remarks : This species was earlier recorded from Nagaland by Tytler (1911).

68. ***Athyma asura asura*** Moore (Studded Sergeant)

1857. *Athyma asura* Moore, *Cat. Lep. Mus. E.I.C.*, 1 171 pl. 5a, 1

1911. *Athyma asura* Moore : Tytler, *J. Bombay nat Hist Soc.*, 21(1) : 61.

1932. *Pantoporia asura asura* (Moore) : Evans, *Identification of Indian Butterflies* : 164.

1994. *Athyma asura* (Moore) : Varshney, *Oriental Insects*, 28 : 180.

Material examined : Nil.

Wing expanse : 65-75 mm.

Distribution : India : Nagaland, Sikkim and Himachal Pradesh.

Elsewhere : Myanmar.

Remarks : This nominate subspecies is distinguished from its ally *A. asura idita* Moore found in Myanmar by the underside of hind wing bearing a postdiscal band of white spots, each with a black spot in the centre. Its status is rare and its has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

69. ***Athyma kanwa phokys*** Fruhstorfer

1911. *Athyma kanwa* Moore: Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 60.

1914. *Pantoporiakanwa phokys* Fruhstorfer : *Macrolepidoptera of the World*, **9** : 691.

1932. *Neptis kanwa phokys* Fruhstorfer : Evans, *Identification of Indian Butterflies*, : 169.

Material examined : Nil.

Wing expanse : 60-70 mm.

Distribution : India : Nagaland, Sikkim and Himachal Pradesh.

Elsewhere : Myanmar.

Remarks : This subspecies was earlier reported from Nagaland by Tytler (1911).

70. ***Athyma larymna siamensis*** (Fruhstorfer)

1911. *Pantoporia larymna siamensis* Fruhstorfer, *Macrolepidoptera of the World*, **9** : 644.

1914. *Athyma larymna* Doubleday & Hewitson : Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 508.

1932. *Pantoporia larymna siamensis* Fruhstorfer : Evans, *Identification of Indian Butterflies*, : 164.

1994. *Athyma larymna* Doubleday & Hewitson: Varshney, Oriental Insects, **28** : 180.

Material examined : Nil.

Wing expanse : 60-70 mm.

Distribution : India : Nagaland, Sikkim and Himachal Pradesh.

Elsewhere : Myanmar.

Remarks : This subspecies was earlier reported from Nagaland by Tytler (1914).

XXXVII. Genus ***Parasarpa*** Moore

1898. *Parasarpa* Moore, *Lep. indica*, **3** (32) : 146.

This genus is represented in India by two species *viz., Parasarpa zayla* Doubleday and *P. duda* (Westwood).

Key to species

- Upperside of fore wing with a broad yellow discal band and hind wing with a silvery white discal band present ..... *zayla* (Doubleday)
- Upperside of fore and hind wing with a broad white discal band .....*dudu* (Westwood)

71. ***Parasarpa zayla*** (Doubleday) (Bicolour Commodore)

1850. *Liminitis zayla* Doubleday, In Doubleday, *Westw. & Hew. Gen. diurn. Lep.*, **2** : 276, pl. 35, fig. 4.

1911. *Liminitis zayla* Doubleday : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 60.

1932. *Liminitis zayla* Doubleday : Evans, *Identification of Indian Butterflies*, : 169.

1994. *Parasarpa zayla* (Doubleday) : Varshney, *Oriental Insect*, **28** : 181.

Material examined : Nil.

Forewing length : 41-42 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, Assam, Meghalaya and West Bengal.

Elsewhere : Bangladesh.

Remarks : Tytler (1911) mentioned its occurrence in Nagaland.

72. ***Parasarpa dudu*** (Westwood) (White Commodore)

1850. *Liminitis dudu* Westwood, In Doubleday, Westw. & Hew. *Diurn. Lep.*, **2** : 276.

1911. *Liminitis dudu* Westwood : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 60.

1932. *Liminitis dudu* Westwood : Evans, *Identification of Indian Butterflies*, : 169.

1994. *Parasarpa dudu* (Westwood) : Varshney, *Oriential Insects*, **28** : 181

Material examined : Nil.

Forewing length : 37-38mm.

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim.

Elsewhere : Bangladesh, Myanmar and Nepal.

Remarks : Tytler (1911) recorded this species from Nagaland. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

XXXVIII. Genus ***Bhagadatta*** Moore

73. ***Bhagadatta austenia*** Moore

1892. *Bhagadatta austenia* Moore, *Lep. Ind.* **5** : 311.

1914. *Bhagadatta austenia* Moore, Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 508.

1932. *Limenitis austenia austenia* : Evans, *Identification of Indian Butterflies*, : 160.

1994. *Bhagadatta austenia* Moore, Varshney, *Oriential Insects*, **28** : 182.

Material examined : Nil.

Forewing length : 85-90mm.

Distribution: India: Nagaland (Kirbari, Naga Hills), Assam, Manipur.

Elsewhere : North Myanmar.

Remarks : Tytler (1914) recorded this species from Nagaland. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

XXXIX. Genus ***Auzakia*** Moore

1898. *Auzakia* Moore, *Lep. Indica*, **3** (32) : 146, 148.

This genus is represented in India by a single species, *Auzakia danava* (Moore).

74. ***Auzakia danava*** (Moore) (Commodore)

1857. *Liminitis danava* Moore, *Cat. Lep. Mus. East. India Cog.*, **1** : 180, pl. 6a, fig. 2.

1911. *Auzakia danava* (Moore) : Tytler, *J. Bombay nat Hist. Soc.*, **21**(1) : 60.

1932. *Liminitis danava* Moore: Evans, *Identification of Indian Butterflies*, : 169.

1994. *Auzakia danava* (Moore) : Varshney, *Oriental Insects*, **28** : 182.

Material examined : Nil.

Forewing length : 40-41 mm.

Distribution : India : Nagaland, Sikkim, Himachal Pradesh to Arunachal Pradesh.

Elsewhere : Myanmar.

Remarks : Tytler (1911) recorded it from Nagaland. Evans (1932) mentioned its status rare. This species has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

XL. Genus ***Neurosigma*** Butler

1868. *Neurosigma* Butler, *Proc. zool. Soc. London*, (3) : 615.

This monotypic genus is represented in India by a species, *Neurosigma siva* (Westwood).

75. ***Neurosigma siva*** (Westwood) (Panther)

1850. *Adolias siva* Westwood, *Gen. diurn. Lep.*, **2** 291

1911. *Neurosigma doubledayi* (Westwood) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 58.

1932. *Neurosigma doubledayi* (Westwood) : Evans, *Identification of Indian Butterflies*, : 169.

1992. *Neurosigma doubledayi* (Westwood) : Haribal, *Butterflies of Sikkim Himalaya*, : 180.

1994. *Neurosigma siva*, Varshney, *Oriental Insects*, **28** 183

Material examined : Nil.

Forewing length : 41-43mm.

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Bangladesh, Bhutan and Nepal.

Remarks : The species exhibits variation regarding extent and prominence of spots and other markings on wings. Its status is rare and it has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

XLI. Genus *Parthenos* Huebner

1814. *Parthenos* Huebner, *Verz., bekannt. Schmett.*, (3) : 38.

This genus is represented in India by a single species, *Parthenos sylvia* Cramer.

76. *Parthenos sylvia gambrisius* (Fabricius) (Clipper)

1787. *Papilio gambrisius* Fabricius, *Mantissa Ins.* **2** : 12.

1911. *Parthenos gambrisius* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 59.

1932. *Parthenos sylvia gambrisius* (Fabricius) : Evans, *Identification of Indian Butterflies*, : 169.

2003. *Parthenos sylvia gambrisius* (Fabricius) : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 67. *Zool. Surv. India.*

Material examined : Nil.

Wing expanse : 95-110mm.

Distribution : India: Nagaland, Sikkim, Arunachal Pradesh, Assam, Manipur and Bengal.

Elsewhere : Myanmar.

Remarks : There are four subspecies of *Parthenos sylvia* known in India. This subspecies differs from its counterparts, *viz., virens* Moore occurring in South India, *roepstorfii* Moore in Andamans and *nila* Evans in South Nicobars by the upperside of wings being pale bluish green, and, in dry season form upperside of fore wing with apex whitish and white spots more contiguous.

XLII. Genus *Lebadea* Felder

1861. *Lebadea* Felder, *Nova Acta Leop. Carol.*, **28** (3) : 28.

This genus is represented in India by a single species, *Lebadea martha* Fabricius.

77. *Lebadea martha martha* (Fabricius) (Knight)

1787. *Papilio martha* Fabricius, *Mant. Ins.*, **2** : 56, female.

1881. *Lebadea ismene* Doubleday & Hewitson: De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 58.

1911. *Lebadea martha* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 60.

1932. *Lebadea martha martha* (Fabricius): Evans, *Identification of Indian Butterflies*, : 169.

2003. *Lebadea martha martha* (Fabricius) : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 67. *Zool. Surv. India.*

Material examined : Nil.

Forewing length : 32-34 mm.

Distribution : India : Nagaland, Sikkim.

Elsewhere : Bhutan and Nepal.

Remarks : This nominate subspecies differs from *L. martha ismene* (Doubleday & Hewitson) found from Assam – Manipur by upperside of wings bearing broader bands, inner edge of vertical spot in area Cu_{1b}, discal band in hind wing filling basal area. Tytler (1911) recorded it from Nagaland.

XLIII. Genus *Tanaecia* Butler

1869. *Tanaecia* Butler, *Proc. zool. Soc. Lond.*, (3) : 610.

The genus is represented in India by five species of which three are dealt with from Nagaland.

Key to species

1. Fore wing with apex produced and outer margin falcate below apex. Outer margin of hind wing slightly angled at vein Cu_{1a} thereafter straight upwards .... *lepidea* (Butler)

– Fore wing not falcate, outer margin of hind wing evenly rounded 2

2. Upperside of wings with two dark discal lines composed of diffused spots .... *julii* (Bougainville)

– Upperside of wings with discal bands consistin of conspicuous connected crescents .... *jahnu* (Moore)

78. *Tanaecia lepidea lepidea* (Butler) (Grey Count)

1868. *Adolias lepidea* Butler, *Ann. Mag. nat. Hist. Lond.*, (4) : 71.

1911. *Euthalia lepidea* (Butler) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 59.

1932. *Euthalia lepidea lepidea* (Butler) : *Identification of Indian Butterflies,* : 150.

2003. *Lebadea martha martha* (Butler) : *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* 9(Part-4) : 67.

Material examined : Nil.

Forewing length : 32-33 mm.

Distribution : India : Nagaland, Sikkim, Uttar Pradesh and Arunachal Pradesh.

Remarks : The nominate subspecies differs from *Tanaecia lepidea miyana* (Fruhstorfer) found in North Kanara and Orissa by upperside of wings with pale grey borders. Its status is not rare but it has been listed in Schedule–II (Part–2) of the Indian Wildlife (Protection) Act.

79. *Tanaecia julii appiades* (Ménétriés) (Common Earl)

1857. *Adolias appiades* Ménétriés, *Enum. Crop. An. Mus. Peter, Lep.,* 2 : 120, pl. 9, fig. 4.

1911. *Euthalia appiades* (Ménétriés) : Tytler, *J. Bombay nat. Hist. Soc.,* 21(1) : 59.

1932. *Euthalia julii appiades* (Ménétriés) : *Identification of Indian Butterflies,* : 151.

2003. *Euthalia julii appiades* (Ménétriés) : *Fauna of Sikkim, State Fauna Series,* 9(Part-4) : 67. *Zool. Surv. India.*

Material examined : Nil.

Forewing length : 33-38 mm.

Distribution : India : Nagaland, Sikkim and Uttar Pradesh.

Remarks : This subspecies is differentiated from *T. julii adima* Moore found in Meghalaya and *T. julii sedeva* (Moore) in Manipur and North Myanmar by upperside of hind wing in male with blue margin to outer discal band and reaching vein M_1, female rather pale brown with whitish spots at the upper end of each discal band in area M_1; underside of hind wing with tornal half green and female all bluish except apex.

80. *Tanaecia jahnu jahnu* (Moore) (Plain Earl)

1857. *Adolias jahnu* Moore, *Cat. Lep. Mus. East India Coy.,* 1 : 192.

1881. *Adolias sananda* Moore : De Nicéville, *J. Asiat. Soc. Beng.,* 50(1) : 58.

1911. *Euthalia jahnu* (Moore : Tytler, *J. Bombay nat. Hist. Soc.,* 21(1) : 59.

1932. *Euthalia jahnu jahnu* (Moore) : Evans, *Identification of Indian Butterflies,* : 152.

2003. *Euthalia Euthalia jahnu jahnu* (Moore) : *Fauna of Sikkim, State Fauna Series,* 9(Part-4) : 67. *Zool. Surv. India.*

Material examined : Nil.

Forewing length : 33-35 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, Assam and West Bengal.

Elsewhere : Bangladesh and North Myanmar.

Remarks : Only the nominate subspecies is found in India. Tytler (1911) recorded it from Nagalnd.

XLIV. Genus *Euthalia* Huebner

1819. *Euthalia* Huebner, *Verz. bekannt. Schmett.,* (3) : 41.

The genus includes more than 12 species in India, of which, seven are recorded from Nagaland.

Key to species

1. Upperside or underside of fore wing never with two detached apical white spots on either side of vein R_5, just behind origin of vein R_4 unless forming part of pale band in female; upperside of fore wing with basal markings in area $1_A + 2_A$ consisting of a well defined ring under origin of vein Cu_{1b} reaching mid $1_A + 2_A$ as well as a dark dot at the extreme base 2

– Upperside or underside of fore wing always with two detached apical white spots on either side of vein R_5 just before origin of vein R_4. Upperside of fore wing basal markings on area $1_A + 2_A$ consisting of a spot, not a ring, under origin of vein Cu_{1b} may be replaced by a ring 5

2. Underside of fore wing at base in area $1_A + 2_A$ bearing always a ring or round spot under

origin of vein Cu_{1b} with usually a second below it 3

– Underside of fore wing without basal markings in area in $1_A + 2_A$ or only a single spot or dash under origin of vein Cu_{1b} and only very rarely a spot present at the extreme base 4

3. Apex of fore wing pointed; in male hind wing with tornus produced and termen convex. Male dark brown with a discal band on upperside of fore wing and a broad bluish grey margin on upperside of hind wing. Female paler brown with usual two dark discal lines .... *kesava* (Moore)

– Apex of fore wing highly falcate; in male, hind wing at tornus produced and termen being concave before tornus. Upperside of wings in male ash grey, male less suffused with greenish. In female curved row of small spots present beyond cell from area Cu_{1a} to costa ..... *anosia* (Moore)

4. Upperside of fore wing with cilia white at apex; hind wing termen evenly convex and tornus not produced .... *telchinia* (Menetries)

– Upperside of fore wing with cilia brown throughout; hind wing with tornus produced in male ..... *merta* Oberthuer

5. Upperside of wings dark green with red spots on hind wing and in cell of fore wing .... *lubentina* (Cramer)

– Upperside of wings without any of the red spots 6

6. Upperside of hind wing with a outer discal band of small and usually well defined and well separated spots..... *aconthea* (Cramer)

– Upperside of hind wing with outer discal line continuous or absent but never of well defined and separated small spots. 7

7. Upperside of fore wing with a white streak at termen in area R_5, extending in areas M_1 and R_4 on underside of fore wing .... *jama* (Felder)

– Upperside of fore wing without any white steak in area R_5 ..... *phemius* (Doubleday)

81. ***Euthalia telechina*** (Ménétriés) (Blue Baron)

1857. *Adolias telchinia* Ménétriés, *Enum. Carp. Anim. Mus. Petrop, Lep.*, **2** : 120, pl. 9, fig. 3.

1911. *Euthalia telechinia* (Ménétriés) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 59.

1932. *Euthalia telechinia* (Ménétriés) : Evans, *Identification of Indian Butterflies*, : 169.

1994. *Euthalia telechinia* (Ménétriés) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Nil.

Forewing length : 36 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Karnatata, Sikkim and West Bengal.

Elsewhere : Nepal and N. Myanmar.

Remarks : Tytler (1911) recorded this species from Nagaland. Its status is very rare. This species has been included in Schedule–I (Part-4) of the Indian Wildlife (Protection) Act.

82. ***Euthalia kesava arhat*** Fruhstorfer (Powdered Baron)

1911. *Euthalia arhat* Fruhstorfer, In Seitz : *Macroepidoptera of the World*, **9** : 530.

1911. *Euthalia kesava* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 59.

1932. *Euthalia kesava arha* Fruhstorfer : Evans, *Identification of Indian Butterflies*, : 169.

2003. *Euthalia kesava arha* Fruhstorfer : *Fauna of Sikkim, State Fauna Series*, **9** (Part-4) : 67. *Zool. Surv. India.*

Material examined : Nil.

Forewing length : 28-33 mm.

Distribution : India : Nagaland and Sikkim.

Remarks : This subspecies differs from the nominate one occurring from Assam to North Myanmar by the male being pale and in female pale discal band less developed, respectively.

83. ***Euthalia lubentina indica*** Fruhstorfer (Gaudy Baron)

1911. *Euthalia indica* Fruhstorfer, *Stett., Zg.*, **65** : 350.

1911. *Euthalia lubentina* Cramer : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 59.

1932. *Euthalia lubentina indica* Fruhstorfer : Evans, *Identification of Indian Butterflies*, : 169.

2003. *Euthalia lubentina indica* Fruhstorfer : Gupta, *Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 67. *Zool. Surv. India.*

Material examined : Nil.

Forewing length : 30-32 mm.

Distribution : India : Nagaland, Sikkim, Himachal Pradesh to Arunachal Pradesh, and Maharashtra to Bengal.

Elsewhere : Bangladesh and Myanmar.

Remarks : This subspecies differs from its counterpart *E. lubentina arasada* Fruhstorfer found in South India by its uniform dark colouration. It exhibits considerable season variation. It has been included in Schedule-4 of the Indian Wildlife (Protection) Act.

84. ***Euthalia aconthea suddhodana*** Fruhstorfer (Common Baron)

1911. *Euthalia suddhodana* Fruhstorfer, In Seitz, *Macrolapidoptera of the world*, **9** : 667.

1911. *Euthalia garuda* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 59.

1932. *Euthalia garuda suddhodana* Fruhstorfer : Evans, *Identification of Indian Butterflies*, : 169.

2003. *Euthalia acnthea suddhodana* Fruhstorfer hstorfer : Gupta, *Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 67. *Zool. Surv. India.*

Material examined : Nil.

Forewing length : 29 mm.

Distribution : India : Nagaland, Sikkim and 'Bengal'

Remarks : The species, *Euthalia aconthea* (Cramer) is highly variable and is, thus, represented in India by five subspecies, *viz.*, *E. aconthea meridionalis* Fruhstorfer-from South India to North Kanara, *E.aconthea anagama* Fruhstorfer–Bombay to Orissa, *E. aconthea aconthea* Cramer–Assam to Myanmar, *E. aconthea aconthis* Hewitson–Andamans and lastly *E. aconthea suddhodana*. The latter is distinguished from others by the darker colouration and upperside of fore wing bearing discal spots smaller.

85. ***Euthalia jama jamida*** Fruhstorfer (Streaked Baron)

1911. *Euthalia jamida* Fruhstorfer, *Ins. Boerse*, **23** 19.

1911. *Euthalia jama* Felder : Tytler, *J. Bombay nat. Hist Soc.*, **21**(1) : 59.

1932. *Euthalia jama jamida* Felder : Evans, *Identification of Indian Butterflies*, : 169.

2003. *Euthalia jama jamida* Felder : Gupta, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 67.

Material examined : Nil.

Forewing length : 28-29 mm.

Distribution : India : Nagaland and Sikkim.

Remarks : This subspecies is distinguished from the nominate one found in Assam and Manipur by the upperside of wings being pale and bearing narrow markings.

86. ***Euthalia phemius*** (Doubleday) (White Edged Blue Baron)

1848. *Itanus phemius* Doubleday, *Gen. Diurn. Lep.* pl. 41, 41, fit. 4. (male.)

1911. *Euthalia phemius* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 59.

1932. *Euthalia phemius* (Doubleday) : Evans, *Identification of Indian Butterflies*, : 169.

2003. *Euthalia phemius* (Doubleday) : Gupta, *Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 67. *Zool Surv. India.*

Material examined : Nil.

Forewing length : 32-34mm.

Distribution : India : Nagaland, Sikkim, Assam, Meghalaya and Nagaland.

Elsewhere : Bangladesh, Bhutan and Myanmar.

Remarks : The species exhibits sexual dimorphism as upperside of hind wing is with broad blue border in male but upperside of hind wing entirely brown in female.

XLV. Genus *Lexias* Boisduval

1832. *Lexias* Boisduval, In : d'Urville, Voy. *"Astrolabe" Fauna Ent.* **1** (Lep.) : 125.

Of the three species of this genus occurring in India, two, viz., *Lexias khasiana* (Swinhoe) *L. dirtea* are treated from Nagaland.

Key to species

- Antennae black above. Male with underside of wings ferruginous brown ....*khasiana* Swinhoe
- Antennae prominently yellow tipped above. Male with underside of wings ochreous brown ..... *dirtea* (Fabricius)

87. *Lexias khasiana khasiana* (Swinhoe) (Dark Archduke)

1893. *Symphaedra khasiana* Swinhoe, *Trans. ent. Soc. London,* : 284.

1911. *Symphaedra khasiana* Swinhoe : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 58.

1932. *Adolias khasiana khasiana* (Swinhoe) : Evans, *Identification of Indian Butterflies,* : 158.

1994. *Lexias khasiana* (Swinhoe) : Varshney, *Oriental Insects,* **28** : 185.

Material examined : Nil.

Wing expanse : 80-105 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and Assam.

Elsewhere : Bhutan.

Remarks : This nominate subspecies differs from *L. khasiana intermedia* (Tytler) found in Nagaland by the male having upperside of fore wing unspotted and blue border vestigial, hind wing with blue border narrow and mostly purple bearing a row of blue spots; in female upperside of wings with bluish white spots and underside ochreous brown. Bingham (1905) and Wynter-Blyth (1957) considered it as rare. It has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

88. *Lexias dirtea* (Fabricius) (Dark Archduke)

1911. *Adolias dirtea jadeitina* Fruhstorfer, *Macrolepidoptera of the World,* **9** : 651

1911. *Symphaedra dirtea* Fabricius : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 58.

1932. *Adolias dirtea jadeitina* Fruhstorfer : Evans, *Identification of Indian Butterflies* : 158.

1994. *Lexias dirtea* (Fabricius) : Varshney, *Oriental Insects,* **28** : 185.

Material examined : Nil.

Wing expanse : 80-105 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and Assam.

Elsewhere : Bhutan.

Remarks : This subspecies was reported from Nagaland by Tytler (1911).

XLVI. Genus *Bassarona* Moore

1897. *Bassarona* Moore, *Lep. Indica,* **3** (7) : 49, 59.

The genus is represented in India by ten species, of which five are found in Nagaland.

Key to species

1. Upperside of fore wing with a submarginal row of white spots, cell of fore wing not completly closed .....*franciae* (Gray)
- Upperside of fore wing without any row of submarginal white spots, cell of fore wing completly closed 2
2. Upperside of fore wing bronzy olive green in male and without any white discal band, rather a narrow white discal band present in fore wing of female spot in area M_3 elongate, pointed and well separated from the spots on either side ..... *nara* (Moore)
- Upperside of fore wing with a pale discal band in male, spot in area M_3 conjoined to spots on either side both in male as well as in female 3
3. Upperside of hind wing with a continuous

curved discal band from costa to vein 4, fore wing with white discal band narrow and dusky at lower end,upper spots small, the spot in space 4smaller than others .... *khama* Alpheraky

– Upperside of hind wing with a macular discal band, fore wing with a spot in 4 as large as other spots; discal band pale yellow in male and usually white in female.....4

4. On upperside of fore wing, distance of outer edge of spot in area Cu_{1b} from termen about equal to the length of spot..... ..... *sahadeva* (Moore)

8. On upperside of fore wing, distance of outer edge of spot in area Cu_{1b} from termen about half the length of the spot ..... *iva* (Moore)

89. ***Bassarona franciae franciae*** (Gray) (French Duke)

1846. *Adolias franciae* Gray, *Lep. Ins. Nepal*, : 12, pl. 14.

1911. *Euthalia franciae* race *attenuata* Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 59.

1932. *Euthalia francia franciae* (Gray) : Evans, *Identification of Indian Butterflies*, : 169.

1992. *Euthalia franciae franciae* (Gray) : 1994. *Bassarona franciae* (Gray) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Nil.

Forewing length : 28-32 mm.

Distribution : India : Nagaland and Sikkim.

Elsewhere : Bhutan and Nepal.

Remarks : The nominate subspecies is distinguished from *B. franciae rajah* (Felder) found from India (Assam) – Myanmar (Karens) by the upperside of wings bearing broad white discal band and all slightly diffused markings.. Its status is very rare and it has been included in Schdule-1 (Par-4) of the Indian Wildlife (Protection) Act.

90. ***Bassarona nara nara*** (Moore) (Bronze Duke)

1859. *Adolias nara* Moore, *Trans. ent. Soc. Lond.* New ser. **5** : 78, pl. 8, fig. 1.

1911. *Dophla nara* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 58.

1932. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies*, : 169.

1992. *Euthalia nara nara* (Moore) :

1994. *Bassarona nara* (Moore) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Nil.

Forewing length : 35–38 mm.

Distribution : India : Sikkim.

Elsewhere : North Myanmar.

Remarks : Only the nominate subspecies is found in India. Tytler (1911) mentioned its occurrence in Nagaland. Its status in rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

91. ***Bassarona sahadeva sahadeva*** (Moore) (Green Duke)

1859. *Adolias sahadeva* Moore, *Trans. ent. Soc. Lond.* New series, **5** : 80, pl. 8, Fig. 3.

1911. *Dophla sahadeva* (Moore) : Tytler, *J. Bombay nat Hist. Soc.*, **21**(1) : 58.

1932. *Euthalia sahadeva sahadeva* (Moore): Evans, *Identification of Indian Butterflies* : 169.

1994. *Bassarona sahadeva* (Moore) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Nil.

Forewing length : 41-44 mm.

Distribution : India : Nagaland, Sikkim.

Elsewhere : Bhutan.

Remarks : The nominate subspecies is distinguished from *B. sahadeva nadaka* (Frushtorfer) found from Assam to Manipur by upperside of hind wing in male bearing discal spots extending to area 1 and beyond the spots in areas M_2 and M_1 but wing being conspicuously paler, showing up the very broad postdiscal band. Tytler (1911) observed this subspecies in Nagaland. Its status is rare and it has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

92. *Bassarona iva* (Moore)

1857. *Adolias iva* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 195.

1914. *Dophla iva* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 507.

1932. *Euthalia iva* (Moore) : Evans, *Identification of Indian Butterflies*, : 169.

1994. *Bassarona iva* (Moore) : Varshney, *Oriental Insects*, **28** : 184.

Material examined : Nil.

Wing expanse : 115-125 mm.

Distribution : India : Nagaland, Sikkim and Manipur.

Remarks : Its status is very rare and it has been included in Scheudule-1 (Part-4) of the Indian Wildlife (Protection) Act.

93. *Bassarona khama curvifascia* (Tytler)

1911. *Dophla curvifasciata* Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 58.

1932. *Euthalia khama curvifascia* (Tytler) : Evans, *Identification of Indian Butterflies*, : 156.

1994. *Bassarona khama* (Alpheraky) Varshney, *Oriental Insects*, **28** : 184.

Material examined : Nil.

Wing expanse : 75-95 mm.

Distribution : India : Nagaland and Manipur.

Remarks : Its status is very rare and it has been included in Scheudule-1 (Part-4) of the Indian Wildlife (Protection) Act.

XLVII. Genus *Dophla* Moore

1880. *Dophla* Moore, *Lep. Ceylon*, **1** (1) : 33.

This genus is represented in India by a single species–*Dophla evelina* (Stoll).

94. *Dophla evelina derma* (Kollar) (Redspot Duke)

1848. *Adolias derma* Kollar, *Huegel's Kaschmir*, **4** (2) : 436, No. 2.

1911. *Dophla derma* Kollar : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 58.

1932. *Euthalia evelina derma* Kollar, : Evans, *Identification of Indian Butterflies*, : 157.

1994. *Dophla derma* Kollar : Varshney, *Oriental Insects*, **28** : 185.

Material examined : Nil.

Wing expanse : 80-105 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh and Assam.

Elsewhere : Bhutan.

Remarks : This subspecies differs from *Euthalia evelina laudabilis* (Swinhoe) found in South India by the upperside of wings being brown It has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

Tribe **Pseudergolini**

Fore wing and hind wing with cells closed. Fore tarsi clawed in females with a few exceptions.The tribe is represented in India by three genera.

Key to genera

1. Eyes hairy ..... ***Stibochiona*** Butler
– Eyes not hairy ..... ***Pseudergolis*** Felder

XLVIII Genus *Stibochiona* Butler

1816. *Stibochiona* Butler, *Proc. zool Soc. Lond*,. **3** : 614.

This genus is known in India by a single species, *Stibochiona nicea* (Gray).

95. *Stibochiona nicea nicea* (Gray) (Popinjay)

1846. *Adolias nicea* Gray, Lep. Ins. Nepal : 13, pl. 12. fig.1.

1881. *Stibochiona nicea* (Gray) : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 57.

1911. *Stibochiona nicea* (Gray) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 58.

1932. *Stibochiona nicea* (Gray) : Evans, *Identification of Indian Butterflies* : 169.

1992. *Stibochiona nicea nicea* (Gray) : Haribal, *Butterflies of Sikkim Himalaya* : 156.

Material examined : Nil.

Forewing length : 30-34 mm.

Distribution : India : Nagaland, Sikkim, Himachal Pradesh to Arunachal Pradesh.

Elsewhere : Bangladesh and North Myanmar.

Remarks : Only the nominate subspecies occurs in India. Tytler (1911) recorded it from Nagaland.

XLIX Genus ***Pseudergolis*** Felder

1867. *Pseudergolis* Felder, *Novara Reise, Lep.* 3 : 404.

This genus is represented in India by only a single species, *Pseudergolis wedah* (Kollar).

96. ***Pseudergolis wedah*** (Kollar) (The Tabby)

1844. *Ariadne wedah* Kollar, *Huegel's Kaschmir*, 4 (Part 2) : 437.

1911. *Pseudergolis wedah* (Kollar) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 64.

1932. *Pseudergolis wedah* (Kollar) : Evans, *Identification of Indian Butterflies* : 169.

1992. *Pseudergolis wedah* (Kollar) : Haribal,

Material examined : Nagaland : Wokha District, Lungsang, Wokha, alt. 1340 m., 1 ex., 14.10.1998. (Coll. T. K. Pal and Party).

Forewing length : 28-30mm.

Distribution : India : Nagaland (Wokha), Sikkim, Arunachal Pradesh, Assam, Jammu & Kashmir, Meghalaya and West Bengal.

Elsewhere : Bangladesh and Myanmar.

Remarks : The females are usually paler than males. This species was ealier recorded from Nagaland by Tytler (1911).

Tribe **Apaturini**

Labial palpi with second segment not inflated. Fore wing vein S_C not dilated at base, R_4 ending at apex or on termen (with a few exceptions), R_2 arising from R_5 or from end cell, apex of cell closer to wing base than origin of vein Cu_{1a}; fore wing cell short and open. Hind wing precostal vein arising beyond origin of S_C+R_1.

The tribe is known in India by 10 genera and are also represented in Nagaland.

Key to genera

1. Antennae longer than half the length of fore wing costa.Labial palpi white or brown throughout 2

– Antennae equal to half the length of the costa. Labial palpi black or black and white 6

2. Antennal club sharply spatulate. Fore wing with upper end of cell obtuse, R_2 arising from R_5 ..... ***Helcyra*** Felder

– Antennal club stout and gradual. Fore with upper end cell right angled or acute, R_2 arising from cell 3

3. Cell closed in fore and hind wings ..... ***Dilipa*** Moore

– Cell open in fore and hind wings 4

4. Underside of fore wing with prominent small subapical white dots in spaces M_2, M_1 and R_4 ..... ***Rohana*** Moore

– Underside of fore wing without any of the minute subapical white dots in spaces M_2, M_1 and R_4 5

5. Underside of fore wing with black spots in cell ..... ***Apatura*** Fabricius

– Underside of fore wing without any black spot in cell ..... ***Chitoria*** Moore

6. Fore wing with vein R_2 arising from R_5 7

– Fore wing with rein R_2 arising from cell 9

7. Palpi very long and black with a white tip. ..... ***Sephisa*** Moore

– Palpi short and white at base 8

8. Eyes hairy ..... ***Diagora*** Snellen

– Eyes smoooth ..... ***Euripus*** Doubleday

9. Fore wing with vein S_C long and ending on costa before origin of vein 9(R_3) .... ***Hestina*** Westwood

– Fore wing with vein Sc ending after origin of vein 9 (R_3)..... ***Sasakia*** Leech

L. Genus ***Helcyra*** Felder

1860. *Helcyra* Felder, *Sitzungsb. Ak. Wiss,* **40** : 450.

Only a single species, *Helcyra hemina* Hewitson represents this genus in India.

97. ***Helcyra hemina*** Hewitson (White Emperor)

1864. *Helcyra hemina* Hewitson, *Trans. ent. Soc. Lond.,* (3) **2** : 245, pl. 15, Fig. 1.

1911. *Helcyra hemina* Hewitson : Tytler, *J. Bombay nat. Hist. Soc.,* **21**(1) : 56.

1932. *Helcyra hemina* Hewitson : Evans, *Identification of Indian Butterflies,* : 169.

2003. *Helcyra hemina* Hewitson : Gupta, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 75.

Material examined : Nil.

Forewing length : 32-33 mm.

Distribution : India : Nagaland, Sikkim and Nagaland.

Elsewhere : Myanmar.

Remarks : Tytler (1911) recorded this species from Nagaland. De Nicéville (1886) commented about this species as very beautiful and rare. It has been included in Schedule-1 (Part-4) of the Indian Wildlife (Protection) Act.

LI. Genus ***Dilipa*** Moore

1857. *Dilipa* Moore, *Cat. Lep. Mus. East India Coy.,* **1** : 201

This genus is represented in India by a single species, *Dilipa morgiana* Westwood.

98. ***Dilipa morgiana*** (Westwood) (Golden Emperor)

1851. *Apatura ? morgiana* Westwood, *Gen. diurn. Lep.,* **2** : 305, no. 22.

1911. *Dilipa morgiana* (Westwood) : Tytler, *J. Bombay nat. Hist. Soc.,* **21**(1) : 57.

1932. *Dilipa morgiana* (Westwood) : Evans, *Identification of Indian Butterflies,* : 169.

1994. *Dilipa morgiana* (Westwood) : Varshney, *Oriental Insects,* **28** : 187.

2003. *Dilipa morgiana* (Westwood) : Gupta, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 75.

Material examined : Nil.

Forewing length : 34mm.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir and Sikkim.

Elsewhere : Myanmar and Nepal.

Remarks : This species exhibits sexual dimorphism as upperside of wings is golden bronzy in male but white in female. Its status is rare and it has been included in Schedule-I (Part-4) of the Indian Wildlife (Protection) Act.

LII. Genus ***Rohana*** Moore

1880. *Rohana* Moore, *Lep. Ceylon,* **1** (1) : 27.

Two species, *Rohana parvata* Moore and *R. parisatis* Westwood occur in India.

Key to species

Eyes hairy. Upperside of fore and hind wings brown in both sexes ..... *.parvata* (Moore)

– Eyes not hairy. Upperside of fore and hind wings purple-black in male and brown in female ..... *parisatis* (Westwood)

99. ***Rohana parvata*** (Moore) (Brown Prince)

1857. *Apatura parvata* Moore, *Cat. Lep. Mus. East India Coy.,* **1** : 202, pl. 6a, fig. 6 male.

1911. *Apatura parvata* Moore : Tytler, *J. Bombay nat. Hist. Soc.,* **21**(1) : 57.

1932. *Apatura parvata* Moore : Evans, *Identification of Indian Butterflies,* : 169.

1994. *Rohana parvata* (Moore) : Varshney, *Oriental Insects,* **28** : 186.

2003. *Rohana parvata* (Moore) : Gupta, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 76.

Material examined : Nil.

Forewing length : 24-26 mm.

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Bhutan.

Remarks : The status of this species is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

100. ***Rohana parisatis parisatis*** (Westwood) (Black Prince)

1850. *Apatura parisatis* Westwood, In Doubleday, Westwood and Hewitson, *Gen. diurn. Lep.*; **2** : 305, no. 20.

1881. *Rohana parysatis* (sic) (Westwood) : De Nicéville, *J. Asiat. Soc. Beng.*, **50** (1) : 58.

1911. *Apatura parisatis* Westwood : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 56.

1932. *Apatura parisatis parisatis* (Westwood) : Evans, *Identification of Indian Butterflies*, : 169.

2003. *Apatura parisatis parisatis* (Westwood) : Gupta, *Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 76. *Zool. Surv. India.*

Material examined : Nil.

Forewing length : 21-23mm.

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Bangladesh and Myanmar.

Remarks : This nominate subspecies differs from its counterpart *atacinus* Fruhstorfer occurring in South India by the presence of a single apical dot on upperside of fore wing and female is much darker. Tytler (1911) recorded it from Nagaland.

LIII. Genus ***Apatura*** Fabricius

1807. *Apatura* Fabricius, *Mag. f. Insektenk* (Illiger), **6** : 280.

Two species, *viz.*, *Apatura ambica* Kollar and *A. chevana* Moore of this genus occurring in India are dealt with from Nagaland.

Key to species

1. Upperside of fore wing cell with a broad white streak ..... *chevana* (Moore)
- Upperside of fore wing cell without any streak ..... *ambica* Kollar

101. ***Apatura chevana*** (Moore) (Sergeant Emperor)

1865. *Athyma chevana* Moore, *Proc. zool. Soc. Lond.*, : 763 pl. 41, fig. 1 male.

1911. *Apatura chevana* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 56.

1932. *Apatura chevana* (Moore) : Evans, *Identification of Indian Butterflies*, : 169.

1994. *Apatura chevana* (Moore) : Varshney, *Oriental Insects*, **28** : 186.

2003. *Apatura chevana* (Moore): Gupta, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 76.

Material examined : Nil.

Forewing length : 36-37 mm.

Distribution : India : Nagaland and Sikkim.

Elsewhere : North Myanmar.

Remarks : The presence of a broad white streak in cell on upperside of fore wing makes this species mimick other species of *Athyma* Westwood. Its status is rare and it has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

102. ***Apatura ambica ambica*** Kollar (Indian Purple Emperor)

1844. *Apatura ambica* Kollar, *Huegel Kaschmir*, **4** (2) 431.

1911. *Apatura ambica* Kollar : Tytler, *J. Bombay nat Hist Soc.*, **21**(1) : 56.

1932. *Apatura ambica* Kollar: Evans, *Identification of Indian Butterflies*, : 169.

2003. *Apatura ambica* Kollar : Gupta, *Fauna of Sikkim, State Fauna Series*, **9** (Part-4) : 76. *Zool. Surv. India*

Material examined : Nil.

Forewing length : 31-33mm.

Distribution : India : Nagaland, Assam, Sikkim and West Bengal.

Elsewhere : Myanmar.

Remarks : This nominate subspecies differs from its counterpart *chitralensis* Evans found from Pakistan (Chitral) to India (Jammu & Kashmir) by lesser wing expanse and well defined markings

on wings. Its status is rare. Tytler(1911) reported its occurrence in Nagaland.

LIV. Genus ***Chitoria*** Moore

1896. *Chitoria* Moore, *Lep. Indica,* **3** (25) : 10.

Of the three species of this genus occurring in India, two, viz., *Chitoria sordida* Moore and *C. florenciae* Tytler are treated here from Nagaland.

Key to species

1. Upperside of wings dark brown, fore wing with a single discal pale macular in male, continuous in female, in addition to white apical spots; hind wing without a pale band. Underside of fore- and hind wings, each with a fulvous ringed ocellus in space 2, dark discal line white edged at upper end .... *sordida* (Moore)

– Upperside of wings dark brown, fore wing with two discal bands and the outer being broken at vein 4; in addition to white apical spots; in male hind wing only tawny in spaces 5 and 6, in female post discal spots well defined. Underside of fore- and hind wings pale greenish white.....*florenciae* (Tytler)

103. ***Chitoria sordida sordida*** (Moore) (Sordid Emperor)

1865. *Apatura sordida* Moore, *Proc. zool. Soc. Lond.,* : 765, pl. 41.

1911. *Apatura sordida* Moore : Tytler, *J. Bombay nat. Hist. Soc.,* **21**(1) : 56.

1914. *Apatura sordida naga* Tytler, *J. Bombay nat. Hist. Soc.,* **21**(1) : 502.

1932. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies,* : 169.

1992. *Apatura sordida sordida* : Haribal,

1994. *Chitoria sordida* (Moore) : Varshney, *Oriental Insects,* **28** : 186

Material examined : Nil.

Forewing length : 30-31 mm.

Distribution : India : Nagaland.

Remarks : This subspecies *Chitoria sordida naga* (Tytler) is distinguished from the nominate one occurring in Sikkim and Myanmar by the absence of discal white band on upperside of fore wing, a prominent ocellus in space Cu_{1b} in hind wing, and, underside of wings brown. Tytler (1911) mentioned its occurrence in Nagaland. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

104. ***Chitoria ulupi florenciae*** (Tytler) (Tawny Emperor)

1911. *Apatura florenciae* Tytler, *J. Bombay nat. Hist. Soc.,* **21**(1) : 56.

1932. *Apatura ulupi florenciae* Tytler : Evans, *Identification of Indian Butterflies,* : 146.

1994. *Chitoria florenciae* Tytler : Varshney, *Oriental Insects,* **28** : 187.

Material examined : Nil.

Forewing length : 30-31 mm.

Distribution : India : Nagaland and Sikkim.

Elsewhere : North Myanmar.

Remarks : This subspecies differs from the nominate subspecies occurring in Upper Assam by the outer discal band broken at vein 4 in fore wing and upperside of fore wing tawny in areas 5 and 6 only.

LV. Genus ***Sephisa*** Moore

1882. *Sephisa* Moore, *Proc. zool. Soc. Lond.,* : 240.

The genus is represented in India by two species, *viz., Sephisa chandra* (Moore) and *S. dichroa* (Kollar) and the former is dealt with from Nagaland.

105. ***Sephisa chandra*** (Moore) (Eastern Courtier)

1858. *Castalia chandra* Moore, *Cat. Lep. Ins. Mus. East India Coy,* **1** : 200, pl. 6A.

1882. *Sephisa chandra* (Moore) : De Nicéville, *J. Asiat. Soc. Beng.,* **51** (2-3) : 60.

1911. *Sephisa chandra* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.,* **21**(1) : 58.

1932. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies,* : 169.

1994. *Sephisa chandra* (Moore) : Varshney, *Oriental Insects*, **28** : 187.

Material examined : Nagaland : Kohima District, Ruzaphema, 16 km. South East of Jharnapani, Kohima, alt. 575 m. 1 ex., 2.1.1990, (Coll. J.P. Sinha and party).

Forewing length : 38-39 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Sikkim, and West Bengal.

Elsewhere : Myanmar.

Remarks : The female of this species is very rare and polymorphic. Tytler (1911) reported its occurrence in Nagaland. It has been included in Schedule-1 (Part-4) of the Indian Wildlife (Protection) Act.

LVI. Genus ***Diagora*** Snellen

1844. *Diagora* Snellen, *Tijdschr. Ent.*, **37** : 67.

This genus is represented in India by two species, *viz.*, *Diagora persimilis* Westwood and *D. nicévillei* Moore and of which the former is dealt with from Nagaland.

106. ***Diagora persimilis persimilis*** (Westwood) (Siren)

1850. *Diadema persimilis* Westwood, *Gen. diurn. Lep.*, **2** : 281, no. 19.

1882. *Hestina persimilis* (Westwood) : De Nicéville, *J. Asiat. Soc. Beng.*, **51** (2-3) : 58.

1911. *Parhestina persimilis* (Westwood) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 57.

1932. *Neptis ananta namba* Tytler : Evans, *Identification of Indian Butterflies*, : 169.

1994. *Diagora persimilis* (Westwood) : Varshney, *Oriental Insects*, **28** : 186.

Material examined : Nil.

Forewing length : 32-33 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Meghalaya, Nagaland and Orissa.

Elsewhere : Myanmar.

Remarks : This nominate subspecies is distinguished from *D. persimilis zella* Butler, found from Himachal Pradesh (Shimla) to Uttar Pradesh (Kumaon), by the presence of narrower white markings or darker wings and apex of fore wing produced. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

LVII Genus ***Euripus*** Doubleday

1848. *Euripus* Doubleday, *Gen. diurn. Lep.*, (2) : pl. 41, fig. 2.

Of the two species, *viz.*, *Euripus nyctelius* (Doubleday) and *E consimilis* (Westwood) occurring in India, the former is treated from Nagaland.

107. ***Euripus nyctelius*** (Doubleday) (Courtesan)

1845. *Diadema nyctelius* Doubleday, *Ann. Mag. nat. Hist.*, **16** : 182 : female.

1911. *Euripus halitherses* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 58.

1932. *Euripus halitherses* (Doubleday) : Evans, *Identification of Indian Butterflies*, : 169.

1994. *Euripus nyctelius* (Doubleday) : Varshney, *Oriental Insects*, **28** : 188.

Material examined : Nil.

Forewing length : 33-36 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Meghalaya, Sikkim, West Bengal.

Elsewhere : Myanmar.

Remarks : The female of this species is polymorphic. Tytler (1911) recorded this species from Nagaland.

LVIII. Genus ***Hestina*** Westwood

1850. *Hestina* Westwood, In Doubleday's *Gen. diurn. Lep.*, **2** : 281.

Only a single species, *Hestina nama* (Doubleday) represents this genus in India.

108. ***Hestina nama*** (Doubleday) (Circe)

1845. *Diadema nama* Doubleday, *Ann. Mag. nat. Hist.*, (1) **16** : 232.

1881. *Hestina nama* (Doubleday) : De Nicéville. *J. Asiat. Soc. Beng.*, **50** (1) : 57.n

1911. *Hestina nama* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 57.

1932. *Hestina nama* (Doubleday) : Evans, *Identification of Indian Butterflies*, : 169.

1994. *Hestina nama* : Varshney, *Oriental Insects*, **28** : 188.

Material examined : Nagaland : Mon Mon District, Mon area 6 km. West of Mon Mon , 1 ex., no date, (Coll. Y.P. Sinha and Party).

Forewing length : 47-49 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar.

Remarks : The discal streaks and postdical spots are bifurcated outwardly. This species mimicks 'Chestnut Tiger'–*Danaus tytia* Gray of the subfamily Danainae. Tytler (1992) mentioned its occurrence in Nagaland.

LIX. Genus ***Sasakia*** Moore

1896. *Sasakia* Moore, *Lep. Ind.* **3** (26) : 39.

109. ***Sasakia funebris*** Leech

1891. *Sasakia funebris* Leech, *Entomologist*, **24**, Supplement : 27

1914. *Euripus funebris* (Leech) : Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 504.

1932. *Sasakia funebris* Leech : Evans, *Identification of Indian Butterflies*, : 169.

Material examined : Nil.

Forewing expanse : 125-130 mm.

Distribution : India : Nagaland.

Remarks : Tytler (1914) mentioned its occurrence in Nagaland. This species has been listed in Schedule-I (Part-4) of the Indian Wildlife Protection Act.

Subfamily CHARAXINAE

Large and robust butterflies. Fore wing with cell closed, vein R_4 arising nearer to end of cell than to termen. Hind wing with cell open or closed.

This subfamily is represented in India by three genera, two of which are dealt with here.

Key to genera

1. Upperside of wings predominantly reddish to dark brown. Hind wing with cell slenderly closed, a single tooth or tail present at vein M_3 ..... ***Charaxes*** Ochsenheimer

– Upperside of wings predominantly pale yellowish or greenish white. Hind wing with cell open, subequal pointed tails present at veins Cu_{1b} and M_3 ..... ***Polyura*** Billberg

LX. Genus ***Charaxes*** Ochsenheimer

1816. *Charaxes* Ochsenheimer, *Schmett. Europe*, **4** : 18.

Of the six species of this genus occurring in India, five are dealt with from Nagaland.

Key to species

1. Upperside of fore wing and hind wing brown with a yellow or whitish discal band. Hind wing with long tails at veins Cu_{1b} and M_3 ... .*fabius* (Fabricius)

– Upperside of fore wing and hind wing tawny or chestnut. In male, hind wing more or less toothed at M_3 whereas in female, tailed at M_3 2

2. In male, upperside of fore wing with broad black border, never with tawny spots at apex; in female, upperside of fore wing with a broad discal band .....*polyxena* (Cramer)

– In male, upperside of fore wing with narrow black border, tawny spots reaching the apex and inwardly bordered by a lunular dark line; in female, upperside of fore wing without a white or pale discal band 3

3. Upperside of fore wing without apical spot above vein M_1. Underside of wings purple tawny ..... *aristogiton* Felder

– Upperside of fore wing with apical spots above vein M_1. Underside of wings ochreous 4

4. Underside of wings more or less uniform and markings regular, fore wing with mid cell black bar macular, hind wing with more or less straight (except just beyond end cell) discal line beyond cell ..... *marmax* Westwood

– Underside of wings with markings prominent and irregular; central band much darker, fore wing with all cell bars entire, hind wing with discal line very irregular and broken and may be highly concave in area M_1 .... *kahruba* (Moore)

110. *Charaxes fabius sulphureus* Rothschild & Jordan (Black Rajah)

1900. *Charaxes fabius sulphureus* Rothschild & Jordan, *Nov. Zool.*, 7 : 468.

1911. *Charaxes sulphureus* Rothschild & Jordan : Tytler, *J. Bombay nat. Hist. Soc.*, 21(1) : 55.

1932. *Charaxes fabius sulphureus* Rothschild & Jordan : Evans, *Identification of Indian Butterflies* : 142.

Material examined : Nil.

Forewing length : 36 mm.

Distribution : India : Nagaland and Assam.

Elsewhere : Myanmar.

Remarks : This subspecies is distinguished from the nominate subspecies, found in Himachal Pradesh, Maharashtra, Orissa, Sikkim, Uttar Pradesh and West Bengal by the upperside of wings sulphur yellow, bearing a broad pale discal band and hind wing spotting on termen wider. Tytler (1911) took its speimens sparingly at the foot of Naga Hills in June, October and November. Varhney (1994) treated *Charaxes fabius* Fabricius as synonym of *Charaxes solon* Fabricius.

111. *Charaxes polyxena hierax* Felder (Tawny Rajah)

1867. *Charaxes hierax* Felder, *Novara Reise, Lep. Rhop.* 3 : 422.

1911. *Charaxes hierax* Felder : Tytler, *J. Bombay nat. Hist. Soc.*, 21 : 55.

1932. *Charaxes polyxena hierax* Felder : Evans, *Identification of Indian Butterflies* : 141.

Material examined : Nil.

Forewing length : 37-42mm.

Distribution : India : Nagaland, Sikkim and West Bengal.

Elsewhere : North Myanmar.

Remarks : Bingham (1905) mentioned this subspecies as highly variable. Evans (1932) referred to males showing polymorphism. Tytler (1911) collected its specimens from at the foot Naga Hills in February to April, August and September and from Tamlu and Nichugaurd in August and assigned these specimens to several forms. Evans (1932) treated considered f. *jalinder* Butler same to *hipponax* Felder, f. *naganum* Tytler and f. *khasiana* Butler identical to f. *pleistonax* Moore and all these forms were earlie treated distinct by Tytler (1911).

112. *Charaxes aristogiton* Felder (Scarce Tawny Rajah)

1867. *Charaxes aristogiton* Felder, *Reise Novara, Lep.*, 3 : 445, no. 727.

1911. *Charaxes aristogiton* Felder : Tytler, *J. Bombay nat Hist. Soc.*, 21(1) : 55.

1932. *Charaxes aristogiton* Felder: Evans, *Identification of Indian Butterflies* : 141.

Material examined : Nil.

Forewing length : 41-43 mm.

Distribution : India : Nagaland, Sikkim and Assam.

Elsewhere : Bangladesh, Bhutan and Myanmar.

Remarks : Tytler (1911) took its five male specimens at the foot of Naga Hills in April and October. The status of this species is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife Protection Act.

113. *Charaxes marmax* Westwood (Yellow Rajah)

1848. *Charaxes marmax* Westwood, *Cab. Or. Ent.*, : 43, pl 21, male and female.

1911. *Charaxes marmax* Westwood : Tytler, *J. Bombay nat Hist. Soc.*, 21(1) : 55.

1932. *Charaxes marmax* Westwood : Evans, *Identification of Indian Butterflies* : 142.

Material examined : Nil.

Forewing length : 48-53 mm.

Distribution : India : Nagaland, Sikkim, Assam and Uttar Pradesh.

Elsewhere : Bangladesh and Myanmar.

Remarks : Tytler (1911) collected it's a few specimens at foot of Naga Hills in March, April and August.This species has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

114. ***Charaxes kahruba*** (Moore)
(Variegated Rajah)

1895. *Haridra kahruba* Moore, *Lep. Ind.*, **2** : 235, pl. 171, fig, 1, 1a-1c, ♂♀.

1911. *Charaxes kahruba* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 55.

1932. *Charaxes kahruba* (Moore) : Evans, *Identification of Indian Butterflies* : 142.

Material examined : Nil.

Forewing length : 48-50 mm.

Distribution : India : Nagaland, Sikkim, Assam and Uttar Pradesh.

Elsewhere : Myanmar.

Remarks : Tytler (1911) obtained two males from Tamlu and Gaspani in August and October. Its status is rare and it has been included in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

LXI Genus ***Polyura*** Billberg

1820. *Polyura* Billberg, *Enum. Ins. Mus. Billb.*, : 79.

Of the nine species occurring in India, six are dealt with from Nagaland.

Key to species

1. Upperside of wings with the ground colour black or deep indigo blue 2
- Upperside of wings with the ground colour yellowish white 4
2. Upperside of wings with discal area or band margined outwardly with blue .... *schreiber* Godart
- Upperside of wings with discal area or band not margined outwardly with blue 3
3. Upperside of wings with discal band pale yellow.....*athamas* (Drury)
- Upperside of wings with discal band pale greenish white ..... *arja* (Felder & Felder)
4. Upperside of fore wing with two series of pale white spots. Underside fore wing with costa white ..... *eudamippus* (Doubleday)
- Upperside of fore wing without any postdiscal series of pale or white spots 5
5. Underside of fore wing with a prominent chocolate brown band on inner side of discal area ..... .*moori* Distant
- Underside of fore wing without any chocolate brown band on inner side of discal area .... *delphius* (Doubleday)

115. ***Polyura schreiber assamensis*** (Rothschild)
(Blue Nawab)

1899. *Eulepis schreiber assamensis* Rothschild, *Novit. Zool.* **6** : 223, fig. 39, Holotype male, India : Khasi Hills (BMNH).

1911. *Eulepis schreiberi* Godart : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 56.

1932. *Eriboea schreiberi assamensis* (Rothschild) : Evans, Identfication of Indian *Butterflies* : 142.

1982. *Polyura schreiber assamensis* (Rothschild) : Smiles, *Bull. Brit. Mus. nat. Hist* (Ent.), **44**(3) : 161.

Material examined : Nil.

Wing expanse : 90-100 mm.

Distribution : India : Nagaland, Assam, Meghalaya, Mizoram and Sikkim.

Elsewhere : Myanmar, Thailand and Vietnam..

Remarks : This subspecies is earlier known

from Nagaland. It differs from *P. schreiber wardi* (Moore) found in South India, *P.schreiber tisamenus* (Fruhstorfer) occurring in Andamans and Mynamar (Evans,1932), Bangka Island, Belitung Island, Singapore, Sumatra, and West Malaysia (Smiles, 1982) by the upperside of fore wing with discal band tapering at the upper end and just reaching space 4, white spot in space 5 much nearer apex and an apical dot in space 6. Smiles (1982) mentioned of *P. schreiber* Godart (without referring to any subspecies) in Andamans. It has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

116. ***Polyura athamas athamas*** (Drury) (Common Nawab)

1770. *Papilio athamas* Drury, *Ill. exot. Ent.*, **1** : 5 pl. 2, fig. 4.

1911. *Eulepis athamas* (Drury) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 55.

1932. *Eriboea athamas athamas* (Drury) : Evans, *Identification of Indian Butterflies* : 143.

1982. *Polyura athamas athamas* (Rothschild) : Smiles, *Bull. Brit. Mus. (Nat. Hist.)*, Entomology **44** (3) : 166.

Material examined : Nil.

Forewing length : 31-34 mm.

Distribution : India : Nagaland, Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Maharashtra, Manipur, Meghalaya, Mizoram, North-West Himalaya, Orissa, Sikkim, Uttar Pradesh, Tamil Nadu and West Bengal.

Elsewhere : Bangladesh, China, Hainan, Hongkong, Laos, Myanmar, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam and West Malaysia.

Remarks : The nominate subspecies is distinguished from *P. athamas andamanica* (Fruhstorfer) from Andamans by upperside of fore wing bearing discal band broader than 4mm at its narrowest point in male and 7 mm in female. Tytler (1911) collected specimens of this subspecies throughout the yearfrom the foot Naga Hills at altitude up to 1525 m.

117. ***Polyura arja*** (Felder & Felder) (Pallid Nawab)

1867. *Charaxes arja* Felder & Felder, *Novara Reise, Lep Rhap.*, : 438.

1911. *Eulepis arja* Felder & Felder : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 56.

1912. *Eulepis arja* (Felder & Felder) : Evans, *J. Bombay nat. Hist. Soc.*, **21**(2) : 572.

1932. *Polyura arja* (Felder & Felder) : Evans, *Identification of Indian Butterflies* : 143.

1982. *Polyura arja* (Felder & Felder) : Smiles, *Bull. Brit. Mus. (Nat. Hist.)*, Entomology **44**(3) : 166.

Material examined : Nil.

Forewing length : 37-40 mm.

Distribution : India : Nagaland, Sikkim, Assam, Manipur, Meghalaya, West Bengal.

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

Remarks : Tytler (1911) obtained a single of this species from an altitude of 1220m in Nagaland. Its status is not rare.

118. ***Polyura eudamippus eudamippus*** (Doubleday) (Great Nawab)

1843. *Charaxes eudamippus* Doubleday, *Annls. Soc. ent Fr.* (2) **1** : 218, pl. 8.

1911. *Eulepis eudamippus* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 56.

1932. *Eriboea eudamippus eudamippus* (Doubleday), Evans, *Identification of Indian Butterflies* : 143

1982. *Polyura eudamippus eudamippus* (Doubleday) Smiles, *Bull. Brit. Mus. (Nat. Hist.)*, Entomology, **4**(3) : 166.

Material examined : Nil.

Forewing length : 50-52 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan and Nepal.

Remarks : Tytler (1911) collected male specimens of this nominate subspecies at the foot

of Naga Hills in March-April and at Tamlu in August.

119. ***Polyura moori sandakana*** (Fruhstorfer) (Malayan Nawab)

1895. *Charaxes sandakanus* Fruhstorfer, *Ent. Nachr.* **21** : 197, Holotype, male (India : Assam).

1911. *Eriboea moori* Distant : Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 56.

1932. *Eriboea moori sandakanus* (Fruhstorfer) : Evans, *Identification of Indian Butterflies* : 143.

1982. *Polyura moori sandakana* (Fruhstorfer) : Smiles, *Bull. Brit Mus. nat. Hist* (Ent.), **44**(3) : 185.

Material examined : Nil.

Wing expanse : 80-85 mm.

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Myanmar.

Remarks : This subspecies is previously known from Naga Hills and its status is very rare. It has been incldued in Schedule-1 (Part-4) of the Indian Wildlife (Protection) Act.

120. ***Polyura delphis delphis*** (Doubleday) (Jewelled Nawab)

1843. *Charaxes delphis*, Doubleday, *Annls, Soc. ent. Fr.*, (2) **1** : 217, pl.7, Lectotype male, Bangladesh.

1932. *Eriboea delphis* (Doubleday) : Evans, Identfication of Indian *Butterflies* : 144.

1982. *Palyura delphis delphis* (Doubleday) : Smiles, *Bull. Brit Mus. nat. Hist* (Ent.), **44**(3) : 190.

Material examined : Nil.

Wing expanse : 95-100 mm.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya, Mizoram and Sikkim.

Elsewhere : Bangladesh, Myanmar and Thailand.

Remarks : The nominate subspecies is earlier known from Nagaland.It has been listed in Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

Subfamily LIBYTHEINAE

Eyes naked; labial palpi very long, porrect and beak like; wings short and broad with cell closed by tubular veins, fore wing falcate and truncate at apex and vein 1_A+2_A forked at base; fore legs imperfect in male but functionally perfect in female.

The subfamily is represented in the World by a single genus *Libythea* Fabricius with 12 species of which three occur in India.

LXII. Genus ***Libythea*** Fabricius

1807. *Libythea* Fabricius, *Mag. f. Insektenk* (Illiger) **6** : 284.

Of the three species of this genus found in India, two are dealt with from Nagaland.

Key to species

1. Upperside of fore wing with an elongate oval orange-yellow spot beyond lower apex of cell ..... *myrrha* Godart

– Upperside of fore wing with a quadrate orange spot beyond lower apex of cell .... *lepita* Moore

121. ***Libythea myrrha sanguinalis*** Fruhstorfer (Club Beak)

1898. *Libythea myrrha* var. *sanguinalis* Fruhstorfer, *Berl. ent. Zeits.*, **43** : 169.

1911. *Libythea myrrha* Godart: Tytler, *J. Bombay nat. Hist. Soc.*, **21**(1) : 64.

1932. Libythea myrrha var. sanguinalis Fruhstorfer : Evans, *Identfication of Indian Butterflies* : 194.

Material examined : Nagaland.

Forewing length : 24-27 mm.

Distribution : India : Nagaland, Sikkim, Arunachal Pradesh, Himachal Pradesh and Meghalaya.

Elsewhere : Myanmar.

Remarks : This subspeices differs from *L. myrrha carma* Fruhstorfer from South India by upperside of fore wing and hind wing bearing

less wide ochreous markings and presence of yellow apical spot in fore wing. Tytler (1911) collected its specimens sparingly in April and November at altitude of 520 m and in October at altitude of 1525 m.

122. *Libythea lepita lepita* Moore (Common Beak)

1857. *Libythea lepita* Moore, *Cat. Ins. Mus. East. India Coy.*, **1** : 240.

1911. *Libythea lepita* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 64.

1932. *Libythea lepita lepita* Moore : Evans, *Identfication of Indian Butterflies* : 194.

Material examined : Nagaland.

Forewing length : 21-26 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Jammu & Kashmir, Meghalaya and Sikkim.

Remarks : Tytler (1911) obtained a few specimens of this subspecies at altitudes of 520m and 1525m in March and October. This nominate subspecies has been treated as *L. celtis leptia* by D'Abrera (1985). Varshney (1994) considered *L. celtis* Laicharting and *L. lepita* as separate species. Though its status is known to be not rare, the species has been included in the Schedule-II (Part-2) of the Indian Wildlife (Protection) Act.

SUMMARY

Altogether 123 species/subspecies belonging to 62 genera and six subfamilies *viz.*, Morphinae, Acraeinae, Nymphalinae, Charaxinae and Libythinae of the family Nymphalidae have been dealt with from Nagaland. Keys to identification of species and genera have been provided. Of these 123 spp. and subspp., seven are endemic to Nagaland and 24 have been afforded protection by including in Schedule-I (Part-4) : 11 species and Schedule-II (Part-2) : 13 species, of the Indian Wildlife (Protection) Act.

ACKNOWLEDGEMENTS

The author is grateful to the Director, Zoological Survery of India for providing laboratory facilities for the work. Thanks are due to Dr. A.K. Hazra, Scientist–E, Entomology Division, for his valuable suggestions during the course of this study. He is also thankful to Mr. Rati Ram, P.P.O. and Mr. Roop Lal for several courtsies.

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Fauna of Nagaland, State Fauna Series 12 : 263-290, 2006

INSECTA : LEPIDOPTERA : PAPILIONIDAE and NYMPHALIDAE (DANAINAE)

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INTRODUCTION

Of the 17,000 speceis of butterflies known from the world, about 1,500 species (8.66%) are recorded from India. Eastern part of India is very rich in butterfly diversity and harvour more than 700 species of butterflies. Presently, 57 species/ subspecies of butterlies of family Papilionidae and Nymphalidae (Danainae) are treated from the state of Nagaland.

The knowledge on butterflies Fauna of India is mainly due to works of De Niceville (1882,1886), Bingham (1905,1907), Tytler (1911, 1912, 1915), Evans (1932), Talbot (1939,1947) and Wynter-Blyth (1957) which include families Papilionidae and Nymphalidae (Danainae).

At present, the studies on the butterflies are based upon the specimens collected by several scientists of Zoological Survey of India during their surveys of the state of Nagaland. The specimens available in the old collections of Zoological Survey of India have also examined. The species not represented in the collection have been reviewed from literature. As a result, 57 species representing 24 genera under two families of butterflies Papilionidae and Nymphalidae (Danainae) have been dealt with from the state of Nagaland. Of these 57 species/subspecies, 17 species of which Papilionidae (10 spp.) and Nymphalidae (Danainae) (7 spp.) are the first definitive records for six Districts, *viz.*, Dimapur, Kohima, Mokokchung, Monmon, Phek and Zunhebeto of Nagaland.

Keys to species and genera of butterflies have been given, common name, geographical distributions and forewing length/expanse have been provided for each species/subspecies.

SYSTEMATIC ACCOUNT

Family PAPILIONIDAE

Antennae comparatively short and usually with a distinct club; probocis well developed ; palpi short and a pressed to frons (accept and projecting in *Teinopalpus*); fore legs fully developed, fore tibiae with spur on the innerside, hind tibiae with middle spur, claws simple rarely with toothed, paronychium and pulvillus absent. Cell closed in both sexes. Forewing with 12 veins, in addition vein 3A ending on inner margin, a short transverse vein also present near the base of wing between cell and vein 2_A (with few exceptions), vein R_5, R_4 stalked, vein Cu_{1b} arising before middle of cell, four veins arising from the outer lower edge of the cell. Hind wing usually with a tail at vein M_3 which may be slender or broad and spatulate, inner margin of hind wing being frequently folded over and within the fold, in male bearing a patch of specialized scales or scent scales (androconia). Vein 2_A absent, the basal cell and precostal vein present.

Of the three subfamilies of Papilionidae, two, *viz.*, Parnassiinae and Papilioninae occur in India.

Key to subfamilies

1. Hind wing with vein 3A present; antennae very short ..... BARONIINAE

– Hind wing with vein 3A absent or rudimentary 2

2. Antennae relatively short; basal spur (cu-v) absent or rudimentary, if present the legs unscaled ..... PARNASSIINAE

– Antennae long and slender; basal spur (cu-v) well developed, if weak then legs scaled .... PAPILIONINAE

Of the three subfamilies of Papilionidae, two, *viz.*, Parnassiinae and Papilioninae represented in India are dealt with from Nagaland.

Subfamily PARNASSINAE

This subfamily includes two Tribes namely Parnassini and Zerynthini and the latter is treated from Nagaland.

Tribe **Zerynthiini**

This tribe is represented by a single genus, *Bhutanitis* Atkinson in India.

I Genus ***Bhutanitis*** Atkinson

1873. *Bhutanitis* Atkinson, *Proc. zool. Soc. London* : 570.

This genus is represented in India by a single species, *Bhutanitis lidderdalii* Atkison.

1. ***Bhutanitis lidderdalei lidderdalei*** Atkinson (Bhutan Glory)

1873. *Bhutanitis lidderdalii* Atkinson, *Proc. zool. Soc., London* : 570.

1912. *Armandia lidderdali* (Atkinson) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 588.

1939. *Armandia lidderdalei lidderdalei* (Atkinson) : Talbot, *Fauna of British India* (Butterflies), **1** : 250.

1983. *Bhutanitis lidderdalei* Atkinson : Hancock, *Smithersia*, **2** : 46.

1992. *Bhutanitis lidderdalii* Atkinson: Varshney : *Oriental Insects*, **27** : 355.

Material examined : Nil.

Wing expanse : ♂ 90, ♀ 110 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills).

Elsewhere : Bhutan and Chin Hills.

Remarks : Only this nominate subspecies occurs in India. Previously, the nominate subspecies is known from Naga Hills at elevations of 1650-2100m and collected during August-October. It is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

Subfamily PAPILIONINAE

Antennae long, scaled or unscaled, legs scaled or unscaled; fore wing with radial venation usually complete, basal spot (Cu-V) present, rarely weak; hind wing with precosta usually forked, precostal cell variable; 1st and 3rd anal veins absent or rudimentary.

Key to tribes

1. Tibae and tarsi scaled ..... **Leptocircini**

– Tibae and tarsi unscaled 2

2. Tibae and tarsi with ventral rows of spines separeted from dorsal rows by an impressed spineless space; hind wing precosta simple, curved distad ..... **Papilionini**

3. Tibae and tarsi with ventral rows of spines not separeted from dorsal rows by an impressed spineless space; hind wing precosta forked, curved basad ..... **Troidini**

Tribe **Leptocircini**

Key to genera

1. Fore wing middle discocellular flat and concave 2

– Fore wing middle discocellular downcurved and straight in dorsal view 3

2. Antennae unscaled; palpi long and porrect; basal spur reduced ..... ***Teinopalpus*** Hope

– Antennae dorsally scaled; palpi small and upturned; basal spur well developed .... ***Meandrusa*** Moore

3. Antennae more than half length of fore wing; R_3 stalked with R_4 to beyond origin of R_5; tail

much longer than main part of hindwing .... ***Lamproptera*** Gray

– Antennae less than half length of fore wing; R_3 free from R_4; tail absent or much longer than main part of hindwing ....***Graphium*** Scopoli

II Genus ***Teinopalpus*** Hope

1843. *Teinopalpus* Hope, *Trans. Linn. Soc. London*, **19** : 131

A single species, *Teinopalpus imperialis* Hope of this genus occurs in India.

2. ***Teinopalpus imperialis imperialis*** Hope (Kaiser-i-Hind)

1843. *Teinopalpus* Hope, *Trans. Linn. Soc. London*, **19** : 131, pl. 3.

1912. *Teinopalpus imperialis imperialis* Hope: Tytler, *J. Bombay Nat. Hist. Soc.*, **21** : 588.

1914. *Teinopalpus imperialis* Hope : Tytler, *J. Bombay Nat. Hist. Soc.*, **23** : 515.

1939. *Teinopalpus imperialis imperialis* Hope : Talbot. *Fauna of British India* (Butterflies), **1** : 247.

1983. *Teinopalpus imperialis* Hope : Hancock, *Smithersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂90, ♀120 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga hills), Assam, Sikkim.

Elsewhere : Myanmar.

Remarks : Only the nominate subspecies is known in India. Several male individuals were collected at elevation of 2100 m in Naga Hills during September (Tytler, 1912). It is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent and amendments.

III Genus ***Meandrusa*** Moore

1888. *Meandrusa* Moore, *Descrip. New. Ind. Lep. Ins. From. Coll. Atkinson* : 284 (Calcutta)

Only a single species-*Meandrusa sciron* (Leech) of this genus is found in India.

3. ***Meandrusa sciron sciron*** (Leech)

1841. *Papilio gyas* Westwood, Arc. *Entom.*, **1** : 41, pl. 11 fig. 1.

1912. *Papilio gyas* Westwood : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 590.

1939. *Graphium gyas gyas* (Westwood) : Talbot. *Fauna of British India* (Butterflies), **1** : 240.

1983. *Meandrusa sciron* (Leech) : Hancock, *Smithersia*, **2** : 18, 46.

Material examined : Nil. *Wing expanse* : ♂105, ♀115 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Sikkim, Assam.

Remarks : Only the nominate subspecies is represented in India. Tytler (1912) found males not uncommon at elevations of 1500-1800m in Naga Hills during July-October. It is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

IV Genus ***Lamproptera*** Gray

1832. *Lamproptera* Gray, In Griffith's *ed Cuvier, Animal Kingdom*, **15** : pl. 102.

This genus is represented in India by two species, *viz.*, *Lamproptera curius* (Fabricius) and *Lamproptera meges* (Zinken-Sommer) and both of these are treated from Nagaland.

Key to species

1. Upperside of wings with white band; the latter on fore wing constricted towards the middle. In male, hind wing with white scent-organ ..... *curius* (Fabriciu

– Upperside of wings with green band; the latter of even width. In male, hind wing without white scent-organ ..... *meges* (Zinken)

4. ***Lamproptera curius curius*** (Fabricius) (White Dragontail)

1787. *Lamproptera curius* Fabricius, *Mant. Ins.*, **2** : 9.

1912. *Leptocircus curius Fabricius* : Tytler, *J. Bombay nat Hist. Soc.*, **21** : 588.

1939. *Lamproptera curius curius* (Fabricius) : Talbot. *Fauna of British India*, (Butterflies) **1** : 244

1983. *Lamproptera curius* (Fabricius) : Hancock, *Smithersia*, **2** : 20, 46.

1993. *Lamproptera curius* (Fabricius) : Varshney, *Oriental Insects*, **27** : 350.

Material examined : Nagaland : Kohima District, 1♂, 1♀, Puleadze Wildlife Sanctuary, alt. 1490 m, 14. ix.1994, (*B. Mitra and Party coll.*).

Wing expanse : ♂38, ♀40 mm.

Distribution : India : *Present record* : Nagaland : Kohima (Mitra 1994), *Past record* : Arunachal Pradesh (Mitra 1992), Assam, Sikkim (Elwes 1894).

Elsewhere : Java, Myanmar and Palawan.

Remarks : Only the nominate subspecies is known in India. Earlier, the nominate subspecies is known commonly at low elevations in Naga Hlls (Tytler, 1912).

5. ***Lamproptera meges indistincta*** (Tytler) (Green Dragontail)

1912. *Leptocircus meges* race *indistincta* Tytler : Tytler, *J. Bombay Nat. Hist. Soc.*, **21** : 588.

1914. *Leptocircus meges indistincta* Tytler : Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 515.

1939. *Lamproptera meges indistincta* (Tytler) : Talbot. *Fauna of British India (Butterflies)*, **1** : 245.

1983. *Lamproptera meges* (Zinken-Sommer): Hancock, *Smerthisia*, **2** : 20, 46.

Material examined : Nil.

Wing expanse : ♂40, ♀45 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Assam.

Elsewhere : North Myanmar.

Remarks : Only this subspecies is found in India. Previously, this subspecies was recorded at elevations of 1200-1500m in Naga Hills during April–October and also a single male at Gaspani in July. Tytler (1915) collected several males and females from the Naga Hills during July.

V Genus ***Graphium*** Scopoli

1777. *Graphium* Scopoli, *Intr. Hist. Nat.*, : 433.

Nine species of this genus occurring in Nagaland are included under three subgenera, *viz.*, *Pazala* (Moore)-one species, *Pathysa* Reakirt-three species and *Graphium* Scopoli- five species.

Subgenus ***Pazala*** (Moore)

alebion group

Pattern primitive, fore wing bars 5 and 7 medially weakened, bar 6 free; hind wing with submarginal blue scales; fore wing upper discocellular much longer than middle discocellular. (Hind wing underside with a complete discal row of pale spots)

6. ***Graphium (Pazala) eurous sikkimica*** Heron (Sixbar Swordtail)

1899. *Papilio sikkimica* Heron, *Ann. Mag. nat. Hist.*, (7) **3** : 120.

1912. *Papilio sikhimica* (sic) Heron : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 590.

1939. *Graphium eurous sikkimica* (Heron) : Talbot. *Fauna of British India* (Butterflies), **1** : 204

1983. *Graphium (Pazala) eurous* (Leech) : Hancock, *Smirthersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂60 , ♀70 mm (Talbot, 1939).

Distribution : India : Past record : Nagaland (Naga Hills), Assam, Sikkim.

Remarks : This subspecies differs from *G. eurous caschmirensis* (Rothschild) found from Kashmir to Kumaon by the upperside of fore wing with the fourth transverse black band from the base crossing the cell and reaching beyond the median vein; the post-discal band reaching vein1. Earlier, this subspecies is known from elevation of 600m in Naga Hills collected in April.

Subgenus ***Pathysa*** Reakirt

Four species under two groups are placed in this subgenus.

antiphates group

Pattern primitive, fore wing bars 6 and 7 fused; tail long, sword-like; fore wing vein not darked scales.

Key to species

Hind wing underside with discal rows of red spots.....*aristeus* (Stoll)

Hind wing underside without discal rows of red spots.....*antiphates* (Cramer)

7. ***Graphium (Pathysa) aristeus anticrates*** (Doubleday)

(Chain Swordtail)

1846. *Papilio anticrates*, Doubleday, *Ann. Mag. nat. Hist.*, **18** : 371

1912. *Papilio anticrates* Doubleday : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 590.

1915. *Papilio aristeus hermocrates* Felder : Tytler, *J. Bombay Nat. Hist. Soc.*, **23** : 515.

1939. *Graphium aristeus anticrates* (Doubleday) : Talbot. *Fauna of British India (Butterflies)*, **1** : 210

1983. *Graphium (Pathysa) aristeus anticrates* (Doubleday) : Hancock, *Smithersia*, **2** : 48.

Material examined : Nil.

Wing expanse : ♂70, ♀80 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Assam, Sikkim.

Remarks : Only this subspecies is represented in India. Previouly, this subspecies was recorded as a single brooded and common at the foot Naga Hills during April-May.Tytler (1915) captured a single male at Nichuguard in the Naga hills, in May under the name 'Papilio aristeus hermocrates Felder', which was treated non-Indian by Talbot (1939). It is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

8. ***Graphium (Pathysa) antiphates pompillius*** (Fabricius)

(Fivebar Swordtail)

1787. *Papilio pompillius* (Fabricius), *Mant. Ins.*, **2** : 8.

1912. *Papilio alcibiades* Fabricius : Tytler, *J. Bombay nat Hist. Soc.*, **21** : 590.

1939. *Graphium (Pathysa) antiphates pompillius* (Fabricius) : Talbot. *Fauna of British India (Butterflies)*, **1** : 212.

1983. *Graphium (Pathysa) antiphates* (Doubleday) : Hancock, *Smithersia*, **2** : 48.

Material examined : Nil.

Wing expanse : ♂80, ♀95 mm (Talbot, 1939).

Distribution: India : *Past record* : Nagaland (Naga Hills), Sikkim.

Elsewhere : Annan, Hainan, Myanmar, Thailand.

Remarks : This subspecies differs from *G. aniphates naira* (Moore) found in Peninsular India and *G. aniphates epaminondas* (Oberthuer) in Andaman Islands by all the black markings shorter and narrower, fore wing with the second band from base reaching vein 1, only. Previously, this subspecies was recorded as occurring in Naga Hills during March-August.

macareus group

Pattern primitive or mimetic, fore wing bar 6 generally free; tail short or absent; fore wing vein not darkened scales.

(Fore wing light brown at base; hind wing with a large tornal spot.....*xenocles*)

9. ***Graphium (Pathysa) xenocles xenocles*** (Doubleday)

(Great Zebra)

1842. *Papilio xenocles* Doubleday, In Gray's *Zool Miscell.* : 74

1912. *Papilio xenocles* Doubleday : Tytler, *J. Bombay nat Hist. Soc.*, **21** : 591.

1939 *Graphium xenocles xenocles* (Doubleday) : Talbot. *Fauna of British India* (Butterflies), **1** : 237.

1983. *Graphium (Graphium) xenocles* (Doubleday) Hancock, *Smithersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂85, ♀120 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Assam.

Remarks : This nominate subspecies differs from *Graphium xenocles phrontis* (de Niceville) occurring in Sikkim and Bhutan by the female much darker and pale stripes very strongly reduced. Earlier, the nominate subspecies was recorded from the foot of Naga Hills collected during May-August.

Subgenus ***Graphium*** Scopoli

Five species are placed in three groups under this subgenus.

eurypylus group

Fore wing dark bars straight or slight angled, bar 5 broad, with or without median spot; underside of fore wing with base of costa white-scaled

Key to species

Hind wing underside with a black costal bar with a row of spots ..... *chiron* (Wallace)

– Hind wing underside with costal bar separated from basal dark bar, the bar red-centred .... *doson* (C. & R. Felder)

10. *Graphium* (*Graphium*) *chiron* (Wallace)
(Veined Jay)

1865. *Papilio chiron* Wallace, *Trans. Linn. Soc. London*, **25** : 66

1912. *Graphium bathycles chiron* (Wallace) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Graphium bathycles chiron* (Wallace) : Talbot, *Fauna of British India (Butterflies)*, **1** : 228.

1983. Graphium (Graphium) chiron (Wallace) : Hancock, Smithersia, **2** : 46.

Material examined : Nil.

Wing expanse : ♂75, ♀100 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga hills), North Eastern Himalaya.

Elsewhere : Annan, Myanmar and Tonkin.

Remarks : Previously, this species known from near Nichuguard (Michuguard) and Tamlu in Naga Hills collected in April and August, respectively.

11. *Graphium* (*Graphium*) *doson axion* (C. & R. Felder)
(Common Jay)

1864. *Papilio* axion C. & R. Felder, *Ver. Zool. Bot. Ges. Wien*, **14** : 305.

1912. *Graphium axion* C. & R. Felder: Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 590.

1939. *Graphium doson axion* (C. & R. Felder) : Talbot, *Fauna of British India (Butterflies)*, **1** : 223

1983. *Graphium* (*Graphium*) *doson* (C. & R. Felder) : Hancock, *Smithersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂70, ♀80 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga hills), Kumaon to North Eastern Himalaya.

Elsewhere : Annan, Cochin-Chin, Hainan, South China, Thailand and Tonkin.

Remarks : This nominate subspecies differs from *Graphium doson eleius* (Fruhstorfer) occurring from South India to 'Bengal' by the discal band broader on upperside of wings, the upperside of fore wing with second submarginal spot in area 1 nearly always present; the upperside of hind wing with costal bar separate from basal dark band. Previously, this subspecies was reported from the foot of Naga Hills collected during April-September.

agamemnon group

Fore wing dark bar scaled, pale cell spot usually divided, bar 5 broad, median pale spot present; underside of fore wing with base of costa red scaled; hind wing underside red spot present; tail present or reduced.

(Fore wing dark bar angled, underside base of costa with red scaled; hind wing underside with red-spots not in area 3 or 4) .... *agamemnon* (Linnaeus)

12. *Graphium* (*Graphium*) *agamemnon agamemnon* (Linnaeus)
(Tailed Jay)

1758. *Papilio agamemnon* Linnaeus, *Syst. Nat. ed.* **10** : 462

1912. *Papilio agamemnon* Linnaeus: Tytler, *J. Bombay nat. Hist. Soc.* **21** : 591.

1939. *Graphium agamemnon agamemnon* (Linnaeus) : Talbot, *Fauna of British India* (Butterflies), **1** : 229.

1983. *Graphium (Graphium) agamemnon* (Linnaeus) : Hancock, *Smithersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂85, ♀100 mm (Evans, 1932).

Distribution : India : *Past record* : Nagaland (Naga Hills), Uttaranchal, North Eastern Himalaya.

Elsewhere : Myanmar.

Remarks : This nominate subspecies differs from other three Indian subspecies, *viz.*, *G. agamemnon menides* (Fruhstorfer) occurring in Peninsular India, Nilgiris, Sri Lanka; *G. agamemnon andamana* (Lathy) in Andaman Islands and *G. agamemnon decoratus* (Rothschild) in Car Nicobar and Central group of Nicobar Islands and *G. agamemnon pulo* (Evans) in South Nicobar Islands by the upperside of wings black, markings small and bright green; the hind wing tail always shorter. Tytler (1912) found it common at the foot of Naga Hills from February to August and also collected a single specimen at elevation of 1500m.

sarpedon group

Fore wing dark bars fused in cell or some absent; hind wing red spot present or absent, never present in area 6. Tail reduced or absent.

Key to species

- Fore wing upperside transparent green. Tail long ..... *cloanthus* (Westwood)
- Fore wing upperside black with green band. Tail short ..... *sarpedon* (Linnaeus)

13. ***Graphium (Graphium) cloanthus cloanthus*** (Westwood)
(Glassy Bluebottle)

1841. *Papilio cloanthus* Westwood, *Arc. Entom.*, **1** : 42.

1912. *Papilio cloanthus* Westwood : Tytler, *J. Bombay nat Hist. Soc.*, **21** : 591.

1939. *Graphium cloanthus cloanthus* (Westwood): Talbot, *Fauna of British India, including Ceylon and Burma* (Butterflies), **1** : 218.

1983. *Graphium (Pathysa) cloanthus* (Westwood) : Hancock, *Smithersia*, **2** : 47.

Material examined : Nil.

Wing expanse : ♂85, ♀95 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Jammu & Kashmir, Uttaranchal.

Elsewhere : Myanmar.

Remarks : Only this nominate subspecies is represented in India. Tytler (1912) collected it from elevation of 500 m in March and at elevations of 1500-1800 m during May–September.

14. ***Graphium (Graphium) sarpedon sarpedon*** (Linnaeus)
(Common Bluebottle)

1758. *Papilio sarpedon*, Linnaeus, *Syst. Nat. ed.* **10** : 461

1912 *Papilio sarpedon* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Graphium sarpedon sarpedon* (Linnaeus) : Talbot, *Fauna of British India (Butterflies)*, **1** : 220.

1983. Graphium (Graphium) sarpedon (Linnaeus) Hancock, Smithersia, **2** : 46.

Material examined : Nil.

Wing expanse : ♂80, ♀95 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga hills), Kumaon and North Eastern Himalaya.

Elsewhere : Hainan, Lombok, Myanmar, the Philippines and Tonkin.

Remarks : This nominate subspecies differs from *G. sarpedon teredon* (C.& R. Felder) found in Peninsular India and Sri Lanka by the upperside of wings with discal bands broader and of uniformlygreen coloured; the upperside of hind wing with median vein mostly white on the discal band, hind wing tail shorter. Tytler (1912) found it very common at the foot of Naga Hills in February, July-August and at Kohima during July-September.

Tribe **Troidini**

Key to genera

- Pattern black with white red spot. Fore wing with R1 arising opposite Cu_{A1}. Hind wing tailed, never with golden transparent scales ..... **Atrophaneura** Reakirt
- Pattern dark with pale spot. Fore wing with R2 arising opposite Cu_{A2}. Hind wing not tailed, golden transparent scales present .... **Troides** huebner

VI Genus ***Atrophaneura*** Reakirt

1865. *Atrophaneura* Reakirt, *Proc. ent. Soc. Philad.*, **3** : 446.

latreilei group

Hind wing tail spatulate; male scent-organ well developed and woolly; abdominal fold narrow.

Key to species

1. Hind wing tail long and spatulate; anal region in male with a white scent wool 2
- Hind wing tail short and pointed; anal region in male with white scent-scales 3
2. Hind wing underside with submarginal red spot in area M_2 ..... *plutonius* (Oberthur)
- Hind wing underside without submarginal red spot in area M_2 ..... *latreilei* (Donovan)
3. Hind wing uppersidewith submarginal spot in area M_3 4
- Hind wing uppersidewith submarginal spot in area M_3 5
4. Hind wing upperside with discal white patch; hind wing underside of tail tipped bright creamson and a red spot in area M_3 .... *polla* de Nicevelli
- Hind wing upperside without discal white patch; hind wing underside of tail tipped with red spot in area M_3 .... *crassipes* (Oberthuer)
5. Hind wing upperside with submarginal red spot in area M_3 ..... *polyeuctes* (Gray)
- Hind wing upperside with large white spot in area M_3 ..... *dasarada* (Moore)

15. ***Atrophaneura (Atrophaneura) plutonius tytleri*** (Evans)

(Tytler's Chinese Windmill)

1923. *Byasa alcinous tytleri* Evans, *J. Bombay nat. Hist. Soc.*, **29** : 233, 245.

1939. *Polydorus plutonius tytleri* (Evans) : Talbot, *Fauna of British India (Butterflies)*, **1** : 104.

1983. *Atrophaneura (Atrophaneura) plutonius* (Oberthur) : Hancock, *Smithersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂75, ♀90 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Manipur.

Remarks : This subspecies differs from *Atrophaneura plutonius pembertoni* (Moore) found from Sikkim (India) to Bhutan by the upperside of hind wing bearing prominent black submarginal spots and a small red spot in space 2. Tytler (1915) recorded it as *Papilio alcinous impediens* Rothschild from an altitude of 2100m in Naga Hills. It is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

16. ***Atrophaneura (Atrophaneura) latreillei kabrua*** (Tytler)

(Rose Windmill)

1915. *Papilio kabrua* Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 513.

1939. *Polydorus latreillei kabrua* (Tytler) : Talbot, *Fauna of British India* (Butterflies), **1** : 92.

1983. *Atrophaneura latreillei* (Donovan) : Hancock, *Smithersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂110, ♀130 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga hills), Assam, Manipur.

Remarks : This subspecies differs from the nominate one - *Atrophaneura latreillei latreillei*

(Donovan) found from Uttaranchal (Garhwal, Mussoorie) to Sikkim (at elevations 2135-2745m) by the upperside of fore wing with a large white spot in area 5 reaching vein 6 but does not fill base of space 5. Tytler (1915) described this subspecies on the basis of a single male collected at Yakama, Naga Hills, at about 2135m in June. It is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

17. *Atrophaneura (Atrophaneura) polla* (De Niceville)

(De Niceville's Windmill)

1897. *Byasa polla* De Niceville, *J. Bombay nat. Hist. Soc.* **10** (4) : 633.

1915. *Papilio polla* (De Niceville) : Tytler , *J. Bombay nat. Hist. Soc.* **23** : 513.

1939. *Polydorus polla* (De Niceville) : Talbot, *Fauna of British India*, (Butterflies), **1** : 92.

1983. *Atrophaneura (Atrophaneura) polla* (De Niceville) : Hancock, *Smerthisia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂115, ♀130 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga hills). Assam, Manipur.

Elsewhere : North Myanmar.

Remarks : Previously, it was recorded from Naga Hills, at an altitude of 2400 m, in the month of June. It is included in Schedule-I (Part-IV) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

18. *Atrophaneura (Atrophaneura) crassipes* (Oberthuer)

(Black Windmill)

1893. *Papilio crassipes* Oberthuer, *Et. d'Ent.* **17** : 2, pl. 4, figs. 38, 38a.

1915 *Papilio crasispes* (Oberthuer) : Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 513.

1939. *Polydorus crassipes* (Oberthuer) : Talbot, *Fauna of British India* (Butterflies), **1** : 101.

1983. Atrophaneura (Atrophaneura) crassipes (Oberthuer) : Hancock, Smithersia, **2** : 46.

Material examined : Nil.

Wing expanse : ♂105, ♂120 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga hills), Manipur.

Elsewhere : Myanmar (Southern Shan States), Tonkin.

Remarks : Tytler (1915) collected two males at Nichuguard, Naga Hills, in April. It is included in Schedule-I (Part-IV) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

19. *Atrophaneura (Atrophaneura) polyeuctes* (Doubleday)

(Common Windmill)

1831. *Papilio philoxenus* Gray, *Zool. Misc.*, **1** : 32 (Nepal)

1842. *Papilio polyeuctes* Doubleday, *Zool. Misc.*, : 74.

1909. *Papilio philoxenus philoxenus*, Jordan. In : *Seitz A (ed), Macrolep. the World*, **9** : 32.

1912 *Papilio philoxenus* Gray : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 590.

1939. *Polydorus philoxenus polyeuctes* (Doubleday) Talbot, *Fauna of British India including Ceylon and Burma* (Butterflies), **1** : 97.

1983. *Atrophaneura (Atrophaneura) polyeuctes* (Doubleday) : Hancock, *Smithersia*, **2** : 46.

Material examined : Nagaland : Zunhebeto district, Satakha and around Kohima Road, ♂, 13.vii.1991 (*Y. P. Sinha and Party coll.*).

Wing expanse : ♂62 mm.

Distribution : India : *Present record* : Nagaland :Zunhebeto (Sinha 1991). *Past record* : Arunachal Pradesh (Lahiri 1977), Assam, Manipur (Mondal 1992), Meghalaya (Maulik 1992), Mizoram (Sen 1992), Sikkim (Roy 1996).

Elsewhere : Annan, Myanmar, Thailand, Tonkin and Yunnan.

Remarks : This subspecies differs from *A. philoxenus punchi* (O. Bang-Haas) found in Western Kashmir and the nominate one- *A. philoxenus philoxenus* (Gray) occurring from (Kashmir) India to Nepal by larger wing expanse

(122-140 mm) and underside of body almost entirely red. Dead specimens particularly the female give out very strong musky disagreeable odour which persist for a long time. Tytler (1912) found it common from the foot of Naga Hills up to 2100m during April-October.

20. *Atrophaneura (Atrophaneura) dasarada dasarada* (Moore)
(Great Windmill)

1857a. *Papilio dasarada* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 96.

1912. *Polydorus dasarada dasarada* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 589.

1939. *Polydorus dasarada dasarada* (Moore) : Talbot, *Fauna of British India indcluding Burma and Ceylon* (Butterflies) **1** : 100.

1983. *Atrophaneura (Atrophaneura) dasarada* (Moore) : Hancock, *Smithersia,* **2** : 46.

Material examined : Nil.

Wing expanse : ♂120, ♀140 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland, Sikkim, Assam.

Remarks : The nominate subspecies differs from *A. dasarada ravana* (Moore) occurring from Jammu & Kashmir (Kashmir) to Uttaranchal (Kumaon) by the upperside of hind wing very rarely with a discal white spot in 6; the upperside of hind wing of with a discal white spot in area 1b to 2. Previously, its male individuals were reported from low elevations collected in April and November in Naga Hills and also a single female at Kohima in October.

nox group

Hind wing tail present, often reduced; male scent-organ well developed and woolly; abdominal fold broad and rolled up.

Fore wing underside in male with entirely bluish-black, in female uniformly greeen brown; hind wing upperside with rounded anal fold being red or pink on the tormen and with indistinct sheen .... *aidoneus* (Doubkleday)

– Fore wing underside in male with entirely bluish-black, in female uniformly greeen brown; hind wing upperside with rounded anal fold being red or pink on the tormen and with indistinct sheen ..... *varuna* (White)

21. *Atrophaneura (Atrophaneura) aidoneus* (Doubleday)
(Lesser Batwing)

1845. *Papilio aidoneus* Doubleday, *Ann. Mag. nat. Hist,* **16** : 178.

1912. *Papilio aidoneus* Doubleday : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 589.

1939. *Polydorus aidoneus* (Doubleday) : Talbot, *Fauna of British India (Butterflies),* **1** : 72.

1983. *Atrophsneura (Atrophaneura) aidoneus* (Doubleday) : Hancock, *Smithersia,* **2** : 46.

Material examined : Nil.

Wing expanse : ♂112, ♀168 mm (Talbot).

Distribution : India : *Past record* : Nagaland, Uttaranchal (Garhwal), Sikkim.

Elsewhere : Hainan, Myanmar (Shan States), South China, and Tonkin.

Remarks : Earlier, this species is known from the foot of Naga Hills and Kohima collected during February and August-September.

22. *Atrophaneura (Atrophaneura) varuna astorion* (Westwood)
(Common Batwing)

1842. *Papilio astorion* Westwood, *Ann. Mag. nat. Hist.*, **9** : 37.

1912. *Papilio astorion* Westwood : *Tytler, J. Bombay nat. Hist. Soc.*, **21** : 590

1939. *Atrophaneura varuna astorion* (Westwood) : Talbot, *Fauna of British India* (Butterflies), 1 : 74.

1983. *Atrophaneura vaurna (Westwood)* : Hancock, *Smerthesia,* **2** : 46.

1997. *Atrophaneura varuna astorion* (Westwood): Mondal and Maulik, *Fauna of West Bengal, State Fauna Series,* 3(Part-7) : 764.

Material examined : Nagaland : Dimapur district, Kukidolong, 8 km. O-Medriphema, alt. 245 m, 1♂, 28.x.1998 (T. K. Pal and Party coll.).

Wing expanse : ♂55mm.

Distribution : India : *Present record* : Nagaland :Dimapur (Pal 1998), *Past record* : Arunachal Pradesh (Lahiri 1977), Assam, Manipur (Mondal 1992) , Meghalaya (Ghosh 1992), Mizoram (Dutta 1994), Sikkim (Mondal 1998), Uttaranchal : Kumaon (Maulik 2004) and West Bengal : Darjeeling (Bhowmik 1976).

Elsewhere : Myanmar.

Remarks : Previously, this species was reported from the foot of Naga Hills and Kohima collected during March-November.

polydorous group

Tail petiolate; male scent-organ reduced or absent;abdominal fold narrow or vestigial

(Hind wing upperside with a white discal spots in area 2 to 5)..... *aristolochiae* (Fabricius)

23. *Atrophaneura (Atrophaneura) aristolochiae aristolochiae* (Fabricius) (Common Rose)

1775. *Papilio aristolochiae* Fabricius, *Syst. Ent.*, (3) **1** : 443.

1912. *Papilio aristolochiae* Fabricius : Tytler, *J. Bombay Nat. Hist. Soc.*, **21** : 588.

1939. *Polydorous aristolochiae aristolochiae* (Fabricius) : Talbot, *Fauna of British India including Ceylon and Burma (Butterflies)*, **1** : 86.

1983. *Atrophaneura aristolochiae* (Fabricius) : Hancock, *Smithersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂80, ♀110 mm (Talbot,1939).

Distribution : India : *Past record* : Nagaland (Kohima), widely distributed in India.

Remarks : This nominate subspecies is distinguished from other four Indian subspecies, viz., *A. aristolochiae goniopeltis* (Rothschild) occurring in Andaman Islands, Myanmar, South China and Taiwan; *A. aristolochiae sawi* (Evans) in Car Nicobar Islands; *A. aristolochiae camorta* Moore in Central group of the Nicobar Islands and *A. aristolochiae kondulana* (Evans)in South Nicobar Islands by the underside of hind wing with spot in area 1 mostly red, typical form with spots remote from cell and incomplete. Earlier, this nominate subspecies is known from the foot of Naga Hills collected in July, August and December.

VII Genus *Troides* Huebner

1819. *Troides* Huebner, *Var. bek. Schmett.*, : 88.

Subgenus *Troides* (Huebner)

helenu group

Fore wing without an iridescent sheen; hind wing with or without an oapescent sheen; thorax laterally sheenred.

Key to species

Hind wing upperside without any proximal black suffusion in the marginal spots in area 2 to 4. Fore wing in female without white area in the cell ..... *helena* (Linnaeus)

– Hind wing upperside with prominent proximal black suffusion to the marginal spots in area 2 to 4. Male with marginal yellow spot in rea 7, female with 1 b area black at base; fore wing with a white area in the cell. .... *aeacus* (Felder)

24. *Troides (Troides) helena cerberus* (C. & R. Felder) (Common Birdwing)

1864. *Papilio cerberus* C.& R. Felder, *Verz. Zool. Bat Ges* , **14** : 291.

1912. *Papilio cerberus* C. & R. Felder : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 588

1939. *Troides helena cerberus* (C. & R. Felder) Talbot, *Fauna of British India* (Butterflies), **1** : 66.

1983. *Troides (Troides) helena* (C. & R. Felder) : Hancock, *Smithersia*, **2** : 46.

1997. *Troides helena cerberus* (C. & R. Felder) : Mondal & Maulik, *Fauna of West Bengal, State Fauna Series*, **3**(Part-7) : 766.

Material examined : Nagaland : Zunhebeto district, Zunhebeto village and arround, 1♂, 20. vii. 1991 (*Y. P. Sinha and Party coll.*).

Wing expanse : ♂92 mm.

Distribution : India : *Present record* : Nagaland : Zunhebeto (Sinha 1991). *Past record* : Arunachal Pradesh (Mitra 1976), Assam, Manipur (Mondal 1992), Meghalaya (Maulik 1992), Mizoram (Jonathon 1991), Orissa, Sikkim (Dutta 1996), Uttar Pradesh (Srivastav 1984) and West Bengal : Darjeeling (Dudgeon 1894).

Elsewhere : Borneo, Malay Peninsula, Natuna Islands, Tonkin, Myanmar, Nepal.

Remarks : This subspecies is distinguished from the other three Indian subspecies *Troides helena minos* (Cramer) found in Peninsular India; *Troides helena heliconoides* (Moore) in Andaman Island and *Troides helena ferrari* Tytler from South Nicobar Island by the upperside of hind wing with basal area of 1b mostly yellow. Previously, this subspecies was reported from the foot of Naga Hills collected during March-August.

25. ***Troides (Troides) aeacus aeacus*** (C. & R. Felder) (Golden Birdwing)

1860. *Ornithoptera aeacus, C. & R. Felder, Wien. Ent. Mon.*, **4** : 225.

1912. *Papilio aeacus* (C. & R. Felder) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 588.

1939. *Papilio aeacus* Felder : Talbot, *Fauna of British India* (Butterflies), **1** : 68.

1983. *Troides aeacus* (C. & R. Felder) : Hancock, *Smithersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂119, ♀188 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland, Uttaranchal.

Elsewhere : Myanmar, West China.

Remarks : Only the nominate subspecies occurs in India. Previously, the nominate subspecies is known from the foot of Naga Hills collected in March and June and from elevation of 2100m collected in August.

Tribe **Papilionini**

Key to genera

Mimetic of Danaidae, Epicopiidae or Uraniidae, wings almost entirely shining blue ..... ***Chilasa*** Moore

Not mimetic of Danaidae, Epicopiidae or Uraniidae, wings only partly shining blue.. ..... ***Princeps*** Huener

VIII. Genus ***Chilasa*** Moore

Subgenus ***Chilasa*** Moore

clytia group

Hind wing blue spot present, marginal spots not divided; abdomen with pale lateral spots.

Key to species

- Hind wing underside with a row of yellow marginal spot..... *clytia* (Linnaeus)
- Hind wing underside without a row of yellow marginal spot..... *paradoxa* (Zinken)

26. ***Chilasa (Chilasa) clytia clytia*** (Linnaeus) (Common Mime)

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

1912. *Papilio clytia* f. *dissimilis* Linnaeus: Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 589.

1939. *Chilasa clytia clytia* (Linnaeus) : Talbot, *Fauna of Btitish India including Burma and Ceylon* (Butterflies) **1** : 116.

1983. *Chilasa (Chilasa) clytia* (Linnaeus) : Hancock, *Smerthersia*, **2** : 48.

Material examined : Nil.

Wing expanse : ♂90, ♀130 mm (Talbot,1939)

Distribution : India : *Past record* : Nagaland, North-East India.

Elsewhere : Myanmar.

Remarks : This nominate subspecies differs from *C. clytia flavolimbatus* (Oberthuer) by being dark brown with prominent post discal spots of which the apical one may be prolonged inwards and there may traces of a discal series. Tytler

(1912) found it not uncommon at the foot of Naga Hills during February-June.

27. *Chilasa (Chilasa) paradoxa telearchus* (Hewitson)
(Great Blue Mime)

1852. *Papilio telearchus* Hewitson, *Trans. Ent. Soc. London*, **2** : 22

1912. *Papilio telearchus* Hewitson: Tytler, *J. Bombay nat. Hist. Soc.* **21** : 589.

1939. *Chilasa paradoxa teleardhus* (Hewitson) : Hampson. *Fauna of British India indcluding Burma and Ceylon* (Butterflies) **1** : 113.

1983. *Chilasa (Chilasa) paradoxa* (Hewitson) : Hancock, *Smethersia*, **2** : 48

Material examined : Nil.

Wing expanse : ♂ 120, ♀ 150 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland, North- Eastern India.

Elsewhere : Myanmar.

Remarks : Only this subspecies occurs in India. Earlier, this subspecies was reported from Tamlu at elevations of 450-900m and also from Nichuguard (Naga Hills) collected in August. It is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

agestor group

Hind wing blue spots absent ; hind wing cell asymetrical; hind wing submarginal spots undivided; pronotum, thorax and abdomen with pale lateral spots.

Key to species

- Hind wing chesnut brown with gray-white marking..... *agestor* (Gray)
- Hind wing with dark chocolate brown with ochraceus tornal spot..... *slateri* (Hewitson)

28. *Chilasa (Chilasa) agestor agestor* (Gray)
(Tawny Mime)

1832. *Papilio agestor Gray*, In Griffith's ed. *Cuvier, Animal Kingdom*, **15** : 32.

1912. *Papilio agestor Gray* : Tytler, *J. Bombay nat. Hist Soc.* **21** : 589.

1939. *Papilio agestor agestor* (Gray) : Talbot, *Fauna of Btitish India indcluding Burma and Ceylon*, (Butterflies) **1** : 107.

1983. *Chilasa (Chilasa) agestor* (Gray) : Hancock, *Smerthersia*, **2** : 46.

Material examined : Nil.

Wing expanse : ♂ 100, ♀ 120 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland, Sikkim.

Elsewhere : Myanmar (Dawna), Tonkin.

Remarks : This nominate subspecies differs from other two Indian subspecies, viz. *C. agestor govindra* (Moore) found from Kashmir to Kumaon and *C. agestor chiragshahi* (O. Bang Haas) in Western Kashmir: Punch State by being larger, the upperside of hind wing margin bright chestnut, post-discal spots incomplete, paler and more blue above. Previously, the nominate subspecies was recorded from Kohima collected in May.

29. *Chilasa (Chilasa) slateri slateri* (Hewitson)
(Blue Striped Mime)

1859. *Papilio slateri* Hewitson, *Exot. Butt.*, **2** Pl. 4 , text (*nec* fig.) (part.).

1915. *Papilio slateri* Hewitson : Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 514.

1940. 1939. *Chilasa slateri slateri* (Hewitson) : Talbot. *Fauna of British India indcluding Ceylon and Burma*. (Butterflies), **1** : 111.

1983. *Chilasa (Chilasa) slateri* (Hewitson) : Hancock. *Smithersia*, **2** : 48.

Material examined : Nil.

Wing expanse : ♂ 80, ♀ 100 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Sikkim.

Elsewhere : North Myanmar.

Remarks : Only the nominate subspecies is repsented in India. Tytler (1915) mentioned its occurrence in Nichuguard, Naga Hills during March-April. It is included in Schedule-II (Part-

II) of the Indian Wildlife (Protection) Act, 1972 and subsequent amendments.

IX Genus ***Princeps*** Huebner

1807. *Princeps* Huebner, *Samml. Schmett.*, **1** : pl. (116) Augsber.

This genus includes four subgenera of which two, *viz.*, *Menelaides* Huebner and *Princeps* Huebner are represented in Nagaland.

Subgenus ***Menelaides*** Huebner

1819. *Menelaides* Huebner, *Ver. Bek. Schmett.*, part. 6. *Augsburg.* (pp. 81-96)

Of the nine groups, five under this subgenus are treated from Nagaland.

protenor group

Hind wing upperside space 7 largely cream or white; hind wing in male upperside often with dispersed blue scales; both wings often with blue or purple sheen; wing base not red underside; male without androconia.

(Hind wing upperside in area 7 of male with cream or white or with dispersed blue scales; underside at base of wing without red markings; male without androconia.Hind wing without tail) .... *protenor* Fruhstorfer

30. ***Princeps (Menelaides) protenor euprotenor*** (Fruhstorfer)
(Spangle)

1908. *Papilio protenor euprotenor* Fruhstorfer, *Ent. Zeit. Stutt.*, **22** (11) : 46.

1912. *Papilio protenor* Cramer : Tytler, *J. Bombay Nat. Hist. Soc.* **21** : 589.

1939. *Papilio protenor euprotenor* (Fruhstorfer) : Talbot, *Fauna of British India indcluding Ceylon and Burma,* (Butterflies) **1** : 141.

1983. *Princeps (Menelaides) protenor* (Cramer) : Hancock, *Smithersia,* **2** : 48.

1998. *Princeps (Menelaides) protenor euprotenor* (Fruhstorfer) : Mondal & Maulik, *Fauna of Meghalaya, State Fauna Series,* **4**(Part-6) : 230.

Material examined : Nagaland: Kohima District, Kohima Forest Banglow Garden, 1♂, 22.xi.1994 (*P.H. Roy and Party coll.*).

Wing expanse : ♂60 mm.

Distribution : India : *Present record* : Nagalnad : Kohima (Roy 1994). *Past record* : Arunachal Pradesh (Mitra 1976), Assam, Manipur (Barman 1993), Meghalaya (Mondal 1992), Mizoram (Hazra 1994) and Sikkim (Sen 1994).

Elsewhere : North Myanmar, Tonkin.

Remarks : This subspecies can be differentiated from the nominate one-*P. protenor protenor* (Fruhstorfer) occurring from (Jammu & Kashmir) Kashmir to (Uttaranchal) Kumaon by the upperside of hind wing with more extensive blue scaling in the distal area and the underside of fore wing whiter. Previously, its smaller forms were reported from foot Naga Hills collected during February-March and larger rainy season forms from foot of hills up to elevation of 1800m collected during June-September.

bootes group

hind wing upperside space 7 dark but with white discal markings; tail present ; upperside of hind wing in male sometimes with a blue-green sheen; undserside of wing base red; male without androconia.

Key to species

Head red and abdomen with lateral red stripes ..... *janaka* (Moore)

– Head and abdomen without lateral stripes... ..... *mixta Tytler*

31. ***Princeps (Menelaides) janaka janaka*** Moore
(Tailed Redbreast)

1857. *Papilio janaka* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 97.

1915. *Papilio kala* Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 515.

1939. *Papilio bootes janaka* Moore : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **1** : 136.

1983. *Princeps (Menelaides) janaka* (Moore) : Hancock, *Smithersia,* **2** : 48

Material examined : Nil.

Wing expanse : ♂110, ♀120 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Arunachal Paradesh (Abor valley), Sikkim, Uttaranchal.

Remarks : Only this nominate subspecies occurs in India. Tytler (1915) mentioned its occurrence in Naga Hills.

32. ***Papilio (Menelaides) bootes mixta*** Tytler

1915. *Papilio mixta* Tytler, *J. Bombay nat. Hist. Soc.*, **23** : 514-515.

1939. *Papilio bootes mixta* Tytler : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies) **1** : 137.

1983. *Princeps (Menelaides) bootes* (Westwood) : Hancock, *Smithersia*, **2** : 48

Material examined : Nil.

Wing expanse : ♂105, ♀120 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Manipur.

Elsewhere : North Myanmar.

Remarks : This subspecies differs from the nominate one- *P. bootes bootes* (Westwood) found in Meghalaya (India) and Bangladesh by the upperside of hind wing with four discal white spots. Tytler (1915) reported three males from Yakama (Naga Hills) at altitude of 1830m collected in May. The species, *Papilio bootes* (Westwood) is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

memnon group

Upperside of hind wing in male with dispersed blue scales; underside of hind wing base normally red; male without androconia.

Key to species

Hind wing with anal white edged ocellus ... . *alcmenor* (C. & R. Felder)

– Hind wing without anal white edged ocellus ..... *memnon* (Linnaeus)

33. ***Princeps (Menelaides) alcmenor rhetenor*** Westwood

(Redbreast)

1841. *Papilio rhetenor* Westwood, *Arc. Entom.*, **1** : 59.

1912. *Papilio rhetenor* Westwood : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 589.

1939 *Papilio rhetenor rhetenor* Westwood : Talbot, *Fauna of Btitish India indcluding Ceylon and Burma* (Butterflies), **1** : 138

1983. *Princeps (Menelaides) alcemenor* (C. & R. Felder) Hancock, *Smerthersia*, **2** : 48

Material examined : Nil.

Wing expanse : ♂115, ♀130 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland, Assam, Uttaranchal.

Elsewhere : Lower Myanmar (Karen Hills).

Remarks : Only this nominate subspecies occurs in India. Earlier, its smaller forms were reported from foot of Naga Hills collected during March-April and larger wet season forms from elevations of 1500-1800m in September-October.

34. ***Princeps (Menelaides) memnon agenor*** (Linnaeus)

(Great Mormon)

1758. *Papilio agenor* Linnaeus, *Syst. Nat. ed.*, **10** 460

1912. *Papilio memnon agenor* Linnaeus : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 589.

1939. *Papilio memnon agenor* (Linnaeus) : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **1** : 129.

1983. *Princeps (Menelaides) memnon* (Linnaeus) Hancock, *Smithersia*, **2** : 48

1997. *Princeps (Menelaides) memnon agenor* (Linnaeus) : Mondal & Maulik, *Fauna of West Bengal, State Fauna Series*, **3**(Part-7) : 770.

Material examined : Nagaland : Mon Mon district, Leangyu village and arround, 7 km. from Mon Mon on the way to Wackeling, 1♂, 15.vi.1990 (*Y.P. Sinha and Party coll.*).

Wing expanse : ♂68 mm.

Distribution : India : *Present record* : Nagaland : Mon. Mon. (Sinha 1990). Widely distributed in the North-East Himalaya.

Elsewhere : Myanmar.

Remarks : Only this subspecies occurs in India and is very variable. Consequently, several local forms are recognised. Tytler (1912) obtained its specimens at low elevations of hills during March-November. The female form *aphrodites* Roeber is known only from one specimen collected from Naga Hills (Talbot, 1939).

polytes group

Hind wing in male black with a broad or narrow whitem discal band; male without androconia.

(Fore wing with marginal series of white spots which are narrower at the edge of the wing. Hindwing with a transverse discal series of elongate white spots)..... polytes (Linnaeus)

35. ***Princeps (Princeps) polytes romulus*** (Cramer)

(Common Mormon)

1775. *Papilio romulus* Cramer, *Pap. Exot.*, **1** : 67.

1912. *Papilio polytes* Linnaeus : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 589.

1939. *Papilio polytes romulus* (Cramer) : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies) **1** : 178.

1983. *Princeps (Princeps) polytes* (Cramer) : Hancock, *Smithersia*, **2** : 48.

1998. *Princeps (Princeps) polytes romulus* (Cramer) : Mondal & Maulik, *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 233.

Material examined : Nagaland : Kohima district, Pulebadze, 1♂., 25.xi.1997 (*Y.P. Sinha and Party coll.*); Dimapur district, Kukidolong, 8 km. O-Medriphena, alt. 245 m. 1♂., 28.x.1998 (*T. K. Pal and Party coll.*); Zunhebeto district, Zunhebeto Art College Campus and arround, 2♀, 18.vi.1991; Hosehpu Village and arround, 1♂, 25.xii.1991 (*Y. P. Sinha and Party coll.*).

Wing expanse : ♂84, ♀96 mm.

Distribution : India : *Present record* : Nagaland : Kohima (Sinha 1007), Dimapur (Pal 1998) and Zunhebeto (Sinha 1991). *Past record* : Arunachal Pradesh (Mitra 1976), Assam, Manipur (Mondal 1992), Meghalaya (Gupta 1979), Mizoram (Jonathon 1994), Sikkim (Mitra 1995), widely distributed in India.

Elsewhere : Malay Penninsula, Myanmar, Sri Lanka, Tonkin Natua and Lingga Islands.

Remarks : This subspecies differs from *Papilio polytes stichioides* Evans found Andanman Islands and *Papilio polytes nikobarus* Felder found in Nicobar Islands by the upperside of hind wing of male with discal band of even width; the female is trimorphic. This subspecies also shows abberations. Tytler (1912) found it common at the foot of Naga Hills throughout the year and and also at elevation of 1200m during July-August.

nephelus group

Sexes similar or dissimilar, non mimetic or mimetic of Euploea; black with cream bands or patch in non-mimetic forms; male without androconia.

Key to species

Hind wing upperside with four chalky-white band; undserside with yellow submarginal lunules ..... *nephelus* (Westwood)

Hind wing upperside with a large discal spots in area 4 to 6 ; hind wing with submarginal lunules ..... *castor* Westwood

36. ***Princeps (Princeps) nephelus chaon*** (Westwood)

(Yellow Helen)

1845. *Papilio chaon* Westwood, *Arc. Entom.*, **2** : 97.

1912. *Papilio chaon* Westwood : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 589.

1947. *Papilio chaon chaon* Westwood : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **1** : 172

1983. *Princeps (Princeps) chaon* (Westwood) : Hancock, *Smithersia*, **2** : 48.

Material examined : Nil.

Wing expanse : ♂115, ♀130 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland, Sikkim.

Elsewhere : Myanmar and Nepal.

Remarks : Only this subspecies occurs in India. Tytler (1912) recorded its dry season form in February and wet season form in August from low elevations of Naga Hills.

37. ***Princeps (Princeps) castor castor*** (Westwood)

(Common Raven)

1842. *Papilio castor* Westwood, *Ann. Mag. nat. Hist.*, **9** : 37.

1912. *Papilio castor* Westwood : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 589.

1939. *Papilio castor* Westwood : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies) **1** : 163.

1983. *Princeps (Princeps) castor* (Westwood) : Hancock, *Smrthersia*, **2** : 48.

Material examined : Nil.

Wing expanse : ♂100, ♀130 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland, Assam.

Elsewhere : Northern Myanmar.

Remarks : This nominate subspecies differs from *P. castor polias* (Jordan) occurring in Sikkim and ? Myanmar by the underside of hind wing often with discal spot in space 3 and may be complete row; the upperside of hind wing with traces of submarginal spots at apex, streaks white; female with discal streaks absent. Tytler (1912) found it not uncommon in Naga Hills during July-September.

Subgenus ***Princeps*** Huebner

1807. *Princeps* Huebner, *Samml. Schmett.*, **1** : pl. (116) *Augsber.*

Off the seven group of which two are placed in this subgenus.

demoleus group

Sexes similar, non-mimeticl black with yellow postdiscal bands and submarginal spots; basal area with dispersed yellow scales; tail reduced or absent; hind wing red and blue spot present; male without androconia.

38. ***Princeps (Princeps) demoleus demoleus*** (Linnaeus)

(Lime Butterfly)

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

1912. *Papilio demoleus* Linnaeus : Tytler, *J. Bombay nat Hist. Soc.*, **21** : 589.

1939. *Papilio demoleus demoleus* Linnaeus : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **1** : 189.

1983. *Princeps (Princeps) demoleus* (Linnaeus) : Hancock, *Smerthersia*, **2** : 48.

1998. *Princeps (Princeps) demoleus demoleus* (Linnaeus) : Mondal & Maulik, *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 233.

Material examined : Nagaland : Dimapur district, Kukidolong Forest Rest House Complex alt. 195 m. 1♂, 10.ix.1994 (*B. Mitra and Party coll.*); Mon Mon district, 6 km. East from Mon Mon, 1♂, 12.vi.1990 (*Y. P. Sinha and Party coll.*).

Wing expanse : ♂68 mm.

Distribution : India : *Present record* : Nagalnad : Dimapur (Mitra 1994) and Mon Mon (Sinha 1990), widely distributed in India.

Elsewhere : Arabia, Persia, Myanmar and Sri Lanka.

Remarks : Only the nominate subspecuies occurs in India. Tytler (1912) recorded it from foot of Naga Hills with its collection during June -November.

paris group

Sexes similar, non mimetic; black with or without metalic blue or green patch; underside with dispersed basal cream scales , upperside with dispersed metalic scales; tail present or absent; hind wing red and blue spots present , blue scales on the inner surface of of red scales.

Key to species

1. Hind wing upperside with a green patch in inner area and a series of claret-red submarginal lunules. Hind wing with tail.... ..... *polyctor* (Boisduval)

– Hind wing upperside with a submarginal rede or yellowish-red lunules. Male without scent-strek of fore wing 2

2. Hind wing upperside with a series of submarginal red or yellowish-red lunules. Male without scent streaks on fore wing ..3

– Hind wing upperside without submarginal lunules. Male with wooly-scent streaks on fore wing ..... *elephenor* Doubleday

3. Hind wing upperside with prominent submarginal red lunules 4

– Hind wing upperside wsith a complete row of red or yellowish-red submargial lunules .... *paris* Linnaeus

4. Hind wing upperside with a large discal blue spots; a submarginal row of 3 to 6 red spot and a red anla ring ..... *arcturus* Moore

– Hind wing upperside with a large blue patch; four submarginal spots and a large purplish anal eye spot ..... *krishna* Moore

39. *Princeps (Menelaides) polyctor ganesa* (Doubleday)
(Common Peacock)

1842. *Papilio ganesa* Doubleday, In Gray's *Zool. Micell.*, : 73.

1912. *Papilio triumphator* ab. *mal* Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 590.

1939. *Papilio polyctor ganesa* Doubleday : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies) **1** : 147.

1983. *Princeps (Menelaides) polyctor* Doubleday) : Hancock, *Smerthersia*, **2** : 48.

1997. *Princeps (Princeps) polyctor ganesa* (Doubleday): Mondal & Maulik, *Fauna of West Bengal, State Fauna Series*, **3**(Part-7) : 774.

Material examined : Nagaland: Mon Mon District, 6 km. From Mon Mon, 1 ♂, 12. vi. 1990 (*Y. P. Sinha and Party coll.).*

Wing expanse : ♂60 mm.

Distribution : India : *Present record* : Nagaland : Mon Mon (Sinha 1990), *Past record* : Arunachal Pradesh (Mitra 1976), Assam, Manipur(Ghosh 1976), Meghalaya (Sen 1992), Mizoram (Saha 1993), Sikkim (Pal 1994), Tripura (Barman 1982) and West Bengal (Maulik 1986).

Elsewhere : North Myanmar.

Remarks : Only this subspecies occurs in India. Tytler (1912) found it common at the foot of Naga Hills and up to 2100m during February-October.

40. *Princeps (Menelaides) elephenor* (Doubleday)
(Yellow-crested Spangle)

1845. *Papilio elephenor* Doubleday, *Gen. diurn. Lep.*, **1** : 305.

1903. *Pangernopsis elephenor* (Doubleday) : Moore, *Lep. Indica*, **4** : 59, pl. 480, fig. 2 (male).

1912. *Papilio elephenor* Doubleday : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 590.

1939. *Papilio elephenor* Doubleday : Talbot. *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **1** : 143.

1983. *Princeps (Menelaides) elephenor* (Doubleday) : Hancock, *Smithersia*, **2** : 48.

Material examined : Nil.

Wing expanse : ♂110, ♀130 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland, Assam.

Remarks : Tytler (1912) recorded it from Tambu (Tamlu) collected during August and from near Nichuguard collected during February-April. It is included in Schedule-I (Part-IV) of the Indian Wildlife (Protection) Act, 1972, and subsequent *amendments.*

41. *Princeps (Princeps) paris decorosa* (Linnaeus)
(Tamil Peacock)

1758. *Papilio paris* Linnaeus, *Syst. Nat. ed.* **10** : 459.

1912. *Papilio paris* Linnaeus : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 590.

1939. *Papilio paris paris* Linnaeus : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies) **1** : 150.

1983. *Princeps (Princeps) paris* (Linnaeus) : Hancock, *Smithersia,* **2** : 48.

Material examined : Nagaland: Kohima District, Kohima State Guest House, alt. 1460 m, 1♂, 22.xi.1994 (*P. H. Roy and Party coll.*).

Wing expanse : ♂50 mm.

Distribution : India : *Prresent record* : Nagaland : Kohima (Roy 1994). *Past record* : Orissa, Sikkim (Agrawal 1988), Uttaranchal : Kumaon (Maulik 2004).

Elsewhere : Myanmar.

Remarks : This subspecies differs from *P. paris tamilana* (Moore) found in Peninsular India and Nilgiris by the undserside of the fore wing with pale streaks reaching termen. Tytler (1912) found it common from the foot of Naga Hills up to 1800m.

42. *Princeps (Princeps) arcturus arcturus* (Westwood)

(Blue Peacock)

1842. *Papilio arcturus* Westwood, *Ann. Mag. nat. Hist.*, **9** : 37.

1912. *Papilio arcturus* Westwood : Tytler, *J. Bombay Nat. Hist. Soc.*, **21** : 590.

1939. *Papilio arcturus arcturus* Westwood : Talbot. *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **1** : 152.

1983. *Princeps (Princeps) arcturus* (Westwood) : Hancock, *Smerithersia,* **2** : 48.

Material examined : Nil.

Wing expanse : ♂120, ♀130 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga Hills), Sikkim.

Elsewhere : Nepal, North Mynmar.

Remarks : This nominate subspecies differs from *P. arcturus arius* (Rothschild) found from Jammu & Kashmir (Kashmir) to Uttaranchal (Kumaon) by its less fore wing expanse, the underside fore wing with pale streaks entering cell the upperside of hind wing with a blue patch in in space 6 broken. Tytler (1912) reported it not uncommon at elevations of 1200-2100m in Naga Hills during July-October. The name *P. arcturus* ab. *privatus* was assigned by Roeber to a male collected from Naga Hills (2100m) in October; its hind wing was with a blue patch much reduced and green scaling was absent on both sides (Talbot, 1939).

43. *Princeps (Princeps) krishna krishna* (Moore)

(Krishna Peacock)

1857. *Papilio krishna* Moore, *Cat. Lep. Mus. East India Coy.*, **1** : 110, pl. 2a, fig. 6.

1912. *Papilio krishna* Moore : Tytler, *J. Bombay nat. Hist Soc.*, **21** : 590.

1915. *Papilio krishna* Moore : Tytler, *J. Bombay nat. Hist Soc.*, **23** : 515.

1939. *Papilio krishna krishna* Moore : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies) **1** : 154.

1983. *Princeps (Princeps) krishna krishna* (Moore) : Hancock, *Smithersia,* **2** : 48.

Material examined : Nil.

Wing expanse : ♂120, ♀130 mm (Talbot, 1939).

Distribution : India : *Past record* : Nagaland (Naga hills), Sikkim.

Elsewhere : Myanmar.

Remarks : Only this nominate subspecies occurs in India. Previously, the nominate subspecies was recorded from Nichuguard (Naga Hills), collected in May.

Family NYMPHALIDAE

Antennae completely or partly scaled. Palpi not more than twice as long as the head except in Libytheinae. Fore wing with all 12 veins present, one vein usually dilaed at base. R_2 arising nearer apex of cell of wing, vein $1_A + 2_A$ may or may not be bifurcated at base. Hind wing cell closed by a tubular or non-tubular vein, precostal

vein present. Fore legs imperfect in both sexes and not used for walking except in the female, fore tarsus always reduced to a single segment clothed with hair like scales resembling a small brush; in female fore tarsus with a variable number of segments.

Subfamily DANAINAE

Antennae not scaled; eyes naked; fore legs imperfect, useless for walking in both sexes; both wing ample and margin not dented or currved, both wing of cell are closed by tubular vein; fore wing all veins present, vein 2A bifurcated at base, hind wing with precostal vein present.

This subfamily is represented in India by nine genera and 71 species of which four genera and 11 species are treated from Mizoram.

Key to Tribe

- Pulvilli and paronychia of mid- and hindlegs vestigial; tarsal claws almost straight, curved only at tip ..... **Danaini**
- Pulvilli and paronychia of mid- and hindlegs distinct; tarsal claws evenly curved throughout their length ..... **Euploeini**

Tribe **Danaini**

Key to genera

1. Upperside of both wings fulvous or white and without vitreous spots and stripes .... ***Danaus*** Kluk
- Upperside of both wings pale blue and with vitreous spots and stripes 2
2. Fore wing cell close by a transverse black bar ..... ***Tirumala*** Moore
- Fore wing cell not close by a transverse black bar ..... ***Parantica*** Moore

X Genus ***Danaus*** Kluk

1802. *Danaus* Klul, *Zwierzat. Hist. Nat. Pocz. Gospod.*, **4** : 84.

Two species of this genus are treated from Nagaland.

Key to species

- Apex of fore wing underside with ground colour uniformly dark brown distal to white precostal transverse bar .... *genutia* (Cramer)
- Apex of fore wing underside with some light brown markings distal to pale precostal transverse bar ..... *chrysippus* (Linnaeus)

44. ***Danaus genutia genutia*** (Cramer) (Common Tiger)

1779. *Papilio genutia* Cramer, *Pap. Exot.*, **3** : 23.

1911. *Danais plexippus* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49

1947. *Danaus plexippus plexippus* (Linnaeus) : Talbot, *Fauna of British India, indcluding Ceylon and Burma* (Butterflies), **2** : 25

1984. *Danaus (Salatura) genutia* (Cramer) : Ackery & Vane-Wright, *Milkweed Butterflies* : 205

1998. *Danaus genutia genutia* (Cramer) : Mondal & Maulik, *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 236.

Material examined : Nagaland : Mon Mon district, Zonhai village, 13 km. from Mon Mon, 1♂, 7.vi.1990 (*Y.P. Sinha and party coll.*); Monkchung district, 5 km. West of Monkchung Forest Office, 1♂, 23.ix.1994 (*B. Mitra and Party coll.*); Zunhebeto district, Aqaba village, 1♂, 3.vii.1997 (*Y.P. Sinha party coll*).

Wing expanse : ♂34, ♀40 mm.

Distribution : India : *Present record* : Nagaland : Mon Mon (Sinha 1990), Monkchung (Mitra 1994) and Zunhebeto (Sinha 1997), *Past record* : Andaman & Nicobar Islands (Arora 1972), widely distributed on the mainland of India.

Elsewhere : Annan, Asia Minor, Bangladesh, China, Japan, the Philippines, Sumatra, Thailand, Tonkin and Yunnan

Remarks : Only the nominatae subspecies occurs in India. It exhibits sexual dimorphism as black veins in hind wing are very much thickened in male. Tytler (1911) recorded it from the foot of Naga Hills up to 1500m, throughout the year.

45. ***Danaus chrysippus chrysippus*** (Linnaeus) (Plain Tiger)

1758. *Papilio chrysippus* Linnaeus, *Systema Naturae*, 10th Edition, **1** : 471.

1911. *Danais chrysippus* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. *Danaus chrysippus chrysippus* (Linnaeus) : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 21.

1984. *Danaus (Anosia) chrysippus* (Linnaeus) : Ackery & Vane-Wright, *Milkweed Butterflies* : 209.

1998. *Danaus chrysippus chrysippus* Linnaeus : Mondal & Maulik., *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 236.

Material examined : Nil.

Wing expanse : ♂70, ♀80 mm (Talbot, 1947).

Distribution : India : *Past record* : Nagaland, Sikkim to Assam.

Elsewhere : Asia Minor, Borneo, China, Japan, Malaya, Sumatra.

Remarks : Only the nominate subspecies occurs in India. Previously, it was recorded at the foot Naga Hills with its collection during January-February.

XI Genus *Tirumala Moore*

1880a. *Tirumala* Moore, *Lep. Ceylon*, **1** : 4.

46. ***Tirumala limniace leopardus*** (Butler) (Blue Tiger)

1866. *Danais limniace* var. *leopardus* Butler, *Proc. zool. Soc. London*, : 52.

1911. *Danais limniace* Cramer : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. *Danaus limniace leopardus* (Butler) : Talbot, *Fauna British India, indcluding Ceylon and Burma* (Butterflies) **2** : 31.

1984. *Tirumala limniace leopardus* (Butler) : Ackery & Van-Wright, *Milikweed Butterflies* : 198.

1998. *Tirumala limniace leopardus* (Butler) : Mondal & Maulik. *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 236.

Material examined : Nagaland, Zunhebeto District, Sukhalu village and around, 1♂., 24.vii.1991; Hoshepu Village around, 1♂ (*Y.P. Sinha and Paarty coll.*).

Wing expanse : ♂44, ♀50 mm.

Distribution : India : *Present record* : Nagaland : Zunhebeto (Sinha 1991). *Past record* : Arunacahl Pradesh (Sen 1994), Assam, Himachal Pradesh (Mitra 1978), Jammu, Manipur (Mondal 1992), Meghalaya (Biswas 1984), Mizoram (Hazra 1994), Orissa, Sikkim (Mitra 1995), Uttar Pradesh (Arora 1985) and West Bengal (Maulik 1986).

Elsewhere : Bangladesh, Bhutan, China, Malaya, Nepal, Sumatra, Thailand and Vietnam.

Remarks : Only this subspecies is represented in India. Earlier, this subspecies is known from the foot of Naga Hills and its collection in November and from Kohima during April-August.

47. ***Tirumala septentrionis septentrionis*** (Butler) (Dark Blue Tiger)

1874. *Danais septentrionis* Butler, *Ent. Mon. Mag.* **11** : 163 (male, Nepal).

1911. *Danais septentrionis* Butler : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. *Danaus hamata septentrionis* (Butler) : Talbot, *Fauna British India indcluding Ceylon and Burma* (Butterflies), **2** : 34.

1984. *Tirumala septentrionis* (Butler) : Ackery & Van-Wright, *Milikweed Butterflies* : 199.

1997. *Tirumala septentrionis septentrionis* (Butler): Mondal & Maulik, *Fauna of West Bengal, State Fauna Series*, 3(Part-7) :

Material examined : Nagaland, Zunhebeto District, Sukhalu village and around, 1♂, 1♀ 24.vii.1991 ; Hoshepu Village around, 1♂ (*Y. P. Sinha and Paarty coll.*).

Wing xpanse : ♂70, ♀80 mm (Talbot, 1947).

Distribution : India : *Present record* : Nagaland : Zunhebeto (Sinha 1991), *Past record* : Arunacahl Pradesh (Ghosh 1978), Assam, Himachal Pradesh (Saha 1976), Jammu and Kashmir, Manipur (Roy 1992), Meghalaya (Ghosh 1988), Mizoram (Hazra 1994), Sikkim (Mitra 1995), and West Bengal : Darjeeling (Bhowmik 1978).

Elsewhere : Bhutan, China, Hainan, Malaya, Nepal, Sumatra, Taiwan, Thailand, Tonkin and Vietnam.

Remarks : This nominate subspecies differs from *T. septentrionis dravidarum* (Fruhstorfer) found in Peninsular India and *T. septentrionis musikanos* (Fruhstorfer) in Sri Lanka by being larger, fore wing produced, markings narrower and much darker. Previously, the nominate subspecies was recorded from the foot of Naga Hills with its collection in January- February and from Kohima during August – November. Ackery & Van Wright (1984) mentioned that its occurrence in Afghanistan was erroneously given by Talbot (1947).

XII Genus ***Parantica*** Moore

1880a. *Parantica* Moore, *Lep. Ceylon.*, **1** : 7.

Three species of this genus are dealt with from Nagaland.

Key to species

1. Hind wing uppersdie in male with a scent-patch on vein 2 near margin and a smaller one underside it on vein 1b. Smaller species ..... *aglea* Moore

– Hind wing uppersdie in male with a scent-patch on vein1b near margin and a smaller one underside it on vein 1a. Larger species 2

2. Hind wing upperside marginal border bright chesnut. Obscurely spotted..... *sita* (Kollar)

– Hind wing upperside marginal border broad, dark, Chocolate, prominently spotted..... ..... *melaneus* (Cramer)

48. ***Parantica aglea melanoides*** Moore (Glassy Tiger)

1883. *Parantica melanoides* Moore, *Proc. zool. Soc. London* : 247. (Male, Nepal)

1911. *Danais melanoides* Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. *Danaus aglea melanoides* (Moore) : Talbot, *Fauna of British India indcluding Ceylon and Burma (Butterflies)*, **2** : 39.

1984. *Parantica aglea melanoides* Moore : Ackery & Van-Wright, *Milikweed Butterflies* : 175.

1998. *Parantica aglea melanoides* Moore : Mondal & Maulik, *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 236.

Materialexamined : Nagaland : Mon Mon district, Zonhai village, 13 km. From Mon Mon, 1♂, 7.vi.1990; Longpho and arround, 22 km. from Mon Mon, in the way to Phangching, 1♂, 19.vi.1990 (*Y.P. Sinha and Party coll.*); Monkcnung district, Longcham, 5 km. West of Forest Office, 1♂, 23. ix. 1994 (*B. Mitra and Party coll.*); Dimapur district, Kukidolong, 8 km. O-Mdriphena, alt. 245 m., 1♂, 28.x.1998 ; Rangapahar, alt. 130 m. 1♂, 31.x.1998 (*T. K. Pal and Party coll.).*

Wing expanse : ♂72, ♀90 mm.

Distribution : India : *Present record* : Nagaland : Mon Mon (Sinha 1990), Monkchung (Mitra 1998) and Dimapur (Pal 1998). *Past record* Andaman and Nicobar Island, Jammu & Kashmir, Mizoram (Dutta 1994), North and North-East Himalaya.

Elsewhere : Annam, Bangladesh, Hainan, Malaya, Myanmar, Nepal, Thailand and Vietnam.

Remarks : This subspecies differs from *P. aglea melanoleuca* Moore found in Andamans and nominate subspecies occurring in South India and Sri Lanka by the upperside of wings with pale markings more extensive and marginal spots complete. Tytler (1911) found it common at the foot of Naga Hills during February –March and near Kohima during August - November.

49. ***Parantica sita sita*** (Kollar) (Chestnut Tiger)

1844. *Danais sita* Kollar, *In* Huegel, *Kaschmir und das Reich der Siek*, **4** : abt. 2 : 424, t. 6, (Kashmir).

1911. *Danais tytia* Gray : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1932. *Danais tytia sita* Evans, *Identification of Indian Butterflies*, **2** : 87, pl. 10.

1947. *Danaus sita sita* (Kollar) : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 45-46.

1984. *Parantica sita sita* (Kollar) : Ackery & Van-Wright, *Milikweed Butterflies* : 178.

1998. *Parantica sita sita* (Kollar) : Mondal & Maulik, *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 234.

Material examined : Nagaland : Mon Mon district, Zonhai village, 13 km. from Mon Mon, 1♂, 7.vi.1990 ; Zunhebeto district, Atoju village and arround, 1♀, 8. vii. 1991 (*Y. P. Sinha and Party coll.*); Mokokchung district, Minkong Protected forest, 12 km. from the camp Mokokchung, alt. 1350 m. 1♂., 22.iii.1994; Mokokchung village, 1♂., 24.iii.1994 (*P. Mukharjee and Party coll.*); Phek district, Kutsuru, 10 km. O-Futsero, alt. 1800 m. 1♀, 25.x.1998 (*T.K. Pal and Party coll.*); Kohima district, Kohima Forest Banglow Garden, 1♂., 22.ix.1999 (*P.H. Roy and Party coll.*).

Wing expanse : ♂80, ♀108 mm.

Distribution : India : *Present record* : Nagaland : Mon Mon (Sinha 1990), Mokokchung (Mukharjee 1994), Phek (Pal 1998), Kohima (Roy 1999) and Zunhebeto (Sinha 1991), *Past record* : Arunachal Prasdesh(Mitra 1976), Assam, Kashmir, Manipur (Mondal 1992), Meghalaya (Maulik 1988), Mizoram (Hazra 1994), Sikkim (Pal 1994), Uttar Pradesh (Srivastav 1976) and West Bengal (Maulik 1986).

Elsewhere : Afghanistan, Bhutan, China, Hainan, Myanmar, South-East Tibet, Yanan and Vietnam.

Remarks : Only the nominate subspecies occurring in India is highly variable and, therefore, several local forms. Previously, it was reported from Foot of Naga Hills with its collection in February and Kohima during August–October.

Tribe **Euploeini**

XIII Genus ***Euploea*** Fabricius

1807. *Euploea* Fabricius, *Magazine (Illiger), Braunschweig*, **6** : 279-289.

Two species of this genus are treated from Nagaland.

Key to species

1. Fore wing discal cell without or indistinct recurrent veinlet 2
– Fore wing discal cell without or indistinct recurrent veinlet 4
2. Fore wing upperside discal cell with a large white spot filling whole width of cell .... *radamanthus* (Fabricius)
– Fore wing upperside discal cell without white spot in the cell 3
3. Fore wing in male androconial brand elongate, proximally aligned with the point of origin of vein Cu1b ..... *midamus* (Linnaeus)
– Fore wing in male androconial brand shorter, displaced distally from the point of origin of vein Cu_{1b} ..... *klugii* Moore
4. Hind wing upperside in male with black-defined off-white or light brown alar patch 5
– Hind wing upperside in male without well-defined alar pstch 6
5. Fore wing upperside with two brand; a spot in the apex of cell. Hind wing without patch of androconia ..... *sylvestor (Fabricius)*
– Fore wing upperside without brand, a cell spot in the apex of cell. Hind wing withpa pale yellow or buff raised patch in the cell area ..... *mulciber* (Cramer)
6. Fore wing without a series of submarginal spots or with two or three dots near the tornus. Hind wing with inner series of spots elongate, the outer conical .... *doubledayi C. & R. Felder*
– Fore wing without a series of submarginal spots, curved inwardly. Hind wing with a series of conspicuous white submarginal spots ..... *core* (Cramer)

50. ***Euploea radamanthus radamanthus*** (Fabricius)

(Magpie Crow)

1793. *Papilio radamanthus* Fabricius, *Ent. Syst.*, **3** : 42, male.

1910. *Euploea diocletianus diocletianus* f. *despoliata* Fruhstorfer, In Seitz, *Macrolepidoptera of the World*, **9** : 271.

1911. *Euploea diocletianus* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1939. *Euploea diocletiana talboti* Tytler, *J. Bombay nat. Hist. Soc.*, **41** : 243.

1947. *Euploea diocletianus diocletianus* Fabricius) : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 104

1947. *Euploea diocletianus despoliata* Fruhstorfer : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 104.

1984. *Euploea radamanthus* (Fabricius) : Ackery & Vane-Wright, *Milkweed Butterflies* : 220.

Material examined : Nil.

Wing expanse : ♂70, ♀80 mm (Talbot, 1947).

Distribution : India : *Past record* : Nagaland, Assam to Cachar.

Elsewhere : North-Western Myanmar.

Remarks : This nominate subspecies is distinguished from *E. radamanthus ramsayi* Moore found from Sikkim to Assam and Nepal by the upperside of hind wing with white markings restricted and in male not entering base of space 3. Talbot (1947) treated another subspecies *E. diocletianus despoliata* Fruhstorfer with its distribution from Assam to Cachar and North-Western Myanmar having cell patch absent in fore wing but present in normal specimens of *Euploea diocletianus despoliata* f. *talboti* Tytler. Since both the subspecies, *radamanthus* (Fabricius) and *despoliata* Fruhstorfer have overlapping disribution, therefore, unlikely to occur in the same range of distribution thereby inferring that *despoliata* Fruhstorfer might have been mistaken for *radamanthus* (Fabricius). Earlier, also Evans (1932) treated *despoliata* Fruhstorfer as synonym of *diocletianus* (Fabricius). Tytler (1911) recorded it at low elevations in Naga Hills throughout the year.

51. ***Euploea midamus rogenhoferi*** C. & R. Felder (Blue Spotted Crow)

1865. *Euploea rogenhoferi* C. & R. Felder, *Reise Novara*, Lep. 2, Heft **2** : 325-326.

1911. *Euploea splendens* Tytler : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. Euploea midamus rogenhoferi C. & R. Felder : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 92.

1984. *Euploea midamus* (Linnaeus) : Ackery & Vane-Wright, *Milkweed Butterflies* : 217

Material examined : Nil.

Wing expanse : ♂95, ♀105 mm (Talbot, 1947).

Distribution : India : *Past record* : Nagaland, Sikkim to Assam.

Elsewhere : Myanmar (Karen Hills), ? Nepal.

Remarks : This subspecies differs from *E. midamus chloee* (Guerin) occurring in Karen Hills to South Myanmar, Malaya, Thailand, Tonkin and *E. midamus roepstorfii* (Moore) in South Andaman Islands by the upperside of fore wing blue gloss nearly to termen; the upperside of hind wing with post-discal and submarginal spots obsolete. Tytler (1911) recorded it from low elevations in Naga Hills with its collection in January; May; August; November and a single specimen at elevation of 1500m in November. It is included in Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

52. ***Euploea klugii klugii*** Horsfield & Moore (Blue King Crow)

1857. *Euploea klugii*, Horsfield &Moore, *Cat. Lep. Mus. E.I.C.*, **1** : 130.

1911. *Euploea klugii* f. *indigofera* Moore : Tytler, *J. Bombay Nat. Hist. Soc.*, **21** : 49.

1947. *Euploea klugii klugii* Horsfield & Moore : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 95.

1984. *Euploea klugii*, Moore : Ackery & Vane-Wright, *Milkweed Butterflies* : 219.

Material examined : Nil.

Wing expanse : ♂85, ♀100 mm (Talbot, 1947).

Distribution : India : *Past record* : Nagaland, Sikkim to Assam.

Remarks : The nominate subspecies is distiguished from *E. klugii kollari* (C. & R. Felder) found in Orissa, Peninsular India to 'Bengal',

Kanara and Palni Hills by the upperside of fore wing with spots bluish and discal spots usually present; very variable with six forms known. Peviously, it was reported from the the foot of Naga Hills with is collection in May.

53. ***Euploea sylvestor hopei*** C. & R. Felder (Double-branded Blue Crow)

1865. *Eupolea hopei* C. & R. Felder, *Reise. Novora, Lep.*, **2** : 328, pls. 22-57.

1911. *Euploea hopei* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. *Euploea sylvestor hopei* C. & R. Felder : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 80.

1984. *Euploea sylvestor hopei* C. & R. Felder : Ackery & Vane-Wright, *Milkweed Butterflies* : 213.

Material examined : Nil.

Wing expanse : ♂85, ♀100 mm (Talbot, 1947).

Distribution : India : *Past record* : Nagaland, Assam to Sikkim, West Bengal.

Elsewhere : Bangladesh, Myanmar (Shan States).

Remarks : Only this subspecies is represented in India. Earlier, the individuals of this subspecies were collected at the foot of Naga Hills in March and October from Kohima during April-May.

54. ***Euploea mulciber mulciber*** (Cramer) (Striped Blue Crow)

1777. *Papilio mulicber* Cramer, Pap. *Exot.*, **2** : 45, pl. 127, figs. C.D.

1911. *Euploea mulciber mulciber* (Cramer) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. *Euploea mulciber mulciber* (Cramer) : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 83

1984. *Euploea mulciber* (Cramer) : Ackery & Vane-Wright, *Milkweed Butterflies* : 215.

1998. *Euploea mulciber* (Cramer): Mondal & Maulik. *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 237.

Material exmined : Mon Mon district, Vetenary Colony and around 1♂, 9.vi.1990 ; Longpho and around, 22 km. From Mon Mon on the way to Phongchung, 1♀, 19.vi.1990 (*Y. P. Sinha and Party coll.*); Monkchung district, 5 km. West of Longcham Forest Office, 1♂, 23.ix.1994 (*B.Mitra and Party coll.*); Mokokchung district, Mingkong Reserve Forest, 1♀, 27.ix.1994 (*P.H.Roy and Party coll.*); Phek district, Surhopa 10 km. O-Phek, 1♂, 23.x.1998 (*T.K. Pal and Party coll.*).

Wing expanse : ♂88, ♀100 mm.

Distribution : India : *Present record* : Nagaland : Mon Mon (Saha 1990), Monkchung, (Mitra 1994) and Phek (Pal 1998), *Past record* : Andaman and Nicober Island, Arunachal Pradesh (Mitra 1994), Assam, Manipur (Ghosh 1976), Meghalaya (Maulik 1992), Mizoram (Mondal 1992), Himachal Pradesh (Jonatha 1978), Sikkim (Mintra 1994) and West Bengal (Ghosh 1984).

Elsewhere : China, Malaya Peninsula, Myanmar, Nepal, Sumatra, Sunda Island and Vietnam.

Remarks : The nominate subspecies is distinguished from *E. mulciber kalinga* Doherty occurring from Tamil Nadu" Madras" (Eastern Ghats)to "Bengal", Ganjam District, Orissa, Vizagapatnam District and Rajasthan (Jaipur) by the upperside of fore wing bearing blue spots in male, and underside of hind wing in female with narrow white streak in the cell or beyond the cell. Tytler (1911) found it common throughout the year from the foot of Naga Hills up to 1800 m.

55. ***Euploea doubledayi doubledayi*** Felder & Felder (Striped Black Crow)

1865. *Euploea doubledayi* Felder & Felder, *Reise. Novora, Lep.*, **2** : 337.

1911. *Euploea alcathoe* Godart : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. *Euploea doubledayi doubledayi* Felder & Felder : Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 64

1984. *Euploea doubledayi* Felder & Felder : Ackery & Vane-Wright, *Milkweed Butterflies* : 225.

Material examined : Nil.

Wing expanse : ♂85, ♀100 mm (Talbot, 1947).

Distribution : India : *Past record* : Nagaland, Sikkim to Assam.

Elsewhere : Southern Shan States.

Remarks : Only the nominate subspecies occurs in India. Tytler (1911) collected its specimens at the foot of Naga Hills in February, April, July and November.

56. ***Euploea core core*** (Cramer) (Common Indian Crow)

1780. *Papilio core* Cramer, *Pap.Exot.*, **3** : 133. Pl. 266. Figs. EF.

1947. Euploea core core (Cramer) : Talbot, *Fauna of British India indcluding Ceylon and Burma (Butterflies)* **2** : 66

1984. *Euploea core* (Cramer) : Ackery & Vane-Wright, *Milkweed Butterflies* : 228.

1998. *Euploea core core* (Cramer) : Mondal & Maulik. *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 238.

Material examined : Nagaland : Phek district, Surhopa 10 km. O-Phek, 1♂, 23.x.1998 (*T.K. Pal and Party coll.*).

Wing expanse : ♂37 mm.

Distribution : India : *Present record* : Nagaland : Phek (Pal 1998), *Past record* : Throughout India including Anadaman and Nicober Island.

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

Remarks : This nominate subspecies differs from all the other seven Indian subspecies, *viz.*, *E. core godartii* Lucas occurring in Manipur (India), Annam, Southern Myanmar, Thailand and Tonkin; *E. core andamanensis* Atkinson in South Andaman Islands; *E. core ferrari* Tytler in in North Sentinel Island (South Andaman Islands); *E. core bumila* Evans in Little Andaman Islands; *E. core scherzeri* C. Felder in Car Nicobar Island; *E. core camorta* Moore in Central Nicobar Island; *E. core simulatrix* Wood-Mason & Niceville in South Nicobar Island mainly by the upperside of fore wing with submarginal and postdiscal spots prominent, the latter more or less equal or decreasing slightly towards apex, spot at base of space 3 absent. This subspecies is mimicked by the female of *Hypolimnias bolina* (Linnaeus) of the subfamily Nymphalinae and *Chilasa* spp. of the family Papilionidae.

XIV Genus ***Parantica*** Moore

1880. *Parantica* Moore, *Lep. Ceylon*, **1** : 7.

Of the eight species of this genus occurring in India, only a single species- *Parantica melaneus* (Cramer) is treated.

57. ***Parantica melaneus plataniston*** (Fruhstorfer) (Chocolate Tiger)

1910. *Danaida melaneus plataniston* Fruhstorfer, In : Seitz. *Macrolep. World*, **9** : 210.

1911. *Danais melanea* Cramer : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 49.

1947. *Danaus melaneus plataniston* (Fruhstorfer), Talbot, *Fauna of British India indcluding Ceylon and Burma* (Butterflies), **2** : 44.

1984. *Parantica melaneus plataniston* (Fruhstorfer) : Ackery & Van-Wright, *Milkweed Butterflies* : 179.

1998. *Parantica melaneus plataniston* Fruhstorfer: Mondal & Maulik, *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 234.

Material examined : Monkchung district, Longcham, 5 km. West of Forest Office, 1♂, 23.ix.1994 (*B. Mitra and Party coll.*); Sungkumen, alt. 1260 m. 2 ♀, 18. x.1998 (*T.K. Pal and Party coll.*).

Wing expanse : ♂41, ♀44 mm.

Distribution : India : *Present record* : Nagaland : Monkcham (Mitra 1994), *Past record* : Arunachal Prasdesh (Ghosh 1976), Assam, Manipur (Mondal 1992), Meghalaya (Maulik 1988), Mizoram (Parui 1995), Sikkim (Chatterjee 1989), Uttar Pradesh (Pradhan 1976) and West Bengal (Maulik 1982).

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

Remarks : Only this subspecies occurs in India. However, some of the butterflies of the nominate subspecies occur with this subspecies on the boarder of Myanmar. Tytler (1911) obtained a few individuals near Kohima during August October.

SUMMARY

Fifty eight species/subspecies of butterflies belonging to two families, Papilionidae and Nymphalidae (Danainae) are dealt with from Nagaland. The family Papilionidae includes 43 species/subspecies in nine genera whereas family Nymphalidae (Danainae) represents 15 species in four genera. Three species, viz., *Atrophaneura (Atrophaneura) polla* (De Niceville), *Atrophaneura (Atrophaneura) crassipes* (Oberthuer) and *Princeps (Menelaides) elephenor* (Doubleday) of Papilionidae are included in Schedule-I (Part-4) of the Indian Wildlife (Protection) Act, 1972 whereas nine species of Papilionidae and one-*Euploea midamus rogenhoferii* (C. & R. Felder) of Nymphalidae (Danainae) find protection under Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972. Of these 58 species, 17 belonging to family Papilionidae (10 spp.) and Nymphalidae (Danainae) (7 spp.) are the first definitive records for six Districts, *viz.*, Dimapur, Kohima, Mokokchung, Monmon, Phek and Zunhebeto of Nagaland.

AKNOWLEDGEMENTS

The authors are grateful to the Director, Zoological Survey of India for providing necessary Laboratory facilities for carrying out present studies on butterflies. They are thankful to Dr. A.K. Hazra, Scientist-'E' and Officer-in-Charge of the Entomology Division (A), for encouragement and valuable suggestions; to Shri Rati Ram, Publication Production Officer and Shri Roop Lal, Stores Officer, of the same department for various courtsies.

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INSECTA : LEPIDOPTERA : PIERIDAE AND HESPERIIDAE

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INTRODUCTION

North-east India is one of the 18 hot spots in the world for harbouring rich biodiversity. India includes 15,000 species of butterflies and moths which are about 10% of the species of Lepidoptera known in the world. This part of India is well known for species richness of Lepidoptera and inhabitates more than 5,000 species. Nagaland, a state of Union of India, provides shelter to its unique fauna, as a good number of species of Lepidoptera have developed to local forms and subspecies.

Our knowledge on Indian butteflies including those known from Nagaland are on account of works of Elwes (1892), Bingham (1905), Tytler (1912,1915), Talbot (1939) on family Pieridae; Watson (1891) and Evans (1949) on family Hesperiidae; (Evans 1932), Wynter-Blyth (1957) on both families of Pieridae and Hesperiidae.

The studies are based on the collection of butterflies made by several survey parties of the department. The specimens available in the National Zoological Collection of Zoological Survey of India have also been examined. The species not represented in the collection have been reviewed from literature.

Presently, 153 species of butterflies are dealt with representing two families, Pieridae and Hesperiidae from Nagaland. The family Pieridae includes 32 species in 14 genera under two subfamilies, *viz.*, Pierinae and Coliadinae whereas the family Hesperiidae includes 121 species in 43 genera under three subfamilies, *viz.*, Hesperiinae, Coeliadinae and Pyrginae.

Of these 153 specie/subspecies of butterflies, three of Pieridae and two of Hesperiidae listed in Schedule-II (Part-2) and six of Hesperiidae listed in Schedule-IV are protected under the Indian Wildlife (Protection) Act, 1972, and subsequent amendments. Also 12 and nine species/subspecies of Pieridae and Hesperiidae, respectively, are the first definitive records for seven Districts, *viz.*, Dimapur, Kohoma, Monmon, Mokokchung, Phek, Wokha and Zunheboto of Nagaland.

The keys to species, genera and subfamilies of families, Pieridae and Hesperiidae have been given. Fore wing length/expanse and geogrphical distribution for each species/subspecies have been provided.

SYSTEMATIC ACCOUNT

Family PIERIDAE

Antennae of variable length, club more or less ovate (abrupt), or short and thickened gradually to the apex. Fore wing veins R_2 and R_1 usually from the cell, rarely R_2 absent; R_3 usually present; R_5 usually coincident with R_4 and stalked with R_3; M_1 usually stalked with R_5, R_4 and R_3; M_2 usually from above middle of cell; 1A not forked at base. Hind wing with veins 1_A and 2_A present, inner area channeled to receive the abdomen; precostal absent or broad, with the margin reduced in some genera. Both wings with cell closed; upper discocellular cell usually absent on the fore wing.

Of the four subfamilies of Pieridae recognized in the world, two, *viz.*, Pierinae and Coliadinae are represented in India.

Key to subfamilies

- Palpi always with hair; hind wing with well developed precostal vein curved distal ..... PIERINAE
- Palpi without hair; hind wing without precostal vein or very short directed basal ..... COLIADINAE

Subfamily PIERINAE

This subfamily is known by ten genera in Nagaland.

Key to genera

1. Fore wing vein R_4 and R_5 coincident 2
- Fore wing vein R_4 and R_5 separate ..... ***Pareronia*** Bingham
2. Fore wing vein R_2 from cell 3
- Fore wing vein R_2 absent ... ***Delias*** Huebner
3. Fore wing vein R_3 absent ..... ***Leptosia*** Huebner
- Fore wing vein R_3 present 4
4. Fore wing costa serrate ... ***Prioneris*** Wallace
- Fore wing costa not serrate 5
5. Fore wing vein M_1 from the stalk of $R_4 + R_5$ and R_3 6
- Fore wing vein M1 from the cell angle or below it ..... ***Hebomoia*** Huebner
6. Fore wing vein M1 from the mid way between the fork $R_4 + R_5$ and R_3.....*Aporia* Huebner
- Fore wing vein M1 given off nearer the cell than to fork of $R_4 + R_5$ and R_3 7
7. Fore wing vein R3 emitted from $R_4 + R_5$ very close to apex, the stalk long ..... ***Pieris*** Schrank
- Fore wing vein R_3 emitted from $R_4 + R_5$ further from apex, the stalk shorter 8
8. Male with one or two hair pencil on the abdomen .....***Appias*** Huebner
- Male without hair pencil on the abdomen... 9
9. Palpi with 3rd segment slender as long as 2nd segment ..... ***Cepora*** Billberg
- Palpi with 3rd segment short and oval ..... ***Ixias*** Huebner

I. Genus ***Pareronia*** Bingham

1907. *Pareronia* Bingham, *Fauna Brit. India, Butterflies*, **2** : 276.

Remarks : This genus is represented in India by four species of which one *Pareronia avatar* (Moore) is treated from Nagaland.

1. ***Pareronia avatar*** (Moore)
(Pale Wanderer)

1857. *Eronia avatar* Moore, *Cat. lep. Ins. Mus. East India Coy.*, **1** : 61, pl. 2a, fig. 1.

1912. *Pareronia avatar* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 593.

1939. *Valeria avatar avatar* (Moore) : Talbot, *Fauna of British India, Butterflies*, **1** : 481.

1993. *Pareronia avatar* (Moore) : Varshney, *Oriental Insects*, **27** : 362.

2003. *Pareronia avatar* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

Wing expanse : 28-43 mm. (Talbot, 1939).

Distribution : India : Nagaland, Sikkim.

Elsewhere : Northern Myanmar.

Remarks : The dry season form (DSF) of this nominate subspecies is small but its wet season form (WSF) is large. Tytler (1912) collected males and females of this species at elevations of 210 m in July and 1525-1825m in August in Naga Hills. This species is protected under Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

II Genus ***Delias*** Huebner

1819. *Delias* Huebner, *Verz. bek. Schmett.*, : 91.

Remarks : Of the nine species of this genus occurring in India, four are dealt with from Nagaland.

Key to species

1. Hind wing underside without red markings. 2
– Hind wing underside with red markings....3
2. Hind wing underside yellow, with anrrow black border bearing small linear white spots ..... *agostina* (Hewitson)
– Hind wing underside with black ground colour, and with yellow and white spots and stripes ..... *belladonna* (Fabricius)
3. Hind wing underside with broad red subcostal stripe restricted in area R_S ....*descombesi* (Boisduval)
– Hind wing underside with broad red subcostal stripe not restricted in area R_S 4
4. Hind wing upperside without red patch..... ..... *pasithoe* (Linnaeus)
– Hind wing upperside with red basal patch reaching well below the cell..... ..... *thysbe* (Cramer)

2. *Delias agostina agostina* (Hewitson) (Yellow Jezebel)

1852-55. *Pieris agostina* Hewitson, *Exot. Butt.* : Pl.1, fig.1,2.

1912. *Delias agostina* (Hewitson) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Delias agostina agostina* (Hewitson) : Talbot, *Fauna of British India, Butterflies*, **1** : 350.

1998. *Delias agostina* (Hewitson) : Ghosh & Chaudhury, *Fauna of Meghalaya, State Fauna Series*, 4(6) : 247.

2003. *Delias agostina* (Hewitson) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series* 9 (Part-4) : 115.

Material examined : Nil.

Wing expanse : 64-78 mm (Talbot, 1939).

Distribution : India : Nagaland, Meghalaya and Sikkim.

Elsewhere : Nepal to Lower Myanmar, Thailand and Tonkin.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) mentioned its occurrence during July-October at elevations of 515-1525m in Naga Hills.

3. *Delias belladonna ithiela* (Butler) (Hill Jezabel)

1869. *Thyca ithiela* Butler, *Ann. Mag. nat. Hist.* (4) **4** 242.

1912. *Delias ithiela* (Butler) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Delias belladonna ithiela* (Butler) : Talbot, *Fauna of British India, Butterflies*, **1** : 341.

Material examined : Nil.

Wing expanse : 76-90 mm; female, 75-96 mm, (Talbot, 1939).

Distribution : India : Nagaland, Assam, Sikkim.

Remarks : Tytler (1912) collected individuals of this species during August-October from elevation of 1200-2200 m in Naga Hills.

4. *Delias descombesi descombesi* (Boisduval) (Red Spot Jezebel)

1836. *Pieris descombesi* Boisduval, *Spec. Gen. Lep* **1** 465.

1912. *Delias descombesi* (Boisduval) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Delias descombesi descombesi* (Boisduval) : Talbot, *Fauna of British India, Butterflies*, **1** : 347.

1998. *Delias descombesi* (Boisduval) : Ghosh & Chaudhury, *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 248.

2003. *Delias descombesi* (Boisduval) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 110.

Material examined : Nil.

Wing expanse : 80-85 mm (Evans, 1932).

Distribution : India : Nagaland (Naga hills).

Elsewhere : Annam, Cochin-China, Nepal to Myanmar, Saigon and Thailand.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) collected a few individuals of this species during August–September from elevations of 450-1300 m in Naga Hills. Its status is 'not rare' (Talbot, 1939).

5. *Delias pasithoe* (Linnaeus) (Red Base Jezebel)

1767. *Papilio pasithoe* Linnaeus, *Syst. Nat.* 12th ed. : 765.

1912. *Delias aglaia* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Delias aglaia aglaia* (Linnaeus) : Talbot, *Fauna of British India, Butterflies*, **1** : 342.

1993. *Delias pasithoe* (Linnaeus), Varshney, *Oriental Insects*, **27** : 359.

2003. *Delias pasithoe* (Linnaeus) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 110.

Material examined : Nil.

Wing expanse : Male, 68-84 mm; female, 69-92 mm.

Distribution : India : Nagaland, Assam, Sikkim.

Elsewhere : Nepal, South west China and Yunnan.

Remarks : Tytler (1912) mentioned it very common at foot of Naga Hills and at Kohima during February-March and July-November. Its status is 'not rare' (Talbot, 1939).

6. *Delias thysbe pyramus* (Wallace) (Red Breast Jezebel)

1867. *Thyca pyramus* Wallace, *Trans. ent. Soc. London*, **4** (ser. 3) : 347.

1912. *Delias thysbe* Cramer : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Delias thysbe pyramus* (Wallace) : Talbot, *Fauna of British India, Butterflies*, **1** : 345.

2003. *Delias thysbe pyramus* (Wallace): Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

W*ing expanse* : Male, 80-90 mm; female, 84-98 mm), (Talbot, 1939).

Distribution : India : Nagaland, Himachal Pradesh, Meghalaya, Sikkim.

Elsewhere : Malay Peninsula, Myanmar, Yunnan, Thailand and Tonkin.

Remarks : This subspecies differs from *D. thysbe kandha* Doherty found in South India by the upperside of hind wing tornal area being ochreous; underside of hind wing pale area tornally ochreous and apically white. Tytler (1912) collected individuals of this species from foot of Naga Hills up to 1500m in February and during August–November.

III. Genus *Leptosia* Huebner

1818. *Leptosia* Huebner, *Ent. Syst.*, **3** (1) : 194.

Remarks : A single species, *Leptosia nina* (Fabricius) represents this genus in India.

7. *Leptosia nina nina* (Fabricius) (Psyche)

1793. *Papilio nina* Fabricius, *Ent. Syst.*, **3** (1) : 194.

1939. *Leptosia nina nina* (Fabricius) : Talbot, *Fauna of British India, Butterflies*, **1** : 305.

1998. *Leptosia nina nina* (Fabricius) : Ghosh & Chaudhury, *Fauna of West Bengal, State Fauna Series*, **3**(Part-7) : 709.

2003. *Leptosia nina nina* (Fabricius) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nagaland, Dimapur District, Rangapahar, 2 exs., 24. ix. 1994 (Coll. R.S. Barman); Chumuliduna, 50 m., 2 exs., 29.ix. 1998; Forest Colony, 100m., 1 ex., 30.ix.1998 (Coll. T.K. Pal).

Fore wing length : 13-17mm.

Distribution : India : Nagaland (Dimapur), Andaman & Nicobar Islands, Meghalaya, Peninsular India to Mussoorie Hills, Sikkim, Uttar Pradesh, West Bengal.

Elsewhere : Myanmar, Indochina, South China, Hainan and Thailand.

Remarks : Only the nominate subspecies occurs in India and it is a first definitive from Nagaland.

IV. Genus *Prioneris* Wallace

1867. *Prioneris* Wallace, *Trans. Ent. Soc. Lond.*, **4** (3), pt. 3 : 383.

Remarks : This genus is known in India by three species of which two, *viz., Prioneris*

clemanthe (Doubleday) and *P. thestylis* (Doubleday) are treated here.

Key to species

Hindwing underside with a red basal patch ..... *clemanthe* (Doubleday)

– Hindwing underside without red basal patch .....*thestylis* (Doubleday)

8. ***Prioneris clemanthe clemanthe*** (Doubleday) (Red Spot Sawtooth)

1864. *Pieris clemanthe* Doubleday, *Ann. Mag. Nat. Hist.*, **18** : 23.

1912. *Prioneris clemanthe* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Prioneris clemanthe clemanthe* (Doubleday) : Talbot, *Fauna of British India, Butterflies*, **1** : 377.

1998. *Prioneris clemanthe* (Doubleday) : Ghosh & Chaudhury, *Zool. Surv. India, Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 257.

2003. *Prioneris clemanthe* (Doubleday) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

Fore wing expanse : 80-90 mm (Talbot, 1939).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim.

Elsewhere : Myanmar, South China, Thailand and. Tonkin.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) recorded this nominate subspecies from Naga Hills.

9. ***Prioneris thestylis*** (Doubleday) (Spotted Sawtooth)

1842. *Pieris thestylis* Doubleday, In Gray's, *Zool. Miscell.*, : 76.

1912. *Prioneris thostylis* (sic) (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Prioneris thestylis* (Doubleday) : Talbot, *Fauna of British India, Butterflies*, **1** : 373.

1998. *Prioneris* thestylis (Doubleday) : Ghosh & Chaudhury, *Zool. Surv. India, Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 257.

2003. *Prioneris thestylis* (Doubleday) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

Wing expanse : 70-90 mm (Talbot, 1939).

Distribution : India : Nagaland (Kohima). Meghalaya, Sikkim, Uttaranchal,West Bengal.

Elsewhere : Hainan, Myanmar, South China.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) mentioned about this species that its males common and females uncommon; collected individuals of dry season form at foot of Naga Hills in April and at Kohima in October but individuals of wet season form at foot of Naga Hills up to 1525 m during May-October.

V. Genus ***Hebomoia*** Huebner

1819. *Hebomoia* Huebner, *Samml. Exot. Schmett.*, **2** : 95

Remarks : Only a single species, *Hebomoia glaucippe* (Linnaeus) of this genus found in India is treated here.

10. ***Hebomoia glaucippe glaucippe*** (Linnaeus) (Great Orange Tip)

1758. *Papilio glaucippe* Linnaus, *Syst. Nat.* 10th. ed. 469.

1912. *Hebomoia glaucippe*(Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 593.

1939. *Hebomoia glaucippe glaucippe*, *Talbot, Fauna Brit India, Butterflies*, **1** : 475.

2003. *Hebomoia glaucippe glaucippe* (Linnaeus) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 113.

Material examined : Nagaland, Zunheboto District, Sukha lu, 2 ex., 24.vii.1991 (Coll. Y.P. Sinha); Sungkomen District, Mokokchung, 1260 mm., 1 ex.,18.x.1998 (Coll. T.K. Pal).

Fore wing length : 18-22 mm.

Distribution : India : Nagaland (Zunheboto), Sikkim, West Bengal.

Elsewhere : Nepal and Myanmar.

Remarks : This nominate subspecies is distinguished from *H. glaucippe australis* Butler

found in Peninsular India and Sri Lanka and *H. glaucippe roepstorfii* Wood-Mason in Andaman Islands by the upperside of fore wing having orange tip on its inner side edged broadly with black. Tytler (1912) recorded this species at the foot Naga Hills up to 610m during February-November.

VI. Genus *Aporia* Huebner

1819. *Aporia* Huebner, *Verz. bek. Schmett.*, : 90.

Remarks : Of the four species of this genus occurring in India , only one i.e. *Aporia agathon* (Gray) is treated here.

11. *Aporia agathon agathon* (Gray) (Great Black Vein)

1831. *Pieris agathon* Gray, *Zool. Misc.*,**1** : 33.

1912. *Prioneris agathon* (Gray) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Aporia agathon agathon* (Gray) : Talbot, *Fauna of British India, Butterflies*, **1** : 317.

1971. *Aporia agathon* (Gray), Varshney & Chanda, *Ind. Mus. Bull.*, **6**(1) : 44.

2003. *Aporia agathon* (Gray) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

Wing expanse : 80-90 mm (Talbot, 1939).

Distribution : Nagaland, Himalaya, Meghalaya, Sikkim.

Elsewhere : Myanmar (N. Shan States), Nepal, Taiwan, Tibet and Yunnan.

Remarks : The nominate subspecies is differentiaed from *A. agathon ariaca* (Moore) occurring in Uttaranchal (Kumaon) and *A. agathon caphusa* (Moore) in Uttaranchal (Garhwal to Mussoorie) by being darker, discal pale spots often small; the upperside of fore wing having cell always black dusted. Tytler (1912) captured a single male of the nominate subspecies at elevation of 300m near Phiphima during May. The species *Aporia agathon* (Gray) is given protection under Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

VII. Genus *Pieris* Schrank

1801. *Pieris* Schrank, *Fauna Boica.* : 152.

Remarks : This genus is represented in India by eight species of which, three are dealt with here.

Key to species

1. Hind wing underside with the veins defined with black ..... *napi* (Linnaeus)
- Hind wing underside with the veins not defined with black 2
2. Fore wing upperside with inner edge of black area dentate ..... *canidia* (Sparrman)
- Fore wing upperside with inner edge of black area not dentate.....3
3. Hind wing underside dusted with black..... ..... *brassicae* (Linnaeus)
- Hind wing underside not dusted with black ..... *naganum* (Moore)

12. *Pieris napi montana* Verity (Greenvein White)

1908. *Pieris napi* var. *montana* Verity, *J. Asiat. Soc. Bengal*, 53, no. 1 : 141, pl. 31, figs. 20, 21 (male, female from Sikkim).

1912. *Pieris meleto* (sic) Menetries : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Pieris napi montana* Verity : Talbot, *Fauna Brit. India, Butterflies*, **1** : 420.

Material examined : Nil.

Fore wing expanse : 50-60 mm.

Distribution : India : Nagaland, Sikkim.

Elsewhere : Myanmar (Southern Shan States).

Remarks : This subspecies differs from *Pieris napi ajaka* Moore occurring from Pakistan (Murree) to India (Uttaranchal: Kumaon) and *Pieris napi melaina* Roeber in Sikkim (Chumbi Valley) and Tibet by being variable, larger wing expanse, females yellow and often much darkened. Tytler (1912) collected a few individuals at elevations of 1525-1825 m in February, August and November.

13. ***Pieris canidia indica*** Evans (Indian Cabbage White)

1912. *Pieris canidia indica* Evans, *J. Bombay nat Hist. Soc.*, : 559, 976.

1912. *Pieris canidia* (Sparrman) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Pieris canidia indica* Evans : Talbot, *Fauna Brit. India, Butterflies*, **1** : 425-426.

2003. *Pieris canidia canis* Evans : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 110.

Material examined : Nagaland : Monmon District, near Tennang River and around 6 km West of Monmon District, 10 exs., 4.iv.1990; Totak village and around 10km. from Monmon District, 3 exs., 5.vi.1990; Wackching and around Monmon District, 2 exs.,7.vi.1990; Veternary Colony and around Mandit, 1 ex., 9.vi.1990; Monagle, 6km. East from Monmon District, 4 exs., 12.vi.1990 Mongrea, 6km., east from Monmon District, 3 exs., 12.vi.1990; Mangrea, 7 km of Monmon District, 4 exs, 16.vi.1990; Nagarimora and around ca 80km north west of Monmon District, 10 exs, 16.vi.1990 (Coll. Y.P. Sinha). Mokokchung District, 1350m, 1 ex., 16.iii.1989, (Coll. J.P. Sati); Minkong Protect House, 12km. from the camp Mokokchung, 1350m, 1 ex., 22.iii.1994, (Coll. P.K. Mukherjee). Wokha District, Lungsung, 1340m., 2 exs., 14.x.1998; Sungkamen, 1260m., 4 exs., 18.x.1998 (Coll. T.K. Pal). Kohima District, Dzubza River side,15km. from C. Kohima, 1exs.,18.iii.1994 (Coll. S.K. Chatterjee); Botanical Garden, 1ex., 23.iii.1997, Pukekadse, 1500m., 3exs.,12.x.1998 (T.K. Pal). Dimapur District, Dimapur, Rangapahar, 1 ex., 18.iii.1997; Itanki R.F., 1ex., 18.iii.1997 (Coll. A.K. Hazra). 36/3 Calvert on the way to Phek, 3exs., 24.iii.1997 (Coll. A.K. Hazra). Phek District, near N.A.P. Campus, 1250m.,1ex., 24.x.1998; Surtula,10km. of Phek,1ex., 28.x.1998 (Coll. T.K. Pal).

Material examined : Nil.

Fore wing length : 18-32 mm.

Distribution : India : Nagaland (Dimapur, Kohima, Mokokchung, Monmon, Phek, Wokha), Meghalaya, Sikkim, Uttaranchal.

Elsewhere : Myanmar, North Baluchistan, Pakistan (Chitral) and Zhob.

Remarks : This subspecies differs from *P. canidia canis* Evans found in South India (Nilgiri Hills) by being small and less heavily marked but very variable. Tytler (1912) mentioned its occurrence throughout the year from the foot of Naga Hills up to 1825 m.

14. ***Pieris brassicae nepalensis*** Doubleday (Large Cabbage White)

1864. *Pieris brassicae* var. *nepalensis* Doubleday, *Genera of Diurnal Lepidoptera*, **1** : 9, pl.vi.

1912. *Pieris brassicae* Linnaeus : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 591.

1939. *Pieris brassicae nepalensis* Doubleday : Talbot, *Fauna Brit. India Butterflies*, **1** : 427- 428.

2003. *Pieris brassicae nepalensis* Doubleday : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 111.

Material examined : Nagaland, Mokokchung, 1350m., 1ex., 16.iii.1989 (Coll. J.P. Sati). Yisemydong, State Agriculture Centre Complex, 16km. of Mokokchung, 1325 m, 2 exs, 21.iii. 1994 (Coll. P. Mukherjee).

Fore wing length : 32-34 mm.

Distribution : India : Nagaland (Mokokchung), Assam, Meghalaya, West Bengal, Plains adjoining the Himalaya, Sikkim.

Elsewhere : Baluchistan, Pakistan (Chitral), Tibet and Yunnan,

Remarks : Only this subspecies occurs in India. Tytler (1912) recorded this subspecies from Kohima in February, August and October.

15. ***Pieris naganum naganum*** (Moore) (Naga White)

1884. *Mancipium naganum* Moore, *J. Asiat. Soc Bengal*, 53, no1 : 45

1912. *Pieris naganum* (Moore) : Tytler, *J. Bombay nat Hist Soc.*, **21** : 591.

1939. *Pieris naganum naganum* (Moore) Talbot, *Fauna Brit. India, Butterflies*, **1** : 423.

Material examined : Nil.

Fore wing expanse : 65 mm.

Distribution : India : Nagaland, Assam.

Elsewhere : Northern Myanmar and Upper Myanmar.

Remarks : Only the nominate subspecies is known in India. Tytler (1912) took a single male of this nominate subspecies in March between Kohima and Nichugaurd. It is considered one of the rarest Indian butterflies with its one male known from Nagaland.

VIII. Genus *Appias* Huebner

1819. *Appias* Huebner, *Verz. bek. Schmett.*, : 91.

Remarks : Of the eight species of this genus occurring in India, four are treated from Nagaland.

Key to species

1. Upperside of wings orange to crimson, veins more or less blackened..... *nero* (Fabricius)
- Upperside of wings never orange or crimson 2
2. Fore wing with middle discocellular placed at an acute angle to upper edge of cell angle ..... *albina* (Boisduval)
- Fore wing with middle discocellular placed at right angles to upper edge of cell angle....3
3. Hind wing underside with a black dot at end of cell, and marginal dots between the veins ..... *lalage* (Doubleday)
- Hind wing underside without a black dot at end of cell, and no marginal dots between the veins.....4
4. Hind wing underside with a broad dark chocolate marginal border..... ..... *lyncida* (Cramer)
- Hind wing underside without a dark chocolate marginal border..... *libythea* (Fabricius)

16. *Appias nero galba* (Wallace) (Orange Albatross)

1867. *Tachyris galba* Wallace, *Trans. ent. Soc. London*, **4** (Series 3) part 3 : 378.

1912. *Appias nero* Fabricius : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Appias nero galba* (Wallace) : Talbot, *Fauna Brit. India, Butterflies*, **1** : 410.

2003. *Appias nero* (Fabricius) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

Fore wing expanse : 65-80 mm.

Distribution : India : Nagaland, Sikkim.

Elsewhere : Myanmar, Thailand and Tonkin.

Remarks : Only this subspecies occurs in India. Tytler (1912) captured male individuals in April, June, July and October and observed this subspecies very variable with its specimens displaying orange, red and vermillion red colouration.

17. *Appias albina darada* (C. & R. Felder) (Common Albatross)

1865. *Pieris darada* C. & R. Felder, *Reise Novara, Lep.*, **2** : 166.

1912. *Appias albina* Boisduval : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Appias albina darada* (C. & R. Felder) : Talbot, *Fauna of British India, Butterflies*, **1** : 400.

2003. *Appias albina* (Boisduval) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) :

Material examined : Nil.

Fore wing expanse : 60-75 mm (Talbot, 1939).

Distribution : Nagaland, Andaman Islands, Meghalaya, Peninsular India, Sikkim.

Elsewhere : Myanmar, Sri Lanka.

Remarks : Only this subspecies occurs in India and it has been listed in Schedule-II (Part-2) of The Wildlife (Protection) Act, 1972 of India and subsequent amendments. Tytler (1912) collected a single male individual at the foot of the Naga Hills in April and a female individual of the wet season form at Kohima in August.

18. ***Appias lalage lalage*** (Doubleday) (Spot Puffin)

1842. *Pieris lalage* Doubleday, In Gray's Zool. Miscell. : 76 (female, North India).

1912. *Appias lalage* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Appias lalage lalage* (Doubleday) : Talbot, *Fauna of British India, Butterflies*, **1** : 387.

Material examined : Nil.

Fore wing expanse : 55-80 mm (Talbot, 1939).

Distribution : Nagaland, Uttaranchal.

Elsewhere : Myanmar (Tavoy).

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) mentioned it to be common throughout the year from the foot of the Naga Hills up to 1825 m and collected individuals of extreme dry season form during January-March, large dark individuals of wet season form during June-October and individuals of intermediate forms during October-November.

19. ***Appias lyncida eleonora*** (Boisduval) (Chocolate Albatross)

1836. *Pieris eleonora* Boisduval, *Spec. Gen. Lep.*, **1** : 481.

1912. *Appias hippo* Cramer : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Appias lyncida eleonora* (Boisduval) : Talbot, *Fauna Brit. India, Butterflies*, **1** : 398- 400, fig.146.

2003. *Appias lyncida eleonora* (Boisduval) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 111.

Material examined : Nagaland : Kohima District, Old Jalu chii, 46km S.E. of Jharna Pani, 1 ex., 11.i.1990 (Coll. J.P. Sati); Veternary Colony and around Onion, 1ex.,9.6.1990 (Coll. Y.P. Sinha). Wokha District, Lungsung, Wokha, 1340m., 2exs, 14.x.1998 (T.K. Pal).

Fore wing expanse : 25-28mm.

Distribution : India : Nagaland (Kohima, Wokha), Meghalaya, Sikkim, West Bengal.

Elsewhere : Annam, Hainan, Myanmar, Thailand and Tonkin.

Remarks : This subspecies differs from *A. lyncida nicobarica* Moore occurring in Car Nicobar and Central Nicobar Islands, *A. lyncida latifasciata* (Moore) in Peninsular India up to 1200m and *A. lyncida galbana* Fruhstorfer in South Nicobars by the upperside of male being variable, margin hardly dentate on hind wing and the underside of hind wing dark margin very narrow. Tytler (1912) found this subspecies to be common at foot of Naga Hills up to 1525 m during April-October.

20. ***Appias libythea olferna*** Swinhoe (Striped Albatross)

1890. *Appias olferna* Swinhoe, *Ann. Mag. nat. Hist.* (6) **5** : 358.

1939. *Appias libythea olferna* Swinhoe : Talbot, *Fauna of British India, Butterflies*, **1** : 396.

Material examined : Nil.

Fore wing expanse : 55-65 mm.

Distribution : India : Nagaland, Assam, Nicobar Islands, 'Bengal'

Elsewhere : Hainan, Malay Peninsula,

Remarks : This subspecies differs from the nominate subspecies - *Appias libythea libythea* (Fabricius) found in Myanmar Peninsular India, 'Punjab' and Sri Lanka by being larger, the upperside of fore wing of male with a black submarginal line between which and the margin, above vein Cu_{1b}, the veins are heavily blackened.

IX. Genus ***Cepora*** Billberg

1820. *Cepora* Billberg, *Enumeratio Insecta Orum in Museo Billberg*, : 36.

Remarks : Two species, *viz.*, *Cepora nerissa* (Fabricius) and *C. nadina* (Lucas) representing this genus in India are treated.

Key to species

Underside of fore wing with a black spot in middle of area Cu_{1a}, separated from the black border by a white spot ... *nerissa* (Fabricius)

– Underside of fore wing without a detached black spot in area Cu_{1a} ..... *nadina* (Lucas)

21. *Cepora nerissa nerissa* (Fabricius) (Common Gull)

1775. *Papilio nerissa* (Fabricius), *Syst. Ent.*, : 471.

1912. *Huphina copia* Wallace : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Cepora nerissa nerissa* (Fabricius) : Talbot, *Fauna Brit. India, Butterflies*, **1** : 365.

2003. *Cepora nerissa nerissa* (Fabricius) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

Wing expanse : 50-65 mm (Talbot, 1939).

Distribution : India : Nagaland., Assam, Sikkim.

Remarks : This nominate subspecies is distinguished from *C. nerissa dapha* (Moore) occurring in Assam, Andaman & Nicobar Islands (straggler in Central Nicobars), Myanmar, Malay Peninsula and Thailand; *C. nerissa phryne* (Fabricius) found from Peninsular India to North-west Provinces, Nepal and Sri Lanka and *C. nerissa lichenosa* (Moore) with its distribution in Andaman & Nicobar Islands (Andamans) by larger wing expanse, the upperside of fore wing with black apex unspotted, the upperside of hind wing in female with submarginal markings grey. Tytler (1912) collected males of dry season form and intemediate form in February and April, respectively, from Naga Hills.

22. *Cepora nadina nadina* (Lucas) *(Lesser Gull)*

1852. *Pieris nadina* Lucas, *Rev. Mag. zool. Ser.*, (2) **4** : 333.

1912. *Cepora nadina* (Lucas) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Cepora nadina nadina* (Lucas) : Talbot, *Fauna Brit. India, Butterflies*, **1** : 367.

2003. Cepora nadina *(Lucas)* : *Majumdar (Chaudhury), Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

Fore wing expanse : 55-65 mm (Talbot, 1939).

Distribution : India : Nagaland, Sikkim.

Elsewhere : Myanmar.

Remarks : This nominate subspecies differs from *C. nadina andamana* (Swinhoe) found in Andaman Islands and *C. nadina remba* (Moore) in Peninsular India by the upperside of fore wing dark apex narrower; in wet season form the underside of hind wing with long pale streak in cell and extending into bases of areas M_3 and M_2; the dry season form very pale with dark brown veins. Tytler (1912) captured a few individuals of both sexes of this nominate subspecies from Kohima and Tamlu in August.

X. Genus *Ixias* Huebner

1819. *Ixias* Huebner, *Verz. bek. Schmett.*, : 95.

Remarks : Of the three species of this genus occurring in India, only one-*Ixias pyrene* (Linnaeus) is treated here.

23. *Ixias pyrene familiaris* Butler (Yellow Orange Tip)

1874. *Ixias familiaris* Butler, *Trans. ent. Soc. London*, Pt. **4** : 432.

1912. *Ixias latifasciata* Butler : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Ixias pyrene familiaris* Butler : *Talbot, Fauna Brit. India, Butterflies*, **1** : 447.

2003. *Ixias pyrene sesia* (Fabricius) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 112.

Material examined : Nagaland, Wockchang, around Mon District, 1ex., 7.vi.1990 (Coll. Y.P. Sinha).

Fore wing length : 20-28 mm.

Distribution : India : Nagaland (Mon), Sikkim, West Bengal.

Remarks : This subspecies is distinguished from *I. pyrene kausala* Moore occurring in Baluchistan, Sind, 'Punjab', United Provinces to Chitral and Kumaon and *I. pyrene sesia* (Fabricius) in Peninsular India to 'Bengal' by being usually larger, the upperside of fore wing with orange band entering lower angle of cell, yellow ground colour not entering the base of area Cu_{1b} and

NOT FOR ISSUE

only the extreme base of area Cu_{1a}; female very variable, sometimes nearly entirely suffused with black on white ground, with apical band white; or the ground colour may be yellow and the band white. Tytler (1912) mentioned it very variable and collected its two very small dry season forms in February at the foot of Naga Hills, a typical wet season form during September-November and intermediate forms in Dececmber at elevations of 600-1800 m.

Subfamily COLIADINAE

Four genera of this subfamily dealt with from Nagaland.

Key to genera

1. Hing wing with precostal vein short, male with oval sex patch on upperside of hindwing.....2
- Hind wing with precostal vein absent or obsolete, male without sex patch 3
2. Forewing with margin between vein M1and $R_4 + R_5$ falcate or pointed .... ***Dercas*** Doubleday
- Forewing with margin rounded..... ..... ***Catopsilia*** Huebner
3. Forewing vein R_2 from the cell..... ..... ***Eurema*** Huebner
- Forewing vein R_2 from the stalk of $R_4 + R_5$ and R_3 ..... ***Colias*** Fabricius

XI. Genus *Dercas* Doubleday

1847. *Dercas* Doubleday, In Doubleday, *Westwood and Hewitsons 'Genera of Diurnal Lepidoptera*, **1** : 70.

Remarks : This genus is represented in India by two species, *viz.*, *Dercas lycorias* (Doubleday) and *D. verhuelli* Hoeven and the former is treated here.

24. *Dercas lycorias lycorias* (Doubleday) (Plain Sulphur)

1842. *Rhodocera lycorias* Doubleday, *Zool. Miscell.*, : 77

1912. *Dercas lycorias* (Doubleday) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592

1939. *Dercas lycorias lycorias* (Doubleday) : Talbot, *Fauna of British India, Butterflies*, **1** : 503.

2003. *Dercas lycorias* (Doubleday) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nil.

For ewing expanse : 50-60 mm (Talbot, 1939).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim.

Elsewhere : Annam, China, Tibet and Tonkin.

Remarks : Only this nominate subspecies occurs in India.Tytler (1912) captured individuals of this nominate subspecies during June- July and October in Naga Hills. The species *Dercas lycorias* (Doubleday) is afforded protection under Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

XII. Genus *Catopsilia* Huebner

1890. *Catopsilia* Huebner, *Verz. bek. Schmett.* : 98.

Remarks : All the three species of this genus known from India are treated.

Key to species

1. Underside of wings marked with transverse reddish brown strigae 2
- Underside without reddish brown strigae..... .....*pomona* (Fabricius)
2. Forewing upperside below apex with marginal dark border continuous and often broad .... *pyranthe* (Linnaeus)
- Forewing upperside below apex with a macular marginal dak border always narrow ....*florella* (Fabricius)

25. *Catopsilia pomona pomona* (Fabricius) (Lemon Emigrant)

1775. *Papilio pomona* Fabricius, *Syst. Ent.*, : 479.

1912. *Catopsilia crocale* (Cramer) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Catopsilia pomona pomona* (Fabricius) : Talbot, *Fauna of British India, Butterflies*, **1** : 492-493.

1993. *Catopsilia pomona* (Fabricius) : Varshney, *Oriental Insects*, **27** : 362.

2003. *Catopsilia pomona pomona* (Fabricius) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 113.

Material examined : Nagaland, Maromi and around Zunheboto, 2exs., 22.vii.1991 (Coll. Y.P. Sinha). Dimapur District, Forest Office Complex, 195 m., 2exs., 11.x.1994 (Coll. M. Sil & R.S. Mirdha); Itanki R.F., 1ex., 18.iii.1994 (Coll. A.K. Hazra).

Fore wing expanse : 26-35 mm.

Distribution : India : Nagaland (Dimapur). Andaman & Nicobar Is., Meghalaya, Sikkim and West Bengal.

Elsewhere : Australia, Myanmar, Solomon Is., South China and Sri Lanka.

Remarks : Only the nominate subspecies occurs in India. It exhibits much variations and, therefore, its several forms are known. Tytler (1912) obtained a few individuals at the foot of Naga Hills during May and of form *catilla* during March-May and November.

26. ***Catopsilia pyranthe pyranthe*** (Linnaeus) (Mottled Emigrant)

1758. *Papilio pyranthe* Linnaeus, *Syst. Nat., Edition* **10** : 469.

1939. *Catopsilia pyranthe pyranthe* (Linnaeus) : Talbot, *Fauna Brit. India, Butterflies*, **1** : 496-499.

2003. *Catopsilia pyranthe pyranthe* (Linnaeus): Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nagaland, Dimapur District, Forest Rest house Complex, 195 m., 1ex., (Coll. M. Sil).

Fore wing expanse : 33mm.

Distribution : India : Nagaland (Dimapur), Andaman Is., Meghalaya, West Bengal.

Elsewhere : Africa, Arabia, Hainan, Indo-China, Myanmar, South China and Sri Lanka.

Remarks : Only the nominate subspecies occurs in India.

27. ***Catopsilia florella gnoma*** (Fabricius) (African Emigrant)

1776. *Papilio gnoma* Fabricius, *Syst. Ent.*, : 828.

1912. *Catopsilia florella* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 592.

1939. *Catopsilia florella gnoma* (Fabricius) : Talbot, *Fauna of British India, Butterflies*, **1** : 500-501.

2003. *Catopsilia florella gnoma* (Fabricius) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 113.

Material examined : Nagaland, Dimapur District, Forest Rest House Complex, 195 m., 2exs., 10.ix.1994 (Coll. B. Mitra).

Fore wing expanse : 25 mm.

Distribution : India : Nagaland (Dimapur), Andaman Is., Maharashtra, North West Himalaya, Tamil Nadu and West Bengal.

Elsewhere : Myanmar and Sri Lanka.

Remarks : Only this subspecies occurs in India. Tytler (1912) found it to be common in February at Nichuguard (Michuguard) in Nagaland.

XIII. Genus ***Eurema*** Huebner

1819. *Eurema* Huebner, *Verz. bek. Schmett*, : 96.

Remarks : The genus is represented in India by six species of which, three are dealt with from Nagaland.

Key to species

1. Fore wing dorsally with black border not continued along vein 1_A. Underside of both wings without discocellular ring spots 2

– Fore wing dorsally with black border often continued along vein 1_A. Underside of both wings with large discocellular ring spots 3

2. Upperside both wings with black borders usually broad, with inner edge regular. Male without a sex brand. Fore wing underside with two small black discocelluler spots .... *brigitta* (Cramer)

– Upperside of hind wing in male with a sex brand at base of area R_S. Underside of fore

wing with a sex brand at base of area 1_A+2_A, a single small black discocelluler spot present ..... *laeta* (Boisduval)

3. Forewing underside with three spots in the cell ..... *blanda* (Boisduval)

– Forewing underside with two spots in the cell ..... *hecabe* (Linnaeus)

28. *Eurema brigitta rubella* (Wallace) (Small Grass Yellow)

1867. *Terias rubella* Wallace, *Trans. ent. Soc. Lond.* 4 (ser. 3) Pt. 3 : 323.

1912. *Terias libythea* Fabricius : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 593.

1939. *Eurema brigitta rubella* (Wallace) : Talbot, *Fauna Brit. India*, Butterflies, **1** : 515.

Material examined : Nil.

Fore wing expanse : 30-40mm.

Distribution : India : Nagaland, Meghalaya, Sikkim and West Bengal.

Elsewhere : Annam, Hainan, Java, Myanmar and Thailand.

Remarks : Only this subspecies occurs in India. Tytler (1912) mentioned this subspecies not to be very common and took a few individuals at Kohima during February-August, and individuals of dry season form collected during February had the cilia and edges of both wings pinkish.

29. *Eurema laeta sikkima* (Moore) (Spotless Grass Yellow)

1906. *Nirumala sikkima* Moore, *Lep. Ind.*, **7** : 43, pl. 565, figs. 4, 4a, (male, female, Sikkim, Bhutan).

1912. *Terias laeta* Boisduval : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 593.

1912. *Terias venata* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 593.

1939. *Eurema laeta sikkima* (Moore) : Talbot, *Fauna Brit. India, Butterflies*, **1** : 520.

Material examined : Nagaland, Mongrea, 6km. East from Monmon District, 4ex, 12.vi.1990 (Coll. Y.P. Sinha).

Fore wing expanse : 15-20 mm.

Distribution : India : Nagaland (Monmon), Meghalaya, Sikkim and West Bengal.

Elsewhere : Annam, Hainan, Java, Myanmar and Thailand.

Remarks : This subspecies is differentiated from the nominate one-*E. laeta laeta* Boisduval occurring in Peninsular India to Western India and Sri Lanka by being larger; the upperside of fore wing in male with distal border not reaching the inner margin but in female it extends to tornus. Tytler (1912) mentioned this subspecies to be very common at Kohima during August-October and he captured individuals of dry season form during January-May; October and November and individuals of wet season form in October.

30. *Eurema blanda silhetana* (Wallace) (Three Spot Grass Yellow)

1867. *Terias silhetana* Wallace, *Trans. Ent. Soc. Lond.*, **4**(3) : 324.

1912. *Terias silhetana* Wallace : *J. Bombay nat. Hist. Soc.*, **21** : 593.

1939. *Eurema blanda silhetana* (Wallace) : Talbot, *Fauna Brit. India, Butterflies*, **1** : 523-525.

2003. *Eurema blanda silhetana* (Wallace) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 115.

Material examined : Nagaland, Wokha District, Doyang, On way to Meerapani, 120 m., 3exs., 25.i.1990 (Coll. J.P. Sati).

Fore wing expanse : 16-20 mm.

Distribution : India : Nagaland (Wokha), Andaman Is., Assam, Meghalaya, Peninsular India to Sikkim and West Bengal.

Elsewhere : Myanmar and Sri Lanka.

Remarks : This subspecies differs from *E. blanda moorei* (Butler) found in Car Nicobar and Central Nicobar Islands and *E. blanda grisea* (Evans) in South Nicobar Islands by the upperside of fore wing with black margin always broad. Tytler (1912) found this subspecies during August-November in Naga Hills.

31. *Eurema hecabe contubernalis* (Moore) (Common Grass Yellow)

1886. *Terias contubernalis* Moore, *J. Linn. Soc. Lond. Zool.*, : 46.

1912. *Terias hecabe* (Linnaeus) : *J. Bombay nat. Hist. Soc.* **21** : 593.

1939. *Eurema hecabe contubernalis* (Moore) : Talbot, *Fauna of British India*, Butterflies, **1** : 527-530.

2003. *Eurema hecabe contubernalis* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 114.

Material examined : Nagaland, Wokha District, Sangarcha, 16km. from Minikong Rest House, 1ex., 17.iii.1989; Doyang, on way to Meerapani, 440 feet, 3 exs., Meerapani, 290 feet, 5 exs, 25.i.1990 (Coll. J.P. Sati); Lungsund, Wokha, 1340m., 4exs., 14.xii.1998 (Coll. T.K. Pal). Mon District, Mon Village and around 8 km., East of Mon, 2exs.,8 .vi.1990; Veternary Colony and around Mon District, 8 exs., 9.vi.1990 (Y.P. Sinha). Mokokchung District, Chungtia, 20 km. from Mokokchung District, 1325m., 1ex., 23.iii.1994 (Coll. P. Mukherjee). Kohima District, Kevi village 31 km south east of Jharnapani, 450m, 4exs., 11.i.1990 (Coll. J.P. Sati). Zunhebota District, Asukhati Town, and Village around, 2exs., 7.vii.1991; Atoiju Village, and around, 4exs., 8.vi. 1991 (Coll. Y.P. Sinha). Dimapur District, F.R. H. Complex, 195m., 1ex., 17.ix.1994 (Coll. B. Mitra); Itanki R.F., 3 exs., 18.iii.1997 (Coll. A.K. Hazra).

Fore wing expanse : 13-22 mm.

Distribution : India : Nagaland (Dimapur, Kohima, Mokokchung, Mon, Wokha, Zunhebota), Assam, Gujarat, Maghalaya, Sikkim and West Bengal.

Elsewhere : Malay Peninsula, Myanmar, Singapore.

Remarks : This subspecies differs from *E. hecabe fimbriata* (Wallace) occurring from 'Punjab' to Chitral and Kumaon; *E. hecabe stimulata* (Moore) in Peninsular India, Central Provinces and Sri Lanka; *E. hecabe blairiana* (Moore) in Andaman Islands and *E. hecabe nicobairensis* (Felder) in Nicobar Islands by its larger individuals. Tytler (1912) mentioned this subspecies to be very common throughout the year in Naga Hills.

XIV Genus *Colias* Fabricius

1807. *Colias* Fabricius, *Illigers Mag.*, **6** : 284.

There are eight species of this genus occurring in India, of which only one-*Colias fieldi* Menetries is treated from Nagaland.

32. *Colias fieldii* Menetries (Dark Couded Yellow)

1855. *Colias fieldii* Menetries, *Enum. Corp. Anim. Mus.*, : 79.

1912. *Colias fieldii* Menetries : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 593.

1939. *Colias electo fieldii* Menetries : Talbot, *Fauna of British India, Butterflies*, **1** : 562-563.

1984. *Colias electo* Menetries : Mondal, *Rec. zool. Surv. India, Occ. Paper* No. **57** :

1993. *Colias fieldii* Menetries : Varshney, *Oriental Insects*, **27** : 364.

2003. *Colias electo fieldii* Menetries : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 114.

Material examined : Nagaland, Phek District, Kutsura, 1800m., 10 km. of Phutseso, 2 exs., 25.x.1998 (Coll. T.K. Pal).

Fore wing length : 18 mm.

Distribution : India : Nagaland (Phek), Maharashtra, Meghalaya, N. W. Himalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar, Nepal and Tibet.

Remarks : Tytler (1912) mentioned this species as common in Zulla Valley (1950m) in November and near Kohima during July-October. Mondal (1981) mentioned its adaptations to colder regions of high altitudes.

Family HESPERIIDAE

Antennae widely separated at base, generally curved or hooked at apex. Eyes smooth. All the three pairs of legs well developed; fore tibiae with a bluntly pointed tibial epyphysis, usually densely scaled, on the inner edge; hind tibiae usually with

a medial as well as a terminal pair of spurs. Wings shorter in proportion to the stout body. Wings dark brown or ochreous, with white or yellowish hyaline spots, which may be conjoined to form a hyaline band, and markings on upperside usually confined to fore wing. Both wings with all veins arising from the wing base or cell, none being forked or coincident beyond the cell. On both wings, but particularly on the hind wing, vein M_2 may be faint or indicated only by a fold in the wing.

The family is represented in nagaland by 121 species/subspecies belonging to 56 genera and three subfamilies, *viz.*, Hesperiinae, Coeliadinae and Pyrginae.

Key to subfamilies

1. Fore wing vein M_2 nearer to M_1 than M_3 at origin of cell; abdomen shorter than anal margin of hind wing 2
- Fore wing vein M_2 nearer to M_3 than M_1 at origin of cell; abdomen generally equal to anal margin of hind wing ..... HESPERIINAE
2. Labial palpi with second joint upturned and third joint porrect, long and owl-shaped ..... COELIADINAE
- Labial palpi with these joints showing variable orientation, third joint may be long but never owl-shaped ..... PYRGINAE

Subfamily HESPERIINAE

This subfamily includes eight Groups of genera from India, of which six are represented in Nagaland.

Key to Groups

1. Fore wing M_2 stright at its origin; hind wing lower end cell usually not upturned; vein M_2 well marked 2
- Fore wing M_2 decurved at its origin; hind wing lower end cell usually upturned; vein M_2 usually untraceable 5
2. Second segment of labial palpi porrect 3
- Second segment of labial palpi erect 4
3. Hind wing cell usually longer than half of the wing ..... **Heterotopterus** Group
- Hind wing cell not longer than half of the wing ..... **Astictopterous** Group
4. Hind wing vein M_2 decurved at origin ..... **Ancistroides** Group
- Hind wing vein M_2 not decurved at origin ..... **Plastingia** Group
5. Antennal apiculus absent ..... **Taractocera** Group
- Antennal apiculus present ... **Gegenes** Group

Group **Heterotopterus**

Only one genus-*Apostictopterous* Leech is represented in Nagaland.

XV. Genus ***Apostictopterus*** Leech

1893. *Apostictopterus* Leech, *Butterfl. China Japan. Cor.* : 630.

Remarks : This genus is represented in India by a single species, *Apostictopterus fulginosus* Leech.

33. ***Apostictopterus fuliginosus curiosa*** Swinhoe

(Giant Hopper)

1917. *Apostictopterus curiosa Swinhoe, Ann. Mag. nat Hist.*, **20** : 411.

1949. *Apostictopterus fuliginosus curiosa* Swinhoe : Evans, A catalogue of Hesperiidae from Europe, *Asia and Australia in the British Museum (Nat. Hist.)*, London : 233.

Material examined : Nil.

Fore wing length : Male, 30 mm.

Distribution : India : Nagaland, Assam and Manipur.

Remarks : Only this subspecies occurs in India. Evans (1949) mentioned of male and female specimens of this subspecies from Manipur and Naga hills in the British Museum.

Group **Astictopterus**

Of the 12 genera of this Group occurring in India, 11 are represented in Nagaland.

Key to genera

1. Fore wing vein M_2 well before vein R1 and far away from vein Cu_{1a} 2
- Fore wing vein M_2 after or opposite vein R_1 and never so far away from vein Cu_{1a} 3
2. Wings broad, costa of fore wing arched and vein R_1 and S_C approximate ..... ***Astictopterus*** Felder
- Wings narrow, costa of fore wing straight and vein R_1 and S_C apart ..... ***Arnetta*** Watson
3. Wings broad and costa of fore wing always arched 4
- Wings produced at apex of fore wing, costa straight 6
4. Hind wing cell shorter than half of wing 5
- Hind wing cell equal to half of wing ..... ***Aeromachus*** de Niceville
5. Fore wing vein M_1 abnormal, arising well below end cell and placed mid vein M_2 and R_5 ..... ***Ochus*** de Niceville
- Fore wing vein M1normal with veins M_2 and R_5 at cell apex ..... *Ampittia* Moore
6. Fore wing upper end of cell not produced and vein M_2 straight ..... ***Sevastonyma*** Watson
- Fore wing upper end of cell produced and vein M_2 decurved at origin 7
7. Uncus undivided ..... ***Sovia*** Evans
- Uncus divided 8
8. Antennal apiculus not longer than twice the width of club 9
- Antennal apiculus longer than twice the width of club ..... ***Pithauria*** Moore
9. Apiculus obtuse, rather stout and blunt ..... ***Pedestes*** Hemming
- Apiculus hooked 10
10. Labial palpi porrect, gnathos strongly devloped ..... ***Thoressa*** Swinhoe
- Labial palpi erect, gnathos absent or underdevloped ..... ***Halpe*** Moore

XVI. Genus ***Astictopterus*** Felder

1860. *Astictopterus* Felder, *Wien. ent. Amoatsb*, **4** : 401.

Remarks : Only a single species, *Astictopterus jama* Felder representing this genus in India is dealt with.

34. ***Astictopterus jama olivascens*** Moore *(Forest Hopper)*

1878. *Astictopterus olivascens* Moore, *Proc. zool. Soc. London*, : 692.

1892. *Astictopterus olivascens* Moore : Elwes, *Proc. zool. Soc. London*, : 662.

1912. *Astictopterus henrici* Holland : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1949. *Astictopterus jama olivascens* Moore : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 233-234.

2003. *Astictopterus jama olivascens* Moore : *Majumdar (Chaudhury), Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 117.

Diagnostic characters : Wings : apex of fore wing and tornus of hind wing more produced, underside amber brown; male without hyaline spot but female with hyaline spots in cells and on veins R_4, R_5 and M_1.

Material examined : Nil.

Fore wing length : Male, 16-17 mm (Evans, 1949).

Distribution : India : Nagaland, Andamans, Assam, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan, Indo-China and Thailand.

Remarks : Only this subspecies occurs in India. Both the wet season form and dry season form of this subspecies occur, but, the female of WSF, sometimes, bears two apical spots on upperside of fore wing. Elwes (1892) recorded it from Naga

Hills. Tytler (1912) reported from it Nichuguard and Kohima in July and August.

XVII. Genus *Arnetta* Watson

1893. *Arnetta* Watson, *Proc. zool. Soc. London*, : 72.

Remarks : Of the three species of this genus occurring in India, one - *Arnetta atkinsoni* (Moore) is treated.

35. *Arnetta atkinsoni* (Moore) (Atkinson Bob)

1878. *Isoteinon atkinsoni* Moore, *Proc. zool. Soc. London*, : 693, pl. 16, fig. 10.

1892. *Isoteinon atkinsoni* Moore : Elwes, *Proc. zool. Soc. London*, : 653.

1912. *Arnetta atkinsoni* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Arnetta atkinsoni* : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 236.

Material examined : Nil.

Fore wing expanse : 25-32 mm (Evans, 1932).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim.

Elsewhere : Myanmar and Thailand.

Remarks : Previously, this species is known from the Naga Hills and its specimens collected during March, May and July-August.

XVIII. Genus *Aeromachus* de Niceville.

1890. *Aeromachus* de Niceville, *J. Bombay nat. Hist. Soc.*, **5** : 214.

Remarks : There are five species of this genus known in India of which, three are dealt with here.

Key to species

1. Upperside of fore wing with prominent spots; underside of hind wing with purple markings, central marking narrow and broken .... *kali* (de Niceville)

– Upperside of fore wing with spots faint or absent; underside of hind wing with white or greenish yellow markings, central marking neither narrow nor broken 2

2. Fore wing underside with veins towards termen more less paler, hind wing veins R_5 and M_1 hair pinned ..... *stigmata* (Moore)

– Fore wing underside with veins towards termen not paler, hind wing veins R_5 and M_1 not hair pinned ..... *jhora* (de Niceville)

36. *Aeromachus kali* (de Niceville) (Blue Spotted Scrub Hopper)

1885. *Thanaos kali* de Niceville, *J. Asiat. Soc. Bengal.*, : 123, pl. 2, fig. 3.

1892. *Aeromachus kali* (de Niceville) : Elwes, *Proc. zool. Soc. Lond.*, : 652.

1912. *Aeromachus kali* (de Niceville) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1915. *Aeromachus kali* (de Niceville): Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 151.

1949. *Aeromachus kali* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 241.

2003. *Aeromachus kali* (de Niceville) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 117.

Material examined : Nil.

Fore wing expanse : 25-30 mm (Evans, 1932).

Distribution : India : Nagaland, Assam, and Sikkim.

Elsewhere : Myanmar.

Remarks : Earlier, this species was recorded at elevations of 900-1500m in Naga Hills. Tytler (1915) also collected a single specimen at Jakama in July.

37. *Aeromachus stigmata obsoleta* (Moore) (Veined Scurb Hopper)

1878. *Thanaos obsoleta* Moore, *Proc. zool. Soc. London*, 694.

1892. *Aeromachus stigmata* (Moore) : Elwes, *Proc. zool Soc. London*, : 652.

1912. *Aeromachus stigmata* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1915. *Aeromachus stigmata* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 150.

1949. *Aeromachus stigmata obsoleta* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 242.

Material examined : Nil.

Fore wing length : Male, 12 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Bhamo and Myanmar.

Remarks : This subspecies is distinguished from the nominate subspecies occurring from Pakistan (Murree)-India (Mussoorie in Uttaranchal Sikkim) and Bhutan by the upperside of male of DSF with faint discal stigma reduced to dots at each end or absent and white dots usually continued to vein 1. are This subspecies was recorded earlier from Kirbari, Naga Hills, and also collected from Kohima during August-September.

38. ***Aeromachus jhora creta*** Evans (Grey Scrub Hopper)

1949. *Aeromachus jhora creta* Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 243.

Material examined : Nil.

Fore wing length : Male, 12-13 mm (Evans, 1949).

Distribution : India : Nagaland.

Remarks : This subspecies is distinguished from the nominate one-*Aeromachus jhora jhora* (de Niceville) found in Sikkim by the underside of fore wing with olive scaling; discal spots smaller and irregular. Tytler (1915) reported it as *Aeromachus jhora* De Nicevlle with a single male taken at Nichuguard, Naga Hills, in May.

XIX. Genus ***Ochus*** deNiceville

1894. *Ochus* de Niceville, *J. Asiat. Soc. Bengal* (N. S), **63** (2) : 51.

Remarks : Only a single species, *Ochus subvittatus* (Moore) representing this genus in India is treated here.

39. ***Ochus subvittatus subradiatus*** (Moore) (Tiger Hopper)

1878. *Cyclopides subradiatus* Moore, *Proc. zool. Soc. Lond.*, : 693

1892. *Cyclopides subvittatus* Moore : Elwes, *Proc. zool. Soc. Lond.*, : 653.

1912. *Ochus subvittatus* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Ochus subvittatus subradiatus* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.), London* : 236.

2003. *Ochus subvittatus* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 118.

Material examined : Nil.

Fore wing length : Male, 11-12 mm (Evans, 1949).

Distribution : India : Nagaland, Assam and Meghalaya.

Remarks : Only this subspecies occurs in India. Earlier, this subspecies was found common in Naga Hills during July-October and in Kohima.

XX. Genus ***Ampittia*** Moore

1881. *Ampittia* Moore, *Lepidoptera ceylonica*, **1** : 171.

Remarks : Of the two species, *viz.*, *Ampittia dioscorides* (Fabricius) and *A. maroides* de Niceville known in India, the former is treated here.

40. ***Ampittia dioscorides dioscorides*** (Fabricius) (Bush Hopper)

1793. *Hesperia dioscorides* Fabricius, *Ent. Syst.*, Suppl. : 432.

1912. *Ampittia maro* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Ampittia dioscorides dioscorides* (Fabricius) : Evans, *A catalogue of Hesperiidae from Europe, Asia andAustralia in the Brituish Museum (Nat. Hist.)*, London : 239.

2003. *Ampittia dioscorides dioscorides* (Fabricius): Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 118.

Material examined : Nil.

Fore wing length : 11 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) obtained a single specimen in September from Kohima.

XXI. Genus *Sevastonyma* Watson

1893. *Sevastonyma* Watson, *Proc. zool. Soc. London* : 81.

Remarks : This genus is known in India by a single species, *Sevastonyma dolopia* Hewitson.

41. *Sevastonyma dolopia* (Hewitson) (Tufted Ace)

1868. *Hesperia dolopia* Hewitson, *Descript. Hesperiid.* : 27.

1892. *Halpe dolopia* (Hewitson) : Elwes, *Proc. zool. Soc. Lond.*, : 653.

1912. *Sebastonyma* (sic) *dolopia* (Hewitson) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Sevastonyma dolopia* Hewitson : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia* in the *British Museum (Nat. Hist.)*, London : 246.

2003. *Sevastonyma dolopia* Hewitson : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 118.

Material examined : Nil.

Fore wing length : Male, 16 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : North Myanmar.

Remarks : Previously, this species from Naga Hills and also its individuals collected at Nichuguard in June.

XXII. Genus *Sovia* Evans

1949. *Sovia* Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 27.

Remarks : Of the four species of this genus occurring in India, only one -*Sovia lucasii* Mabille is dealt with here.

42. *Sovia lucasii magna* (Evans) (Lucas Ace)

1932. *Halpe separata magna* Evans, *Identification of Indian Butterflies* : 389.

1949. *Sovia lucasii magna* (Evans) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 247.

Material examined : Nil.

Fore wing length : Male,17 mm (Evans, 1949).

Distribution : India : Nagaland, Assam and Meghalaya.

Remarks : This subspecies differs from *Sovia lucasii separata* (Moore) occurring in Sikkim and Bhutan by larger wing expanse, upperside blacker; white and black chequering of ciliavery conspicuousand extreme apex of upperside of fore wing of male tipped with; underside of hind wing olive and occasionally with signs of dark spots. Earlier, this subspecies was recorded as *Halpe separata* Moore from Naga Hills at elevations of 1800-2100 m and its individuals collected during July-August.

XXIII. Genus *Pithauria* Moore

1878. *Pithauria* Moore, *Proc. zool. Soc. London* : 689.

Remarks : There are three species of this genus known in India of which, two, *viz.*, *Pithauria murdeva* (Moore) and *P. stramineipennis* Wood-Mason & De Niceville are treated here.

Key to species

- Male upperside covered with pale to dark ochreous scales, underside of fore wing without white area on mid-dorsum .... *murdava* (Moore)
- Male upperside covered with bluish green scales, underside of fore wing with a connspicious yellowish, white area on mid-dorsum ..... *stramineipennis* Wood-Mason & De Niceville

43. *Pithauria murdava* (Moore) (Dark Straw Ace)

1865. *Isemene murdava* Moore : *Proc. zool. Soc. London* : 784.

1892. *Pithauria murdava* (Moore) : *Proc. zool. Soc. London* : 649.

1912. *Pithauria murdava* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604

1949. *Pithauria murdava* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 268.

2003. *Pithauria murdava* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 119.

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Remarks : Earlier, this species was recorded from Naga Hills and a single specimen captured at Nichuguard in June. The status of this species is 'not rare' (Evans, 1932).

44. ***Pithauria stramineipennis stramineipennis*** Wood-Mason & de Niceville (Light Straw Ace)

1886. *Pithauria stramineipennis* Wood-Mason & de Niceville, *J. Asiat. Soc. Bengal* : 388, pl. 15, fig. 5.

1912. *Pithauria stramineipennis* Wood-Mason & de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Pithauria stramineipennis stramineipennis* Wood-Mason & de Niceville : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 268.

2003. *Pithauria stramineipennis* Wood-Mason & de Niceville : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 119.

Material examined : Nil.

Fore wing length : Male, 20-22 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) obtained two specimens at the foot of Naga Hills in March and October.

XXIV A. Genus ***Pedesta*** Hemming

1934. *Pedesta* Hemming, *Entomologist*, **67** : 38.

Remarks : Of the three species of this genus occurring in India, two, *viz.*, *Pedesta panda* Evans and *P. pandita* de Niceville are treated here.

Key to species

1. Upperside of fore wing spot in space 3 small and widely separated from the cell spot..... ..... *panda* Evans

– Upperside of fore wing spots in space 2 and 3 overlapping, cell spot reachinf across the cell ..... *pandita* de Niceville

45. ***Pedesta panda*** Evans

1937. *Pedesta panda* Evans, *Entomologist*, London, 70 :18.

1949. *Pedesta panda* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 249.

Material examined : Nil.

Fore wing length : Male, 13 mm (Evans, 1949).

Distribution : India : Nagaland (Naga Hills) and Manipur.

Remarks : This species does not display significant variation.

46. ***Pedesta pandita*** (de Niceville) (Brown Bush Bob)

1885. *Isoteinon pandita* de Niceville, *J. Asiat. Soc. Bengal* : 121, pl. 2, fig. 14.

1892. *Isoteinon pandita* de Niceville : Elwes, *Proc. zool. Soc. London* : 654.

1912. *Pedestes pandita* (de Niceville) Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Pedesta pandita* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 249.

2003. *Pedesta pandita* (de Niceville) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 120.

Material examined : Nil.

Wing expanse : 25-30 mm (Evans, 1932).

Distribution : India : Nagaland (Naga Hills), Sikkim.

Elsewhere : North Myanmar, North Shan States and Tonkin.

Remarks : Previously, this species was reported at elevations of 1500-1800 m in Naga Hills and from Kohima collected during August-September.

XXV. Genus *Thoressa* Swinhoe

1913. *Thoressa* Swinhoe, *Lep. Indica*, **10** : 284.

Remarks : There are ten species of this genus occurring in India of which three are dealt with.

Key to species

1. Antennal club ringed with pale yellow before apiculus 2
- Antennal club not ringed with pale yellow before apiculus ..... *fusca* Elwes
2. Underside of hind wing ochreous brown and sometimes with sharply marked small yellow spot in space 6 ..... *hyrie* deNiceville
- Underside of hind wing more or less continuous band of white spots and a large spot at base of space 7..... *cerata* (Hewitson)

47. *Thoressa fusca fusca* (Elwes) (Olive Ace)

1892. *Halpe fusca* Elwes, *Proc. zool. Soc. London*, : 653.

1915. *Halpe fusca* Elwes : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 154.

1949. *Thoressa fusca fusca* (Elwes) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 256.

Material examined : Nil.

Wing expanse : 42 mm (Evans, 1932).

Distribution : India : Nagaland and Manipur.

Elsewhere : Myanmar.

Remarks : Only the nominate subspecies occurs in India. Tytler (1915) collected two males at Nichuguard, Naga hills, in June.

48. *Thoressa hyrie* deNiceville (Lucas'Ace)

1891. *Halpe hyrie* de Niceville, *J. Bombay nat. Hist. Soc.*, : 388, t. G., fig. 34.

1892. *Halpe hyrie* de Niceville : *Proc. zool. Soc. Lond.*, : 653.

1912. *Halpe hyrie* de Niceville : Tytler, *J. Bombay nat Hist. Soc.*, **21** : 605.

1949. *Thoressa hyrie* de Niceville : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 253.

Material examined : Nil.

Fore wing length : Male, 15-17 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur.

Elsewhere : Bhutan, North Myanmar, North Shan States, Sadon South-East Tibet.

Remarks : Earlier, this species was reported from Naga Hills at elevations of 1500-1800m. Evans (1949) mentioned about collection of several males and a female from Manipur and Naga Hills.

49. *Thoressa cerata* (Hewitson) (Northern Spotted Ace)

1876. *Halpe cerata* Hewitson, *Ent. Mon. Mag.*, : 152.

1915. *Halpe cerata* Hewitson: Tytler *J. Bombay nat. Hist Soc.*, **24** : 153.

1949. *Thoressa cerata* (Hewitson) Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 253.

2003. *Thoressa cerata* (Hewitson) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 120.

Material examined : Nil.

Wing expanse : 38 mm (Evans, 1932).

Distribution : India : Nagaland, Meghalaya and Sikkim.

Elsewhere : Indo-China, Myanmar and Thailand.

Remarks : Tytler (1915) mentioned it not uncommon in Manipur and the Naga hills at low elevations.

XXVI. Genus *Halpe* Moore

1878. *Halpe* Moore, *Proc. zool. Soc. London*, : 689.

Remarks : This genus is represented by ten species in India, of which five are treated.

Key to species

1. Antennal club white or pale yellow ringed before apiculus 2
- Antennal club not ringed before apiculus .... *homolea* Hewitson
2. Underside of hind wing with a broad contiuous white band ..... *zema* Hewitson
- Underside of hind wing without contiuous white band 3
3. Upperside of fore wing cell spot conspicous as large as spot in space Cu_{1a}, underside of hind wing with dark yellow scaling 4
- Upperside of fore wing cell spot absent or smaller than spot in space Cu_{1a}, underside of hind wing with ill defined markings .... *sikkima* Moore
4. Smaller in size. Wings rounded, cilia light reddish brown, underside of hind wing generally unmarked but with dense ochreous scaling ..... *.kumara* de Niceville
- Larger in size. Wings more produced, cilia grey, underside of hind wing scaling patchier and sparser and with a subtornal ochreous spot ..... *knyvetti* Elwes & Edwards

50. ***Halpe homolea aucma*** Swinhoe (Indian Ace)

1893. *Halpe aucma* Swinhoe, *Trans. Ent. Soc. London* : 325.

1912. *Halpe honolea* (sic) Hewitson : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1915. *Halpe honolea* (sic) Hewitson : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 154.

1949. *Halpe homolea aucma* Swinhoe : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 262.

2003. *Halpe homolea aucma* Swinhoe : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 121.

Material examined : Nil.

Fore wing length : Male, 16 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Malaya and Myanmar.

Remarks : This subspecies differs from other four subspecies, *viz., H. homolea hindu* Evans occrring in South India (Travancore to North Kanara), *H. homolea molta* Evans in Sikkim, *H. homolea filda* Evans in Sikkim (localities other than those for *molta*) and *H. homolea perfossa* South in Mishmi Hills by some specimens resembling *filda;* upperside of fore wing with spots smaller, upperside of hind wing darker and more uniform ad underside of hind wing with less defined markings. Previously, this subspecies is known from Naga Hills. The species *Halpe homolea* Hewitson is protected under Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972 and subsequent amendments.

51. ***Halpe zema zema*** (Hewitson) (Banded Ace)

1877. *Hesperia zema* Hewitson, *Ann. Mag. Nat. Hist.* (4) **19** : 77.

1892. *Halpe zema* (Hewitson) : *Proc. zool. Soc. Lond.*, : 653.

1912. *Halpe zema* (Hewitson) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1915. *Halpe zema* (Hewitson) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 153.

1949. *Halpe zema zema* (Hewitson) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 253.

2003. *Halpe zema* (Hewitson) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 121.

Material examined : Nil.

Fore wing length : 17 mm (Evans,1949).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim.

Elsewhere : Indo-china and North Myanmar.

Remarks : Only the nominate subspecies occurs in India. Previously, this nominate subspecies is known from Naga Hills and collected in March, June and October.

52. ***Halpe sikkima*** Moore (Sikkim Ace)

1882. *Halpe sikkima* Moore, *Proc. zool. Soc. London* : 407.

1892. *Halpe sikkima* Moore, *Proc. zool. Soc. London* : 653.

1912. *Halpe sikkima* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1915. *Halpe sikkima* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 154.

1949. *Halpe sikkima* Moore : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 260.

2003. *Halpe sikkima* Moore : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : 17 mm (Evans, 1949).

Distributionl : India : Nagaland, Manipur, Meghalaya and Sikkim.

Elsewhere : Indochina, Malayan subregion, Myanmar and Thailand.

Remarks : Earlier, this species is known from Naga Hills.

53. ***Halpe kumara*** de Niceville (Plain Ace)

1885. *Halpe kumara* de Niceville, *J. Asiat. Soc. Bengal* : 121, pl. 2, fig. 10

1912. *Parnara kumara* (de Niceville) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1915. *Halpe kumara* de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 154.

1949. *Halpe kumara* de Niceville : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Briuish Museum (Nat. Hist.)*, London : 259.

2003. *Halpe kumara* de Niceville : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : 15 mm (Evans,1949).

Distribution : India : Nagaland, Manipur, Meghalaya and Sikkim.

Remarks : Previously, this species was recorded from Gaspani in February, Kohima and Kirbari, Naga Hills, during August-September.

54. ***Halpe knyvetti*** Elwes & Edwards (Knyvett Ace)

1897. *Halpe knyvetti* Elwes & Edwards, *Trans. Zool. Soc. London*, **14**(4) : 261.

1915. *Halpe knyvetti* Elwes & Edwards : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 153.

1949. *Halpe knyvetti* Elwes & Edwards : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 259.

2003. *Halpe knyvetti* Elwes & Edwards : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : 17 mm (Evans,1949).

Distribution : India : Nagaland, Meghalaya, Sikkim.

Elsewhere : Myanmar (Karen Hills).

Remarks : Tytler (1915) reported this species from near Kohima, Naga Hills.

Group **Ancistroides**

Of the seven .genera of this Group known in India, six are reperesented in Nagaland.

Key to genera

1. Fore wing vein M_2 straight 2
– Fore wing vein M_2 more or less decurved at its origin 4
2. Fore wing vein S_C and R_1 separate ..... ***Iambrix*** Watson
– Fore wing vein S_C and R_1 almost touching. 3
3. Antennae normal and equal to half of the costa ..... ***Koruthaialos*** Watson
– Antennae abnormal, short and apiculus costricted ..... ***Stimula*** de Niceville
4. Fore wing Cu_{1a} opposite to vein R_2 at their origin and M_3 not nearer to vein Cu1a than to M_2 ..... ***Ancistroides*** Butler
– Fore wing Cu_{1a} opposite to vein R_3, vein M_3 nearer to vein Cu_{1a} than to M_2 5

5. Hind wing cell equal to half of wing, antennae greater than costa, fore wing with hyaline white band dorsally ..... ***Notocrypta*** de Niceville

– Hind wing cell shorter than half of wing, antennae shorter than half of costa, fore wing with large hyaline spot dorsally ..... ***Udaspes*** Moore

XXVII. Genus *Iambrix* Watson

1893. *Iambrix* Watson, *Proc. zool. Soc. London*, : 76, pl. 3, fig. 25.

Remarks : Only a single species-*Iambrix salsala* (Moore) representing this genus in India, is treated here.

55. *Iambrix salsala salsala* (Moore) (Chest Nut Bob)

1865. *Nisionides salsala* Moore, *Proc. zool. Soc. London*, : 786,

1912. *Iambrix salsala* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Iambrix salsala salsala* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 272.

2003. *Iambrix salsala* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : 13 mm (Evans, 1949).

Distribution : Oriental region including India : Nagaland, Assam, Himachal Pradesh, Meghalaya, Sikkim and West Bengal.

Elsewhere : Hainan, Hongkong, Java, Malaya, Myanmar, the Philippines, Sumatra, Taiwan and Thailand.

Remarks : This nominate subspecies differs from *I. salsala luteipalpis* Ploetz found in South India and Sri Lanka by the upperside of fore wing with ochreous spots smaller, duller, but may be more numerous, or absent; costa not ochreous; upperside of fore wing in female with white dots absent or less numerous, nearly reaching area $1_A + 2_A$. Tytler (1912) found it very common in October at the foot of Naga Hills.

XXVIII. Genus *Koruthailos* Watson

1893. *Koruthailos* Watson, *Proc. zool. Soc. London* : 76.

Remarks : All the three species of this genus occurring in India are dealt with.

Key to species

1. Palpi with 3third segment thin, pointed and conspicuously protruding..... *rubecula* Plotz

– Palpi with third segment short, stout, blunt and not protruding 2

2. Underside of fore wing with a groove under radius covered by diagonally placed scales and under the basal part of the radius not furnished with specialised scales .... *butleri* (de Niceville)

– Underside of fore wing with a groove under radius longer and filled with double row of white shining scales and more or less covered with brown scales ..... *sindu* Felder

56. *Koruthailos rubecula cachara* Evans (Narrow Banded Velvet Bob)

1949. *Koruthailos rubecula cachara* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 274.

Material examined : Nil.

Wing expanse : 32-37 mm (Evans, 1932).

Distribution : India : Nagaland, Assam, Manipur, Meghalaya.

Elsewhere : Bangladesh (Sylhet).

Remarks : Tytler (1915) reported it as *Koruthailos rubeccla* (sic) Ploetz with collection of two specimens at Nichuguard, Naga hills, in May and October.

57. *Koruthailos butleri* (de Niceville) (Dark Velvet Bob)

1883. *Astictopterous butleri* de Niceville, *J. Asiat. Soc. Bengal*, **52** (2) : 98, pl. x, fig. 3.

1915. *Koruthailos butleri* Wood-Mason & de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 149.

1949. *Koruthailos butleri* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 276.

2003. *Koruthailos butleri* (de Niceville) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 122.

Material examined : Nil.

Fore wing expenase : 32-37mm (Evans, 1932).

Distribution : India : Nagaland, Assam, Sikkim.

Elsewhere : Myanmar.

Remarks : Tytler (1915) mentioned of collection of four males and two females at Nichuguard, Naga Hills, in May and October.

58. ***Koruthailos sindu monda*** Evans

1949. *Koruthaibs sindu monda* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 277.

Material examined : Nil.

Wing expanse : 16-18 mm.

Distribution : India : Nagaland, Assam, Manipur.

Elsewhere : North Myanmar.

Remarks : Evans (1949) mentioned of specimens collected from Naga hills, in the collection of British museum.

XXIX Genus ***Stimula*** de Niceville

1898. *Stimula* de Niceville, *J. Bombay nat. Hist. Soc.*, **12** : 159.

Remarks : Only a single species-*Stimula swinhoei* (Elwes & Edwards) representing this genus in India is treated here.

59. ***Stimula swinhoei*** (Elwes & Edwards) (Watson Demon)

1897. *Kerana swinhoei* Elwes & Edwards, *Trans. Ent. Soc. London*, 14(4) : 220,

1915. *Watsoniella swinhoei* (Elwes & Edwards) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 152.

1949. *Stimula swinhoei swinhoei* (Elwes & Edwards) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*. London : 279.

2003. *Stimula swinhoei* (Elwes & Edwards) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 145.

Material examined : Nil.

Fore wing length : 24 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Myanmar.

Remarks : Only the nominate subspecies occurs in India. Tytler (1915) held its males common at elevations of 1800-2100 m in Naga Hills during July and August but obtained only a single female.

XXX. Genus ***Ancistroides*** Butler

1874. *Ancistroides* Butler, *Trans. ent. Soc. London* : 436.

Remarks : Only a single species-*Ancistroides nigrita* Latreille of this genus occurring in India is treated.

60. ***Ancistroides nigrita diocles*** (Moore) (Chocolate Demon)

1865. *Kerana diocles* Moore, *Trans. ent. Soc. London*, 14(4) : 255.

1912. *Kerana diocles* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1915. *Tamela (=Kerana) diocles* Moore : Tytler, *J Bombay nat. Hist. Soc.*, **24** : 152.

1949. *Ancistroides nigrita diocles* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.), London* : 280.

2003. *Ancistroides nigrita diocles* (Moore) : Ghosh and Chaudhury, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 122.

Diagonistic characters : Forewing upperside brown, unmarked; underside with apex of fore wing and termen of hind wing broadly tailer.

Material examined : Nil.

Fore wing length : Male, 26 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Bhutan and Myanmar.

Remarks : Only this subspecies is known in India. Earlier, this subspecies was reportd from Naga Hills collected in March, July and October.

XXXI. Genus *Notocrypta* deNiceville

1889. *Notocrypta* de Niceville, *J. Bombay Nat. Hist. Soc.*, : 188.

Remarks : All the three species of this genus known in India are treated.

Key to species

1. Fore wing upperside without any trace of spot in area between vein R_4 to M_1, termen straight to vein M_3 then convex to apex. Hind wing dorsum equal to costa .... *paralysos* (Wood-Mason & de Niceville)

– Fore wing upperside with a trace of spot in area between vein R_4 to M1and also in spaces beween M_2 and Cu_{1a}, termen not straight to vein M_3. Hind wing dorsum greater than costa 2

2. Fore wing underside central band produced above the radius..... *feisthamelii* (Boisduval)

– Fore wing underside central band not produced above the radius..... *curvifascia* (Felder)

61. *Notocrypta paralysos asawa* Fruhstorfer (Common Banded Demon)

1911. *Notocrypta paralysos asawa* Fruhstorfer, *Iris*, : 24.

1949. *Notocrypta paralysos asawa* Fruhstorfer : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 284.

2003. *Notocrypta paralysos asawa* Fruhstorfer : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 122.

Material examined : Nagaland, Mokokchung Dist., 5 km. west of Long chem Forest office, 210 m., lex, 23.ix.1994, (Coll. M. Sil).

Fore wing expanse : 15 mm.

Distribution : India : Nagaland (Mokokchung District), Assam and Sikkim.

Elsewhere : Foochow, Hainan, Indochina, Long kayi Is., Myanmar and Thailand.

Remarks : This subspecies differs from *N. paralysos mangla* Evans found in South Kanara and *N. paralysos paralysos* (Wood-Mason & de Niceville) in South Andaman Islands by the considerable variation, and the white banding of antennae is conspicuous.

62. *Notocrypta feisthamelli alysos* (Moore) (Spotted Demon)

1865. *Plesioneura alysos* Moore, *Proc. zool. Soc. London*, : 789.

1912. *Notocrypta feisthamelli* Boisduval : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Notocrypta feisthamelli alysos* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 287.

2003. *Notocrypta feisthamelli alysos* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 123.

Material examined : Nil.

Fore Wing expanse : 18-22 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, North-West. Himalaya, Skikkim.

Elsewhere : Indo-China, Malaya, Myanmar and Thailand.

Remarks : Only this subspecies occurs in India. Tytler (1912) collected its specimens during August-December from Kohima and one specimen at Gaspani in March.

63. *Notocrypta curvifascia curvifascia* (Felder) (Restricted Demon)

1862. *Plesioneura curvifascia* Felder, *Wien. ent. Mon.* **6** : 29.

1912. *Notocrypta restricta* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Notocrypta curvifascia curvifascia* (Felder) Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat Asia and Australian in the British Museum (Nat. Hist.)*, London : 286

2003. *Notocrypta curvifascia curvifascia* (Felder) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 123.

Material examined : Nagaland, Kohima District, Pulebadze wild life Sanctuary, 1490 m., 1 ex, 14.ix.1994, Coll. B. Mitra; Above forest colony, 1470 m., 2 exs, 11.x.1998, (coll. T.K. Pal).

Fore wing length : 20-22 mm.

Distribution : India : Nagaland (Kohima), Andaman Islands, Assam, Meghalaya, Sikkim. South India and West Bengal.

Elsewhere : Hong Kong, Indo-China, Liu Kiu islands, Myanmar, Nepal, Sri Lanka, Taiwan, Thailand, W. Szechwan and Yunnan.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) found it common at Kohima during August-October and at the foot of Naga Hills in March.

XXXII. Genus *Udaspes* Moore

1881. *Udaspes* Moore, *Lep. Ceylon.*, 1 : 177.

Remarks : Only a single species-*Udaspes folus* (Cramer) of this genus occurring in India is treated.

64. *Udaspes folus* (Cramer) (Grass Demon)

1775. *Papilio folus* Cramer, *Pap. Exot.*, **1** : 118, pl. 74, fig. E.

1912. *Udaspes folus* (Cramer) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Udaspes folus* (Cramer) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 292.

2003. *Udaspes folus* (Cramer): Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 123.

Material examined : Nil.

Fore wing length : 23 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, North-West Himalaya, Orissa, Sikkim, South India and West Bengal.

Remarks : This species exhibits considerable seasonal variation in some localities. Tytler (1912) found it common in August at Kohima.

Group **Plastingia**

This Group includes 18 genera from India of which 11 are represented in Nagaland.

Key to genera

1. Antennal apiculus not longer than twice width of club or moderately hooked, palpi generally with 2nd segment slender, 3rd pointed and protruding more or less 8
– Antennal apiculus longer than twice width of club palpi generally with 2nd segment stout and quadrantic, 3rd short and stout, bluntly conical, not protruding 2
2. Hind wing dorsum not longer than costa .. 3
– Hind wing dorsum longer than costa 5
3. Palpi 3rd segment very long and thin, fore wing vein M_2 straight. 4
– Palpi 3rd segment very short, fore wing vein M_2 decurved ..... ***Cupitha*** Moore
4. Fore wing vein M_3 nearer to Cu_{1a} than vein M_2, vein S_C and R_1 close ..... ***Scobura*** El. & Ed.
– Fore wing vein M_3 midway between M_2 and Cu_{1a}, vein S_C and R_1 apart ..... ***Suastus*** Moore
5. Fore wing vein Cu_{1a} opposite to vein R_3 rather than vein R_2 6
– Fore wing vein Cu_{1a} opposite to vein R_2 rather than vein R_3 7
6. Fore wing vein M_2 decurved ..... ***Zographetus*** Watson
– Fore wing vein M_2 straight ..... ***Hyarotis*** Moore
7. Hind wing cell equal to or greater than half of the wing. Upperside of fore wing with yellow markings ..... ***Plastingia*** Butler
– Hind wing cell shorter than half of the wing. Upperside of fore wing with hyaline markings ..... ***Lotongus*** Distant
8. Fore wing cell not as long as dorsum of hind

wing. Dorsum of hind wing not longer than dorsum of fore wing 9

– Fore wing cell very long or greater than dorsum. Hind wing dorsum longer than dorsum of fore wing 12

9. Hind wing cell shorter than half of wing .... ***Gangara*** Moore

– Hind wing cell equal to half of wing 10

10. Fore wing vein Cu_{1b} nearer to base than to end cell ..... ***Erionota*** Mabille

– Fore wing vein Cu_{1b} nearer to end cell than to base cell 11

11. Eyes red. Hind wing lower apex of cell abnormally produced, vein M_1 opposite to vein Cu_{1b} ..... ***Matapa*** Moore

– Eyes not red. Hind wing lower apex of cell normally produced, vein M_1 opposite to vein Cu_{1a} ..... ***Pudicitia*** de Niceville

XXXIII. Genus *Cupitha* Moore

1884. *Cupitha* Moore, *J. Asiat. Soc. Bengal*, : 47,

Remarks : Only a single species of this genus represented in India is treated here.

65. *Cupitha purrea* (Moore)
(Wax Dart)

1877. *Pamphila purrea* Moore, *Proc. zool. Soc. London*, : 594.

1949. *Cupitha purrea* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 299.

2003. *Cupitha purrea* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 124.

Material examined : Nagaland, Dimapur Dist., Itenkilt, 1ex., 18.iii.1997 (Coll. A.K. Hazra).

Fore wing length : 14 mm.

Distribution : India : Nagaland (Dimapur), Andaman Is., Assam, Meghalaya, South India, Sikkim.

Elsewhere : Bhutan, Borneo, Java, Indochina, Malaya, Nias, Sumatra, Thailand.

Remarks : This species does not show significant variation.

XXXIV. Genus *Scobura* Elwes & Edwards

1897. *Scobura* Elwes & Edwards, *Trans. zool. Soc. London*, **14** : 204.

Remarks : Of the six species of genus occurring in India, three are dealt with.

Key to species

1. Upperside of hind wing without any mark.. ..... *tytleri* Evans

– Upperside of hind wing with one or two hyaline spots 2

2. Upperside of fore wing with a spot in space Cu_{1a} ..... *cephaloides* (de Niceville)

– Upperside of fore wing without spot in space Cu_{1a} ..... *cephala* (Hewitson)

66. *Scobura tytleri* (Evans)
(Tytler Ace)

1914. Iambrix *tytleri* Evans, *J. Bombay nat Hist. Soc.*, **23** : 302.

1915. *Iambrix tytleri* Evans, : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 150.

1949. *Scobura tytleri* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 293.

Material examined : Nil.

Fore wing length : Male, 13 mm (Evans, 1949).

Distribution : India : Nagaland and Manipur.

Remarks : Tytler (1915) obtained a female in July and two males in September at Kirbari, Naga Hills.

67. *Scrobura cephaloides cephaloides* (de Niceville)
(Large Forest Bob)

1888. *Hesperia cephaloides* de Niceville, *J. Asiat. Soc. Bengal*, : 288, pl. 13, fig. 4,

1892. *Isoteinon cephaloides* (de Niceville) : Elwes, *Proc. zool. Soc. Lond.*, : 654.

1912. *Scrobura cephaloides* (de Niceville) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1915. *Scrobura cephaloides* (de Niceville) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 152.

1949. *Scrobura cephaloides cephaloides* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 294.

Material examined : Nil.

Fore wing length : Male, 17 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur.

Elsewhere : Myanmar.

Remarks : Previously, the nominate subspecies was recorded from Naga Hills collected in March, April and June.

68. *Scobura cephala* (Hewitson) (Forest Bob)

1876. *Hesperia cephala* Hewitson, *Ent. Mon. Mag.*, : 152.

1915. *Scobura cephala* (Hewitson) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 151.

1949. *Scobura cephala* (Hewitson) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in theBritish Museum (Nat. Hist.)*, London : 293.

2003. *Scobura cephala* (Hewitson) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 125.

Material examined : Nil.

Fore wing length : Male, 16 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Sikkim and Meghalaya.

Elsewhere : Myanmar.

Remarks : Tytler (1915) obtained four specimens at the foot of the Naga hills during August-December.

XXXV. Genus *Suada* de Niceville

1895. *Suada* deNiceville, *J. Asiat. Soc. Bengal*, **9** (4) : 370.

Remarks : This genus is represented in India by a single species, *Suada swerga* (de Niceville) which is treated here.

69. *Suada swerga swerga* (de Niceville) (Grass Bob)

1893. *Hesperia swerga* de Niceville, *J. Asiat. Soc. Bengal*, **52** (2) : 89, pl. 10, fig. 12.

1912. *Suada swerga* (de Niceville) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Suada swerga swerga* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Briuish Museum (Nat. Hist.)*, London : 295.

2003. *Suada swerga* (de Niceville : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 125.

Material examined : Nil.

Fore wing length : Male, 17 mm (Evans, 1949).

Distribution : India : Nagaland, Assam and Sikkim.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) collected its specimens at Nichuguard in March.

XXXVI. Genus *Zographetus* Watson

1893. *Zographetus* Watson, *Proc. zool. Soc. London*, : 84.

Remarks : Only a single species representing this genus India is dealt with here.

70. *Zographetus satwa* (de Niceville) (Purple and Gold Flitter)

1883. *Isoteinon satwa* de Niceville, *J. Asiat. Soc. Bengal* . 86.

1915. *Zographetus satwa* (de Niceville) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 151.

1949. *Zographetus satwa* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 299.

2003. *Zographetus satwa* (de Niceville) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim. State Fauna Series*, **9**(Part-4) : 125.

Material examined : Nil.

Fore wing length : Male, 16 mm (Evans, 1949).

Distribution : India : Nagaland, Assam and Sikkim.

Elsewhere : Java, Malaya, Myanmar and Thailand.

Remarks : Tytler (1915) reported a male obtained at Nichuguard in March.

XXXVII. Genus ***Hyarotis*** Moore

1881. *Hyarotis* Moore, *Lep. Ceylon.*, **1** : 174.

Remarks : There are two species, *viz.*, *Hyarotis adrastus* Cramer and *Hyarotis microstictum* Wood-Mason & de Niceville of this genus occurring in India, of which the former is treated here.

71. ***Hyarotis adrastus praba*** (Moore) (Tree Flitter)

1865. *Plesioneura praba* Moore, *Proc. zool. Soc. London* : 790.

1912. *Hyarotis adrastus* Cramer : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Hyarotis adrastus praba* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 303.

2003. *Hyarotis adrastus praba* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 126.

Material examined : Nagaland, Mokokchung District, Mirikong Res. Forest, 1 ex., 27.ix.1994. (Coll. P.H. Roy).

Fore wing length : 18 mm.

Distribution : Oriental region including India: Nagaland (Mokokchung Dist), Andaman Is., Assam, Sikkim, N. Western Himalaya and West Bengal.

Remarks : Only this subspecies is known in India. Tytler (1912) collected its specimens from Nichuguard in March. The species *Hyarotis adrastus* Cramer is protected under Schedule-IV of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

XXXVIII. Genus ***Plastingia*** Butler

1870. *Plastingia* Butler, *Ent. Mon. Mag.*, : 7.

Remarks : Of the four species of this genus occurring in India, only one-*Plastingia margherita* Doherty is dealt with here.

72. ***Plastingia margherita margherita*** Doherty

1889. *Plastingia margherita* Doherty, *J. Asiat. Soc. Bengal.*, : 131, pl. 10, fig. 5.

1892. *Plastingia callineura* var. *margherita* Doherty : Elwes, *Proc. zool. Soc. London* : 657.

1912. *Plastingia margherita* Doherty : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Plastingia margherita margherita* Doherty : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 315.

Material examined : Nil.

Fore wing length : Male, 17 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, and Manipur.

Remarks : Only the nominate subspecies occurs in India. Eearlier, the nominate subspecies is known from Naga Hills.

XXXIX. Genus ***Lotongus*** Distant

1886. *Lotongus* Distant,*Rhopalocera Malayana*, : 369, 371

Remarks : Only a single species representing this genus in India is treated.

73. ***Lotongus sarala*** (de Niceville) (Yellow Band Palmer)

1889. *Parnara sarala* de Niceville, *J. Bombay nat. Hist. Soc.*, **4** : 173.

1915. *Lotongus sarala* (de Niceville) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 153.

1949. *Lotongus sarala* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 322.

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, and Meghalaya.

Remarks : Only the nominate subspecies is known in India. Tytler (1915) reported a male and a female collected at Gaspani, Naga Hills, at elevation of 500 m in October.

XL. Genus ***Gangara*** Moore

1881. *Gangara* Moore, *Lep. Ceylon.*, **1** : 164.

Remarks : Of the two species, viz., *Gangara thyrsis* (Fabricius) and *Gangara lebadea*

(Hewitson) of this genus known from India, former is dealt with here.

74. *Gangara thyrsis thyrsis* (Fabricius) (Giant Red Eye)

1775. *Papilio thyrsis* Fabricius, *Syst. Ent.*, : 532,

1915. *Gangara thyrsis* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 152.

1949. *Gangara thyrsis thyrsis* (Fabricius) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 325.

2003. *Gangara thyrsis* (Fabricius) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 36 mm (Evans, 1949).

Distribution : India : Nagaland, Andaman Is., Assam, N.W. India, Sikkim, South India, South Nicobars and West Bengal.

Elsewhere : Banka, Borneo, Celebes, Hainan, Indo-china, Malaya, Nias, Sumatra and Thailand.

Remarks : Tytler (1915) reported a male collected at Nichuguard, Naga Hills, in October.

XLI. Genus *Erionota* Mabille

Erionota Mabille, *Ann. Soc. Ent. Belg.*, **21** : 34.

Remarks : Of the three species of this genus occurring in India, only one-Erionota thrax (Linnaeus) is dealt with here.

75. *Erionota thrax thrax* (Linnaeus) (Palm Red Eye)

1867. *Papilio thrax* Linnaeus, *Syst. Nat.*, **1** : 794,

1912. *Erionota thrax* (Linnaeus) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 604.

1949. *Erionota thrax thrax* (Linnaeus) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 327

2003. *Erionota thrax thrax* (Linnaeus) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 126.

Material examined : Nagaland, Kohima District, Jotsoma village, 15 km. east of Kohima Reserve Forest, 2 exs., 23.ix.1994 (Coll. P.H. Roy).

Fore wing expanse : 70-76 mm (Evans, 1932).

Distribution : India : Nagaland (Kohima), Assam, Sikkim and West Bengal.

Elsewhere : Banka, Borneo, Celebes, Indo-china, Java, Lombok, Myanmar, Nias, Palawan, Sangir, Sumbawa, Sumatra and Thailand.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) collected its specimens during August–October from Kohima.

XLII. Genus *Matapa* Moore

1881. *Matapa* Moore, *Lep. Ceylon.*, **1** : 163.

Remarks : There are five species of this genus known from India, of which three are treated here.

Key to species

1. Upperside of fore wing stigma grey and conspicuous ..... *druna* (Moore)
- Upperside of fore wing stigma black and inconspicuous 2
2. Upperside of fore wing uniform dark brown with bluish green metallic stinge on the thorax and wing bases. Underside fuliginous with black veins ..... *sasivarana* (Moore)
- Upperside of fore wing uniform dark with purplr gloss.Underside uniform brown .... *purpurascens* Elwes & Edwards

76. *Matapa druna* (Moore) (Dark Banded Red Eye)

1865. *Ismene druna* Moore, *Proc. zool. Soc.* London 784.

1915. *Matapa druna* (Moore) : Tytler, *J. Bombay nat. Hist Soc.*, **24** : 152.

1949. *Matapa druna* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 330.

2003. *Matapa druna* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 127.

Material examined : Nil.

Fore wing length : Male, 22 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Borneo, Indochina, Malaya, Myanmar and Sumatra.

Remarks : Tytler (1915) captured a single male at Nichuguard, Naga hills, in October.

77. ***Matapa sasivarana*** (Moore) (Black Veined Red Eye)

1865. *Ismene sasivarana* Moore, *Proc. zool. Soc. London*, : 784,

1915. *Matapa sasivarana* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 152.

1949. *Matapa sasivarana* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 331.

2003. *Matapa sasivarana* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 127.

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Sikkim and Meghalaya.

Elsewhere : Hainan, Indochina, Malaya, Myanmar and Sumatra.

Remarks : Tytler (1915) collected a single female at Nichuguard, Naga hills, in March.

78. ***Matapa purpurascens*** Elwes & Edwards (Purple Red Eye)

1896. *Matapa purpurascens* Elwes & Edwards, *Trans. Zool. Soc. London*, **14** : 209, pl. 20, fig.

1915. *Matapa purpurascens* Elwes & Edwards : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 152.

1949. *Matapa purpurascens* Elwes & Edwards : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 331.

2003. *Matapa purpurascens* Elwes & Edwards : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 127.

Material examined : Nil.

Fore wing expanse : 48-54 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Sikkim and Meghalaya.

Elsewhere : Myanmar.

Remarks : Tytler (1915) collected a single male at Nichuguard, Naga Hills, in March.

XLIII. Genus ***Pudicitia*** de Niceville

1895, *Pudicitia* dNiceville, *J. Bombay nat. Hist. Soc.*, **9** : 379.

Remarks : Only a single species representing this genus in India is dealt with here.

79. ***Pudicitia pholus*** (de Niceville) (Spotted Red Eye)

1895. *Parnara pholus* de Niceville, *J. Bombay nat. Hist. Soc.*, **14** : 172,

1915. *Pudicitia pholus* (de Niceville) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 152.

1949. *Pudicitia pholus* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 332.

2003. *Pudicitia pholus* (de Niceville) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 126.

Material examined : Nil.

Fore wing length : Male, 28 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Remarks : Tytler (1915) reported several specimens at Kirbari, Naga Hills, from an altitude of 1800m collected in August and September,1913.

Group **Taratocera**

Of the five genera of this Group known in India, two, *viz.*, *Potanthus* Scudder and *Telicota* Moore are represented in Nagaland.

Key to genera

Labial palpi with 3rd segment long and thin as antennal shaft, apiculus hooked and not longer than width of club .... ***Potanthus*** Scudder

– Labial palpi with 3rd segment short, stout and never thin as antennal shaft, apiculus more or less obtuse and longer ..... ***Telicota*** Moore

XLIV. Genus ***Potanthus*** Scudder

1872. *Potanthus* Scudder, *4th Ann. Peabody Acad. Sci.*, : 75

Remarks : Of the 16 species of this genus occurring in India, three are treated here.

Key to species

1. Uncus tapered 2
– Uncus not tapered ..... *confucius* Felder
2. Uncus more or less constricted before apiculus and without stalk 3
– Uncus not constricted before apiculus, stalk present ..... *omaha* Edwards
3. End of uncus rounded, bulbous; cuiller curved ..... dara Kollar
– End of uncus excavated between sharply angled shoulder; Cuiller straight and long... .....*flava* Murray

80. ***Potanthus confucius dushta*** (Fruhstorfer) (Chinese Dart)

1911. Telicota *dushta* Fruhstorfer, *Iris*, : 39.

1949. *Potanthus confucius dushta* (Fruhstorfer) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 382.

2003. *Potanthus confucius dushta* (Fruhstorfer) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 146.

Material examined : Nagaland, Merankong Forest, 20 km. from F. R. House, Tuli, 2 exs., 26.iii.1991 (Coll. P. Mukherjee).

Fore wing length : Male, 13mm.

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Remarks : This subspecies differs from *P. confucius nina* Evans found in Andaman & Nicobar Islands and *P. confucius diana* Evans in South India (Coorg, Palnis, Nilgiris and North Kanara) and Central Provinces by the wing markings broader and apically conjoined on upperside of fore wing.

81. ***Potanthus dara*** (Kollar) (Himalayan Dart)

1848. *Hesperia dara* Kollar, *In Huegel's Kaschmir*, 4 : 455

1892. *Padraona dara* (Kollar) : Elwes, *Proc. zool. Soc. Lond.* : 651.

1949. *Potanthus dara* (Kollar) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 379.

Material examined : Nil.

Fore wing expanse : 30 mm (Evans, 1932).

Distribution : India : Nagaland, North west Himalaya, Chitral to Kumaon.

Remarks : Elwes (1892) recorded this species from Naga Hills.This species is found above 1800 m from Chitral to Kumaon. Its status is 'not rare' (Evans, 1932).

82. ***Potanthus omaha*** (Edwards) (Lesser Dart)

1892. *Padraona maesoides* Butler : Elwes, *J. Bombay nat Hist. Soc.*, : 651.

1911. *Padroana omaha* Edwards, *Iris.*, : 39.

1912. *Telicota maesoides* Butler : Tytler, *J. Bombay nat Hist. Soc.*, **21** : 605.

1949. *Potanthus omaha omaha* (Edwards) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 378.

Material examined : Nil.

Fore wing length : 12 mm (Evans, 1949).

Distribution : India : Nagaland.

Elsewhere : Annam, Lingga Islands, Malaya, Mynamar, Tavoy, Mergui, Sambawa and Thailand.

Remarks : Earlier, this species is known from Naga Hills and also specimens collected during February-March from Gaspani.

83. ***Potanthus flava alcon*** (Evans) (Japanese Dart)

1932. *Padraona flava alcon* Evans, *Identification of Indian Butterflies* : 403.

1949. *Potanthus flava alcon* (Evans) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 381.

Material examined : Nil.

Fore wing expanse : 35 mm (Evans, 1932).

Distribution : India : Nagaland.

Elsewhere : Mynamar (Southern Shan State, Karens, Ataran).

Remarks : Tytler (1912) recorded it as *Telicota dara* Kollar from the foot of the Naga Hills up to 1500m. Evans (1949) mentioned of its two male and two female specimens from Naga Hills in the British Museum.

XLV. Genus ***Telicota*** Moore

1881. *Telicota* Moore, *Lep. Ceylon.*, **1** : 169.

Remarks : Of the five species of this genus occurring in india, three are dealt with here.

Key to species

1. Upperside of fore wing with lower end of stigma at vein 1_A, stigma broad reaching base of space Cu_{1a} 2

– Upperside of fore wing stigma placed centrally, stigma narrow, not reaching base of space Cu_{1a} ..... *ohara* Plotz

2. Underside of hind wing more or less tawny, band broad but inconspicuous..... ..... *augius* (Linnaeus)

– Underside of hind wing not tawny and without band .....*ancilla* Herrischaffer

84. ***Telicota ohara jix*** Evans (Dark Palm Dart)

1949. *Telicota ohara jix* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 400.

2003. *Telicota ohara jix* Evans : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 129.

Material examined : India, Nagaland, Zunheboto, Honpu, 1 ex., 25.vii.1991. (Coll. ?)

Fore wing length : 15 mm.

Distribution : India : Nagaland (Zunheboto), Assam, Sikkim.

Elsewhere : Indo china, Malaya, Myanmar and Thailand.

Remarks : Only this subspecies is known in India.

85. ***Telicota augius augius*** (Linnaeus)

1767. *Papilio augius* Linnaeus, *Syst. Nat.*, **1** (2) : 794.

1892. *Telicota augius augius* (Linnaeus) : Elwes, *Proc. zool. Soc. Lond.*, : 651.

1949. *Telicota augius augius* (Linnaeus) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 394.

Material examined : Nil.

Fore wing length : Male, 17 mm (Evans, 1949).

Distribution : India : Nagaland and Meghalaya.

Elsewhere : Malayan Subregion and South Myanmar.

Remarks : Only the nominate subspecies occurs in India. Elwes (1892) recorded this species Naga Hills.

86. ***Telicota ancilla bambusae*** (Moore) (Pale Palm Dart)

1878. *Pamphila bambusae* Moore, *Proc. zool. Soc. London*, : 691.

1912. *Telicota bambusae* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Telicota ancilla bambusae* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australian in the British Museum (Nat. Hist.)*, London : 397.

Material examined :

Fore wing length : Male, 15 mm (Evans, 1949).

Distribution : Oriental region including India : Nagaland, Assam, Madhya Pradesh, N. W. Himalaya, Orissa, South India and Sikkim,

Remarks : Only this subspecies occurs in India. Tytler (1912) collected its specimens from the foot Naga Hills during February-March and July.

Group **Gegenes**

This Group includes eight genera from India of which seven are represented in Nagaland.

Key to genera

1. Fore wing vein Cu_{1a} nearer to upper end cell than to base 2
- Fore wing vein Cu_{1a} nearer to base than to upper end cell ..... ***Iton*** de Niceville
2. Antennae with more segments on the nudum on the club than on the apiculus .... ***Parnara*** Moore
- Antennae with at least as many segments on the apiculus as on the club 3
3. Antennae not reaching mid costa. Fore wing vein Cu_{1a} opposite to R_1 4
- Antennae longer, nearly equal to half of the costa. Fore wing vein Cu_{1a} before origin of vein R_1 5
4. Underside of hind wing without cell spot. Mid tibia unspined ..... ***Borbo*** Evans
- Underside of hind wing with a cell spot. Mid tibia heavily spined ..... ***Pelopidas*** Walker
5. Antennal apiculus more obtuse and palpi less flattened ..... ***Polytremes*** Mabille
- Antennal apiculus right angled, palpi much stouter 6
6. Mid tibiae unspined ..... ***Caltoris*** Swinhoe
- Mid tibiae heavily spined ..... *Baoris* Moore

XLVI. Genus ***Iton*** de Niceville

1895. *Iton* deNiceville, *J. Bombay nat. Hist. Soc.*, **9** : 399.

Remarks : Only a single species of this genus known in India is dealt with here.

87. ***Iton semamora semamora*** (Moore) (Common Wight)

1865. *Hesperia semamara* Moore, *Proc. zool. Soc. London*, : 791.

1915. *Iton semamora* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 154.

1949. *Iton semamora semamora* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 457.

2003. *Iton semamora* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 130.

Material examined : Nil.

Fore wing length : Male, 18 mm (Evans, 1949).

Distribution : India : Nagaland, Meghalaya, Sikkim and West Bengal.

Elsewhere : Malaya, Myanmar and Thailand.

Remarks : Tytler (1915) mentioned this subspecies not uncommon in Naga Hills at low elevations and also collection of a single male at 1800m in the Naga Hills.

XLVII. Genus ***Parnara*** Moore

1881. *Parnara* Moore, *Lep. Ceylon.*, **1** : 166.

Remarks : Of the three species of this genus known from India, two, *viz.*, ***Parnara guttatus*** Bremer & Gray and *P. ganga* Evans are treated.

Key to species

Cuiller projecting ventrally beyond the valva, then ventral edge of the latter straight .... ***guttatus*** Bremer & Gray

- Valva projecting ventrally beyond the cuiller, the ventral edge of the former concave below the projection. ..... ***ganga*** Evans

88. ***Parnara guttatus mangala*** (Moore) (Straight Swift)

1865. *Pamphila mangala* Moore, *Proc. zool. Soc. London.*, : 792.

1892. *Pamphila mangala* Moore, *Proc. zool. Soc. London.*, : 650.

1912. *Parnara guttata* Bremer & Gray : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Parnara guttatus mangala* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Britiuish Museum (Nat. Hist.)*, London : 433.

2003. *Parnara guttatus mangala* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 146.

Material examined : Nil.

Fore wing length : Male, 17 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Sikkim, N.W. Frontier, Kashmir to Kumaon.

Elsewhere : Bokhara, Hainan, Chitral South and West China, SouthShan States and North Myanmar.

Remarks : Only this subspecies is known in India. Earlier, this species was recorded from Naga Hills and also its specimens collected in August from Kohima.

89. ***Parnara ganga*** Evans

1937. *Parnara ganga* Evans, *A Cat. of African Hesperiidae Brit. Mus. Nat. Hist.*

1949. *Parnara ganga* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.), London* : 434.

Material examined : Nil.

Fore wing length : Male, 14-15 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Bihar, Central India, Manipur, Meghalaya and West Bengal.

Elsewhere : China, Malaya and Myanmar.

Remarks : This species does not exhibit significant variation.

XLVIII. Genus ***Borbo*** Evans

1949. *Borbo* Evans., *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.),* London : 44.

There are two species, *viz.*, *Borbo bevani* (Moore) and *Borbo bevani* (Moore) of this genus known from India and the former is dealt with here.

90. ***Borbo bevani*** (Moore) (Bevan's Swift)

1878. *Hesperia bevani* Moore, *Proc. zool. Soc. Lond.,* : 688.

1892. *Parnara bevani* (Moore) : Elwes, *Proc. zool. Soc. London* : 650.

1912. *Parnara bevani* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Borbo bevani* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.),* London : 437.

2003. *Borbo bevani* (Moore) : *Majumdar (Chaudhury), Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 131.

Material examined : Nil.

Fore wing length : 34 mm (Evans, 1932). cf. 70-72mm (Wynter-Blyth, 1957).

Distribution : India : Nagaland, Assam, Central India, Kashmir to Kumaon, Meghalaya.

Elsewhere : Bhutan, Celebes, Ceram, Hainan, Indochina, Peninsular Thailand, Java and Myanmar.

Remarks : Previously, this species was recorded from Naga Hills and its individuals collected at elevation up to 1500m during January-October.

XLIX. Genus ***Pelopidas*** Walker

1870. *Pelopidas* Walker, *Ent.*, **5** : 56.

Remarks : Of the seven species of this genus occurring in India, only two, *viz.*, *Pelopidas sinensis* (Mabille) and *P. assamensis* (Wood-Mason & de Niceville) are teated here.

Key to species

– Upperside of fore wing with discal stigma and straight row of four white spots between veins M_2 and cu_{1b}..... *sinensis* (Mabille)

– Upperside of fore wing without discal stigma, four white spots present between veins M_2 and cu_{1b} but not in straight row ..... q*assamensis* (Wood-Mason & de Niceville)

91. ***Pelopidas sinensis*** (Mabille) (Large Banded Swift)

1877. *Gegenes sinensis* Mabille, *Bull. Soc. Zool. Fr.,* : 232.

1892. *Chapra prominens* Moore : *Proc. zool. Soc. Lond.* : 649.

1912. *Parnara sinensis* (Mabille) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Pelopidas sinensis* (Mabille) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 438.

2003. *Pelopidas sinensis* (Mabille) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 131.

Material examined : Nil.

Fore wing length : Male, 17 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, N.W. Himalaya, Sikkim.

Elsewhere : SouthWest China and Myanmar.

Remarks : Previously, this species was reported from Naga Hills and its individuals collected at elevation up to 1500 m in January, March and August. The species *Pelopidas sinensis* (Mabille) is protected under Schedule-IV of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

92. ***Pelopidas assamensis*** (Wood Mason & de Niceville) (Great Swift)

1882. *Parnara assamensis* Wood-Mason & de Niceville, *J. Asiat. Soc. Bengal* : 65.

1912. *Parnara assamensis* Wood-Mason & de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Pelopidas assamensis* (Wood Mason & de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 443.

Material examined : Nil.

Fore wing length : Male, 23 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim, Kasauli.

Elsewhere : Indochina, Malaya, Myanmar, Thailand.

Remarks : Tytler (1912) obtained its specimens at foot of Naga Hills in April, May and November and at elevations of 1200-1800m in April and October. This species is protected under Schedule-IV of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

L. Genus ***Polytremis*** Mabille

1904. *Polytremis* Mabille In Wytsman. *Genera Insectorum*, **17**(B) : 136.

Remarks : This genus is represented in India by four species of which three are dealt with here.

Key to species

1. Palpi with third segment slender protruding semi erect. Antennal club obtuse. Upperside wing with inconspicuous spots .... *lubricans* (Herrich Schoff)

– Palpi with third segment short, stout and erect. Antennal club angled. Upperside wing with conspicuous spots 2

2. Hind wing tornal cilia white..... ..... *discreta* (Elwes & Edwards)

– Hind wing tornal cilia yellow..... ..... *eltola* (Hewitson)

93. ***Polytremis lubricans lubricans*** (Herrich-Schaffer) (Swift)

1869. *Goniloba lubricans* Herrich-Schaffer, *Corr. Blatt Zool. Mir. Ver. Regensb.*, : 196.

1892. *Parnara toona* (Moore) : Elwes, *Proc. zool. Soc. Lond.*, : 446.

1912. *Parnara contigua* Mabille : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Polytremis lubricans lubricans* (Herrich- Schiffler) Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Briuish Museum (Nat. Hist.)*, London, : 446.

2003. *Polytremis lubricans* (Herrich-Schaffer) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 132.

Material examined : Nil.

Fore wing length : Male, 18 mm (Evans, 1949).

Distribution : India : Nagaland, Andaman Is., Assam, Bihar, Meghalaya, South India, Sikkim.

Elsewhere : Indochina, Malayan subregion and Myanmar.

Remarks : Earlier, this nominate subspecies was found common in Naga Hills during February-March.

94. *Polytremis discreta discreta* (Elwes & Edwards)
(Himalayan Swift)

1776. *Parnara discreta* Elwes & Edwards, *Trans. zool. Soc. London*, **14** : 282, fig. 16.

1915. *Parnara discreta* Elwes & Edwards : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 155.

1949. *Polytremis discreta discreta* (Elwes & Edwards) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 447.

2003. *Polytremis discreta discreta* (Elwes & Edwards) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 132.

Material examined : Nagaland, Minikong Res. Forest, 16 km. from Sangharcha, 1200 m, 1 ex., 17.iii.1989 (Coll. J.P. Sati).

Fore wing expanse : 17 mm.

Distribution : India : Nagaland, Assam, Meghalaya, N.W. Himalaya.

Elsewhere : China, Maloya, Myanmar, North Thailand.

Remarks : Only this nominate subspecies occurs in India. Tytler (1915) reported it as not uncommon in Naga Hills from the foot of hills up to 1800 m. The species *Polytremis discreta* (Elwes & Edwards) is protected under Schedule-IV of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

95. *Polytremis eltola eltola* (Hewitson)
(Yellow Spot Swift)

1869. *Hesperia eltola* Hewitson, *Exot. Butt.*, **4** : pl. 4, fig. 40.

1892. *Parnara eltola* (Hewitson) : Elwes, *Proc. zool. Soc. London* : 649.

1912. *Parnara eltola* (Hewitson) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Polytremis eltola eltola* (Hewitson) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 447.

2003. *Polytremis eltola* (Hewitson) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 132.

Material examined : Nil.

Fore wing length : Male, 18-19 mm (Evans, 1949).

Distribution : India, Nagaland,Assam, Meghalaya, N.W. Himalayan and West Bengal.

Elsewhere : Myanmar.

Remarks : Previously, this nominate subspecies was recorded the foot of Naga Hills and Kohima during March-October.

LI. Genus *Caltoris* Swinhoe

1893. *Caltoris* Swinhoe, *Trans. ent. Soc. London* : 323

Remarks : Of the 12 species of this genus occurring in India, only two, *viz.*, *Caltoris aurociliata* (Elwes & Edwards) and *C. tulsi* (de Niceville) of this genus are treated here.

Key to species

– Upperside of fore wing with well marked cell spot ..... *aurociliata* (Elwes & Edwards)

– Upperside of fore wing without cell spot .... *tulsi* (de Niceville)

96. *Caltoris aurociliata* (Elwes & Edwards)
(Yellow Fringed Swift)

1896. *Parnara aurociliata* Elwes & Edwards, *Trans. Zool. Soc. London*, **14** : 278 fig. 23.

1915. *Parnara aurociliata* Elwes & Edwards : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 155.

1949. *Caltoris aurociliata* (Elwes & Edwards) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 451.

2003. *Caltoris aurociliata* (Elwes & Edwards) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 133.

Material examined : Nil.

Fore wing length : Male, 22 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur, Meghalaya and Sikkim.

Remarks : Tytler (1915) collected six males and a female of this species at Kirbari and Kohima, Naga Hills in July, August and September.

97. ***Caltoris tulsi tulsi*** (de Niceville) (Purple Swift)

1888. *Parnara tulsi* de Niceville, *J. Asiat. Soc. Bengal*, **52**(2) : 86, no. 30, pl.X, fig. L.

1915. *Parnara tulsi* de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 155.

1949. *Caltoris tulsi tulsi* (de Niceville): Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum(Nat. Hist.)*, London : 455.

2003. *Caltoris tulsi* (de Niceville) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 133.

Material examined : Nil.

Fore wing length : Male, 21 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim.

Elsewhere : Bhutan, Malaya, Myanmar and Thailand.

Remarks : Tytler (1915) collected a male at Gaspani, Naga Hills, at an altitude of 500 m in November.

LII. Genus ***Baoris*** Moore

1881. *Baoris* Moore, *Lep Ceyl.*, **1** : 165.

Remarks : There are three species of this genus known from India of which two, viz., *Baoris farri* (Moore) and *B. pagana* (de Niceville) of this genus are dealt with here.

Key to species

- Upperside of hind wing with a black recumbent paint brush over lying a scent pouch in the cell and correlated with a polish grey dorsal area on underside of fore wing in the centre of which there is oval band. Upperside of fore wing with hyaline white spots and cell spots ..... *farri* (Moore)
- Upperside of hind wing without secondary sexual characters. Upperside of fore wing with well developed yellow spots and a single cell spot across the cell ... *pagana* (de Niceville)

98. ***Baoris farri farri*** (Moore) (Paint Brush Swift)

1878. *Hesperia farri* Moore, *Proc. zool. Soc. London* : 688.

1912. *Parnara oceia* Hewitson : Tytler, *J. Bombay nat. Hist Soc.*, **21** : 605.

1915. *Baoris farri* (Moore) : Tytler, *J. Bombay nat Hist. Soc.*, **24** : 155.

1949. *Baoris farri farri* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.), London* : 448.

2003. *Baoris farri* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*. **9**(Part-4) : 134.

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Central India, Meghalaya, Sikkim, South India, Uttar Pradesh and West Bengal.

Remarks : This nominate subspecies differs from *B. farri scopulifera* Moore found in Andaman & Nicobar Islands by the upperside of fore wing usually with fully developed spots, two in cell, three apical and three discal; in female a spot in1b but reduced as dot in male; the underside of hind wing rather pale silky brown. Earlier, the nominate subspecies is known from Naga Hills. The species *Baoris farri* (Moore) is protected under Schedule-IV of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

99. ***Baoris pagana*** (de Niceville) (Figure of 8 Swift)

1887. *Parnara pagana* de Niceville, *Proc. zool. Soc. London* : 465, pl. 40, fig. 7.

1912. *Parnara pagana* de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Baoris pagana* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 450

2003. *Baoris pagana* (de Niceville) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 134.

Material examined : Nil.

Fore wing length : Male, 22 mm (Evans, 1949).

Distribution : India : Nagaland, Sikkim and West Bengal.

Elsewhere : Borneo and Myanmar.

Remarks : Tytler (1912) collected a single specimen from Kohima in August.

Subfamily COELIADINAE

The subfamily is known in India by 21 species and five genera of which 13 species and four genera are treated from Nagaland.

Key to genera

1. Fore wing cell shorter than dorsum. 2
- Fore wing cell not shorter than dorsum.....3
2. Fore wing vein 1_A slightly bisinuate, without hyaline spot dorsally ..... ***Bibasis*** Moore
- Fore wing vein 1_A acutely bisinuate, often with a hyaline spot dorsally ..... ***Hasora*** Moore
3. Fore wing cell longer than dorsum. Upperside of fore wing brown with hyaline white spots ..... ***Badamia*** Moore
- Fore wing cell equal to dorsum. Upperside of fore wing mmore or less blue or green without and hyaline white spots..... ***Choaspes*** Moore

LIII. Genus ***Bibasis*** Moore

1881. *Bibasis* Moore, *Lep. Ceylon.*, **1** : 160.

Remarks : Of the seven species of this genus occurring in India, seven are dealt with here.

Key to species

1. Underside of hind wing more less striped with small black spot at space 8 2
- Underside of hind wing not striped and without black spot ..... *sena* (Moore)
2. Underside of fore wing discal striping not reaching termen at apex 3
- Underside of fore wing discal striping reaching termen at apex 5
3. Fore wing vein Cu_{1a} nearer to origin of vein Cu_{1b} than vein M_3 4
- Fore wing vein Cu_{1a} nearer to origin of vein M_3 than Cu_{1b}..... *harisa* (Moore)
4. Underside of hind wing with orange striping ..... *oedipodea* Swainson
- Underside of hind wing without orange striping ..... *jaina*(Moore)
5. Hind wing cilia ochreous .... *vasutana* (Moore)
- Hind wing cilia white.....6
6. Fore wing vein Cu_{1a} nearer to origin of vein Cu_{1b} than vein M_3 ..... *amara* (Moore)
- Fore wing vein Cu_{1a} nearer to origin of vein M_3 than Cu_{1b}..... *gomata*(Moore)

100. ***Bibasis sena sena*** (Moore)
(Orange Tail Awl)

1865. *Goniloba sena* Moore, *Proc. zool. Soc. London.* : 778.

1892. *Bibasis sena* (Moore) : Elwes, *Proc. zool. Soc. London* : 648.

1912. *Bibasis sena* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 606.

1949. *Bibasis sena sena* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 52.

2003. *Bibasis sena* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 135.

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans,1949).

Distribution : India : Nagaland, Andaman Is., Assam, Meghalaya, North-West Himalaya, Sikkim, South India.

Elsewhere : China, Mynamar, Sri Lanka and Thailand.

Remarks : Earlier, the nominate subspecies was recorded from Kohima and its specimens collected in September and November and from Gaspani in October. The species *Bibasis sena* (Moore) is protected under Schedule-II (Part-II) of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

101. ***Bibasis harisa*** (Moore)
(Orange Awlet)

1865. *Ismene harisa* Moore, *Proc. zool. Soc. London* : 782.

1892. *Choaspes harisa* (Moore) : Elwes, *Proc. zool. Soc. London* : 646.

1912. *Ismene harisa* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605:

1949. *Bibasis harisa* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 48.

2003. *Bibasis harisa* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 135.

Material examined : Nil.

Fore wing length : Male, 25 mm (Evans, 1949).

Distribution : Oriental region including India: Nagaland, Andaman Is., Assam and Meghalaya.

Remarks : Earlier, this species was recorded from Naga Hills and collection made in March and October.

102. ***Bibasis oedipodea belesis*** (Mabille) (Branded Orange Awlet)

1876. *Ismene belesis* Mabille, *Bull. Ann. Soc. Ent. Fr.* (5)4 : ix & 260.

1915. *Ismene ataphus* Watson: Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 155.

1949. *Bibasis oedipodea belesis* (Mabille) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 45.

Material examined : Nil.

Fore wing length : Male, 23 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, North-west Himalaya (Kangra-Kumaon), Sikkim, West Bengal (Kolkata).

Elsewhere : China (Hong Kong, Kwang Si), Hainan, Myanmar, Thailand and Tonkin.

Remarks : Tytler (1915) collected a male at Nichuguard, Naga hills, in June.

103. ***Bibasis jaina jaina*** (Moore) (Orange Awl)

1865. *Ismene jaina* Moore, *Proc. zool. Soc. London* : 782.

1912. *Ismene jaina* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Bibasis jaina jaina* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)* London : 47.

2003. *Bibasis jaina* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 135.

Material examined : Nil.

Fore wing length : Male, 27 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, N.W. Himalaya and Sikkim.

Elsewhere : Myanmar.

Remarks : This nominate subspecies is distinguished from *B. jaina fergusonii* de Niceville occurring in Travancore, South India and *B. jaina astigmata* Evans in Andaman Islands by the underside of fore wing with a white cell spot, short white streaks on disc and dorsum broadly whitish; the underside of hind wing with conspicuous orange to whitish streaks beyond end cell. In male, the the upperside of fore wing with brand circular, 4 mm across. Tytler (1912) collected several male individuals during August–September at elevation of 1500 m from Naga Hills.

104. ***Bibasis vasutana*** (Moore) (Green Awl)

1865. *Ismene vasutana* Moore, *Proc. zool. Soc. London* 783.

1892. *Choaspes vasutana* (Moore) : Elwes, *Proc. zool. Soc London* : 646.

1912. *Ismene vasutana* Moore : Tytler, *J. Bombay nat Hist Soc.*, **21** : 605.

1949. *Bibasis vasutana* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)* London : 49.

2003. *Bibasis vasutana* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 135.

Material examined : Nil.

Fore wing length : Male, 28 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Myanmar and Nepal.

Remarks : Earlier, this species was recorded from Naga Hills and also found common at Kohima during August-October.

105. ***Bibasis amara*** (Moore)
(Small Green Awl)

1865. *Ismene amara* Moore, *Proc. zool. Soc. London* : 783.

1892. *Choaspes amara* (Moore), *Proc. zool. Soc. London* : 646.

1912. *Bibasis amara* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 605.

1949. *Bibasis amara* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 50.

2003. *Bibasis amara* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 135.

Material examined : Nil.

Fore wing length : Male, 25 mm (Evans,1949).

Distribution : India : Nagaland, Andaman Is.Assam, Meghalaya, Sikkim and West Bengal.

Elsewhere : China, Myanmar and Thailand.

Remarks : Previously, this species is known of from Naga Hills.

106. ***Bibasis gomata gomata*** (Moore)
(Pale Green Awl)

1865. *Ismene gomata* Moore, *Proc. zool. Soc. London* : 783.

1912. *Ismene gomata* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 606.

1949. *Bibasis gomata gomata* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 50.

2003. *Bibasis gomata* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 136.

Material examined : Nil.

Fore wing length : Male, 25 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Sikkim, Meghalaya and West Bengal.

Remarks : This nominate subspecies differs from *Bibasis gomata* kanara Evans found in North Kanara (South India) by the underside of hind wing with dark streaks about end of vein M_2 reaching end of the cell. Tytler (1912) obtained its single specimen at elevation of 1800m from Naga Hills in October.

LIV. Genus ***Hasora*** Moore

1881. *Hasora* Moore, *Lep. Ceylon.*, **1** : 159.

Remarks : Of the eight species of this genus occuuring in India, only four are treated here.

Key to species

1. Underside of hind wing with dark tornal lobe 2
– Underside of hind wing without dark tornal lobe ..... *anura* de Niceville
2. Upperside of fore wing with stigma and underside of hind with a band in cell .... *schoenherr* Latreille
– Upperside of fore wing without stigma and underside of hind with a small cell spot ... 3
3. Underside of hind wing brown with pale spots ..... *badra* (Moore)
– Underside of hind wing not brown, a whitebroken band presents ..... *vitta* Evans

107. ***Hasora anura anura*** de Niceville
(State Awl)

1889. *Hasora anura anura* de Niceville, *J. Bombay Nat. Hist. Soc.*, **6** : 170, pl. 6. Fig. 5.

1915. *Hasora anura* de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 155.

1949. *Hasora anura anura* de Niceville : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australian in theBritish Museum (Nat. Hist.)*, London : 57.

2003. *Hasora anura anura* de Niceville : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 136.

Material examined : Nil.

Fore wing length : Male, 22 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur, Meghalaya and Sikkim.

Elsewhere : North Myanmar.

Remarks : Only the nominate subspecies occurs in India. Tytler (1915) collected several males and females at Kirbari and Jakama, Naga Hills, at altitude of 1800-2100m.

108. ***Hasaora schoenherr gaspa*** Evans (Yellow Banded Awl)

1949. *Hasaora schoenherr gaspa* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 64.

Material examined : Nil.

Fore wing length : Male, 22 mm (Evans, 1949).

Distribution : India : Nagaland, Assam.

Elsewhere : Myanmar, Thailand and Torkin.

Remarks : Only this subspecies is known in India. Elwes (1892) recorded its single specimen from Naga hills as *Choaspes chuza* (Hewitson). Tytler (1912) mentioned about specimens of *Hasora chuza* collected earlier by Doherty from Naga Hills. Tytler (1915) mentioned of specimens of '*Hasora chuza*, Hewitson' collected at Nichuguard, Naga Hills, during March-May, October and November. Evans (1949) treated *Hasaora schoenherr chuza* (Hewitson) as non – Indian subspecies.

109. ***Hasora schoenherr chuza*** Hewitson (Yellow Banded Awl)

1915. *Hasora chuza Hewitson* : Tytler, *J. Bombay nat. Hist. Soc.*, **24** :155.

1949. *Hasora schoenherr chuza Hewitson* : Evans., *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 64.

Material examined : Nil.

Forewing length : Male, 25 mm. (Evans, 1949).

Distribution : India : Nagaland and Manipur.

Elsewhere : Borneo, Malaya, Sarawak and Sumatra.

Remarks : Evans (1949) not reported this subspecies from India but Tytler (1915) collected this subspecies from Manipur and at Nichuguard from Naga Hills in October and November and again in March to May.

110. ***Hasora badra badra*** (Moore) (Common Awl)

1865. *Goniloba badra* Moore, *Proc. zool. Soc. London* 778.

1912. *Hasora badra* (Moore) : Tytler, *J. Bombay nat. Hist Soc.*, **21** : 606.

1915. *Hasora badra* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 155.

1949. *Hasora badra badra* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 66.

2003. *Hasora badra* (Moore) : Majumdar (Chaudhury). *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 137.

Material examined : Nil.

Fore wing length : Male, 23 mm (Evans, 1949).

Distribution : India : Nagaland, Andaman & Nicobar Islands, Assam, Meghalaya, Sikkim.

Elsewhere : China, Myanmar, Thailand, Taiwan and Malayan subregion.

Remarks : Only the nominate subspecies occurs in India. Earlier, this nominate subspecies is known from Nichuguard, Naga Hills.

111. ***Hasora vitta indica*** Evans (Plain Banded Awl)

1932. *Hasora indica* Evans., *Trans. ent. Soc. London* 498.

1949. *Hasora vitta indica* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 68.

2003. *Hasora vitta indica* Evans : Majumdar (Chaudhury). *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 137.

Material examined : Nil.

Fore wing length : Male, 22 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim, South India and West Bengal.

Remarks : This subspecies is differentiated from *H. vitta manda* Evans found in Andaman Islands by the the underside of hind wing with

white band broken in area $1_A + 2_A$, 2.5 mm wide, outwardly diffused. Tytler (1912) recorded it as *Hasora chabrona* Ploetz and collected its specimens in May and November at the foot of Naga Hills and at Kohima in September. The species *Hasora vitta* Butler is protected under Schedule-IV of the Indian Wildlife (Protection) Act, 1972, and subsequent amendments.

LV ***Badamia*** Moore

1881. *Badamia* Moore, *Lep. Ceylonica*, **1** : 157.

Remarks : Only a single species representing this genus in India is treated.

112. ***Badamia exclamationis*** (Fabricius) (Brown Awl)

1775. *Papilio exclamationis* Fabricius, *Syst. Ent.* : 530.

1912. *Badamia exclamationis* (Fabricius) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 606.

1949. *Badamia exclamationis* (Fabricius) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 72.

2003. *Badamia exclamationis* (Fabricius) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 138.

Material examined : Nil.

Fore wing length : Male, 29 mm (Evans, 1949).

Distribution : India : Nagaland, Andamans, Assam, Meghalaya, Sikkim and West Bengal.

Elsewhere : Other parts of Oriental region, Australian, Hawain and Papuan region.

Remarks : Tytler (1912) mentioned it as not uncommon at Kohima during August-November.

LVI Genus ***Choaspes*** Moore

1881. *Choaspes* Moore, *Lep. Ceylon*, **1** : 158.

Remarks : There are four species of this genus known from India of which only one – *Choaspes benjamini* (Guerin) is treated here.

113. ***Choaspes benjamini japonica*** Murray (Indian Awl King)

1843. *Thymele benjamini* Guerin, *Delesserts. Souv. Voy. Ind.*, **2** : 79, pl. 22, fig. 2, 2a.

1892. *Choaspes benjamini* (Guerin) : Elwes, *Proc. zool. Soc. Lond.*, : 646.

1912. *Rhopalocampa benjamini* (Guerin) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 606.

1949. *Choaspes benjamini japonica* Murray : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 74.

2003. *Choaspes benjamini* (Guerin) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Serie*, **9**(Part-4) : 137.

Material examined : Nil.

Fore wing length : Male, 25 mm (Evans, 1949).

Distribution : India : Nagaland, Meghalaya and South India.

Elsewhere : Sri Lanka.

Remarks : This subspecies differs from the nominate one-*Choaspes benjamini benjamini* (Guerin) occurring in South India and Sri lanka by the upperside of male paler and more uniform; the underside of hind wing with tornal orange area is narrow and spots in area Cu1a are in the middle. Earlier, this subspecies was rcorded from Naga Hills and at Kohima collected during July-September.

Subfamily PYRGINAE

The subfamily includes th ree Groups of genera from India of which two, *viz.*, Celaenorrhinus Group and Tagiades Group are represented in Nagaland.

Key to groups

– Fore wing cell generally long, 2nd segment of palpi erect ..... **Celaenorrhinus** Group

– Fore wing cell generally short, 2nd segment of palpi porrect ..... **Tagiades** Group

Celaenorrhinus Group

Of the four genera of this Group represented in India, four are dealt with here.

Key to genera

1. Hind wing vein M_2 tubular, hind tibia with hair pencil ..... ***Capila*** Moore

- Hind wing vein M_2 not tubular, hind tibia without hair pencil 2

4. Antennae arcuate, uncus undivided ..... ***Lobocla*** Moore

- Antennae obtuse, uncus divided 3

5. Fore wing costa angled at the end of vein R_1 unmarked except for a compact hyaline white or orange central brand on upperside of fore wing ..... ***Charmion*** de Niceville

- Fore wing costa evenly arched. Typically brown with hyaline white spots on upperside and tawny spots on upperside of hind wing ..... ***Celaenorrhinus*** Huebner

Group **Celaenorrhinus**

LVII. Genus ***Capila*** Moore

1865. *Capila* Moore, *Proc. zool. Soc. Lond.*, : 785.

Remarks : There are six species of this genus known in India of which, two, *viz.*, *Capila jayadeva* (Moore) and *C. zennara* (Moore) of this genus are dealt with here.

Key to species

- Fore wing dorsum as long as termen. Head, thorax and bases of wings orange; wings produced ..... *jayadeva* (Moore)

- Fore wing dorsum as longer than termen. Head, thorax and bases of wings brown; wings not produced ..... *zennara* (Moore)

114. ***Capila jayadeva*** (Moore) (Striped Dawn Fly)

1857. *Ismene jayadeva* Moore, *Cat. Lep. E. I. C.*, **1** : 248.

1892. *Capila jayadeva* (Moore) : Elwes, *Proc. zool. Soc. Lond.*, : 648.

1949. *Capila jayadeva* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 87.

2003. *Capila jayadeva* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 139.

Material examined : Nil.

Fore wing length : Male, 30 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Melghalaya, Sikkim and West Bengal.

Remarks : Elwes (1892) recorded a single male of this species from Naga Hills.

115. ***Capila zennara*** (Moore) (Pale Striped Dawn Fly)

1865. *Pisola zennara* Moore, *Proc. zool. Soc. London* : 786

1892. *Pisola zennara* Moore : Elwes, *Proc. zool. Soc. London* : 648.

1915. *Capila zennara* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 143.

1949. *Capila zennara* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in theBritish Museum (Nat. Hist.)*, London : 87.

2003. *Capila zennara* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 139.

Material examined : Nil.

Fore wing length : Male, 31mm (Evans, 1949).

Distribution : Oriental region including Nagaland, Manipur, Sikkim Bengal.

Elsewhere : West Myanmar, Sadon, Tempary and Thibet.

Remarks : Earlier, this species was recorded from Naga Hills and also its specimens collected from Nichuguard in November.

LVIII. Genus ***Lobocla*** Moore

1884. *Lobocla* Moore, *J. Asiat. Soc. Beng.* **53** (2) : 51

Remarks : Only a single species *Lobocla liliana* (Atkinson) representing this genus in India is treated here.

116. ***Lobocla liliana liliana*** (Atkinson) (Marbled Flat)

1871. *Plesioneura liliana* Atkinson, *Proc. zool. Soc. London* : 216, no. 3, pl. 12, fig. 2.

1915. *Achalarus bifasciata liliana* (Atkinson) : Tytler, *J Bombay nat. Hist. Soc.*, **24** : 143.

1949. *Lobocla liliana liliana* (Atkinson) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 88.

2003. *Lobocla liliana* (Atkinson) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 23 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Sikkim.

Elsewhere : Myanmar (Ataran), Indo-China, Thailand and Yunnan.

Remarks : The nominate subspecies is distinguished from *L. liliana aborica* Tytler found in Abor Valleys by the upperside fore wing band broad, 5 mm wide and yellowish. Tytler (1915) reported it from Phesima and Kirbari, Naga Hills and its collecting during May-June.

LIX. Genus ***Charmion*** de Niceville

1894. *Charmion* de Niceville, *J. Asiat. Soc. Bengal*, Pt II, **63** (1) : 48.

Remarks : Only a single species, *Charmion ficulnea* Hewitson representing this genus in India is treated here.

117. ***Charmion ficulnea queda*** Ploetz (Velvet Flat)

1885. *Charmion queda* Ploetz, *Berl. ent. Ztschr.* : 225.

1949. *Charmion ficulnea queda* Ploetz. : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Musuem (nat. Hist.), London* : 91

Material examined : Nil.

Fore wing length : Male, 19-21mm (Evans, 1949).

Distribution : India : Nagaland.

Elsewhere : Malaya, Sumatra, Peninsular, Thailand and Myanmar.

Remarks : Only this subspecies occurs in India.

LX. Genus ***Celaenarrhinus*** Huebner

1819. *Celaenorrhinus* Heubner, *Verz. Bek. Schmett* : 106.

Remarks : Of the 21species of this genus occurring in India, 14 are dealt with here.

Key to species

1. Upperside fore wing with central spots or band white 2
– Upperside fore wing with central spots or band yellow to orange 13
2. Upperside fore wing with spots in the basal part of space 1_b 3
– Upperside fore wing without spots in the basal part of space 1_b 7
3. Upperside of fore wing with spots in space 3 and mid spot in spaces 2 and 4 .... *aspersa* Leech
– Upperside of fore wing with a spot in space 3 approximate to the spots in spaces 2 and 4. 4
4. Underside of fore wing with double pale spots in space 1_b beyond the double discal spots. ..... *pyrrha* de Niceville
– Underside of fore wing without double spots in space 1_b beyond the double discal spots. 5
5. Antennae only basal half of club white, shaft chequred or pale dull brown 6
– Antennal club fully white, and shaft also white ..... *pero* de Niceville
6. Fore wing apex rounded, termen shorter than dorsum ..... *ratna* Fruhstorfer
– Fore wing apex produced, termen equal to dorsum ..... *pulomaya* Moore
7. Upperside of fore wing cell spot placed midway between the base and the apex of the wing 8
– Upperside of fore wing cell spot distinctly placed nearer to apex than to base 12
8. Antennal shaft chequred, club and apiculus white 9
– Antennal shaft and club both white 11
9. Upperside of fore wing spot in space 1b completly overlapped by the spot in space 2 ..... *morena* Evans

– Upperside of fore wing spot in space 1_b not overlapped by the spot in space 2..... 10

10. Upperside hind wing spot end cell conspicuous as well as spots underside of hind wing .... *plagifera* de Niceville

– Upperside hind wing without spots in end cell. ..... *sumitra* de Niceville

11. Abdomen striped. Upperside of fore wing cell spot not continued above radius ....*patula* de Niceville

– Abdomen unstriped. Upperside of fore wing cell spot continued above radius .... *leucocera* de Niceville

12. Hind wing cilia white or pale yellow between the darkened end of the veins .... *munda* de Niceville

– Hind wing cilia normally whitish between end of veins or entirely brown ....*nigricans* de Niceville

13. Upperside of fore wing with edges of central band irregular. Upperside of hind wing with dark, suffused markings; underside of hind wing with small suffused ochreous spots .... *dhanada* Moore

– Upperside of fore wing with edges of central compact band regular. Upperside and underside of hind wing unmarked except for a dull yellow cell bar on underside of hind wing .....*aurivittata* (Moore)

118. ***Celaenorrhinus aspersa*** Leech (Large Streaked Flat)

1891. *Celaenorrhinus aspersa* Leech, *Entomologist*, Suppl. **24** : 61.

1912. *Celaenorrhinus aspersa* Leech : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1915. *Celaenorrhinus clitus* de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 144.

1949. *Celaenorrhinus aspersa* Leech : *Evans, A catalogue of Hesperiidae from Europe, Asia* and *Australia in the British Museum (Nat. Hist.)*, London : 93.

Material examined : Nil.

Fore wing length : Male, 28 mm (Evans, 1949).

Distribution : India : Nagaland.

Elsewhere : N. Myanmar, Hainan Szechwan.

Remarks : Previously, this species was recorded from elevations of 1500-2100 m in Naga Hills during June–October.

119. ***Celaenorrhinus pyrrha*** de Niceville (Double Spotted Flat)

1889. *Celaenorrhinus pyrrha* de Niceville, *J. Bombay nat. Hist. Soc.*, **4** : 181.

1915. *Celaenorrhinus pyrrha* de Niceville : Tytler, *J. Bombay nat. Hist. Soc.* **24** : 144.

1949. *Celaenorrhinus pyrrha* de Niceville : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 95.

2003. *Celaenorrhinus pyrrha* de Niceville : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 25 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Bhutan, Cochin China and N. Myanmar.

Remarks : Tytler (1915) collected females of this species at Kohima and Kirbari, Naga Hills, in August and September.

120. ***Celaenorrhinus pero lucifera*** Leech (Mussouri Pied Flat)

1894. *Celaenerrhinus lucifera* Leech.

1912. *Celaenerrhinus pero* De Niceville : Tytler, *J Bombay nat. Hist. Soc.*, **21** : 603.

1915. *Celaenerrhinus pero* De Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 145.

1949. *Celaenerrhinus pero lucifera* Leech : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist)*, London : 96.

2003. *Celaenerrhinus pero lucifera* Leech : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 28 mm (Evans, 1949).

Distribution : India : Nagaland and Sikkim.

Elsewhere : Moupin.

Remarks : This subspecies differs from the nominate one-*C. pero pero* de Niceville found in Uttaranchal (Mussoorie, Kumaon) by the hind wing markings darker and larger. Earlier, this subspecies is known from elevation of 1800m in Naga Hills collected in September.

121. ***Celenorrhinus ratna tytleri*** Evans (Tytlers'Multispotted Flat)

1915. *Iambrix tytleri* Evans : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 150. Evans :

1949. *Celenorrhinus ratna tytleri* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 95.

2003. *Celenorrhinus ratna tytleri* Evans : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 23 mm (Evans, 1949).

Distribution : India : Nagaland, Assam and Sikkim.

Remarks : This subspecies differs from *C. ratna daphne* Evans occurring in North-west Himalaya (Kumaon) by the upperside and underside of hind wing with yellow spots complete and conspicuous. Tytler (1915) recorded it from Kirbari, Naga Hills.

122. ***Celaenorrhinus pulomaya pulomaya*** (Moore) (Multi Spotted Flat)

1865. *Plesineura pulomaya* Moore, *Proc. zool. Soc. London* : 787.

1892. *Celaenorrhinus pulomaya* (Moore) : Elwes, *Proc. zool. Soc. London* : 659.

1912. *Celaenorrhinus pulamaya* (sic) (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1915. *Celaenorrhinus pulomaya* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 144.

1915. *Celaenorrhinus pila* Tytler, *J. Bombay nat. Hist. Soc.* **24** : 144.

1949. *Celaenorrhinus pulomaya pulomaya* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum(Nat. Hist.)*, London : 95.

2003. *Celaenorrhinus pulomaya* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 24 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Manipur, N. W. Himalaya, Sikkim.

Elsewhere : Bhutan and Yunnan.

Remarks : Previously, the nominate subspecies is known from Naga Hills at elevations of 1500-2200 m. Tytler (1915) differentiated his collected specimens from Naga Hills in two species, *viz.*, *Celaenorrhinus pulomaya* (Moore) and a new species *Celaenorrhinus pila.* Later on, Evans (1949) treated *Celaenorrhinus pila* Tytler (1915) as synonym of *Celaenorrhinus pulomaya* (Moore).

123. ***Celaenorrhinus morena*** Evans (Pied Flat)

1949. *Celaenorrhinus morena* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in theBrituish Museum (Nat. Hist.)*, London : 97.

2003. *Celaenorrhinus morena* Evans : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 23 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur and Sikkim.

Remarks : This species does not show significant variation.

124. ***Celaenorrhinus plagifera*** de Niceville (De Niceville's Spotted Flat)

1889. *Celaenorrhinus plagifera* de Niceville, *J. Bombay Nat. Hist.Soc.*, **4** : 182, pl. B, fig. 13.

1915. *Celaenorrhinus plagifera* de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 144.

1949. *Celaenorrhinus plagifera* de Niceville : Evans, *A catalogue of Hesperiidae from Europe, Asia*

and Australia in the British Museum (Nat. Hist.), London : 97.

2003. *Celaenorrhinus plagifera* de Niceville : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 140.

Material examined : Nil.

Fore wing length : Male, 27 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Sikkim.

Elsewhere : Bhutan, North Myanmar.

Remarks : Tytler (1915) reported collection of its specimens from Kirbari, Naga hills, at elevation of 1800-2100 m in July, August and October.

125. ***Celaenorrhinus sumitra*** (Moore) (Moore's Spotted Flat)

1865. *Plesioneura sumitra* Moore, *Proc. zool. Soc. London*, 787.

1912. *Celaenorrhinus sumitra* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1949. *Celaenorrhinus sumitra* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 97.

2003. *Celaenorrhinus sumitra* (Moore) Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 140.

Material examined : Nil.

Fore wing length : Male, 28 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur, Sikkim.

Elsewhere : N. Shan States, Myomyo.

Remarks : Previously, this species is known from Naga Hills.

126. ***Celaenorrhinus patula*** de Niceville (Large Spotted Flat)

1889. *Celaenorrhinus patula* de Niceville, *J. Bombay Nat. Hist. Soc.*, **4** : 182, pl. B, fig. 4.

1915. *Celaenorrhinus patula* de Niceville : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 145.

1949. *Celaenorrhinus patula* de Niceville : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 98.

2003. *Celaenorrhinus patula* de Niceville : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 140.

Material examined : Nil.

Fore wing length : Male, 22-27 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Manipur and Sikkim.

Elsewhere : Chin Fu Shan, Myanmar, N. Yunnan, S. Shan States, Omei Shan Tien Tsuen.

Remarks : Tytler (1915) obtained several specimens of this at Kirbari and Takabama, Naga Hills, at elevations of 1800-2100 m during July-September.

127. ***Celaenorrhinus leucocera*** (Kollar) (Common Spotted Flat)

1848. *Hesperia leucocera* Kollar, *In Hugel Kashmir und der Peich der Siek*, **4** (I) : 454, pl. 18, fig. 3, 4

1912. *Celaenorrhinus leucocera* (Kollar) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1949. *Celaenorrhinus leucocera* (Kollar) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 98.

2003. *Celaenorrhinus leucocera* (Kollar) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 140.

Material examined : Nil.

Fore wing length : Male, 22 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim.

Elsewhere : Bhutan, Myanmar, W. Thailand.

Remarks : Tytler (1912) collected its specimens from Naga Hills in September.

128. ***Celaenorrhinus dhanada affinis*** Elwes & Edwards (Himalayan Yellow Flat)

1775. *Celaenorrhinus affinis* Elwes & Edwards, *Trans zool Soc. London*, **14** : 121, fig. 9.

1915. *Celaenorrhinus affinis* Elwes & Edwards : Tytler, *J Bombay nat. Hist. Soc.*, **24** : 145.

1949. *Celaenorrhinus dhanada affinis* Elwes & Edwards: Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 104

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans, 1949).

Distribution : India. Nagaland, Assam and Meghalaya.

Elsewhere : Myanmar.

Remarks : This subspecies is differentiated from the nominate one – *C. dhanada dhanada* Moore found in North-west Himalaya (Mussoorie, Kumaon), Sikkim, Bhutan and *C. dhanada andamanica* Wood-Mason & de Niceville in Andaman Islands by the upperside of fore wing with a broad yellow tornal spot as on the undersie of fore wing. Tytler (1915) collected a male at Kirbari, Naga Hills, from an altitude of 1800m in November.

129. *Celaenorrhinus aurivittata aurivittata* (Moore)
(Dark Yellow Banded Flat)

1878. *Plesioneura aurivittata* Moore, *Proc. zool. Soc. London* : 843, pl. 53, fig. 2.

1892. *Kerana aurivittata* (Moore) : Elwes, *Proc. zool. Soc. London* : 663.

1912. *Celaenorrhinus aurivittata* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1915. *Celaenorrhinus aurivittata* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 145.

1949. *Celaenorrhinus aurivittata aurivittata* (Moore) : Evans, *A catalogue of Hesperiidae from Europe Asia and Australia in the British Museum (Nat. Hist.)*, London : 107.

Material examined : Nil.

Fore wing length : Male, 19 mm (Evans, 1949).

Distribution : India. Nagaland, Andaman Is., Assam.

Elsewhere : Indochina, Myanmar, Thailand Szechwan.

Remarks : Earlier, the nominate subspecies was from Naga Hills up to altitude of 1800m.

130. *Celaenorrhinus munda maculicornis* (Elwes & Edwards)
(Himalayan Spotted Flat)

1775. *Pealestes maculicornis* Elwes & Edwards, *Trans. Zool. Soc. London*, **14** : 193, pl. 18, fig. 23.

1912. *Celaenorrhinus maculicornis* (Elwes & Edwards): Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1915. *Celaenorrhinus maculicornis* (Elwes & Edwards) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 145.

1949. *Celaenorrhinus munda maculicornis* (Elwes & Edwards) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 100.

2003. *Celaenorrhinus munda maculicornis* (Elwes & Edwards) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 22 mm (Evans, 1949).

Distribution : India : Nagaland, Assam and Sikkim.

Elsewhere : Myanmar to Kumaon Hills.

Remarks : This subspecies differs from the nominate one - *C. munda munda* Moore occurring in North-west Himalaya (Murree, Shimla) and Sikkim by the upperside of fore wing with a spot in area Cu_{1b} small and detached, spots in area 1_A+2_A smaller, but present on underside of hind wing, the underside of hind wing usually with a series of small yellow discal spots in addition to the bar end cell. Previously, this subspecies is known at elevations of 1200-1500m from Kohima, and Phesima, Jakama and Kirbari, at an altitude of 1800 m during July-October.

131. *Celaenorrhinus nigricans nigricans* de Niceville
(Dark Banded Flat)

1885. *Plesioneura nigricans* de Niceville, *J. Asiat. Soc. Bengal*, **59** (2) : 123, pl. 2, fig. 6.

1949. *Celaenorrhinus nigricans nigricans* de Niceville : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 101.

2003. *Celaenorrhinus nigricans* de Niceville : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nagaland, Kohima District, B. Garden, 1 ex., 23.iii.1997. (Coll. A.K. Hazra).

Fore wing length : 18 mm.

Distribution : India : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Bhutan, Myanmar, West Thailand.

Remarks : Only this nominate subspecies occurs in India.

Group **Tagiades**

This Group includes 15 genera from India of which 11 are represented in Nagaland.

Key to genera

1. Apiculus tapered to a fine point. Fore wing vein S_C+R_1 usually ending over end cell 2

– Apiculus blunt. Fore wing vein S_C+R_1 ending well before end cell....10

2. Antennal club angled or hooked to apiculus beyond the thickest part of the club 3

– Antennal club arcuate or obtuse from the thickest part of the club 5

3. Hind wing produced at tornus, dorsum greater than costa ..... ***Darpa*** Moore

Hind wing not produced at tornus, dorsum not greater than costa 4

4. Tawny brown or grey. Hind wing dorsum equal to costa. Upperside of fore wing with large hyalie spots ..... ***Coladenia*** Moore

– Dark brown. Hind wing dorsum shorter than costa. Upperside of fore wing with small separated hyaline spots.. ***Sarangessa*** Moore

5. Apiculus short, nudum not extending 16 segments 6

– Apiculus long, nudum 20 segments 8

6. Hind wing dorsum not shorter than costa, vein 1_A equal to or longer than vein 8 7

– Hind wing dorsum equal to costa. Vein 1_A much shorter than vein 8 .... ***Mooreana*** Evans

7. Male with recumbent hair-pencil on the hind tibiae. Upperside fore wing with large hyaline spots; upperside of hind wing with pale central area .....***Daimio*** Murray

– Male without hair-pencil on the hind tibiae. Upperside fore wing with small hyaline spots; upperside of hind wing without pale central area .....***Tagiades*** Huebner

8. Hind wing dorsum longer than costa, upperside generally with large white central area 9

– Hind wing dorsum not longer than costa, upperside plain brown .....***Chamunda*** Evans

9. Hind tibia with a hair pencil ....***Satarpura*** Moore

Hind tibia without hair pencil ....***Sesaria*** Matsumara

10. Hind tibia with a hair pencil. Both wings with numerous hyaline spots ....***Ctenoptilum*** de Niceville

Hind tibia without hair pencil. Both wings usually without hyaline ....***Odontoptilium*** de Niceville

LXI. Genus ***Darpa*** Moore

1865. *Darpa* Moore, *Proc. zool. Soc. London*, 781.

Remarks : There are three species of this genus occurring in India of which only one-*Darpa hanria* Moore is treated here.

132. ***Darpa hanria*** Moore (Hairy Angle)

1865. *Darpa hanria* Moore, *Proc. zool. Soc. London*, 781, pl. 42, fig. 2.

1915. *Darpa hanria* Moore : Tytler, *J. Bombay nat Hist Soc.*, **24** : 149.

1949. *Darpa hanria* Moore : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 110.

2003. *Darpa hanria* Moore : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 142.

Material examined : Nil.

Fore wing length : Male, 17 mm (Evans, 1949).

Distribution : Oriental region including India : Nagaland, Assam, Meghalaya, Manipur and Sikkim.

Remarks : Tytler (1915) mentioned of collecting a male specimen at Kohima in September.

LXII. Genus ***Coladenia*** Moore

1881. *Coladenia* Moore, *Lep. Ceylon.*, 1 : 180.

Remarks : Of thefive species of this genus known from India, three are dealt with here.

Key to species

1. Underside of hind wing dark brown, more or less suffused with tawny spots; hind tibiae fringed ..... *dan* (Fabricius)
- Underside of hind wing neither dark brown nor with tawny spots; hind tibiae with recumbent hair pencil 2
2. Antennae brown. Underside of fore wing without white spot in space 1b external to the discal series ..... *omni* (de Niceville)
- Antennae whitish below club. Underside of fore wing with white spot in space 1b external to the discal series ....*agnioides* Elwes & Edwards

133. ***Coladenia dan festa*** Evans (Fulvous Pied Flat)

1949. *Colaedenia dan festa* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australi a in the British Museum (Nat. Hist.), London* : 113.

2003. *Colaedenia dan festa* Evans : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 144.

Material examined : Nil.

Fore wing length : Male, 18 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur, Meghalaya and Sikkim.

Elsewhere : Bhutan, China, Myanmar.

Remarks : This subspecies differs from *C. dan fatih* Kollar occurring in Nort-west Himalaya (Kangra to Nepal); *C. dan fatua* Evans in Sikkim, Meghalaya, Nagaland (Naga Hills), Manipur, Lushai, Bangladesh (Sylhet), Bhutan, North Myanmar; nominate one-*C. dan dan* Fabricius in South India (Travancore to North Kanara and Mysore) and *C. dan fabia* Evans in Assam, Sikkim, Bhutan, Fukien, Hainan, Indo-china, Kwang Si, Myanmar and North-west Thailand by being darker, upperside fore wing with central spots more conjoined, pale yellow in male, white in female. Tytler (1912) recorded it as *Colaedenia dan* Fabricius and its specimens collected from Kohima during September-October and from Nichuguard in October. The subspecies *C. dan fatih* Kollar as reported from an altitude of 1800m in Naga hills by Tytler (1915) might be *C. dan festa* Evans according to the distribution provided by Evans (1949).

134. ***Coladenia dan fatua*** Evans (Fulvous Pied Flat)

1949. *Coladenia dan fatua* Evans : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 113.

2003. *Coladenia dan fatua* Evans : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 16-17 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur, Meghalaya and Sikkim.

Elsewhere : Bangladesh, Bhutan and Myanmar.

Remarks : This subspecies, allied to *C. dan festa* Evans, is smaller bright reddish above, central spots smaller and more red than in *festa*, wings more produced, at lower elevation than *festa* and in plains replaced by *C. dan fabia* Evans.

135. ***Coladenia agni agni*** (de Niceville) (Brown Pied Flat)

1883. *Plesioneura agni* de Niceville, *J. Asiat. Soc. Beng.*, 52 (2) : 87, pl. 10, fig. 4.

1892. *Tapena agni* de Niceville : Elwes, *J. Bombay nat. Hist. Soc.*, : 659.

1949. *Coladenia agni agni* (de Niceville) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 116.

2003. *Coladenia agni* (de Niceville) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 144.

Material examined : Nil.

Fore wing length : Male, 18mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Sikkim.

Elsewhere : Hainan, Myanmar and Thailand.

Remarks : Only the nominate subspecies is known in India. Elwes (1892) mentioned about a darker specimen of the nominate subspecies from Naga Hills.

136. ***Coladenia agnioides*** Elwes & Edwards (Elwes Pied Flat)

1897. *Coladenia agnioides* Elwes & Edwards, *Trans. zool. Soc. Lond.*, **14** (4) : 128

1912. *Coladenia agnioides* Elwes & Edwards : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1915. *Coladenia agnioides* Elwes & Edwards : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 146.

1949. *Coladenia agnioides* Elwes & Edwards : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 116.

Material examined : Nil.

Fore wing length : Male, 18 mm (Evans, 1949).

Distribution : India : Nagaland and Manipur.

Elsewhere : Fukien, Myanmar, Tilinyaw.

Remarks : Earlier, this species known from Naga Hills.

LXII Genus ***Sarangessa*** Moore

1881. *Sarangessa* Moore, *Lep. Ceylon.*, 1 : 176.

Remarks : Of the two species, *viz.*, *Sarangessa dasahara* Moore and *Sarangessa purendra* Moore representing this genus in India, former is treated here.

137. ***Sarangessa dasahara dasahara*** (Moore) (Small Common Flat)

1865. *Nisionides dasahara* Moore, *Proc. zool. Soc. London* : 787.

1892. *Sarangessa dasahara* (Moore) : *Proc. zool. Soc. London* : 652.

1912. *Sarangessa dasahara* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603

1949. *Sarangessa dasahara dasahara* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 120.

2003. *Sarangessa dasahara* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 16mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Bihar, Meghalaya, N.W. Himalaya and Sikkim.

Elsewhere : Indochina and Myanmar.

Remarks : This nominate subspecies is distinguished from *S. dasahara davidsoni* Swinhoe found in South India, Maharashtra; *S. dasahara adona* Evans in Pachmarhi, Mount aaaaaabu, Ganjam and; *S. dasahara sandra* Evans in Middle Andaman Islands by being generally larger, hind wing cilia dusky; the upperside of fore wing with cell spots small and separate. Previously, the nominte subspecies is known from Gaspani and Nichuguard in Naga Hills collected during October–November.

LXIII. Genus ***Mooreana*** Evans

1926. *Mooreana* Evans, *J. Bombay nat. Hist. Soc.*, **31** 51.

Remarks : Only a single species-*Mooreana trichoneura pralaya* (Moore) representing this genus in India is treated here.

138. ***Mooreana trichoneura pralaya*** (Moore) (Yellow Flat)

1857. *Goniloba pralaya* Moore, *Cat. Lep. E. I. C.*, **1** 246

1915. *Tagiades pralaya* (Moore) : Tytler, *J. Bombay nat Hist. Soc.*, **24** : 147.

1949. *Mooreana trichoneura pralaya* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 155.

2003. *Mooreana trichoneura pralaya* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing expanse : 40-45 mm (Evans, 1932).

Distribution : India. Nagaland, Assam, Meghalaya, Skikkim, Uttar Pradesh.

Elsewhere : Indochina, Myanmar and Thailand.

Remarks : Tytler (1915) mentioned of a pair of this subspecies collected at Gaspani in the Naga Hills near Nichuguard in June and October.

LXIV. Genus ***Daimio*** Murray

1875. *Daimio* Murray, *Ent. mon. Mag.*, **11** : 17.

Remarks : Of the three species of this genus occurring in India, two, *viz. Daimio sinica* Felder and *D. phisara* Moore are treated here.

Key to species

- Abdomen upperside centrally white, brown at end ..... *sinica* Felder
- Abdomen upperside narrowly striped with white, without brown at end .... *phisara* Moore

139. ***Daimio sinica narada*** (Moore) (WhiteYellow Breast Flat)

1884. *Satarupa narada* Moore, *J. Asiat. Soc. Bengal* : 51.

1915. *Satarupa diversa* Leech : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 148.

1949. *Daimio sinica narada* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 130.

2003. *Daimio sinica* Felder : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 144.

Material examined : Nil.

Fore wing length : Male, 16-17 mm (Evans, 1949).

Distribution : India : Nagaland.

Remarks : Tytler (1915) stated capturing of a pair of this subspecies at Kirbari, Naga Hills, 1800m in July and August.

140. ***Daimio phisara phisara*** (Moore) (DuskyYellow Breast Flat)

1884. *Satarupa phisara* Moore, *J. Asiat. Soc. Beng.* : 50.

1912. *Satarupa phisara* Moore : Tytler, *J. Bombay nat. Hist. Soc.* **21** : 603.

1949. *Daimio phisara phisara* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 131.

2003. *Daimio phisara* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 144.

Material examined : Nil.

Fore wing length : Male, 18 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Myanmar and Thailand.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) obtained its specimens at Gaspani during February–March.

LXV. Genus ***Tagiades*** Huebner

1816. *Tagiades* Huebner, *Verz. bek. Schmett.*, : 108.

Remarks : Of the seven species representing this genus in India, five are treated here.

Key to species

1. Fore wing without hyaline spot in space 11 over cell spot, hind tibiae without hair pencil in male 2
- Fore wing with a hyaline spot in space 11 over cell spot, hind tibiae with a short recumbent hair pencil on inner side in male 3
2. Upperside of fore wing with two hyaline discal spots in spaces 2 and 3 ..... *japetus* Stoll
- Upperside of fore wing without discal hyaline spots in spaces 2 and 3 ..... *gana* Moore
3. Upperside of hind wing with a dark discal spot in space 1_c ..... *menaka* (Moore)

– Upperside of hind wing without a dark discal spot in space 1_c 4

4. Upperside of hind wing with a dark spot at the end of 1_b ..... *litigiosa* Moeschler

– Upperside of hind wing without a dark spot at the end of 1_b ..... *calligana* Butler

141. *Tagiades japetus ravi* (Moore) (Common Snow Flat)

1865. *Pterygospidia ravi* Moore, *Proc. zool. Soc. London* : 779.

1892. *Tagiades ravi* (Moore) : *Proc. zool. Soc. London* : 654.

1892. Tagiades atticus Fabricius : Elwes, Proc. Zool. Soc. London : 665

1912. *Tagiades khasiana* Moore : Tytler, *J. Bombay nat. Hist.. Soc.*, **21** : 603.

1949. *Tagiades japetus ravi* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 135.

2003. *Tagiades japetus ravi* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male (WSF), 20 mm; male (DSF), 23mm (Evans, 1949).

Distribution : Oriental region including India, Nagaland, Assam, Meghalaya, Orissa, Sikkim, Uttar Pradesh and West Bengal.

Remarks : This subspecies is distinguished from other five Indian subspecies, *viz., T. japetus obscura* Mabille found in South India (Nilgiris) and Sri Lanka; *T. japetus ravina* Fruhstorfer in Andaman Islands; *T. japetus carnica* Evans in Car Nicobar; *T. japetus nankowra* Evans Centreal Nicobars and *T. japetus helferi* Felder in Pulo Milo, Kondul, Little Nicobar and South Nicobar by the upperside of hind wing cilia brown, underside hind wing bluish white, with 2 well marked seasonal forms; the DSF pale brown, wings pointed, large; underside of hind wing with black spots small or absent; the WSF darker, wings more rounded, smaller, underside of hind wing with black spots large, white colouring more suffused; the upperside of fore wing with discal spots small in male but much larger in female. Earlier, this subspecies was recorded from Naga Hills and also its specimens collected in July and October.

142. *Tagiodes gana meetana* Moore (Large Snow Flat)

1878. *Tagiades meetana* Moore, *Proc. zool. Soc. London*, : 593, pl. 58, fig. 2.

1915. *Tagiodes alica meetana* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 147.

1915. *Tagiodes gana* Moore Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 147.

1949. *Tagiodes gana meetana* Moore : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 142.

Material examined : Nil.

Fore wing length : Male, 19-22 mm (Evans, 1949).

Distribution : India. Nagaland, Andaman Is. and Central Nicobar.

Remarks : This subspecies differs from other three Indian subspecies, *viz., T. gana alica* Moore occurring in Andaman Islands, Central Nicobar Islands; *T. gana silvia* Evans in Travancore to Western Ghats, Chhota Nagpore and *T. gana athos* Ploetz in Assam, Orissa, Sikkim, West Bengal, Nepal and Thailand by the WSF with white area narrower and the cilia nearly always brown. Earlier, this subspecies was reported from Naga Hills and also collection made at Gaspani at elevation of 500 m in September.

143. *Tagiades menaka* (Moore) (Spotted Large Snow Flat)

1865. *Goniloba menaka* Moore, *Cat. Lep. Mus E.I.C.* : 246.

1912. *Tagiades menaka* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603.

1949. *Tagiades menaka* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 147

2003. *Tagiades menaka* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 143.

Material examined : Nil.

Fore wing length : Male, 21mm (Evans, 1949).

Distribution : India. Nagaland, Assam, N.W. Himalaya, Sikkim, West Bengal.

Elsewhere : Bhutan, Hainan, Indo-china, Thailand.

Remarks : Only the nominate subspecies is known in India. Tytler (1912) found it common from the foot of Naga hills up to 1500 m during May-October.

144. ***Tagiades litigiosa litigiosa*** Moschler (Water Snow Flat)

1878. *Tagiades litigiosa* Moschler, *Verh. Zool. 'Bot. Ges. Wien*, **68** : 230.

1915. *Tagiades litigiosa* Moschler : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 147.

1949. *Tagiades litigiosa litigiosa* Moschler : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 146.

2003. *Tagiades litigiosa* Moschler : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male (WSF), 18mm; male (DSF), 19mm (Evans, 1949).

Distribution : India. Nagaland, Assam, Meghalaya, South India, Sikkim. N.W. Himalaya.

Elsewhere : Indo-china, Myanmar, Thailand.

Remarks : This nominate subspecies differs from *T. litigiosa andamanica* Evans found in Andaman Islands (South Andaman Islands) by being small (WSF-18 mm, DSF-19 mm); the upperside of hind wing of WSF with submarginal spots larger and often conjoined; the underside of hind wing of DSF without brown terminal line. Tytler (1915) considered it common in the Naga Hills.

145. ***Tagiades calligana*** Butler (Malayan Snow Flat)

1879. *Tagiades calligana* Butler, *Trans. Linn. Soc. Lond.* (Zool.), **1**(2) : 556.

1949. *Tagiades calligana* Butler : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 145.

Material examined : Nil.

Fore wing length : Male, 18mm (Evans, 1949).

Distribution : India. Nagaland.

Elsewhere : Banka, Borneo, Java, Malaya, Nian, Sumatra.

Remarks : Its status is 'not rare'(Evans, 1932).

LXVI. Genus ***Chamunda*** Evans

1949. *Chamunda* Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 14.

Remarks : This genus is represented in India by a single species-*Chamunda chamunda* (Moore) which is dealt with here.

146. ***Chamunda chamunda*** (Moore) (Olive Flat)

1865. *Plesioneura chamunda* Moore, *Proc. zool. Soc. London* : 788.

1892. *Celaenorrhinus chamunda* (Moore) : Elwes, *Proc. zool. Soc. London* : 661.

1912. *Celaenorrhinus chamunda* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603

1949. *Chamunda chamunda* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 127.

2003. *Chamunda chamunda* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 143.

Material examined : Nil.

Fore wing length : Male, 24 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim, West Bengal.

Elsewhere : Myanmar.

Remarks : Previously, this species is known from Naga Hills and also a single specimen collected at elevation of 2100 m.

LXVIII. Genus ***Satarupa*** Moore

1865. *Satarupa* Moore, *Proc. zool. Soc. London.*, 780.

Remarks : All the three species of this genus occurring in India are dealt with.

Key to species

1. Fore wing cell spot absent or small not larger than the spot in space 3 and with its center directed to the dorsum well before the tornus 2
- Fore wing cell spot larger than the spot in space 3 and its center directed to the dorsum ..... *splendens* Tytler
2. Upperside of fore wing spot in space 1b as wide as spot in space 2 and wider than the spot in space 3 ..... *zulla* Tytler
- Upperside of fore wing spot in space 1b narrower than the spots in spaces 2 and in space 3 ..... *gopala* Moore

147. *Satarupa splendens* Tytler (Splendid White Flat)

1915. *Satarupa splendens* Tytler, *J. Bombay nat. Hist. Soc.* **24** : 147.

1949. *Satarupa splendens* Tytler : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Briuish Museum (Nat. Hist.)*, London : 122.

Material examined : Nil.

Fore wing length : Male, 32 mm (Evans, 1949).

Distribution : India : Nagaland.

Remarks : Tytler (1915) collected a single male at Kirbari (1800m), Naga Hills, in July and a female at Jakama in September.

148. *Satarupa zulla zulla* Tytler (Tytler's White Flat)

1915. *Satarupa zulla* Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 148.

1949. *Satarupa zulla* Tytler : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 121.

2003. *Satarupa zulla zulla* Tytler : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 34 mm (Evans, 1949).

Distribution : India : Nagaland and Sikkim.

Remarks : Tytler (1915) reported a male taken at Kirbari, Naga hills (1800m) in July and two more collected at the same place in September.

149. *Satarupa gopala* Moore (Large White Flat)

1865. *Satarupa gopala* Moore, *Proc. zool. Soc. London* 780, pl. 42, fig. L.

1915. *Satarupa gopala gopala* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 147.

1949. *Satarupa gopala* Moore : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the British Museum (Nat. Hist.)*, London : 121.

2003. *Satarupa gopala* Moore : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 142.

Material examined : Nil.

Fore wing length : Male, 25-28 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim.

Elsewhere : China, Malaya, Myanmar and Sumatra.

Remarks : Tytler (1915) reported a single male specimen taken at Nichuguard, Naga Hills, in April.

LXIX. Genus *Sesaria* Matsumara

1920. *Sesaria* Matsumara, *Thous. Ins. Japan. Addit.*, **3** : 683.

Remarks : Of the two species representing this genus in Inida, two, *viz.*, *Sesaria sambara* (Moore) and *S. dohertyi* Watson are treated here.

Key to species

- Upperside of hind wing with white area sullied ..... *sambara* (Moore)
- Upperside of hind wing with white area unsullied ..... *dohertyi* Watson

150. *Sesaria sambara sambara* (Moore) (Sikkim White Flat)

1857. *Goniloba sambara* Moore, *Cat. Lep. Mus. East. India Coy*, **1** : 246.

1915. *Sesaria sambara* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 148.

1949. *Sesaria sambare sambara* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 124.

2003. *Sesaria sambare sambara* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 142.

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Manipur, N.W. Himalaya and Sikkim.

Elsewhere : *Bhutan.*

Remarks : Tytler (1915) mentioned of its collection at Nichuguard (one male) in May and another at Kirbari (1800 m) in June, both in Naga Hills.

151. ***Sesaria dohertyi dohertyi*** (Watson) (Himalayan White Flat)

1893. *Satarupa dohertyi* Watson, *Proc. zool. Soc. Lond.* : 46.

1949. *Sesaria dohertyi dohertyi* (Watson) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 123.

2003. *Sesaria dohertyi dohertyi* (Watson) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 145.

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans, 1949).

Distribution : India : Nagaland, Manipur, N.W. Himalaya, Sikkim.

Remarks : Only the nominate subspecies is known in India.

LXX. Genus ***Ctenoptilum*** de Niceville

1890. *Ctenoptilum* de Niceville, *J. Bombay nat. Hist. Soc.* **5** : 220.

Remarks : Only a single species-*Ctenoptilum vasava* (Moore) representing this genus in India is dealt with here.

152. ***Ctenoptilum vasava vasava*** (Moore) (Tawny Angle)

1865. *Achylodes vasava* Moore, *Proc. zool. Soc. London*, : 786.

1915. *Ctenoptilum vasava* (Moore) : Tytler, *J. Bombay nat. Hist. Soc.*, **24** : 146.

1949. *Ctenoptilum vasava vasava* (Moore) : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 157.

2003. *Ctenoptilum vasava* (Moore) : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 141.

Material examined : Nil.

Fore wing length : Male, 16-17 mm (Evans, 1949).

Distribution : India : Nagaland, Assam and Sikkim.

Elsewhere : Myanmar and Thailand.

Remarks : Tytler (1915) collected a male specimen of this species at Nichugaurd, Naga Hills, in June.

LXXI. Genus ***Odontoptilum*** de Niceville.

1775. *Odontoptilum* deNiceville, *J. Bombay nat. Hist. Soc.*, **5** : 217.

Remarks : This genus is represented in India by a single species, *Odontoptilum angulata* Felder which is treated here.

153. ***Odontoptilum angulata angulata*** Felder (Chest Nut Angle)

1862. *Odontoptilum angulata* Felder, *Verh. Zool. Bot. Ges. Wien.* **12** : 488.

1912. *Odontoptilum sura* Moore : Tytler, *J. Bombay nat. Hist. Soc.*, **21** : 603-604.

1949. *Odontoptilum angulata angulata* Felder : Evans, *A catalogue of Hesperiidae from Europe, Asia and Australia in the Brituish Museum (Nat. Hist.)*, London : 157.

2003. *Odontoptilum angulata* Felder : Majumdar (Chaudhury), *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 141.

Material examined : Nil.

Fore wing length : Male, 20 mm (Evans, 1949).

Distribution : India : Nagaland, Assam, Meghalaya, N.W. Himalaya, South India and Sikkim.

Elsewhere : Bhutan, Indochina, Myanmar, Nepal, Thailand, Sri Lanka and Malayan subregion.

Remarks : Only the nominate subspecies occurs in India. Tytler (1912) found it common at the foot of Naga Hills in March, April and October and obtained a single specimen at elevation of 1500m.

SUMMARY

One hundred fifty three species/ subspecies of butterflies belonging to two families, *viz.*, Pieridae and Hesperiidae have been dealt with from the state of Nagaland. The family Pieridae is represented by 32 species in 14 genera in two subfamilies-Pierinae and Coliadinae; and 121 species in 56 genera of three subfamilies, *viz.*, Hesperiinae, Coeliadinae and Pyrginae under the family Hesperiidae. Three pierid and two Hespriid species/subspecies listed in Schedule-II (Part-2) and six of species of Hesperiidae listed in Schedule-IV are protected under the Indian Wildlife (Protection) Act, 1972, and subsequent amendments. Of these 153 species, 12 and nine species/ subspecies of Pieridae and Hesperiidaee, respectively, are the first definitive records for seven Districts, *viz.*, Dimapur, Kohima, Monmon, Mokokchung, Phek, Wokha and Zunheboto of Nagaland.

AKNOWLEDGEMENTS

The authors are grateful to the Director, Zoological Survey of India for providing necessary facilities for carrying out the present studies on butterflies. They are also thankful to Dr. A. K. Hazra, Scientist-'E'& Officer-in Charge of the Entomology Division (A), for encouragement and valuable suggestions; and Shri Rati Ram, Publication Production Officer and Shri Roop Lal, Stores Officer of the same department, for several courtsies.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 351-366, 2006

INSECTA : LEPIDOPTERA : GEOMETRIDAE : HETEROCERA

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INTRODUCTION

Geometrids are parasitic at larval stage. These are available from higher montane range to plain. Larva of some of the species sometimes become serious pest. For other details refer Mandal and Ghosh (1997, 1998).

For the states of North-East India earlier work worth to mention Cotes and Swinhoe (1887-88), Moore (1882) Swinhoe (1891, 1892, 1894), Warren (1893), Hampson (1895), Mondal & Ghosh (1997, 1998), Mondal *et al.* (2000). No consolidated account of Geometridae of the State of Nagaland is so far available.

Here attempt is made to provide a systematic account of the Geometrid fauna of the State. As such, the large part of Nagaland remains unexplored for this family. Only seven species are so far studied and others included by reviewing literature. As a total of 98 species are included in this paper, of which four species constitute new locality for the state of Nagaland. Out of 98 species, 46 species restricted their distribution in India only, and 44 species restricted to North India, 37 species to North-East India, and only 19 species endemic to Nagaland.

LIST OF TAXA

Order LEPIDOPTERA

Suborder HETEROCERA

Family GEOMETRIDAE

Subfamily OENOCHROMINAE

Genus 1. ***Eumelea*** Duncan

1. *rosalia* (Stoll)

Genus 2. ***Noreia*** Walker

2. *pardensata* Walker

Genus 3. ***Naxa*** Walker

3. *seriaria* (Motschulsky)

Genus 4. ***Centronaxa*** Prout

4. *orthostigialis* (Warren)

Genus 5. ***Ozola*** Walker

5. *falcipennis* (Moore)

Subfamily GEOMETRINAE

Genus 6. ***Dysphania*** Hübner

6. *militaris* (Linnaeus)

Genus 7. ***Xenozancla*** Warren

7. *versicolor* Warren

Genus 8. ***Gelasma*** Warren

8. *dissimulata* (Walker)

9. *griseoviridis* Warren

Genus 9. ***Thalassodes*** Guenée

10. *falsaria* Prout

Genus 10. ***Idiochlora*** Prout

11. *ophthalmicata* (Moore)

Genus 11. ***Mixolophia*** Warren

12. *albiradiata* (Warren)

Genus 12. ***Thalera*** Hübner

13. *aeruqinata* (Warren)

Genus 13. ***Hemistola*** Warren

14. *detracta* (Walker)

Genus 14. ***Jodis*** Hübner

15. *opalaria* Guenée

(* species studied; ** Reported first time from the state)

Genus 15. ***Berta*** Walker

16. *acte* (Swinhoe)

Subfamily STERRHINAE

Genus 16. ***Dithecodes*** Warren

17. *idaea* (Swinhoe)

Genus 17. ***Anisodes*** Guenée

18. *frenaria* Guenée

19. *monetaria* Guenée

20. *denticulata* Hampson

Genus 18. ***Somatina*** Guenée

21. *lapidata* Warren

Genus 19. ***Lipomelia*** Warren

22. *subusta* Warren

Genus 20. ***Scopula*** Schrank

23. *extimaria* (Walker)

24. *eulomata* (Snellen)

Genus 21. ***Sterrha*** Hübner

25. *acuminata* (Moore)

26. *trianqularis* (Hampson)

Subfamily LARENTIINAE

Genus 22. ***Naxidia*** Hampson

27. *punctata* (Butler)

28. *irrorata* (Moore)

Genus 23. ***Dysethia*** Warren

29. *bicommata* Warren

30. *ocyptaria* Swinhoe

Genus 24. ***Cambogia*** Guenée

31. *memorata* (Walker)

Genus 25. ***Chlorochystis*** Hübner

32. *atroviridis* Warren

33. *infrazebrina* Hampson

34. *emerginaria* Hampson

35. *costalis* (Moore)

Genus 26. ***Pomasia*** Guenée

36. *denticlathrata* Warren

Genus 27. ***Eupithecia*** Curtis

37. *raiata* Guenée

38. *costalis* (Walker)

Genus 28. ***Cidaria*** Treitschke

39. *chalybearia* Moore

40. *obfuscata* Warren

41. *minuta* Butler

42. *hockingii* (Butler)

Genus 29. ***Eustroma*** Hübner

43. *cervinaria* (Moore)

Genus 30. ***Larentia*** Tritschke

44. *argentilineata* (Moore)

45. *albidivisa* (Warren)

Genus 31. ***Hydrelia*** Hübner

46. *purpuraria* Hampson

47. *bicolorata* Moore

48. *distorta* Hampson

Subfamily ENNOMINAE

Genus 32. ***Zamarada*** Moore

49. *translucida* Moore

50. *eogenaria* (Snellen)

Genus 33. ***Stegania*** Guenée

51. *marginata* Warren

52. *strigata* (Warren)

53. *rectifascia* Hampson

Genus 34. ***Synegia*** Guenée

54. *complicata* (Warren)

55. *erythra* Hampson

Genus 35. ***Parasynegia*** Warren

56. *suffusa* Warren

Genus 36. ***Hyperythra*** Guenée

*57. *phoenix* Swinhoe

Genus 37. ***Luxiaria*** Walker

58. *mitorrhaphes* Prout

Genus 38. ***Macaria*** Curtis

59. *acutaria* Walker

60. *perfusaria* Walker

61. *temeraria* Swinhoe

Genus 39. ***Obeidia*** Walker

62. *tigrata* Guenée

Genus 40. ***Percnia*** Guenée

63. *coryneta* Swinhoe

64. *felinaria* Guenée

65. *interfusa* Warren
**66. *belluaria* Guenée

Genus 41. ***Arichanna*** Moore

67. *transfasciata* Warren
68. *marginata* Warren
69. *regularis* (Warren)
70. *hamiltonia* (Swinhoe)
71. *iaguarinaria* oberthür

Genus 42. ***Boarmia*** Treitschke

72. *enormis* Warren
73. *idaeoides* (Moore)
74. *leucozona* Hampson
75. *boarmiaria* (Guenée)
76. *bingasoides* Warren
77. *propulsaria* Walker
78. *fimbriata* (Moore)
79. *semicirculata* (Moore)
80. *lamprosticta* Hampson
81. *scripturaria* (Walker)
82. *dentilinea* (Warren)

Genus 43. ***Srinopteryx*** Butler

83. *rufivinctata* (Walker)

Genus 44. ***Ourapteryx*** Leach

*84. *picticaudata* (Walker)

Genus 45. ***Xandrames*** Moore

85. *dholaria* Moore

Genus 46. ***Crocota*** Hübner

86. *ventraria* (Guenée)

Genus 47. ***Psyra*** Walker

**87. *cuneata* Walker

Genus 48. ***Medasina*** Moore

88. *nigrovittata* (Moore)
89. *albidior* Hampson

Genus 49. ***Dilinia*** Hübner

90. *immaculata* (Hampson)

Genus 50. ***Prionia*** Hübner

91. *lithosiaria* Walker
92. *obliquilineata* Warren
93. *intexta* (Swinhoe)
94. *discata* (Warren)

Genus 51. ***Garaeus*** Moore

95. *discolor* Warren

Genus 52. ***Hypochrosis*** Guenée

96. *festivaria* (Fabricius)

Genus 53. ***Eilicrinia*** Hübner

97. *flava* (Moore)

Genus 54. ***Xenographia*** Hampson

98. *semifusca* Hampson

SYSTEMATIC ACCOUNT

Subfamily OENOCHROMINAE

Genus 1. ***Eumelea*** Duncan

1841. *Eumelea* Duncan, *Exot. Moth*, **32** : 215.

*1. ***Eumelea rosalia*** (Stoll)

1782. *Phalaena (Geometra) rosalia* Stoll, *Pap. Exot.*, **4** 152.

2003. *Eumelea rosalia* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Material examined : One ♀, Kohima, alt. 1460 m. (at light), 10.x.1998, coll. T.K. Pal.

Length of Fore wing : 31 mm.

Diagnosis : Wings orange-yellow, irrorated with crimson, crimson antemedial, medial and submarginal bands of fore wings indistinct. Under side crimson bands prominent.

Distribution : India : Nagaland, Assam, Bihar and Sikkim.

Elsewhere : Austro-Malaya subregion from Sundaland and estwards, Bangladesh (Sylhet), Malayan and Sri Lanka.

Genus 2. ***Noreia*** Walker

1862. *Noreia* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** 1092

2. ***Noreia perdensata*** Walker

1862. *Noreia perdensata* Walker, *Cat. Lep. Het. Brit. Mus.* **24** : 1092.

2003. *Noreia perdensata* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4)

Distribution : India : Nagaland, Kerala, Meghalaya and Sikkim.

Elsewhere : Celebes, Philippines, Pulo-Laut and Sri Lanka.

Genus 3. *Naxa* Walker

1856. *Naxa* Walker, *Cat. Lep. Het. Brit. Mus.*, **7** : 1742.

3. *Naxa seriaria* (Motsch)

1866. *Zerene seriaria* Motsch, *Bull. Mosc.*, **39** : 1, P. 196.

1912. *Naxa seriaria* : Prout, *Lep. Cat.*, **8** : 72.

Distribution : India : Nagaland.

Elsewhere : Amur, Bhutan and Japan.

Genus 4. *Centronaxa* Prout

1910. *Centronaxa* Prout, *Gen. Ins.*, **104** : 92, fig. 12.

4. *Centronaxa orthostigialis* (Warren)

1893. *Naxa orthostigialis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 343.

1912. *Centronaxa orthostigialis* : Prout, *Lep. Cat.*, **8** : 73.

Distribution : India : Nagaland.

Elsewhere : Bhutan.

Genus 5. *Ozola* (Walker)

1862. *Ozola* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1080.

5. *Ozola falcipennis* (Moore)

1888. *Metaabraxas falcipennis* Moore, *Descr. new Indian Lep. Ins. Coll. Atk.* : 266, t8, f. 29.

1912. *Ozola falcipennis* : Prout, *Lep. Cat.*, **8** : 74.

Distribution : India : Nagaland and Meghalaya (Khasi Hills).

Subfamily GEOMETRINAE

Genus 6. *Dysphania* Hübner

1826. *Dysphania* Hübner, *Verz. bek. Schmett.*, 175.

6. *Dysphania militaris* (Linnaeus)

1758. *Phalaena Bombyx militaris* Linnaeus, *Syst. Nat.* ed. x, **1** : 505.

2003. *Dysphania militaris* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Andaman and Nicobar Islands, Assam, Maharashtra, Meghalaya, and West Bengal.

Elsewhere : China, Indonesia and Myanmar.

Genus 7. *Xenozancla* Warren

1893. *Xenozancla* Warren, *Proc. zool. Soc. Lond.*, **1893** : 342.

7. *Xenozancla versicolor* Warren

1893. *Xenozancla versicolor* Warren, *Proc. zool. Soc. Lond.*, **1893** : 342, t. 32, f. 17.

1913. *Xenozancla versicolor* : Prout, *Lep. Cat.*, **14** : 39.

Distribution : India : Nagaland.

Genus 8. *Gelasma* Warren

1893. *Gelasma* Warren, *Proc. zool. Soc. Lond.*, **1893** : 353.

8. *Gelasma dissimulata* (Walker)

1861. *Thalassodes dissimulata* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 551.

1913. *Gelasma dissimulata* : Prout, *Lep. Cat.*, **14** : 93.

Distribution : India : Nagaland.

Elsewhere : Bhutan, Indonesia (Borneo), Myanmar (Moulmein) and Sri Lanka.

9. *Gelasma griseoviridis* Warren

1893. *Gelasma griseoviridis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 353.

2003. *Gelasma griseoviridis* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland (1900 m), Meghalaya (Khasi Hills) and Sikkim.

Genus 9. *Thalassodes* Guenée

1858. *Thalassodes* Guenée, *Hist. nat. Ins. Lep.*, **1** : 359.

10. *Thalassodes falsaria* Prout

1912. *Thalassodes falsaria* Prout, *Gen. Ins.*, **129** : 153.

1998. *Thalassodes falsaria* : *Fauna of Meghalaya, State Fauna Series*, **4**(6) : 434.

Distribution : India : Nagaland, Meghalaya and Nilgiris.

Elsewhere : Java, Nepal and Sri Lanka.

Genus 10. ***Idiochlora*** Prout

1912. *Idiochlora* Prout, *Gen. Ins.*, **129** : 163.

11. ***Idiochlors ophthalmicata*** (Moore)

1867. *Thalassodes ophthalmicata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 637.

1913. *Idiochlora ophthalmicata* : Prout, *Lep. Cat.*, **14** : 106.

Distribution : India : Nagaland and Sikkim (Hampson, 1895), Bengal (Cotes and Swinhoe, 1888).

Genus 11. ***Mixolophia*** Warren

1894. *Mixolophia* Warren, *Novit. Zool.*, **1** : 391.

12. ***Mixolophia albiradiata*** (Warren)

1893. *Uliocnemis albiradiata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 356.

1913. *Mixolophia albiradiata* Prout, *Lep. Cat.*, **14** : 108.

Distribution : India : Nagaland.

Genus 12. ***Thalera*** Hübner

1826. *Thalera* Hübner, *Verz. bek. Schmett.* : 285.

13. ***Thalera aeruginata*** (Warren)

1893. *Chlorodontopera aeruginata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 353.

1913. *Thalera aeruginata* : Prout, *Lep. Cat.*, **14** : 144.

Distribution : India : Nagaland.

Genus 13. ***Hemistola*** Warren

1893. *Hemistola* Warren, *Proc. zool. Soc. Lond.*, **1893** : 35.

14. ***Hemistola detracta*** (Walker)

1861. *Geometra detracta* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 521.

2003. *Hemistola detracta* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, 9(Part-4).

Distribution : India : Nagaland, Himachal Pradesh, Sikkim and Kashmir.

Genus 14. ***Jodis*** Hübner
(*Iodis* Guenée, 1857 missp.)

1826. *Jodis* Hübner, *Verz. bek. Schmett.* : 285.

15. ***Jodis opalaria*** Guenée

1857. *Jodis opalaria* Guenée, *Hist. nat. Ins. Lep.*, **1** : 357.

1913. *Jodis opalaria* : Prout, *Lep. Cat.*, **14** : 157.

Distribution : India : Nagaland, Assam (Margharita), Meghalaya (Khasi Hills), and Sikkim.

Elsewhere : China and Indonesia (Borneo).

Genus 15. ***Berta*** Walker

1862. *Berta* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1621.

16. ***Berta acte*** (Swinhoe)

1892. *thalera acte* Swinhoe, *Trans ent. Sco. Lond.*, **1892** 6, t. 1, fig. 13.

2003. *Berta acte* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, 9(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

Elsewhere : Sri Lanka and West China.

Subfamily STERRHINAE

Genus 16. ***Dithecodes*** Warren

1900. *Dithecodes* Warren, *Novit. zool.*, **7** : 102.

17. ***Dithecodes idaea*** (Swinhoe)

1892. *Hemithea idaea* Swinhoe, *Trans ent. Soc. Lond.*, **1892** : 6.

1934. *Dithecodes idaea* : Prout, *Lep. Cat.*, **61** : 26.

Distribution : India : Nagaland.

Genus 17. ***Anisodes*** Guenée

1857. *Anisodes* Guenée, *Hist. nat. Ins. Lep.*, **1** : 415.

18. ***Anisodes frenaria*** Guenée

1857. *Anisodes frenaria* Guenée, *Hist. nat. Ins. Lep.*, **1** : 421.

1934. *Anisodes frenaria* Prout, *Let. Cat.*, **61** : 116.

Distribution : India : Nagaland.

Remarks : Swinhoe (1892) described this species as *pulverulenta* which is synonymised under *frenaria* Guené (Prout 1934).

19. ***Anisodes monetaria*** Guenée

1857. *Anisodes monetaria* Guenée, *Hist. nat. Ins. Lep.*, **1** : 458.

1934. *Anisodes monetaria* : Prout, *Let. Cat.*, **61** : 123.

Distribution : India : Nagaland.

20. ***Anisodes denticulata*** Hampson

1895. *Anisodes denticulata* Hampson, *Fauna Brit. India,* Moths, **3** : 447.

1934. *Anisodes denticulata* : Prout, *Let. Cat.*, **61** : 125.

Distribution : India : Nagaland.

Genus 18. ***Somatina*** Guenée

1857. *Somatina* Guenée, *Hist. nat. Ins. Lep.*, **2** : 10.

21. ***Somatina lapidata*** Warren

1893. *Somatina lapidata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 359.

1895. *Somatina lapidata* : Hampson, *Fauna Brit. India,* Moths, **3** : 465.

Distribution : India Nagaland.

Genus 19 ***Lipomelia*** Warren

1893. *Lipomelia* Warren, *Proc. zool. Soc. Lond.*, **1893** : 359.

22. ***Lipomelia subusta*** Warren

1893. *Lipomelia subusta* Warren, *Proc. zool. Soc. Lond.*, **1893** : 360.

1992. *Lipomelia subusta* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 123.

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

Elsewhere : Myanmar and Taiwan.

Genus 20. ***Scopula*** Schrank

1802. *Scopula* Schrank, *Fauna Boica,* **2**(2) : 162.

23. ***Scopula extimaria*** (Walker)

1861. *Acidalia extimaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **23** : 782.

1934. *Scopula extimaria* : Prout, *Lep. Cat.*, **63** : 224.

Distribution : India : Nagaland, N.W. Himalaya and Sikkim.

Elsewhere : Bangladesh (Sylhet).

24. ***Scopula eulomata*** (Snellen)

1877. *Acidalia eulomata* Snellen, *Tijd. Ent.*, **20** : 42, t. 3, f. 21.

1934. *Scopula eulomata* : Prout, *Lep. Cat.*, **63** : 26.

Distribution : India : Nagaland.

Elsewhere : Batu Island, Indonesia (Borneo, Java and Sumatra), Myanmar, Nias and Singapore.

Genus 21. ***Sterrha*** Hübner

1825. *Sterrha* Hübner, *Verz. bek. Schmett.*, : 309.

25. ***Sterrha acuminata*** (Moore)

1888. *Janarda acuminata* Moore, *Descr. new Indian Lep. Ins. Atkinson* : 265.

1934. *Sterrha acuminata* : Prout, *Lep. Cat.*, **63** : 415.

Distribution : India : Nagaland and Sikkim.

Elsewhere : Myanmar (Prout 1934).

26. ***Sterrha triangularis*** (Hampson)

1895. *Acidalia triangularis* Hampson, *Fauna Brit. India,* **3** : 441.

1934. *Sterrha triangularis* : Prout, *Lep. Cat.*, **63** : 420.

Distribution : India : Nagaland, North-east Indian.

Elsewhere : Bali, Halbinsel, Malay, Sian and Tonkin.

Subfamily LARENTIINAE

Genus 22. ***Naxidia*** Hampson

1895. *Naxidia* Hampson, *Fauna Brit. India,* **3** : 334.

27. ***Naxidia punctata*** (Butler)

1880. *Argidava punctata* Butler, *Ann. Mag. nat. Hist.*, **6**(5) : 128.

1997. *Naxidia punctata* Mondal and Ghosh, *Fauna of West Bengal, State Fauna Series*, 3(7) : 500.

Distribution : India : Nagaland, Sikkim and West Bengal (Darjeeling).

Elsewhere : West China.

28. *Naxidia irrorata* (Moore)

1887. *Argidava irrorata* Moore, *Descr. new India Lep. Ins. Coll. Atkinson* : 251.

1997. *Naxidia irrorata* : Mondal and Ghosh, *Fauna of West Bengal, State Fauna Series*, 3(7) : 500.

Distribution : India : Nagaland, Sikkim and W. Bengal (Darjeeling).

Elsewhere : W. China.

Genus 23. *Dysethia* Warren

1893. *Dysethia* Warren, *Proc. zool. Soc. Lond.*, **1893** : 347.

29. *Dysethia bicommata* Warren

1893. *Dysethia bicommata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 348, pl. 32, fig. 1.

2003. *Dysethia bicommata* : Ghosh, *in State Fauna Series*, Sikkim.

Distribution : India : Nagaland and Sikkim.

30. *Dysethia ocyptaria* Swinhoe

1893. *Dysethia ocyptaria* Swinhoe, *Ann. Mag. nat. Hist.*, **12**(6) : 157.

2003. *Dysethia ocyptaria* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, 9(Part-4).

Distribution : India : Nagaland and Sikkim.

Genus 24. *Cambogia* Guenée

1857. *Cambogia* Guenée, *Hist. nat. Ins. Lep.*, 1 : 431.

31. *Cambogia memorata* (Walker)

1861. *Pomasia memorata* Walker, *Cat. Lep. Het. Brit. Mus.*, **22** : 657.

2003. *Cambogia memorata* : Ghosh. In : *Fauna of Sikkim, State Fauna Series*, 9(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim (Yatang).

Elsewhere : Indonesia (Borneo), Myanmar and Sri Lanka.

Genus 25. *Chloroclystis* Hübner

1825. *Chloroclystis* Hubner, *Verz. bek. Schmett.*, : 323.

32. *Chloroclytis atroviridis* (Warren)

1893. *Eupithecia atroviridis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 384, pl. 31, fig. 19.

1900. *Chloroclystis atroviridis* : Swinhoe, *Cat. Eart. Austral. Lep. Het.*, **2** : 351.

Distribution : India : Nagaland and Meghalaya (Khasi Hills).

33. *Chloroclystis infrazebrina* Hampson

1895. *Chloroclystis infrazebrina* Hampson, *Fauna Brit. India, Moths*, 3 : 394.

Distribution : India : Nagaland.

34. *Chloroclystis emarginaria* Hampson

1893. *Chloroclystis emarginaria* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, 9 : 152, 171, fig. 14.

1895. *Chloroclystis emarginaria* : Hampson, *Fauna Brit. India, Moths*, 3 : 395.

Distribution : India : Nagaland and Nilgiris.

Elsewhere : Sri Lanka.

35. *Chloroclystis costalis* (Moore)

1887. *Calluga costalis* Moore, *Lep. Ceylon*, 3 : 480, pl fig. 1.

1895. *Chloroclystis costalis* : Hampson, *Fauna Brit India*, Moths, 3 : 397, fig. 185.

Distribution : India : Nagaland.

Elsewhere : Bhutan, Myanmar and Sri Lanka.

Genus 26. *Pomasia* Guenée

1857. *Pomasia* Guenée, *Hist. nat. Ins. Lep.*, 1 : 427.

36. *Pomasia denticlathrata* Warren

1893. *Pomasia denticlathrata* Warren, *Proc. zool Soc Lond.*, **1893** : 367.

1895. *Pomasia denticlathrata* : Hampson, *Fauna Brit India*, Moths, 3 : 388.

Distribution : India : Nagaland and Meghalaya (Khasi Hills).

Genus 27. ***Eupithecia*** Curtis

1825. *Eupithecia* Curtis, *Brit. Ent.*, **6** : 64.

37. ***Eupithecia rajata*** Guenée

1857. *Eupithecia rajata* Guenée, *Hist. nat. Ins. Lep.*, **2** : 328.

1895. *Eupithecia rajata* : Hampson, *Fauna Brit. India*, Moths, **3** : 399, fig. 186.

Distribution : India : Nagaland, Himachal Pradesh (Dharmasala) Meghalaya (Khasi Hills), Mhow and Nilgiris.

Elsewhere : Sri Lanka.

38. ***Eupithecia costalis*** (Walker)

1863. *Pena costalis* Walker, *Cat. Lep. Het. Brit. Mus.*, **27** : 130.

1997. *Eupithecia costalis* : Holloway, *Malayan Nat. J.*, **51** : 137.

Distribution : India : Nagaland and Nilgiris.

Elsewhere : Hong Kong, Indonesia (Borneo), Mayanmar (E. Pegu), Peninsular, Malaysia and Taiwan.

Genus 28. ***Cidaria*** Treitschke

1828. *Cidaria* Treitschke, *Schmett. Eur.*, **6** (2) : 140.

39. ***Cidaria chalybearia*** Moore

1867. *Cidaria chalybearia* Moore, *Proc. zool. Soc. Lond.*, **1867** : 663.

2003. *Cidaria chalybearia* : Ghosh In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

40. ***Cidaria obfuscata*** (Warren)

1893. *Xanthorhoe obfuscata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 376.

2003. *Cidaria obfuscata* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

41. ***Cidaria minuta*** (Butler)

1889. *Hyria minuta* Butler, *Ill. Typ. Lep. Het. Brit. Mus.*, **7** : 117.

2003. *Cidaria minuta* : Ghosh *in State Fauna Series*, Sikkim.

Distribution : India : Nagaland, Sikkim and N.W. Himalaya.

Elsewhere : Tibet.

42. ***Cidaria hockingii*** (Butler)

1889. *Eupithecia hockingii* Butler, *Ill. Typ. Lep. Het. Brit. Mus.*, **7** : 115.

1914. *Cidaria hockingii* : Prout, *Macrolep. World.*, **4** : 241.

Distribution : India : Nagaland, Himachal Pradesh (Dharmsala).

Genus 29. ***Eustroma*** Hübner

1825. *Eustroma* Hübner, *Verz. bek. Schmett.*, : 334.

*43. ***Eustroma cervinaria*** (Moore)

1867. *Cidaria cervinaria* Moore, *Proc. zool. Soc. Lond.*, **1867** : 664.

1900. *Eustroma cervinaria* : Swinhoe, *Cat. Eart. Austr. Lep. Het.*, **2** : 340.

Material examined : One ex., ♂, 21.iii.1997, Kohima, (at light), coll. A.K. Hazra and S.K. Ghosh.

Length of Fore wing : 15 mm.

Diagnosis : Head and thorax purple. Fore wing with purple and black markings, purple antemedial band with small black spots, black medial area broad at costa narrower near inner margin, a Y-shaped purple mark from costa to lower angle of cell. Hind wing with distinct waved postmedial and submarginal lines.

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

Remarks : This species is reported for the first time from Nagaland (Kohima).

Genus 30. ***Larentia*** Treitschke

1828. *Larentia* Treitschke, *Schmett. Eur.*, **6**(2) : 75.

*44. ***Larentia argentilineata*** (Moore)

1867. *Cidaria argentilineata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 660, pl. 33, fig. 5.

2003. *Larentia argentilineata* Ghosh, In : *Fauna of Sikkim, State Fauna Series,* **9** (Part-4).

Material examined : One ex., ♀, 10.x.1998, Kohima, (at light), coll. T.K. Pal.

Distribution : India : Nagaland and Sikkim.

Remarks : This species is reported for the first time from Nagaland (Kohima) : Inoue (1982) reported the species from Nepal under the genus ***Lamropteryx*** Stephens.

45. *Larentia albidivisa* (Warren)

1893. *Perizoma* (?) *albidivisa* Warren, *Proc. zool. Soc. Lond.,* **1893** : 380.

1895. *Larentia albidivisa* : Hampson, *Fauna Brit. India,* Moths, **3** : 375.

Distribution : India : Nagaland.

Genus 31. *Hydrelia* Hübner

1825. *Hydrelia* Hübner, *Verz. bek. Schmett.* : 322.

46. *Hydrelia purpuraria* Hampson

1895. *Hydrelia purpuraria* Hampson, *Fauna Brit. India, Moths,* **3** : 413.

Distribution : India : Nagaland.

47. *Hydrelia bicolorata* (Moore)

1867. *Hyria bicolorata* Moore, *Proc. zool. Soc. Lond.,* **1867** : 642.

1992. *Hydrelia bicolorata* : Inoue, *Lep. Taiwan,* Checklist, 1(2) : 127.

Distribution : India : Nagaland, Himachal Pradesh (Dharmsala) Meghalaya (Khasi Hills) and Sikkim.

Elsewhere : Taiwan.

48. *Hydrelia distorta* Hampson

1895. *Hydrelia distorta* Hampson, *Fauna Brit. India,* Moths, **3** : 414.

Distribution : India : Nagaland.

Genus 32. *Zamarada* Moore

1887. *Zamarada* Moore, *Lep. Ceylon,* **3** : 432.

49. *Zamarada translucida* Moore

1887. *Zamarada translucida* Moore, *Lep. Ceylon,* **3** : 432.

1895. *Zamarada translucida* : Hampson, *Fauna Brit. India,* Moths, **3** : 198, fig. 111.

Distribution : India : Nagaland, Meghalaya (Khasi Hills), Nilgiris and Orissa (Ganjam).

Elsewhere : Indonesia (Borneo), Malaya (Perak) and Sri Lanka.

50. *Zamarada eogenaria* (Snellen)

1881. *Phorodesma eogenaria* Snellen, *Tijdschr. Ent.,* **24** 78.

1993. *Zamarada eogenaria* : Holloway, *Malayan Nat J.,* **47** : 137.

Distribution : India : Nagaland and Meghalaya (Khasi Hills).

Elsewhere : Sulawesi and Sundaland.

Remarks : Holloway (1993) stated that the ssp. *cosmiaria* Swinhoe found in Myanmar.

Genus 33. *Stegania* Guenée

1844. *Stegania* Guenée in Duponchel, *Cat. Lep. Eur.*: 270.

51. *Stegania marginata* Warren

1893. *Stegania marginata* Warren, *Proc. zool. Soc. Lond.,* **1893** : 388, pl. 32, fig. 22.

2003. *Stegania marginata* Ghosh, In : *Fauna of Sikkim, State Fauna Series,* **9**(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

52. *Stegania strigata* (Warren)

1893. *Chiasma strigata* Warren, *Proc. zool. Soc. Lond.,* **1893** : 412. pl. 31, fig. 22.

1895. *Stegania strigata* : Hampson, *Fauna Brit. India,* Moths, **3** : 165.

Distribution : India : Nagaland, Meghalaya and Sikkim.

Remarks : Inoue, (1987) reported this species under *Monocerotesa* (Warren) from Nepal.

53. *Stegania rectifascia* Hampson

1893. *Stegania rectifascia* Hampson, *Ill. Typ. Lep. Het Brit. Mus.,* **9** : 142. pl. 170, fig. 8.

2003. *Stegania rectifascia* Ghosh, In : *Fauna of Sikkim, State Fauna Series,* **9** (Part-4).

Distribution : India : Nagaland, Himachal Pradesh (Kangra Valley) and Sikkim.

Elsewhere : Bhutan and Sri Lanka.

Genus 34. ***Synegia*** Guenée

1857. *Synegia* Guenée, *Hist. nat. Ins. Lep.,* **1** : 423.

54. ***Synegia complicata*** (Warren)

1893. *Parasynegia complicata* Warren, *Proc. zool. Soc. Lond.,* **1893** : 414.

1895. *Synegia complicata* : Hampson, *Fauna Brit. India,* Moths, **3** : 168.

Distribution : India : Nagaland.

55. ***Synegia erythra*** Hampson

1891. *Synegia erythra* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.,* **8** : 104, pl. 150, fig. 2.

1895. *Synegia erythra* : Hampson, *Fauna Brit. India,* Moths, **3** : 169.

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Nilgiris.

Genus 35. ***Parasynegia*** Warren

1893. *Parasynegia* Warren, *Proc. zool. Soc. Lond.,* **1893** : 413.

56. ***Parasynegia suffusa*** Warren

1893. *Parasynegia suffusa* Warren, *Proc. zool. Soc. Lond.,* **1893** : 414.

1992. *Parasynegia suffusa* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 112.

Distribution : India : Nagaland.

Elsewhere : Taiwan.

Genus 36. ***Hyperythra*** Guenée

1857. *Hyperythra* Guenée, *Hist. nat. Ins. Lep.,* **1** : 99.

*57. ***Hyperythra phenix*** Swinhoe

1891. *Hyperythra phoenix* Swinhoe, *Trans. ent. Soc. Lond.,* **1891** : 484.

1895. *Hyperythra phoenix* : Hampson, *Fauna Brit. India,* Moths, **3** : 219.

Material examined : Two exs. ♀, 22.iii.1997, Jafu Hills, Kohima, coll. A.K. Hazra and S.K. Ghosh.

Diagnosis : Olive green specimen. Fore wing with reddish antemedial and medial reddish bands, apical grey patch prominent on underside. Both wings with prominent post medial lines.

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

Elsewhere : Peninsular Malayasia.

Genus 37. ***Luxiaria*** Walker

1860. *Luxiaria* Walker, *Cat. Lep. Het. Brit. Mus.,* **20** : 231.

58. ***Luxiaria mitorrhaphes*** Prout

1925. *Luxiaria mitorrhaphes* Prout, *Nivit. Zool.,* **32** : 64.

1992. *Luxiaria mitorrhaphes* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 113.

Distribution : India : Nagaland.

Elsewhere : Taiwan.

Genus 38. ***Macaria*** Curtis

1823. *Macaria* Curtis, *Brit. Ent.,* **6** : 132.

59. ***Macaria acutaria*** Walker

1869. *Macaria acutaria* Walker, *Char. Undescr. Lep. Het. Lond.,* : 100.

2003. *Macaria acutaria* Ghosh, In : *Fauna of Sikkim, State Fauna Series,* **9** (Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills) Sikkim and Uttar Pradesh (Varanasi).

60. ***Macaria perfusaria*** Walker

1866. *Macaria perfusaria* Walker, *Cat. Lep. Het. Brit. Mus.,* **35** : 1659.

2003. *Macaria perfusaria* : Ghosh. In : *Fauna of Sikkim, State Fauna Series,* **9**(Part-4).

Distribution : India : Nagaland, Himachal Pradesh, (Dharmsala) Meghalaya (Khasi Hills), Nilgiris.

Elsewhere : Indonesia (Borneo), Myanmar and Sri Lanka.

61. ***Macaria temeraria*** Swinhoe

1891. *Macaria temeraria* Swinhoe, *Trans. ent. Soc. Lond.*, **1891** : 492.

1895. *Macaria temeraria* : Hampson, *Fauna Brit. India*, Moths, **3** : 207.

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Himachal Pradesh (Simla).

Genus 39. ***Obeidia*** Walker

1862. *Obeidia* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1139.

62. ***Obeidia tigrata*** Guenée

1857. *Obeidia tigrata* Guenée, *Hist. nat. Ins. Lep.*, **2** : 202.

1992. *Obeidia tigrata* : Inoue, *Lep. Taiwan*, Chcklist, **1**(2): 114.

Distribution : India : Nagaland, Central India (Inoue, 1992) and Sikkim.

Elsewhere : China, Malay Peninsula (Penang) and Taiwan.

Genus 40. ***Percnia*** Guenée

1857. *Percnia* Guenée, *Hist. nat. Ins. Lep.*, **2** : 216.

63. ***Percnia coryneta*** Swinhoe

1894. *Percnia coryneta* Swinhoe, *Trans. ent. Soc. Lond.*, **1894** : 213.

2003. *Percnia coryneta* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

Elsewhere : Myanmar.

64. ***Percnia felinaria*** Guenée

1857. *Percnia felinaria* Guenée, *Hist. nat. Ins. Lep.*, **2** : 216.

1987. *Percnia felinaria* : Inoue, *Bull. Fac. domest. Sci. Otsuma, Wom. Univ.*, **23** : 257.

Distribution : India : Nagaland, Meghalaya (Khasi Hills), and Sikkim.

Elsewhere : Nepal.

65. ***Percnia interfusa*** Warren

1893. *Percnia interfusa* Warren, *Proc. zool. Soc. Lond.*, **1893** : 392.

1895. *Percnia interfusa* : Hampson, *Fauna Brit India*, Moths, **3** : 308.

Distribution : India : Nagaland (Hampson, 1895).

66. ***Percnia belluaria* Guenée

1857. *Percnia belluaria* Guenée, *Hist. nat. Ins. Lep.*, **2** 217.

1998. *Percnia belluaria* : Mondal and Ghosh, *Fauna of Meghalaya, State Fauna Series*, **4**(6) : 453.

Material examined : One ex. ♂, 21.x.1998, Kohima, alt. 1460 m, coll. T.K. Pal.

Length of Fore wing : 33 mm.

Diagnosis : Ground colour pale grey, male with fovea, wings with much smaller spots; Hind wing Rs from upper angle of cells.

Distribution : India : Nagaland, Himachal Pradesh, Meghalaya and West Bengal.

Elsewhere : Nepal.

Remarks : The species reported for the first time from Nagaland.

Genus 41. ***Arichanna*** Moore

1867. *Arichanna* Moore, *Proc. zool. Soc. Lond.*, **1867** 658.

67. ***Arichanna transfasciata*** Warren

1893. *Arichanna transfasciata* Warren, *Proc. zool. Soc Lond.*, **1893** : 425.

2003. *Arichanna transfasciata* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and Sikkim.

68. ***Arichanna marginata*** Warren

1893. *Arichanna marginata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 239.

1915. *Arichanna marginata* : Prout, *Macrolep World*, **4** : 303.

Distribution : India : Nagaland, Himachal Pradesh, Meghalaya and Sikkim.

Elsewhere : Bhutan and Taiwan.

69. ***Arichanna regularis*** (Warren)

1893. *Metabraxas regularis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 392.

1895. *Arichanna regularis* : Hampson, *Fauna Brit. India*, Moths, **3** : 293.

70. ***Arichanna hamiltonia*** (Swinhoe)

1892. *Rhyparia hamiltonia* Swinhoe, *Trans. ent. Soc. Lond.*, **1892** : 17, pl. 1, fig. 5.

1895. *Arichanna hamiltonia* : Hampson, *Fauna Brit. India*, Moths, **3** : 294.

Distribution : India : Nagaland and Meghalaya (Khasi Hills).

71. ***Arichanna iaguarinaria*** (Oberthür)

1876-94. *Rhyparia jagurinaria* Oberthür, *Et. Ent.*, **6** : 17, pl. 9, fig. 1.

1895. *Arichanna jaguarinaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 295.

Distribution : India : Nagaland.

Elsewhere : China and Japan.

Genus 42. ***Boarmia*** Treitschke

1825. *Boarmia* Treitschke, *Schmett. Eur.*, **5**(2) : 433.

72. ***Boarmia enormis*** (Warren)

1893. *Myrioblephara enormis* Warren, *Proc. zool. Soc. Lond.*, **1893** : 429.

1895. *Boarmia enormis* Hampson, *Fauna Brit. India*, Moths, **3** : 258.

Distribution : India : Nagaland.

73. ***Boarmia idaeoides*** (Moore)

1887. *Cleora idaeoides* Moore, *Descr. new. Indian Lep. Ins. Coll. Atkinson* : 239.

2003. *Boarmia idaeoides* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills), Sikkim and West Bengal (Darjeeling).

Elsewhere : Karen Hills.

74. ***Boarmia leucozona*** Hampson

1895. *Boarmia leucozona* Hampson, *Fauna Brit. India*, Moths, **3** : 260.

Distribution : India : Nagaland.

75. ***Boarmia boarmiaria*** (Guenée)

1857. *Hypochroma boarmiaria* Guenée, *Hist. Nat. Ins. Lep.*, **1** : 282.

2003. *Boarmia boarmiaria* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Assam, Sikkim, West Bengal (Darjeeling).

Elsewhere : Sri Lanka and Taiwan.

76. ***Boarmia pingasoides*** (Warren)

1893. *Prorhina pingasoides* Warren, *Proc. zool. Soc. Lond.*, **1893** : 430.

1895. *Boarmia pingasoides* : Hampson, *Fauna Brit. India*, Moths, **3** : 263.

Distribution : India : Nagaland.

77. ***Boarmia propulsaria*** Walker

1860. *Boarmia propulsaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 385.

1895. *Boarmia propulsaria* : Hampson, *Fauna Brit. India*, Moths, **3** : 265.

Distribution : India : Nagaland, Meghalaya (Khasi Hills), Sikkim and West Bengal (Kurseong).

Elsewhere : Indonesia (Borneo and Sumatra) and Myanmar (Tenasserim).

78. ***Boarmia fimbriata*** (Moore)

1867. *Cleora fimbriata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 628.

1895. *Boarmia fimbriata* : Hampson, *Fauna Brit. India*, Moths, **3** : 275.

Distribution : India : Nagaland, Bengal (Cotes and Swinhoe, 1888) and Sikkim.

Remarks : Inoue (1987) reported the species as *Microcalicha fimbriata* (Moore) from Nepal.

79. ***Boarmia semicirculata*** (Moore)

1867. *Eupithecia semicirculata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 654.

1895. *Boarmia semicirculata* : Hampson, *Fauna Brit. India*, Moths, **3** : 278.

Distribution : India : Nagaland and Sikkim (Hampson, 1895), Darjeeling (Cotes and Swinhoe, 1888).

80. ***Boarmia lamprosticta*** Hampson

1895. *Boarmia lamprosticta* Hampson, *Fauna Brit. India,* Moths, **3** : 280.

Distribution : India : Nagaland.

Elsewhere : Myanmar (Tenasserim).

81. ***Boarmia scripturaria*** (Walker)

1866. *Tephrosia scripturaria* Walker, *Cat. Lep. Het. Brit. Mus.*, **35** : 1590.

1895. *Boarmia scripturaria* : Hampson, *Fauna Brit. India,* Moths, **3** : 282.

Distribution : India : Nagaland, Himachal Pradesh (Kulu), Meghalaya (Khasi Hills), Sikkim.

Elsewhere : Myanmar (Pegu & Margui).

82. ***Boarmia dentilinea*** (Warren)

1893. *Psilalcis dentilinea* Warren, *Proc. zool. Soc. Lond.*, **1893** : 431.

1895. *Boarmia dentilinea* : Hampson, *Fauna Brit. India,* Moths, **3** : 277.

Distribution : India : Nagaland and Sikkim.

Genus 43. ***Srinopteryx*** Butler

1883. *Srinopteryx* Butler, *J. Linn. Soc.*, **27** : 201.

83. ***Srinopteryx rufivinctata*** (Walker)

1862. *Urapteryx rufivinctata* Walker, *Cat. Lep. Het. Brit. Mus.*, **26** : 1747.

2003. *Srinopteryx rufivinctata* Ghosh, In : *Fauna of Sikkim, State Fauna Series,* **9**(Part-4).

Distribution : Nagaland, Meghalaya (Khasi Hills), West Bengal (Darjeeling).

Elsewhere : Nepal.

Genus 44. ***Ourapteryx*** Leach

1814. *Ourapteryx* Leach, *Zool. Misc.*, 79.

*84. ***Ourapteryx picticaudata*** (Walker)

1860. *Urapteryx picticaudata* Walker, *Cat. Lep. Het. Brit. Mus.*, **20** : 12.

2003. *Ourapteryx picticaudata* Ghosh, In : *Fauna of Sikkim, State Fauna Series,* **9** (Part-4).

Material examined : One ex. ♂, 21.x.1998, Kohima, alt. 1460 m, coll. T.K. Pal.

Length of Fore wing : 25 mm.

Distribution : India : Nagaland, Himachal Pradesh, Meghalaya and Sikkim.

Elsewhere : Indonesia (Borneo and Sumatra) and Malaya.

Genus 45. ***Xandrames*** Moore

1867. *Xandrames* Moore, *Proc. zool. Soc. Lond.*, **1867** 634.

85. ***Xandrames dholaria*** Moore

1867. *Xandrames dholaria* Moore, *Proc. zool. Soc. Lond.* **1867** : 634.

1992. *Xandrames dholaria* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 116.

Distribution : India : Nagaland, Sikkim and West Bengal (Inoue, 1992).

Elsewhere : Taiwan.

Genus 46. ***Crocota*** Hübner

1825. *Crocota* Hübner, *Verz. bek. Schmett.*, 294

86. ***Crocota ventraria*** (Guenée)

1857. *Gnophos ventraria* Guenée, *Hist. nat. Ins Lep* **1** : 294.

1895. *Crocota ventraria* : Hampson, *Fauna Brit. India,* Moths, **3** : 221.

Distribution : India : Nagaland.

Elsewhere : Bangla Desh (Sylhet).

Genus 47. ***Psyra*** Walker

1860. *Psyra* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** 482

87. ***Psyra cuneata* Walker

1860. *Psyra cuneata* Walker, *Cat. Lep. Het. Brit. Mus.*, **21** : 483.

1992. *Psyra cuneata* : Inoue, *Lep. Taiwan,* Checklist, **1**(2) : 117.

Material examined : One ex. ♂, 23.iii.1997, Kohima, coll. A. K. Hazra and S. K. Ghosh.

Length of Fore wing : 21 mm.

Diagnosis : Yellow; palpi black; two black spots on metathorax. Ante-, post- and submarginal lines of fore wing indistinct with black spots on them, double spot on M_2. Series of marginal speaks on hind wing.

Distribution : India : Nagaland, Meghalaya (Khasi Hills), NW. Himalaya, N. India (Inoue, 1992) and Sikkim.

Elsewhere : Japan (Hampson, 1895) and Taiwan.

Remarks : The species constitute new locality in the State.

Genus 48. ***Medasina*** Moore

1887. *Medasina* Moore, *Lep. Ceylon*, **3** : 309.

88. ***Medasina nigrovittata*** (Moore)

1867. *Hemerophila nigrovittata* Moore, *Proc. zool. Soc. Lond.*, **1867** : 626.

2003. *Medasina nigrovitta* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Bengal (Cotes and Swinhoe (1888), Meghalaya (Khasi Hills) and Sikkim.

89. ***Medasina albidior*** Hampson

1895. *Medasina albidior* Hampson, *Fauna Brit. India*, Moths, **3** : 290.

Distribution : India : Nagaland.

Genus 49. ***Dilinia*** Hübner

1825. *Dilinia* Hübner, *Verz. bek Schmett.*, 310.

90. ***Dilinia immaculata*** (Hampson)

1893. *Petalia immaculata* Hampson, *Ill. Typ. Lep. Het. Brit. Mus.*, **9** : 140. pl. 168, fig. 6, 12.

1895. *Dilinia immaculata* : Hampson, *Fauna Brit. India*, Moths, **3** : 216.

Distribution : India : Nagaland and Sikkim.

Elsewhere : Sri Lanka.

Genus 50. ***Prionia*** Hübner

1832. *Prionia* Hübner, *Zutr. Samml. exot. Schmett.*, **4** : 40.

91. ***Prionia lithosiaria*** (Walker)

1862. *Omiza lithosiania* Walker, *Cat. Lep. Het. Brit. Mus.*, **24** : 1085.

1895. *Prionia lithosiaria* : Hampson, *Fauna Brit. India, Moths*, **3** : 175.

Distribution : India : Nagaland, Meghalaya (Khasi Hills). and Sikkim.

Elsewhere : Indonesia (Borneo).

92. ***Prionia obliquilineata*** Warren

1893. *Prionia obliquilineata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 409.

1893. *Prionia obliquilineata* : Hampson, *Fauna Brit. India*, Moths, **3** : 175.

Distribution : India : Nagaland.

Elsewhere : Myanmar (Yangon).

93. ***Prionia intexta*** (Swinhoe)

1891. *Hypochrosis intexta* Swinhoe, *Trans. ent. Soc. Lond.*, **1891** : 145, pl. 8, fig. 11.

1895. *Prionia intexta* : Hampson, *Fauna Brit. India*, Moths, **3** : 175.

Distribution : India : Nagaland, Meghalaya (Khasi Hills) and N. Canara.

94. ***Prionia discata*** (Warren)

1892. *Amorphozancle discata* Warren, *Proc. zool. Soc. Lond.*, **1893** : 408, pl. 32, fig. 23.

1895. *Prionia discata* Hampson, *Fauna Brit. India*, Moths, **3** : 177.

Distribution : India : Nagaland.

Genus 51. ***Garaeus*** Moore

1867. *Garaeus* Moore, *Proc. zool. Soc. Lond.*, **1867** : 623.

95. ***Garaeus discolor*** Warren

1893. *Garaeus discolor* Warren, *Proc. zool. Soc. Lond.*, **1893** : 400, pl. 32, fig. 19.

2003. *Garaeus discolor* Ghosh; In : *Fauna of Sikkim, State Fauna Series*, **9**(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills), and Sikkim.

Genus 52. ***Hypochrosis*** Guenée

1857. *Hypochrosis* Guenée, *Hist. nat. Ins. Lep.*, **2** : 536.

96. ***Hypochrosis festivaria*** (Fabricius)

1794. *Phalaena festivaria* Fabricius, *Ent. Syst.*, 3(2) : 84. *In* press *Hypochrosis festivaria* : Ghosh. In : *Fauna of Sikkim, State Fauna Series*, 9(Part-4).

Distribution : India : Nagaland, Assam, Andaman and Sikkim.

Elsewhere : Indonesia (Borneo), Riykiu Is. and Taiwan.

Genus 53. ***Eilicrinia*** Hübner

1823. *Eilicrinia* Hübner, *Verz. bek. Schmett.*, : 287.

97. ***Eilicrinia flava*** (Moore)

1887. *Noreia flava* Moore, *Descr. new Indian Lep. Ins. Atkinson*, : 233, pl. 8, fig. 2.

2003. *Eilicrinia flava* Ghosh, In : *Fauna of Sikkim, State Fauna Series*, 9(Part-4).

Distribution : India : Nagaland, Meghalaya (Khasi Hills), Sikkim and West Bengal (Darjeeling).

Genus 54. ***Xenographia*** Warren

1893. *Xenographia* Warren, *Proc. zool. Soc. Lond.*, **1893** : 404.

98. ***Xenographia semifusca*** Hampson

1895. *Xenographia semifusca* Hampson, *Fauna Brit. India*, Moths, **3** : 189.

Distribution : India : Nagaland.

SUMMARY

Systematic account of Geometridae of Nagaland in North-East India is consolidated here. Altogether 98 species belonging to 54 genera under five subfamilies are reported. Of these, four species are recorded for the first time from the state.

ACKNOWLEDGEMENT

The author is thankful to the Director, Zoological Survey of India, Calcutta for providing opportunity to carry out this study. Thanks are also due to Dr. A.K. Hazra, Scientist-E and Shri I.J. Gupta, Scientist-C and Officer-in-Charge (Retd.), Lepidoptera Section for providing various facilities for the present work. I am grateful to Dr. M. Prasad, Scientist-C (Retd.) for reviewing the manuscript.

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INSECTA : LEPIDOPTERA : LASIOCAMPIDAE AND LYMANTRIIDAE

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INTRODUCTION

The account of moths of families, *viz.*, Lasiocampidae and Lymantriidae from India, including Nagaland, has been been provided by Hampson (1892). Other contributions to these moths are by Strand (1910, 1915, 1929), Swinhoe (1922, 1923), Gruenberg (1925), Fletcher (1925), Gaede (1932), Bryk (1934), Collenette (1935, 1938), Collier (1936), Gupta *et al.* (1981), Mondal and Maulik (1997, 1998).

The studies on moths of these two families are based on the specimens collected by various survey parties of the Department. The specimens of these moths available in the National Zoological Collection of Zoological Survey of India have also been examined. The other species not represented in the collection have been reviewed from literature.

Presently, 22 species of moths belonging to families Lasiocampidae and Lymantriidae are dealt with from Nagaland. The family Lasiocampidae includes seven species in seven genera whereas family Lymantriidae represents 15 species in seven genera.

Keys to genera of families have been given. Fore wing length/expanse and distribution for each species have been provided.

Family LASIOCAMPIDAE

Palpi porrect and generally large; probocis absent; eyes small; antennae bipectinate in both sexes; legs generally with minute terminal pairs of spurs to mid and hind tibae and rather hairy. Fore wing with vein 1*a* not forked with *b*; 1*c* rarely present; the cell medial in position; vein 6 and 7 from the angle; vein 9 and 10 always stalked and from before the angle. Hind wing with two internal veins; 6 and 7 arising very near the base; 8 curved and almost touching 7 or connected with it by a bar, thus forming a precostal cell; accessory costal veinlets generally present. Frenulum absent.

Key to genera

1. Hind wing vein 8 running close along 7; no connecting bar; with or wihout accessory costal veinlets 2
– Hind wing vein 8 remote from 7; a bar connecting them and forming a large precostal cell with numerous accessory costal veinlets 5
2. Cells of both wings open .. ***Trabala*** Walker
– Cells of both wings closed 3
3. Hind wing with costa excised ..... ***Lebeda*** Walker
– Hind wing with costa not excised, and evenly rounded 4
4. Fore wing with veins 6 and 7 stalked ..... ***Dendrolimus*** Germer
– Fore wing with veins 7 and 8 stalked and vein 6 from cell ..... ***Kosala*** Moore
5. Fore wing with the stalk of veins 9 and 10 long ..... ***Estigena*** Moore
– Fore wing with the stalk of veins 9 and 10 short 6
6. Fore wing short, the apex rounded ..... ***Lenodora*** Moore

– Fore wing longer, the apex produced..... ..... ***Odonestis*** Germer

I. Genus ***Trabala*** Walker

1856. *Trabala* Walker, *Cat.*, **7** : 1785.

Only a single species, *Trabala vishnou* (Lefebvre) of this genus is known in India.

1. ***Trabala vishnou*** (Lefebvre)

1827. *Gastropacha vishnou* Lefebvre, *Zool. Journ.*, **3** : 207.

1892. *Trabala vishnu* (Lefebvre) : Hampson, *Fauna of British India,* (Moths), **1** : 421.

2003. *Trabala vishnou* (Lefebvre) : Maulik, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 12.

Material examined: Nagaland: Kohima District: Kohima, Science College area, alt.1800m, 3♂, 15. ix.1994. (*Coll. B. Mitra & Party*). Mon Mon district, Zonhai village, 13 km. from Mon Mon,1♂, 7. vi.1990; Zunhebeto district, Atoju village and arround, 1♂, 8.vii.1991 (*Y.P.Sinha and Party coll.*).

Wing expanse : ♂41, ♀70 mm.

Distribution : India: *Present record* : Nagaland : Kohima (Mitra 1994), Mon Mon (Sinha 1990), Zunhebeto (Sinha1990). *Past record* : Andaman Islands (Arora 1973), Assam (Swinhoe 1893), Bihar (Maulik 1994) , Himachal Pradesh (Mitra 2001), Jammu & Kashmir, Karnataka (Maulik 1982), Maharashtra (Roy 2001), Meghalaya (Swinhoe 1893), Sikkim (Elwes 1884), Tamil Nadu (Maulik 2004), Uttaranchal (Maulik 2004), West Bengal : Darjeeling (Bhowmik 1974).

Elsewhere : Bangladesh (Swinhoe 1893), Bhutan (Dudgeon 1894), Hongkong (Moore 1881), Java (Moore 1871), Myanmar (Swinhoe 1893), Pakistan (Murree), Sri Lanka (Swinhoe 1893).

Remarks : This species exhibits a large range of variation.

II Genus ***Lebeda*** Walker

1855. *Lebeda* Walker, *Cat. Lep. Het. Brit. Mus.*, **6** : 1453.

A single species, *Lebeda nobolis* Walker is dealt with here.

2. ***Lebeda nobolis*** Walker

1855. *Lebeda nobolis* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 1456.

1892. *Lebeda nobolis* Walker : Hampson, *Fauna of British India, (Moths),* **1** : 407.

2003. *Lebeda nobolis* Walker : Maulik, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9** (Part-4) : 13.

Material examined: Nagaland : Mokokchung district , Mokokchung village, 1♂, 24 .iii.1994 (*P. Mukharjee and Party coll.*); Phek district, Kutsuru, 10 km. O-Futsero, alt. 1800 m. 1♀, 25. x.1998 (*T.K. Pal and Party coll.*).

Wing expanse : ♂110, ♀138mm

Distribution : India : *Present record* : Nagaland : Mokokchung (Mukharjee 1994). *Past record :* Himachal Pradesh (Mitra 1994), Meghalaya (Maulik 1988), North - West and East Himalaya, Sikkim (Biswas 1969), Uttaranchal (Maulik 2004).

Elsewhere : Bangladesh.

Remarks : The distance between lines on inner margin of fore wing varies very much.

III Genus ***Dendrolimus*** Germer

181. *Dendrolimus* Germer, *Systematia Glossatonum Prodromus,* **2** : 35.

A single species, *Dendrolimus latipennis* (Walker) is treated here.

3. ***Dendrolimus latipennis*** (Walker)

1855. *Lebeda latipennis* Walker, *Cat. Lep. Het. Brit. Mus.*, **6** : 1457.

1892. *Metanastria latipennis* Walker : Hampson, *Fauna of British India,* (Moths), **1** : 409.

2003. *Dendrolimus latipennis* (Walker): Maulik, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 13.

Material examined : Nagaland: Kohima District: Kohima State Guest House, alt. 1460m, at light, 2♂, 2♀, 10.x.1998. (T.K.Pal & Party Coll.).

Wing expanse : ♂84, ♀124 mm.

Distribution : India : *Present record* : Nagaland : Kohima (Pal 1998). *Past record :* Assam, Sikkim

(Biswas 1969), Uttaranchal (Maulik 2004), West Bengal (Ghosh 1986).

Elsewhere : Borneo, Myanmar, Sri Lanka.

Remarks : There is variation in the colouration of head, thorax, abdomen and hind wings.

IV Genus ***Kosala*** Moore

1879. *Kosala* Moore, *Proc. zool. Soc. Lond.*,: 418.

A species, *Kosala rufa* Hampson of this genus is treated here.

4. ***Kosala rufa*** Hampson

1892. *Kosala rufa* Hampson, *Fauna of British India*, (Moths), **1** : 419.

Material examined : Nil.

Wing expanse : ♂ 62 mm.

Distribution : India : *Past record* : Nagaland.

Remarks : This species is endemic to Nagaland.

V Genus ***Estigena*** Moore

1859. *Estigena* Moore, *Lep. East India Coy.* : 426.

A species, *Estigena pardalis* Walker of this genus is dealt with.

5. ***Estigena pardalis*** Walker

1856. *Estigena pardalis* Walker, *Cat. Lep. Het. Brit. Mus.*, **6** : 1453.

1859. *Estigena pardale* Moore, *Cat. Lep. East India Coy.* **2** : 426.

1892. *Estigena pardalis* Walker : *Fauna of British India including Ceylon and Burma* (Moths), **1** : 424.

Material examined : Kohima district, Kohima Forest Banglow Garden, 2♂, 1♀, 22.ix.1999 (*P. H. Roy and Party coll.*).

Wing expanse : ♂38, ♀72 mm.

Distribution : India : *Present record* : Nagaland : Kohima (Roy 1999); *Past record* : Andaman Islands, widely distributed in India.

Elsewhere : Arabia (Swinhoe1883); Java (Moore 1878) ; Myanmar Java (Moore 1883) : Sri Lanka (Swinhoe1889).

Remarks : The female lacks ochreous patch on hind wing.

VI Genus ***Lenodora*** Moore

1883. *Lenodora* Moore, *Lep. Ceyl.*, **2** : 144.

A species, *Lenodora semihyalina* Swinhoe of this genus is dealt with.

6. ***Lenodora semihyalina*** Swinhoe

1890. *Lenodora semihyalina* Swinhoe, *Trans. ent. Soc.*, : 196, pl.6, figs.10, 16.

1892. *Lenodora semihyalina* Swinhoe: Hampson, *Fauna of British India including Ceylon and Burma* (Moths), **1** : 424.

Material examined : Nagaland : Mokokchung district, Mokokchung village, 1♂, 1♀, 24. iii.1994 (*P. Mukharjee and Party coll.*).

Wing expanse : ♂40, ♀46 mm.

Distribution : India : *Present record* : Nagaland : Mokokchung (Mukharjee 1994).

Elsewhere : Bassein (Swinhoe 1889), East Pegu (Swinhoe 1889), and Rangoon. (Swinhoe 1889),

Remarks : In India, this species is restricted in distributon Nagaland.

VII Genus ***Odonestis*** Germer

1811. *Odonestis* Germar, *Syst. Glose, Prod.*, **2** : 35 / 49

A single species, *Odonestis isocyma* Hampson is treated here.

7. ***Odonestis isocyma*** Hampson

1892. *Odonestis isocyma* Hampson, *Fauna of British India*, (Moths), **1** : 427.

Material examined : Nagaland : Kohima District, Kohima Forest Banglow Garden, 1♂., 22.xi.1994 (*P.H. Roy and Party coll.*).

Wing expanse : ♂, 40 mm.

Distribution : India : *Present record* : Nagaland : Kohima (Roy 1994).

Remarks : This species is known from an altitude of 1850 m in Nagaland.

Family LYMANTRIIDAE

Mostly clothed with hair-like scales and with very developed pectinations to the antennae in the male , the branches often having long terminal spines, and spines to retain them in position ; the females often have a largely developed anal tuft of hair for covering the eggs.

Probocis absent; legs hairy; frenulum present. Fore wing with vein 1a not anastomosing with 1b; 1c absent; 5 from close to lower angle of cell. Hind wing with two internal veins; 5 from close to lower angle of cell ; 8 nearly touching 7 at middle of cell and connected with it by a bar.

Key to genera

1. Fore wing vein 9 arising from 10 and anostomosing with vein 8 to form the areole or both the veins 9 and 10 anastomosing to form the areole 2
- Fore wing without areole or rarely vein 10 arising from vein 11 and anostomosing with vein 8 to form the areole 5
2. Fore wing with veins 9 and 10 anostomosing with vein 8 to form the areole ..... ***Mardara*** Walker
- Fore wing vein 9 arising from vein '10 and anostomosing with vein 8 to form the areole 3
3. Fore tarsi with lateral tufts of hair to the joints 4
- Fore tarsi without lateral tufts of hair to the joints ..... *Aroa* Walker
4. Hind tibia with one pair of spurs ..... ***Orgyia*** Ochsenheimer
- Hind tibia with two pairs of spurs ..... ***Cifuna*** Walker
5. Fore wing with vein 10 from the cell, rarely stalked with vein 11 ..... ***Caviria*** Walker
- Fore wing with veins 7,8,9 and 10 stalked 6
6. Palpi upturned ..... ***Lymantria*** Huebner
- Palpi porrect ..... ***Euproctis*** Huebner

VIII Genus ***Mardara*** Walker

1865. *Mardara* Walker, *Cat. Lep. Het. Brit. Mus.*, **32** : 329.

Three species of this genus are treated.

8. ***Mardara plagidotata*** Walker

1858. *Mardara plagidotata* Walker, *Cat. Lep. Het. Brit. Mus.*, **25** : 1483.

1892. *Mardara plagidotata* Walker : Hampson, *Fauna of British India including Ceylon and Burma* (Moths), **1** : 454.

Material examined : Nagaland : Kohima district, Kohima Forest Banglow Garden, 1♂, 2♀, 22.ix.1999 (P.H. Roy and Party coll.).

Wing expanse : ♂64 , ♂71 mm..

Distribution : India : *Present record* : Nagaland : Kohima (Roy 1999). *Past record* : Sikkim (Dudgeon 1894)

Remarks : The species is not known to display significant variation.

9. ***Mardara caligramma*** Walker

1865. *Mardara caligramma* Walker, *Cat. Lep. Het. Brit. Mus.*, **32** : 402.

1892. *Mardara caligramma* Walker : Hampson, *Fauna of British. India including Ceylon and Burma* (Moths), **1** : 455.

Material examined : Nagaland : Mokokchung district, Mokokchung village, 1♂, 1♀, 24. iii.1994 (*P. Mukharjee and Party coll.*).

Wing expanse : ♂50, ♀58 mm.

Distribution : India : *Present record* : Nagaland : Mokokchung (Mukharjee 1994). *Past record* : Himachal Prdesh (Mondal 1972), Sikkim (Hampson 1897).

Remarks : The species is not known to exhibit significant variation.

10. ***Mardara albostriata*** Hampson

1892. *Mardara albostriata* Hampson, *Fauna of British India including Ceylon and Burma* (Moths), **1** : 455.

Material examined : Zunhebeto district, Atoju village and arround, 1♂., 8.vii.1991 (Y.P. Sinha and Party coll.).

Wing expanse : ♂60 mm.

Distribution : India : *Present record* : Nagaland : Zunhebeto (Sinha 1991); Manipur (Mondal 1992)

Remarks : The species is not known to show significant variation.

IX Genus *Aroa* Walker

1855. *Aroa* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 791.

Three species of this genus are treated here.

11. *Aroa socrus* (Geyer)

1855. *Gynaephora socrus* Geyer, *Huebn. Zutr.*, **5** : 12, figs. 387, 388 or 837,838.

1892. *Aroa socrus* (Geyer) : Hampson, *Fauna of British. India including Ceylon and Burma* (Moths), **1** : 439.

Material examined : Nil.

Wing expanse : ♂♂, 32-38 mm.

Distribution : India : *Past record* : Nagaland, Assam, Meghalaya and Sikkim.

Elsewhere : Bangladesh, China, Hongkong, Java and Myanmar.

Remarks : The species is not known to show significant variation.

12. *Aroa pyrrhochroma* Walker

1865. *Aroa pyrrhochroma* Walker, *Cat. Lep. Het. Brit. Mus.*, **32** : 329.

1892. *Aroa pyrrhochroma* Walker : Hampson, *Fauna of British. India*, (Moths), **1** : **439.**

Material examined : Nil.

Wing expanse : ♂26, ♀44 mm.

Distribution : India : *Past record* : Nagaland, Assam , Himachal Pradesh (Mandi), Maharashtra, Meghalaya, North-West Himalaya, Sikkim and West Bengal.

Remarks : However, the specimens collected from Mumbai (Bombay) being small and the female uniformly pale orange were designated the form *clara.*

13. *Aroa aurantifascia* Hampson

1892. *Aroa aurantifascia* Hampson, *Fauna of British India including Ceylon and Burma* (Moths), **1** : 440.

Material examined : Nil.

Wing expanse : ♂ 44 mm.

Distribution : India : *Past record* : Nagaland (Naga Hills).

Remarks : The species is endemic to Nagaland where it is known from an altitude of 1835m in Naga Hills.

X Genus *Orgyia* Ochsenheimer

1810. *Orgyia* Ochsenheimer, *Schmett. Eur.*, **3** : 208.

A single species, *Orgyia postica* (Walker) of this genus is dealt with.

14. *Orgyia postica* (Walker)

1855. *Lacida postica* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 803.

1892. *Orgyia postica* (Walker) : Hampson, *Fauna of British. India, including Ceylon and Burma* (Moths), **1** : 436.

Material examined : Nil.

Wing expanse : ♂24, ♀28 mm.

Distribution : India : *Past record* : Nagaland, Sikkim, Tamil Nadu (Nilgiris), West Bengal.

Elsewhere : Borneo, East Indies, Java, Myanmar, New Guinea, Sri Lanka and Taiwan.

Remarks : The female differs from male in having aborted wings.

XI Genus *Cifuna* Walker

1855. *Cifuna* Walker, *Cat. Lep. Het. Brit. Mus.*, **5** 1172

A species, *Cifuna locuples* Walker of this genus is dealt with.

15. *Cifuna locuples* Walker

1855. *Cifuna locuples* Walker, *Cat. Lep. Het. Brit. Mus.*, **5** : 1173.

1892. *Cifuna locuples* Walker : Hampson, *Fauna of British. India including Ceylon and Burma* (Moths), **1** : 446.

Material examined : Nil.

Wing expanse : ♂♂, 40-52 mm (Hampson, 1892).

Distribution : India : *Past record* : Nagaland, Meghalaya.

Elsewhere : Bangladesh, Japan.

Remarks : The female is uniformly much darker.

XII Genus ***Caviria*** Walker

1855. *Caviria* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 824.

A species, *Caviria ochripes* (Moore) of this genus is dealt with.

16. ***Caviria ochripes*** (Moore)

1879. *Stilpnotia ochripes* Moore, *Descr. Ind. Lep. Atk.* **1** : 45.

1892. *Caviria ochripes* (Moore) : Hampson, *Fauna of British. India including Ceylon and Burma* (Moths), **1** : 490.

Material examined : Nil.

Wing expanse : ♂40, ♀50 mm.

Distribution : India : *Past record :* Nagaland, Sikkim.

Elsewhere : Myanmar.

Remarks : The female varies showing frons, costa and apex of fore wing tinged with fuscous.

XIII Genus ***Lymantria*** Huebner

1818. *Lymantria* Huebner, *Verz.* : 160.

A species, *Lymantria concolor* Walker of this genus is dealt with.

17. ***Lymantria concolor*** Walker

1855. *Lymantria concolor* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 803.

1892. *Lymantria concolor* Walker : Hampson, *Fauna of British. India, including Ceylon and Burma* (Moths), **1** : 459.

Material examined : Nil.

Wing expanse : ♂55, ♀88 mm.

Distribution : India : *Past record* : Nagaland, North-West Himalaya and Sikkim.

Elsewhere : Bangladesh and Myanmar.

Remarks : The colouration of head, thorax and wings may be yellowish.

XIV Genus ***Euproctis*** Huebner

1818. *Euproctis* Huebner, *Verz.* : 150.

Five species of this genus occurring in India are treated.

18. ***Euproctis divisa*** Walker

1855. *Euproctis divisa* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 836.

1892. *Euproctis divisa* Walker : Hampson, *Fauna of British. India, including Ceylon and Burma* (Moths), **1** : 471.

Material examined : Nil.

Wing expanse : ♂♀, 34-50 mm..

Distribution : India : *Past record* : Nagaland, Meghalaya, Punjab, Sikkim.

Elsewhere : Bangladesh, Nepal.

Remarks : The species is not known to exhibit significant variation.

19. ***Euproctis antiphates*** Hampson

1892. *Euproctis antiphates* Hampson, *Fauna of British India including Ceylon and Burma* (Moths), **1** : 478.

Material examined : Nil.

Wing expanse : ♂24 mm.

Distribution : India *: Past record* : Nagaland, Naga Hills.

Remarks : The species is endemic to Nagaland and is from an altitude of 600 m.

20. ***Euproctis varia*** Walker

1855. *Euproctis varia* Walker, *Cat. Lep. Het. Brit. Mus.*, **4** : 840.

1892. *Euproctis varia* Walker : Hampson, *Fauna of British. India including Ceylon and Burma* (Moths), **1** : 480.

Material examined : Nil.

Wing expase : ♂46, ♀58 mm.

Distribution : India : *Past record :* Nagaland, Himachal Pradesh, Sikkim.

Elsewhere : Myanmar (Mergui).

Remarks : The species is not known to show significant variation.

21. ***Euproctis lativittta*** (Moore)

1879. *Pida lativitta Moore, Descr. Ind. Lep. Atk.* **1** : 49.

1892. *Euproctis lativittta* (Moore): Hampson, *Fauna of British. India including Ceylon and Burma* (Moths), **1** : 481.

Material examined : Nil.

Wing expanse : 52 mm.

Distribution : India : *Past record :* Nagaland, Sikkim, West Bengal.

Remarks : The species is not known to display significant variation.

22. ***Euproctis bipunctapex*** Hampson

1891. *Euproctis bipunctapex* Hampson, *Ill. Lep. Het. Brit. Mus.*, **8** : 57.

1892. *Euproctis bipunctapex* Hampson: Hampson, *Fauna of British. India including Ceylon and Burma* (Moths), **1** : 484.

Material examined : Nil.

Wing expanse : ♂24, ♀40 mm.

Distribution : India : *Past record :* Nagaland, Nilgiris.

Elsewhere : China, Kangraand Myanmar.

Remarks : The fore wing is with a brown spot at end of cell visible and a male from Naga Hills bears only a subapical spot.

SUMMARY

Twenty two species of moths belonging to two families, Lasiocampidae and Lymantriidae are dealt with from Nagaland. The family Lasiocampidae includes seven species in seven genera whereas family Lymantriidae represents 15 species in seven genera. Of these 22 species, ten are first definitive records for the state of Nagaland.

AKNOWLEDGEMENTS

The authors are grateful to the Director, Zoological Survey of India for providing necessary Laboratory facilities for carrying out present studies on moths. They are thankful to Dr. A.K. Hazra, Scientist-'E' and Officer-in-Charge of the Entomology Division (A), for encouragement; to Shri Rati Ram, Publication Production Officer and Shri Roop Lal, Stores Officer, of the same department for various courtsies

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INSECTA : LEPIDOPTERA : ARCTIIDAE AND CTENUCHIDAE

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INTRODUCTION

North-east India is one of the 18 hot spots in the world for harbouring very rich biodiversity. India includes 15,000 species of butterflies and moths which is about 10% of the species of Lepidoptera known in the world. This part of India is well known for species richness of Lepidoptera and inhabitates more than 5,000 species. Nagaland, a state of Union of India, provides shelter to its unique fauna, as a large number of species of Lepidoptera have developed to local forms and subspecies. Earlier, significant works on moths of the family Arctiidae from India are by Hampson (1894,1900,1901, 1905, 1914), Seitz (1913), Draudt (1914), Rothschild (1914), and Roepke (1944). The arctiids of North-Eastern States of India have been studied by Dudgeon (1903), Arora and Chaudhury (1982), Ghosh and Chaudhury (1997, 1998), Majumdar (Chaudhury) (2003). On the other hand, contributions to the studies of Indian moths of family Ctenuchidae are by Hampson (1892, 1898) and, later on, followed by Arora (1980), Arora *et al.* (1982), Ghosh and Chaudhury (1997, 1998) and Majumdar (Chaudhury) (2003).

Altogether, 39 species of moths belonging to families, viz., Arctiidae and Ctenuchidae have been treated from the state of Nagaland. The family Arctiidae is represented by 28 species in 19 genera in five subfamilies—Arctiinae, Lithosiinae, Nolinae, Nyctemerinae and Spilosominae; and 11 species in five genera under the family Ctenuchidae. Of these 39 species, 12 are the first definitive records for the State of Nagaland. The classification and nomenclature have been followed mainly after Hampson (1898) for species of family Ctenuchidae and Hampson (1900, 1901) for family Arctiidae.

The studies are based on the collection of moths made by several survey parties of the department. The specimens available in the National Zoological Collection of Zoological Survey of India have also been examined. The species not represented in the collection have been reviewed from literature.

Family ARCTIIDAE

Subfamily NOLINAE

I. Genus *Celama* Walker

1864. *Celama* Walkar, *Cat. Lep. Het. Brit. Mus*, **32** 500

Remarks : Of the 16 species of this genus occurring in India, three are treated here.

Key to species

1. Antennae of male pectinate 2
– Antennae of male with fascicles of cilia .... *erythrostigmata* (Hampson)
2. Fore wing with medial band confluent With the postmedial series of points below The cell ..... *encausta* (Hampson)
– Fore wing without medial band .... *astigma* (Hampson)

1. *Celama erythorostigmata* (Hampson)

1894. *Nola erythrostigmata* Hampson, *Fauna Brit. India*, Moths, **2** : 139.

1900. *Celama erythorostigmata* (Hampson) : Hampson, *Cat Lep. Phal. Brit. Mus.*, **2** : 8-9.

Material examined : Nil.

Wing expanse : 13 mm (Hampson, 1894).

Distribution : India : Nagaland (Naga Hills).

Elsewhere : Anam, Bhutan and Borneo.

Remarks : The species is not known to show significant variation.

2. *Celama encausta* Hampson.

1900. *Celama encausta* Hampson : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 8–9.

2003. *Celama encausta* Hampson: Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 180.

Material examined : Nil.

Wing expanse : 18 mm (Majumdar, 2003).

Distribution : India : Nagaland, Annam, Sikkim.

Remarks : Hampson (1900) proposed new name *Celama encausta* for Rhynchopalpus fasciatus Hampson (1894), which was recorded from an altitude of 6000feet in Nagaland.

3. *Celama astigma* (Hampson)

1894. *Nola astigma* Hampson, *Fauna Brit. India*, Moths., **2** : 140

1900. *Celama astigma* (Hampson) : Hampson *Cat. Lep. Phal. Brit. Mus.*, **2** : 12, pl. 18, fig. 7.

2003. *Celama astigma* (Hampson): Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 180.

Material examined : Nil.

Wing expanse : 21 mm (Hampson, 1894).

Distribution : India : Nagaland. Manipur, Sikkim.

Elsewhere : Annam.

Remarks : The species was recorded earlier from an altitude of 3000 feet in Nagaland and 6000 feet in Manipur.

II. Genus *Nola* Leech

1815. *Nola* Leech, *Edinb. Encycl.*, **9** : 135.

Remarks : Of the six species representing this genus in India, only one-*Nola brunella* (Hampson) is dealt with here.

4. *Nola brunella* (Hampson)

1893. *Rhynchopalpus brunella* Hampson, *Ill. Het.*, **9** : 89, pl. 158, fig. 31.

1894. *Rhynchopalpus brunellus* (Hampson) : Hampson, *Fauna Brit. India*, Moths., **2** : 140.

1901. *Nola brunella* (Hampson) : Hampson *Cat. Lep. Phal. Brit. Mus.*, **2** : 34.

2003. *Nola brunella* (Hampson) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 183.

Material examined : Nil.

Wing expanse : 21 mm (Hampson, 1894).

Distribution : India : Nagaland, Assam, Sikkim.

Elsewhere : Sri Lanka.

Remarks : The species is not known to exhibit significant variation.

III. Genus *Roesalia* Heubner

1827. *Roesalia* Huebner, *Verz. bek. Schmett.* : 397.

Remarks : This genus is represented in India by ten species in India of which two species are dealt with from Nagaland.

Key to species

Fore wing with fuscous fascia from Cell to termen ..... *ascripta* (Hampson)

– Fore wing without fuscous fascia from cell to termen ..... *indistincta* (Hampson)

5. *Roesalia indistincta* (Hampson)

1894. *Selca indistincta* Hampson, *Fauna Brit. India*, Moths, **2** : 147.

1900. *Roesalia indistincta* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 66, pl. 20, fig. 10.

Material examined : Nil.

Wing expanse : 20 mm (Hampson, 1900).

Distribution : India : Nagaland (Naga Hills), Assam.

Remarks : Earlier, the species was recorded from an altitude of 3000 feet in Nagaland.

6. *Roesalia ascripta* (Hampson)

1894. *Selca ascripta* Hampson, *Fauna Brit. India*, Moths, 2 : 147.

1900. *Roesalia ascripta* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 2 : 71-72.

Material examined : Nil.

Wing expanse : 28 mm (Hampson, 1900).

Distribution : India : Nagaland, Assam.

Remarks : Previously, the species was recorded from an altitude of 3000 feet in Nagaland.

Subfamily LITHOSIINAE

Key to genera of Lithosiinae

1. Fore wing with vein M_2 absent 2
- Fore wing with vein M_2 present 5
2. Hind wing vein M_3 absent ..... ***Poliosia*** Hampson
- Hind wing vein M_3 present 3
3. In male hind wing without secondary sexual character ..... ***Eilema*** Huebner
- In male hind wing with secondary sexual character 4
4. Fore wing cell a little over half the length of wing, tufts about half the length of cell ..... ***Prabhasa*** Moore
- Fore wing cell about two thirds the length of wing, tufts two thirds length of cell ..... ***Zadarda*** Moore
5. Fore wing with an areole ..... ***Agylla*** Walker
- Fore without areole 6
6. Hind wing with vein M_2 obsolescent From just below angle of discocellular ..... ***Cyana*** Walker
- Hind wing vein M_2 fully developed from well below angle of discocellular 7
7. Palpi upturned ..... ***Siccia*** Walker
- Palpi porrect 8
8. Fore wing vein R_1 anastomosing with S_C ... ***Asura*** Walker
- Fore wing vein R_1 not anastomosing with S_C 9
9. Fore wing vein M_2 free 10
- Fore wing vein M_2 stalked with M_3 ..... ***Trischalis*** Hampson
10. Fore wing vein R_2 free ..... ***Miltochrista*** Huebner
- Fore wing vein R_2 stalked with R_3 ..... ***Schistophleps*** Hampson

IV. Genus *Poliosia* Hampson

1900. *Poliosia* Hampson, *Cat. Lep. Phal. Brit. Mus.*, 2 : 106.

Remarks : There are four species of this genus are known from India of which only one *Poliosia cubitifera* (Hampson) is treated here.

7. *Poliosia cubitifera* (Hampson)

1894. *Lithosia cubitifera* Hampson, *Fauna Brit. India*, Moths, 2 : 82.

1900. *Poliosia cubitifera* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 2 : 108.

2003. *Poliosia cubitifera* (Hampson) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 194.

Material examined : Nil.

Wing expanse : 24-28 mm (Hampson, 1900).

Distribution : India : Nagaland, Assam, Sikkim.

Remarks : Previously, the species is known from an altitude of 3000 feet in Nagaland.

V. Genus *Eilema* Huebner

1816. *Eilema* Huebner, *Verz. beck. Schmett.*, 165

Of the 37 species of this genus occurring in India, two, *viz.*, *Eilema tetragona* (Walker) and *E. plembeomicans* (Hampson) are dealt with here.

Key to species

Fore wing with a large quadrate post medial Black patch from cell to inner margin ..... ***tetragona*** (Walker)

– Fore wing without post medial black mark below the cell.... *plumbeomicans* (Hampson)

8. *Eilema tetragona* (Walker)

1854. *Lithosia tetragona* Walker, *List. Lep. Insects. Brit. Mus.*, **2** : 510.

1894. *Thysanoptyx tetragona* Walker, *Fauna Brit. India*, Moths, **2** : 75.

1998. *Eilema tetragona* (Walker), Ghosh & Choudhury, *Fauna of Meghalaya, State Fauna Series*, **4**(6) : 362.

2003. *Eilema tetragona* (Walker) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 197.

Material examined : Nil.

Wing expanse : Male; 30-34 mm; female, 36-38 mm (Hampson, 1894).

Distribution : India : Nagaland, Assam, Arunachal Pradesh, Kerala, Manipur, Meghalaya, Tamilnadu.

Elsewhere : Bangladesh, Borneo, China, Kampuchea.

Remarks : Previously, the species is known from an altitude of 3000feet in Nagaland.

9. *Eilema plumbeomicans* (Hampson)

1894. *Prabhasa plumbeomicans* Hampson, *Fauna Brit. India*, Moths, **2** : 77.

2003. *Eilema plumbeomicans* (Hampson): Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 197.

Remarks : Previously, the species is known from an altitude of 3000 feet in Nagaland.

VI Genus *Prabhasa* Moore

1878. *Prabhasa* Moore, *Proc. zool. Soc. Lond.*, : 25, pl. II, fig. 16.

Remarks : The genus is represented in India by three species of which *Prabhasa venosa* Moore is treated here.

10. *Prabhasa venosa* Moore

1878. *Prabhasa venosa* Moore, *Proc. zool. Soc. Lond.* : 26, pl. II, fig. 16.

1894. *Prabhasa venosa* Moore, *Fauna Brit. India*, Moths, **2** : 76.

1997. *Prabhasa venosa* Moore: Ghosh & Chaudhury, *Fauna of West Bengal, State Fauna Series*, **3**(Part-7) : 266

2003. *Prabhasa venosa* Moore : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 199.

Material examined : Nil.

Wing expanse : 37 mm (Hampson, 1894).

Distribution : India : Nagaland. Assam, Arunachal Pradesh, Meghalaya, Sikkim, West Bengal.

Elsewhere : Bhutan, China and Myanmar.

Remarks : The fore wing bears a more or less developed post discal spot in female which is absent in male.

VII. Genus *Zadadra* Moore

1878. *Zadadra* Moore, *Proc. zool. Soc. Lond.* : 572

Remarks : A single species, *Zadarda distorta* (Moore) of this genus occurs in India.

11. *Zadadra distorta* (Moore)

1872. *Lithosia distorta* Moore, *Proc. zool. Soc. Lond.*, : 572.

1894. *Prabhasa distorta* Hampson, *Fauna Brit. India*, Moths, **2** : 77.

1998. *Zadadra distorta* (Moore) : Ghosh & Chaudhury, *Zool. Surv. India, Fauna of Meghalaya, State Fauna Series*, **4**(6) : 361.

2003. *Zadadra distorta* (Moore) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 199.

Material examined : Nil.

Wing expanse : 55 mm (Hampson, 1894).

Distribution : India : Nagaland. Arunachal Pradesh, Assam, Meghalaya, Sikkim, West Bengal.

Elsewhere : China, Nepal.

Remarks : The head is orange yellow and hind wing yellowish grey in male but head and hind wings are whitish and yellowish white, respectively, in female.

VIII. Genus *Agylla* Walker

1854. *Agylla* Walker, *List. Lep. Insect. Brit. Mus.*, **2** : 552.

Remarks : Of 16 species of this genus occurring in India, only *Agylla prasena* (Moore) is treated here.

12. *Agylla prasena* (Moore)

1859. *Tripura prasena* Moore, *Lep. East India Comp.*, : 299, pl. 7a, figt. 6

1894. *Macrobrochis prasena* Hampson, *Fauna Brit. India*, Moths, 2 : 66.

1900. *Agylla prasena* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 2 : 210.

2003. *Agylla prasena* (Moore) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 201.

Material examined : Nil.

Wing expanse : 58 mm (Hampson,1900).

Distribution : India : Nagaland, Assam, Punjab (Dalhousie), Himachal Pradesh (Kangra), Sikkim, N. W. Himalaya.

Remarks : The species is not known to show significant variation.

IX. Genus *Cyana* Walker

1854. *Cyana* Walker, *List. Lep. Het. Brit. Mus.*, 2 : 528

Remarks : Thirty species of this genus occur in India, of which four are treated here.

Key to species

1. Fore wing with lobe bifid 2
– Fore wing with the lobe single..... ..... *dudgeoni* Hampson
2. Abdomen with terminal half Crimson .... *arama* (Moore)
– Abdomen wholly white 3
3. Forewing with fuscous spot at end of cell .. .. *detrita* (Walker)
– Forewing with black spot at end cell..... ..... *dohertyi* (Elwes)

13. *Cyana arama* (Moore)

1859. *Bizone arama* Moore, *Cat. Lep. East India Comp.*, : 306.

1894. *Cyana arama* (Moore) : Hampson, *Fauna Brit. India*, Moths, 2 : 62.

1998. *Cyana arama* (Moore) : Ghosh & Choudhury, *State Fauna Series 4, Fauna of Meghalaya*, Part-6 : 366.

2003. *Cyana arama* (Moore) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 203.

Material examined : Nil.

Wing expanse : 23-35 mm. (Hampson 1900).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim, West Bengal.

Remarks : The species is not known to show significant variation.

14. *Cyana dohertyi* (Elwes)

1890. *Bizone dohertyi* Elwes, *Proc. zool. Soc. London*, : 394, pl 32, fig. 4.

1894. *Cyana dohertyi* (Elwes) : Hampson, *Fauna Brit. India*, Moths, 2 : 62.

1998. *Cyana dohertyi* (Elwes) : Ghosh & Choudhury, *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 366.

2003. *Cyana dohertyi* (Elwes) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 204.

Material examined : Nil.

Wing expanse : 23-35 mm. (Hampson, 1900)

Distribution : India : Nagaland (Naga Hills), Assam, Meghalaya, North-west Himalaya, Sikkim.

Remarks : The species is not known to show significant.

15. *Cyana detrita* Walker

1854. *Cyana detrita* Walker, *List Lep. Insect. Brit. Mus.*, 2 : 529.

1894. *Lithosia cubitifera* Hampson, *Fauna Brit. India*, Moths, 2 : 60.

1998. *Cyana detrita* Walker : Ghosh & Chaudhury, *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 367

2003. *Cyana detrita* Walker: Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 204.

Material examined : Nil.

Wing expanse : Male, 28 mm; female, 38mm (Hampson, 1894).

Distribution : India : Nagaland, Assam, H.P., Meghalaya, Mussorie, N.W. Himalaya.

Remarks : The species is not known to show significant variation.

16. *Cyana dudgeoni* (Elwes)

1895. *Cyana dudgeoni* (Elwes) : Hampson, *Trans. ent. Soc. Lond.*, : 293.

1998. *Cyana dudgeoni* (Elwes) : Ghosh & Choudhury, *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 365.

2003. *Cyana dudgeoni* (Elwes): Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 204.

Material examined : Nagaland, Kohima District, near Bible college, 1480 m., 1 ex., 21.10.1998. (Coll. T.K. Pal).

Wing expanse : 24mm.

Distribution : India : Nagaland, Assam, Arunachal Pradesh, Sikkim, Meghalaya.

Elsewhere : Bhutan.

Remarks : This species is a first definitive record from Kohima District in Nagaland.

X. Genus *Siccia* Walker

1854. *Siccia* Walker, *List. Lep. Insect. Brit. Mus.*, **2** : 539.

Remarks : Of nine species of this genus known from India, only *Siccia seriata* Hampson is dealt with here.

17. *Siccia seriata* Hampson

1900. *Siccia seriata Hampson, Cat. Lep. Phal. Brit. Mus.*, **2** : 395-396.

1998. *Siccia seriata* Hampson: Hampson, Ghosh & Choudhury, *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 375.

Material examined : Nil.

Wing expanse : 32 mm (Hampson,1900).

Distribution : India : Nagaland, Assam, Sikkim, Meghalaya, Maharashtra, N.W. Himalaya.

Remarks : The species is not known to exhibit significant variation.

XI Genus *Asura* Walker

1854. *Asura* Walker, *List. Lep. Het. Brit. Mus.*, **2** : 484.

Remarks : This genus is represented in India by 42 species, of which only *Asura frigida* (Walker) is treated here.

18. *Asura frigida* (Walker)

1854. *Doliche frigida* Walker, *List Lep. Insects. Brit. Mus.*, **2** : 530.

1894. *Nepita frigida* (Walker) : Hampson, *Fauna Brit. India*, Moths, **2** : 107.

1900. *Asura frigida* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 464.

1998. *Asura frigida* (Walker) : Ghosh & Choudhury, *Fauna of Meghalaya, State Fauna Series*, **4**(Part-6) : 368.

2003. *Asura frigida* (Walker): Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 207.

Material examined : Nil.

Wing expanse : Male, 21 mm; female 24 mm (Hampson, 1900).

Distribution : India : Nagaland, Assam, Sikkim.

Elsewhere : Myanmar, Borneo, Sarawak, Sumatra, Java, Pulo Laut.

Remarks : Hampson (1894) mentioned that the hind wing was suffused with fuscous, and a black spot at end of cell in specimens from Sikkim and Naga Hills.

XII Genus *Trischalis* Hampson

1894. *Trischalis* Hampson, *Fauna Brit. India*, Moths, **2** : 101.

Remarks : Of two species of this genus occurring in India, only *Trischalis absconditana* (Walker) is treated here.

19. *Trischalis absconditana* (Walker)

1863. *Tospitis absconditana* Walker, *List. Lep. Het. Brit. Mus.*, **28** : 432.

1900. *Trischalis absconditana* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 549-550.

Material examined : Nil.

Wing expanse : 14 mm (Hampson, 1900).

Distribution : India : Nagaland, Assam.

Elsewhere : Borneo, Saraswah, Sri Lanka.

Remarks : The species is not known to exhibit significant variation.

XIII Genus *Miltochrista* Heubner

1816. *Miltochrista* Huebner, *Verz. bek. Schmett.*, : 16 C.

Remarks : This genus is represented in India by 28 species of which two, *viz.*, *M. strigivenata* Hampson and *M. cuneonotata* (Walker) are dealt with here.

Key to species

- Fore wing of male with median nervure bent upwards at extremity, discocellular short. Fore wing crimson, abdomen pinkish at base..... ..... *strigivenata* Hampson
- Fore wing of male normal. Fore wing yellow, abdomen greyish at base .... *cuneonotata* (walker)

20. *Miltochrista strigivenata* Hampson

1894. *Miltochrista strigivenata* Hampson, *Fauna Brit. India*, Moths, **2** : 107.

1900. *Miltochrista strigivenata* Hampson : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 473, pl. 32, fig. 32.

Material examined : Nil.

Wing expanse : 25 mm (Hampson, 1900).

Distribution : India : Nagaland, Assam, Meghalaya.

Remarks : Earlier, this species was collected at an altitude of 6000 feet from Naga hills.

21. *Miltochrista cuneonotata* (Walker)

1855. *Ammatho cuneonotata* Walker, *List. Lep. Insects. Brit. Mus.*, **3** : 759.

1892. Miltochrista *cuneonotata* (Walker), *Fauna Brit. India*, Moths, **2** : 117.

1922. *Miltochrista cuneonotata* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **2** : 482-483.

2003. *Miltochrista cuneonotata* (Walker): Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 211.

Material examined : Nil.

Wing expanse : 30-42 mm. (Hampson, 1900).

Distribution : India : Nagaland, Arunachal Pradesh, Meghalaya, Sikkim, West Bengal.

Elsewhere : Sri Lanka, Malayasia, Indonesia and thePhillippnes.

Remarks : The species is known exhibit much variation and, therefore, several local forms are known.

XIV Genus *Schistophleps* Hampson

1891. *Schistophleps* Hampson, *Ill. Het.*, **8** : 453.

Remarks : Only a single species, *Schistophleps bipunctata* Hampson occurring in India, is treated here.

22. *Schistophleps bipuncta* Hampson

1891. *Schistophleps bipuncta* Hampson, *Ill. Het.*, **8** : 54

1894. *Schistophleps bipuncta* Hampson: Hampson, *Fauna Brit. India*, Moths, **2** : 125.

1900. *Schistophleps bipuncta* Hampson : Hampson *Cat. Lep. Phal. Brit. Mus.*, **2** : 527-28.

Material examined : Nil.

Wing expanse : 20-22 mm (Hampson, 1900).

Distribution : India : Nagaland, Assam, Nilgiris.

Elsewhere : Sri Lanka, Myanmar.

Remarks : The species is not known to show significant variation.

Subfamily ARCTIINAE

XV Genus *Diacrisia* Huebner

1827. *Diacrisia* Huebner, *Verz. bek. Schmett.*, : 169.

Key to species

- Fore wing whitish buff with black points. Abdomen orange but buff at base and extremity.....*punctata* (Moore)
- Fore wing orange red with scarlet veins. Abdomen orange red with dorsal black band ..... *erythrophleps* (Hampson)

23. ***Diacrisia punctata*** (Moore)

1859. *Spilosoma punctata* Moore, *Lep. East India, Comp.*, : 355.

1894. *Nudaria punctata* (Moore): Hampson, *Fauna Brit. India*, Moths, **2** : 124.

1901. *Diacrisia punctata* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **3** : 279-80.

2003. *Diacrisia punctata* (Moore) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9** (Part-4) : 185

Material examined : Nil.

Wing expanse : Male : 34 mm., Female : 40-44 mm. (Hampson, 1901)

Distribution : India : Nagaland, Assam, Sikkim, West Bengal.

Elsewhere : Bassein, Java, Myanmar, Thetmyo.

Remarks : The species is not known to display significant variation.

24. ***Diacrisia erythrophleps*** (Hampson)

1894. *Spilosoma erythrophleps* Hampson, *Fauna Brit. India*, Moths, **2** : 8.

1901. *Diacrisia erythrophleps* (Hampson) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **3** : 284.

Material examined : Nil.

Wing expanse : 32 mm (Hampson, 1901).

Distribution : India : Nagaland, Assam.

Remarks : Previously, the species is known from an altitude of 6000 feet in Naga hills.

Subfamily NYCTEMERINAE

XVI. Genus *Nyctemera* Huebner

1820. *Nyctemera* Huebner, *Verz. bek. Schmett.*, : 178.

Remarks : This genus is represented in India by 12 species of which, *Nyctemera adversats* (Schaller) is dealt with here.

25. ***Nyctemera adversata*** (Schaller)

1788. *Phalaena (Geometra) adversata* Schaller, *Naturforscher*, **23** : 52.

1998. *Nyctemera adversata* (Schaller) : Ghosh & Choudhury, *Fauna of Meghalaya, State Fauna Series* **4**(Part-6) : 354.

2003. *Nyctemera adversata* (Schaller): Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 188.

Material examined : Nagaland : Mon District, Leangnya village and around 7 km. of Mon, on the way to Wackchung Mapaland, 1 ex. 15.vi. 1990. (Coll. Y.P. Sinha & party), Kohima Dist, Science College Campus, 1 ex., 20. Ix. 94. (Coll. P.H. Roy).

Wing expanse : 52 mm.

Distribution : India : Nagaland (Kohima, Mon).

Elsewhere : Bangladesh,.Honkong, Indochina, Japan, Malaysia, South China, Sumatra and Tonkin.

Remarks : The species is not known to exhibit significant variation.

Subfamily SPILOSOMINAE

Key to genera of Spilosominae

1. Antennae ciliated in both sexes. Hind legs with a pair of tibial spurs, fore tibia without curved apical claw.....***Phissama*** Moore

– Antennae minutely serrate or pectinate in male. Hind legs with two pairs of tibial spurs, rarely the middle pair extremely reduced. Fore tibia with or without apical claw 2

2. Head, thorax and abdomenwith large wooly hair. Antennae about half the length of costa. Proboscis extremely short not extending the width of the head ..... ***Spilarctia*** Butler

– Head, thorax and abdomen smoothly scaled Antennae less than half the length of costa. Proboscis extending the width of the head.. ..... ***Olepa*** Watson

XVII. Genus ***Phissama*** Moore

1859. *Phissama* Moore, *Lep. East India Comp.*, : 362

Remarks : Only a single species, *Phissama transiens* (Walker) occurring in India is treated here.

26. *Phissama transiens* (Walker)

1856. *Spilosoma transiens* Walker, *List Lep Insect. Brit. Mus.*, 3 : 675.

1894. *Phissama transiens* (Walker) : Hampson, *Fauna Brit. India*, Moths, 2 : 29.

1998. *Phissama transiens* (Walker) : Ghosh & Choudhury, *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 357.

2003. *Phissama transiens* (Walker) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 190.

Diagnostic characters : Head and thorax dirtywhite, palpi and femora orange. Fore wing very pale fuscous, the costa and base of inner margin ivory white, black spots in and just beyond each angle of cell. Hind wing pale fuscous. Abdomen orange aboveand white below.

Material examined : Nagaland : Kohima District, Science College Campus, 1 ex, 20.ix.1994 (Coll. P.H. Roy); Ateiju village, and around Zunheboto District, 2 exs., 8. vii. 1991 (Coll. Y.P. Sinha).

Wing expanse : 44 mm.

Distribution : India : Nagaland (Kohima, Zunheboto), Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, West Bengal.

Elsewhere : China, Indonesia and the Philippines.

Remarks : This species is a first definitive record from Nagaland.

XVIII Genus *Spilarctia* Butler

1875. *Spilarctia* Butler, *Cist. Ent.*, 2 : 39.

27. *Spilarctia casigneta* (Kollar)

1844. *Euprepia casigneta* Kollar, *In Hugels Kashmir and das Reich den Sicll.* 4(2) : 469.

1894. *Spilosoma casignetum* Kollar, *Fauna Brit. India*, Moths, 2 : 9.

1998. *Spilarctia casigneta* (Kollar) : *Fauna of Meghalaya, State Fauna Series*, 4(Part-6) : 358.

2003. *Spilarctia casigneta* (Kollar) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 191.

Diagnostic characters : Antennae strongly bipectinate. Palpi dark at base. Fore wing buff yellow with a series of dashes in submarginal area on each side of vein. Abdomen tinged with crimson with dorsal and lateral spots.

Material examined : Nagaland: Dimapur District, Dimapur, Rangapahar Forest Rest House at light, 1 ex., 30.iii.94 (Coll. P. Mukherjee).

Wing expanse : 42 mm.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, N.W. Himalayas.

Elsewhere : Tahid Mades, Asia, Bhutan, Western China.

Remarks : The species is variable with several local forms known.

XIX Genus *Olepa* Watson

1980. Olepa Watson. *The generic names of the Moths of theWorld*, 2 : .133.

Remarks : Only a single species, *Olepa ricini* (Fabricius) representing this genus in India is treated here.

28. *Olepa ricini* (Fabricius)

1775. *Bombyx ricini* Fabricius, *Syst. Ent.*, : 583.

1894. *Arctia ricini* (Fabricius) : Hampson, *Fauna Brit. India*, Moths, 2 : 17.

1982. *Olepa ricini* (Fabricius) : Arora & Choudhury, *Tech Monogr.*, No. 6 : 21-22.

2003. *Olepa ricini* (Fabricius) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) 192.

Diagnostic character : Fore wing dark with a series of black brown spots edged with white. Hind wing also with similarly marked with maculate bands particularly in subbasal, medial and post medial and terminal area but without pale edging.

Material examined : Nagaland, Dimapur District, Dimapur, 1 ex., 8.iii.1999. (Coll. B. Nandi)

Wing expanse : 57 mm.

Distribution : India : Nagaland, Assam, Arunachal Pradeesh, Karnataka, Madhya Pradesh, Sikkim, Punjab.

Elsewhere : Bangladesh and Sri Lanka.

Remarks : This species is a first definitive record from Nagaland.

Family CTENUCHIDAE

Key to genera

1 Hind wing vein Cu_{1a} absent ..... ***Ceryx*** Wallengren

– Hind wing vein Cu_{1a} present 2

2 Hind wing vein M_2 from lower angle of cell or stalked with Cu_{1a} 3

– Hind wing vein M_2 from well above angle of cell .....***Eressa*** Walker

3. Fore wing vein R_3 absent ..... ***Psichotoe*** Boisduval

– Fore wing vein R_3 present 4

4. Wings sparsely clothed with hairlike scales ..... ***Callitomis*** Butler

– Wings clothed with scales and usually with hyaline patches.....***Syntomis*** Ochsenheimer

XX Genus ***Ceryx*** Wallengren

1863. *Ceryx* Wallengren, *Wien. Ent. Mon.*, **7** : 140.

Remarks : Of six species of this genus two *viz.*, *C. hyaline* (Moore) and *C. godartii* (Boisduval) are treated here.

Key to species

– Fore wing hyaline with black veins. Abdomen with five bands, termunal segment steel blue.....*hyaline* (Moore)

– Fore wing black with hyaline patch in cell, an elongated patch below cell and vein Cu1b.. ..... *godartii* (Boisduval)

29. ***Ceryx hyalina*** (Moore)

1879. *Syntomis hyalina* Moore, *Descr. Ind. Lep. Atk.*, **1** : 13.

1892. *Syntomoides hyalina* Moore : Hampson, *Fauna of Brit. India*, Moths, **1** : 211.

1898. *Ceryx hyalina* (Moore) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **1** : 42.

2003. *Ceryx hyalina* (Moore) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 94.

Material examined : Nil.

Wing expanse : 30-40 mm (Hampson, 1898).

Distribution : India : Nagaland, Assam, Sikkim, West Bengal.

Elsewhere : Myanmar.

Remarks : The species is not known to show significant variation.

30. ***Ceryx godartii*** (Boisduval)

1828. *Syntomis godartii* Boisduval, *Mon. Zyg.*, : 115.

1892. *Syntomoides godartii* (Boisduval) : Hampson, *Fauna of Brit. India*, Moths, **1** : 210.

1898. *Ceryx godarti* (Boisduval) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **1** : 43-44.

2003. *Ceryx godartii* (Boisduval) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, **9**(Part-4) : 94.

Material examined : Nagaland, Mokokchung District, Wamenen Res. Forest., Tuli, 2 ex., 28.iii.1994. (Coll. P. Mukherjee).

Wing expanse : 32 mm.

Distribution : India : Nagaland (Mokokchung), Assam, Meghalaya, Sikkim, South India and West Bengal.

Elsewhere : Malaya, Myanmar and Sumatra.

Remarks : The species is a first definitive record from Mokokchung District in Nagaland.

XXI. Genus ***Eressa*** Walker

1854. *Eressa* Walker, *List. Lep. Het. Brit. Mus.*, **1** : 149.

Remarks : This genus is represented in India by seven species , of which three are treated from Nagaland.

Key to species

1. Antennae of male serrate. Abdomen crimson,

with series of blue black spots .... *multigutta* (Walker)

– Antennae of male bipectinate.Abdomen with dorsal and lateral orange yellow spots.....2

2. Hind wing with hyaline spots between M_2 and Cu_{1a} and at end of cell ..... *affinis* Moore

– Hind wing with a large hyaline spot below base of cell.....*confines* (Walker)

31. *Eressa multigutta* (Walker)

1854. *Syntomis multigutta* Walker, *List. Lep. Het. Brit. Mus.*, 1 : 134.

1892 Eressa multigutta Hampson, *Fauna of British India*, Moths, 1 : 220.

1898. *Eressa multigutta* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 1 : 120-121.

2003. *Eressa multigutta* (Walker) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 95.

Material examined : Nagaland, Kohima District, Pulebal Wild life Sanctuary, 1490 m., 1 ex., 14.ix.1994. (Coll. M. Sil).

Wing expanse : 30 mm.

Distribution : India : Nagaland (Kohima), Arunachal Pradesh, Meghalaya, Sikkim, West Bengal.

Elsewhere : China, Nepal, Tibet.

Remarks : This species is a first definitive record from Kohima District in Nagaland.

32. *Eressa affinis* Moore

1877. *Eressa affinis* Moore, *Proc. zool. Soc. Lond.*, : 596, pl. 59.

1892. *Syntomis affinis* Moore : Hampson, *Fauna of Brit. India*, Moths, 1 : 223.

1898. *Eressa affinis* Moore : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 1 : 117.

Material examined : Nagaland, Mokokchung District, 5 km. N. W. of Longchem Forest office, 210 m., 1 ex., 23.ix.1994. (Coll. B. Mitra.).

Wing expanse : 24 mm.

Distribution : India : Nagaland (Mokokchung). Andamans, Arunachal Pradesh, Meghalaya, West Bengal.

Remarks : This species is a first definitive record from Mokokchung District in Nagaland.

33. *Eressa confinis* (Walker)

1854. *Glaucopis confinis* Walker, *List Lep. Het. Brit. Mus.*, 1 : 149.

1892. *Syntomis confinis* Hampson, *Fauna of Brit. India*, Moths, 1 : 223.

1898. *Eressa confinis* (Walker) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 1 : 117.

2003. *Eressa confinis* (Walker) : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 94.

Material examined : Nagaland, Mokokchung District, 5 km. N. W. of Longchem Forest office, 210 m., 1 ex., 23. ix.94. (Coll. B. Mitra), Dimapur District, 1 ex., 19.iii.97. (Coll. A.K. Hazra).

Wing expanse : 30 mm.

Distribution : India : Nagaland (Mokokchung, Dimapur), Himachal Pradesh, Maharashtra, Meghalaya, N. W. Himalaya, Tamil Nadu, West Bengal.

Elsewhere : Bhutan, Myanmar and Sri Lanka.

Remarks : This species is a first definitive record for Dimapur and Mokokchung Districts.in Nagaland.

XXII. Genus *Psichotoe* Boisduval

1829. *Psichotoe* Boisduval, *Mon. Zyg.*, : 129.

Remarks : Only a single species, *Psichotoe duvauceli* Boisduval occurring in India.

34. *Psichotoee duvauceli* Boisduval

1830. *Psichotoee duvauceli* Boisduval, *Mon. Zyg.*, 129, pl. 8, fig. 5.

1892. *Psichotoee duvauceli* Boisduval Hampson, *Fauna of British India*, Moths, 1 : 226.

1898. *Psichotoee duvauceli* Boisduval : Hampson, *Cat Lep Phal. Brit. Mus.*, 1 : 32.

Material examined : Nagaland, Dimapur District, Kevija–U. Colony, 190 m, 5 exs. 17. ix.

1994, Nagajar colony, 185 m., 9 exs., 17. ix. 1994. (Coll. B. Mitra & R.S. Mirdha).

Wing expanse : 32-40 mm.

Distribution : India : Nagaland (Dimapur), Arunachal Pradesh, Assam, West Bengal.

Elsewhere : Myanmar, Pakistan.

Remarks : This species is a first definitive record from Dimapur District in Nagaland.

XXIII Genus *Callitomis* Butler

1876. *Callitomis* Butler, *J. Linn. Soc. Zool.*, **12** : 351

Remarks : This genus is represented in India by three species of which only *Callitimis multifasciata* Hampson is dealt with.

35. *Callitomis multifasciata* Hampson

1892. *Callitomis multifasciata* Hampson, *Fauna Brit. India*, Moths, **1** : 225.

1898. *Callitomis multifasciata* Hampson :Hampson, *Cat. Lep. Phal. Brit. Mus.*, **1** : 33.

2003. *Callitomis multifasciata* Hampson : Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 97.

Material examined : Nil.

Wing expanse : 29 mm. (Hampson 1898).

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim, Arunachal Pradesh.

Elsewhere : Myanmar and Nepal.

Remarks : The species is not known to show significant variation.

XXIV. Genus *Syntomis* Ochsenheimer

1808. *Syntomis* Ochsenheimer, *Schmett. Eur.* **2** : 103.

Remarks : Of 28 species representing this genus in India, four are dealt with here.

Key to species

1. Abdomen with orange band on each segment 2
- Abdomen with orange band on 1st and 5th segment ..... *sperbius* (fabricius)
2. Abdomen with the extremity orange .... *chlorocera* Hampson
- Abdomen with the extremity black 3
3. Fore wing with a black bar across submedian interspace ..... *luteifascia* Hampson
- Fore wing without a black bar across submedian interspace ..... *melaena* Walker

36. *Syntomis sperbius* (Fabricius)

1787. *Zygaena sperbius* Fabricius, *Mant. Ins.*, **2** : 103.

1898. *Syntomis sperbius* (Fabricius) : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **1** : 106.

2003. *Syntomis sperbius* (Fabricius): Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 96.

Material examined : Nagaland, Dimapur District, 10.ix. 94 (Coll. M. Sil) F.R.H. Complex, 2 exs, 195 mm. Kevija–U. colony, 190 m., 2 exs, 17. ix. 1994. (Coll. B. Mitra).

Wing expanse : 35 mm.

Distribution : India : Nagaland (Dimapur), Assam, Meghalaya, West Bengal, Sikkim.

Elsewhere : Myanmar.

Remarks : This species is a first definitive record from Dimapur District in Nagaland.

37. *Syntomis chlorocera* Hampson

1892. *Syntomis chlorocera* Hampson, *Fauna Brit. India*, Moths, **1** : 218.

1898. *Syntomis chlorocera* Hampson : Hampson, *Cat. Lep. Phal. Brit. Mus.*, **1** : 93, pl. 3, fig. 22.

2003. *Syntomis chlorocera* Hampson: Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series,* **9**(Part-4) : 97.

Material examined : Nil.

Wing expanse : 20 mm. (Hampson, 1898)

Distribution : India : Nagaland, Assam.

Remarks : The species is not known to exhibit significant variation.

38. *Syntomis melaena* Walker

1854. *Syntomis melas* Walker, *List. Lep. Insect. Brit. Mus.*, **1** : 133.

1892. *Syntomis melaena* Walker : Hampson, *Fauna of British India*, Moths, 1 : 216.

1898. *Syntomis melaena* Walker : Hampson, *Cat. Lep. Phal. Brit. Mus.*, 1 : 96.

2003. *Syntomis melaena* Walker: Majumdar, *Zool. Surv. India, Fauna of Sikkim, State Fauna Series*, 9(Part-4) : 97.

Material examined : Nagaland, Mokokchung District, Wamenen Res. Forest, Tuli, 28. iii. 1994. (Coll. P. Mukherjee).

Wing expanse : 52 mm.

Distribution : India : Nagaland (Mokokchung), Assam, Meghalaya, Sikkim, West Bengal.

Elsewhere : Myanmar and Nepal.

Remarks : This species is a first definitive record from Mokokchung District in Nagaland.

39. *Syntomis luteifascia* Hampson

1892. *Syntomis leuteifascia* Hampson, *Fauna Brit. India*, Moths, 1 : 218.

1898. *Syntomis leuteifascia* Hampson: Hampson, *Cat. Lep. Phal. Brit. Mus.*, 1 : 97-98, pl. 3, fig. 25.

Material examined : Nil.

Wing expanse : 34 mm.

Distribution : India : Nagaland, Arunachal Pradesh and Assam.

Remarks : The species is not known to show significant variation.

SUMMARY

Thirty nine species of moths belonging to two families, *viz.*, Arctiidae and Ctenuchidae have been dealt with from the state of Nagaland. The family Arctiidae is represented by 28 species in 19 genera in five subfamilies families- Arctiinae, Lithosiinae, Nolinae, Nyctemerinae and Spilosominae; and 11 species in five genera under the family Ctenuchidae. Of these 39 species, 12 and 5 spp. of Arctiidae and and Ctenuchidae, respectively, are the first definitive records for the State of Nagaland.

ACKNOWLEDGEMENTS

The authors are grateful to the Director, Zoological Survey of India for providing necessary facilities for carrying out the present studies on moths. They are thankful to Dr. A.K. Hazra, Scientist-'E' & Officer-in-Charge of the Entomology Division (A) for encouragement and valuable suggestions; Shri Rati Ram, Publication Production Officer and Shri Roop Lal, Stores Officer of the same deparment, for several courtsies.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 389-392, 2006

ORIBATID MITES (ACARI : ORIBATEI)

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INTRODUCTION

The oribatid or cryptostigmatid mites have received attention to the acarologists due to its presence in almost all habitats in all the continents of the world. These mites are also important for its role in increasing soil fertility through humification and in biological control of plant pests. They are also known to cause injuries to plants, transmit helminth diseases to domestic animals and developing respiratory allergy in man.

Out of 407 species of oribatid mites so far known from India (Alfred *et al.*, 1998) only 16 species under 14 families and 15 genera are known from Nagaland. Ghosh and Bhaduri (1979) first took up the study on Oribatid fauna of Nagaland. They recorded 5 species including 2 species *viz.*, *Eremobelba indica* and *Allonothrus monensis* as new to the science. Later Darlong and Alfred (1993) while studying microarthropod diversity in northeast India reported 11 species, mostly identified upto generic level. In order to prepare a consolidated report on this group of mite known from Nagaland, the present paper is prepared.

LIST OF ORIBATID TAXA

1. Family BRACHYCHTHONIIDAE
1. Genus ***Brachychthonius*** Berlese
1. *Brachychthonius* sp.
2. Family EUPHTHIRACARIDAE
2. Genus ***Rhysotritia*** Markel and Meyer
2. *Rhysotritia* sp.
3. Family LOHMANNIIDAE
3. Genus ***Haplacarus*** Walkwork
3. *H. foliatus bengalensis* Bhattacharya *et al.*
4. Family CAMISIIDAE
4. Genus ***Platynothrus*** Berlese
4. *P. peltifer* (Koch)
5. Family TRHYPOCHTHONIIDAE
5. Genus ***Allonothrus*** Hammen
5. *A. Monensis* Ghosh and Bhaduri
6. Family EREMULIDAE
6. Genus ***Eremulus*** Berlese
6. *E. avenifer* Berlese
7. Family EREMOBELBIDAE
7. Genus ***Eremobelba*** Berlese
7. *Eremobelba indica* Ghosh and Bhaduri
8. Family OTOCEPHEIDAE
8. Genus ***Dolicheremaeus*** Jacot
8. *D. bruneiensis* Aoki
9. *Dolicheremacus* sp.
9. Family OPPIIDAE
9. Genus ***Oppia*** Koch
10. *Oppia* spp.
10. Genus ***Ramusella*** Hammer
11. *Ramusella* sp.
10. Family SUCTOBELBIDAE
11. Genus ***Suctobelba*** Paoli
12. *Suctobelba* spp.

11. Family PARACALUMMIDAE

12. Genus ***Neoribates*** Berlese

13. *Neoribates* spp.

12. Family HAPLOZETIDAE

13. Genus ***Haplozetes*** Willmann

14. *Haplozetes* sp.

13. Family SCHELORIBATIDAE

14. Genus ***Scheloribates*** Berlese

15. *Scheloribates* sp.

14. Family GALUMNIDAE

15. Genus ***Galumna*** von Heyden

16. *Galumna* sp.

SYSTEMATIC ACCOUNT

1. Family BRACHYCHTHONIIDAE Balogh, 1943

1. Genus ***Brachychthonius*** Berlese

1910. *Brachychthonius* Berlese, *Redia,* **6** (2) : 219.

1. ***Brachychthonius*** sp.

Remarks : Darlong and Alfred (1993) recorded the genus from mixed forest at Kukidulong, Kohima district of the State.

2. Family EUPHTHIRACARIDAE Jacot, 1930

2. Genus ***Rhysotritia*** Markel and Meyer

1959. *Rhyrotritia* Markel and Meyer, *Zool. Anz.*, **163** : 329.

2. ***Rhysotritia*** sp.

Remarks : The genus was reported by Darlong and Alfred (1993) from mixed forest and Jhoom field at Kukidulong, Kohima district, Nagaland.

3. Family LOHMANNIIDAE Berlese, 1916

3. Genus ***Haplacarus*** Wallwork

1962. *Haplacarus* Wallwork, *Acarologia,* **4** : 465.

3. ***Haplacarus foliatus bengalensis*** Bhattacharya, Bhaduri and Raychaudhuri

1974. *Haplacarus foliatus bengalensis* Bhattacharya, Bhaduri and Raychaudhuri, *Oriental Ins.*, **8**(2) : 281.

Diagnosis : Prodorsal setae smooth; an excresence in the posterior margin of preanal plate; notogastral setae less foliate; sensillus pectinate with 10-12 branches; notogaster with 10 transverse bands; adanal setae foliate, thin and transparent; 10 pairs of genital setae.

Distributions : India : Nagaland, Tripura, West Bengal.

Remarks : The species was recorded by Ghosh and Bhaduri (1979) from humus in a sugarcane field at Ghaspani, Nagaland.

4. Family CAMISIIDAE Oudemans, 1900

4. Genus ***Platynothrus*** Berlese

1913. *Platynothrus* Berlese, *Redia,* **9** : 99.

4. ***Platynothrus peltifer*** (Koch, 1839)

Remarks : Ghosh and Bhaduri (1979) reported the species from humus in an agricultural garden at Kohima, Nagaland.

Distribution : India : Nagaland.

5. Family TRHYPOCHTHONIIDAE Willmann, 1931

5. Genus ***Allonothrus*** Hammen

1953. *Allonothrus* Hammen, *Proc. Acad. Sci. Amst.*, **56c** : 244.

5. ***Allonothrus monensis*** Ghosh and Bhaduri

1979. *Allonothrus monensis* Ghosh and Bhaduri, *Indian J. Acar.*, **3**(2) : 53.

Diagnosis : Prodorsum punctate; lateral ridges on prodorsum thick, strongly, curved, extend a little beyond the bothridia; all notogas tral setae except ps_2 and ps_3 visible dorsally from above, C_2 and C_3 small, barbed, with pointed apex, all other setae fan-shaped; genital setae 12 pairs; each anal plate characterized by presence of a small pointed lateral horn; all epimeral setae except *3a, 3c* and *4a* smooth; all legs tridactylous.

Distribution : India : Nagaland.

Remarks : The species was described as new species by Ghosh and Bhaduri (1979) from humus and compost heaps at Mon and Jharnapani, Nagaland.

6. Family EREMULIDAE Grandjean, 1965

6. Genus *Eremulus* Berlese

1908. *Eremulus* Berlese, *Redia*, **5** : 10.

6. *Eremulus avenifer* Berlese

1913. *Eremulus avenifer* Berlese, *Redia*, **9** : 96.

Diagnosis : Prodorsum with four longitudinal ridges, inner ridge or lamellae connected at anterior end by translamella; sensillus bristles like with minute setae throughout; two or three rows of many distinct pores arranged transversely on the anterior margin of notogaster; 11 pairs of notogastral setae, unilaterally barbed; genital setae 6 pairs.

Distribution : India : Nagaland, West Bengal.

Remarks : Ghosh and Bhaduri (1979) reported the species from humus in sugarcane field and decaying bamboo leaves at Ghaspani and Chumukdima, Nagaland.

7. Family EREMOBELBIDAE Balogh, 1961

7. Genus *Eremobelba* Berlese

1908. *Eremobelba* Berlese, *Redia*, **5**(1) : 9.

7. *Eremobelba indica* Ghosh and Bhaduri

1979. *Eremobelba indica* Ghosh and Bhaduri, *Indian J. Acar.*, **3** (2) : 51.

Diagnosis : Rostral and lamellar setae simple, smooth; interlamellar setae long, about one and half times longer than their mutual distance; a thick broad lamellar ridge laterally on either side of prodorsum; sensillus long, finely barbed; 11 pairs of flagelliform notogastral setae with very thin crooked, coiled tips; notogaster with rounded pits; 6 pairs of simple genital setae; epimeral setae *3b* and *3c* pentaradiate in form, setae *4b* triradiate; tarsi monodactylous.

Distribution : India : Nagaland.

Remarks : This new species from Nagaland was described by Ghosh and Bhaduri (1979) from rotten wood at Ghaspani.

8. Family OTOCEPHEIDAE Balogh, 1961

8. Genus *Dolicheremaeus* Jacot

1938. *Dolicheremaeus* Jacot, *Florida Ent.*, **21**(4) : 51.

8. *Dolicheremaeus brueiensis*, Aoki

1967. *Dolicheremaeus bruneiensis* Aoki, *Bull. Nat Sci. Mus. Tokyo*, **10** (3) : 342.

Remarks : The species was reported by Darlong and Alfred (1993) form forested land at kukidulong, Nagaland. Due to non-availibility of literature the diagnosis of the species is not mentioned here.

9. *Dolicheremaeus* sp.

Remarks : The genus with unidentified species was recorded from forested land at Kukidulong, Nagaland.

9. Family OPPIIDAE Grandjean, 1954

9. Genus *Oppia* Koch

1836. *Oppia* Koch, Deutschlands Crustaceen. Myriapoden and Arachniden, 1–9.

10. *Oppia* spp.

Remarks : The genus *Oppia* was reported by Darlong and Alfred (1993) from forested land at Kukidulong, Nagaland.

10. Genus *Ramusella* Hammer

1962. *Ramusella* Hammer, *Biol. Skr. Dan. Vid. Selsk.*, **13**(2) : 50.

11. *Ramusella* sp.

Remarks : Darlong and Alfred (1993) recorded the genus form forested land at Kakidulong, Nagaland.

10. Family SUCTOBELBIDAE Grandjean, 1954

11. Genus *Suctobelba* Paoli

1908. *Suctobellba* Paoli, *Redia*, **5**(1) : 72.

12. ***Suctobelba*** spp.

Remarks : The genus *Suctobelba* was reported by Darlong and Alfred (1993) from forested land at Kukidulong, Nagaland.

11. Family PARACALUMMIDAE Grandjean, 1936

12. Genus ***Neoribates*** Berlese

1914. *Neoribates* Berlese, *Redia*, **10** : 113.

13. ***Neoribates*** spp.

Remarks : Darlong and Alfred (1993) recorded the genus from forested land at Kukidulong, Nagaland.

12. Family HAPLOZETIDAE Grandjean, 1936

13. Genus ***Haplozetes*** Willmann

1935. *Haplozetes* Willmann, *Zool. Jahrb., Syst.*, **66** : 333.

14. ***Haplozetes*** sp.

Remarks : The Genus was reported by Darlong and Alfred (1993) from forested and jhoom lands at Kukidulong, Nagaland.

13. Family SCHELORIBATIDAE Grandjean, 1953

14. Genus ***Scheloribates*** Berlese

1908. *Scheloribates* Berlese, *Redia*, **5** : 2.

15. ***Scheloribates*** sp.

Remarks : Darlong and Alfred (1993) recorded the genus from forested and jhoom lands at Kukidulong, Nagaland.

14. Family GALUMNIDAE Jacot, 1925

15. Genus ***Galumna*** von Heyden

1826. *Galumna* von Heyden, *Isis Oken*, **18** : 611.

16. ***Galumna*** sp.

Remarks : The genus was recorded by Darlong and Alfred (1993) from forested and jhoom land at Kukidulong, Nagaland.

SUMMARY

The paper is a consolidated report of oribatid species so far known from Nagaland. Altogether 16 oribatid species belonging to 15 genera and 14 families have been recorded from the state.

ACKNOWLEDGEMENTS

The author expresses his gratefulness to the Director, Zoological survey of India for encouragement and providing facilities.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 393-425, 2006

FISHES

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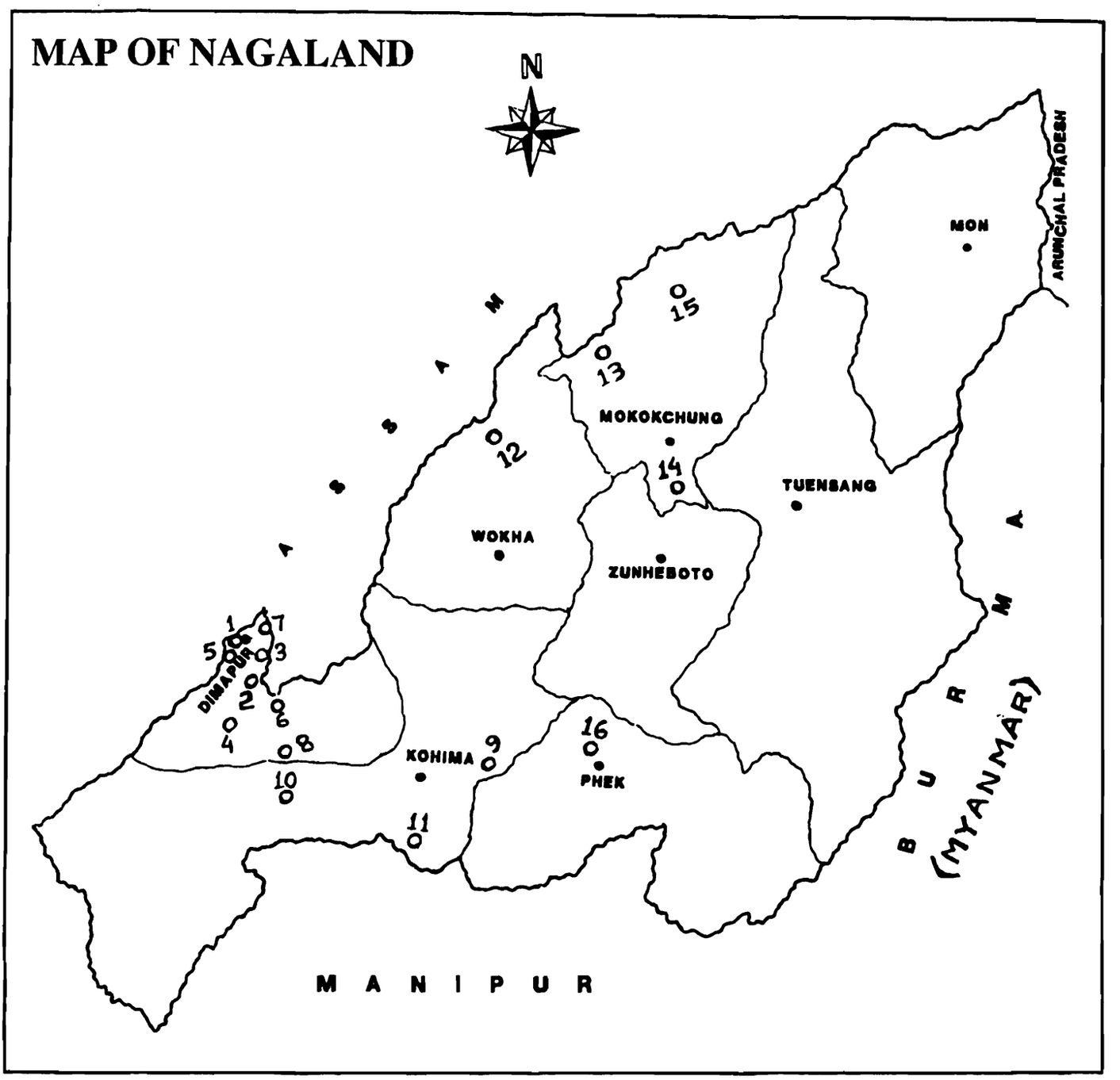
INTRODUCTION

The State of Nagaland has been named after the Nagas. Until recently it was only one of the hill districts of Assam. To it Tuengsang area of old NEFA has been added. In 1963 Nagaland was declared as a separate state of Indian Union with Kohima as its capital. On the north-west lies Assam, on the north-east corner Arunachal Pradesh, on the south Manipur and entire eastern portion being bordered by Myanmar. The area of this hilly state is 16579 sq. km. Except a strip of plains at the foot-hills, the state is mainly hilly with an altitude ranging 2000 ft. to 10, 000 ft. About 12 lakhs people inhabit in 8 districts and 860 villeges of Nagaland. The villages are found mainly on the hill tops. The natural surrounding are beautiful with hills, hillocks, forest, rivers, streams and lakes. The peoples of Nagaland are naga tribals belonging to different tribes, namely, Angamese, Chakachhang, Kachchari, Kuki, Jeniang residing at Kohima; the Lothans in Okha; the Aos in Mokokchung; the Semas in Jonubot; the Koniaks in Mon; the Chakchhang in Phek and the Changs, Fom, Imchungan, Khemuingang and Mangtam tribes in Tuengsang district, respecticely. The language of different tribes are different too. Scripts used are mainly roman. Their state language is Nagamese. The Angamese are the largest tribe in Nagaland and their social life is mostly westernised. Though modernisation is very common in Nagaland, they still cherish old traditions in dress, festivals, tools, etc. The Naga dances are another fascinating experience in Nagaland and it varies from tribe to tribe. Mug and dolls made of bamboo and Naga woolen shawls are also very popular. The traditional Naga houses are made of woods and beautifully decorated. Now a days, upper classes of the people hang horns cross-wise across the traiangular corners of their houses.

Nagaland, sometimes referred to as the Switzerland of the East, the exquisitely picturesque landscapes, the vibrantly colourful sunrise and sunset, lush and verdant flora; this is a land that represents unimaginable beauty, moulded perfectly for a breath taking experience. Nagaland offers limitless exploration possibilities in its lust and verdant sub-tropical rain forests which are also a treasure trove of a plethorn of medicinal plants. There is a large number of orchid species in Nagaland, some of which are very rare. Rhododendrons in white and red colours are found in abundance.

The western and northern parts of the Nagaland state are drained by the Brahmaputra drainage of Assam, whereas the eastern and southern parts by the Chindwin drainage of Myanmar. The Dayang, Dikhu, Dhansari, Tirit and Diphu join the Brahmaputra river, while the Tezu join the Chindwin river in Myanmar.

Day (1889) was the first to report *Erythistes hara* (Hamilton-Buchanan), *E. elonga* Day and *Danio aequipinnatus* (McClelland) from Naga Hills, Nagaland. Hora (1921) included only 2 species, viz., *Rasbora rasbora*(Hamilton-Buchanan) and *Rhynchobdella dhansharii* Hora, from Nagaland. Hora and Mukherjee (1935)



LIST OF COLLECTING STATIONS

1. Brooder Cum Experimental Fish Farm, Dimapur.
2. Jhampukhari Govt. Fish Farm, Dimapur.
3. Pond near Burma Camp, 2.5 kms north of PWD Inspection Bungalow, Dimapur.
4. Kuppa Nalla, a tributary of Dhansari river, 20 kms south of PWD Inspection Bungalow, Dimapur.
5. Dhansari river, 10 kms south west of PWD Inspection Bungalow, Dimapur.
6. Pond at Showuba village, 15 kms east of PWD Inspection Bungalow, Dimapur.
7. Bokajan Beel, 10 kms east of PWD Inspection Bungalow, Dimapur.
8. Diphu river, 30 kms south east of Dimapur.
9. Dzuu river, a tributary of Dayang river, 20 kms east of Kohima.
10. Dzulake river (stream), 30 kms west of Kohima.
11. Keharu stream, 19 kms south of Kohima.
12. Dayang river near Dayang Hydel project, Dist. Wokha.
13. Tzurong river, 48 kms north west of Mokokchung.
14. Dikhu river, 20 kms south of Mokokchung.
15. Lengnak stream, 45 kms north of Mokokchung.
16. Tizu river at Phek, near Lanyu Bridge.

reported 44 species from Naga Hills on which 17 were collected from Tizu river and its tributaries. Contribution of Hora (1936) and Menon (1954) on the fishes of Naga Hills are from Manipur valley and its surrounding hills. Kosygin and Viswanath (1998) reported 27 species under 19 genera and 7 families from Tizu river of Nagaland at 3 different sites of Phek district, of which 9 species were recorded first time from Nagaland.

In the present contribution 108 species belonging to 7 orders, 20 families and 57 genera have been dealt with in detail. Out of these, 40 species are recorded for the first time from Nagaland.

Further, a rare specimen, *Silurus indicus* Datta, Barman & Jayaram were also collected.

SYSTEMATIC LIST OF FISHES

Class PISCES

Sub-class TELEOSTOMI

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

1. *Notopterus notopterus* (Pallas)

Order CYPRINIFORMES

Family CYPRINIDAE

Sub-Family CULTRINAE

1. *Chela cachius* (Hamilton-Buchanan)
3. +*C. laubuca* (Hamilton-Buchanan)
4. + *Salmostoma acinaces* (Valenciennes)
5. + *S. bacaila* (Hanilton-Buchanan)

Subfamily HYPOPHTHAL MICHTHYINAE

6. *Hypophthalmichthys molitrix* (Valenciennes)

Subfamily RASBORINAE

7. *Amblypharyngodon mola* (Hamilton-Buchanan)
8. + *Aspidoparia morar* (Hamilton-Buchanan)
9. * *Barilius barila* (Hamilton-Buchanan)
10. + *B. bendelisis* (Hamilton-Buchanan)
11. * *B. dogarsinghi* Hora
12. + *B. shacra* (Hamilton-Buchanan)
13. + *B. tileo* (Hamilton-Buchanan)
14. *Brachydanio acuticephala* (Hora)
15. + *B. rerio* (Hamilton-Buchanan)
16. *Danio aequipinnatus* (McClelland)
17. *** *D. dangila* (Hamilton-Buchanan)
18. + *D. devario* (Hamilton-Buchanan)
19. *D. naganensis* Chaudhuri
20. *Esomus danricus* (Hamilton-Buchanan)
21. * *Raiamas guttatus* (Day)
22. + *Rasbora rasbora* (Hamilton-Buchanan)

Subfamily CYPRININAE

23. ** *Catla catla* (Hamilton-Buchanan)
24. + *Chagunius chagunio* (Hamilton-Buchanan)
25. *Cirrhinus mrigala* (Hamilton-Buchanan)
26. *C. reba* (Hamilton-Buchanan)
27. *Ctenopharyngodon idellus* (Valenciennes)
28. ** *Cyprinion semiplotum* (McClelland)
29. ** *Cyprinus carpio* Linnaeus.
30. + *Labeo angra* (Hamilton-Buchanan)
31. + *L. dero* (Hamilton-Buchanan)
32. *** *L. dyocheilus* (McClelland)
33. *L. rohita* (Hamilton-Buchanan)
34. + *Neolissocheilus hexagonolepis* (McClelland)
35. + *N. hexastichus* (McClelland)
36. + *Osteobrama cotio cotio* (Hamilton-Buchanan)
37. **Poropuntius clavatus burtoni* (Chaudhuri)
38. *Puntius chola* (Hamilton-Buchanan)
39. **P. clavatus* (McClelland)
40. *P. conchonius* (Hamilton-Buchanan)
41. * *P. sarana orphoides* (Valenciennes)
42. + *P. shalynius* Yazdani & Talukdar
43. *P. sophore* (Hamilton-Buchanan)
44. *P. ticto ticto* (Hamilton-Buchanan)
45. + *Tor chelynoides* (McClelland)
46. *** *T. mosal* (Hamilton-Buchanan)
47. + *T. putitora* (Hamilton-Buchanan)
48. * *T. tor* (Hamilton-Buchanan)

Subfamily SCHIZOTHORACINAE

49. + *Schizothorax richardsonii* (Gray)

Subfamily GARRINAE

50. + Crossocheilus burmanicus (Hora)
51. + *C. latius latius* (Hamilton-Buchanan)
52. + *Garra annandalei* Hora
53. + *G. gotyla gotyla* (Gray)
54. **G. kempi* Hora
55. **G. lissorhynchus* (McClelland)
56. *G. naganensis* Hora
57. **G. nasuta* (McClelland)
58. **G. rupecula* (McClelland)

Family PSILORHYNCHIDAE

59. +Psilorhynchus balitora (Hmilton-Buchanan)
60. *** *P. homaloptera* Hora & Mukherjee

Family HOMALOPTERIDAE

Subfamily HOMALOPTERINAE

61. + *Balitora brucei* Gray

Subfamily NOEMACHEILINAE

62. *Noemacheilus botia* (Hamilton-Buchanan)
63. +*N. kanjupkhulensis* Hora
64. *N. manipurensis* Chaudhuri
65. **N. nagaensis* Menon
66. **N. prashadi* Hora
67. *N. rupecola* (McClelland)
68. + *N. savona* (Hamilton-Buchanan)
69. ***N. scaturigina* (McClelland)
70. **N. sikmaiensis* Hora
71. **N. zonalternans* (Blyth)

Family COBITIDAE

Subfamily COBITINAE

72. **Lepidocephalus berdmorei* (Blyth)
73. *L. guntea* (Hamilton-Buchanan)
74. * *Pangio pangio* (Hamilton-Buchanan)

Subfamily BOTIINAE

75. ***Botia dario* (Hamilton-Buchanan)
76. +*B. rostrata* Gunther

Order SILURIFORMES

Family BAGRIDAE

77. ***Aorichthys seenghala* (Hamilton-Buchanan)
78. *Mystus armatus* (Day)
79. + *M. bleekeri* (Day)
80. *M. cavasius* (Hamilton-Buchanan)

Family SILURIDAE

81. *Ompok bimaculatus* (Bloch)
82. +*Silurus indicus* (Datta, Barman & Jayaram)
83. ***Wallago attu* (Bloch)

Family AMBLYCIPITIDAE

84. +*Amblyceps mangois* (Hamiltan-Buchanan)

Family SISORIDAE

85. **Conta conta* (Hamilton-Buchanan)
86. *Erethistes pussilus* Muller & Troschel
87. **Exostoma labiatum* (McClelland)
88. +*Glyptothorax cavia* (Hamilton-Buchanan)
89. **G. sinense manipurensis* Menon
90. +*G. trilineatus* Blyth
91. +*Sisor rhabdophorus* Hamilton-Buchanan

Family OLYRIDAE

92. +*Olyra longicaudata* McClelland

Family HETEROPNEUSTIDAE

93. *Heteropneustes fossilis* (Bloch)

Order ATHERINIFORMES

Family BELONIDAE

94. *Xenentodon cancila* (Hamilton-Buchanan)

Order CHANNIFORMES

Family CHANNIDAE

95. +*Channa barca* (Hamilton-Buchanan)
96. **C. orientalis* Bloch & Schneider
97. *C. punctatus* (Bloch)

Order PERCIFORMES

Family CHANDIDAE

98. *Chanda nama* (Hamilton-Buchanan)

Family NANDIDAE

99. *Badis badis* (Hamilton-Buchanan)

Family CICHLIDAE

100. *Oreochromis mossambica* (Peters)

Family GOBIIDAE

101. *Glossogobius giuris* (Hamilton-Buchanan)

Family ANABANTIDAE

102. + *Anabas cobojius* (Hamilton-Buchanan)

103. +*A. testudineus* (Bloch)

Family BELONTIIDAE

104. *Colisa fasciatus* (Schneider)

105. *Macropodus cupanus* (Valenciennes)

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

106. **Macrognathus aral* (Bloch & Schneider)

107. ***Mastacembalus armatus* (Lacepede)

108. *M. pancalus* (Hamilton-Buchanan)

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*Listed from literature.

**Observed in the field, but not collected due to huge size.

***Recorded from Zoological Survey of India (H.Q.) registered collection.

+ Recorded for the first time from Nagaland.

SYSTEMATIC ACCOUNT

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

Genus ***Notopterus***, Lecepede, 1800

1800. *Notopterus* Lecepede, *Hist. nat. Poiss*, 2 : 189. (type species : *Notopterus kapirat* Lecepede = *Gymnotus notopterus* Pallas).

Body broad, strongly compressed, caudal part tapering and long. Abdominal edge serrated, with about 28 scutes. Head compressed, abruptly tapering on anterior side. Large membranous opercular flap present. Mouth opening wide. Small teeth on jaws, also on palate and tongue. Darsal fin short, almost in the middle of back with 7 to 10 rays. Anal fin very long with 100 to 135 rays confluent with caudal fin. Pelvic fin rudimentary.

1. *Notopterus notopterus* (Pallas)

1769. *Gymnotus notopterus* Pallas *Specil. Zool*, 7 : 40, pl. 6, fig. 2 (type locality : Indian Ocean)

1991 *Notopterus notopterus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 64-65, fig. 25

Material examined : 2exs; 104-206mm, Pond near Burma camp, 2.5 kms north of P.W.D. Inspection Bungalow, Dimapur, Coll. A.K.K. & Party, 7.VI.98 (ii) lex; 115 mm, Tzurong river, 48 kms north west of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland 1999.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh; Myanmar; Thailand; Malaya and Indonesia.

Fishery information : It attains a length of about 450 mm. This fish can only be cultured in wild water or in fattening ponds, for its carnivorous nature. Commercially important fish consumed both in fresh and dried state.

Order CYPRINIFORMES

Family CYPRINIDAE

Sub-family CULTRINAE

Genus ***Chela*** Hamilton-Buchanan 1822

1822. *Chela* Hamilton-Buchanan. *Fishes of Ganges* : 258, 383 (Type-species : *Cyprinus (Chela) cachius* Hamilton-Buchanan).

Body elongate, strongly compressed laterally. Abdominal edge cutting. mouth directed obliquely upward, cleft extending to below anterior margin of eye. No symphysial knob on the lower jaw. Dorsal fin with 9 to 11 and anal fin with 17 to 25 rays. Outer ray of pelvic fin elongated. Lateral line curved downwards, with 34 to 68 scales.

Key to the species of Genus *Chela*

Pectoral fin not reaching anal fin. Pelvic fin with an elongated ray extending to middle or end of anal fin base. Lateral line scales 51 to 68 ..... *C. cachius*

Pectoral fin reaching anal fin. Pelvic fin with elongated ray ends before anal fin base. Lateral line scales 34 to 37 ..... *C. laubuca*

2. *Chela cachius* (Hamilton-buchanan)

1822. *Cyprinus (Chela) cachius* Hamilton-Buchanan, *Fishes of Ganges* : 259, 384 (type-locality : Ganga river about commencement of delta).

1991. *Chela cachius* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 313-314, figs. 111.

Material examined : 4exs., 45-60 mm, Lengnak

stream, 45 kms north of Mokokchung, coll. A.K.K. & Party. 8.V.2000.

Distribugion : India : Throughout.

Elsewhere : Pakistan; Bangladesh and Myanmar.

Fishery information : It attains to a length of about 70 mm. Due to its beautiful colouration, it is used as an ornamental fish in the aquaria.

3. ***Chela laubuca*** (Hamilton-Buchanan)

1822. *Cyprinus (Chela) laubuca* Hamilton-Buchanan, *Fishes of Ganges* : 260, 384 (type-locality : ponds in northern parts of Bengal)

1991 *Chela laubuca* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 316-317, fig. 114.

Material examined : (i) lex., 58 mm, Kuppa nalla, a tributary of Dhansari river, 20 kms south of PWD Rest House, Dimapur, Coll. A.K.K. & party, 5.v.2000.

Distribution : India : Throughout (new record from Nagaland).

Elsewhere : Pakistan; Bangladesh; Sri Lanka; Myanmar; Malay Peninsula and Sumatra.

Fishery information : It attains a length of about 5.5 cm. It is a beautiful shoaling fish prefers the upper layer of water. It proves to be a very hardy aquarium fish and an useful substitute for larvivorous species.

Genus ***Salmostoma,*** Swainson 1839

1839. *Salmostoma* Swainson. *The natural history of fishes,* **2** : 184 (type species : *Cyprinus bacaila* Hamilton-Buchanan).

Body elongate and strongly compressed laterally. Abdominal edge keeled below pectoral fin to vent. Mouth oblique, cleft extending to anterior margin of eye or slightly beyond. Symphysial knob often present on the lower jaw. Dorsal fin with 9 to 10 and anal fin with 14 to 20 rays. Outer ray of pelvic fin usually not elongated. Lateral line gently curved downwards, with 38 to 112 scales.

Key to the species of Genus *Salmostoma*

Anal fin with 14 or 15 branched rays, Lateral line scales 42 to 46 ..... *S. acinaces*

Anal fin with 10 to 13 branched rays, lateral line scales 86 to 110 ..... *S. bacaila*

4. ***Salmostoma acinaces*** (Valenciennes)

1842. *Leuciscus acinaces* Valenciennes, *Hist. nat. Poiss.,* **17** : 509 (type-locality : Kaveri drainage, Mysore).

1991 *Salmostoma acinaces* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 321.

Material examined : (i) 7 exs, 67-115 mm, Dzuu river, a tributary of Dayang river, 20 kms east of Kohima, Coll. A.K.K. & party, 10. vi. 1998.

Distribution : India : West Bengal, Maharashtra, Tamil Nadu and Nagaland (new record).

Fishery information : It attains a length of 15 cm, of no interest to fisheries.

5. ***Salmosta bacaila*** (Hamilton-Buchanan)

1822. *Cyprinus bacaila* Hamilton-Buchanan. *Fishes of Ganges* : 265, 384, pl. 8. fig. 76 (type-locality : freshwater rivers of gangetic provinces).

1991. *Salmostoma bacaila* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 321-322, fig. 115.

Material examined : (i) 2 exs, 82-85mm, Tsurong river, 48 kms north-west of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : Northern India (Ganga-Brahmaputra drainages) to Mahanadi drainage, Nagaland (new record).

Fishery information : It attains a length of about 180 mm and is of little interest to fisheries. It is surface feeder and an useful larvivorous fish.

Subfamily HYPOPHTHALMICHTHYINAE

Genus ***Hypophthalmichthys*** Bleeker 1860

1860. *Hypophthalmichthys* Bleeker, *Natuurk, Tijdschr. Ned. India,* **20** : 283 (type-species : *Leuciscus molitrix* Valenciennes).

Body elongate and laterally compressed. Abdomen wholly or partly keeled. Mouth terminal,

eyes small. Operculum large, its outer surface strongly ridged. Gill membranes joined to each other. Dorsal fin with 10 rays, inserted slightly behind the origin of pelvic fins. Anal fin with 14 to 17 rays. Caudal fin forked. Lateral line complete with 110 to 115 scales.

Key to the species of Genus *Hypophthalmichthys*

Entire abdominal edge carinated. Gill reckers continuous ..... *H. molitrix*

Post ventral abdominal edge only carinated. Gill rackers separated ..... *H. nobilis*

6. ***Hypophthalmichthys molitrix*** (Valenciennes)

1844 *Leuciscus molitrix* Valenciennes, *Hist nat. poiss.*, 17 : 360 (type locality : China).

1991 *Hypophthalmichthys molitrix* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 330-332, fig. 117.

Material examined: 2 exs, 225-232 mm, Jhompukhari Govt. Fish Farm, Dimapur, Coll. A.K.K. & party, 6.vi. 1998.

Distribution : Also introduced in India;

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

Fishery information : It is a planktophagous species. When kept in ponds it thrives well on artificial feeds, such as bone meal, ricebran and flour (Hora and Pillai, 1962). It can be artificially bred like Indian major carps. It is economically important to a considerable extent. It attains an average length of 82 cm and weight of 7 kg in a period of 4 years. This exotic silver carp has been proven as a competitor for food to catla and rohu.

Subfamily RASBORINAE

Genus ***Amblypharyngodon*** Bleeker, 1860

1860. *Amblypharyngodon* Bleeker *Natuurk. Tijdechr Ned. India.* 20 : 433 (type-species : *Cyprinus mola* Hamilton-Buchanan).

Body somewhat elongate and compressed. Abdomen rounded. Mouth more or less superior, upper lip and barbel absent. Dorsal fin with 7 branched rays, inserted slightly behind pelvic fin base. Anal fin with 5 to 6 branched rays. Lateral line incomplete, 55 to 75 scales in lateral series.

7. ***Amblypharyngodon mola*** (Hamilton-Buchanan)

1822. *Cyprinus mola* Hamilton-Buchanan, *Fishes of Ganges* : 334, 392, pl. 38, fig. 92 (type-locality : Ponds and rivers of Gangetic provinces).

1991 *Amblypharyngodon mola*, Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 338.

Material examined : (i) 2 exs,, 65-75 mm. Dhansari river, 10 kms south-west of Dimapur, Coll. A.K.K. & party. 4.v.2000. (ii) 11exs, 50-80 mm, pond at showuba village, 15 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & Party, 3.v.2000. (iii) 23 exs., 48-65 mm, Bokajan Beel, 10 kms east of PWD Rest House, Dimapur, Coll : A.K.K. & Party, 07.vi.98.

Distribution : India : Throughout.

Elsewhere : Bangladesh; Myanmar; Pakistan.

Fishery information : It attains a length of about 100 mm and used as a food fish specially in Eastern India.

Genus ***Aspidoparia*** Heckel, 1843

1843. *Aspidoparia* Heckal *Abbild. Fenzl. Thiere Pill Syriens Fische* : 186 (type-species : *Aspidoparia sardina* Heckel = *Cyprinus morar* Hamilton-Buchanan).

Body elongate and sub-cylindrical; abdomen rounded. Mouth small and inferior. Lower jaw without a lip but with a sharp crescentic bony edge. Barbels absent. Dorsal fin inserted posterior to pelvic fin, with 9 to 10 rays. Anal fin with 9 to 12 rays. Lateral line greatly curved downwards, running in the lower half of caudal peduncle with 38 to 60 scales.

Key to the species of Genus *Aspidoparia*

Lateral line scales 38 to 42. Anal fin with 8 to 10 branched rays ..... *A. morar*

Lateral line scales 52 to 60. Anal fin with 7 branched rays ..... *A. jaya*

8. ***Aspidoparia morar*** (Hamilton-Buchanan)

1822. *Cyprinus morar,* Hamilton-Buchanan, *Fishes of Ganges* : 264, 384, pl. 31, fig. 75 (type locality : Yamuna river and Tista river).

1991. *Aspidoparia morar* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 340, fig. 119.

Material examined : (1) 19 exs, 49-80 mm, Dhansari river, 10 kms south west of Dimapur, Coll. A.K.K. & party, 4.v. 2000.

Distribution : India : Throughout northern part, Tripura, Manipur, Nagaland (new record).

Elsewhere : Iran; Pakistan; Nepal; Bangladesh; Myanmar and Thailand.

Fishery information : It attains a length of about 175 mm and of no interest to fisheries.

Genus ***Barilius*** Hamilton-Buchanan, 1822

1822. *Barilius* Hamilton-Buchanan. *Fishes of Ganges* : 266, 384 (type species : *Cyprinus barila* Hamilton-Buchanan)

Body elongated, laterally compressed, abdomen rounded. Mouth terminal; maxilla extends to below or slightly beyond anterior margin of eye. Barbels 1 or 2 pairs or absent. Dorsal fin inserted opposite to interspace between pelvic and anal fin, often extended over anal fin. Dorsal fin with 9 to 13 and anal fin with 9 to 17 rays. Lateral line concave and complete with 38 to 75 scales. Usually dark spots or bands present on body.

Key to the species of Genus *Barilius*

1. Barbels present 2

   Barbels absent, maxilla extends to below middle of orbit. lateral line scales 65-75 ..... *B. tileo*

2. Barbels 4 3

   Barbels 2 4

3. Lateral line scales 60-70. 12 vertical bars... ..... *B. shacra*

   Lateral line scales 40-44. Anal fin short with 9-11 rays. Each scale with black spot .... *B. bendelisis.*

4. Lateral line scales 38-39 ..... *B. dogarsinghi*

   Lateral line scales 43-46 ..... *B.barila*

9. ***Brilius bendelisis*** (Hamilton-Buchanan)

1807. *Cyprinus bendelisis* Hamilton-Buchanan, *Journey in Mysore,* 3 : 345, pl. 32 (type-locality : Vedawati stream, headwaters of Krishna river near Hariuru, Mysore).

1991. *Barilius bendelisis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* 346-347.

Material examined : (i) 34 exs, 47-115 mm, Dzuu river, a tributary of Dayang river, 20 kms east of Kohima, coll. A.K.K. & party, 10.vi.1998. (ii) 4 exs., 37-68 mm, Dikhu river, 20 kms south of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, Feb. 2000. (iii) 4 exs, 47-70 mm, Lengnak stream, 45 kms north of Mokokchung, Coll. A.K.K. & party, 8.v. 2000. (iv) 8 exs., 50-76 mm, Dayang river, 36 kms from Wokha, Dist. wokha, Coll. A.K.K. & party, 15.vi.1998.

Distribution : India : Throughout (new record from Nagaland).

Elsewhere : Pakistan; Nepal; Bangladesh and Sri Lanka.

Fishery information : It attains a length about 160 mm, is one of the principal commercial hill stream fishes.

10. ***Brilius shacra*** (Hamilton-Buchanan)

1822. *Cyprinion (Barilius) shacra* Hamilton-Buchanan, *Fishes of* Ganges : 271, 385 (type-locality; Kosi river, Uttar Pradesh).

1991. *Barilius shacra* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 351, fig. 121.

Material examined : (i) lex, 78mm, Dhansari river near the bridge, Dimapur, Coll. Dept. of Fisheries, Govt. of Nagaland, 1999 (ii) 15 exs., 32-65 mm, Kuppa nalla, tributory of Dhansari river, 20 kms south of PWD Rest House, Dimapur, Coll. A.K.K. & party, 5.v.2000.

Distribution : India : Ganga, Yamuna and Brahmaputra drainages, Tripura, Meghalaya, Mizoram, Nagaland (new record).

Elsewhere : Bangladesh and Nepal.

Fishery information : Inhabits rivers and streams. It attains a length of about 12.5 cm and is of no interest to fisheries.

11. ***Barilius tileo*** (Hamilton-Buchanan)

1822. *Cyprinus tileo* Hamilton-Buchanan, *Fishes of Ganges* : 276, 385 (type locality : Kosi river, Uttar Pradesh).

1991. *Barilius tileo* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 351-352, fig. 122.

Material examined: (i) 8 exs, 60-105mm, Tsurong river, 48 kms north west of Mokokchung, Coll. A.K.K. & party, 9.v.2000.

Distribution : India : Eastern Himalaya, Assam, Tripura, Meghalaya, Nagaland (new record).

Elsewhere : Bangladesh; Nepal and Myanmar.

Fishery information : It attains a length of about 15 cm and is considered a fairly good table fish.

Genus ***Brachydanio*** Weber & de Beaufort

1916. *Brachydanio*, Weber and de Beaufort, *Fishes Indo-Australian Archipelago*, 3 : 85 (type-species, *Nuria albolineata* Blyth) (as a sub-genus).

Body elongate and compressed. Mouth small, directed obliquely upwards. Maxilla not extending to vertical from anterior margin of eye. Lower jaw with symphysial knob. Barbels one to two pairs, or absent. Dorsal fin short, inserted anterior to origin of anal fin. Anal fin with 9 to 14 branched rays. Lateral line incomplete or entirely absent.

Key to the species of Genus *Brachydanio*

Two well-developed pairs of barbels. Body with 4 well marked shining golden longitudinal bands from head to caudal fin..... *B. rerio*

Barbels absent. Body brownish with a longitudinal broad band along with the side. A black narrow streak along dorsal surface extending from head to caudal fin base..... ..... *B. acuticephala*

12. ***Brachydanio acuticephala*** (Hora)

1921. *Danio (Brachydanio) acuticephala* Hora, *Rec. Indian Mus.*, 22 : 193, fig. 4 (type-locality : small streams and ponds of Yaribuk, Manipur Valley).

1991. *Brachydanio acuticephala* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 356-357.

Material examined : (i) 3 exs, 60-90 mm, Dikhu river, 20 kms south of Mokokchung, Nagaland, Coll. Fisheries Dept., Govt. of Nagaland, Feb. 2000.

Distribution : India; Brahmaputra drainage system from Manipur and Naga Hills to Arunachal Pradesh.

Fishery information : It attains a length of about 9 cm and is of no interest to fisheries.

13. ***Brachydanio rerio*** (Hamilton-Buchanan)

1822. *Cyprinus rerio* Hamilton-Buchanan, *Fishes of Ganges* : 323, 390 (type-locality : Kosi river, Uttar Pradesh).

1991. *Brachydanio rerio* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 360.

Material examined: lex., 72 mm, Tsurong river, 48 kms north-west of Mokokchung, Nagaland, Coll. A.K.K. & party, 9.v.2000.

Distribution : India : Eastern parts from West Bengal to Krishna river system, Tripura, Meghalaya, Nagaland (new record).

Elsewhere : Pakistan; Bangladesh and Nepal.

Fishery information : It attains a length of about 7 cm. is hardy and easy to breed and maintain, desirable in community tank. This danio with blue and horizontal stripes, is one of the most popular aquarium fishes. With its active and graceful habit, this zebra danio is probably the finest small tropical aquarium fish known.

Genus ***Danio*** Hamilton-buchanan 1822

1822. *Danio* Hamilton-Buchanan, *Fishes of Ganges* 321, 390 (type-species : *Cyprinus dangila* Hamilton-Buchanan).

Body more or less elongate and laterally compressed. Mouth anterior, small and directed obliquely upwards. Lower jaw with symphysial knob. Maxilla extends upto anterior margin of

eye. Barbels 2 pairs, 1 pair or absent. Dorsal fin with 6 to 17 and anal fin with 11-20 rays. Lateral line complete, incomplete or absent, with 32 to 65 scales.

Key to the species of Genus *Danio*

1. Barbels absent. Lateral line scales 35-38..... ..... *D. devario*

   Barbels present.....2

2. Several well marked and uniform lateral bands. Lateral line scales 34-36.....*D. aequipinnatus*

   A single lateral band well marked posteriorly. Lateral line scales 38-40 ..... *D. naganensis*

14. ***Danio aequipinnatus*** (McClelland)

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

1991. *Danio aequipinnatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 364-365, fig. 128.

Material examined: (i) 3 exs, 42-105 mm, Dikhu river, 20 kms south of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, Feb. 2000 (ii) 6 exs, 65-85 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. A.K.K. & party, 9.v.2000.

Distribution : India : Throughout.

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

Fishery Information: It attains a length of about 150 mm and beautiful looking. It is proved to be a peaceful and hardy aquarium fish.

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

1822. *Cyprinus devario* Hamilton-Buchanan, *Fishes of Ganges* : 341, 393, pl. 6 fig. 94 (type-locality : rivers and ponds of Bengal)

1991. *Danio devario* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 367-368, fig. 130.

Material examined: 2 exs, 43-44 mm, Dzuu river, a tributary of Dayang river, 20 kms east of Kohima, Coll. A.K.K. & party, 10.vi.1998.

Distribution : India : Northern India to the Krishna-Godavari river system, Tripura, Manipur, Meghalaya, Nagaland (new record).

Elsewhere : Pakistan; Nepal; Bangladesh.

Fishery information : It attains a length of about 100 mm and is fairly popular aquarium fish.

16. ***Danio naganensis*** Chaudhuri

1912. *Danio naganensis* Chaudhuri, *Rec. Indian Mus.*, **7** : 441, pl. 40, fig. 1, 1a & 1B (type locality : Lungting river, Naga Hills, Nagaland).

1991. *Danio naganensis* : Talwar and Jhingran, *Inland fishes of India and Adjacent Countries* : 371.

Material examined : (i) 8 exs., 37-56 mm, Dayang river, 36 kms from Wokha, Dist. Wokha, Coll. A.K.K. & party, 15.vi.1998.

Distribution: India : Manipur, Mizoram, Nagaland.

Fishery information : This fish attains a length of about 6 cm and is of no interest to fisheries.

Genus ***Esomus*** Swainson 1839

1839. *Esomus* Swainson, *The natural history of fishes*, **2** : 185, 285 (type species : *Esomus vittatus* Swainson = *Gyprinus danrica* Hamilton-Buchanan)

Body elongate, slender and laterally compressed. Mouth small, upwardly directed. Lower jaw without any symphysial knob. Barbels 2 pairs, maxillary barbels long, extending upto anal fin, doral fin inscrted more or less above anal fin, with 6 branched rays. Anal with 5 branched rays. Lateral line, when present, strongly arched anteriorly and passes through lower half of caudal peduncle, with 27 to 34 scales.

17. ***Esomus danricus*** (Hamilton-Buchanan)

1822. *Cyprinus danrica* Hamilton-Buchanan, *Fishes of Ganges* : 325, 390, pl. 16, fig 88 (type locality : Ponds and ditches of Bengal).

1991. *Esomus danricus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 377-378, fig. 139.

Material examined : (i) 76 exs., 38-60 mm, Dhansari river, 10 kms south-west of Dimapur,

Coll A.K.K. & party, 4.v.2000 (ii) 14 exs., 31-92 mm, Brooder cum Experimental Fish Farm, Dimapur, Coll. A.K.K. & party, 5.vi.1998, (iii) 11exs. 50-80 mm, Pond at Showuba villege, 15 kms east of PWD Rest House, Dimapur, Coll A.K.K. & party, 3.v.2000, (iv) 1 ex, 55 mm, Kuppa nalla, a tributary of Dhansari river, 20 kms south of PWD Rest House, - Dimapur, Coll A.K.K. & party, 5.v.2000.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; and probably also Sri Lanka and Myanmar.

Fishery information : It attains a length of about 12 cm, very active, surface feeder, equipped with exceptionally wide pectoral fin for jumping.

Genus ***Rasbora*** Bleeker, 1860

1860. *Rasbora* Bleeker, *Acta Soc. Sci. Indo-Neerl*, 7 : 435 (type species : *Cyprinus rasbora* Hamilton-Buchanan).

Body elongate, moderately deep and laterally compressed. Mouth moderate, upwardly directed, with a projecting lower jaw which has a symphysial knob. Barbels usually absent. Dorsal fin inserted opposite interspace between pelvic and anal fin, with 9 to 10 soft rays, no spine. Anal fin with 7 to 8 rays. Lateral line complete, concave, 25 to 37 scales in longitudinal series.

18. ***Rasbora rasbora*** (Hamilton-Buchanan)

1822. *Cyprinus rasbora* Hamilton-Buchanan, *Fishes of Ganges* : 329, 391, pl. 2, fig. 90 (type-locality : ponds of Bengal).

1991. *Rasbora rasbora* : Talwar and Jhingran *Inland Fishes of India and Adjacent Countries* : 390, fig. 139.

Material examined : 1 ex, 82 mm, Lengnak stream, 45 kms north of Mokokchung, Coll. A.K.K. & party, 8.v.2000.

Distribution : India : Gangetic provinces, Assam, Meghalaya, Manipur, Nagaland (new record).

Elsewhere : Pakistan; Bangladesh; Myanmar and Thailand.

Fishery information : It attains a length of about 130 mm and because of its beauty and hardiness, it has established itself as an aquarium fish.

Subfamily CYPRININAE

Ganus ***Chagunius*** Smith 1938

1938. *Chagunius* Smith, *Proc. Biol. Soc. Wash.*, **51** : 157 (type-species : *Cyprinus chagunio* Hamilton-Buchanan).

Body elongate and more or less compressed. Eyes on upper half of head. Mouth narrow and sub-terminal, lips fleshy with tiny papillae. Post-labial groove incomplete. Two long pairs of barbels present. Pharyngeal bone with three rows of broadly faced teeth. Dorsal fin with 13 rays, its last simple ray osseous and serrated. Anal fin with 8 or 9 and pelvic fin with 9 rays. Lateral line scales 44 to 48. Pronounced sexual dimorphism found in fin shape and tuberculation.

Key to the species of Genus *Chagunius*

1(a) Circumferential scales 40 to 44. Circumpeduncular scales 23 to 25 .... *C. chagunio*

(b) Circumferential scales 34 to 36. Circumpeduncular scales 18 to 20 2

2(a) Circumferential scales 34; eye-diameter 4 to 4.8 times in head ..... *C.nicholsi*

(b) Circumferential scales 36; eye diameter 3 to 3.4 times in head ..... *C.baileyi*

19. ***Chagunius chagunio*** (Hamilton-buchanan)

1822. *Cyprinus chagunio* Hamilton-Buchanan, *Fishes of Ganges* : 295, 387 (type locality : Yamuna river and northern rivers of Bihar and Bengal).

1991. *Chagunius chagunio* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 167-168, fig. 63.

Material examined : (i) lex, 233 mm, Dayang river near Dayang Hydel Project, Coll. Fisheries Dept., Govt. of Nagaland, Feb. 2000. (ii) 2 exs., 72-175 mm, Tsurong river, 48 kms north west of Mokokchung, Coll A.K.K. & Party, 9.v.2000 (iii) lex, 48 mm, Diphu river, 30 kms. South east of

Dimapur, Coll. A.K.K. & party, 6.v. 2000. (iv) 3 exs, 60-80 mm, Dayang river, 36 kms from Wokha, Dist. Wokha, Coll. A.K.K. & party, 15.vi.1998.

Distribution : India : Brahmaputra and Ganga drainages along the Himalaya foot hills, Tripura, Meghalaya, Nagaland (new record).

Fishery information : It attains a length of about 50 cm; is generally found in large rivers characterised by rocky bottom, clear and fast flowing water. Unlike *Tor* spp., its movements are fairly restricted. It offers a good sport on small hook.

Genus ***Cirrhinus*** Cuvier, 1817

1817. *Cirrhinus* Oken, *Isis* : 1833 (On *Les Cirrhinus* cuvier,) *Regne Animale*, **2** : 193) (type-species : *Cyprinus cirrhosus* Bloch).

Body elongate; abdomen rounded. Snout depressed, often with pores. Mouth wide; lower jaw with a small symphysial knob. Upper lip not continuous with lower lip around corners of mouth. Barbels one or two pairs, or absent. Dorsal fin inserted anterior to pelvic fins, with 10 to 19 rays, the last simple ray non-osseeous and non-serrated. Anal fin with 7 to 8 rays. Lateral line complete with 35 to 45 scales.

Key to the species of Genus *Cirrhinus*

Dorsal fin with 8 branched rays. Lateral line scales 35-38 ..... *C. reba*

Dorsal fin with 12-13 branched rays, Lateral line scales 40-45 ..... *C. mrigala*

20. ***Cirrhinus mrigala*** (Hamilton-Buchanan)

1822. *Cyprinus mrigala* Hamilton-Buchanan, *Fishes of Ganges* : 279, 386, pl. 6, fig. 79 (type-locality : ponds and freshwater rivers of Gangetic provinces).

1981. *Cirrhinus mrigala* : Jayaram, *The Freshwater fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka* : 126-127.

Material examined : (i) 2 exs, 195-203 mm, Brooder cum Experimental Fish Farm, Dimapur, Coll. A.K.K. & party, 5.vi.1998.

Distribution : India : Northern India from Punjab to West Bengal and Assam. Also successfully introduced into water of peninsular India and other states for aquaculture.

Elsewhere : Pakistan and Bangladesh.

Fishery information : It attains a length of about one metre and weight of 13 kg and is an important major carp in India. A large number of intergeneric hybrids have produced at the Central Inland Fisheries Research Institute, Barrackpore.

21. ***Cirrhinus reba*** (Hamilton-Buchanan)

1822. *Cyprinus reba* Hamilton-Buchanan, *Fishes of Ganges* : 280, 386 (type-locality : rivers and ponds of Bengal and Bihar).

1991. *Cirrhinus reba* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 173 -174.

Material examined : (i) 2 exs, 135-160 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. A.K.K. & party, 9.v.2000.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh.

Fishery Information : It attains a length of about 30 cm in natural waters. Also cultivated in ponds in India. A plankton and detritus feeder. It breeds during June-September in flooded shallows.

Genus ***Ctenopharyngodon*** Steindachner 1866

1866. *Ctenopharyngodon* Steindachner, *Verh. zool. bat. Ges. Wien.*, **16** : 782 (type species : *Ctenophanyngodon laticeps* steindachner = *Leuciscus idella* Valenciennes)

Body elongate. Head broad, depressed on anterior side. Large operculum. Eyes large, visible from under surface. Mouth wide. terminal; Lips moderately developed, lower lip distinct at corners of mouth only. Post labial groove restricted to corners of mouth. Barbels absent. Gill rackers rather short and spiny, biserially arranged. Dorsal fin short, inserted more or less opposite to pelvic fins, with 10 rays, its last simple ray non-osseus. Anal fin with 10 to 11 rays. Lateral line complete with 40 to 42 scales. Monotypic.

22. ***Ctenopharyngodon idellus*** (Valenciennes)

1844. *Leuciscus idella* Valenciennes, *Hist. nat. Poiss.*, **17** : 362 (type-locality : China)

1981. *Ctenopharyngodon idellus* : Howes, *Bull. Br. Mus. nat. Hist.* (Zool.), **41** (1) : fig. 30a.

Material examined : (1) 1ex, 220 mm, Brooder cum Experimental Fish Farm, Dimapur, Coll A.K.K. & party, 5.vi.1998.

Distribution : Introduced in India and many other countries in recent times.

Elsewhere : China; USSR.

Fishery information : The first consignment of grass carp brought from Hong Kong to the Pond Culture Division of the Central Inland Fisheries Research Institute, Cuttack during December 1959. They were successfully bred by hypophysation at Cuttack in 1962, and then fries of grass carp were distributed to various states of India. This fish breeds during monsoon in the flowing waters of rivers, but does not spawn naturally in static waters. Adults are exclusively herbivorous where as juveniles subsist on zooplankton. In addition to culture, this species help in aquatic weed control.

Genus *Labeo* Cuvier 1817

1817. *Labeo* Cuvier, *Ragne Animale*, **2** (ed 1) : 194 (type species : *Cyprinus niloticus* Forskal = *Cyprinus rufescens* Hasselquist).

Body elongate, cylindrical. Abdomen rounded. Mouth generally overhanging, inferior, transverse and semicircular, snout broadly rounded or obtusely pointed. Lips thick, continuous at the angle of mouth. Barbels one or two pairs, or absent. Dorsal fin inserted anterior to pelvic fins, with 11 to 26 rays, devoid of spines. Anal fin short with 7 to 8 rays, Lateral line complete, with 36-86 scales.

Key to the species of Genus *Labeo*

1. Lower lip not separated from isthmus by a post labial groove. Branched dorsal ray 8 to 10. A thin horney covering on lower jaw. Snout grooved. ..... *L. dero*
2. Lower lip seperated from isthmus by a post labial groove. Branched dorsal ray 10 to 14 3
3. Branched dorsal ray 10 ..... *L. angra*

   Branched dorsal ray 12-14 ..... *L. rohita*

23. *Labeo angra* (Hamilton-Buchanan)

1822. *Cyprinus angra* Hamilton-Buchanan, *Fishes of Ganges* : 331, 391 (type-locality : Brahmaputra river).

1991. *Labeo angra* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 198

Material examined : (1) 3 exs, 105 mm - 108 mm, Brahmaputra Drainage, Dimapur, Coll. Fisheries Deptt., Govt. of Nagaland, 1999.

Distribution : India : Assam, West Bengal, Bihar, Uttar Pradesh, Punjab, Orissa, Manipur, Nagaland (new record).

Elsewhere : Bangladesh; Nepal and Myanmar.

Fishery information : It attains a length of about 220 mm. This species is fairly common in Mahanadi river where it breeds during monsoon.

24. *Labeo dero* (Hamilton-Buchanan)

1822. *Cyprinus dero* Hamilton-Buchanan, *Fishes of Ganges* : 227, 385, pl. 22, fig. 78 (type-locality : Brahmaputra river).

1991. *Labeo dero* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 204-205.

Material examined : (1) 1ex; 132 mm., Tizu river, near Lanyu bridge, Phek, Nagaland, Coll. A.K.K. & party., 7.v. 2000. (ii) 1ex, 180 mm, Tsurong river, 48 kms north west of Mokokchung, Nagaland, Coll. A.K.K. & party. 9.v.2000.

Distribution : India : all along the Himalayas, Meghalaya, Arunachal Pradesh, Nagaland (new record).

Elsewhere : Pakistan, Sri Lanka; Bangladesh; Myanmmar and China.

Fishery information : It attains a length of about 75 cm. Its flesh is well flavoured and highly esteemed as food; can readily be caught with cast net. Angler commonly use it as bait for *Raiamas bola* and *Tor putitora*.

25. *Labeo rohita* (Hamilton-Buchanan)

1822. *Cyprinus rohita* Hamilton-Buchanan, *Fishes of*

Ganges : 301, 388, pl. 36, fig.85 (type-locality : Freshwater rivers of Gangetic Provinçes).

1991. *Labeo rohita* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 219-220, fig. 78.

Material examined : (i) 1ex, 260 mm, Brooder cum experimental Fish Farm, Dimapur, Coll. A.K.K. & party, 5.vi.1998. (ii) 1ex, 217 mm, Jhompukhari Govt. Fish Farm, Dimapur, Coll. A.K.K. & party, 6.vi. 1998.

Distribution : India : North and Central provinces.

Elsewhere : Pakistan; Bangladesh; Nepal and Myanmar.

Fishery information : It is one of major carps in India. It attains a length of about 1 metre. It has been transplanted into number of rivers in peninsular India, Andamans, Maharashtra and also in tanks of north-eastern states. Rohu is a bottom feeder and prefers plant matter including decaying vegetation. It attains maturity towards end of second year and spawning takes place in flooded rivers. Rohu of river is more active and stronger than that of tank.

Genus *Neolissocheilus* Rainboth

1962. *Acrossochilus* (nec Oshima) Misra, *Rec., Indian Mus.*, **57** : 148.

1985. *Neolissocheilus* Rainboth, *Beaufortia*, **35** (3) ; 26 (type species : *Barbus stracheyi* Day)

Body broad anteriorly, trunk and peduncle smoothly tapered. Eyes on upper half of head; visible from ventral side, cheeks with numerous tubercles. Head broad, snout blunt, mouth oblique and near - terminal to horizontal and inferior, two long pairs of barbels. Dorsal fin with 13 rays, last un-branched ray not serrated. Anal fin with 8, pectoral fin with 13-17 and pelvic fin with 8 rays. Lateral line scales 22-31.

Key to the species of Genus *Neolissocheilus*

Mouth nearly truncate, edge of lower jaw sharp; dorsal fin inserted almost equidistant from tip of snout and base of caudal fin.... ..... *N. hexagonolepis.*

Mouth smoothly rounded, edge of lower jaw blunt. Dorsal fin inserted nearer to tip of snout than to base of caudal fin .... *N. hexastichus*

26. *Neolissocheilus hexagonolepis* (McClelland)

1839. *Barbus hexagonolepis* McClelland, *Asiat. Res*, **19**(2) : 270, 340, pl. 41, fig. 3 (type-locality : Upper Assam).

1991. *Neolissocheilus hexagonolepis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 229-230, fig. 80.

Material examined : (i) 1ex, 225 mm, Dzuu river, a tributary of Dayang river, 20 kms east of Kohima, Coll. A.K.K. & party, 10.vi.1998 (ii) 1ex, 170 mm, Dayang river near Dayang Hydel Project, Coll. Fisheries Dept., Govt. of Nagaland, Feb. 2000. (iii) 1 ex, 170 mm, Tizu river near Lanyu bridge, Phek, Coll. A.K.K. & party, 7.v.2000. (iv) 3 exs., 55-65 mm, Lengnak stream, 45 kms north of Mokokchung, Coll. A.K.K. & party, 8.v.2000.

Distribution : India : Eastern Himalayas and Assam, Meghalaya, Manipur, Mizoram, Nagaland (new record).

Elsewhere : Bangladesh; Nepal; Myanmar; Thailand; Malayasia; Sumatra and China.

Fishery information : It attains a length of about 60 cm. It is an easteemed game fish with omnivorous feeding habit. This species breeds from April to October with a peak during August and September.

27. *Neolissocheilus hexastichus* (McClelland)

1839. *Barbus hexastichus* McClelland, *Asiat. Res*, **19** (2) : 269, 333, pl. 39, fig. 2 (type-locality : great rivers in the plains of India).

1991. *Neolissocheilus hexastichus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 230- 231.

Material examined : (i) 56 exs., 34-73 mm, Dzuu river, a tributory of Dayang river, 20 kms east of Kohima, Coll. A.K.K. & party, 10.vi.1998.

Distribution : India : rivers from Kashmir to Sikkim and Assam along Himalayan foot hills, Meghalaya, Nagaland (new record).

Elsewhere : Myanmar.

Fishery information : It attains a length of about 90 cm, contributes a minor fishery along the foot hills of Himalaya.

Genus *Osteobrama* Heckel, 1842

1842. *Osteobrama* Heckel in : *Russegger's Reisen in Europa, Asien and Africa etc.* 1(i) : 1033 (type species : *Cyprinus cotio*Hamilton-Buchanan).

Body deep and strongly compressed laterally. Abdominal edge sharp and trenchant or only from pelvic fin base to vent. Mouth small, somewhat directed upwards. Upper jaw slightly longer than lower. Barbels 2 pairs, 1 pair or absent. Dorsal fin inserted considerably behind pelvic fin, with 11 to 12 soft rays and a strong serrated spine. Anal fin with 14 to 36 rays. Lateral line complete with 42 to 80 scales.

28. *Osteobrama cotio cotio* (Hamilton-Buchanan)

1822. *Cyprinus cotio* Hamilton- Buchanan, *Fishes of Ganges* : 339, 393, pl. 39 fig. 93(type locality : ponds and ditches of Bengal).

1991. *Osteobrama cotio cotio* : Talwar and Jhingran, *Inland Fishes of India and adjacent Countries* : 238 239.

Material examined : (i) 2 exs, 72-75 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : Assam, West Bengal, Bihar, Madhya Pradesh, Uttar Pradesh, Punjab, Meghalaya, Manipur, Mizoram and Nagaland (new record).

Elsewhere : Pakistan and Bangladesh.

Fishery information : It attains a length of about 15 cm and is of little interest to fisheries.

Genus *Puntius* Hamilton-Buchanan, 1822

1822. *Puntius* Hamilton-Buchanan, *Fishes of Ganges* : 310, 388 (type-species : *Cyprinus sophore* Hamilton-Buchanan).

Body short or moderately elongate, often deep and slightly compressed; with rounded abdomen. Mouth terminal to inferior; lips thin, devoid of horny covering. Symphysial knob absent. Barbels 2 pairs, 1 pair or absent. Dorsal fin inserted nearly opposite to pelvic fins, with 9 to 13 rays and with or without spine. Anal fin with 7 to 9 rays. Lateral line complete or incomplete, with 20 to 47 scales in longitudinal series.

Key to the species of Genus *Puntius*

1. Barbels present 2
   Barbels absent. 5

2. Two pairs of barbel 3
   One pair of barbel 4

3. Dorsal spine as long as depth of the body. Lateral line scales 42 ..... *P. clavatus*

   Dorsal fin inserted nearer to base of caudal fin than to tip of snout. Lateral line scales 28-34. Scales betweeen middle of back and lateral line 8-9 ..... *P. sarana orphoides*

4. Scales between middle of back and lateral line 5 or 5½. Pre-dorsal scales 10-12. A dark blotch from 23-25 scales of the lateral line. A dark spot along base of first to fourth anterior dorsal ray ..... *P. chola*

5. Dorsal spine serrated 6

   Dorsal spine smooth. Body depth 3.5 to 3.75 in total length. A round black blotch at the root of caudal fin ..... *P. sophore*

6. Body without any vertical black-coloured bands 7

7. Branched ray in dorsal fin 7.6 or 7 rows of transverses scales. A horizontal blue line on the body *and two spots on tail*.....

   ..... *P. shalynius*

   Branched ray in dorsal fin 8. About 12 rows of tranverse scales. No band on body 8

8. Body depth 2.4 in total length. Pre-dorsal scales 9. Lateral line incomplete. One black spot ..... *P. conchonius*

   Body depth 3-3.5 in total length. Pre-dorsal scales 11. Latetal line incomplete. Two black spots ..... *P. ticto.*

29. ***Puntius chola*** (Hamilton-Buchanan)

1822. *Cyprinus chola* Hamilton-Buchanan, *Fishes of Ganges* : 312, 289 (type-locality : North eastern parts of Bengal).

1991. *Puntius chola* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region. *Rec. zool. Surv. India, Occ. Paper* No. **135** : 52-56.

Material examined : (i) 2 exs., 71-93 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. Fisheries Dept., Nagaland, 1999. (ii) 6 exs., 75-105 mm, Tsurong river, 48 kms north-west of Mokokchung, Coll. A.K.K. & party, 9.v.2000. (iii) 1 ex., 66mm, Pond at Showuba Villege, 15 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & party, 3.v.2000.

Distribution : India : Throughout.

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

Fishery information : It attains a length of about 12 cm and is of minor interest to fisheries.

30. ***Puntius conchonius*** (Hamilton-Buchanan)

1822. *Cyprinus conchonius* Hamilton-Buchanan, *Fishes of Ganges* : 317, 389 (type-locality : Pond of north east Bengal; Kosi river and Ami river).

1991. *Puntius conchonius* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region. *Rec. zool. Surv. India, Occ. Paper* No. **135** : 27-29.

Material examined : (i) 5 exs., 42-70 mm, Bokajan Beel, 10 kms east of PWD Rest House, Dimapur, Coll : A.K.K. & Party, 07.vi.98.

Distribution : India : Ganga, Brahmaputra, Mahanadi and Cauveri river systems.

Elsewhere : Pakistan; Nepal and Bangladesh.

Fishery information : It attains a length of about 100 mm. This is one of the most important ornamental *Puntius* species and a very beautiful aquarium fish.

31. ***Puntius shalynius*** Yazdani & Talukdar

1975. *Puntius shalynius* Yazdani & Talukdar. *J. Bombay nat. Hist. Soc.*, 72(1) : 218. fig. (type-locality : Barapani Lake, near Shillong, Meghalaya).

1991. *Puntins shalynius* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region. *Rec. zool. Surv. India, Occ. Paper* No. **135** : 30-32.

Material examined : (i) 3 exs, 38-46 mm, Dzuu river, a tributory of Dayang river, 20 kms east of Kohima, Coll. A.K.K. & party, 10.vi.1998.

Distribution : India : Meghalaya, Assam, Manipur, Mizoram and Nagaland (new record).

Fishery information : It attains a length of about 7 cm. is one of the common species in the Khasi hill-stream and is of minor fishery value.

32. ***Puntius sophore*** (Hamilton-Buchanan)

1822. *Cyprinus sophore* Hamilton-Buchanan, *Fishes of Ganges* : 310, 389 pl. 19, fig. 86 (type locality : ponds and rivers in Gangetic provinces).

1991. *Puntius sophore* : Jayaram, Revision of the Genus *Puntius,* Hamilton from the Indian Region. *Rec. zool. Surv. India, Occ. Paper* No. **135** : 15-20.

Material examined : (i) 3 exs., 95-122 mm, Brooder Cum Experimental Fish Farm, Dimapur, Coll. A.K.K. & party. 5.vi.1998. (ii) 2 exs., 90-91 mm, Kuppa nalla, a tributory of Dhansari river, 20 kms south of PWD Rest House, Dimapur, Coll. A.K.K. & party, 5.v.2000. (iii) 2 exs., 71-75 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999. (iv) 7 exs., 65-80 mm, Dhansari river, 10 kms south-west of Dimapur, Coll. A.K.K. & party, 4.v.2000. (v) 2 exs., 30-37 mm, Lengnak stream, 45 kms north of Mokokchung, coll. A.K.K. & party., 8.v.2000. (vi) 3 exs., 78-81 mm, pond near Burma Camp, 2.5 kms north of PWD Rest House, Dimapur, Coll. A.K.K. & party, 7.vi.1998. (vii) 6 exs., 53-90 mm, pond at showuba village, 15 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & party, 3.v.2000.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh; Myanmar and China.

Fishery information : It attains a length of about 13 cm and is of minor fishery value. This barb is considered as medically important in Tamil Nadu.

33. *Puntius ticto* (Hamilton-Buchanan)

1822. *Cyprinus ticto* Hamilton-Buchanan, *Fishes of Ganges* : 314, 398, pl. 8. fig. 87 (type locality : South-eastern parts of Bengal).

1991. *Puntius ticto* : Jayaram, Revision of the Genus *Puntius* Hamilton from the Indian Region. *Rec. zool. Surv. India, Occ. Paper* No. 135 : 22–26.

Material examined : (1) 98 exs., 32-58 mm, Kuppa nalla, a tributory of Dhansari river, 20 kms south of PWD Rest House, Dimapur, Coll. A.K.K. & party, 5.v.2000 (ii) 85 exs, 28-50 mm, Dhansari river, 10 kms south-west of Dimapur, Coll.A.K.K. & party, 4.v.2000, (iii) 2 exs, 42-50mm, Pond at Showuba Village, 15 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & party, 3.v.2000. (iv) 2 exs, 37-40mm, Diphu river, 30 kms south east of Dimapur, Coll. A.K.K. & party, 6.v.2000, (v) 1 ex, 41 mm, Dayang river, 36 kms from Wokha, Dist. Wokha, Coll. A.K.K. & Party, 15. vi. 1998.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Sri Lanka; Bangladesh; Myanmar and Thailand.

Fishery information : It attains a length of about 10 cm, a popular barb in the aquarium.

Genus *Tor* Gray, 1834

1834. *Tor* Gray *Illustrations of Indian Zoology*, 2 : 196 (type species : *Cyprinus tor* Hamilton-Buchanan)

Body elongate; deep anteriorly, the trunk and peduncle smoothly tapered. Head small, with a prominent snout. Mouth inferior to sub-inferior. Upper jaw often protractile. Lips thick and well developed, lower lip with a distinct median fleshy lobe. Well developed 2 pairs of barbels. Dorsal fin inserted opposite to pelvic fins, with 12 to 13 rays and a strong, smooth spine. Anal fin with 7 to 8 rays. Lateral line complete, with 22 to 37 scales.

Key to the species of Genus *Tor*

1(a) Lateral line scales 32 to 37; width of head greater than its height ; maxillary barbels about twice in eye diameter..... ..... *T. chelynoides*

1(b) Lateral line scales 22 to 28; breadth of head less than its height; maxillary barbels equal to diameter of eye 2

2(a) Length of head considerably greater than body depth; lower fins yellowish .... *T. putitora*

2(b) Length of head shorter than body depth; eyes visible from under side of head ..... *T. tor.*

34. *Tor chelynoides* (McClelland)

1839. *Barbus Chelynoides* McClelland, *Asiat. Res*, 19 (2) : 271, 340, pl. 57, fig. 5 (type locality : Simla)

1991. *Tor chelynoides*: Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 302-303, fig. 105.

Material examined : (i) 2 exs, 110 -120 mm, Tizu river at Phek, near Lanyu Bridge, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : Himalaya, as far east as Assam, Meghalaya, Nagaland (new record), also in the Ganga.

Fishery information : This mahaseer does not grow to a large size. It's interest to fisheries is still uncertain.

35. *Tor putitora* (Hamilton-Buchanan)

1822. *Cyprinus putitora* Hamilton-Buchanan, *Fishes of Ganges* : 203, 388 (type-locality : eastern parts of Bengal).

1982. *Tor putitora* : Tilak and Sharma, *Game Fishes of India and Angling* : 39, figs. 4, 5 & 6.

Material examined : 1 ex, 275 mm, Dzuu river, a tributory of Dayang river, 20 kms east of Kohima, Coll. A.K.K. & party 10.vi.1998.

Distribution : India : All along the Himalaya including Kashmir, U.P. Punjab, Haryana, Darjeeling Dist. of West Bengal, Assam, Tripura, Meghalaya, Manipur, Mizoram, and Nagaland (New record).

Elsewhere : Nepal, Pakistan; Bangladesh and Afghanistan.

Fishery information : It attains a length of about 270 cm. It is the most common mahaseer of the Himalayas. It has afforded lucrative source of sports for anglers since long time, with excellent food value.

Subfamily SCHIZOTHORACINAE

Genus *Schizothorax* Heckel 1838

1838. *Schizothorax* Heckel (Partim), *Fishe aus Cashmir* : 11 (type-species : *Schizothorax plagiostomus* Heckel = *Cyprinus richardsonii* Gray)

Body elongate and sub-cylindrical. Head short, somewhat cone shaped and blunt. Snout covered with warts in male. Interorbital region broad and flat. Mouth inferior, wide and more or less arched. lips fleshy and continuous. Lower lip papillated. Lower jaw covered with hard horny cartilage. Two pairs of barbel. Dorsal fin inserted more or less opposite to pelvic fins, its last unbranched ray osseous, strong and serrated posteriorly. Scales very small.

36. *Schizothorax richardsonii* (Gray)

1832. *Cyprinus richardsonii* Gray *Illustrations of Indian Zoology*, (10) : pl. 14, fig. 2 (type-locality : not known).

1987. *Schizothorax richardsonii* : Tilak, *Fauna of India*, Pisces : 50, figs 12 24.

Material examined : (i) 5 exs, 80-125 mm, Dzulake river (stream), 32 kms west of Kohima, Coll. Fisheries Dept., Govt. of Nagaland, 6.v.2000.

Distribution : India : Along with Himalaya, from Jammu and Kashmir to Assam, Sikkim, Manipur, Nagaland (new record).

Elsewhere : Bhutan; Nepal; Pakistan; and Afghanistan.

Fishery information : It attains a length of about 60 cm and is a well known game fish. It is primarily bottom feeder, breeds during April-May, before the monsoons flood in the rivers and streams. The flesh of this fish is much relished.

Subfamily GARRINAE

Genus *Crossocheilus* Kuhl et van Hasselt, 1823

1823. *Crossocheilus* Kuhl at van Hasselt. *Algemeine Konst. en. Letter-Bode*, 2 (35) : 132 (type-species : *Crossocheilus oblongus* Kuhl et van Hasselt).

Body elongate with rounded abdomen. Head small, snout obtusely rounded. Mouth inferior; upper lip well developed, lower lip fleshy. Usually one pair of rostral barbel. Dorsal fin inserted in advance of pelvic fins, with 10 to 11 soft rays and without a spine. Anal fin with 7 rays. Lateral line complete, with 33 to 46 scales.

Key to the species of Genus *Crossocheilus*

Head length less than 5 times (4.3 to 5.0) in standard length. Lateral line scales 35 .... *C. burmanicus*

Head length more than 5 times (5.1 to 5.2) in standard length. Lateral line scales 37 to 42 ..... *C. latius latius*

37. *Crossocheilus latius latius* (Hamilton-Buchanan)

1822. *Cyprinus latius* Hamilton-Buchanan, *Fishes of Ganges* : 345, 392 (type-locality : Teesta river at the base of Darjeeling Himalaya).

1991. *Crossocheilus latius latius* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 416, fig. 147.

Material examined : (i) 2 exs, 95-105 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. A.K.K. & party, 9.v.2000.

Distribution : India : The Ganga and Brahmaputra in Northern India; Tripura, Meghalaya, Manipur, Mizoram, Nagaland (new record); Mahanadi in Orissa; Western Ghats; head waters of Krishna river.

Fishery information : It attains a length of about 12.5 cm and of little interest to fisheries.

38. *Crossocheilus burmanicus* Hora

1936. *Crossocheilus latius burmanicus* Hora, *Rec. Indian, Mus.*, 38(3) : 324 (type-locality : Burma)

1991. *Crossocheilus burmanicus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 414-415.

Material examined : 1 ex., 73mm, Diphu river, 30 kms South east of Dimapur, Coll A.K.K. & party, 6.v.2000.

Distribution : India : Manipur, Nagaland (new record).

Elsewhere : Myanmar.

Fishery information : It attains a length of about 130 mm and of no interest to fisheries.

Genus *Garra* Hamilton-Buchanan, 1822

1822. *Garra* Hamilton-Buchanan, *Fishes of Ganges* ; 343, 393 (type-species : *Cyprinus lamta* Hamilton-Buchanan).

Body elongate and subcylindrical. Under surface of head and body flattened. Mouth inferior, transverse and semi-circular; a suctorial disc present on chin. A proboscis may or may not present. Barbels 1 or 2 pairs or absent. Dorsal fin inserted in advance of pelvic fins, with 9 to 12 rays and no spine. Paired fins horizontally placed. Anal fin with 6 to 8 rays. Lateral line complete, with 32 to 90 scales.

Key to the species of Genus *Garra*

1. Proboscis present 2

   Proboscis absent 3

2. Proboscis trilobed, 2 pairs of barbels present ..... *G.nasuta*

   Proboscis single projection, well developed with well defined lateral tubercular area .... *G.gotyla gotyla*

3. Lateral line scales 34 or fewer 4

   Lateral line scales 35 - 40 6

4. Dorsal and caudal fins without any marking ..... *G. annandalei*

   Dorsal fin with a light black bar; caudal fin with a broad, w-shaped band 5

5. Back and post-pelvic region scaled .... *G. lissorhynchus*

   Back and post-pelvic region naked .... *G. rupecula*

6. Vent situated almost midway between anterior origin of anal and pelvic fins ..... *G. kempi*

   Vent situated nearer to origin of pelvic fins than to anal fin ..... *G.naganensis*

39. *Garra annandalei* Hora

1877. *Discognathus lamta* (nec. Hamilton-Buchanan) Day (Partim) *Fishes of India* : 527.

1921. *Garra annandalei* Hora *Rec. Indian. Mus.* 22(5) : 657 (type-locality : Mahananda river, below Darjeeling).

1991. *Garra annandalei* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 419-420.

Material examined : (i) 5 exs., 60-65 mm, Diphu river, 30 kms south east of Dimapur, Coll. A.K.K. & party, 6.v.2000. (ii) 7 exs., 37-86mm, Dayang river, 36 kms from Wokha, Dist. Wokha, Coll. A.K.K. & party, 15.vi.1998.

Distribution : India : Northern Bengal, Bihar, Assam, Meghalaya, Mizoram, Nagaland (new record).

Elsewhere : Eastern Nepal and Bangladesh.

Fishery information : It attains a length of abut 23 cm and is of no interest to fisheries.

40. *Garra gotyla gotyla* (Gray)

1832. *Cyprinus gotyla* Gray, *Illustrations of Indian Zoology*, 1., pl. 88, figs 3, 3a (type-locality: Northern India).

1991. *Garra gotyla gotyla* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 421 422.

Material examined : (i) 3exs. 50-110 mm, Dikhu river, 20 kms south of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999. (ii) 1 ex. 65 mm, Dhansari river near the bridge, Dimapur, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : All along Himalayas; Assam, Tripura, Meghalaya, Manipur, Mizoram, Nagaland (new record) ; Chhota Nagpur Plateau and Vindhya - Satpura mountains of Peninsular India.

Elsewhere : Bangladesh; Upper Myanmar.

Fishery information : It attains a length of about 14 cm, of minor interest to fisheries. Generally found in streams and lakes of Himalaya and used as food fish.

41. *Garra naganensis* Hora

1921. *Garra naganensis* Hora, *Rec. Indian. Mus.*, **22**(5) : 667, pl. 25, figs. 2, 2a (type-locality : near Kairong, Naga Hills, Nagaland).

1991. *Garra naganensis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 430.

Material examined : (i) 45 exs., 40-127 mm, Dzuu river, a tributory of Dayang river, 20 kms east of Kohima, Coll. A.K.K. & party, 10. vi. 1998.

Distribution : India : Naga Hills, Nagaland, Manipur, Mizoram, Assam, Meghalaya.

Fishery information : It attains a length of about 15 cm and is of very little interest to fisheries.

Family PSILORHYNCHIDAE

Genus *Psilorhynchus*, McClelland, 1839

1839. *Psilorhynchus* McClelland *Asiat. Res.*, **19** : 300, 428 (type-species : *Cyprinus sucatio* Hamilton-Buchanan)

Mouth small, transverse and vertical; jaws with horny edges, lips fleshy, no barbel. Narrow gill opening. Phanyngeal bone with one row of teeth, 4 in number. Dorsal fin with 10 to 12 rays in which 7 to 9 are branched. Anal fin with 5 branched rays. lateral line complete.

Key to the species of Genus *Psilorhynchus*

Branched dorsal finray 7; abdomen naked; simple pectoral finrays 7 or 8; lateral line scales 42 to 44..... *P. homaloptera*

Branched dorsal finray 8 (rarely 9); simple pectoral finray 6 or 7 (rarely 5) ; lateral line scales 30 to 34..... *P. balitora*

42. *Psilorhynchus balitora* (Hamilton-Buchanan)

1822. *Cyprinus balitora* Hamilton-buchanan, *Fishes of Ganges* : 348, 394 (type-locality : rivers of north-east Bengal).

1991. *Psilorhynchus balitora* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 438-439, fig. 153.

Material examined : (i) 2 exs, 61-67 mm, Dayang river near Dayang Hydel Project, Coll. Fisheries. Dept., Govt. of Nagaland, Feb. 2000.

Distribution : India : North Bengal, Assam, Tripura, Meghalaya, Nagaland (new record), upper reaches of Jamuna river, Gomti river at Lucknow.

Elsewhere : Bangladesh; Nepal and Myanmar.

Fishery information : This fish is of no interest to fisheries.

Family HOMALOPTERIDAE

Subfamily HOMALOPTERINAE

Genus *Balitora* Gray 1830

1830. *Balitora* Gray *Illustrations of Indian Zoology*, **1** : pl. 88, fig. 1 (type species : *Balitora brucei* Gray)

Body strongly depressed; head and abdomen flattened. Eye small, on the dorsal half of head, not visible from underside. Mouth inferior, arched, both jaws covered with a horny sheath. Both lips with 1 or 2 rows of papillae. Rostral barbels four, arranged in a single row; maxillary barbels two. Gill opening extending to ventral side of head. Paired fins broad and horizontal. Caudal fin forked. Scales small.

43. *Balitora brucei* Gray

1830. *Balitora brucei* Gray *Illustrations of Indian Zoology*, **1** : pl. 88. fig. 1 (type locality : Priang river near Cherrapungi, Meghalaya).

1991. *Balitora brucei* Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 446 447.

Material examined : (i) 3 exs., 80-95mm, Dhansari river near the bridge, Dimapur, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : Eastern Himalayas - Darjeeling, Assam, Meghalaya, Mizoram and Nagaland (new record).

Elsewhere : Bhutan and Bangladesh.

Fishery information : It attains a length of about 11 cm and is of no interest to fisheries.

Subfamily NOEMACHEILINAE

Genus *Noemacheilus* bleeker, 1823

1823. *Noemacheilus* Kuhl et van Hasselt, *Algemeine konst en Letter-bode*, 2 (35) : 133 (type species : *Noemacheilus fasciatus* Kuhl et van Hasselt).

Body elongate, more or less cylindrical and somewhat depressed. Mouth small and inferior. Eye minute to small. Pre-orbital spine on head absent. Barbels 2 to 4 pairs. Dorsal fin inserted opposite to pelvic fins, with 8 to 20 soft rays and no spine. Anal fin with 6 to 8 soft rays. Caudal fin emerginate, truncate or lunate. Scales minute. Lateral line complete or incomplete.

Key to the species of Genus *Noemacheilus*

1. Dorsal tin with 9 to 11 branched rays.....2

   Dorsal fin with 6 to 8 branched rays.....3

2. Lateral line usually complete often ending only beyond base of anal fin. Caudal fin slightly emerginate..... *N. botia*

   Lateral line incomplete, ending below dorsal fin base. Caudal emerginate..... ..... *N. zonalternans*

3. Caudal tin truncate. Lateral line incomplete. Body with many narrow bands, narrower than interspace between them and descending upto ventral surface ..... *N. manipurensis*

   Caudal fin slightly emerginate. Lateral line incomplete. Body marked with 7 to 11 broad black bands, extending from back to ventral surface ..... *N. nagaensis*

   Caudal fin deeply forked 4

4. Lateral line incomplete 5

   Lateral line complete 6

5. Dorsal fin with 6 to 7 branched rays. body with 7 to 11 black complete bands..... ..... *N. kangjupkhulensis*

   Dorsal fin with 8 branched rays. Body above lateral line marked by characteristic reticulations ..... *N. prashadi*

6. Interspace between the bands narrow, about half the width of bands or less.....*N.savona*

   Interspace between bands wide, nearly double or equalling width of bands 7

7. Bands on body not continuous from back but disjoined and not descending to ventral surface. Caudal fin with V shaped band..... ..... *N. scaturigina*

   Body with 12 to 13 black bands encircling the body, nearly upto base of pectoral fin. A black bar at the base of caudal fin .... *N. sikmaiensis*

44. *Noemacheilus botia* (Hamilton-Buchanan)

1822. *Cobitis botia* Hamilton-Buchanan, *Fishes of Ganges* : 350, 394 (type locality : rivers of north eastern Bengal).

1987. *Noemacheilus botia* : Menon, *The Fauna of India*. Pisces (Teleostei : Cobitoidea : Homalopteridae) 4 (part 1) : 141, pl. 5, fig. 5.

Material examined : (i) 4 exs, 60-71 mm, Dikhu river, 20 kms south of Mokokehung, Coll. Fisheries Dept., Govt. of Nagaland, 1999, (ii) 2 exs., 63-65 mm, Dzulak river (stream) 33 kms west of Kohima, Coll. Fisheries Dept., Govt. of Nagaland, 6.v. 2000 (iii) 7 exs., 56-73 mm, Diphu river, 30 kms south east of Dimapur, Coll. A.K.K. & party, 6.v.2000.

Distribution : India : Northern India, Brahmaputra and Ganga basin.

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

Fishery information : It attains a length of about 9 cm and is of no interest to fisheries.

45. *Noemacheilus kangjupkhulensis* Hora

1921. *Noemacheilus kangjupkhulensis* Hora, *Rec. Indian Mus.*, 22 : 202, pl. 10. figs. 4, 4a (type-locality : Manipur Valley).

1987. *Noemacheilus Kangjupkhulensis* : Menon, *The Fauna of India* : Pisces (Teleostei: Cobitoidea Homalopteridae) 4 (part 1) : 115 117, figs. 2 & 3, pl. 5.

Material examined : (i) 1 ex., 56 mm, Dikhu river, 20 kms, south of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999. (ii) 5 exs., 38-65 mm, Lengnak stream, 45 kms north of Mokokchung, Coll. A.K.K. & party, 8.v.2000.

Distribution : India : Manipur, Mizoram, Nagaland (new record).

Elsewhere : Myanmar.

Fishery information : It attains a length of about 6 cm and is of no interest to fisheries.

46. *Noemacheilus manipurensis* Chaudhuri

1912. *Noemacheilus manipurensis* Chaudhuri, *Rec. Indian Mus.*, **7** : 443, pl. 40. figs. 4, 4a, 4b and pl. 41, figs. 1, 1a, 1b (type-locality : Manipur).

1987. *Noemacheilus manipurensis* : Menon, *The Fauna of India* : Pisces (Teleostei : Cobitoidea : Homalopteridae), **4**(1) : 121, pl. 12, fig. 4.

Material examined : 21 exs., 45-52 mm, Keharu Stream, 19 kms south of Kohima on Kohima-Imphal Road, Coll. A.K.K. & Party, 12.vi.98.

Distribution : India : Manipur and Nagaland.

Fishery information : It attains a length of about 80 mm and is of no interest to fisheries.

47. *Noemacheilus savona* (Hamilton-Buchanan)

1822. *Cobitis savona* Hamilton-buchanan, *The Fishes of Ganges* : 357, 394 (type-locality : Kosi river of Nathpur, Utttar Pradesh).

1987. *Noemacheilus savona* : Menon, *Fanna of India* : Pisces (Teleostei : Cobitoidea : Hamalopteridae) **4** (part 1) : 91, pl. 13, fig. 1.

Material examined : (i) 4 exs., 65-70 mm, Dhansari river near the bridge, Dimapur, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : Eastern Himalayas : Tista drainage at Darjeeling through Nepal, to Karnali and Kali drainages in Uttar Pradesh; Meghalaya, Mizoram and Nagaland (new record).

Fishery information : It attains a length of about 7 cm and is of no interest to fisheries.

Family COBITIDAE

Sub-family COBITINAE

Genus *Lepidocephalus* Bleeker, 1858

1858. *Lepidocephalus* Bleeker, *Natuurk. tijdschr. Nederl. Ind.*, **16** 303 (type species : *Cobitis microchir* Bleeker)

Body elongate, slightly compressed. back not arched. Mouth inferior, with 6 barbels. A small erectile, bifid, suborbital spine. Dorsal fin inserted opposite to ventral and placed almost on middle of body. Caudal fin rounded, truncate or emerginate. Scales small, but visible. Sides of head covered with small scales in patches. Lateral line absent.

Key to the species of Genus *Lepidocephalus*

Pectoral fin with 9 to 10 rays. Body depth 7.0 to 7.7 times in total length. Caudal fin slightly emerginate..... *L. berdmorei*

Pectoral fin with 7 to 8 rays. Body depth 5.8 to 6.8 times in total length. Caudal fin rounded or cut square ..... *L.guntea*

48. *Lepidocephalus guntea* (Hamilton-Buchanan)

1822. *Cobitis guntea* Hamilton-buchanan, *Fishes of Ganges* : 353, 394 (type locality : Bengal).

1992. *Lepidocephalus guntea* : Menon, *The Fauna of India* (Pisces : Cobitoidea : Cobitidae) **4** (part 2) : 54-60, Text. figs. 2.

Material examined : (i) 2 exs, 65-67 mm, Dikhu river, 20 kms south of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999. (ii) 1 ex., 68 mm, pond of Showuba villege 15 kms east of PWD Rest House, Dimapur, Coll A.K.K. & party, 3.v.2000 (iii) 1ex., 35 mm, Diphu river, 30 kms south east of Dimapur, Coll. A.K.K. & party, 6.v.2000. (iv) 1 ex., 79 mm, Dayang river, 36 kms from Wokha, Dist. Wokha, Coll. A.K.K. & party 15.vi.1998.

Distribution : India : throughout except Karnataka, Kerala and south of Krishna.

Elsewhere : Pakistan; Bangladesh; Nepal; Myanmar; and Thailand.

Fishery Information : It attains a length of about 15 cm and of no interest to fisheries. But it is widely used as an aquarium fish.

Subfamily BOTIINAE

Genus *Botia* Gray, 1831

1831. Botia Gray. *Zool. Misc.*, : 8 (type species : *Botia almorhae* Gray).

Body robust, moderately elongate and laterally compressed. Head long and pointed downwards. A bifid spine present in the antero-ventral direction of the eye. Mouth small and ventral; lips thick. Barbels 3 to 4 pairs. Dorsal fin inserted above or anterior to origin of pelvic fins, with 10-16 rays. Anal fin with 7 to 9 rays. No scales on head. lateral line present.

Key to the species of Genus *Botia*

Barbels four pairs. Snout considerably longer than remaining part of the head. Eyes small, its diameter about 5 times in length of snout ..... *B.rostrata*

Barbels four pairs. Snout equal to or shorter than remaining part of head. Eyes moderately large, its diameter about 3 times in length of snout ..... *B.dario*

49. *Botia rostrata* Gunther

1868. *Botia rostrata* Gunther, *Cat. Fishes Br. Mus.*, 7 : 367, fig. (type-locality : Ganges river in Bengal, and ? Assam).

1991. *Botia rostrata* : Talwar and Jhingran, *Inland Fishes of India and adjacent Countries* : 540-541.

Material examined : (i) 1 ex., 100mm, Diphu river, 30 kms, south east of Dimapur, coll. A.K.K. & party, 6.v. 2000.

Distribution : India : Assam, West Bengal, Tripura, Meghalaya and Nagaland (new record).

Elsewhere : Bangladesh.

Fishery information : This fish is of no interest to fisheries.

Order SILURIFORMES

Family BAGRIDAE

Genus *Mystus* Scopoli, 1777

1777. *Mystus* Scopoli, *Introductio ad historiam naturalem* : 451 (type species : *Bagrus haplepensis* Valenciennes = *Silurus pelusius* Solandar).

Body moderately elongate, posteriorly compressed, Head rather depressed and smooth. Eye moderately large, not visible from underside of head. Mouth terminal and moderately wide. 4 pairs of barbels, maxillary barbels extend beyond dorsal fin. Rayed dorsal fin with one serrated spine and 7 soft rays; adipose dorsal low. Anal fin short, with 9 to 16 soft rays. Lateral line complete.

Key to the species of Genus *Mystus*

1. Adipose dorsal fin commencing immediately after rayed dorsal fin 2

   Adipose dorsal fin commencing after an interspace from rayed dorsal fin; longer than anal fin base. A dark bloch at the base of caudal fin ..... *M.armatus*

2. Maxillary barbels reach anal fin. Inter-orbital width less than 3.0 (2.0 to 3.0) in head length. No dark spot at the base of dorsal fin ..... *M. bleekeri*

   Maxillary barbels reach caudal fin base or beyond. Inter oribital width more than 3.0 (3.0 to 4.0) in head length. A dark spot at the base of dorsal fin ..... *M. cavasius*

50. *Mystus armatus* (Day)

1865. *Hypselobagrus armatus* Day, *Proc. zool. Soc., London*, : 289 (type-locality : Cochin)

1977. *Mystus armatus* : Jayaram, *Rec. zool. Surv. India, Occ. Paper* No. 8 : 28, fig. 23B.

Material examined : (i) 1 ex., 76 mm, Dikhu river, 20 kms south of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : Nagaland. Wynaad range of hills, Western Ghats and Manipur.

Elsewhere : Myanmar.

Fishery information : It attains a length of about 16 cm. In Kerala, it has minor fishery value, where it is obtained only occasionally.

51. *Mystus bleekeri* (Day)

1846. *Bagrus keletius* (nec Valenciennes) Bleeker, *Nat. Geneesk. Arch. Ned. India* 3(2) : 135 (type-locality : Bengal).

1977. *Mystus bleekeri* : Jayaram, *Rec. zool. Surv. India, Occ. Paper* No. 8 : 29, fig. 21B.

Material examined : (i) 2 exs., 115-125 mm, Kuppa Nalla, a tributory of Dhansari river, 20 kms south of P.W.D. Rest House, Dimapur, Coll. A.K.K. & party, 5.v.2000. (ii) 1 ex., 95 mm, Longnek stream, 45 kms north of Mokokchung, Coll. A.K.K. & party. 8.v.2000. (iii) 4 exs., 42-107 mm, Bokajan Beel, 10 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & Party, 07.vi.98.

Distribution : India : Northern India, the southern most limit being Mahanadi headwaters, also Tripura, Meghalaya, Manipur, Mizoram and Nagaland (new record).

Fishery information : It attains a length of about 16 cm. Only minor fishery exists for this fish.

52. ***Mystus cavasius*** (Hamilton-Buchanan)

1822. *Pimelodus cavasius* Hamilton-Buchanan, *Fishes of Ganges* : 203, 379, pl. 11, fig. 67 (type-locality : Gangetic provinces).

1977. *Mystus cavasius*: Jayaram, *Rec. zool. Surv. India, Occ. Papep* No. **8** : 29, fig. 21A.

Material examined : (1) 2 exs, 80-110 mm, Tsurong river, 48 kms north-west of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : Throughout.

Elsewhere : Pakistan; Sri Lanka; Bangladesh; Nepal; Myanmar and Thailand.

Fishery information : It attains a length of about 40 cm. It is very common food fish in the Indian region.

Family SILURIDAE

Genus ***Ompok*** Lecepede

1803. *Ompok* Lacepede, *Hist. nat. Poiss.*, 5 : 49 (type species : *Ompok siluroides*, Lacepede = *Silurus bimaculatus* Bloch).

Body strongly compressed laterally. Head depressed. Mouth broad, oblique, its angle not reaching anterior margin of eye. Lower jaw longer than upper one. Eyes subcutaneous, lying more or less at the corner of mouth. Barbels two pairs. Dorsal fin short with 3 to 5 rays; anal fin long with 52 to 75 rays. Pectoral fin with a spine and 11 to 14 rays. Pelvic fin with 6 to 10 rays. Caudal fin forked, separated from anal fin.

53. ***Ompok bimaculatus*** (Bloch)

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

1976. *Ompok bimaculatus* : Misra, *Fauna of India,* Pisces (2nd ed), **3** : 189, fig. 35.

Material examined : (i) 2 exs, 105-120 mm, Tsurong river, 48 kms north-west of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : throughout.

Elsewhere : Pakistan; Afghanistan; Sri Lanka; Bangladesh; Myanmar; Thailand; Java; Sumatra; Borneo and China.

Fishery information : It attains a length of about 50 cm; caught in fairly good quantities. It is very tasty and highly priced fish. It spawns during monsoon and inhabits rivers, reservoirs, tanks, and ponds.

Genus ***Silurus*** Linnaeus 1758

1758. *Silurus* Linnaeus, *Systema naturae,* 10th ed. : 304 (type species : *Silurus glanis* Linnaeus)

Body elongate and laterally compressed. Head broad and depressed. Mouth terminal or sub-terminal. Barbals 2 or 3 pairs. Maxillary barbels well developed and extending beyond gill opening. Eye small, not visible from underside of head, covered with skin, lying above corner of mouth. Dorsal fin very short with 1 to 4 rays. Anal fin very long with 58 to 85 rays, confluent with caudal fin or not. Pectocal fin with 7 to 11 soft rays. Caudal fin rounded or truncate.

54. ***Silurus indicus*** (Datta, Barman & Jayaram)

1987. *Kryptopterus indicus* Datta, Barman & Jayaram, *Bull zool. Surv. India,* **8** : 29, fig. 1 (type-locality : Namdapha river, Namdapha wildlife sanctuary, Arunachal Pradesh).

1999. *Silurus indicus* : Menon, *Rec. zool. Surv. India Occ. Paper* No. **175** : 220.

Material examined : 1 ex., 265 mm, Tsurong river, 48 kms north-west of Mokokchung, Coll. A.K.K. & party, 9.v.2000.

Distribution : India : Arunachal Pradesh (Namdapha river, Tirap dist.) and also Nagaland (New record).

Fishery information : It attains a length of 26.5 cm. inhabits hill stream with gravelly and sandy bed. It is of no interest of fisheries in our region.

Family AMBLYCIPITIDAE

Genus *Amblyceps* Blyth, 1858

1858. *Amblyceps* Blyth. *Proc. Asiat. Soc. Beng.*, (type-species : *Amblyceps caecutiens* Blyth = *Pimelodus mangois* Hamilton-Buchanan).

Development of a prominent fold of skin (cup-like) in front of pectoral fin in which the gill membrane rests when the gill openings are closed. Nostrils are closed together and separated by nasal barbel. Eyes small, dorsolaterally placed. Monotypic.

55. *Amblyceps mangois* (Hamilton-Buchanan)

1822. *Pimelodus mangois* Hamilton-Buchanan, *Fishes of Ganges* : 199, 379 (type-locality : Northern Bihar).

1991. *Amblyceps mangois* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 615-616.

Material examined : (i) 1 ex., 75 mm, Dhansari river near the bridge, Dimapur, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : Along the foot-hills of the Himalaya from Kangra Valley (Himachal Pradesh) to Assam, Tripura, Meghalaya, Manipur, Nagaland (new record).

Elsewhere : Pakistan; Bangladesh; Northern Myanmar and Thailand.

Fishery information : It attains a length of about 12.5 cm, and is of no interest to fisheries.

Family SISORIDAE

Genus *Erethistes* Muller & Troschel 1845

1845. *Erethistes* Muller and Troschel, *Horae Ichthyol*, 3 : 12 (type species : *Erethistes pussilus*, Muller and Troschel).

Small sized fish, flattened ventrally upto pelvic fin base. Body granulated dorsally and laterally. Head large and broad; granulated. Eye verry small, subcutaneous and dorsolateral. Mouth small and ventral. Teeth minute, present on both the jaws. Four pairs of barbels, annulated with black rings. Gill-membrance confluent with isthmus. Dorsal fin with a strong spine and 6 rays; adipose dorsal of moderate size. Pectral fins horizontally placed, pectoral spine serrated on both edges. Pelvic finrays 6 in number. Caudal fin emarginate. Lateral line complete.

Key to the species of Genus *Erethistes*

1. Dorsal spine smooth; pelvic fin extends to anal fin. ..... *E. maesotensis*

   Dorsal spine distinctly serrated; pelvic fin shorter, not extending to anal fin. .... *E. pussilus*

56. *Erethistes pussilus* Muller & Troschel

1845. *Erethistes pussilus* Muller & Troschel, *Horae Ichthyol;* 3 : 12, pl. 1, fig. 3 (type locality : Assam)

1991. *Erethistes pussilus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* 628-629 fig. 204.

Material examined : (i) 4 exs., 30-33 mm, Cuppa nalla, a tributary of Dhansari river, 20 kms south of PWD Rest House, Dimapur, Coll. A.K.K. & party, 5.v.2000.

Distribution : India : Ganga and Brahmaputra drainage, Nagaland (new record).

Elsewhere : Bangladesh and Myanmar.

Fishery information : It attains a length of about 5 cm and of no interest to fisheries. It is primarily a hill stream fish.

Genus *Glyptothorax* Blyth, 1861

1861. *Glyptothorax* Blyth. *J. Asit. Soc. Beng.*, **29** : 154 (type-species : *Glyptothorax trilineatus* Blyth)

Body laterally depressed or clyindrical. Head depressed; eyes small, dorsal in position. A

prominent thoracic sucking disc present often with a central pit. Mouth inferior, transverse and narrow, lips thick and fleshy. Barbels 4 pairs, maxillary barbel with broad base. Gill membrane confluent with skin of isthmus. Rayed dorsal fin with 1 spine and 5 to 7 soft rays. A short adipose dorsal present. Pectoral fin with a short spine denticulated internally. Anal fin with 7 to 14 rays. lateral line complete.

Key to the species of Genus *Glyptothorax*

1. Adhesive apparatus with a distinct central pit. Skin smooth, Adhesive apparatus complete posteriorly and conical in shape. Least height of caudal peduncle 2.5 in its length ..... *G. cavia*

   Adhesive apparatus without a central pit 2

2. Occipital process not reaching basal bone of dorsal fin. Dorsal spine strong. Dark patches at the base of dorsal and caudal fin conspicuous ..... *G. sinense manipurensis*

   Occipital process reaching basal bone of dorsal fin. Body depth 4.5 in standard length. Body with three longitudinal stripes .... *G. trilineatus*

57. *Glyptothorax cavia* (Hamilton-Buchanan)

1822. *Pimelodus cavia* Hamilton-Buchanan, *Fishes of Ganges;* 188, 378 (type-localtiy : rivers of North Bengal).

1991. *Glyptothorax cavia* : Talwar and Jhingran, *Inland Fishes of India and adjacent Countries* : 649-650.

Material examined : (i) 1 ex, 100mm, Tizu river near Lanyu bridge. Phek, Coll. A.K.K. & party, 7.v.2000.

Distribution : India : North Bengal, Assam, Tripura, Meghalaya, Mizoram and Nagaland (new record).

Elsewhere : Pakistan; Nepal; Bangladesh and Myanmar.

Fishery information : It attains a length of about 16.5 cm and is of little interest to fisheries in Indian region.

58. *Glyptothorax trilineatus,* Blyth

1861. *Glyptothorax trilineatus* Blyth. *J.Asiat Soc. Beng.,* **20** : 154 type-locality : Tenasserim, Burma)

1991. *Glyptothorax trilineatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 665, fig. 221.

Material examined : (i) 2 exs., 72-78 mm, Dikhu river, 20 kms south of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland 1999. (ii) 1 ex., 92 mm, lengnak stream, 45 kms north of Mokokchung, Coll. A.K.K. & party., 8.v.2000.

Distribution : India : Manipur, Nagaland (new record).

Elsewhere : Myanmar and Thailand.

Fishery information : It attains a length of about 30 cm and is of minor interest to fisheries in Manipur and Nagaland.

Genus *Sisor* Hamilton-Buchanan, 1822

1822. *Sisor* Hamilton-Buchanan, *Fishes of Ganges* : 208, 379 (type-species : *Sisor rhabdophorus* Hamilton-Buchanan).

Body elongate, anteriorly depressed and posteriorly compressed. Head flat. Eyes minute, dorsally placed. Mouth small and inferior. Lips thick and papillated. Barbels six pairs, one pair of maxillary and five short mandubular pairs. Gill opening narrow; gill membranes confluent with each other and also with isthmus. Dorsal fin with a weak spine and six soft rays. Adipose dorsal fin modified into spine. Anal fin with 6 rays. Pectoral fin horizontal with a spine and 8 soft rays. Pelvic fin with 7 rays. Upper ray of caudal fin prolonged into a long filament. Lateral line with a series of small rough bony plates.

Monotypic, endemic to South Asia.

59. *Sisor rhabdophorus* Hamilton-Buchanan

1822. *Sisor rhabdophorus* Hamilton-Buchanan, *Fishes of Ganges* : 208, 379 (type-locality : northern rivers of Bengal and Bihar).

1991. *Sisor rhabdophorus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 681-682, fig. 217.

Material examined : (i) 1 ex, 182 mm, Tizu river near Lanyu bridge, Phek, Coll. A.K.K. & party, 7.v. 2000.

Distribution : India : Ganga, Yamuna and Brahmaputra river systems, Nagaland (new record).

Elsewhere : Pakistan and Bangladesh.

Fishery information : It attains about 18 cm standard length and reported to be eaten by poor classes.

Family HETEROPNEUSTIDAE

Genus *Heteropneustes* Muller 1840

1840. *Heteropneustes*, Muller, *Arch. Anat. Physiol* : 115 (type-species : *Silurus fossilis* Bloch).

Body elongate, compressed, almost torpedo-shaped. Head greatly depressed. Mouth small, lips fleshy and papillated. Barbels 4 pairs, well developed. Dorsal fin very short, inserted above tip of pectoral fins and without any spine. Pectoral fin with 1 strong serrated spine and 7 to 8 soft rays. Anal fin base very long with 60 to 79 rays. Caudal fin almost rounded. Lateral line complete.

60. *Heteropneustes fossilis* (Bloch)

1794. *Silurus fossilis* Bloch, *Naturgesch ausland Fische*, 8 : 46, pl. 370, fig. 2 (type locality : Tranquebar, Tamil Nadu).

1991. *Heteropneustes fossilis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 689-690, fig. 219.

Material examined : (i) 1 ex, 180mm, Bokajan Beel, 10 kms. east of PWD Rest House, Dimapur, Coll. A.K.K. & party, 7.vi.1998.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh; Sri Lanka; Myanmar; Thailand and Laos.

Fishery Information : A fish of high economic importance. It attains a length of about 300 mm and is well knwon because of its nourishing properties and for quick recovery from illness.

Family OLYRIDAE

Genus *Olyra* McClelland, 1842

1842. *Olyra* McClelland, *Calcutta Jour. nat. Hist.*, 2 : 588 (type-species : *Olyra longicaudata*, McClelland).

Body slender and long, flattened in front of pelvic fins, but compressed behind. Head small and depressed; snout obtusely rrounded, mouth narrow. Gill membrances confluent with each other across isthmus. Pectoral spine serrated on both edges.

61. *Olyra longicaudata* McClelland

1842. *Olyra longicaudata* McClelland. *Calcutta Jour. nat. Hist.* 2 : 588, pl. 21., fig. 1 (type-locality : Khasi Hills, Meghalaya)

1991. *Olyra longicaudata* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 695-696.

Material examined : (i) 1 ex., 85 mm, Lengnak stream, 45 kms north of Mokokchung, Coll. A.K.K & party, 8.v.2000.

Distribution : India : Base of Darjeeling Himalaya, Assam, Meghalaya, Mizoram, Tripura, Nagaland (new record).

Elsewhere : Myanmar.

Fishery information : It attains a length of about 16 cm and is of no fishery value.

Order ATHERINIFORMES

Family BELONIDAE

Genus *Xenentodon* Regan, 1911

1911. *Xenentodon*, Regan, *Ann. Mag. Nat. Hist.*, (8) 7 322 (type species : *Esox cancila* Hamilton-Buchanan)

Body very elongate and cylindrical; jaws with large canine teeth and much more numerous conical teeth. Gill rackers absent. Dorsal and anal fin almost equal and nearly opposite to each other. Caudal fin truncate or rounded. Scales extremely small. Lateral line placed very low on the body.

62. *Xenentodon cancila* (Hamilton-Buchanan)

1822. *Esox cancila* Hamilton-Buchanan, *Fishes of Ganges* 213, 380, pl. 27, fig. 70 (type-locality : Gangetic Provinces)

1991. *Xenentodon cancila* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 743-744.

Material examined : (1) 2 exs., 135-158 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. Fisheries Dept., Govt. of Nagaland, 1999.

Distribution : India : Throughout.

Elsewhere : Pakistan; Bangladesh; Sri Lanka; Myanmar and Thailand.

Fishery information : It attains a length of about 40 cm, common size being 30 cm. It is an elegant surface living fish, fairly common in Ganga-Brahmaputra River System, with little commercial importance.

Order CHANNIFORMES

Family CHANNIDAE

Genus ***Channa*** Scopoli 1777

1777. *Channa* Scopoli, *Introd. Hist. Nat.*, 459 (type species : *Channa orientalis* Bloch & Schneider).

Body elongate, almost cylindrical anteriorly and somewhat compressed posteriorly. Head large with plate-like scales. Cephalic pits present. Mouth fairly large, lower jaw protruding beyond upper jaw. Dorsal and anal fins long based, both spineless and free from caudal fin. Dorsal fin inserted almost above pectoral fin, with 29 to 55 rays. Anal fin with 21-36 rays. Caudal fin rounded.

Key to the species of Genus *Channa*

1. 4 to 5 scales between orbit and angle of preopercle. 12 to 13 predorsal scales.....2

   9 to 10 scales between orbit and angle of preopercle. 15 to 20 predorsal scales.....3

2. Pelvic fin less than half length of pectoral fin. Anal fin with 21 to 23 rays. Dorsal fin with 32 to 37 rays. No black spot on scales ..... *C. orientalis*

   Pelvic fin more than half length of pectoral fin.. Pectoral fin plain ..... *C. punctatus*

3. No black white edged ocellus on basal portion of caudal fin. Lateral line scales 60-65 .... *C. barca*

63. ***Channa barca*** (Hamilton-Buchanan)

1822. *Ophicephalus barca* Hamilton-Buchanan, *Fishes of Ganges* : 67, 367, pl. 35., fig. 20 (type-locality : Brahmaputra river nr. Goalpara, Assam)

1991. *Channa barca* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 1016.

Material examined : (i) 2 exs., 125-160 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. A.K.K. & party, 9.v. 2000.

Distribution : India : West Bengal, Assam, Tripura, Meghalaya, Nagaland (new record).

Elsewhere : Bangladesh.

Fishery information : It attains a length of about 90 cm and relished as an excellent food fish. It is fairly common in Brahmaputra river and is of minor fishery interest in this region.

64. ***Channa punctatus*** (Bloch)

1793. *Ophicephalus punctatus*, Bloch, *Naturges, ausland Fisches* (7) : 139, pl. 358 (type-locality : rivers and lakes of Coromandel coast).

1991. *Channa punctatus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 1020-1021, pl. 290.

Material examined : (i) 14 exs., 28-90 mm, Brooder-Cum-Experimental Fish Farm, Dimapur, Coll. A.K.K. & party, 5.vi.1998 (ii) 2 exs., 114-163 mm, Kuppa Nalla, a tributory of Dhansari river, 20 kms south of PWD Rest House, Dimapur, Coll. A.K.K. & party., 9.5.2000. (iii) 2 exs., 95-105 mm, Tsurong river, 48 kms north west of Mokokchung, Coll. Fisheries dept., Govt. of Nagaland, 1999. (iv) 1 ex., 125 mm, Dhansari river, 10 kms south West of Dimapur, Coll. A.K.K. & party, 4.v.2000. (v) 8 exs., 30-108 mm, Bokajan Beel, 10 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & Party, 07.vi.98.

Distribution : India : Throughout.

Elsewhere : Afghanistan; Pakistan; Sri Lanka; Nepal; Bangladesh; Myanmar and China.

Fishery information : It attains a length of about 30 cm, very common throughout plains in India. It is of moderate interest to fisheries in Indian region.

Order PERCIFORMES

Family CHANDIDAE

Genus *Chanda* Hamilton-Buchanan, 1822

1822. *Chanda* Hamilton-Buchanan, *Fishes of Ganges* : 103, 270 (type-species : *Chanda nama* Hamilton-Buchanan).

Body oval and more or less transparent, with vertebral column and its adjoining elements visible externally. Lower limit of preopercle provided with double serrated edge. Mouth large, with a conspicuous lower jaw. First dorsal fin with 7 spines and second with 1 spine and 9 to 17 soft rays. Anal fin with 3 spines and 9 to 17 rays. Lateral line complete, incomplete, interrupted or absent.

Key to the species of Genus *Chanda*

Lateral line indistinct, discontinuous or absent. A dark bloch generally present on the upper edge of dorsal fin..... *C. nama*

Lateral line distinct. No such colour bloch on dorsal fin. A dark shoulder spot present..... ..... *C. ranga.*

65. *Chanda nama* Hamilton-Buchanan

1822. *Chanda nama* Hamilton-Buchanan, *Fishes of Ganges* : 109, 371, pl. 39, fig. 37 (type-locality : ponds throughout Bengal).

1981. *Chanda nama* : Jayaram. *The Freshwater Fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka* : 318.

Material examined : (i) 80 exs., 23-68 mm, Jhampukhari Govt. Fish Farm, Dimapur, Coll. A.K.K. & party, 6.vi.1998. (ii) 6 exs., 37-65 mm, Bokajan Beel, 10 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & Party, 07.vi.98.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh and Myanmar.

Fishery information : It attains a length of about 9 cm and are sold in heaps along with other small fishes as low priced item.

Family NANDIDAE

Genus *Badis* Bleeker, 1853

1853. *Badis* Bleeker, *Verh betav. Genoot Kunst Wet.* **25** : 253 (type-species : *Badis buchanani* Bleeker = *Labrus badis* Hamilton-Buchanan)

Body elongate and slightly compressed. Mouth small and more or less protrusible. Operculum triangular, its posterodorsal corner with a prominent spine. Dorsal fin large, with 16 to 18 spines and 6 to 8 soft rays. Caudal fin wedge-shaped. Lateral line interrupted or absent, 26 to 33 scales in longitudinal series.

66. *Badis badis* (Hamilton-Buchanan)

1822. *Labrus badis* Hamilton-Buchanan, *Fishes of Ganges* : 70, 368, pl. 25, fig. 23 (type-locality : Gangetic Provinces)

1991. *Badis badis* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 882-883.

Material examined : (i) 4 exs., 50-65 mm, Tsurang river, 48 kms north-west of Mokokchung, Coll. A.K.K. 7 party, 9.v. 2000, (ii) 1 ex., 35 mm, Diphu river, 30 kms south east of Dimapur, Coll. A.K.K. & party, 6.v.2000. (iii) 2 exs., 35-38 mm, Bokajan Beel, 10 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & Party, 07.vi.98.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh and Myanmar.

Fishery information : It attains a length of about 8 cm and is of no interest to fisheries but established itself as an aquarium fish.

Family CICHLIDAE

Genus *Oreochromis* Gunther

1889. *Oreochromis* Gunther, *Ann. Mag. nat. Hist.*, (6) 4 70 (type-species : *Oreochromis hunteri* Gunther)

Body more or less elongate and laterally compressed. Mouth large and terminal. Dorsal fin inserted opposite base of pectoral fin, with 15 to 16 spines and 10 to 12 soft rays. Anal fin with 3 spines and 10 to 11 soft rays. Caudal fin usually truncate, often with rounded corners.

67. *Oreochromis mossambica* (Peters)

1852. *Chromis (Tilapia) mossambica* Peters, *Montab. Akad. Wiss.*, Berlin : 681 (type-locality : Mozambique).

1983. *Oreochromis mossambica* : Trewavas, *Tilapiine Fishes* : 292, fig. 100.

Material examined : (i) 27 exs., 31-92 mm, Brooder-Cum-Experimental Fish Farm, Dimapur, Coll. A.K.K. & party 5.vi.1998.

Distribution : Introduced in India.

Elsewhere : East Africa; Pakistan; Sri Lanka; Bangladesh; etc.

Fishery information : This fish was introduced in India in 1952 and cultured in freshwater ponds. It is a hardy fish; but unsuitable for aquaculture along with major carps because of its adverse effect on the growth and production of carps. The Tilapias became an important food fish in India and consumer demand for tilapia has increased dramatically. It is suitable for farming because it can be bred easily, and are high-yielding.

Family GOBIIDAE

Genus *Glossogobius* Gill, 1862

1862. *Glossogobius* Gill, *Ann, Lye. Nat. Hist.* New York, 7: 46 (type-species : *Gobius platycephalus* Peters = *Gobius giuris* Hamilton-Buchanan)

Body elongate, anteriorly cylindrical, posteriorly compressed. Head depressed, pointed. Gill-openings from below rear of preopercle to below eyes. Isthmus narrow. Mouth slightly oblique, lower jaw prominent. First dorsal with 6 spines; second one with 1 spine and 6 to 10 soft rays. pelvic fin united forming a disc. Caudal fin oblong to rounded. Lateral line scales 28 to 36.

68. *Glossogobius giuris* (Hamilton-Buchanan)

1822. *Glossogobius giuris* Hamilton-Buchanan, *Fishes of Ganges* : 51, pl. 33, fig. 15 (type-locality : Gangetic provinces)

1991. *Glossogobius giuris* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 936.

Material examined : (i) 2 exs., 27-125 mm, Brooder Cum Experimental Fish Farm, Dimapur, Coll. A.K.K. & party, 5.vi. 1998. (ii) 1 ex., 45 mm, Jhampukhari Govt. Fish Farm, Dimapur, Coll. A.K.K. & party, 6.vi. 1998. (iii) 2 exs., 40-84 mm, Dhansari river, 10 kms south of Dimapur, Coll. A.K.K. & party 4.v. 2000. (iv) 1 ex., 90 mm, Bokajan Beel, 10 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & Party, 07.vi.98.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh; Myanmar; Sri Lanka. It has a wide range of distribution from east coast of Africa to Japan. Also Australia and South Pacific.

Fishery information : It attains a length of about 30 cm. and form a minor fishery specially in the Hooghly Estuary, West Bengal.

Family ANABANTIDAE

Genus *Anabas* Cuvier & Cloquet 1816

1816. *Anabas* Cuvier and Cloquet, *Dictionnaire des sciences naturelles* (ed 2), 2, Suppl. : 35 (type-species : *Perca scandens* Daldoff = *Anthias testudineus* Bloch).

Body oblong and compressed. Head and anterior part of body broad, posterior portion compressed. Mouth small, terminal; upper jaw slightly protrusible. Dorsal inserted above pectoral fin base, with 16 to 18 spines and 8 to 10 soft rays. Anal with 8 to 10 spines and 9 to 11 soft rays. Caudal fin rounded. Lateral line interrupted with 21 to 29 ctenoid scales.

Key to the species of Genus *Anabas*

Depth of body 3.0 to 3.5 times and length of snout 13.0 to 17.5 times in standard length ..... *A. testudineus*

Depth of body 2.2 to 2.8 times and length of snout 10.5 to 12.5 times in standard length ..... *A. cobojius*

68. *Anabas cobojius* (Hamilton-Buchanan)

1822. *Coius cobojius*. Hamilton-Buchanan, *Fishes of Ganges* : 98, 370, pl. 13, fig. 33 (type locality : Gangetic provinces)

1991. *Anabas cobojius* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 996.

Material examined : (i) 2 exs., 64-70 mm,

Dhansari river, 10 kms south-west of Dimapur, Coll. A.K.K. & party, 4.v.2000.

Distribution : India : West Bengal, Orissa, Andhra Pradesh Nagaland (new record).

Elsewhere : Bangladesh and Borneo.

Fishery information : It is a valuable food fish in West Bengal, Orissa and Andhra Pradesh; considered as an important diet for sick and convalescent. It constitutes a minor fishery in Lake Kolleru, Andhra Pradesh.

69. *Anabas testudineus* (Bloch)

1795. *Anthius testudineus* Bloch, *Naturges ausland, Fische,* (6) : 121, pl. 322 (type-locality : ? Java)

1991. *Anabas testudineus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent Countries* : 996-998.

Material examined : (i) 1 ex., 88mm, Dhansari river, 10 kms south-west of Dimapur, Coll. A.K.K. & party, 4.v.2000. (ii) 2 exs., 76-90 mm, Pond at showuba villege, 15 kms., east of PWD Rest House, Dimapur, Coll. A.K.K. & party, 3.v.2000.

Distribution : India : Throughout (new record from Nagaland).

Elsewhere : Pakistan; Bangladesh; Sri Lanka; Myanmar; Malay Archipelago; Singapore and Phillipines.

Fishery information : It attains a length of about 200 mm and is of considerable fisheries interest. Despite its moderate size., this fish is regarded as a highly esteemed fish for its flavour, restorative values and prolonged freshness.

Family BELONTIDAE

Genus *Colisa* Cuvier, 1831

1831. *Colisa* Cuvier, *Hist nat. Poiss.*, 7 : 359 (type-species : *Trichopodus colisa* Hamilton-Buchanan = *Trichogaster fasciatus* Schneider).

Body oblong and compressed. Mouth small, terminal, upwardly directed and protrusible. Ventral border of preopercle serrated. Dorsal fin long, with 15 to 18 spines and 6 to 14 soft rays. Anal fin with 15 to 22 spines and 11 to 20 soft ways. Pelvic fin in the form of a single elongated filliform ray. Caudal fin slightly emerginate or truncate. Lateral line, when present, interrupted with 27 to 31 scales.

Key to the species of Genus *Colisa*

1. Body with a single black longitudinal band from eye to lower half of tail..... *C. sota*

   Body with many oblique bands from back to belly 2

2. Bands on Body 8 to 10. Caudal fin wedge shaped ..... *C. labiosus*

   Bands on body 14 or more. Caudal fin cut square or slightly notched ..... *C. fasiatus*

70. *Colisa fasciatus* schneider

1801. *Trichogaster fasciatus* Schneider, *Syst. ichth* : 164, pl. 36 (type-locality : Tranquebar)

1991. *Colisa fasciatus* : Talwar and Jhingran, *Inland Fishes of India and adjacent countries* : 1006.

Material examined : (i) 8 exs., 45-78 mm, Dhansari river, 10 kms south-west of Dimapur, Coll. A.K.K. & party, 4.v.2000. (ii) 9 exs., 35-55 mm, Bokajan Beel, 10 kms east of PWD Rest House, Dimapur, Coll. A.K.K. & Party, 07.vi.98.

Distribution : India : Throughout.

Elsewhere : Pakistan; Nepal; Bangladesh and Upper Myanmar.

Fishery information : It attains a length of about 12 cm and is traditionally liked in West Bengal for its good taste. It is also a beautiful aquarium fish and easily bred and adopts well to life in community aquaria.

Genus *Macropodus* Lacepede 1802

1802. *Macropodus* lacepede, *Hist. nat. poiss.*, 3 : 417 (type species : *Macropodus viridiauratus* Lacepede = *Labrus opercularis* Linnaeus).

Body oblong, more or less compressed. Mouth small and slightly protrusible. Lower margin of the preopercle serrated. Dorsal fin originated above anterior margin of anal fin with 13-15 spines and 5 to 7 soft rays and anal fin with 16

to 20 spines and 9 to 13 soft rays. First ray of pelvic fin elongated and filamentosus. Lateral line vestigial; scales large. Scaly sheath present at the base of dorsal and anal fins.

71. *Macropodus cupanus* (Valenciennes)

1831. *Polyacanthus cupanus* Valenciennes, *Hist. nat. poiss.*, 7 : 357 (type locality : Ariancoupan river, Pondichery).

1991. *Macropodus cupanus* : Talwar and Jhingran, *Inland Fishes of India and Adjacent countries* : 1002-1003, fig. 286.

Material examined : (i) 2 exs., 41-44 mm, Pond at Showuba villege, 15 kms. east of PWD Rest House, Dimapur, Coll. A.K.K. & party, 3.v.2000.

Distribution : India : Eastern India, Nagaland (new record).

Elsewhere : Sri Lanka; Western Burma; Malay Peninsula and Sumatra.

Fishery information : It attains a length of about 7.5 cm; a fairly good larvivorous fish. A hardy species; used as an aquarium fish.

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

Genus *Mastacembelus* Scopoli 1777

1777. *Mastacembelus* Scopoli *Introductio Historium Naturalem* : 458 (type-species : *Ophidium mastacembelus* Solander).

Body elongate, eel like and compressed. Mouth inferior, cleft narrow. The long fleshy appendage of the snout not transversely striated below. Pre-orbital spine present. Dorsal fin inserted above middle of pectoral fin, with 24 to 39 detached spines and 50 to 90 soft rays. Anal fin with 3 spines and 31 to 89 soft rays. Dorsal and anal fins may or may not be confluent with caudal fin, which is rounded. Lateral line present.

Key to the species of Genus *Mastacembelus*

Dorsal fin with 24 to 30 spines and 30 to 42 rays. Dorsal and anal fins seperate from caudal fin ..... *M. pancalus*

Dorsal fin with 32 to 40 spines and 64 to 92 rays. Dorsal and anal fins broadly joined to caudal fin ..... *M. armatus*

72. *Mastacembelus pancalus* (Hamilton-Buchanan)

1822. *Macrognathus pancalus* Hamilton-Buchanan, *Fishes of Ganges* : 30, 364, pl. 22., fig.7 (type locality : tanks of Gangetic Provinces)

1981. *Mastacembelus pancalus* : Jayaram, *The Freshwater Fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka* : 389.

Material examined : (i) 1 ex., 121 mm, Bokajan Beel, 10 kms east of PWD Rest House. Dimapur, Coll. A.K.K. & party. 7.vi.1998.

Distribution : India : Throughout.

Elsewhere : Pakistan and Bangladesh.

Fishery information : This species attains a length of 180 mm and is of little commercial importance. It is often used as an aquarium fish.

SUMMARY

In the present contribution, an attempt has been made to provide an up-to-date classification, nomenclature, details of material studied, size ranges, distributional records, fishery information along with diagnostic characters of each genus and species identification keys. During the preparation of this faunal work, we have made use of all the earlier informations available in the literature in addition to the study of fish material collected by two extensive field surveys recently conducted by the authors, fish specimens received from Department of Fisheries, Govt. of Nagaland, and also earlier identified collection present in the National Zoological Collection. The fish collection shows mainly Assamese and Burmese elements. The Assamese elements are observed in the northern and western part, whereas, the Burmese elements are found in the eastern and southern sectors. In all 108 species belonging to 7 orders 20 families and 57 genera have been dealt with in this contribution. Out of these 40 species are recorded for the first time from Nagaland. A map showing drainage system and collecting stations has also been included.

ACKNOWLEDGEMENT

We are thankful to the Director, Zoological Survey of India, for giving the opportunity to work on this project and also for laboratory facilities. We are also thankful to Shri T.K. Sen, Scientist 'SE' and Ex-Head of the Fish Division for constant encouragement.

We want to express our sincere thanks and gratitute to the Director of Fisheries, Govt. of Nagaland, Kohima and his officers and other staff members for their help and cooperation during the field surveys and for providing some fish specimens for study.

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AMPHIBIAN

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INTRODUCTION

Very little information is available on the amphibian fauna of Nagaland except few stray reports by Annandale (1911-1912), Boulenger (1890-1920), Kiyasetuo & Khare (1986), Chanda & Ghosh (1989), Chanda (1990). However, Chanda (1994) published a comprehensive account on the amphibian fauna of northeast India.

This area have varied climatic conditions with abundance of vegetation, varied topography with hills and plains, streams, rivers and proved to be a storehouse for amphibians. It is presumed that this difficult terrain may yield further novelty to science if the inaccessible parts of this area are thoroughly explored.

A total of 10 species of toads and frogs under four families and five genera have been dealt with here.

LIST OF SPECIES OF AMPHIBIA KNOWN FROM NAGALAND

Class AMPHIBIA

Order ANURA

Family BUFONIDAE

Genus 1. ***Bufo*** Laurenti

1. *Bufo melanostictus* Schneider.

Family HYLIDAE

Genus 2. ***Hyla*** Laurenti

2. *Hyla annectens* (Jerdon)

Family MICROHYLIDAE

Genus 3. ***Microhyla*** Tschudi

3. *Microhyla berdmorei* (Blyth)
4. *Microhyla ornata* (Dum & Bibron)
5. *Microhyla rubra* (Jerdon)

Family RANIDAE

Genus 4. ***Amolops*** Cope

6. *Amolops afghanus* (Gunther)

Genus 5. ***Pterorana*** Kiyasetuo Khare

7. *Pterorana Khare* Kiyasetuo & Khare

Genus 6. ***Rana*** Linnaeus

8. *Rana Cyanophlyctis* Schneider.
9. *Rana limnocharis* Boie.
10. *Rana liebigii* Gunther.

MATERIALS AND METHODS

Amphibians area either aquatic, terristrial, arboreal or fossorial in habit. Generally the aquatic amphibians are collected by the help of water net, cast-net as well as by fishing hook. On the other hand both terristrial and arboreal forms can be collected by hand or long forcep. The burrowing forms are collected by digging the soil. The collected materials are first chloroformed and then put in 5% formaldehyde solution at least for 24c hours for proper fixation. Before putting the material in the formaldehyde solution (for bigger material) a small incision should be given on the belly to penetrate the formaldehyde solution inside the viscera for their proper preservation. After

two to three days the material was taken out from the solution and washed properly in running water and then put the material in 90% alcohol for permanent preservation for study.

Family BUFONIDAE

Diagnosis : Tongue oval; skin rough and tuberculated. Pupil horizontal; vomerine teeth absent. Jaws toothless. Diapophyses of sacral vertebrae dilated. Terminal phalanges of fingers and toes obtuse or T-shaped. Vertebrae procoelous.

Genus ***Bufo*** Laurenti, 1768

1768. *Bufo* Laurenti, *Synopsis Rept. Vienna* : 25.

Diagnosis : Skin rough and tuberculated. Tongue elliptic, entire Vomerine tooth absent. Pupil horizontal. Tympanum distinct. Parotoid gland large and prominent. Fingers free, toes more or less webbed. Diapophyses of sacral vertebrae more or less dilated.

1. ***Bufo melanostictus*** Schneider, 1799

1799. *Bufo melanostictus* Schneider, *Hist. Amph.*l, Jena, 1216.

Material : 8 exs, Kohima, Nagaland, 4.10.1976, Coll. S. G. Patil; 5 exs, Kohima, Nagaland, 1.10.1983, Coll. Kiyasetuo; 3 exs, Mokokchung, 7.10.1976 Coll. S. G. Patil.

Diagnosis : Dorsally yellowish brown; Ventrally yellowish. Skin rough with spiny watts and tubercles. Tympanum very prominent, large, more than two-third diameter of eyes. Parotoid glands large and prominent. Tibiotarsal articulation reaches eyes. Fingers free; toes half-webbed. A moderately large inner and a small outer metatarsal tubercle present.

Distribution : Throughout Indian region from plains upto an altitude of 3000 m.

Elsewhere : Myanmar; Sri Lanka; China; Sumatra; Java; Borneo; Malaysia; Indonesia; Philippines; Bangla Desh; Pakisthan.

Remarks : This species has been found to occur throughout the plains as well as hills upto an altitude of 3949 m. in Sikkim Himalayas (Boulenger, 1890). This is a terristrial species and nocturnal in habit and found to occur near ponds and streams during breeding season. Eggs are laid in a string at the edges of ponds and rivers.

Family HYLIDAE

Diagnosis : Upper jaw toothed; lower jaw usually toothless; Diapophyses of sacral vertebrae dilated. Terminal phalanges of fingers and toes claw-shaped, swollen at the base. Omosternum cartilagenous (rarely calcified); sternum cartilagenous; vertebrae procoelous.

Genus ***Hyla*** Laurenti, 1768

1768. *Hyla* Laurenti, *Synopsis Rept*; Vienna : 32.

Diagnosis : Skin almost smooth, sometimes tubersulated; tongue entire, slightly pointed, adherent slightly or free behind. Vomerine teeth usually present; pupil horizontal; tympanum distinct or hidden; paratoid glands absent; fingers generally free; toes webbed; outer metatarsals united or slightly separated; omosternum and sternum cartilagenous.

2. ***Hyla annectens*** (Jerdon, 1854)

1870. *Polypedates annectens* Jerdon, *Proc. Asiat. Soc. Bengal* : 84.

1985. *Hyla annectens* Frost, *Amphibian species of the world* : 125.

Material : 1ex. Kohima, Nagaland, 1.10.1983, coll. Kiyasetuo.

Diagnosis : Dorsally greyish; ventral surface almost yellowish; a brownish streak extends from eye to nostril; Skin almost smooth. Head broader than long; snout rounded; tympanum distinct; fingers long, free with claw; subarticular tubercles of fingers and toes moderately prominent. Tibiotarsal articulation reaching anterior corner of eye; toes clawed with distinct swollen tips; an oval shaped inner metatarsal tubercle present.

Distribution : India : Meghalaya, Assam, Nagaland.

Elsewhere : Thailand; Vietnam; China.

Remarks : *Hyla annectens* the only species of the above genus is known from Indian region and is restricted to Assam, Meghalaya and Nagaland of northeast India (Chanda, 1994).

Family MICROHYLIDAE

Diagnosis : Vomerine teeth absent; jaws toothless; pupil vertical and circular; terminal phalanges of fingers and toes simple or T-shaped; omosternum rudimentary or absent; diapophyses of sacral vertebra dilated.

Genus *Microhyla* Tschudi, 1838

1838. *Microhyla* Tschudi, *Mem. Soc. Sc. nat. Nauchatel*, 2 : 28.

Diagnosis : Skin smooth or with small warts. Tongue narrow and elliptical, free and entire behind. Vomerine teeth absent. Pupil vertical and circular. Tympanum hidden. Paratoid gland absent. Fingers and toes free, webbed to a greater or lesser extent; tips of fingers and toes more or less dilated; outer metatarsal united; omosternum absent; sternum cartilagenous; terminal phalanges T-shaped.

Key to the species of *Microhyla*

1. Tibiotarsal articulation reaching beyond tip of snout; toes fully webbed ..... *berdmorei*
– Tibiotarsal articulation not reaching tip of snout 2
2. Tibiotarsal articulation reaching a little infront of shoulder; toes with rudiments of web ..... *ornata.*
– Tibiotarsal articulation reaching eye; toes less than half webbed ..... *rubra.*

3. *Microhyla berdmorei* (Blyth, 1856)

1856. *Engystoma berdmorei* Blyth, *J. Asiat. Soc. Bengal*, 24 : 710.

1985. *Microhyla berdmorei* Frost, *Amphibian species of the world* : 83.

Material : 3 exs, Kohima, Nagaland, 4.10.1976, Coll. S.G. Patil.

Diagnosis : Dorsal colour varies from pink to darkbrown; limbs with faint cross-bars; skin generally smooth; head broader than long, pointed; tympanum hidden. Fingers free with rounded tips; subarticular tubercles large and prominent; tibiotarsal articulation reaching beyond tip of snout; toes fully webbed; tips of toes swollen into rounded tips; both inner and outer metatarsal tubercles present.

4. *Microhyla ornata* (Dum. & Bibron, 1841)

1941. *Engystoma ornata* Dum. & Bibron, *Erp. Gen.*, 8 : 745.

1985. *Microhyla ornata* : Frost, *Amphibian species of the world* : 84.

Material : 2 exs., Kohima, Nagaland, 4.10.1976. Coll. S.G. Patil.

Diagnosis : Dorsal colour varies from olive to greyish-brown with dark markings; limbs with dark, incomplete cross bands; skin generally smooth; head broader than long; tympanum hidden; fingers free with dilated tips; tibiotarsal articulation reaching slightly infrony of shoulder; toes with rudiment of webs and tips dilated into very small discs; inner metatarsal tubercle present, outer metatarsal tubercle absent.

Distribution : India : Assam, Meghalaya, Mizoram, Manipur Nagaland, Tripura, West Bengal.

Elsewhere : Sri Lanka; Malaysia; China.

Remarks : This is the commonest species of the family microhylidae and found to occur from desert to an altitude of 1524 m. Pillai & Chanda (1981) recorded the species for the first time in Meghalaya, northeast India. It is burrowing in habit.

5. *Microhyla rubra* (Jerdon, 1853)

1853. *Engystoma rubra* Jerdon, *J. Asiat. Soc. Beng.*, 22 : 534

1985. *Microhyla rubra* Frost, *Amphibian species of the world* : 388.

Material : 2 Exs., Kohima, Nagaland, 4.10.1976, coll. K.R. Rao.

Diagnosis : Dorsally light brown to pink in colour; belly white, throat spotted with brown; dorsal skin almost smooth; A glandular extends from the posterior corner of eye to the groin; head broader than long; tympanum hidden; fingers free with rounded tips; tibiotarsal articulation reaching eye; subarticular tubercles prominent; both inner and outer metatarsal tubercles present.

Distribution : India : Assam, Kerala, Nagaland, Tamil Nadu, West Bengal.

Elsewhere : Sri Lanka.

Remarks : This species was originally recorded from Southern India (Jerdon, 1854). Pillai & Chanda (1994) recorded it for the first time in Nagaland.

Family RANIDAE

Diagnosis : Upper jaw toothed, lower one nearly always toothless. In most species of this family, fingers perfectly free, but the toes more or less fully webbed. Terminal phalanges of fingers and toes of various shapes and sizes.

Genus ***Amolops*** Cope, 1865

1865. *Amolops* Cope, *Nat. Hist. Rev.* (N.S.), **5** : 97.

Diagnosis : Skin smooth, sometimes tuberculated. Tympanum distinct; paratoid gland absent; fingers free; toes more or less webbed; tips of fingers and toes dilated into distinct discs with horse-shaped grooves, separating the upper surface from the lower one.

6. ***Amolops afghanus*** (Gunther, 1858)

1858. *Polypedates afghanus* Gunther, *Cat. Bat. Sal. Brit. Mus.*, London : 160.

1985. *Amolops afghanus* Frost, *Amphibian species of the world* : 453.

Material : 1 ex; Kohima, Nagaland; 1.10.1983, Coll. Kiyasetuo.

Diagnosis : Dorsally dark-olive to brown, Ventral surface yellowish; limbs with dark cross-bands; Skin smooth; head slightly broader than long; tympanum small and distinct; fingers free with prominent dermal boarder and large discs with well developed grooves seperating upper from the lower surface; subarticular tubercles large and prominent; inner metatarsal tubercle present; outer metatarsal tubercle absent.

Distribution : India : Assam, Arunachal Pradesh, Meghalaya, Mizoram, Tripura, West Bengal.

Elsewhere : Mayanmar; China; Nepal.

Remarks : This species was originally recorded as *Polypedates afghanus* (Gunther). It was subsequently recorded from Assam, Arunachal Pradesh, Meghalaya, Mizoram, Tripura (Daniel 1962, Boulenger, 1920, Pillai & Chanda 19760). During the present study it has been recorded for the first time in Nagaland of northeast India.

Genus ***Pterorana*** Kiyasetuo & Khare, 1986

1986. *Pterorana* Kiyasetuo & Khare, *Asian J. Expl. Sci.*, **1** : 12-17.

Diagnosis : Dorsum coarsely granulated; belly smooth; dorsolateral ridges distinct; large flap of skin on lateral side of the body as well as on the inner side of the thighs; vomerine and maxillary teeth present; pupil horizontally oval; tympanum distinct; dorsum dark slate brown in colour; belly white.

7. ***Pterorana Khare*** Kiyasetuo & Khare, 1986

1986. *Pterorana Khare* Kiyasetuo & Khare, *Asian J. Expl.*

Material examined : 1 ex. Sanuoru river, Kohima, Nagaland, 1.x.1983, Coll. Kiyasetuo; 1 ex. Rukhroma river, Kohima, Nagaland. 15.v.1984, Coll. Kiyasetuo.

Diagnosis : Dorsally slate brown, belly white. Skin coarsely granulated. Prominent glandular tubercle present at the angle of jaws. Distinct dorsolateral ridge extends from eye to hind part of the body. Each thigh having flaps of skin on the inner border measuring about 5 mm when spread. A flap of skin present over the vent.

Head : Longer than broad, depressed; Eyes moderately large; tympanum indistinct, round, half the diameter of the eye.

Forelimbs : Short; fingers with minute oblong discs; subarticular tubercles prominent.

Hindlimbs : Long; tibiotarsal articulation reaching snout; toes fully webbed; tips of toes dilated into oblong discs.

Genus ***Rana*** Linnaeus, 1758

1758. *Rana* Linnaeus, *Syst. Nat. ed.*, Holmiae : 210.

Diagnosis : Skin not smooth. Tongue free, deeply notched and bifid behind. Vomerine teeth present (rarely absent). Pupil horizontal. Tympanum district, sometimes hidden. Paratoid gland absent. Fingers free; toes webbed (rarely nearly frae). Tips of fingers and toes simple or dilated; discs without transverse grooves. Outer metatarsals separated by web. Omosternum and sternum with a bony style.

Key to the species of *Rana*

1. Toes fully webbed 2
- Toes not fully webbed 3
2. Tibiotarsal articulation reaching beyond tip of snout ..... *libigii*
- Tibiotarsal articulation reaching inbetween eyes and nostril ..... *cyanophlyctis*
3. Toes half webbed ..... *mawphlangensis*
- Toes three-fourth webbed ..... *limnocharis*

8. ***Rana cyanophlyctis*** Schneider

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

Material examined : 10 exs., Kohima, Nagaland, 4.x.1976; 12 exs. Sanuro river, Kohima, Nagaland; 1.x.1983, Coll. Kiyasetuo.

Diagnosis : Colour greyish to brownish above, spotted or marbled with black or dark markings. Limbs with incomplete dark bands; ventral surface white or pale yellowish.

Head : Slightly broader than long; nostrils equidistant from eyes and tip of snout; tympanum distinct, more than half the diameter of eyes.

Forelimbs : Moderately long; fingers pointed, free with minute dermal border except in fourth finger; subarticular tubercles small and prominent.

Hindlimbs : Long; tibiotarsal articulation reaching between eyes and nostril; toes fully webbed; subarticular tubercles small and prominent; a small, prominent, pointed digitiform inner metatarsal tubercle present.

Distribution : All over India.

Elsewhere : Pakistan; Afghanistan; South Arabia; Sri Lanka.

Remarks : It is the most common and widely distributed of the Indian frogs after *Rana limnocharis* occuring throughout the year and has been recorded from an altitude of 2133 m. in Sikkim (Chanda, in press).

9. ***Rana limnocharis*** Boisduval

1835. *Rana limnocharis* Boie, *Nova. Acta. Acad. Leop.*: 255.

Material : 8 exs. Kohima, Nagaland, 4.x.1976; Coll. Kiyasetuo.

Diagnosis : Light brown to black with distinct or variable markings on the dorsal side. In most cases a mid-dorsal vertebral band present from snout to vent. Similar band may also be present along the things right upto the heels. This band may be very thin, faint, broad and conspicuous. Limbs with complete or incomplete cross bars. Dorsal skin rough with longitudinal ridges. Vnetrally smooth.

Head : Broader than long; tympanum district, half the diameter of eyes; vomerine teeth oblique in position, on a level with anterior border of choanae, projecting far beyond its posterior border.

Forelimbs : Moderately long; fingers pointed, free; first finger slightly longer than second; third finger longest; subarticular tubercles small, prominent.

Hindlimbs : Long; tibiotarsal articulation reaching tip of snout; toes pointed, half webbed; three phalanges of fourth toe free; subarticular tubercles small, prominent; small prominent, oblong inner metatarsal tubercles and small rounded outer metatarsal tubercle present.

Distribution : All over India.

Elsewhere : Sri Lanka; China; Malaysia; Indonesia; Philippines.

Remarks : It is the most common and widely distributed of the India frogs after R. Cyanophlyctis and has been recorded from an altitude of 2133 m. in Sikkim (Boulenger, 1920). It is a gregarious breeder and the larval form reaches maturity within 28 days.

10. ***Rana liebigii*** Gunther

1860. *Rana liebigii* Gunther, *Proc. zool. Soc.*, London : 157.

Material : Based on literature.

Diagnosis : Head broader than long; nostril slightly closer to tip of snout than eye; tympanum distinct; fingers free; first and second finger equal in size. Tibiotarsal articulation reaching beyond tip of snout; toes entirely webbed; inner metatarsal tubercle present; outer metatarsal tubercle absent.

Distribution : India : Himachal Pradesh; Jammu & Kashmir; Sikkim; Uttar Pradesh; West Bengal.

Remarks : It appears to a hill species and is found to occur in dense herbage in the Eastern Himalayas at an altitude of 12-9-1828 m.

ACKNOWLEDGEMENT

I am grateful to the Director, Zoological Survey of India, for providing facilities to carryout the work and to enable to publish this paper as part of the State Fauna Series.

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REPTILIA

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INTRODUCTION

Nagaland the autonomous hilly state of N.E. India inhabited by the Nagas the main controlling community & hence it forms a single cultural region generally definable by common cultural linguistic tradition. Since recent survey to the state is strictly prohibited due to some disturbances so our faunal work have been carried out by the collection lodged in the N.Z.C. and also from the published evidences. Till date no comprehensive account on the reptilian fauna of Nagaland as a whole is available. Records of earlier workers like Anderson 1871; Cantor 1839; Sclater 1891; Wall 1910; Smith 1933, 1935, 1943; are taken into account.

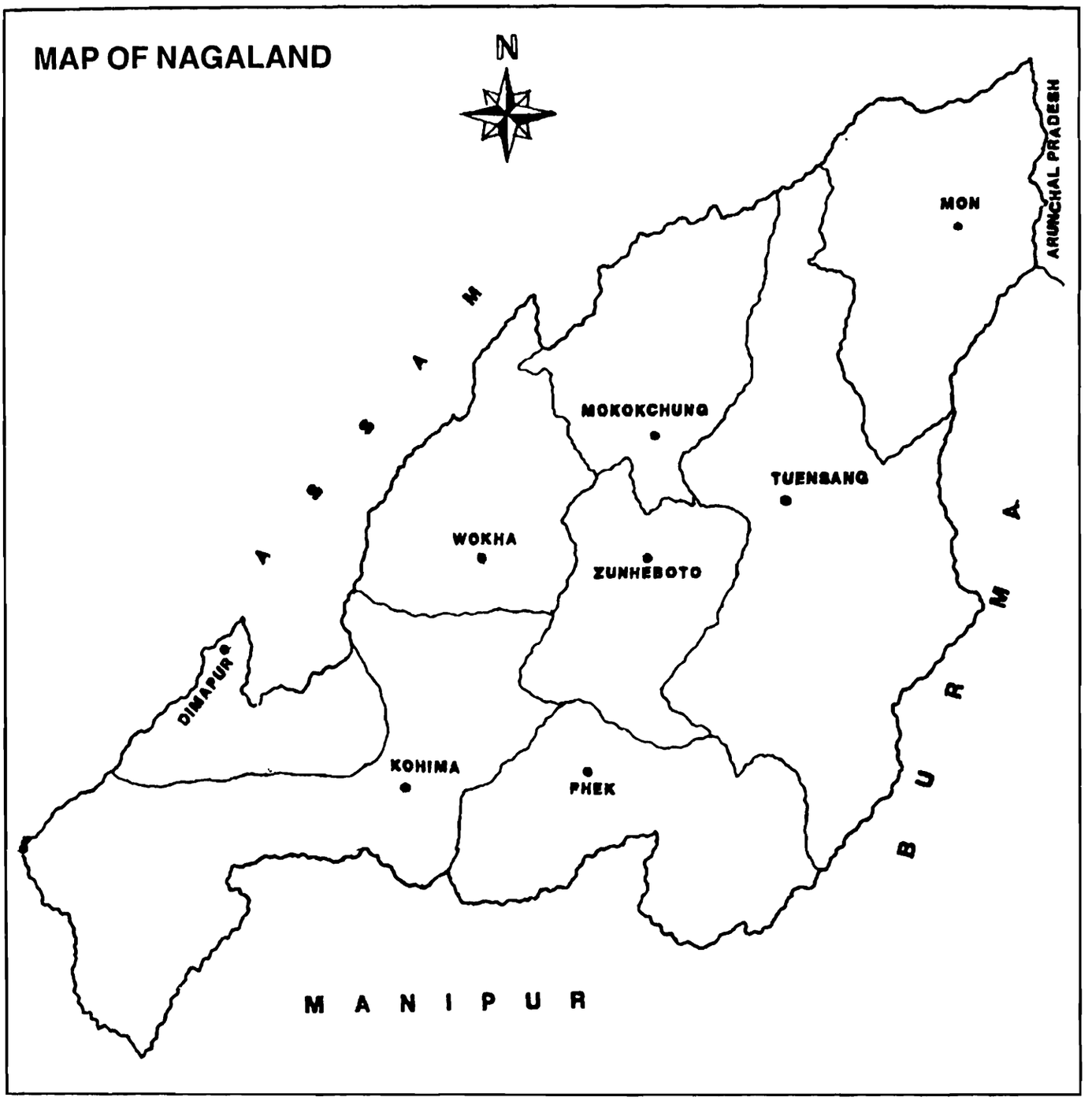
Captain John Butler Anthropologist (1872) made various collections from Samaguting (Chumukedima) region of Naga Hills. Mainly these collections enabled us to prepare a consolidated report of the state. Beside this, collections of other workers also studied. This manuscript includes 62 species, 42 genera under 12 different families. Twenty coloured photos are given in the Paper, some of which are taken from the books of different authors, as because the colour of the specimens have faded due to long passage of time.

Historical account : Like other inhabitants of North East region Nagas too have their share of legend & folklore regarding their origin & evolution through the ages. Nagas are basically tribal people and every tribe had its own effective system of self governance from time immemorial. In the 12th & 13th century gradual contact with Aohms of present day Assam was established, but this did not have any significant impact on traditional Naga way of life. However in the 19th century British appeared on the scene & ultimately the area was brought under British administration. After Independence this territory was made a centrally administrated area in 1957. It was known as the Naga Hills Tuensang area. This failed to quench the thirst of Nagas & unrest began. Hence in 1961 it was renamed NAGALAND & given the status of the State of the Indian union. Finally inaugurated on 1st December 1963.

Phisiography : Nagaland is bounded in the north by Arunachal Pradesh; west by Assam; east by Myanmar & south by Manipur. The state lies between 25°6′ & 27°4′ north of the equator & between the length of 93°20′E & 93°15′E. It has an area16,579 sq. km. The State has eight districts, Dimapur, Kohima, Mon, Zunheboto, Wokha, Phek, Mokokchung, Tuensung. The capital is Kohima. (Statesman Year Book, 2004).

Order I. TESTUDINES

Turtles and tortoises belong to the reptilian order and are distinguished by the shell consisting of two halves, dorsal carapace and ventral plastron. In general there are 13 shields on the carapace, which are vertebrals, costals and marginal where as plastron consist of 12 shields. Paried gulars, humerals pectorals, abdominals, femorals and annals. Horny scutes cover the bones over the shell giving additional protection to the shell. There are 260 species of turtles in the world (Das. I) 32 are distributed in India 6 species so far recorded from Nagaland.



Map showing collection localtities (●) of the State of Nagaland

Due to the thoughtless activities of human being by catching them in large numbers for flesh and consumption their egg this group is on the decline. However over the past few years Forest Departments are making sustained effort to stop this trade.

Order II. SQUAMATA

The order Squamata is divisible into two sub orders Sauria, comprising the lizards and Serpentes the snakes. In lizard body is slender covered by scales with external ears & two pairs of well-developed limbs except in some like Barkudia, Ophisaurus. Lizards are carnivorus, herbivorus and omnivorus 165 species of lizards are found within the limits of India 15 species are available in Nagaland.

Snakes the most ferocious creature to the mankind, as some species have venom but most of the snakes are harmless. Snakes have elongated body devoid of limbs covered with scales. Snakes are toothed and carnivorus creature. The sensory organs in snakes are highly developed though they lack external ear. Touch receptors and heat receptors scattered over the surface of the body; snakes are viviparous. Snakes are externally distinguished from the lizards in absence of eyelids, external ear opening and of limbs. In India there are 263 species of snakes, of which 40 species are reported from Nagaland.

SYSTEMATIC LIST OF REPTILES

Order I. TESTUDINES

Suborder (i). CRYPTODIRA

Family 1. BATAGURIDAE

1. *Cuora amboinensis* (Daudin)
2. *Kachuga dhongoka* (Gray)
3. *Melanochelys trijuga* (Schweiggr)
4. *Pangshura sylhetensis* Jerdon

Family 2. TESTUDINIDAE

5. *Indotestudo elongata* (Blyth)
6. *Manouria emys* (Schleg. & Mull.)

Order II. SQUAMATA

Suborder (ii) SAURIA

Family 3. GEKKONIDAE

7. *Cosymbotus platyurus* (Schneider)
8. *Gekko gecko* (Linneaeus)
9. *Hemidactylus brookii* Gray

Family 4. AGAMIDAE

10. *Calotes emma* Gray
11. *Calotes mystaceous* Dum & Bibr
12. *Calotes versicolor* (Daudin)
13. *Draco maculatus* (Gray)
14. *Draco norvilli* Alcock
15. *Ptyctolaemus gularis* Peters

Family 5. SCINCIDAE

16. *Lygosoma punctatus* (Gmelin)
17. *Mabuya multifasciata* (Kuhl)
18. *Sphenomorphus maculatus* (Blyth)

Family 6. ANGUIDAE

19. *Ophisaurus gracilis* (Gray)

Family 7. VARNIDAE

20. *Varanus bengalensis* (Daudin)
21. *Varanus salvator* (Laurenti)

Suborder (iii) SERPENTES

Family 8. TYPHLOPIDAE

22. *Ramphotyphlops braminus* (Daudin)
23. *Typhlops diardii* (Schlegel)
24. *Typhlops tenuicollis* (Peters)

Family 9. BOIDAE

25. *Python molurus* (Linn.)

Family 10. COLUBRIDAE

Subfamily (A) DIPSADINAE

26. *Pareas monticola* (Cantor)

Subfamily (B) COLUBRINAE

27. *Ahaetulla prasina* (Boie)
28. *Amphiesma parallela* (Boulenger)
29. *Blythia reticulata* (Blyth)
30. *Boiga cynodon* (Boie)
31. *Boiga gokool* (Gray)
32. *Chrysopelea ornata* (Shaw)

33. *Dendrelaphis cyanochloris* (Wall)
34. *Dendrelaphis gorei* (Wall)
35. *Dendrelaphis pictus* (Gmelin)
36. *Dinodon septentrionalis* (Gunther)
37. *Elaphe helena* (Daudin)
38. *Elaphe porphyracea* (Cantor)
39. *Elaphe prasina* (Blyth)
40. *Elaphe radiata* (Schlegel)
41. *Liopeltis stoliczkae* (Sclater)
42. *Lycodon jara* (Shaw)
43. *Oligodon albocinctus* (Cantor)
44. *Oligodon cinereus* (Gunther)
45. *Oligodon dorsalis* (Gray & Hardwicke)
46. *Oligodon erythrorachis* Wall
47. *Psammodynastes pulverulentus* (Boie)
48. *Ptyas korros* (Schlegel)
49. *Ptyas nigromarginatus* (Blyth)
50. *Rhabdophis himalayanus* (Gunther)
51. *Rhabdophis nuchalis* (Boulenger)
52. *Rhabdophis subminiatus* (Schlegel)
53. *Trachischium monticolum* (Cantor)
54. *Xenochrophis piscator* (Schneider)

Subfamily (C) HOMALOPSINAE

55. *Enhydris sieboldii* Schlegel

Family 11. ELAPIDAE

56. *Bungarus fasciatus* (Schneider)
57. *Bungarus niger* Wall
58. *Sinomicrurus macclellandi* (Reinhardt)
59. *Naja kaouthia* Lesson

Family 12. VIPERIDAE

60. *Trimeresurus erythrurus* (Cantor)
61. *Trimeresurus mucrosqamatus* (Cantor)
62. *Trimeresurus popeorum* Smith

Key to the families of the order TESTUDINES

1. Digits webbed, hind limbs paddle shaped ..... BATAGURIDAE

   Digits not webbed, hind limbs club shaped .. .. TESTUDINIDAE

Family 1. BATAGURIDAE

Key to the genera of the family BATAGURIDAE

1. Hexagonal neural plates short-sided behind 2

– Hexagonal neural plates short sided in front 3

2. Plastron united to the carapace by ligamentous tissue, upper jaw feebly hooked ..... ***Cuora***

– Plastron united to the carapace by a tissue, upper jaw feebly notched at the middle .... ***Melanochelys***

3. Fourth vertebral shield pointed in front, narrowly in contact with the third embracing five neural plates ..... ***Pangshura***

– Third vertebral shield forming a broad suture which embraces four neural plates .... ***Kachuga***

Genus 1. ***Cuora*** Gray, 1855

1. ***Cuora amboinensis*** (Daudin)

South East Asian Box Turtle

1802. *Testudo amboinensis* Daudin, *Hist. Nat. Rept.*, **2** : 309.

1864. *Cuora amboinensis* Gunther, *Rept. Brit. Ind.*, : 12, pl. 4.

Material not available, known to occur in Nagaland (Das 1991). Description based on literature.

Diagnostic character : Shell narrow high without well-developed margin. Young with a pair of keel. Posterior margin of carapace smooth & unserrated. Neurals hexagonal, short sided behind, between hypoplastron and hyoplastron there is a hinge. In adults plastron joined to carapace by ligaments. Upper jaw feebly hooked. Toes fully webbed 40-50 small scales. Head dark brown or green above, yellow below with three yellow bands, one over the eyes, meeting above the nostrils, one across the eyes and the third across the upper jaw. Carapace dark olive brown or nearly black; plastron yellow cream or pale brown with a dark blotch on the marginals and on the outer edge of each plastral scute.

Distribution : India : Nagaland, Assam; Arunachal Pradesh; Nicobar island.

Elsewhere : Myanmar; Malaysia; Vietnam, Thailand; Indonesia; Philippines and Bangladesh.

Remarks : Omnivorous turtle, young are totally aquatic while the adults are more amphibious. Males feed through out the year, where as females stop feeding two months before egg laying (Das, 1991).

Genus 2. ***Kachuga*** Gray

2. ***Kachuga dhongoka*** (Gray)
Three-Strped Roofed Turtle

1834. *Emys dhongoka* Gray *illus. Ind. Zool.*, ii, : pl, 60.

1889. *Kachuga dhongoka*, Boulenger, *Cat. Chel. Brit, Mus.*, : 56 and *Fauna Brit. India*, 1890, Pl. 41.

Material not available known to occur in Nagaland, (Mathew 1995) Description based on literature.

Diagnostic character : Head moderately long with a pointed snout which projects beyond the lower jaw, posterior portion of the head with shields; carapace smooth depressed, the keel most prominent up on second & third vertebral shields nuchal shield short sided in front, first vertebral longer than broad, limbs with fully & broadly webbed digits & transversely enlarged scales; fore limbs with 5 claws. Olive brown above with black vertebral stripe young with 2 black stripes; yellowish beneath; juveniles with a large reddish brown patch on the shields of plastron, a yellow stripe runs along the side of the heads starting from nostrils and passing above the eye & tymphanum.

Distribution : India : Nagaland; Manipur; Mizoram; Arunachal Pradesh; Assam; Tripura, Uttar Pradesh; West Bengal.

Elsewhere : Nepal.

Remarks : This species is entirely aquatic.

Genus 3. ***Melanochelys*** Gray 1869

3. ***Melanochelys trijuga*** (Schweigger)
Indian Black Turtle

1814. *Emys trijuga* Schweigger, *Prodr, Monogor, Chel.*, : 41.

1989. *Melanochelys trijuga* (Schweigger) Dasl, *J.B.N.H.S.*, **87** : 91-97.

Material not available known to occur in the state (Das. I 1989) Description based on literature.

Diagnostic character : Elongated carapace fairly elevated in adults, depressed in young, tricarinate, posterior margins feebly serrated; nuchal small, triangular; vertebrals typically as long as wide or longer than wide, except vertebral V which is broader then long; plastron truncated anteriorly and notched posteriorly, head moderate with a short snout; upper jaw notched; toed fully webbed carapace brown, plastron usually dark with a light yellow border which may be absent in the old specimens. Limbs grey brown or blackish.

Distribution : Nagaland, Assam; Meghalaya; West Bengal; Bihar; Uttar Pradesh; Kerala.

Genus 4. ***Pangshura*** Jerdon, 1870

4. ***Pangshura sylhetensis*** Jerdon
Assam Roofed Turtle
(Col. photo 1)

1870. *Pangshura sylhetensis* Jerdon, *Proc. Asiat. Soi. Bengal.* : 69.

2003. *Pangshura sylhetensis*, Das *J. Bombay nat. Hist. Soc.*, **100**(2 & 3) : 457.

Material examined : 1 example, Naga Hills (damaged) (Reg. No. 956).

Diagnostic Character : Head more or less small snout slightly projecting, shorter than the orbit carapace elevated with a prominent vertebral keel which transforms into a backwardly projecting spike at the posterior margin of the 3rd vertebral shield, posterior margin of carapace strongly serrated 26 marginal shields present posterior of plastron weekly notched, upper brown with a pale brown vertebral keel, plastron with large black blotch.

Distribution : India : Nagaland as stated above; Assam ; Meghalaya.

Elsewhere : Bangladesh.

Family 2. TESTUDINIDAE

Genus 5. ***Indotestudo*** Lindholm.1929

5. ***Indotestudo elongata*** (Blyth)

1853. *Testudo elongata* Blyth, *J. Asiat. Soc. Bengal*, **22** : 639.

1995. *Indotestudo elongata*, Mathew, *Fauna of Meghalaya*, ii, : 1 52.

Material not available, known to occur in Nagaland (Mathew, 1995). Description based on literature.

Diagnostic character : Shell elongated, arched, carapace narrow, flat broader posteriorly in adults, rounded in young, edges serrated, vertebrals five, as broad as the costals, four, supracaudal single; forelimbs with large pointed scales; heels with large flat scales. Carapace yellow, plastron with black blotches; Head pale yellow.

Distribution : India : Nagaland (Mathew, 1995) Bihar; Uttar Pradesh; Meghalaya, Orissa; West Bengal.

Elsewhere : Nepal; Bangladesh.

Genus 6. ***Manouria*** Gray 1854

6. ***Manouria emys*** (Schleg. & Mull.)
Asian Brown Tortoise

1844. *Testudo emys* Scleg. & Mull., *in Temminck, Verh. Nat. Ned. Ind. Rept.*, : 34, pl. 4.

1991. *Manoura emys*, (Das), *Colour Guide to the Turtles & Tortoises of Indian*, R.A. Publishing Ltd. : 133.

Material not available. Known to occur in Nagaland; Lumajooting (Das, I 1995) (Sharma 1985). Description based on literature.

Diagnostic Character : Head moderate, upper jaw feebly hooked. The top of the head is covered with large symmetrical shields. Carapace dome shaped in adult but depressed in juveniles, marginal serrated; vertebrals wider than long. Plastron is large sometimes larger than carapace owing to the extended gular shields slightly notched anteriorly and deeply notched posteriorly. Fore limbs with 5 claws. Hind limbs are 4 clawed; adults have a greatly enlarged conical scute on the back of the thigh. Tail is moderate and terminates in a grooved spur like tubercle. Shell head and limbs are blackish.

Distribution : India : Nagaland, Assam, Meghalaya, Manipur.

Elsewhere : Bangladesh.

Remarks : It is largest of the Asiatic tortoise (Tikadar & Sharma 1985).

Order 2. SQUAMATA

Suborder SAURIA

Key to the families of the order SAURIA

1. Limbs present 2
– Limbs absent ..... ANGUIDAE
2. Eyes without movable eyelids; Tongue broad & short covered with villose papillae; top of the head with asymmetrical shields .... GEKKONIDAE
– Eyes with movable eyelids 3
3. Tongue short, smooth or covered with villose papillae, no symmetrical shield on the top of the head ..... AGAMIDAE
– Tongue moderate to very long 4
4. Tongue bifid; back covered with rounded scales; top of the head with small scales ... . VARANIDAE
– Tongue not bifid; body covered with cycloid imbricate scales; top of the head with symmetrical shields ..... SCINCIDAE

Family 3. GEKKONIDAE

Key to the genera of family GEKKONIDAE

1. Dorsal scales granular or tubercular; skin is not expanded along the side of the body.....2
– Dorsal scales granular or tubercular, skin is expanded along the side of the body .... ***Cosymbotus***
2. Terminal phalanges long; slender, clawed, free rising angularly from within the expansion, subdigital lamellae divided ... ***Hemidactylus***

– Terminal phalanges of outer four digits slender,compressed, clawed attached to the dilated portion, subdigital lamellae undivided ..... ***Gekko***

Genus 7. ***Cosymbotus*** Fitzinger, 1843

7. ***Cosymbotus platyurus*** (Schneider)
Frilled House Gecko
(Col. photo 2)

1792. *Stellio platyurus* Schneider, *Amph. Physiol.*, **2** : 30.

1932. *Cosymbotus platyurus*, Deraniuyagala, *Ceylon J. Sci.*, **B16** : 306.

Material examined : 6 examples, Samaguting, Oct. 1872, Capt. J. Butler (Reg. nos. 5963, 6128, 6139, 6150, 6166, 6167).

Measurement : Snout to vent : 30mm. to 50mm.

Diagnostic character : Head moderate covered above with minute granular scales largest upon the snout; back with uniform small granular scales; belly with large smooth, rounded imbricate scales. Digits one third webbed. Tail very strongly depressed with broad, sharply denticulated lateral margin , covered above with small scales, below with larger ones and a series of transversely enlarged plates. A well-marked dermal fringe along the sides of the body. Colour grayish brown above, yellowish below.

Distribution : India : Nagaland as mentioned above; Assam; Arunachal Pradesh, Manipur, Meghalaya; Sikkim; West Bengal.

Elsewhere : Nepal; Indochina; Hongkong; Formosa.

Remarks : Insectivorous, prefers to live in house as will as in gardens. It has not been recorded so far from Naga Hills.

Genus 8. ***Gekko*** Laurenti 1768

8. ***Gekko gecko*** (Linn.)
Tuctoo Lizard
(Col. Photo 3)

1858. *Lacerta gecko* Linnaeus, *Syst. Nat. ed.*, **10** : 205.

1912. *Gekko gecko*, Barbour, *Mem. Mus. Comp. Zool. Harvard Coll.* Cambridge, **44** : 82.

Material examined : 9 exs. Samaguting, Oct. 1872, Capt. J. Butler, (Reg. Nos. 2555, 2558, 2559, 2560, 2561, 2563, 2564, 2566, 2569.)

Measuremnt : Snout to vent : 97mm. to 129mm. Tail 105mm. (Reg.no.2555). Tail broken in rest of the examples).

Diagnostic character : Head more or less large; 12-14 upper labials, the first touching the nostril; 5 pairs of post mentals. 2 large inter nasals. Head covered above with small polygonal scales. Dorsal with small juxtaposed flat scales intermixed with larger subconical tubercles arranged in about 12 longitudinal series, 3-5 small scales between the dorsal scales. Tail slightly depressed, annulate covered with subqadrangular smooth scales & regular rows of large conical tubercles, banded black & white, whitish below.

Distribution : Nagaland as mentioned above; Assam; Tripura; Meghalaya; Bihar; West Bengal.

Genus 9. ***Hemidactylus*** Oken 1817

9. ***Hemidactylus brookii*** Gray
Brook's House Gecko

1845. *Hemidactylus brookii* Gray, *Cat. Liz. Brit. Mus.*, **1** : 153.

Likely to occur, description based on literature.

Diagnostic Character : Head large prominent; ear opening oval covered with small granular scales, rostral shield quadrangular not much broader than high. Small granular scales mixed with tubercule on the dorsum. Ventral scales are smooth, digits are free moderately dilated with oblique lamellae. Tail is much longer than the head & body verticillate, swollen at the base. Male with pre- ano- femoral pores. Light brown with dark brown spots above. A dark streak along the side of the head.

Distribution : India : Throughout India.

Elsewhere : Sri Lanka; Borneo; Pakistan; Myanmar; South China; West Indies; Tropical Asia & Africa.

Remarks : Commonest House Gecko.

Family 4. AGAMIDAE

Key to the genera of the family AGAMIDAE

1. A wing like expansion is present on the much extended ribs ..... ***Draco***
- Wing like expansion is not present, ribs are not extended 2
2. Tympanum concealed. Dorsal scales of the dome unequal. Thorat is with three parallel longitudinal folds forming a U-shaped mark ..... ***Ptyctolaemus***
- Tympanum exposed; dorsal scales are equal in size; parallel longitudinal folds on the throat absent ..... ***Calotes***

Genus 10. ***Calotes*** Rafinesque 1815

Key to the species of genus *Calotes*

1. No fold or pit in front of the shoulder; 35-52 scales round the body ..... *versicolor*
- An oblique fold or triangular pit is available in front of the shoulder 2
2. 49-65 keeled scales round the body; a post orbital spine is present ..... *emma*
- 48-58 keeled scales round the body; devoid of postorbital spine ..... *mystaceous*

10. ***Calotes emma*** Gray
Emma Grays' Forest Lizard
(Col. Photo 4)

1845. *Calotes emma* Gray, *Cat. Liz. Brit. Mus.*, : 244.

Material examined : 1 example, Samaguting (Naga Hills), Oct. 1872, Capt, J. Butler (Reg. No. 6529).

Measurement : Snout to Vent : 108 mm; Vent to tail : 275 mm.

Diagnostic character : Head more or less large, Fourth toe is longer than third toe, third and fourth fingers are equal. Tail slightly compressed covered with equal scales. Nuchal &dorsal crests developed in both the sexes. 9-12 upper labials and as many as lower labials. Body scales large keeled, Ventral scales are mucronate scales in 49 to 65 rows at mid-body. A post orbital spine is present. Colour brownish.

Distribution : India : Nagland as mentioned, Assam, Meghalaya.

Elsewhere : Mayanmar; Siam; Yunnan; French Indo China; Malay peninsula.

Remarks : This species has not been recorded so far from Naga Hills.

11. ***Calotes mystaceous*** Dum & Bibr
Moustached Forest Lizard

1837. *Calotes mystaceous* Dum & Bibr. *Erp. Gen.*, **4** : 408.

Material examined : 3 examples, Kanglatongli camp, Dimapur 12.10.1945, 14-19.9.1945; Major M.L. Roonwall (Reg. No. 20490.20491.20492).

Measurement : Snout to vent : 45 to 97 mm Vent to tail : 79 to 176 mm.

Diagnostic character : The body is compressed gular point is small. Which becomes larger in breeding season, 9-13 upper labials, 48-58 scales round the middle of the body, nuchal and dorsal crests are present which are continuous & well developed in male. Colour grayish with faint spots all over.

Distribution : India : Nagaland as stated, Andaman & Nicobar Island.

Elsewhere : The complete Indo Chinese sub region.

Remarks : Romer 1948 recorded it from Kohima (Naga Hills).

12. ***Calotes versicolor*** (Daudin)
Indian Garden Lizard

1802. *Agama versicolor* Daudin, *Hist. Nat. Rept.*, **3** : 395.

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

Material examined : 23 exs, Samaguting Oct. 1872; Capt J Butler (Reg. Nos.6422, 6423, 6424, 6426, 6427, 6429, 6430, 6431, 6433, 6434, 6435, 6436, 6438, 6439, 6440, 6441, 6442, 6443, 6445, 6446, 6447, 6448, 6451).

Measurement : Snout to vent : 41mm to 90mm; Vent to tail : 100mm to 265 mm.

Diagnostic character : Body laterally compressed with oval head. Strongly keeled dorsal scales present. Tow distinct spines on each side of the head. No fold or pit in front of the shoulder, 35-52 scales round the body. Dorso nuchal crest well developed, extending nape to above vent in the male. Tail long and rounded; juveniles with light dorso ventral stripes, which enclose transverse black spots. Adult grayish brown above with dark transverse bars. Belly whitish with dark streaks. Tail with dark brown cross bars.

Distribution : India : Nagaland as stated above; found throughout India.

Elsewhere : Sumatra to South China; Sri Lanka; Pakistan; Afganistan.

Remarks : These Lizards are excellent climbers and can jump from branch to branch, their toes and long tail proves to be most useful in balancing the body for such arboreal mode of existence.

Genus 11. *Draco* Linnueus 1758

Key to the species of the genus *Draco*

1. Tympanum scaly; nostril lateral patagium spotted ..... *maculatus*
– Tympanum scaly; nostril dorsal,. Patagium banded ..... *norvilli*

13. *Draco maculatus* (Gray)

Naga Hill Flying Dragon

1845. *Dracunculus maculatus* Gray, *Cat. Liz. Brit. Mus.*, : 262.

1929 *Draco maculatus* (Gray), Smith, *Rec. Ind. Mus.*, 31 : 77.

Material not available. Description based on literature. (Smith 1929)

Diagnostic character : Usually 5 patagial ribs. Snout as long as or a little longer than the orbit; nostrils lateral, directed more or less outwards, tympanum covered with small scales. Upper head scales unequal strongly keeled, compressed more or less erect over the canthal regions and anterior part of the orbit; 7 to 11 supra labials. Gular appendage of male much longer than the head, with obtusely pointed extremely covered with moderately large scales which are about as large as the ventrals; appendage of female usually not half the length of the head. Dorsal scales unequal, smooth or feebly keeled; on each side of the back a series of widely separated, enlarged strongly keeled scales. The forelimb extends to beyond the snout, the hind limb to the axilla or not quite so far. Males are having nuchal fold but devoid of caudal crest. Geyish to bronze above black spots are present on the nape and inter orbital region. Wing membrane coloured beautifully with orange; reddish brown or green with admixture of variable black coloured spots arranged in longitudinal lines, pale yellow below, gular pouch yellow or brown with blue spot.

Distribution : India : Nagaland; Assam; Arunachal Pradesh.

Elsewhere : complete Indo Chinise peninsula to Hainan & Man-Son Mountains Tonking; Nahon; Srito Mountains in Thailand.

Remarks : Smith (1929) recorded the species collected by J. Hutton from Naga Hills.

14. *Draco norvilli* Alcock

Norvilli's Flying Dragon

1895. *Draco norvilli* Alock, *J. Asiat. Soc. Beng.*, 46 : 14.

Material examined : One example Naga Hills J.H. Hutton (Reg. No. 19913).

Measurement : Snout vent 175 mm Vent to tail 200 mm.

Diagnostic character : Head small, directed above, tympanum covered with minute scales upper head shields not equal, strongly keeled behind the supracillary edge a small subconical tubercule present, nine to ten supra labials. In male gular appendage little longer than head, covered with large scales. In female gular appendage less than half the length of the head. Dorsum is with feebly keeled unequal scales. Ventral scales are strongly keeled. The fore limbs

are longer which extends beyond the tip of the snout Males with a slight nuchal fold but are devoid of caudal crest. Greyish above with metallic tints and darker spots. A light transverse bar across the middle of the back. Patagium in the female the first band and inner parts of the second and third bands are dark brown; belly white spotless, throat blotched with grey.

Distribution : India : Nagaland; Arunachal Pradesh; Assam.

Genus 12. ***Ptyctolaemus*** Peters 1864

15. ***Ptyctolaemus gularis*** Peters
Blue Throated Lizard

1864. *Otocryptis (Ptyctolaemus) gularis* Peters, *Mon. Akad. Berlin*, : 386.

1885. *Ptyctolaemus gularis*, Boulenger, *Cat. Liz. Brit. Mus.*, : 273.

Material not available known to occur in Naga Hills (Romer J.D.1948.) Description based on literature.

Diagnostic character : Head more or less long, narrow body compressed with low nuchal folds & hidden tympanum, snout longer than the orbit. Throat with three parallel longitudinal folds on each side of the middle, curved and form a U-shaped mark. Olive brown above, with dark brown transverse bars and spots on head, between and below the eyes, Limbs moderately long; third & fourth fingers equal; fourth toe much longer than the third the hind limb reaches the ear. Tail much longer than the head & the body. Olive brown above with dark brown transverse bars & spots on the head, between & below the eyes.

Distribution : India : Nagaland ; Arunachal Pradedsh; Assam.

Remarks : During breeding season sexual dimorphism is clearly shown by males by the fully extended throat with its conspicuous blue colour.

Family 5. SCINCIDAE

Key to the genera of the family SCINCIDAE

1. Limbs long 2
- Limbs short ..... ***Lygosoma***

2. Pterygoid bones are not touching one another; supra nasals are present ..... ***Mabuya***
- Pterygoid bones are in contact anteriorly; no supranasals ..... ***Sphenomorphus***

Genus 13. ***Lygosoma*** Hardwicke & Gray 1829

16. ***Lygosoma punctatus*** (Gmelin)
Spotted Supple Skink
(Col. photo 5)

1799. *Scincus punctatus* Gmelin, *Hist. Amph.*, : 197.

1977. *Lygosoma punctatus*, Greer, *J. nat. Hist.*, **11** : 516.

Material examined : One example, Dimapur, ?, J.W. Counter Esq. (Reg. no. 19865).

Measurement : Snout to Vent : 46 mm. Vent to Tail : 41 mm.

Diagnostic character : Elongated snake like body with 5 fingers & 5 toes; lower eyelid with undivided transparent disc. Body scales smooth, 24-26 scales round middle of back. Limbs reduced, fourth toe quite longer than third, 11-14 lamellae under the fourth toe. Tail thick at base. Colour brown above, each side with a dark spot forming longitudinal series, belly yellowish white.

Distribution : Nagaland as mentioned. Throughout India.

Genus 14. **Mabuya** Fitzinger 1826

17. ***Mabuya multifasciata*** (Kuhl)
Many-lined Grass Skink
(Col. Photo 6)

1820. *Scincus multifasciatus* Kuhl, *Beitr. Zool. Vergl. Anat.*, : 126.

1826. *Mabuya multifasciata*, Fitzinger *N. Class. Rept.*, : 52.

Material examined : 4 ex. Samaguting,. Naga Hill, Oct. 1872, Capt. J. Butler (Reg. No. 2288, 2290, 2285, 2286).

Measurement : Snout to vent : 73 mm to 137 mm.; vent to tail : 145 mm to 195 mm.

Diagonostic character : Supranasals present which are separated or just touch one another, fronto nasal broader than long. Pre frontals are in

contact with one another, nuchals and post nasal present; lower eyelids scaly with small pointed lobules; anteriorly dorsal scales keeled, lateral scales smooth, 30-34 scales round the body; digits are more or less long with 17 to 23 keeled lamellae beneath the fourth toe; the hind limb reaches to the wrists of the of the elbow. Colour brown to black with spots along the lateral margins of the scales head is blotched with black dots; belly whitish.

Distribution : India : Nagaland (Naga Hills); Assam, Nicobar Island.

Elsewhere : Yunnan; Tongking; Hainan; Pulocondore.

Genus 15. ***Sphenomorphus*** Fitzinger 1843

18. ***Sphenomorphus maculatus*** (Blyth)
Spotted Litter Skink
(Coloured photo 7)

1853 *Lissonata maculata* Blyth, *J. Asiat. Soc. Beng.*, **22** : 653.

1935. *Sphenomorphus* maculatus, Pope, *Rept. China New York* : 483.

Material examined : 10 examples, Samaguting, 1872, Capt, J. Butler (Reg. nos : 2443, 2446, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2459).

Measurement : Snout to vent : 45 mm to 57 mm; Vent to tail : 77 mm to 97 mm.

Diagnostic character : Body is not elongated limbs well developed, rostral flat or concave, prefrontal more or less small, touching one another, devoid of nuchal, supra orbital region prominent, 5 supra oculars, first longest, 5th the smallest, supra cilliaries 10-12, both the loreals higher than long, 2 large superposed scales; tympanum is deeply sunk. Upper labial 7; a pair of large pre anal scale present, tail gradually tapering to a point. Almost two times longer than the head and body; the median rows of scale transverse enlarged. Limbs are moderately long and compressed, with 16-22 keeled lamellae under the fourth toe. The dorsal colouration bronzy or deep brown; generally with faint small green spots & two median series of small black stripes, flank with enormous spots, belly whitish.

Distribution : India : Nagaland, Assam; Bihar; W.Bengal; Andman & Nicobar islands.

Elsewhere : Myanmar; S.China; Thailand; S.Vietnam; N.Vietnam.

Family 6. ANGUIDAE

Genus 16. ***Ophisaurus*** Daudin,1803

19. ***Ophisaurus gracilis*** (Gray)
Indian Glass Snake
(Col. Photo 8)

1845. *Pseudopus gracilis* Gray, *Cat. Liz. Brit. Mus.*, : 46.

1885. *Ophisaurus gracilis*, Boulenger, *Cat. Liz. Brit. Mus.*, **2** : 283.

Material examined : 1ex 25.8.1874, Capt. Godwin Austen (Reg. No. 8688).

Mesurement : Snout to vent : 70 mm, tail broken.

Diagnostic character : Body is snake like; limbs absent. Ear opening semi circular; five supra oculars, prefrontal narrow. Dorsal scales strongly keeled ventral scales smooth in 10 longitudinal series Inter parietal broader than the parietals. Dorsal part light brown, ventral pale yellow.

Distribution : India : Nagaland; Assam, Arunachal Pradesh, Meghlaya (Khasi Hills), West Bengal (Darjeeling district).

Elsewhere : Myanmar; Southern China.

Remarks : Tail is missing. This species is recorded first time from Nagaland.

Family 7. VARANIDAE

Genus 17. ***Varanus*** Merrem 1820

Key to the species of the genus *Varanus*

1. Nostril is like an oblique slit, which is nearer to the orbit than to the end of the snout .... ***bengalensis***

– Nostril round or oval which is nearer to the end of the snout than to the orbit .... ***salvator***

20. ***Varanus bengalensis*** (Daudin)
Common Indian Monitor
(Col. photo 9)

1802. *Tupinambus bengalensis* Daudin, *Hist. Nat. Rept.*, 3 : 67.

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

Material examined : One example, Samaguting, Oct. 1872, Capt. J. Butler (Reg. No. 2144).

Measurement : Snout to vent : 185mm. Vent to tail: 258mm.

Diagnostic character : Head tapering; neck slender; teeth acute, long ♯ tongue very long, forked and protrucible. Nostril is like an oblique slit a little nearer to the orbit than to the tip of the snout. Scales on the neck region are smaller than those on the crown. The tail is long & strong; colour brown.

Distribution : India : Nagaland as mentioned. Occurs throughout the Indian subcontinent.

21. ***Varanus salrvator*** (Laurenti)
Water Monitor
(Col. photo 10)

1768. *Stellio salvator* Laurenti, *Syn. Rept.* (based on Seba's illustr. ii. : pl. 88).

1847. Varanus salvater, Cantor, *Cat. Rept. Malaya Pen.*, : 29.

Material examined : One example, Samaguting, Oct. 1872, Capt. J. Butler (Reg. No. 2155).

Measurement : Snout to Vent : 210 mm. Vent to tail : 296 mm.

Diagnostic character : Nostrils round & oval, situated at the anterior end of the head. Snout depressed at the end; median supra ocular transversely enlarged, dorsal scales keeled; tail compressed with a double-toothed crest on the upper side.

Distribution : India : Nagaland as stated above; Meghalaya; Andaman & Nicobar Island; West Bengal.

Elsewhere : Bangladesh & Sri Lanka.

Remarks : This is the largest of all Indian monitors, found usually in rivers, canals and sea coast.

Suborder 11. SERPENTES

Key to the families of the sub order SERPENTES

1. Eyes vestigial, covered by scales, body worm like ..... TYPHLOPIDAE
– Eyes developed, exposed, body not worm like 2
2. Vestiges of hind limb present ..... BOIDAE
– Vestiges of hind limb absent 3
3. No poison fangs in front of the mouth ..... COLUBRIDAE
– Poison fangs present in front of the mouth 4
4. Head shields asymmetrical ..... VIPERIDAE
– Head shields symmetrical ..... ELAPIDAE

Family 8. TYPHLOPIDAE·

Key to the genera of the family TYPHLOPIDAE

1. Suture of the nasal shield touching the 2nd labial ..... ***Typhlops***
– Suture of the nasal shield not touching the 2nd labial but it touches the preocular ..... ***Ramphotyphlops***

Genus 18. ***Ramphotyphlops*** Fitzinger 1943

22. ***Ramphotyphlops braminus*** (Daudin)
Brahminy Blind Snake

1803. *Eryx braminus* Daudin *Hist. Nat. Rept.*, 7 : 27.

1890. *Typhlops braminus*, Boulenger, *Fauna Brit. India*, : 236.

1943. *Ramphotyphlops braminus* Fitzinger, *Bull. Zool. Mus.*, 33 (3/4) : 204-207.

Material examined : 1ex. Naga Hills, 1872, J. Butler (Reg. No. 6917).

Measurement : Total length 155 mm.

Diagnostic character : Rostral large; snout rounder; upper labials 4, the last two touches ocular; nasal suture terminating of the edge of the preocular. 20 rows of scales round the body. Brown above; lighter below.

Distribution : India : Nagaland as stated above, throughout India.

Elsewhere : Africa; Mexico & New Guinea.

Remarks : It is the most common snake, found under the soil, stone debris etc.

Genus 18. ***Typhlops*** Oppel, 1811

Key to the species of the genera *Typhlops*

1. 22 scales round the body ..... *tenuicollis*
– 24 to 26, rarely 28 scales round the body ..... *diardii*

23. *Typhlops diardii* (Schlegel)
Diard's Blind Snake

1839. *Typhlops diardi* Schlegel, *Abbild. Amphib.*, : 39.

1923. *Typhlops diardi diardi*, Smith *J.N.H.S. Saim*, **6** : 52.

2003. *Typhlops diardii*, Das, *J. Bombay nat. Hist. Soc.*, **100** (2 & 3) : 484.

Material examined : Total 4 examples : 1 example 10 miles from Imphal in Dimapur, 10.8.1995. M.S. Roonwall (Reg. No. 20498); 3 exs. Oct. 1872. Capt. J. Butler (Reg. Nos. 6894, 6925, 6900).

Measurement : Total length 40 mm to 403 mm.

Diagnostic character : Snout rounded, projecting, nostril lateral. Nasal incompletely divided, the lower left pasing to the second labial 24-26 or 28 scales round the body. 260-300 transverse srows of scale. Dorsal side blackish, ventral paler.

Distribution : India : Nagaland; Meghalaya; Assam; West Bengal.

Elsewhere : French Indochina; Malaya Peninsula and Archipelago; Myanmar; Siam.

24. *Typhlops tenuicollis* (Peters)
Slender Necked Worm Snake

1864. *Onychocephalus (Opthatmidion) tenuicollis* Peters, *Mon. Akad. Berlin.*, 272.

1871. *Typhlops theobaldianus* Stoliczka, *J. Asiat. Soc. Beng.*, **40** : 429 pl. 25.

1943. *Typhlops tenuicollis* Smith F.B.I., **3** : 50.

Material examined : 1 example damaged, 15.10.1872, Capt. J. Butler (Reg. No. 8723).

Diagnostic character : Snout broadly rounded strongly projecting; rostral half as broad as head extending to the level of the ocular shields, no upper suture, nasal incompletely divided22 scales round the body.

Distribution : Nagaland; Meghalaya.

Remarks : At first this species bearing Reg. No8723 was described as *Typhlops theoblodianus* Stolcizka, Smith checked Peter's fig & found nostril lateral. According to him Boulenger placed *tenuicollis* (F.B.I. 236) in a section by itself, the nostrils said to be inferior but in all other respects the description agrees completely with *theoboldianus* so Smith 1943 F.B.I did not hesitate in uniting them. In this respect we have represented here the reference on the species *theoboldianus*.

Family 9. BOIDAE

Genus 20 ***Python*** Daudin 1803

25. *Python molurus* (Linn.)
Indian Rock Python

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

1890. *Python molurus*, Boulenger, F.B.I. : 246.

Material not available. Description based on literature.

Diagnostic character : Head distinct from neck, with large symmetrical shields. Eye with vertical pupil and rostral with a deep pit on either side. Nostril at the posterior and upper part of a large posterior nasal; 11-13 supralabials, first 2 deeply pitted, 6th or 7th labial touching the eye; a lance-shaped mark on the top of the head extending on the nape; a dark streak on the side of the head which become wider behind the eye and extending to the angle of the mouth.

Distribution : Found throughout India.

Remarks : the snake is oviparous. After the eggs are deposited mother coils herself round them until they are hatched out. It is omnivoronus creature prefers mammals in its diet. The specimen bearing Reg. no. 8066 collected from Naga Hills sent to Selangor Museum (written in the Register).

Family 10. COLUBRIDAE

Key to the subfamilies of the family COLUBRIDAE

1. Mental groove absent ..... DIPSADINAE
– Mental groove present 2
2. Hypapophyses absent or present on the posterior dorsal vertebral; nostril lateral ..... COLUBRINAE
– Hypapophyses developed throughout the vertebral column; nostril crescentic on the upper surface of the snout ..... HOMALOPSINAE

Subfamily (A) DIPSADINAE

Genus 21 *Pareas* Wagler 1830

26. *Pareas monticola* (Cantor) Assam Snail Eater

1839. *Dipsas monticola* Cantor, P.Z.S. P. 53.

1943. *Pareas monticola*, Smith, *Fauna of Brit. India, Rep. Amph.*, **3** : 118.

Material examined : 1 example, Samatguting, Oct. 1872, Capt J. Buttler (Reg. No. 8020).

Measurement : Snout to vent : 379 mm, Vent to tail : 103 mm.

Diagnostic character : Eye large and its diametar greater than its distance from the mouth, pupil vertical; supra labials 7. No pre ocular, a sub ocular present, post oculars 2; temporal 2+2; scales in 15 rows. Brown above with longitudinal blakish bars on the sides; a black line from above the eye to the nape & another from the posterior region of the eye to the angle of the mouth.

Distribution : Nagaland as stated above; Assam; Meghalaya; Himachal Pradesh (Sikkim); North Bengal (Darjeeling).

Remarks : Its type was described from Nagaland (Naga Hills), which is retained in the British Museum.

Subfamily (B) COLUBRINAE

Key to the genera of the sub-family COLUBRINAE

1. All the teeth solid, not grooved 2
– All the teeth not solid, nor grooved 13
2. Posterior maxillary teeth longest ..... ***Ptyas***
– Posterior maxillary teeth not longest 3
3. Maxillary teeth equal ..... ***Xenochropis***
– Maxillary teeth subequal 4
4. Scales in 19 to 27 rows ..... ***Elaphe***
– Scales in 13 to 15 rows 5
5. Scales without apical pits ..... ***Liopeltis***
– Scales with apical pits 6
6. Ventrals & caudals with a suture like lateral keel & a notch on each side..... ***Dendrelaphis***
– No such keels & notch on each side 7
7. Hypapophyses absent on posterior dorsal vertebrae 8
– Hypapophyses developed throughout the vertebral column, represented on the posterior dorsal vertebrae by a more or less developed crest or tubercle projecting below the centrum 10
8. 6-16 teeth, devoid of fang like teeth ..... ***Oligodon***
– Some of the anterior maxillary teeth enlarged & fang like 9
9. Maxillary bone strongly arched ..... ***Lycodon***
– Maxilary bone not arched ..... ***Dinodon***
10. Nostril directed forward & outward 11
– Nostril not directed forward & outward 12

11. Loreal, preocular present..... ***Trachischium***

– No loreal, no preocular ..... ***Blythia***

12. Sulcus spermaticus forked..... ***Rhabdophis***

– Sulcus spermaticus simple ..... ***Amphiesma***

13. Pupil horizontal..... ***Ahaetulla***

– Pupil vertical 14

14. Maxillary teeth 10-14. Scales in 19-29 rows ..... ***Boiga***

– Maxillary teeth 18-20. Scales in 17 rows... ..... ***Psammodynastes***

Genus 22. ***Ahaetulla*** Meize &Hening 1932

27. ***Ahaetulla prasina*** (Boie)
Oriental Vine Snake
(Col. photo 11)

1827. *Dryophis prasinus* Boie, *Isis.*, : 545.

1932. *Ahaetulla prasinus*, Meise & Henning, *Zool. Anz. Lepzig, xcix*, 11/12 : 296.

1997. *Ahaetulla prasina*, Das, *Hamadryad*, 22 : 40.

Material examined : Total 3 examples : 2 examples, Naga Hills, 1869, Capt. J. Gregory (Reg. nos. 8414, 8415); 1 example, Samaguting, Oct. 1872, Capt. J. Butler (Reg. no. 7794).

Measurement : Snout to vent 806mm to 901mm; vent to tail, 402mm to 498 mm.

Diagnostic Character : Snout devoid of dermal appendage.; nasals in contact with the labials; from which prefrontals are separated by 2 or 3 loreals; 1 preocular in contact with the frontal; 2 post oculars; anterior genials much shorter than posterior. Dorsal green, interstitial skin black or white, forming oblique lines, ventral side pale, a white line along the outer margins of the ventral.

Distribution : Nagaland as mentioned above. Meghalaya, West Bengal.

Elsewhere : Eastern Himalays throughout the whole of the Indo–Chinese region, Indo-Australian Archipelago.

Remarks : This is a rare snake of India, & recorded first time from Nagaland.

Genus 23. ***Amphiesma*** Duneril & Bibron, 1854

28. ***Amphiesma parallela*** (Boulenger)
Boulenger's Keelback

1890. *Tropidonotus parallelus* Boulenger, F.B.I. P. 345.

1960. *Amphiesma parallela* Malnate. *Proc. Acad. Nat. Sci. Philadelphia*, 112 : 50.

Material not available, description based on literature.

Description : Body selender; nostrils lateral or 2 preoculars; internasals truncate anteriorly, temporals 1+1; 8 supralabials, 3rd, 4th, & 5th touching the eye, scales in 19 rows, the tips nearly bidentate, more or less strongly keeld. Greyish brown above, the scale, black edged stripes, a black streat from the dyee to the angle of the month; lavials yellow, uniform or black edged; ventrals & caudals yellow with or without a black dot in side.

Distribution : India : Nagaland (Mathew 1995); Meghalaya, Sikkim, West Bengal.

Elsewhere : Myanmar; Tongking; Yannan.

Genus 24. ***Blythia*** Theobald 1868

29. ***Blythia reticulata*** (Blyth)
Irridescent Snake
(Col. photo 12)

1854. *Calamaria reticulata* Blyth, *J. Asiat. Soc. Beng*, 23 : 287.

1868. *Blythia reticulata*, Theobald, *Cat. Rept. Mus. Asiat. Soc.*, : 44.

Material examined : Two examples, Samaguting Naga Hills; Oct. 1872; Capt. J. Butler (Reg. nos : 7054 (Damaged); 7055).

Measurement : Snout to vent 210 mm; Vent to tail : 30 mm.

Diagnostic character : Rostral high as well as broad; visible from dorsal side; Head not distinct from neck; no loreal or preocular; 1 post ocular; 6 anterior labials; scales smooth in 13 rows without apical pits, ventrals 127-155; caudal 26-32; colour olivaceous.

Distribution : India : Nagaland (as stated); Assam; Manipur, Mehgalaya.

Elsewhere : Myanmar.

Remarks : The snake has not been reported so far from Nagaland.

Genus 25. ***Boiga*** Fitzinger, 1826

Key to the species of the genus *Boiga*

1. Preocular not reaching the upper surface of the head; scales in 21 (19) rows ..... *gokool*
– Preocular reaching the upper surface of the head; scales in 23, rarely 29 rows.....*cynodon*

30. ***Boiga cynodon*** (Boie)

1827. *Dipsas cynodon* Boie, *Isis,* : 549.

1924. *Boiga cynodon* Wall, *J. Bombay nat. Hist. Soc.*, **29** : 874.

Material examined : 1 (Damaged near the middle region) Samaguting, Oct. 1872, Capt. Butler (Reg. No. 7831).

Diagnostic character : Head very distinct from neck; eye large with vertical pupil; body more or less compressed one preocular reaching the upper surface of the head; temporals 2+3;8 supralabials. Scales in 23 rows. Brownish above with black chevron shaped spot n ape with two longitudinal, parallel black stripes; another from eye to the angle of the month.

Distribution : India : Nagaland as stated above; Assam; West Bengal.

Elsewhere : Myanmar; Siam; Cambodia; Malaya Peninsula & Archipelago.

31. ***Boiga gokool*** (Gray)
Eastern Gamma

1834. *Dipsas gokool* Gray, *Ill. Ind. Zool.*, **2** : pl, 83 fig 1.

1943. *Boiga gokool,* Smith, *Fauna Brit. India,* **3** : 351.

Material examined : 2 examples, Samagoting, Oct. 1872, Capt. J. Butler (Reg. nos. 7923, 7925).

Measurement : Snout to vent 536 mm to 590 mm; Vent to tail 157 mm to 160 mm.

Diagnostic character : Scales in 21 (19) : 17 rows, ventrals strongly enlarged, posterior margins of these concave, a dorsal series of branched spots. Ventrals 224-226, caudals 87-103. Brownish above, with a series of vertical Y-shaped markings on each side of the back. Head with a black arrow shaped mark. A long striper from eye to the angle of the mouth.

Distribution : India : Nagaland as stated above; Assam; West Bengal.

Elsewhere : Bangladesh.

Genus 26. ***Chrysopelea*** Boie, 1826

32. ***Chrysopelea ornata*** (Shaw)
Golden Tree Snake
(Col. photo 13)

1802. *Coluber ornata* Shaw, *Gen. Zool.*, **3** : 477.

1827. *Chrysopelea ornata,* Boie, *Isis,* : 546.

Material examined : 2 exs : 1 ex Samagooting, 1872, Capt. Butler (Reg. No. 7778); 1 example (Juvenile) Naga Hills, Capt. H. Butcher (Reg. No 8775).

Measurement : Snout to vent 223 mm to 545 mm; Vent to tail 80 mm to 220.

Diagnostic Character : Body elongate. Scales smooth; head distinct from neck, eye large with round pupil, loreal elongate, 9 supralabials, 4th touching 5th & 6th below the eye, 1 large pre ocular; 2 post oculars; frontal bell shaped. Scales in 17 rows. Last ventral scale divided. Dorsal surface black to greenish yellow lower surface alternately marked with black and yellow spots.

Distribution : India : Nagaland as mentioned; Meghalaya, Bihar; Orissa; West Bengal; Western Ghat.

Elsewhere : Southern China; Tongking; Myanmar; Sri Lanka.

Remarks : The snake has been recorded first time from Nagaland.

Genus 27. ***Dendrelaphis*** Boulenger, 1890

Key to the species of the genus *Dendrelaphis*

1. Scales in 13 rows ..... *gorei*
– Scales in 15 rows 2
2. Diameter of the eye not more than its distance from the nostril; a black temporal stripe.... ..... *pictus*
– Diameter of the eye more than the distance from the nostril; no black temporal stripe.. ..... *cyanochloris*

33. *Dendrelaphis cyanochloris* (Wall) Blue Bronzeback Tree Snake

1921. *Dendrophis pictus* (Var, cyanochloris) Wall, *Rec. Ind. Mus.*, **22** : 155.

1940. *Ahaetulla cyanochyloris*, Smith, *Rec. Ind. Mus.*, **42** : 482.

1997. *Dendrelaphis cyanochloris*, Das, *Hamadryad*, **22** : 41.

Material examined : 1 ex Samaguting, Oct., 1872, Capt J. Butler (Reg. No. 7706. Tail damaged).

Measurement : Snout to vent : 610 mm. Tail damaged.

Diagnostic character : Head distinct from neck, eye as long as its distance from the anterior border of the nostril vertebral strongly enlarged. Scales in 15 : 15 : 11 rows, ventral 197. Olive above, the scales black edged. No black flank stripe.

Distribution : India : Nagaland as stated; Assam; Andaman & Nicobar Islands, Islands.

Elsewhere : Myanmar; Tenaserrim; Siam.

34. *Dendrelaphis gorei* (Wall) Himalayan Bronzeback Tree Snake

1910. *Dendrophis gorei* Wall, *J. Bombay nat. Hist. Soc.*, **19** : 829.

1943. *Ahaetulla gorei*, Smith *Fauna Brit. India*, **3** : 246.

1997. *Dendrelaphis gorei*, Das *Hamadryad*, **22** : 41.

Material not available known to occur in Naga Hills (Wall, Rec. Ind. Mus, 1910, Vol. 22. P. 153) Description based on Wall's literature.

Description : Scales in 13 rows to behind midbody reducing to 11 or 9 before vent. Ventrals 187 to 199. Anal divided, subcaudals, 139-153. Loreal as long as nasal, its depth about two-fifths its length. Temporals 1+1+2, Supralabials 8 usuelly the 2nd 3rd touching the loreal & 4th & 5th touching the eye. Dorsally bronze the bases and overlapped part of the scales black, the latter enclosing turquose-blue patches. A series of black equidistant, lateral anterior bars. An ill-defined buff flank stripe ending at the vent without any balck lines above or below. No caudal stripes. Ventrally greenish or partially black. A well-defined black postocular stripe occupying the full depth of the temporal region.

Distribution : India : The Eastern Himalayas, West Bengal (Darjeeling), Nagaland; Assam.

Remarks : Reg. No 7707 sent to British Museum written in the register (Wall 1921).

35. *Dendrelaphis pictus* (Gmelin) Painted Bronze back

(Col. photo 14)

1769. *Coluber pictus* Gmelin, *Syst. Nat. Ed.*, **1** : 116.

1934. *Dendrelaphis pictus*, R. Mertens, *Arch. Hydrobil. Stuttgart, supl.*, **12** (4) : 693.

Material examined : 2 examples, 1 Juvenile, Samaguting, 1872, Capt. J. Butler (Reg. No. 7709), Naga Hills; Jan, 1869, J. Gregory (Reg. No. 7717).

Measurement : Snout to vent : 349 mm to 425 mm. Vent to tail : 163 mm to 283 mm.

Diagnostic characes : Snout broadly rounded, eye as long as its distance from nostril supralabials 8 and 9 respectively. Scales in 15 rows, Vertebral scales enlarged. Bronze brown above, on yellowish coloured flank stripe along scale-rows, A black stripe along the side of the head strong on the temple and reaching to neck breaks up in to oblique bars.

Distribution : Nagaland as mentioned in the material.

Elsewhere : The whole of the Indo Chinese region from Bengal and the Eastern Himalayas to southern China.

Remarks : This is a peculiar type of snake with enlarged vertebral scales.

Genus 28. ***Dinodon*** Dum.& Bib.1853

36. ***Dinodon septentrionalis*** (Gunther)
Gunther's False Wolf Snake

1875. *Ophites septentrionalis* Gunther, P.Z.S., : 233.

1893. *Dinodon septentrionalis*, Boulenger, *Cat. Sn. Brit. Mus.*, **I** : 363.

Material not available, known to occur in Naga Hills (Wall 1909, J.B.N.H.S. Vol 19, p 614) Description based on literature.

Description : Head elongate, depressed; nostril between two nasals; 1 pre and 2 post oculars; temporals 2+2 or 2+3; 8 supralabials, 3rd, 4th & 5th touching the eye kposterior nasal longer than the anterior; loreal sometimes very small well separated from the inter nasal and the eye; scales in 17 : 17 (19) : 15 rows. Ventral 207-214; caudal 81-92; anal 1. Purplish black above & on the sides, with narrow white transverse bars, 25-35 in number on the body which expand laterally. These bars are absent on fore part of the body.

Distribution : Nagaland, Naga Hills (Wall 1909); West Bengal (Darjeeling); Assam.

Elsewhere : Myanmar; Siam; Upper Laos; Tongking.

Genus 29. ***Elaphe*** Fitzinger 1928

Key to the species of the genus *Elaphe*

1. Scales in 25 to 29 rows ..... *helena*
– Scales in 19 rows 2
2. Ventrals strongly angulate laterally .... *radiata*
– Ventrals not angulate laterally 3
3. Anterior maxillary teeth largest , colour reddish brown .....*porphyracea*
– Posterior maxillary teeth largest, colour niform green.....*prasina*

37. ***Elaphe helena*** (Daudin)
Trinket Snake
(Col. photo 15)

1802. *Coluber helena* Daudin, *Hist. Nat. Rept.*, **6** : 277.

1943. *Elaphe helena*, Smith, *Fauna Brit. India*, **3** : 149-150.

Material examined : 1 example, Samaguting; 1872; Capt. Butler (Reg. No. 8882).

Measurement : Snout to vent 952 mm. Vent to tail 245 mm.

Diagnostic character : Snout twice as long as the eye; prefrontals nearly twice as long as the inter nasals; loreal little longer than high. Scale in 29 rows, ventral 245, caudal 84 anal 1. Brownish above with dark cross bars containing ocelli. A black vertical streak below the eye and an oblique one behind it. Lower part lighter.

Distribution : Nagaland as stated; Assam; Bihar; West Bengal; Uttar Pradesh.

38. ***Elaphe porphyracea*** (Cantor)
Black Banded Trinket Snake

1839. *Coluber porphyraceus* Cantor, P.Z.S., : 51.

1930. *Elaphe porphyracea*, Smith, *Bull. Raffles Mus.*, **3** : 48.

Material examined : 1 example, Naga Hills J.H. Hutton. (Reg. No. 19899).

Measurement : Snout to vent : 222 mm. Vent to tail : 45 mm.

Diagnostic character : 8 supralabials 4th 5th touching the eye. Scales in 19 rows, smooth. Ventrals 190-218, not angulate laterally caudal 52-76. Reddish brown with dark brown cross bars. In the young bars are entirely black, 2 black dorso lateral lines on the hinder part of the body and tail, a black down the middle of the head and another on each side usually connecting with first transverse mark on the neck; lower part entirely yellow.

Distribution : India : Nagaland as mentioned; Assam; Meghalaya; West Bengal.

Elsewhere : China; Malay peninsula; Myanmar; Siam; Sumatra; Yunnan.

Remarks : The specimen checked by us found some portion near the head damaged.

39. *Elaphe prasina* (Blyth)
Green Tree Racer

1854. *Coluber prasinus* Blyth, *J. Asiat Soc. Beng.*, **22** : 291.

1930. *Elaphe prasina*, Smith, *Bull. Raffles Mus.*, 3 : 48.

Material examined : 2 examples, Samaguting Oct. 1872, Capt, J. Butler (Reg. No. 7674, 7675).

Measurement : Snout to vent: 275 mm. Vent to tail : 46 mm.

Diagnostic character : Scales in 19 rows, supralabials 9 4th 5th touching the eye; preocular; post ocular; temporals 2+2 or 2+3. Uniform green interstitial skin with network of black and white.

Remarks : The specimen bearing registration number 7675 found damaged.

40. *Elaphe radiata* (Schlegel)
Copperhead

1837. *Coluber radiatus* Schlegel, *Phys. Serp.*, **2** : 135. pl. 5.

1935. *Elaphe radiata*, Pope, *Rept. China* : 261, fig head.

Material examined : 3 examples, 2 examples, Samaguting, Oct. 1872 Capt. J. Butler (Reg. No 7264, 8873); 1 example, Kanglatongli, Dimapur, Imphal Road; 8.11.1945, Major Roonwall (Reg. no. 20507).

Measurement : Snout to vent: 589 mm. Vent to tail: 182 to 352 mm.

Diagnostic character : Snout twice as long as the eye; loreal a little longer than high, Supralabials 9 sometimes 8, 4th and 5th touching the eye, 5th in contgact with the temporal. Scales in 19 rows or 21 rows. Ventrals 222 to 250, caudal 82-108; anal-1. Reddish brown above with 4 black stripes in the anterior half or two thirds of the body extending a short distance behind the neck; the upper pair either side of the vertebral line are broad. The outer pair which is narrow usually broken into a series of elongated spots on the anterior part of the body. Lower part yellowish.

Distribution : Nagaland as stated; Mehgalaya; Manipur; Assam.

Elsewhere : Indo Chinese sub region; Malay Archipelago.

Remarks : One specimen (Reg. No 7264) found some portion behind the head damaged.

Genus 30. *Liopeltis* Fitzinger 1843

41. *Liopeltis stoliczkae* (Sclater)
Stoliczka's Stripe necked Snake

1891. *Ablebes stoliczkae* Sclater, *J.Asiat. Soc. Beng.*, **60** : 234, pl. 6.

1924. *Liopeltis stoliczkae*, Wall, *J. Bombay N.H.S.*, **29** : 864.

Material examined : 2 examples, One example, Samaguting 15.10.1872, Capt Bulter (Reg. no. 8725); One example Type Naga Hills (Reg.no. 3925).

Description : Rostral shield broader than deep; internasals shorter than the prefrontals and some what triangular, frontal hardly as long as its distance from the end of the snout, and a good deal shorter than the parietals; nostrils rounded, about the middle of the length of an undivided shield which is quite three times as large as the loreal; this latter is very small and squarish; one preocular not reaching the upper part of the head. Two post oculars both in contact with the parietals, eye moderate size about half the length of the snout; temporals 1+2; upper labials eight, 4th & 5th entering the eye, four labials in contact with the anterior chin shields which are about as long as the posterior scales smooth, in 15 rows. Ventrals 153-4, subcaudals 116-9, Anal divided. Colour light olive-brown above, lighter olive, yellow below, the two colours separated in front by a conspicuous broad longitudinal black streak, extending from just in front of the eye back along the neck for or inch or so.

Distribution : Nagaland (Naga Hills); Himachal Pradesh (Sikkim), West Bengal (Darjeeling).

Remarks : It is a rare snake. The type *Ablebes stoliczkae* lodged in the Indian Museum bearing Reg. No. 3925 described from Naga Hills is syntype. The specimen bearing Reg. no. 8925 found mutilated.

Genus 31 ***Lycodon*** Boie, 1826

42. ***Lycodon jara*** (Shaw)
Yellow Specled Wolf Snake

1802. *Coluber jara* Shaw, *Genl. Zool.*, **3** : 525.

1871. *Lycodon jara* Stoliczka, *J.Asiat. Soc. Beng.*, **40** : 442.

Material not available known to occur in Naga Hills (Wall, 1909, *J. Bombay nat. Hist. Soc.*, **19** : 614) Description based on literature.

Description : Snout not projecting beyond the lower jaw; posterior nasal shorter than the anterior; loreal not touching the eye but in contact with the inter nasal; a preocular; temporals 1+2 or 2+3; 8 sometimes 9, supralabials Scales 17: 17: 15 rows, smooth. V 167-188, not angulate laterally 52-74; A. 2. Brownish above mottled over with white dots, two on each scale; upper lip and lower surface white; a white collar is found in the young.

Distribution : Nagaland, West Bengal, Assam, Uttaranchal (Dehra Dun), Arunachal Pradesh, Meghalaya.

Genus 32. ***Oligodon*** Boie, 1827

Key to the species of the genus *Oligodon*

1. Scales in 15 rows 2
– Scales more than 15 rows 3
2. 29 black light-edged cross bars on the body and 7 on the tail ..... *erythrorachis*
– Body with light vertebral stripe edged with black; no cross bars; tail with 2 or three black spots ..... *dorsalis*
3. Eight supralabials; a small subocular present or absent ..... *cinereus*
– Seven supralabials, no subocular ..... *albocinctus*

43. ***Oligodon albocinctus*** (Cantor)
White-barred Kukri Snake

1839. *Coronella albocincta* Cantor, P.Z.S., : 50.

1943. *Oligodon albocinctus*, Smith, *Fauna Brit. India*, **3** : 211-212.

Material examined : 4 exs, Samaguting Oct. 1872, Capt. J. Butler (Reg. No. 7124, 7149, 7150, 7151).

Measurement : Snout to vent : 414 mm. to 561 mm. Vent to tail : 8 mm to 164 mm.

Diagnostic character : head short, not differentiated from neck; eye moderate with roud pupil, supralabial 7, 3rd and 4th touching the eye; 1 anterior temporal,V 177-208, angulate laterally; C. 40-49. Brown above with white, yellow or fawn coloured black-edge cross bars; belly whitish with black squarish spots at the auter margins of the ventrals. Head typical pattern of the genus.

Distribution : India : Nagaland as mentioned; Meghalaya; Assam; Sikkim; West Bengal.

Elsewhere : Myanmar.

Remarks : Specimens 7124, 7149 mutilated. Recorded first time from Nagaland.

44. ***Oligodon cinereus*** (Gunther)
Black Barred Kukri Snake

1864. *Simotes cinereus* Gunther, *Rept, Brit. India.*

1871. *Simotes semifasciatus*, Anderson, *J. Asiat. Soc. Beng.*, **40** : 16.

1923. *Oligodon violaceous* Wall, *Rec. Ind. Mus.*, **25** : 413.

1943. *Oligodon cinereus*, Smith, *Fauna Brit. India.*, **3** : 215-217.

Material examined : Two examples (Type) Naga Hills; 1869, J. Gregory (Reg. No. 7167, 7168). Description based on literature (Anderson 1871).

Diagnostic character : Scales in 17 rows, occipital suture little more than half the length of vertical. Occipitals but little larger than the vertical, rounded or obliquely truncated behind. 8 upper labials, the 4th & 5th entering the orbit, Loreal longer than high 2 preoculars and 2 postoculars, but when there is a small anterior temporal this shield is in contact with the 2 post oculars. Upper post ocular wedged in between the supraciliary and occipital. Ventals 181, C-34 Anal entire (The snake has been cut open through the anal). Length 8 5 tail 2 3. Ventral with an obtuse keel. Uniform

brown above with 50 obscuras, irregular narrow broken transverse black bands formed by the black margin of the scales. Under surface dull yellowish with numerous quadrangular large black spots on the vertrals and caudals obscure on the anterior eights of the body. All these scales minutely punctulated with brown.

Distribution : India : Nagaland; Meghalaya, Assam, West Bengal.

Elsewhere : Cambodia; Cochin China; French Indo-China; Hainan; Hongkong; Myanmar; Siam, Tenasserim; ThuaLun; Tong-Kong.

Remarks : The Type specimens *Simotes semifasciatus* Anderson 1871 (Syntype) represented here subjective synonym of *Oligodon cinereus.*

45. *Oligodon dorsalis* (Gray & Hardwicke) **Spot-tailed Kukri Snake**

1834. *Elaps dorsalis* Gray & Hardwicke *III, Ind. Zool.*, **2** : pl. 85. fig.

1858. *Oligodon dorsalis*, Gunther, *Cat. Sn. Brit. Mus.*, : 22.

Material examined : 1 example, Samaguting. Oct. 1872. Capt Butler (Reg. No. 7032).

Measurement : Snout to Vent : 275 mm. Vent to Tail : 46 mm.

Diagnostic character : Head small, not differentiated from neck. Suprlabials 7, 3rd & 5 th touching the eye. 1 anterior temporal scale in 15 rows. V. 162-188 not angulate laterally; c 27-51. Brown with light vertebral stripe 2 and 3 scale tows to with black stripe belly black tail yellow, head deep brown with typical ornamentation, tail with 2 or 3 large black spots above, the first on the base others near the tip.

Distribution : India : Nagaland as mentioned; Meghalaya, Assam.

Elsewhere : Myanmar; Bangladesh.

46. *Oligodon erythrorachis* Wall **Red-striped Kukri Snake**

1910. *Oligodon erythrorachis* Wall, *J. Bombay. nat. Hist. Soc.*, **19** : 923.

Material not available the type specimen described by Wall found from Jaipur, Namsang (Which is situated at the foot of Naga Hills-Wall 1924) is deposited in British Museum London. Description based on Wall's literature 1910, *J. Bombay nat. Hist. Soc.*, **19** : 626.

Description : Length–375 mm, Lepid – Costals 15 behind before vent, Ventrals. 154, Anal-Divided sub caudals 46-64? divided. Nasal entire loreal absent; temporal-1, Suprlabials 7the 3rd & 4th touching the eye, 6th reaching edge of lip.

Distribution : Jaipur (Namsang, at the foot of Naga Hills.)

Genus 33. *Psammodynastes* Gunther 1858

47. *Psammodynastes pulverulentus* (Boie) **Mock Viper**

(Col. photo16)

1827. *Psammophis pulverulenta* Boie, *Isis*, : 547.

1890. *Psammodynastes pulverulenta*, Boulenger, *Fauna Brit. India*, : 363.

1997. *Psammodynastes pulverulentus*, Das, *Hamadryad*, **22** : 43.

Material examined : One example, Samaguting Oct. 1872 Capt. J. Butler (Reg. No. 7659).

Measurement : Snout to vent : 327 mm. Vent to tail : 83 mm.

Diagnostic character : Head distinct from neck; eye large with vertically elliptic pupil; snout short, truncate in profile, slightly turned up in the adult; nostril in a single nasal; frontal narrow elongate, some what bell-shaped longer than the distance from the end of the snout; 8 supralabials; 4th infralabrial very large V.146-175; c. 44-71. Scale in 17 rows, variable colour is found in this species. Black, red grey, brown, yellow with small black spots. Lower part with dark spots or longitudinal lines. Head with dark markings.

Distribution : India : Nagaland as mentioned; Eastern Himalayas.

Elsewhere : Southern China; Nepal; Hainan; Malay Archipelago.

Remarks : This snake has not been recorded

so far from Naga Hills. This Mock-Viper behaves perfectly like a true viper when first handled strikes, fiercely.

Genus 34. ***Ptyas*** Fitzinger 1843

Key to the species of the genus *Ptyas*

1. Scales in odd numbers 15 rarely 13 rows .. .. *korros*

– Scales in even numbers18 or 16 : 16 or 14 : 14 rows ..... *nigromarginatus*

48. ***Ptyas korros*** (Schlegel)
Eastern Rat Snake

1837. *Coluber korros* Schlegel, *Phys, Serp.* **2** : 139.

1943. *Pytas korros,* Smith, *Fauna Brit. India,* **3** : 162-163.

Material examined : One example, Kanglatongli Camp, Dimapur 26.9.1945. M.S. Roonwall (Reg. No. 20510).

Measurement : Snout to vent : 1035 mm. Vent to tail : 505 mm.

Diagnostic character : Head elongate, distinct from neck; loreal region concave, nostril large; scales in 15 : 15 rarely 13 : 11, A. 2. Olivaceous green anteriorly; posterior part brownish and the scales in this part edged with black yellowish white below. Young are olive green with narrow white crossbars containing series of spots.

Distribution : India : Nagaland; Manipur, Meghalaya, Assam.

Elsewhere : China; Hainan; Malayasia; Myanmar.

49. ***Ptyas nigromarginatus*** (Blyth)
Green Rat Snake

1854. *Coluber nigromarginatus* Blyth, *J. Asiat. Soc. Beng.,* **23** : 290.

1923. *Ptyas nigromarginatus,* Wall, *J. Bombay Nat. Hist. Soc.,* **29** : 617.

Material not available. Description based on literature.

Diagnostic character : Internasals nearly or quite as long as the prefrontals. 8 supralabials. Scales in 18 or 16:or 14:14 rows the median one keeled. Ventral 190- 209; caudal 123-142. Green above, the scales edged with black, with 4 broad black longitudinal stripes. Top of the head brown.

Distribution : India : Nagaland; Meghalaya; Assam; Sikim.

Elsewhere : Myanmar; Tongking; Yunnan and Western China.

Remarks : The specimen bearing registration number 8883 collected by John Butler, 1872 from Samaguting sent to Hongkong Museum. (Written in the register).

Genus 35. ***Rhabdophis*** Fitzinger 1843

Key to the species of the genus *Rhabdophis*

1. Scales in 15 or 17 rows; 6 supralabials .... *muchalis*

– Scales in 19 rows; 8 supralabials 2

2 Two dorsolateral series of yellow spots present; 2 labials touch the eye .... *himalayanus*

– No dorsolateral series of yellow spots; three labials touch the eye ..... *subminiatus*

50. ***Rhabdophis himalayanus*** (Günther)
Himalayan Keelback

1864. *Tropidonotus himalayanus* Gunther, *Rept. Brit. India,* p. 265, pl. 22, fig. H.

1923. *Rhabdophis himalayanus,* Wall *J. Bombay nat. Hist. Soc.,* **29** : 605.

Material examined : 3exs. Kohima; 1976; Prof. Ibrahimuddin, (Reg. No. 23675)

Measurement : Snout to vent : 144 mm. to 255 mm. Vent to tail : 52 mm to 87 mm.

Diagnostic character : Scales in 19 rows, strongly keeled, those on the outer row feebly keeled. Ventrals 151-176; Caudal 79-95. Olive above with small black spots & two dorsolateral series of yellow spots; lower part yellowish mottled with brown or black or entirely grayish or blackish; a yellow or orange collar present; labials with black broader; two black cross bars

one below & the other behind the eyes; net work of black and yellow found in the fore body.

Distribution : India : Nagaland; Assam; Manipur; Meghalaya.

Elsewhere : Myanmar.

51. ***Rhabdophis nuchalis*** (Boulenger) (Col. Photo-17)

1891. *Tropidonotus nuchalis* Boulenger, *Ann. Mag. Nat. Hist.*, London; Ser., **6**, 7 : 281.

1960. *Rhabdophis nuchalis* Malnate, *Acard. Nat. Sci.* Philadelphia, **112** : 49.

Material examined : 1 example, Dezuleke Village Kohima, Nagaland; 21.4.2004; F. Ahmed, A. Das (Reg. No. 25591).

Measurement : Snout to vent : 389 mm. Vent to tail : 139 mm.

Material examined : Body more or less stout; scales in 15 : 17 rows, distinctly keeled excep the outer row. 6 supralabials 3rd, 4th & 5th touching the eye, 5th largest; 1 preocular; nostrials lateral; internasals truncate anteriorly; presence of nuchal groove. Ventrals 139-160; caudals 41-65. Olivaleous above pale greenish below.

Distribution : India : Nagaland (Kohima).

Elsewhere : Myanmar; China; N. Vietnum.

Remarks : The species has been recorded first time from India. Nagaland (Ahmed, M. F. & Das, A. 2004).

52. ***Rhabdophis subminiatus*** (Schlegel) **Red-necked Keel Back**

1837. *Tropidonotus subminiatus* Schlegel, *Phys. Serp.*, **2** : 313.

1924. *Rhabdophis subminiatus*, Wall, *J. Bombay nat. Hist. Soc.*, **29** : 606.

Material examined : 4exs. : 1 example Kohima, 1976, Prof. Ibrahimuddin, (Reg. No. 23676); 2 examples Samaguting, 1872, Capt. J. Butler (Reg. Nos. 7422, 7423); I example Naga hills 14.1.1869, Lieunt Gregory (Reg. No. 7420).

Mesaurement : Snout to vent : 300 mm-838 mm. Vent-tail : 93 mm-275 mm.

Diagnostic character : A nuchal groove & gland; the scales on each side of the groove enlarged & paired. Usually 8 supra labials, sometimes 7. Scales in 19 rows. 1 pre ocular, temporals 2+2 or 2+3.

Distribution : India : Nagaland; Mizoram; Manipur; Meghalaya; Assam; Tripura.

Elsewhere : China; Hongkong; Hainan; Malay peninsula & Archipelago.

Remarks : Two colour forms are seen in this species.

Genus 36. ***Trachischium*** Gunther, 1858

53. ***Trachischium monticolum*** (Cantor) **Assam Oriental Slender Snake**

1839. *Calamaria monticola* Cantor, P.Z.S., : 50.

1943. *Trachischium monticola*, Smith, *Fauna Brit. India*, **3** : 322.

1997. *Trachischium monticolum*, Das, *Hamadryad*, **22** : 43.

Material examined : 1 example, Samaguting, Oct. 1872, Capt. Butler (Reg. No. 8647–damaged).

Diagnostic character : Head not distinct from neck; nostril directed forwards & outwards. Prefrontals 2; postoculars 2; temporals 1+1; scales in 15 rows; ventrals 113-125 ; caudal 26-40; tail short. Brown above with blackish longitudinal lines & two or more reddish dorso lateral stripes. Ventral side yellowish.

Distribution : Nagaland; Meghalaya; Assam; Hills north & south of Brahmaputra; West Bengal.

Genus 37. ***Xenochrophis*** Gunther, 1864

54. ***Xenochrophis piscator*** (Schneider) **Checkered Keelback**

1799. *Hydrus piscator* Schneider, *Hist. Amph. Jena*, **1** 247.

1965. *Xenochrophis piscator*, Malnate & Minton *Proc. Acad. Nat. Sci.* Philadelphia, **117** : 19.

Material examined : 2 exs : 1 example, Kohima, 1976, Prof. Ibramhimuddin, (Reg. No.

23667); 1example Kanglatongli camp, Dimapur, 29.10.1945, M. S. Roonwall (Reg. No. 20508).

Measurement : Snout to vent : 572 mm-694 mm; vent to tail : 112 mm-250 mm.

Diagnostic character : Flattened head, distinct from neck; snout bluntly pointed, wider than high; internasal distinctly narrowed anteriorly; single large loreal; eye moderate size; with large pupil; 9 supralabials 4th & 5th touching the eye, the 6th excluded by the post ocular. Scales in 19 rows more or less distinctly keeled. Colour olivaceous with numerous white & black spots arranged like a chess board. Belly white, two black streaks running from the eye.

Distribution : Nagaland, throughout India.

Remarks : The snake is of and on found in water.

Sub family (C) HOMALOPSINAE

Genus 38. ***Enhydris*** Sonnini & Laterlli, 1802

55. ***Enhydris. sieboldi*** (Schlegel)
Siebold's Smooth Water Snake

1837. *Homalopsis sieboldi* Schlegel, *Phys. Serp.*, **2** : 349, pl. 12. figs. 4 & 5.

1943. *Enhydris sieboldi*, Smith *Fauna Brit. India*, **3** : 389.

Material examined : 1 example,? Dimapur, Col. J. Michel (Reg. No. 13677).

Measurement : Snout to vent : 151 mm.; vent to tail 30 mm.

Diagnostic character : Snout blunt, squarish; internasal longitudinally divided touching or just separated from the loreal ; 2 preoculars, the lower of the two & the post ocular often extending below the eye.; 7 or 8 supralabials 4th touching the eye, last one or two horizontally divided. Scales in 29 rarely 31 rows. The snake is buff greenish above with rhomboidal dark transverse spots on the back & a series of roundish spots at the sides. The lower surface is usually white checkered with black.

Distribution : India : Nagaland; Assam; Kerala; Bihar; Maharashtra; Uttar Pradesh.

Elsewhere : Bangladesh; Myanmar.

Remarks : The specimen recorded by Sclater 1891, from Samaguting bearing Registration number 8199 not found by us.

Family 11. ELAPIDAE

Key to the genera of the family ELAPIDAE

1. Maxillary bone not extending forwards beyond the paletine ..... ***Bungarus***
– Maxillary bone extending forwards beyond the paletine 2
2. Scales in 13 rows not disposed obliquely .. .. ***Sinomicrurus***
– Scales in 15-25 rows, disposed obliquely... ..... ***Naja***

Genus 39. ***Bungarus*** Daudin 1803

Key to the species of the genus *Bungarus*

1. Tail ending obtusely; dorsal vertebrae forming a ridge down the back. Alternately marked with black & yellow annuli ..... *fasciatus*
– Tail ending in a point; dorsal vertebrae not forming a ridge down the back ..... *niger*

56. ***Bungarus fasciatus*** (Schneider)
Banded Krait
(Col. Photo 18)

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

1943. *Bungarus fasciatus*, Smith, *Fauna Brit. India*, **3** : 411-412.

Material examined : 1 example, Samaguting, 1872, Capt. Butler (Reg. No. 2928).

Measurement : Snout to vent : 1245 mm. Vent to tail : 30 mm.

Diagnostic character : Scales in 15 rows; a prominent ridge down the back & tail. Ventral 200-234; caudal 23-39. Tail ending bluntly, usually more or less swollen at the tip. Alternately banded with black & yellow annuli; a large black mark on the nape continued in a point on the head to between the eyes.

Distribution : Nagaland; Assam; Bihar; Orissa; Andhra Pradesh.

Remarks : This venomous snake is timid and inoffensive.

57. *Bungarus niger* Wall
Black Krait

1908. *Bungarus niger* Wall, *J. Bombay nat. Hist. Soc.*, **18** : 715.

Material not available, known to occur (Wall), description based on literature.

Diagnostic character : Scales in 15 rows; ventral 216-231; caudal 49-56. Uniform black or bluish black above white below.

Distribution : Assam; Nagaland; Meghalaya; Eastern Himalayas.

Genus 40. *Sinomicrurus* Slowinski *et al.* (2001a)

58. *Sinomicrurus macllelandi* (Reinhardt)
Macllelland's Coral Snake

1844. *Elaps macclellandi* Reinhardt, *Calcutta J. nat. Hist.*, **4** : 532.

1924. *Calliophis macclellandi* Wall, *J. Bombay nat. Hist. Soc.*, **30** : 244.

2001. *Sinomicrurus macclellandi* Slowinski et al, *Herpetologica* **57**(2) : 233-245.

Material not available, known to occur (Wall, 1924), description based on literature.

Diagnostic character : Body cylindrical; head not distinct from neck; scales in 13 rows; absence of teeth behind the poison fangs; diameter of the eye less than its distance from the mouth; 1 pre ocular in contact with the posterior nasal. 2 post oculars; temporals 1+1; 7 supra labials, 3rd & 4th touching the anterior temporals; ventrals 182-244 ; caudals 20-36. Reddish brown above with the black crossbars reduced to transverse vertebral spots & a series of larger spots along the middle of the ventrals. Head black except for the broad white transverse bar.

Distribution : India : Nagaland; Manipur; Assam; Meghalaya; Sikkim.

Elsewhere : Myanmar; Indo China; S. China; Formosa.

Genus 41. *Naja* Laurenti, 1768

59. *Naja kaouthia* Lesson
Monocled Cobra
(Col. Photo 19)

831. *Naja kaouthia* Lesson, in Ferussac, *Bull. Sci. Nat.*, **25** : 122.

940. *Naja naja kaouthia*, Smith, *Rec. Ind. Mus.*, **42** : 485.

998. *Naja kaouthia*, Wuster, *Hamadryad*, **23** (1) : 15-32.

Material examined : 2 examples : 1 example, Naga Hills, ?, J. H. Hutton Esq. (Reg. No.19898); example, Samaguting, Oct. 1872, Capt. Butler Reg. No. 8327).

Measurement : 146 mm. to 378 mm.; Vent to tail : 70 mm to 90 mm.

Diagnostic character : Head dilated; eye moderate; loreal absent; nostril between anterior & posterior nasal; scales smooth, 25-31 on the neck, usually 21 on the body, 17 or 15 in front of the vent; ventral 164-196; caudal 43-58. Olivaceous or brownish to black above, with orange coloured, 'O' shaped or monocellate mark on the hood; a black spot on the lower surface of the hood on either side; one or two black cross bars on the belly behind it, the rest of the belly is usually of the same colour.

Distribution : India : Nagaland ; Assam; Orissa; Sikkim.

Elswhere : Nepal; Bangladesh; Myanmar; S. China; Thailand; Vietnam; Cambodia; N. Malayasia.

Remarks : The specimen bearing Registration number 8327 have been found damaged to some extent.

Family 12. VIPERIDAE

Genus 42 *Trimeresurus* Lacepede

Key to the species of the genus *Trimeresurus*

1. First labial partly or completely united with the nasal ..... *erythrurus*
– First labial completely separated from the nasal 2

2. A single series of scales between the labials & elongate sub oculars; scales in 23 or 21 : 21 : 15 rows ..... *popeorum*

2-3 series of small scales between the labials & elongate sub oculars; scales in 25 : 25 : 19 rows ..... *mucrosqamatus*

60. *Trimeresurus erythrurus* (Cantor)
Spot Tailed Pit Viper
(Col. photo 20)

1839. *Trigonocephalus erythrurus* Cantor, P.Z.S., : 31.

1933. *Trimeresurus erythrurus*, Pope & Pope, *Amer. Mus. Nov.* no. 620, p. 8.

Material examined : 21 examples, Samaguting, Oct. 1872, Capt. J. Butler (Reg. Nos. 2990, 2991, 2992, 2993, 2999, 3002, 3004, 3005, 3010, 3011, 3012, 3013, 3040, 3946, 3047, 3048, 3049, 3050, 3051, 3052, 3055).

Measurement : Snout to vent : 272mm. to 577mm. Vent to tail : 40 mm to 115mm.

Diagnostic character : Head very distinct from neck; a deep pit in the side of the face between the pre ocular & loreal. Upper head scales small, more or less tubercular in from; supra oculars narrow & entire, 11 to 14 scales on the line between them; 9 to 13 supra labials, first partly or completely united with the nasal, third largest. Tail prehensile; scales in 23 or 25; 23 or 25 : 17 or 19 rows; ventrals 151-180; caudals 49-79. Dorsal green; ventral yellowish. A light stripe starting from the neck & extending to the tail along the scale rows found in the males but this stripe may or may not found in the female specimens. Tail end spotted or speckled with brown.

Distribution : Nagaland ; Meghalaya; Assam; West Bengal; Eastern Himalayas.

Remarks : This is the common snake of Nagaland.

61. *Trimeresurus mucrosqamatus* (Cantor)
Brown Spotted Pit Viper

1839. *Trigonocephalus mucrosqamatus* Cantor, P.Z.S., : 32.

1870. *Trimeresurus mucrosqamatus*, Swinhoe, P.Z.S., : 411, pl. xxxi.

Material not available, description based on literature.

Diagnostic character : Head more or less elongate; snout 2-3 times as long as the diameter of the eye; scales on upper side of the head very small, unequal, obtusely keeled on the hinder part; supra oculars long narrow entire. 14 to 16 scales between the supra oculars; inter nasals separated from one another by 3-4 small scales. 9-11 supra labials. Scales in 25 : 25 : 19 rows, strongly keeled; ventrals 200-218; caudals 76-91, paired. Greyish or olive brown above with a dorsal series of large brown spots and a lateral series of smaller ones; whitish below; heavily powdered with light brown. Head brown above, lighter below, with or without dark temporal streak; tail light brown with black spots.

Distribution : India : Nagaland (Cantor 1839).

Elsewhere : China; N. Myanmar; Vietnam; Taiwan.

Remarks : The Type specimen described by Cantor 1839 from Naga Hills is not present in Indian Museum.

62. *Trimeresurus popeorum* Smith
Pope 'S Green Pit Viper
(Col. Photo 21)

1937. *Trimeresurus popeorum* Smith, *J Bombay nat. Hist. Soc.*, **39** : 730.

Material examined : 1 example, Samaguting, Capt. J. Butler, (Reg. No. 2996).

Measurement : Snout to vent : 527mm.; vent to tail : 94mm.

Diagnostic character : Upper head scales small, unequal sub imbricate, smooth, 10-13 scales between the supraoculars; 9-11 supralabials; internasals separated by 1-2 scales. Temporal scales small. Scales in 21 : 21 : 15 rows; ventral 164-170; caudal 60-76. Green above; whitish below.

Distribution : India : Nagaland as mentioned above; Meghalaya; West Bengal.

Elsewhere : Borneo; Malaya Peninsula; Mayanmar; Siam; Sumatra.

Remarks : This snake is recorded first time from Nagaland.

ACKNOWLEDGEMENTS

We are deeply indebted to Late Captain John Butler (1872), who was killed brutally by the Nagas during his Survey to Naga Hills region (V. Elwin, 1969). We are inspired by his immense collections that are retained in our National Zoological Collection & this enabled us to become enthusiastic and finally we determined to work on 'Reptile Fauna of Nagaland'

We express our deep sense of gratitude to the Director Zoological Survey of India, who fulfilled our desire and provided all sorts of facilities to carry out the work. Thanks are due to Shri S. Sur, O/C Reptilia Section, N.C. Gayen, Sr. Z. A. and other staff members of the section for active co-operation and guidance. We are also grateful to Dr. A.K. Singh, SD for his helpful advice. We also thank Dr. R.C. Sharma, Shri D.P. Sanyal, Dr. S.K. Chanda, Shri S.K.Talukdar, who enlighted us to gather knowledge in the field of Taxonomy which led to the achievement of our goal. We also express our immense gratitude to all the photographers of Spirit Building, Z.S.I. who have enriched this paper with descent photographs & we are also grateful to S.S. Misra Asstt. Zoologist, Marine Fish Section, who rendered necessary help while typing the paper in computer.

Finally we must also thank Dr. Mrs. Mrinmoyee Banerjee O/C, A.S.I. Library and her staff who provided maps and necessary books related to our work.

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Fig. 1. *Pangshura sylhetensis* Jerdon

Fig. 2. *Cuora amboinensis* (Schneider)

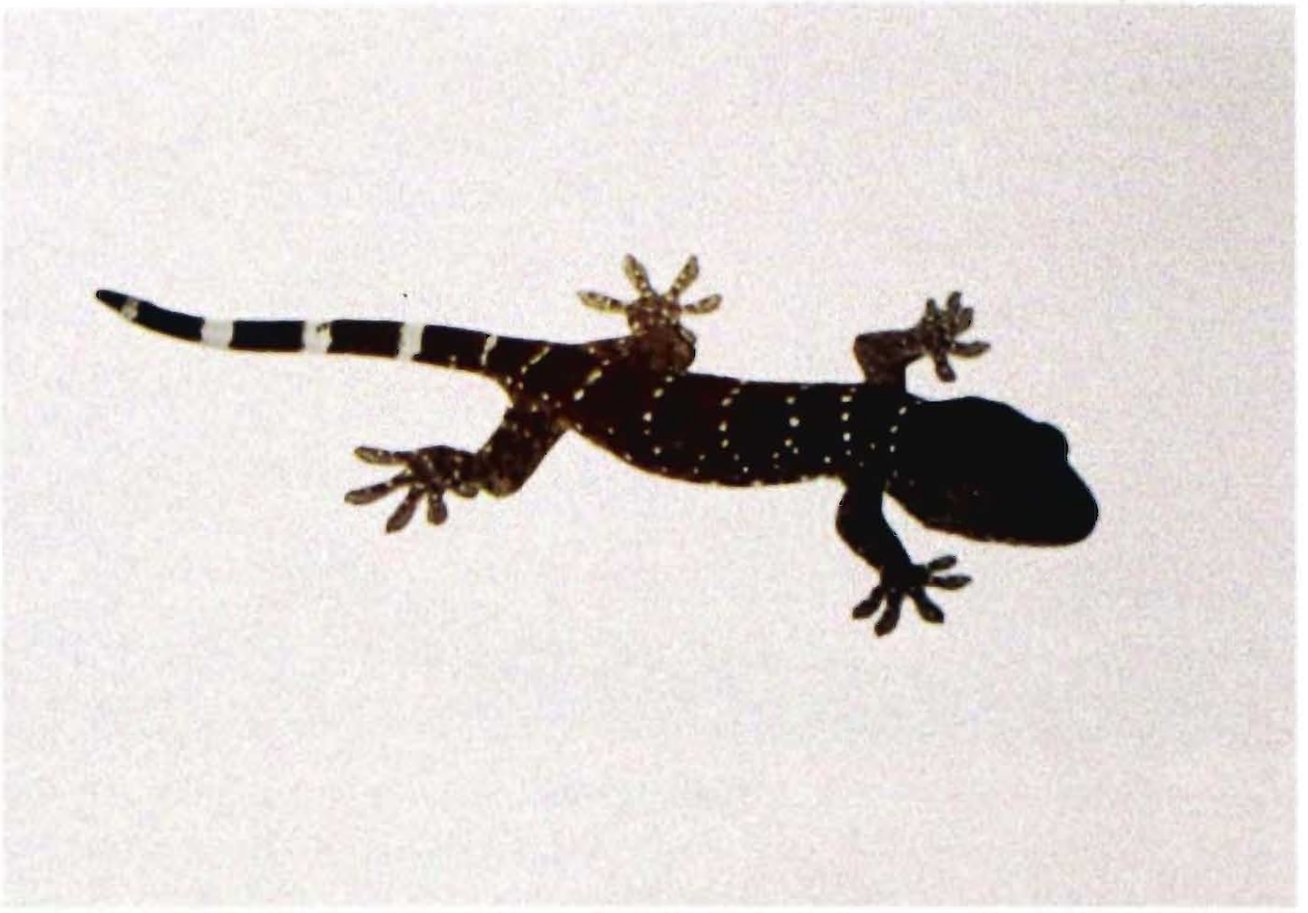

Fig. 3. *Gekko gecko* (Linnaeus)

Fig. 4. *Calotes emma* Gray

Fig. 5. *Lygosoma punctatus* (Gmelin)

Fig. 6. *Mabuya multifasciata* (Kuhl)

Fig. 7. *Sphenomorphus maculatus* (Blyth)

Fig. 8. *Ophisaurus gracilis* (Gray)

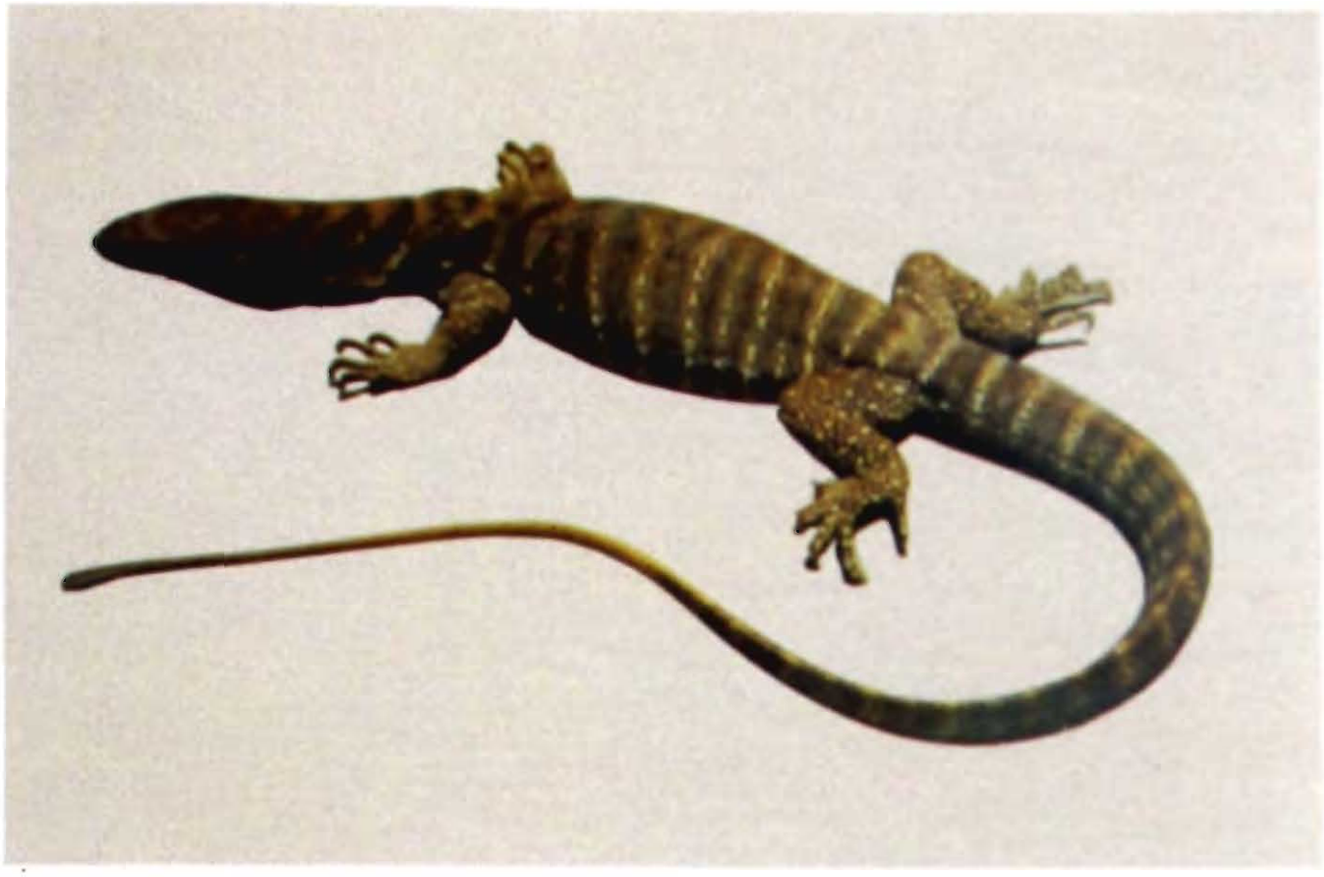

Fig. 9. *Varanus bengalensis* (Daudin)

Fig. 10. *Varanus salvator* (Laurenti)

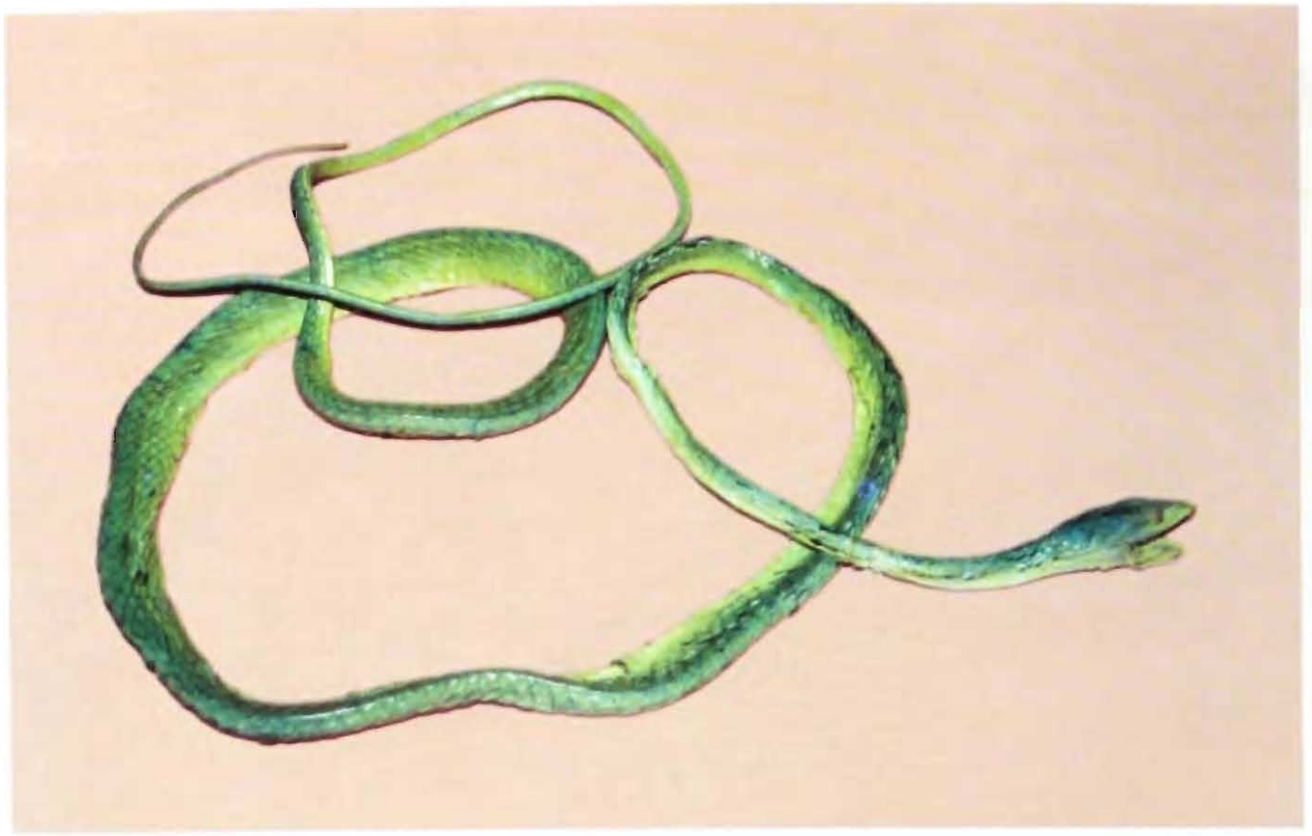

Fig. 11. *Ahaetulla prasina* (Boie)

Fig. 12. *Blythia reticulata* (Blyth)

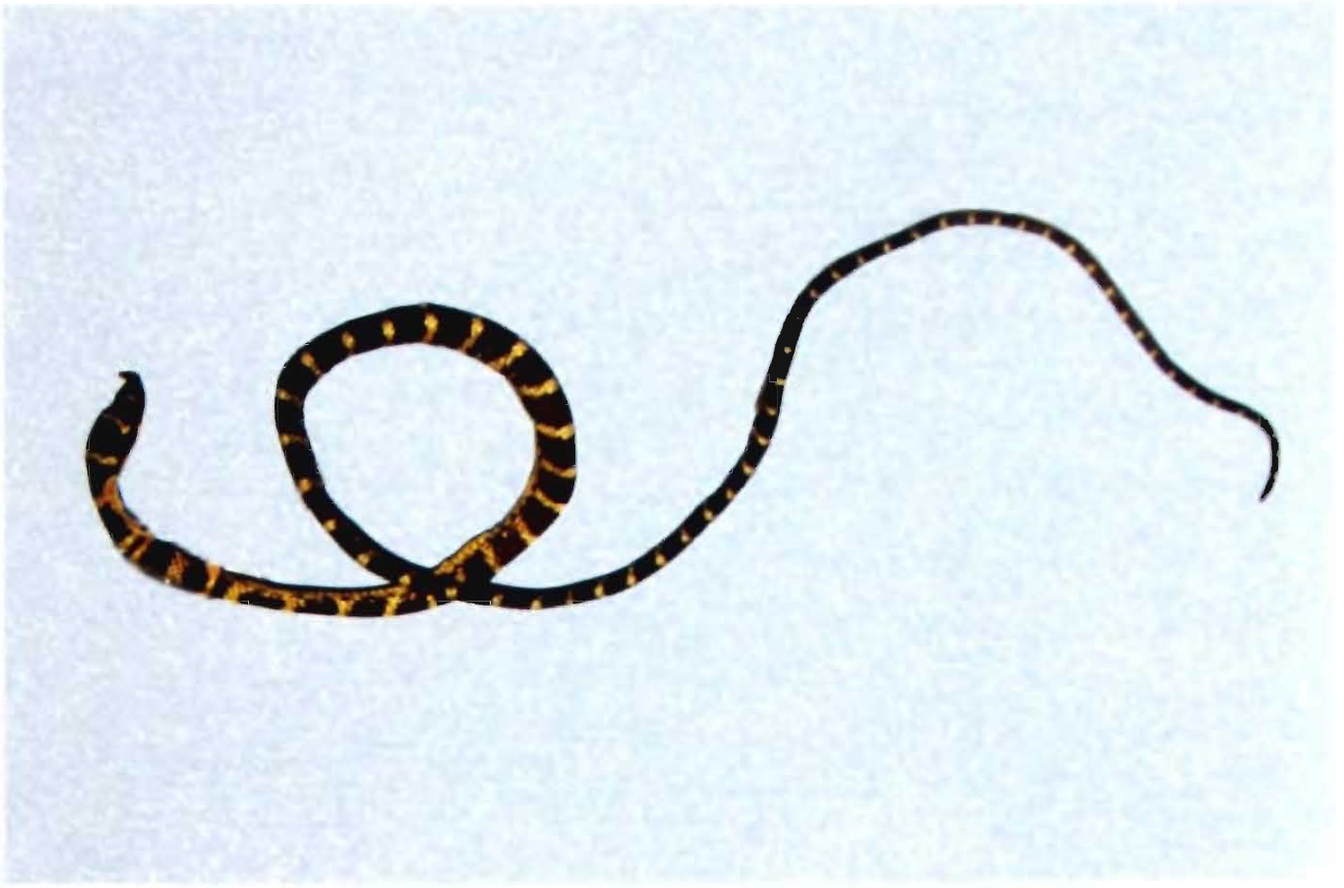

Fig. 13A. *Chrysopelea ornata* (Shaw) (Juvenile specimen)

Fig. 13B

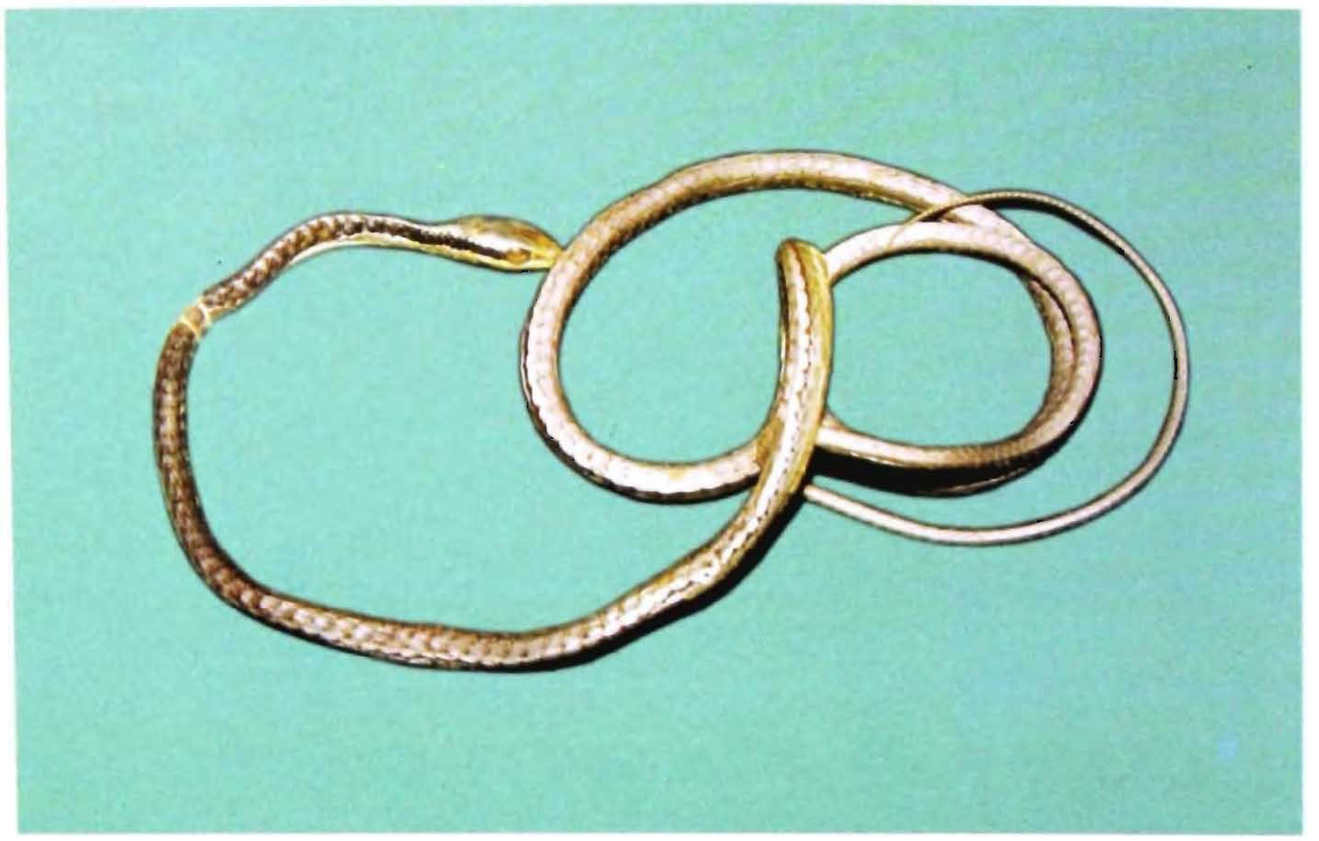

Fig. 14. *Dendrelaphis pictus* (Gmelin)

Fig. 15. *Elaphe helena* (Daudin)

Fig. 16. *Psammodynastes pulverulentus* (Boie)

Fig. 17. *Rhabdophis nuchalis* (Boulenger)

Fig. 18. *Bungarus fasciatus* (Schneider)

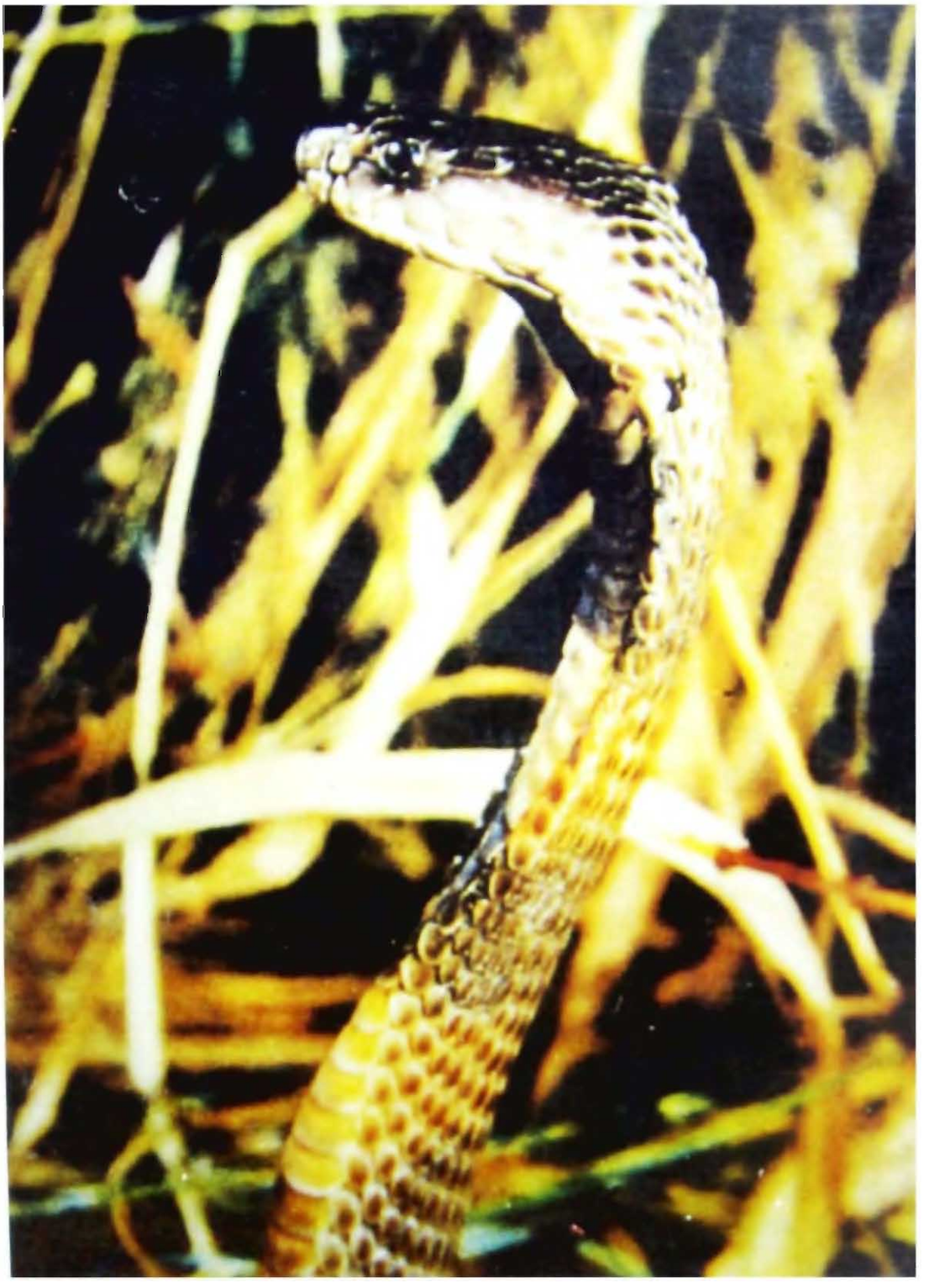

Fig. 19. *Naja kaouthia* Lesson

Fig. 20. *Trimeresurus erythrurus* (Cantor)

Fig. 21. *Trimeresurus popeorum* Smith

Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 461-578, 2006

AVES

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INTRODUCTION

Nagaland become a part of the Indian Union in December, 1963 and since then no comprehensive report on the Avian fauna of this State is available except some scattered reports. Earlier reports from this region are that of Blyth (1845-1865), Godwin-Austen (1870-1882), Hume (1888), Baker (1907-1925) Gould (1838-1874), Sharpe(1838), Oglive-Grant (1895), Allen(1905), Sclater(1892), Blanford (1895) and Harrington (1915). In later years Koelz (1952-1954) and Ripley (1952) further enriched the Knowledge of avian fauna of Nagaland. After a long gap Ali & Ripley (1974) and Ripley (1982) published their monumental work which helped to get an overall view of the avian fauna of Nagaland.

Nagaland, the hilly State of North-Eastern India lies between 26°5'N to 27°4'N longitude and 93°20'E to 93°15'E latitude. It is bounded in the north by Arunachal Pradesh, in the west by Assam; in the east by Myanmar and in the south by Manipur. The state has an area of 16,579 sq. km.

Under the State Fauna Programme of Govt. of India, Zoological Survey of India has taken up the project on the avian fauna of Nagaland.

Since conducting Faunistic Survey in Nagaland was not possible due to some disturbances the present paper is based mainly on earlier collections present in the National Zoological collection and previous accounts. Species recorded in earlier literature but not present in the National Zoological Collection are also dealt with. Alotgether 428 species and sub-species of birds from Nagaland are discussed here. Ali and Ripley's (1987) classification of taxa has been adopted in the present account. The numbers used in the text against each species is according to the Handbook of India & Pakistan by Ali & Ripley.

SYSTEMATIC LIST

Order CICONIIFORMES

Family ARDEIDAE

1. *Ardea cinerea rectirostris* Gould
2. *Ardeola grayii grayii* (Sykes)
3. *Ardea alba modesta* J.E. Gray
4. *Egretta intermedia intermedia* (Wagler)
5. *Egretta garzetta garzetta* (Linnaeus)
6. *Nycticorax nycticorax nycticorax* (Linnaeus)

Family CICONIIDAE

7. *Anastomus oscitans* (Boddaert)
8. *Ephippiorhynchus asiaticus asiaticus* (Latham)

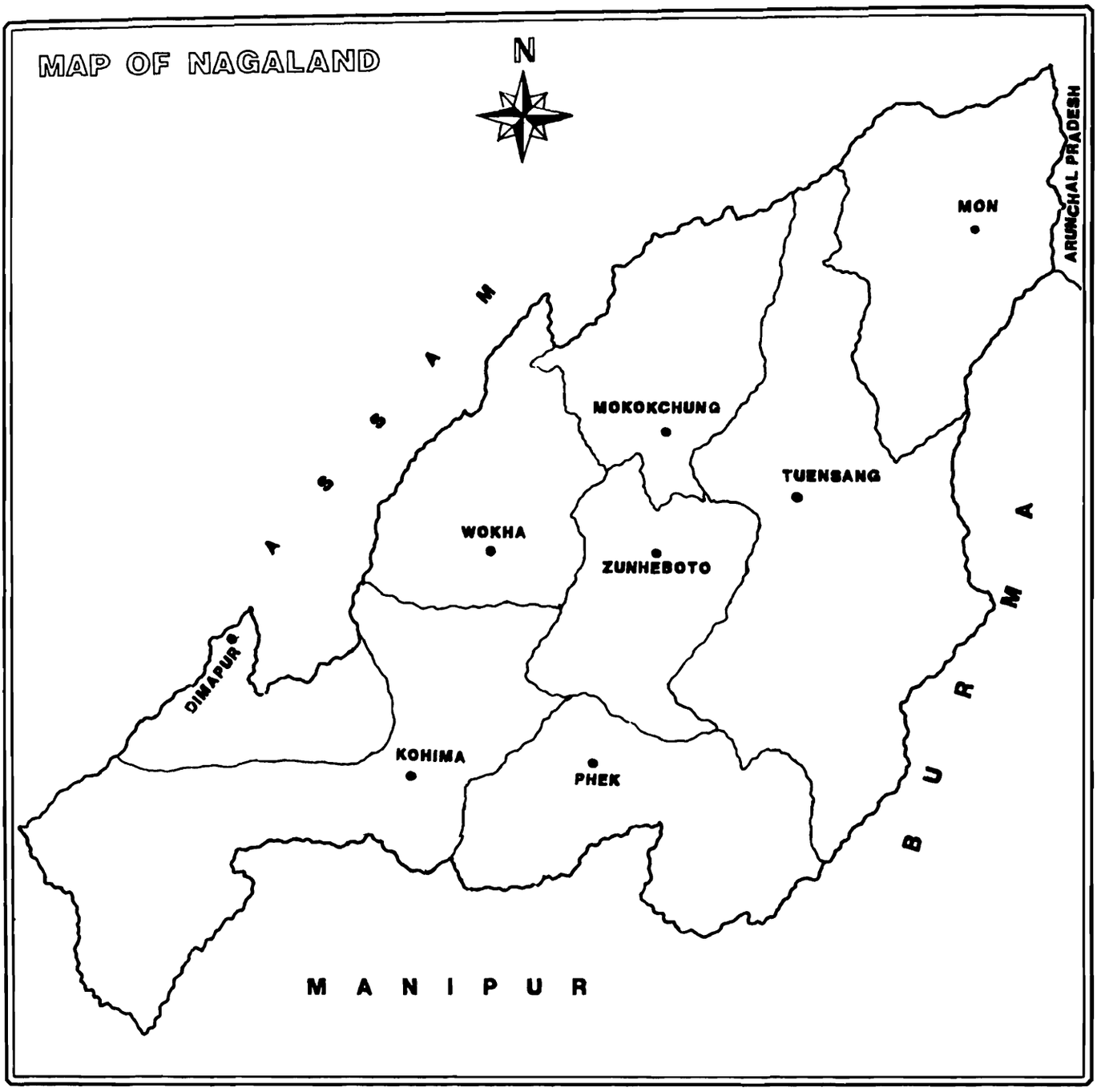
Family THRESKIORNITHIDAE

9. *Threskiornis aethiopica melanocephala* (Latham)
10. *Platalea leucorodia major* Temminck & Schlegel

Order ANSERIFORMES

Family ANATIDAE

11. *Dendrocygna javanica* (Horsfield)
12. *Tadorna ferruginea* (Pallas)
13. *Anas acuta* Linnaeus



Map showing different districts of Nagaland

14. *Anas crecca crecca* Linnaeus
15. *Anas strepera strepera* Linnaeus
16. *Anas querquedula* Linnaeus
17. *Anas clypeata* Linnaeus
18. *Nettapus coromandelianus coromandelianus* (Gmelin)
19. *Sarkidiornis melanotos melanotos* (Pennant)
20. *Mergus merganser Orientalis* Gould

Order FALCONIFORMES

Family ACCIPITRIDAE

21. *Milvus migrans govinda* Sykes
22. *Milvus migrans lineatus* (Gray)
23. *Haliastur indus indus* (Boddaert)
24. *Accipiter badius dussumieri* (Temminck)
25. *Accipiter nisus nisosimilis* (Tickell)
26. *Sarcogyps calcvs* (Scopoli)
27. *Gyps bengalensis* (Gmelin)
28. *Circus macrourus* (S.G.Gmelin)
29. *Circus aeruginosus aeruginosus* (Linnaeus)

Family FALCONIDAE

30. *Falco peregrinus japonensis* Gmelin

Order GALLIFORMES

Family PHASIANIDAE

31. *Coturnix coromandelica* (Gmelin)
32. *Perdicula manipurensis manipurensis* Hume
33. *Arborophila torqueola interstincta* Ripley
34. *Arborophila atrogularis* (Blyth)
35. *Bambusicola fytchii hopkinsoni* Godwin-Austen
36. *Tragopan blythii blythii* (Jerdon)
37. *Lophura leucomelana lathami* (J.E.Gray)
38. *Syrmaticus humiae humiae* (Hume)
39. *Polyplectron bicalcaratum bakeri* Lowe
40. *Pavo cristatus* Linnaeus

Order GRUIFORMES

Family TURNICIDAE

41. *Turnix sylvatica dussumier* (Temminck)
42. *Turnix tanki blanfordii* Blyth

Order CHARADRIIFORMES

Family JACANIDAE

43. *Hydrophasianus chirurgus* (Scopoli)
44. *Metopidius indicus* (Latham)

Family CHARADRIIDAE

45. *Vanellus indicus indicus* (Boddaert)
46. *Pluvialis dominica fulva* (Gmelin)
47. *Charadrius dubius curonicus* Gmelin
48. *Tringa totanus eurhinus* (Oberholser)
49. *Tringa stagnatilis* (Bechstein)
50. *Tringa nebularia* (Gunnerus)
51. *Tringa ochropus* Linnaeus
52. *Tringa glareola* Linnaeus
53. *Tringa hypoleucos* Linnaeus
54. *Gallinago stenura* (Bonaparte)
55. *Gallinago gallinago gallinago* (Linnaeus)
56. *Gallinago minima* (Brunnich)
57. *Scolopax rusticola rusticola* Linnaeus
58. *Calidris minutus* (Leisler)
59. *Calidris temminckii* (Leisler)
60. *Philomachus pugnax* (Linnaeus)

Family ROSTRATULIDAE

61. *Rostratula bengalensis bengalensis* (Linnaeus)

Family RECURVIROSTRIDAE

62. *Himantopus himantopus himantopus* (Linnaeus)

Family BURHINIDAE

63. *Burhinus oedicnemus indicus* (Salvadori)
64. *Esacus magnirostris recurvirostris* (Cuvier)

Family LARIDAE

65. *Sterna aurantia* J.E.Gray
66. *Sterna acuticauda* J.E. Gray

Order COLUMBIFORMES

Family COLUMBIDAE

67. *Treron sphenura sphenura* (Vigors)
68. *Treron curvirostra nipalensis* (Hodgson)
69. *Treron pompadora phayrei* (Blyth)

70. *Treron bicincta bicincta* (Jerdon)
71. *Ducula badia griseicapilla* Walden
72. *Columba hodgsonii* Vigors
73. *Columba pulchricollis* Hodgson
74. *Columba punicea* Blyth
75. *Macropygia unchall tusalia* (Blyth)
76. *Streptopelia orientalis agricola* (Tickell)
77. *Streptopelia tranquebarica humilis* (Temminck)

Order PSITTACIFORMES

Family PSITTACIDAE

78. *Psittacula eupatria nipalensis* (Hodgson)
79. *Psittacula alexandri fasciata* (P.L.S.Muller)
80. *Psittacula finschii* (Hume)
81. *Loriculus vernalis* (Sparrman)

Order CUCULIFORMES

Family CUCULIDAE

82. *Clamator coromandus* (Linnaeus)
83. *Cuculus sparverioides sparverioides* Vigors
84. *Cuculus fugax nisicolor* Blyth
85. *Cuculus canorus bakeri* Hartert
86. *Cuculus saturatus saturatus* Blyth
87. *Cuculus poliocephalus poliocephalus* Latham
88. *Cacomantis sonneratii sonneratii* (Latham)
89. *Cacomantis merulinus querulus* Heine
90. *Chalcites xanthorhynchus xanthorhynchus* (Horsfield)
91. *Surniculus lugubris dicruroides* (Hodgson)
92. *Eudynamys scolopacea malayana* Cabanis & Heine
93. *Rhopodytes tristis tristis* (Lesson)
94. *Centropus Sinensis intermedius* (Hume)
95. *Centropus toulou bengalensis* (Gmelin)

Order STRIGIFORMES

Family STRIGIDAE

96. *Tyto alba stertens* Hartert
97. *Phodilus badius saturatus* Robinson
98. *Otus spilocephalus spilocephalus* (Blyth)
100. *Otus scops sunia* (Hodgson)
101. *Otus bakkamoena lettia* (Hodgson)
102. *Bubo bubo bengalensis* (Franklin)
103. *Bubo nipalensis nipalensis* Hodgson
104. *Bubo coromandus coromandus* (Latham)
105. *Bubo zeylonica leschenault* (Temminck)
106. *Bubo flavipes* (Hodgson)
107. *Glaucidium brodiei brodiei* (Burton)
108. *Glaucidium cuculoides ansterum* Ripley
109. *Glaucidium cuculoides rufescens* Baker
110. *Ninox scutulata burmanica* Hume
111. *Strix leptogrammica newarensis* (Hodgson)
112. *Strix aluco nivicola* (Blyth)
113. *Asio flammeus flammeus* (Pontoppidan)

Order CAPRIMULGIFORMES

Family PODARGIDAE

114. *Batrachostomus hodgsoni hodgsoni* (G.R. Gray)

Family CAPRIMULGIDAE

115. *Eurostopodus macrotis cerviniceps* (Gould)
116. *Caprimulgus indicus hagarae* Whistler & Kinnear
116. *Caprimulgus macrurus albonotatus* Tickell
118. *Caprimulgus macrurus ambiguus* Hartert

Order APODIFORMES

Family APODIDAE

119. *Collocalia brevirostris brevirostris* (Horsfield)
120. *Chaetura (Caudacuta) cochinchinensis* Oustalet
121. *Chaetura gigantea indica* Hume
112. *Apus pacificus pacificus* (Latham)
123. *Apus affinis subfurcatus* (Blyth)
124. *Cypsiurus parvus infumatus* (Sclater)

Order TROGONIFORMES

Family TROGONIDAE

125. *Harpactes erythrocephalus hodgsonii* (Gould)

Order CORACIIFORMES

Family ALCEDINIDAE

126. *Ceryle lugubris guttulata* Stejneger
127. *Alcedo hercules* Laubmann
128. *Alcedo meninting coltarti* Baker
129. *Ceyx erithacus erithacus* (Linnaeus)
130. *Plelargopsis capensis capensis* (Linnaeus)
131. *Halcyon coromanda Coromanda* (Latham)
132. *Halcyon smyrnensis perpulchra* Madarasz
133. *Halcyon pileata* (Boddaert)

Family MEROPIDAE

134. *Merops leschenaulti leschenaulti* Vieillot
135. *Nyctyornis athertoni athertoni* (Jardine & Selby)

Family CORACIIDAE

136. *Coracias benghalensis affinis* Horsfield
137. *Eurystomus orientalis cyanicollis* Vieillot

Family BUCEROTIDAE

138. *Aceros nipalensis* (Hodgson)
139. *Rhyticeros undulatus ticehursti* Deignan
140. *Anthracoceros malabaricus malabaricus* (Gmelin)
141. *Buceros bicornis homrai* Hodgson

Order PICIFORMES

Family CAPITONIDAE

142. *Megalaima virens magnifica* Baker
143. *Megalaima franklinii franklinii* (Blyth)
144. *Megalaima asiatica asiatca* (Latham)
145. *Megalaima australis cyanotis* (Blyth)

Family INDICATORIDAE

146. *Indicator xanthonotus fulvus* Ripley

Family PICIDAE

147. *Jynx torquilla chinensis* Hesse
148. *Picumnus innominatus malayorum* Hartert
149. *Sasia ochracea reichenowi* Hesse
150. *Micropternus brachyurus phaioceps* Blyth
151. *Picus canus gyldenstolpei* Baker
152. *Picus flavinucha flavinucha* Gould
153. *Picus chlorolophus chlorolophus* Vieillot
154. *Gecinulus grantia grantia* (Horsfield)
155. *Hypopicus hyperythrus hyperythrus* (Vigors)
156. *Picoides major stresemanni* (Rensch)
157. *Picoides darjellensis darjellensis* (Blyth)
158. *Picoides cathpharius pyrrhothorax* (Hume)
159. *Picoides macei macei* (Vieillot)
160. *Blythipicus pyrrhotis pyrrhotis* (Hodgson)
161. *Chrysocolaptes lucidus guttacristatus* (Tickell)

Order PASSERIFORMES

Family EURYLAIMIDAE

162. *Serilophus lunatus rubropygius* (Hodgson)
163. *Psarisomus dalhousiae dalhousiae* (Jameson)

Family PITTIDAE

164. *Pitta nipalensis nipalensis* (Hodgson)
165. *Pitta sordida cucullata* Hartlaub
166. *Pitta cyanea cyanea* Blyth

Family ALAUDIDAE

167. *Mirafra assamica assamica* Horsfield

Family HIRUNDINIDAE

168. *Hirundo rustica tytleri* Jerdon
169. *Hirundo striolata mayri* Hall
170. *Delichon nipalensis nipalensis* Moore

Family LANIIDAE

171. *Lanius tephronotus tephronotus* (Vigors)
172. *Lanius Suchach tricolor* (Hodgson)
173. *Lanius cristatus cristatus* Linnaeus

Family ORIOLIDAE

174. *Oriolus xanthornus xanthornus* (Linnaeus)
175. *Oriolus traillii traillii* (Vigors)

Family DICRURIDAE

177. *Dicrurus adsimilis albirictus* (Hodgson)
178. *Dicrurus leucophaeus hopwoodi* Baker
179. *Dicrurus annectans* (Hodgson)
180. *Dicrurus aeneus aeneus* Vieillot
181. *Dicrurus remifer tectirostris* (Hodgson)

182. *Dicrurus hottentottus hottentottus* (Linnaeus)
183. *Dicrurus paradiseus grandis* (Gould)

Family STURNIDAE

184. *Sturnus malabaricus nemoricola* (Jerdon)
185. *Acridotheres fuscus fumidus* Ripley
186. *Gracula religiosa intermedia* A.Hay

Family CORVIDAE

187. *Garrulus glandarius interstinctus* Hartert
188. *Cissa chinensis chinensis* (Boddaert)
189. *Cissa erythrorhyncha magnirostis* (Blyth)
190. *Dendrocitta frontalis frontalis* Horsfield
191. *Dendrocitta formosae humalayensis* Blyth
192. *Corvus macrorhynchos levaillantii* Lesson

Family CAMPEPHAGIDAE

193. *Hemipus picatus capitalis* (Horsfield)
194. *Tephrodornis gularis pelvica* (Hodgson)
195. *Coracina melaschistos melaschistos* (Hodgson)
196. *Coracina melanoptera sykesi* (Strickland)
197. *Pericrocotus flammeus fraterculus* Swinhoe
198. *Pericrocotus brevirostris brevirostris* (Vigors)
199. *Pericrocotus ethologus mariae* Ripley
200. *Pericrocotus roseus roseus* (Vieillot)
201. *Pericrocotus cinnamomeus vividus* Baker

Family IRENIDAE

202. *Aegithina tiphia tiphia* (Linnaeus)
203. *Chloropsis hardwickii hardwickii* Jardine & Selby

Family PYCNONOTIDAE

204. *Spizixos canifrons canifrons* Blyth
205. *Pycnonotus atriceps atriceps* (Temminck)
206. *Pycnonotus melanicterus flaviventris* (Tickell)
207. *Pycnonotus jocosus monticola* (McClelland)
208. *Pycnonotus cafer stanfordi* Deignan
209. *Pycnonotus striatus arctus* Ripley
210. *Pycnonotus flavescens flavescens* Blyth
211. *Criniger flaveolus flaveolus* (Gould)
212. *Hypsipetes viridescens cacharensis* (Deignan)
213. *Hypsipetes mcclellandi mcclellandi* Horsfield
214. *Hypsipetes flavalus flavalus* (Blyth)
215. *Hypsipetes madagascariensis nigrescens* Baker

Family MUSCICAPIDAE

216. *Pellorneum ruficeps chamelum* Deignan
217. *Pellorneum albiventre albiventre* (Godwin-Austen)
218. *Trichastoma abbotti abbotti* (Blyth)
219. *Pomatorhinus schisticeps schisticeps* Hodgson
220. *Pomatorhinus ruficollis bakeri* Harington
221. *Pomatorhinus erythrogenys mcclellandi* Godwin-Austen
222. *Pomatorhinus ferruginosus formosus* Koelz
223. *Pomatorhinus ochraceiceps austeni* Hume
224. *Xiphirhynchus superciliaris intextus* Ripley
225. *Rimator malacoptilus* Blyth
226. *Napothera epilepidota roberti* (Godwin-Austen & Walden)
227. *Pnoepyga albiventer albiventer* (Hodgson)
228. *Pnoepyga pusilla pusilla* Hodgson
229. *Spelaeornis chocolatinus chocolatinus* (Godwin-Austen & Walden)
230. *Spelaeornis formosus formosus* (Walden)
231. *Sphenocichla humei roberti* Godwin-Austen & Walden
232. *Stachyris rufifrous ambigua* (Harington)
233. *Stachyris ruficeps ruficeps* Blyth
234. *Stachyris chrysaea chrysaea* Blyth
235. *Stachyris nigriceps coltarti* Harington
236. *Macronous gularis rubricapilla* Jardine & Selby
237. *Timalia pileata bengalensis* Godwin-Austen
238. *Chrysomma sinense sinense* (Gmelin)
239. *Chrysomma altirostre griseigularis* (Hume)
240. *Paradoxornis nipalensis poliotis* (Blyth)

241. *Paradoxornis atrosuperciliaris atrosuperciliaris* (Godwin-Austen)
242. *Paradoxornis ruficeps bakeri* (Hartert)
243. *Paradoxornis gularis transfluvialis* (Hartert)
244. *Paradoxornis flaviventris flaviventris* Gould
245. *Paradoxornis guttaticollis* David
246. *Garrulax monileger monileger* (Hodgson)
247. *Garrulax pectoralis melanotis* Blyth
248. *Garrulax striatus cranbrooki* (Kinnear)
249. *Garrulax leucolophus patkaicus* Reichenow
250. *Garrulax chinensis nuchalis* Godwin-Austen
251. *Garrulex galbanus galbanus* Godwin-Austen
252. *Garrulax delesserti gularis* (McClelland)
253. *Garrulax cineraceus cineraceus* (Godwin-Austen)
254. *Garrulax rufogularis rufiberbis* (Koelz)
255. *Garrulax caerulatus livingstoni* Riply
256. *Garrulax merulinus toxostominus* (Koelz)
257. *Garrulax sannio albosuperciliaris* Godwin-Austen
258. *Garrulax Virgatis* (Godwin-Austen)
259. *Garrulax austeni austeni* (Godwin-Austen)
260. *Garrulax squamatus* (Gould)
261. *Garrulax erythrocephalus godwini* Harrington
262. *Garrulax phoeniceus bakeri* (Hartert)
263. *Leiothrix argentauris vernayi* (Mayr & Greenway)
264. *Leiothrix lutea calipyga* (Hodgson)
265. *Cutia nipalensis nipalensis* Hodgson
266. *Pteruthius rufiventer* Blyth
267. *Pteruthius flaviscapis validirostris* Koelz
268. *Pteruthius xanthochlorus hybridus* Harington
269. *Pteruthius melanotis melanotis* Hodgson
270. *Gampsorhynchus rufulus rufulus* Blyth
271. *Actinodura egertoni khasiana* Godwin-Austen
272. *Actinodura waldeni waldeni* Godwin-Austen
273. *Minla ignotincta ignotincta* Hodgson
274. *Minla strigula yunnanensis* (Rothschild)
275. *Minla strigula cinereigenae* (Ripley)
276. *Minla cyanouroptera cyanouroptera* (Hodgson)
277. *Yuhina castaniceps plumbeiceps* (Godwin-Austen)
278. *Yuhina castaniceps castaniceps* (Moore)
279. *Yuhina bakeri* Rothschild
280. *Yuhina flavicollis rouxi* (Oustalet)
281. *Yuhina gularis gularis* Hodgson
282. *Yuhina nigrimenta nigrimenta* Hodgson
283. *Yuhina xantholeuca xantholeuca* (Hodgson)
284. *Alcippe chrysotis albilineata* (Koelz)
285. *Alcippe cinerea* (Blyth)
286. *Alcippe castaneceps castaneceps* (Hodgson)
287. *Alcippe Vinipectus austeni* (Ogilvie-Grant)
288. *Alcippe cinereiceps manipurensis* (Ogilvie-Grant)
289. *Alcippe rufogularis collaris* Walden
290. *Alcippe brunnea mandelli* (Godwin-Austen)
291. *Alcippe poioicephala fusca* Godwin-Austen
292. *Alcippe nipalensis commoda* Ripley
293. *Heterophasia annectens annectens* (Blyth)
294. *Heterophasia gracilis* (McClelland)
295. *Heterophasia pulchella* (Godwin-Austen)
296. *Heterophasia picaoides picaoides* (Hodgson)
297. *Muscicapa muttui muttui* (Layard)
298. *Muscicapa ferruginea* (Hodgson)
299. *Muscicapa parva albicilla* Pallas
300. *Muscicapa strophiata strophiata* (Hodgson)
301. *Muscicapa monileger leucops* (Sharpe)
302. *Muscicapa hyperythra hyperythra* Blyth
303. *Muscicapa hodgsonii* (Verreaux)
304. *Muscicapa westermanni australorientis* Ripley
305. *Muscicapa superciliaris aestigma* Gray
306. *Muscicapa leucomelanura cerviniventris* (Sharpe)
307. *Muscicapa sapphira* (Blyth)
308. *Muscicapa grandis grandis* (Blyth)

309. *Muscicapa macgrigoriae signata* (Horsfield)
310. *Muscicapa sundara sundara* (Hodgson)
311. *Muscicapa vivida oatesi* (Salvadori)
312. *Muscicapa poliogenys cachariensis* (Madarasz)
313. *Muscicapa unicolor unicolor* (Blyth)
314. *Muscicapa rubeculoides rubeculoides* (Vigors)
315. *Muscicapa banyumas magnirostris* (Blyth)
316. *Muscicapa thalassina thalassina* Swainson
317. *Muscicapella hodgsoni hodgsoni* (Moore)
318. *Culicicapa ceylonensis calochrysea* Oberholser
319. *Rhipidura hypoxantha* Blyth
320. *Rhipidura albicollis stanleyi* Baker
321. *Terpsiphone paradisi saturatior* (Salomonsen)
322. *Tesia cyaniventer* Hodgson
323. *Tesia olivea* (McClelland)
324. *Tesia castaneocoronata castaneocoronata* (Burton)
325. *Cettia major vafer* (Koelz)
326. *Cettia flavolivacea alexanderi* Ripley
327. *Bradypterus luteoventris luteoventris* (Hodgson)
328. *Prinia rufescens rufescens* Blyth
329. *Prinia hodgsonii rufula* Godwin-Austen
330. *Prinia subflava fusca* (Hodgson)
331. *Prinia flaviventris flaviventris* (Delessert)
332. *Prinia criniger catharia* Reichenow
333. *Prinia atrogularis khasiana* (Godwin-Austen)
334. *Orthotomus sutorius luteus* Ripley
335. *Orthotomus atrogularis nitidus* Hume
336. *Orthotomus cucullatus coronatus* Blyth
337. *Megalurus palustris toklao* (Blyth)
338. *Acrocephalus dumetorum* Blyth
339. *Plylloscopus pulcher pulcher* Blyth
340. *Phylloscopus inornatus mandellii* (Brooks)
341. *Phylloscopus inornatus inornatus* (Blyth)
342. *Phylloscopus proregulus newtoni* Gatke
343. *Phylloscopus maculipennis maculipennis* (Blyth)
344. *Phylloscopus trochiloides trochiloides* (Sundevall)
345. *Plylloscopus occipitalis coronatus* (Temminck & Schlegl)
346. *Phylloscopus reguloides assamensis* Hartert
347. *Seicercus affinis* (Hodgson)
348. *Seicercus burkii burkii* Burton
349. *Seicercus xanthoschistos tephrodiras* Sick
350. *Seicercus castaniceps castaniceps* (Hodgson)
351. *Abroscopus superciliaris flaviventris* (Jerdon)
352. *Abroscopus hodgsoni hodgsoni* (Moore)
353. *Brachypteryx hyperythra* Jerdon & Blyth
354. *Brachypteryx loecophrys nipalensis* Moore
355. *Erithacus calliope* (Pallas)
356. *Erithacus chrysaeus chrysaeus* (Hodgson)
357. *Erithacus indicus indicus* (Vieillot)
358. *Copsychus saularis erimelas* Oberholser
359. *Copsychus malabaricus indicus* (Baker)
360. *Phoenicurus hodgsoni* (Moore)
361. *Phoenicurus frontalis* (Vigors)
362. *Phoenicurus auroreus leucopterus* (Blyth)
363. *Rhyacornis fuliginosus fuliginosus* (Vigors)
364. *Cinclidium leucurum* (Hodgson)
365. *Enicurus scouleri scouleri* Vigors
366. *Enicurus immaculatus* (Hodgson)
367. *Enicurus schistaceus* (Hodgson)
368. *Enicurus leschenaulti indicus* Hartert
369. *Enicurus maculatus guttatus* Gould
370. *Saxicola torquata przevalskii* (Pleske)
371. *Saxicola caprata burmanica* Baker
372. *Saxicola jerdoni* (Blyth)
373. *Saxicola ferrea* Gray
374. *Chaimarrornis leucocephalus* (Vigors)
375. *Monticola cinclorhynchus* (Vigors)

376. *Monticola rufiventris* (Jardine & Selby)
377. *Monticola solitarius pandoo* (Sykes)
378. *Myiophonus caeruleus temminckii* (Vigors)
379. *Zoothera dixoni* (Seebohm)
380. *Zoothera monticola monticola* Vigors
381. *Zoothera marginata* Blyth
382. *Turdus dissimilis dissimilis* Blyth
383. *Turdus albocinctus* Royle
384. *Turdus boulboul* (Latham)
385. *Turdus rubrocanus gouldii* (Verreaux)
386. *Turdus feai* (Salvadori)
387. *Turdus obscurus* Gmelin
388. *Turdus ruficollis atrogularis* Jarocki
289. *Turdus ruficollis ruficollis* Pallas

Family PARIDAE

390. *Melanochlora sultanea sultanea* (Hodgson)
391. *Parus major nipalensis* Hodgson
392. *Parus monticolus monticolus* Vigors
393. *Parus rubidiventris saramatii* Ripley
394. *Parus spilonotus subviridis* Blyth
395. *Sylviparus modestus modestus* Burton
396. *Aegithalos concinnus manipurensis* (Hume)

Family SITTIDAE

397. *Sitta europaea nagaensis* Godwin-Austen
398. *Sitta castanea kolizi* Vaurie
399. *Sitta himalayensis australis* Koelz
400. *Sitta formosae* Blyth
401. *Sitta frontalis frontalis* Swainson

Family CERTHIIDAE

402. *Certhia familiaris mandellii* Brooks
403. *Certhia discolor manipurensis* Hume

Family MOTACILLIDAE

404. *Anthus hodgsoni hodgsoni* Richmond
405. *Anthus novaeseelandiae rufulus* Vieillot
406. *Anthus roseatus* Blyth
407. *Motacilla indica* Gmelin
408. *Motacilla caspica caspica* (Gmelin)
409. *Motacilla alba alboides* Hodgson
410. *Motacilla alba leucopsis* Gould
411. *Motacilla alba ocularis* Swinhoe

Family DICAEIDAE

412. *Dicaeum agile agile* (Tickell)
413. *Dicaeum chrysorrheum chrysochlore* Blyth
414. *Dicaeum melanoxanthum* (Blyth)
415. *Dicaeum concolor olivaceum* Walden
416. *Dicaeum cruentatum cruentatum* (Linnaeus)
417. *Dicaeum ignipectus ignipectus* (Blyth)

Family NECTARINIIDAE

418. *Anthreptes singalensis rubinigentis* (Baker)
419. *Aethopyga gouldiae isolata* Baker
420. *Aethopyga gouldiae dabryii* (Verreaux)
421. *Aethopyga nipalensis koelzi* Riply
422. *Aethopyga saturata assamensis* (McClelland)
423. *Aethopyga siparaja labecula* (Horsfield)
424. *Aethopyga ignicauda ignicauda* (Hodgson)
425. *Arachnothera magna magna* (Hodgson)

Family ZOSTEROPIDAE

426. *Zosterops palpebrosa palpebrosa* (Temminck)

Family PLOCEIDAE

427. *Passer domesticus indicus* Jardine &Selby
428. *Passer montanus hepaticus* Ripley
429. *Passer rutilans intensior* Rothschild
430. *Lonchura striata acuticauda* (Hodgson)

Family FRINGILLIDAE

431. *Mycerobas melanozanthos* (Hodgson)
432. *Carduelis spinoides heinrichi* Stresemann
433. *Pyrrhula nipalensis ricketti* La Touche

Family EMBERIZIDAE

434. *Emberiza spodocephala sordida* Blyth
435. *Emberiza fucata fucata* Pallas
436. *Emberiza pusilla* Pallas
437. *Melophus lathami* (Gray)

Order CICONIIFORMES

Family ARDEIDAE

Genus *Ardea* Linnaeus,1758

36. *Ardea cinerea rectirostris* Gould

1843. *Ardea rectirostris* Gould, *Proc. zool. Soc. Lond* : 22 (New South Wales = 'India?', Stone, 1913 *Austral Av. Rec.*, **1** : 142 restricted by Ripley 1961, *Synopsis* : 12 to India)

1978.. *Ardea cinerea rectirostris* Gould, Ali and Ripley, Vol. **1** : 55.

Common name : Eastern Grey Heron.

Diagnostic characters : Size smaller than the Openbill Stork (length 750 mm). Ashy grey with white crown and neck with a long black occipital crest, below a prominent black dotted line down the middle of foreneck, breast with elongated black-streaked white feathers; rest of underparts greyish white. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Maldive Islands, Middle East, Myanmar, Thailand, Indochina, Malayasia, East Siberia, East China, Japan, Formosa and Hainan.

Genus *Ardeola* Boie, 1822

42. *Ardeola grayii grayii* (Sykes)

1832. *Ardea Grayii* Sykes, *Proc. zool. Soc. Lond,* : 158 (Dukhun)

1978. *Ardeola grayii grayii* (Sykes), Ali and Ripley, Vol. **1** : 63.

Comman name : Indian Pond Heron or Paddybird.

Diagnostic characters : Size slightly smaller than the Cattle Egret (length 460 mm). Winter plumage (Non-breeding)–Upperparts ashy brown; head and neck clark brown, striped with light brown; chin and throat white; breast white, streaked with brown; rest of phumage including tail white. Breeding–Crown brown; occipital crest white of long pointed feathers; head and neck light brown; mantle deep maroon; feathers of back slaty, long and hair like; breast feathers long disintrigated ashy brown, streaked with white; wings white; primaries tinged with brown; lower back, tail and rump white. Sexes alike in non-breeding and breeding plumages.

Distribution : India : Nagaland; throughout the India Union.

Elsewhere : Bangladesh, Bhutan, Nepal, Pakistan, Myanmar, Iran, Iraq and Malayasia.

Genus *Egretta* Forster, 1817

46. *Ardea alba modesta* J. E.Gray

1831. *Ardea modesta* J.E. Gray, *Zool. Misc.* 19 (India)

1978. *Ardea alba modesta* J.E. Gray, Ali and Ripley, Vol. **1** : 69.

Common name : Eastern Large Egret.

Diagnostic characters : Size that of the Grey Heron (length 910 mm). Whole plumage white; crown feathers slightly elongated; a bunch of ornamental filamentous plumes develop on the back; bill black, yellow at base; legs, feet and claws black. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Bhutan, Nepal, Pakistan, Sri Lanka, Maldive Islands, Myanmar, Indochinese Countries, Malayasia to South and Central China, South and Central Japan, South and East to Australia.

47, 48. *Egretta intermedia intermedia* (Wagler)

1829. *Ardea intermedia* Wagler, *Isis Von Oken, coll.* 659 (Java)

1978. *Egretta intermedia intermedia* (Wagler), Ali and Ripley, Vol. **1** : 71.

Common name : Smaller or Median Egret.

Diagnostic characters : Size slightly smaller than the Large Egret (length 450 mm). Plumage entirely snow white. In breeding season, breast and back develop long and lanceolate decomposed filaments; crest absent. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Nepal, Sri Lanka, Myanmar, Indochinese Countries, Japan, Malayasia, Philippines, Greater Sunda Islands and Thailand.

49. *Egretta garzetta garzetta* (Linnaeus)

1766. *Ardea Garzetta* Linnaus, *Syst. Nat. Ed.* 12,1 : 237 ('Oriente'= northeast Italy)

1978. *Egretta garzetta garzetta* (Linnaeus), Ali and Ripley, Vol. 1 : 72.

Common name : Little Egret.

Diagnostic characters : Size that of the village Hen (Length 630 mm). Breeding birds bear two long attenuated feathers; breast feathers develop long lanceolate ornamental plumes; back feathers also become elongated and decomposed turning upwards at the terminal ends. Non-breeding birds all white without ornamental feathers. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Pakistan, Bhutan, Nepal, Sri Lanka, Myanmar, South and East Europe, North and East Africa, Middle East, Iran, Afghanistan, Malayasia, east to China, Hainan and Japan.

Genus *Nycticorax* T. Forster, 1817

52. *Nycticorax nycticorax nycticorax* (linnaeus)

1758. *Ardea nycticorax* Linnaeus, *Syst. Nat.* ed. 10, 1 : 142 (Southern Europe)

1978. *Nycticorax nycticorax nycticorax* (Linnaeus), Ali and Ripley, Vol. 1 : 78.

Common name : Night Heron

Diagnostic characters : Size that of the Cattle Egret (length 580 mm). Crown to back black with a metallic green wash; occipital crest black, a few ribbon feathers arise from the crest; white on the forehead, spread over the eye and cheeks; sides of the body, rump and tail ashy grey with pinkish gloss; underparts white. Sexes alike.

Distribution : India : Nagaland, throughout the Indian Union.

Elsewhere : Bangladesh, Nepal, Bhutan, Pakistan, Sri Lanka, Myanmar, China, Indochinese Countries, Japan, Malayasia and Middle East.

Family CICONIIDAE

Genus *Anastomus* Bonnaterre, 1791

61. *Anastomus oscitans* (Boddaert)

1783. *Ardea oscitans* Boddaert, Table pl. *enlum* : 55 (Pondicherry).

1978. *Anastomus oscitans* (Boddaert), Ali and Ripley, Vol. 1 : 95.

Common name : Openbill Stork

Diagnostic characters : Size that of a large Duck (length 810 mm).Upperparts white; flight feathers and tail black; underparts white; a narrow gap between the arching shaped mandibles. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Bhutan, Nepal, Pakistan, Myanmanr, Iran, Iraq and Malayasia.

Genus *Ephippiorhynchus* Bonaparte, 1885

66. *Ephippiorhynchus asiaticus asiaticus* (Latham)

1790. *Mycteria asiaticus* Latham, *Index Orn.*, 2 : 670 (India), Ali and Ripley, Vol. 1 : 104.

1978. *Ephippiorhynchus asiaticus asiaticus* (Latham).

Common name : Blacknecked Stork.

Diagnostic characters : Size that of the Vulture (height 1200 mm). Head, neck and scapulars black washed with bluish green, purple and bronze; back and upper tail-coverts white; under plumage white; under wings show black line across each wing, in flight; bill black; legs long and red. Sexes alike.

Distribution : India : Nagaland; throughout India (rare in South).

Elsewhere : Bangladesh, Nepal, Sri Lanka, Myanmar, Malayasia, Thailand and Indochinese Countries.

Family THRESKIORNITHIDAE

Genus ***Threskiornis*** G.R. Gray, 1842

69. ***Threskiornis aethiopica melanocephala*** (Latham)

1790. *Tantalus melancephala* Latham, *Index Orn.*, **2** : 709 (India).

1978. *Threskiornis aethiopica melanocephala* (Latham), Ali and Ripley, Vol. **1** : 110

Common name : White Ibis.

Diagnostic characters : Size that of a large domestic Hen (length 750 mm). A bare-headed black necked water bird with a Curlew like bill. Entire plumage white. In breeding season the scapulars turn slaty grey; upper breast bears plumes like feathers. In non-breeding plumage, the slaty grey scapular replaced by ordinary feathers. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Nepal, Pakistan, Sri Lanka, Myanmar, China (sporadically) and Japan.

Genus ***Platalea***, Linnaeus 1758

72. ***Platalea leucorodia major*** Temminck & Schlegel

1849. *Platalea major* Temminck & Schlegel, in Siebold, *Fauna Jap.*, Aves: 119, pl.73 (Japan)

1978. *Platalea leucorodia major* Temminck & Schlegel, Ali and Ripley, Vol. **1** : 116.

Common name : Spoonbill.

Diagnostic characters : Size that of the Night Heron (length 840 mm). Entire plumage snow white with a spatula shaped black and yellow bill; cinnamon yellow patch at foreneck. Sexes alike. Adult in breeding season bears a long white bushy nuchal crest.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Nepal, Pakistan, Sri Lanka, Central Asia from China, Egypt, Japan, Syria, Taiwan, Transbaikalia and Ussuriland.

Order ANSERIFORMES

Family ANATIDAE

Genus ***Dendrocygna*** Swainson, 1837

88. ***Dendrocygna javanica*** (Horsfield)

1821. *Anas javaniaca* Horsfield, *Trans. Linn. Soc. London*, **13** : 199, pl. 1 (Java)

1978. *Dendrocygna javanica* (Horsfield), Ali and Ripley, Vol. **1** : 138.

Common name : Lesser Whistling Teal or Tree Duck.

Diagnostic characters : Size that of the Domestic Duck (length 420 mm.). Crown dark brown with a black line down the back of the nape; chin and throat white; upper plumage dark brown; feathers pale rufous tipped; wings black; shoulders bear chestnut patch; a buff patch on the sides of the body; lesser wing-coverts and upper tail-coverts chestnut; tail dark brown; underparts pale ferruginous darker on abdomer; under tail feathers whitish. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Nepal, Pakistan, Myanmar, Sri Lanka, China (Southern part), Indonesia, Malayasia, Ryukyu Islands, Thailand and Vietnam.

Genus ***Tadorna*** von Oken,1817

90. ***Tadorna ferruginea*** (Pallas)

1764. *Anas (ferruginea)* Pallas, in *Vroeg, Cat. d' Ois.*, Adumbr : 5 (Tartary)

1978. *Tadorna ferruginea* (Pallas), Ali and Ripley, Vol. **1** : 141

Common name : Ruddy Shelduck or Brahminy Duck.

Diagnostic characters : Size that of the large Domestic Duck (length 660 mm). Head and neck buffy-white; upper plumage orange-brown; wings bear a metallic spewlam with a white patch; tail black.

Male in breeding season develops a narrow black collar, round the base of the neck; obsolate in winter.

Female similar but with head paler and whitish and no black collar.

Distribution : India : Nagaland; winters in the Indian Union (rare or absent in the south).

Elsewhere : Bangladesh, Pakistan, Nepal, Bhutan, Myanmar and Sri Lanka (occasional). Breeds in Ladak (India), South Spain and from SE. Europe, near East Caspian Sea, across Asia to Transbaikalia south to Himalayas and SW. China. [Also in SE. Iran and Scistan] winters in the Nile Valley and China.

Genus *Anas* Linnaeus, 1758

93. *Anas acuta* Linnaeus

1758. *Anas acuta* Linnaeus, *Syst, Nat.*, ed. 10, 1 : 126 (Sweden).

1978. *Anas acuta* Linnaeus, Ali and Ripley, Vol. 1 : 149.

Common name : Pintail

Diagnostic characters : Size smaller than the Domestic Duck (length 560-740 mm). Male-upper plumage finely barred and vermiculated with black and white; sides of the body also vermiculated like the back; head and foreneck chocolate, head and neck to fuse with white nape and breast; a conspicuous white band runs from side of the chocolate head and neck to fuse with white nape and breast; wings brown; longer scapulars lanceolate in shape; speculum dull bronze green with a copper coloured bar in front; flanks vermiculated with slaty grey; under tail coverts black with a broad yellowish patch on either sides of the base of tail; two long central tail feathers pointed; underparts white.

Distrtibution : India : Nagaland; throughout the Indian Union in winter except Andaman and Nicobar Islands.

Elsewhere : Bangaladesh, Pakistan, Nepal, Bhutan, Sri Lanka, North Africa, Nile Valley, Ethiopia, Persian Gulf, Siam and South China (inwinter). Breeds in the northern parts of Europe, Asia and North America including British Isles.

94. *Anas crecca crecca* Linnaeus

1758. *Anas Crecca* Linnaeus *Syst. Nat.*, ed-10, 1 : 126 (Sweden).

1978. *Anas crecca crecca* Linnaeus, Ali and Ripley, Vol. 1 : 151.

Common name : Common Teal.

Diagnostic characters : Size a little bigger than a Cotton Teal (length 380 mm). Male-Upperparts and sides of the body white sharply waved with black; scapular white; wings brown, wing-bar tri-coloured–black, green and buff; speculum metallic green and black; head and neck cinnamon; a broad metallic green band edged with buff line enclosing eye; running down the sides of the neck rump brown; patch at the sides of the tail buffy-brown; chin blackish brown; breast white spotted with black; abdomen white. In the eclipse plumage, head like that of the female; crown and nape dark brown; body feathers and scapulars edged with rufous buff.

Female-upper plumage dark brown mottled and streaked with dusky brown; lower neck and breast cinnamon mottled with black and brown; speculum green; underparts buff.

Distribution : India : Nagaland; throughout the Indian Union in winter.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Myanmar, China, Indochinese Countries, Philippines, North Africa, Nile Valley, Somali Land and Persia. Breeds in Europe and Asia from Iceland to China, Manchuria, Kurile Islands and Japan.

110. *Anas strepera strepera* Linnaeus

1758. *Anas strepera* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 125 (Sweden)

1978. *Anas strepera strepera* Linnaeus, Ali and Ripley, Vol. 1 : 163.

Common name : Gadwall.

Diagnostic characters : Size more or less of the Domestic Duck (length 510). Drake (adult) forehead and crown creamy golden; upper plumage dark brown and grey with black tail and upper tail-coverts; chestnut patch with black and white speculum in wings; upper breast blackish; underparts whitish.

Duck (adult) upper plumage dark brown

mottled with buff and tinged with rufous; wings bear a white patch, greater wing-coverts largely black; underparts white.

Distribution : India : Nagaland; throughout the Indian Union in winter but rare in South India.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, N. Africa, Ethiopia and China, Breeds in Eurasia from Iceland to Kamchatka, South to England, Holland, Germany, Central Russia, Caspian, Sestan and Transbaikalia.

104. *Anas querquedula* Linnaeus

1758. *Anas querquedula* Linnaeus, *Syst. Nat., ed.* 10, **1** : 126 (Sweden)

1978. *Anas querquedula* Linnaeus, Ali and Ripley, Vol. **1** : 169.

Common name : Garganey or Bluewinged Teal.

Diagnostic characters : Size smaller than the Domestic Duck (length 410 mm). Male—head and neck pinky brown finely streaked with white; broad eye-brows white; wing shoulders bluish grey; speculum green bordered with two white bands; speculars elongated and glossy black with a broad central white stripe; breast buffy-brown; abdomen white sharply demarkated from breast.

Female—head brown; eye brows white; a dark line from bill through eye to nape; wing shoulders greyish brown; speculum faint olive-green; throat white; upper breast and near vent brownish with darker spots; rest of underparts white.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere. Bangladesh, Pakistan, Nepal and Sri Lanka.

105. *Anas clypeata* Linnaeus

1758. *Anas clypeata* Linnaeus, *Syst. Nat., ed.* 10, **1** : 124 (Sweden).

1978. *Anas Clypeata* Linnaeus, Ali and Ripley, Vol. **1** : 172.

Common name : Shoveller

Diagnostic characters : Size somewhat smaller than the Mallard (length 510 mm). Drake (adult) —head and upper neck glossy purplish green; hind neck and back dark brown; wing-coverts blue-grey,greater wing-coverts white tipped; speculum green; tail dark brown edged with white; upper breast white; scapulars elongated with white shaft-bands streaked blue grey and black; lower breast and abdomen chestnut; under tail-coverts black.

Duck (adult)-General aspects mottled dark and light brown; scapular greyish brown; speculum dull green; wings greyish blue; breast pale chestnut brown; abdomen chestnut brown.

Distribution : India : Nagaland; throughout Indian Union in winter.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Myanmar, China, Japan, Hawai, Lower Califonia, Honduars, Florida (U.S.A) East Africa and Persian Gulf. Breeds in Europe (Common in Britain), Asia and North America.

Genus *Nettapus* Brandt, 1836

114. *Nettapus coromandelianus coromandelianus* (Gmelin)

1789. *Anas coromandelianus* Gmelin, *Syst. Nat.*, **1**(2) : 522 (Coromandel, India)

1978. *Nettapus coromandelianus coromandelianus* (Gmelin), Ali and Ripley, Vol. **1** : 190.

Common name : Cotton Teal or Quacky-duck.

Diagnostic characters : Size that of the Rock Pigeon (length 330 mm). Male—upper back white; a back ring around the base of the neck and upper back; mantle glossy greenish black with purple reflections; head glossy greenish black; sides of head white; wing coverts dark green, basal half of primaries black; under plumage white.

Female—upperparts, wings and tail brown; wing-bar absent; wing-quills tipped with white; upper tail-coverts light greyish brown; crown brown; eye-brow and rest of the head, neck and under plumage dirty white.

Distribution : India : Nagaland; throughout the Indian Union except in Kerala, Punjab and Rajasthan.

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

Genus ***Sarkidiornis*** Eyton, 1838

115. ***Sarkidiornis melanotos melanotos*** (Pennant)

1769. *Anas melanotos* Pennant, *Ind. Zool.* : 12. pl. 11 (Ceylon)

1978. *Sarkidiornis melanotos melanotos* (Pennant), Ali and Ripley, Vol. 1 : 192

Common name : Nakta or Comb Duck.

Diagnostic characters : Size larger than the Domestic Duck (length 760 mm). Head and neck white densely to lightly spotted and speckled with black; upper back black; glossed with blue-green and purple; lower back, grey breast with half collar; wing speculum bronze; bill bears an upstanding black fleshy comb at the base; under plumage white.

Female similar to the male in colour pattern but smaller and less glossy; bill without a comb.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Pakistan, Nepal, Myanmar, South-East China, Africa from Gambia and the Sudan, south to the cape and Madagascar.

Genus ***Mergus*** Linnaeus, 1758

121. ***Mergus merganser orientalis*** Gould.

1845. *Mergus orientalis* Gould, *Proc. zool. Soc. London* : 1 (Amoy, China)

1978. *Mergus merganser orientalis* Gould, Ali and Ripley, Vol. 1 : 204

Common name : Eastern Merganser.

Diagnostic characters : Size larger than the Domestic Duck but slimmer (length 660 mm). Male (breeding) head, crest and upper neck black glossed with metallic green and purple; lower back, rump and upper tail-coverts grey vermiculated with white; scapulars glossy black; tail silvery brown; primaries black; secondaries white; lower neck and underparts white, tinged with salmon pink.

Female (adult) head, crest and neck dark chestnut and cinnamon-brown; chin and upper throat white; uppperparts mottled blush grey-brown; primaries black; secondaries white and grey, forming a white speculum; tail grey-brown; underparts white, striped with grey on flanks.

Male (in eclipse) resembles female, but retains white wing-coverts.

Distribution : India : Nagaland; throughout North India.

Elsewhere : Nepal, Bhutan, North Myanmar and China. Breeds in Afghanistan, Turkestan , Altai and Tibet.

Order FALCONIFORMES

Family ACCIPITRIDAE

Genus ***Milvus*** Lacepede, 1799

133. ***Milvus migrans govinda*** Sykes.

1832. *Milvus Govinda* Sykes, *Proc. zool. Soc. Lond.*, 18 (Dukhunm)

1978. *Milvus migrans govinda* Sykes, Ali and Ripley, Vol 1 : 227.

Common name : Pariah Kite.

Diagnostic characters : Size somewhat smaller than the Vulture (length 610 mm). Upper plumage Chocolate brown; lower parts paler; head flat, a dark patch behind the eye; body plumage marked with dark shaft-stripes; wings long, pointed; flight feathers blackish; tail brown above, light brown to white below with cross bars; legs short, partly feathered. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union excluding Nicobar Islands.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Myanmar and Malayasia (occasional).

134. ***Milvus (migrans) lineatus*** (Gray)

1831. *Haliaetus lineatus* J.E. Gray, in hardwicke, *Ill Ind. Zool.*, 1(8) : 1, pl. 18 (China)

1978. *Milvus (migrans) lineatus* (Gray), Ali and Ripley, Vol. 1 : 229

Common name : Blackeared or Large Indian Kite.

Diagnostic characters : Size slightly larger than the Pariah Kite (length 660 mm). Upperparts tawny; back blackish; ear-coverts black and conspicuous; a conspicuous white under wing patch; underparts paler; legs and feet nearly white. Sexes alike.

Distribution : India : Nagaland; Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya pradesh, Maharashtra, Uttar Pradesh and West Bengal.

Elsewhere : Myanmar, Hainan and Indochina. Breeds in W. Siberia from about lat. 58^0 N, Turkestan and N.China (peters).

Genus ***Haliastur*** Selby,1840

135. ***Haliastur indus indus*** (Boddaert)

1783. *Falco Indus* Boddaert, Table Pl. enlum, : 25 (Pondicherry ex Daubenton, pl-416 and Buffon **1** : 490)

1978. *Halistur Indus Indus* (Boddaert), Ali and Ripley, Vol. **1** : 230

Common name : Brahminy Kite.

Diagnostic characters : Size smaller than Pariah Kite (length 480 mm). Head, neck and breast white; upper parts, wings and tail bright chestnut; wings long; flight feathers blackish, tail moderately long, rounded and white tipped; abdomen light chestnut; body plumage bears dark shaft lines; tarsus short and feathered above. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union except Nicobar Islands.

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

Genus ***Accipiter*** Brission, 1760

138. ***Accipiter badius dussumieri*** (Temminck)

1824. *Falco dussumieri* Temminck, Pl. Col. Livr. 52 text to pl. 308 (adult), pl. 336 (immature). (India, type from Bengal).

1978. *Accipiter badius dussumieri* (Temminck), Ali and Ripley, Vol. **1** : 235.

Common name : Indian Shikra.

Diagnostic characters : Size that of the Rock Pigeon(length 310-360 mm) Male-upper plumage bluish ashy grey; head rounded; chin whitish with a median grey stripe; wings round, feathers grey and tipped with black; tail longish, ashy grey above, underside of tail barred with dark brown except the central and outer pairs; underparts whitish; legs slender, long and bare, feathers upto knee joint.

Female—larger than the male; upper plumage brownish grey closely barred with reddish brown below; central tail feathers very faintly barred.

Distribution : India : Nagaland; throughout Indian Union except Assam and Kerala.

Elsewhere : Nepal.

147. ***Accipiter nisus nisosimilis*** (Tickell)

1833. *Falco Nisosimilis* Tikell, *Jour. Asiat. Soc. Bengal,* **2** : 571 (Marcha, Borabhum, India).

1978. *Accipiter nisus nisosimilis* (Tickell), Ali and Ripley, Vol. **1** : 243.

Common name : Asiatic Sparrow-Hawk.

Diagnostic characters : Size that of the House crow (length 310-360 mm).

Male—almost like the Shikra *(Accipiter badius)* but slaty grey above; head blackish; supercilium white; tail tipped whitish with four broad black bands; underparts white to pale rufous, finely striated with rufous on chin, throat and upper breast, narrowly barred with rufous-brown on rest of underparts. Sexes almost alike but female larger and paler; barring on underparts less rufous more grey-brown.

Distribution : India : Nagaland; throughout the Indian Union except the Nicobar Islands, Lakshadweep and Minicoy Islands.

Elsewhere : Bangladesh, Pakistan, Nepal and Myanmar. Breeds in N. and C. Asia from Turkestan to the sea of Okhotsk, Japan, N. China and E. China, south to the Yangtse. Winters to S. China.

Genus ***Sarcogyps*** Lesson, 1842

178. ***Sarcogyps calvus*** (Scopoli)

1786. *Vultur callvus* Scopoli, *Del. Faun. et. Flor. Insubr.*, **2** : 85 (Pondicherry, ex Sonnerat)

1978. *Sarcogyps calvus* (Scopoli), Ali and Ripley, Vol. 1 : 296

Common name : Black or King Vulture.

Diagnostic characters : Size that of the Peacock minus the tail (length 840 mm). Naked head, neck, thighs and legs scarlet; breast and thigh patches white. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Pakistan, Bangladesh, Nepal, Myanmar, Thailand, Malaya Peninsula and Vietnam.

Genus *Gyps* Savigny, 1809

185. ***Gyps bengalensis*** (Gmelin)

1788. *Vultur bengalensis* Gmelin, *Syst. nat.*, 1(1) : 245 (Bengal).

1978. *Gyps bengalensis* (Gmelin), Ali and Ripley, Vol. 1 : 307.

Common name : Indian White-backed Vulture.

Diagnostic characters : Size almost like peacock (length 900 mm). Head and fore-neck almost naked, hind-neck covered with dirty white downy feathers; blackish tail and wings, neck and head sunk into sholders while bird at rest, lower back rump, part of flanks and thigh-coverts white; breast and abdomen dark brown with pale streaks. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union but rare in Punjab and desert portions of Rajasthan.

Elsewhere : East to Yunnan, south to Siam and Cochinchina (S. Vietnam), Malay Peninsula to Renang (Peters).

Genus *Circus* Lacepede, 1799

190. ***Circus macxourus*** (S.G.Gmelin)

1770. *Falco macrourus* S.G. Gmelin, *Reise d. Russl., th.* 1 : 48 (Voronezh, southern Russia)

1978. *Circus macrourus* (S.G. Gmelin), Ali and Ripley. Vol. 1 : 319

Common name : Pale Harrier.

Diagnostic characters : Size smaller than the Kite (length 460 mm) Male—Back ashy grey; tip of wings black; throat, breast and belly pure white; tail long and white cross-barred with grey.

Female—Back umber brown with prominent pale rufous ruff.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Myanmar, Africa from the Sudan to cape Province. Breeds from the Baltic Sea provinces east to Tarbagatai and the Tian Shans, south to Rumania, S. Russia and Ferghana (Peters).

193. ***Circus aeruginosus aeruginosus*** (Linnaeus)

1758. *Falco aeruginosus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 91 (Europe, restricted type locality, Sweden)

1978. *Circus aeruginosus aeruginosus* (Linnaeus), Ali and Ripley, Vol. 1 : 324

Common name : Marsh Harrier.

Diagnostic characters : Size smaller than the Kite (length 540-590 mm). Male—Head, neck and breast dark brown with pale rufous; wings and tail silvery grey, the former with black tip; rest of underparts dark rufous.

Female—Back umber brown; head with a buff cap.

Distribution : India : Nagaland; throughout the Indian Union except Nicobar Islands.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Myanmar, China, Maldive Islands, Malaya Peninsula and Philippines. Breeds from S. Sweden and Denmark east to the Yenesei, south to Mediterranean, Turkestan and Mongolia.

Family FALCONIDAE

Genus ***Falco*** Linnaeus, 1758

209. ***Falco peregreinus japonensis*** Gmelin

1788. *Falco japonensis* Gmelin, *Syst. nat.*, 1(1) : 257, No. ex 'Japanese Hawk' Latham, *J., Gen. Syn. Bds.*,

1 : 33, No. 7b ('flew on board off Japan'). *Falco calidus* Latham, 1790, *Index Orn.*, 1 : 41 (India).

1978. *Falco peregrinus japonensis* Gmelin, Ali and Ripley, Vol. 1 : 347.

Common name : Eastern peregrine Falcon.

Diagnostic characters : Size almost like Jungle Crow (lengths 400-480 mm). A typical streanlined falcon with broad shoulder, pointed wing and compact body; slaty black head, white chin and throat with relatively short tail. Sexes alike, female larger. Young, dark brown, more dark on head; below rufescent white, body streaked with brown.

Distribution : India : Nagaland; throughout the sub-continent eastward through Assam and Manipur, from Gilgit and Kashmir, foot of Himalayas south to Kanyakumari and also in Laccadive islands.

Elsewhere : 'Breeds in N. Asia from W. Siberia east of Anadyr and Kamachatka. In winter migrating to Japan, SE. India, Sunda islands, the Molluccas, New Guinea, and occasionally to N. Africa' (Peters).

Family PHASIANIDAE

Genus ***Coturnix*** Bonaparte, 1791

252. ***Coturnix coromandelica*** (Gmelin).

1789. *Tetrao coromandelicus* Gmelin, *Syst, Nat.* 1(2) : 764 (Coromandel Cast)

1969. *Coturnix coromandelica* (Gmelin) Ali and Ripley, Vol. 1 : 41.

Common name : Blackbreasted or Rain Quail.

Diagnostic characters : Size, a little bigger than the Sparrow but plumps and squat (length 180 mm). In male, face and throat marked with black patches; cheeks white; upperparts striped with brown and pale fawn; breast black; lowerparts pale buffy cream; flanks conspicuously streaked with black. In female, chin and throat creamy buff; breast with longish black spot; abdomen dirty white.

Distribution : India : Nagaland; Practically throughout the Indian mainland.

Elsewhere : Bangladesh, Pakistan, Sri Lanka and Myanmar.

Genus ***Perdicula*** Hodgson, 1837

265. ***Perdicula manipurensis manipurensis*** Hume

1881. *Perdicula manipurensis* Hume, *Stray Feathers* 9 : 467 (Bases of the hills in the southeastern portion of the Manipur plain)

1969. *Perdicula manipurensis manipurensis* Hume Ali and Ripley, Vol. 2 : 54

Common name : Manipur Painted Bush Quail.

Diagnostic characters : Size that of a fortnight old chicken (length 200 mm). In male, upperparts slaty grey barred throughout and boldly blotched in the scapular region with velvety black; forehead and sides of face rufous-chestnut with a fine white line through eye; chin and throat rufous-chestnut; neck and upper breast ashy grey spotted with balck; rest of lower parts rufous-buff; flanks grey and barred with black. Female paler and duller and no rufous on head; lowerparts pale greyish buff; Chin and throat pale.

Distribution : India : Nagaland; Assam and Manipur.

Genus ***Ariborophila*** Hodgson, 1837

268. ***Arborophila torqueola interstincta*** Ripley

1951. *Arborophila torqucola interstincta* Ripley, Postilla, Yale Peabody Museum, No. 6 : 1(mt. Zephu, 93 miles E. of Kohima, eastern Naga Hills, Assam).

1969. *Arborophila torqueola interstincta* Ripley Ali and Ripley, Vol. 2 : 58

Common name : Assam Hill Partridge.

Diagnostic characters : Size smaller than the Grey Partridge (length 300 mm). Crown and nape chestnut with black spots on latter; rest olive-brown; chin and throat black separated from grey breast by a white band; abdomen rufous; rest of underparts grey and white; flanks streaked with chestnut. Female similar but crown brown, streaked with black; breast brownish; throat band chestnut.

Distribution : India : Nagaland; Assam and Manipur.

Elsewhere : Myanmar.

272. ***Arborophila atrogularis*** (Blyth).

1850. *Arboricola atrogularis* Blyth, *Jour. Asiat. Soc. Bengal*, 18(2) : 819 (Assam, Sythet and Arrakan)

1969. *Arborophila atrogularis* (Blyth) Ali and Ripley, Vol. 2 : 62.

Common name : Whitecheeked Hill Partridge.

Diagnostic characters : Size smaller than the Grey Partridge (length 280 mm). Upperparts light olive-brown stippled and barred with black; scapular barred and mottled with black and rufous; forehead and supercilium grey; crown olive brown; nape rufous, spotted with black; a black line below supercilium; cheeks white; ear-coverts rufous-buff; chin throat and foreneck black diffusing through black and white into grey of breast and flanks; flanks grey; centre of abdomen whitish. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya, Mizoram and Tripura.

Elsewhere : Bangladesh and Myanmar.

Genus ***Bambusicola*** Gould, 1863 (1862)

274. ***Bambusicola fytchii hopkinsoni*** Godwin-Austen

1874. *Bambusicola hopkinsoni* Godwin-Austen, *Proc. zool. Soc. London* : 44 (Khasia Hills, Assam)

1969. *Bambusicola fytchii hopkinsoni* Godwin-Austen Ali and Ripley, Vol. 2 : 64

Common name : Assam Bamboo Partridge.

Diagnostic characters : Size, a little bigger than the Grey Partridge (length 350mm). Upperparts grey-brown, streaked with chestnut and spotted with blackish chestnut in scapular regions; lower wing chestnut spotted and streaked with white and grey; rest of underparts buff, with large black heart or half-moon shaped spots except on centre of abdomen and vent. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh and Myanmar.

Genus ***Tragopan*** Cuvier, 1829

288. ***Tragopan blythii blythii*** (Jerdon).

1870. *Ceriornis Blythii* Jerdon, *Proc. Asiat. Soc. Bengal*, : 60 (Hills at the head of the Assam Valley, i.e. Henema, Naga Hills, Assam)

1969. *Tragopan blythii blythii* (Jerdon) Ali and Ripley, Vol. 2 : 85.

Common name : Greybellied Tragopan.

Diagnostic characters : Size that of the village hen (length ♂ 630 mm and ♀590 mm). Male—Upperparts brown tinged with crimson and having white and maroon ocelli on back; forehead, crown, neck patch and border to the orange-yellow face and gular patch black; upper back, hindneck and supercilium bright crimson; upper breast bright crimson followed by smoky grey lower breast and belly; flanks and thighs mottled black and buff; tail rufous; underparts mottled, stippled and spotted with dark brown, rufous, and greyish white; centre of adbomen and vent uniform grey.

Distribution : India : Nagaland; Assam, Manipur and Mizoram.

Elsewhere : Myanmar,

Genus ***Lophura*** Fleming, 1822

296. ***Lophura leucomelana lathami*** (J.E. Gray)

1829. *Phasianus lathami* J.E.Gray, ex Griffith, Cuvier, *Anim. Kingd.*, 8 (Aves, 3) : 26 (Sylhet).

1969. *Lophura leucomelana lathami* (J.E. Gray) Ali and Ripley, Vol. 2 : 99.

Common name : Blackbreasted Kaleej Pheasant.

Diagnostic characters : Size, that of the Domestic fowl (length 600 mm - 680 mm). Entire upper plumage glossy blue-back with purple sheen; lower back and rump glossy blue-black, feathers edged with broad white; breast black glossed with steel-blue and purple, the feathers rounded, crown with black crest and tail shorter and straighter. In female, crown with upright crest; tail short, with central rectrices inconspicuously streaked with black, which appears plain chestnut.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Bhutan and Myanmar.

Genus ***Syrmaticus*** Wagle, 1832

308. ***Syrmaticus humiae humiae*** (Hume)

1881. *Callophasis humiae* Hume, Stray Feathers **9** : 461 (Manipur)

1969. *Syrmaticus humiae humiae* (Hume) Ali and Ripley, Vol. **2** : 119.

Common name : Mrs Hume's Barredback Pheasant.

Diagnostic characters : Size that of the large Domestic fowl (length ♂ 900 mm and ♀ 600 mm). In male head, neck and rump steel-blue, the last narrowly scalloped with white; facial skin bare crimson; back and mantle golden bay colour scalloped with black; scapular banded with white; wings provided with two white bands; tail grey with narrow chestnut and black cross bands; Chin, throat and foreneck glossy steel blue; lower breast like back, changing to deep chestnut on abdomen and flanks. In female, head reddish brown, crown streaked with black; upperparts sandy brown, streaked, mottled and barred with black; tail chestnut, rectrices barred with black and tipped white black spotted on upper breast, barred with pale grey on lower breast and flanks.

Distribution : India : Nagaland; Manipur and Mizoram.

Elsewhere : Myanmar.

Genus ***Polyplectron*** Temminck, 1813

309. ***Polyplectron bicalcaratum bakeri*** Lowe

1925. *Polyplectron bicalcaratum bakeri* Lowe,

1969. *Polyplectron bicalcaratum bakeri* Lowe Ali and Ripley, Vol. **2** : 120.

Common name : Bhutan Peacock-Pheasant.

Diagnostic characters : Size, that of the Domestic hen (length ♂ 600 mm and ♀ 500 mm). Upper plumage greyish brown, spotted and barred with whitish on back, rump and upper tail-coverts; violet green-blue, white rimmed, ocellated mantle, wing-coverts, and fan-shaped tail; head and neck brownish buff with a short frowzly crist; facial skin naked, yellowish pink; chin and throat whitish; rest greyish brown narrowly barred with whitish. Female similar to male but smaller and duller, with shorter tail; whitish on throat more extensive; ocelli on mantle less brilliant.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bangladesh and Bhutan.

Genus ***Pavo*** Linnaeus, 1758

311. ***Pavo cristatus*** Linnaeus

1758. *Pavo cristatus* Linnaeus, *Syst. Nat., ed.* 10, **1** : 156 ('India orientali, Zeylona' = India)

1969. *Pavo cristatus* Linnaeus Ali and Riply, Vol. **2** : 123.

Common name : Indian Peafowl.

Diagnostic characters : Size that of a goose excluding the train of the cock (length 2000 to 2500 mm including the train); female smaller than the male, less impressive and lacks the train. Male absolutely magnificent—head feathers short, metallic blue, crown bears a beautiful fan-shaped, spatula-tipped crest, erected on bare shafts; a white patch under the eye; a long slender blue neck; upperparts covered with scaly median feathers washed with copper; scapulars and median wing-feathers barred black and buff; wing quills and coverts chestnut; secondary black; upper tail-coverts 'train' form a group of long ocellated barles, each ocellus deep blue, surrounded by two broad rings of blue and bronze; tail dark brown; breast glossy bright blue; under tail-coverts black; a spur on leg above the hind toe.

Female—head rufous-brown; crown bears a crest similar to that of the male; upperparts brown; wing dark brown; lower neck metallic green; breast and abdomen buffy white.

Distribution : Nagaland. Greater part of India (Wild as well as feral) and Sri Lanka.

Family TURNICIDAE

Genus ***Turnix*** Bonnaterre, 1791

313. ***Turnix sylvatica dussumier*** (Temminck)

1828. *Hemipodius Dussumier* Temminck, pl. Col., livr. 76, pl. 454, f. 2 (Bengale)

1969. *Turnix sylvatica dussumier* (Temminck) Ali and Ripley, Vol. 2 : 128.

Common name : Little Bustard-Quail.

Diagnostic characters : Size that of the Spotted Munia (length 150mm). Crown blackish brown with a buffy white line running from the forehead to nape; a buffy white line over each eye; back and neck ferruginous, feathers edged with buff; mantle barred rufous and black; central tail feathers lengthened; underparts whitish with black spots on sides of breast and 'V' shaped flanks. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland except Himachal Pradesh and Jammu and Kashmir.

Elsewhere : Bangladesh, Nepal, Pakistan and Myanmar.

315. *Turnix tanki blanfordii* Blyth.

1863. Turnix Blanfordii Blyth, *Jour, Asiat, Soc, Bengal*, 32 : 80 (Burma and Arrakan, type from Thayetmyo)

1969. *Turnix tanki blanfordii* Blyth Ali and Riply, Vol. 2 : 131.

Common name : Burmese Yellowlegged Button Quail.

Diagnostic characters : Size that of the House Sparrow (length ♂ 150mm) and ♀ slightly larger.

Male : Less rich in colour than the females; upper plumage greyish brown, cross-barred and vermiculated with black; back dark grey with black spots on wings; chin and throat white; underparts light buff, unbarred but finely spotted with black on the sides of the breast; tail short.

Distribution : India : Nagaland; Assam, Manipur and Mizoram.

Elsewhere : Myanmar, Thailand, Yunnan, Cochinchina and Manchuria.

Family JACANIDAE

Genus *Hydrophasianus* Wagler, 1832

358. *Hydrophasianus chirurgus* (Scopoli)

1786. *Tringa chirurgus* Scopoli, *Del. Flor. et Faun. Insubr., fasc.* 2 : 92 ('In nova guiana' = Luzon ex Sonnerat)

1969. *Hydrophasianus chirurgus* (Scopoli) Ali and Ripley, Vol. 2 : 199

Common name : Pheasant-tailed Jacana.

Diagnostic characters : Size that of the Grey Partridge (length minus the tail 310mm). Breeding : Head white; nape yellow; upper plumage black; tail long, thin and arch shaped; face and foreneck white; lower plumage dark brown.

Non-breeding : pale brown and white; breast provided with a black 'necklace'; tail short and pointed. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Nepal, Pakistan, Sri Lanka, Myanmar, China, Cambodia, Java, Malaya Peninsula, Philippines, Tawain and Thailand.

Genus *Metopidius* Wagler, 1832

359. *Metopidius indicus* (Latham)

1790. *Parra indica* Latham, *Index orn.* 2 : 765 (India)

1969. *Metopidius indicus* (Latham) Ali and Ripley, Vol 2 : 201.

Common name : Bronzewinged Jacana.

Diagnostic characters : Size more or less that of the Grey Partridge (length ♂ 280 mm, ♀ 310 mm). Head, neck and breast glossy black; a white stripe over the eye; upper plumage olive-bronze; primaries black; tail chestnut; underparts and rump dull backish brown; bill greenish yellow, red at base. Sexes alike.

Distribution : India : Nagaland; throughout Indian mainland (excepting Western Punjab and Western Rajasthan).

Elsewhere : Bangladesh, Nepal, Bhutan, Pakistan, Myanmar, Cambodia, Java, Malaya Peninsula, Sumatra, Thailand and Vietnam.

Family CHARADRIIDAE

Genus *Vanellus* Brisson,1760

366. *Vanellus indicus indicus* (Boddaert).

1783. *Tringa Indica* Boddaert, *Table Pl. enlum* : 150 (Goa. ex Daubenton, pl. 807).

1969. *Vanellus indicus indicus* (Boddaert) Ali and Ripley, Vol. **2** : 212.

Common name : Redwattled Lapwing.

Diagnostic characters : Size larger than the Grey Partridge (length 330 mm). Back and wings bronze-brown; head, neck and breast black; a crimson fleshy wattles in front of each eye; a white band behind eyes running down sides of neck and wings to meet the white underparts. Sexes alike.

Distribution : India : Nagaland; throughout Indian mainland.

Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Eastern Transcaspian, Iraq, Iran, Arabia and Afghanistan.

Genus ***Pluvialis*** Brisson, 1760

373. ***Pluvialis dominica fulva*** (Gmelin)

1789. *Charadrius fulvus* Gmelin, *Syst. nat.*, **1**(2) : 687 (Tahiti).

1969. *Pluvialis dominica fulva* (Gmelin) Ali and Ripley, Vol. **2** : 222.

Common name : Eastern Golden Plover.

Diagnostic characters : Size, smaller than the Grey Partridge (length 240 mm). Head back and wing mottled brown, white and yellow, underparts whitish; breast mottled with brown, grey and yellow; axillaries grey. Sexes alike.

Distribution : India : Nagaland; throughout Indian Union.

Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, Myanmar, Thailand, Malaysia, Indo-chinese countries, S. China, Ocenia, Australia, Hawai Islands, East Africa and Pacific Coast of N. America. Breeds in Arctic Europe and Asia from Scandinavia to the Yenisey river, south to Latviya and W. Siberia .Winters chiefly in the Mediterranean countries.

Genus ***Charadrius*** Linnaeus, 1758

379. ***Charadrius dubius curonicus*** Gmelin.

1789. *Charadrius curonicus* Gmelin, *Syst. Nat.*, **1**(2) : 692 (Kurland)

1969. *Charadrius dubius curonicus* Gmelin Ali and Ripley, Vol. **2** : 231

Common name : European Little Ringed Plover.

Diagnostic characters : Size, that of the Sand plover (length 170 mm). Back sandy brown; Forecrown black, a black band from lores through eye to ear-coverts; a double coller on hind neck (a upper white, the lower black) underparts white with a black pectoral band.

Distribution : India : Nagaland; throughout Indian Union.

Elsewhere : Paskistan, Nepal, Bhutan, Bangladesh, Sri Lanka, Myanmar, Thailand, Malaya Peninsula, Indochina, New Guinea, Bismarck, Archipelago, apparently also the greater and Lesser Sunda Islands.

Genus ***Tringa*** Linnaeus, 1758

394. ***Tringa totanus eurhinus*** (Oberholer)

1900. *Totanus totanus eurhinus* Oberholser, *Proce. U.S. Nat Mus.* **22** : 207 (Tso Moriri Lake, 15,000 ft, Ladakh)

1969. *Tringa totanus eurhinus* (Oberholser) Ali and Ripley, Vol. **2** : 257.

Common name : Eastern Redshank.

Diagnostic characters : Size more or less that of the Grey Pertridge (length 280 mm). Upperparts greyish brown, mottled with black; lower back and rump white; throat, breast and underparts whitish, spotted and finely streaked with black and brown; secondaries broadly tipped with white forming a prominent wing bar, most conspicuous in flight; tail white,barred with brown; legs orange coloured. Sexes alike.

Distribution : India : Nagaland; found throughout India.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Myanmar and Maldive Islands. Breeds in Central and Eastern India, east to Transbaikalia and Western Kansu. Winters in India, Sri Lanka, Myanmar, Malay States, South China, Philippines, Sunda Islands and Celebes.

395. *Tringa stagnatilis* (Bechstein)

1803. *Totanus stagnatilis* Bechstein, *Orn. Taschenb. Deutschl*, 2 : 292, pl. 29 (Germany).

1969. *Tringa stagnatilis* (Bechstein) Ali and Ripley, Vol. 2 : 259.

Common name : Marsh Sandpiper or Little Greenshank.

Diagnostic characters : Size that of the Snipe (length 250 mm). Forehead, sides of the head, lower back and rump white, upper plumage greyish brown; underparts white; tail narrowly barred with brown. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union except Andaman and Nicobar Islands and Lakshadweep.

Elsewhere : Bangladesh, Pakistan, Sri Lanka, Myanmar. Breeds in South-East Europe, Central and South Russia and across middle Asia of lat 56° at least as far east as Transbaikalia, south to Turkestan and North Mangolia. Migrates in winger to Africa, Arabia, India, Myanmar, Indochinese Countries, Sunda Islands and Moluccas to Australia.

396. *Tringa nebularia* (Gunnerus).

1767. *Scolopax nebularia* Gunnerus, in Leem, Beskr. Finm. Lapper : 251 (District of Trondhjem, Norway)

1969. *Tringa nebelaria* Gunnerus Ali and Ripley, Vol. 2 : 261

Common name : Greenshank.

Diagnostic characters : Size that of the Grey Partridge (length 360 mm). Forehead, lower back, rump and tail white, the last faintly barred; sides of the foreneck and head greyish; upper plumage dark greyish brown; lower plumage white. Sexes alike.

Distribution : India : Nagaland; found throughout the Indian Union.

Elsewhere : Bangladesh, Pakistan, Nepal,Sri Lanka and Maldive Islands. Breeds in North Europe south to Leningrad, Kazan and across to North Asia to Kamchatka south to about 55° N. Winters in the Mediteranean Countries, Africa and eastward through South-east Asia to Australila and New-Zealand.

397. *Tringa ochropus* Linnaeus.

1758. *Tringa Ochropus* Linnaeus, *Syst. Nat. ed.* 10, 1 . 149 (in Europa = Sweden) [Name emended to ochropus]

1969. *Tringa ochropus* Linnaeus Ali and Ripley, Vol. 2 263.

Common name : Green Sandpiper.

Diagnostic characters : Size, more or less that of the Snipe (length 240 mm). Upper plumage dark brown with bronze-green tinge; head and neck ashy brown; chin white; outer primaries black, axillaries dark blackish; under wing-coverts blackish; rump brown; base of tail white; tail short and stumpy, white, conspicuously barred with dark brown; underparts white; breast and throat finely streaked with brown. Sexes alike.

Distribution : India : Nagaland; found throughout India except Nicobar Islands.

Elsewhere : Bangladesh, Pakistan, Bhutan, Nepal, Sri Lanka. Breeds in northern Europe and Asia, north to the Arctic Circle (locally to *c* 68°N), south to Transcaspia, Turkestan, North-West Mongolia and the Amur river. Winters in the British Isles, Mediterranean region, Africa South to Angola and Kenya and southern Asia, Hainan, Taiwan and the Philippines.

398. *Tringa glareola* Linnaeus.

1758. *Tringa Glareola* Linnaeus, *Syst.Nat., ed.*10, 1 : 149 (in Europa = Sweden)

1969. *Tringa glareola* Linnaeus Ali and Ripley, Vol. 2 265.

Common name : Wood or Spotted Sandpiper.

Diagnostic characters : Size that of the Grey Quail (length 210 mm). Upperparts greyish brown and sepia-brown indistincly spotted and market with white; lower back, rump and tail white, the last barred with blackish; a prominent white supercilium present; underparts whitish with pale dusky breast. Sexes alike.

Distribution : India : Nagaland; found all over India including Andaman Islands.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka and Bhutan. Breeds in North Europe and North Asia east to the Amur river, Kamchatka and northern Kurile Islands. Winters throughout Africa and South-east Asia, Japan, Philippines, Malay Archipelago to Australia.

401. ***Tringa hypoleucos*** Linnaeus.

1758. *Tringa hypoleucos* Linnaeus, *Syst-Nat ., ed,* 10, **1** : 149 (in Europa = Sweden).

1969. *Tringa hypoleucos* Linnaeus Ali and Ripley, Vol. **2** : 271.

Common name : Common Sandpiper.

Diagnostic characters : Size that of the Grey Quail (length 210 mm). Upperparts olive-brown; rump brown; tail brown tipped white, outer feathers white; head and neck ashy brown, streaked darker; supercilium broad and pale, underparts white with a broad diffused dusky band across breast. Sexes alike.

Distribution : India : Nagaland; found throughout India.

Elsewhere : Bangladesh, Pakistan, Nepal, Bhutan, Myanmar and Sri Lanka. Breeds throughout Europe and Asia south of the Tundra, south to North Span, North Italy, South Russia, Iran, Mongolia, Manchuria and Japan. Winters in Africa, India, Sri Lanka, South-east Asia north to South China, Taiwan, the Philippines, Malay Archipelago to Australia.

Genus ***Gallinago*** Koch, 1816

406. ***Gallinago stenura*** (Bonaparte)

1830. *Seolopax stenura* 'Kuhl' = Bonaparte, *Ann. Stor. Nat. Bologna* **4** : 335 (Sunda Islands).

1969. *Gallinago stenura* (Bpnaparte) Ali and Ripley, Vol. **2** : 282

Common name : Pintail Snipe.

Diagnostic characters : Size, somewhat large than the grey Quail (length 270 mm). Crown black with dark brown double streaks running from forehead to the nape; buffish white bands above the eyes run down the nape; upper plumage dark brown, heavily streaked with black, rufous and buff; rump and upper tail coverts rufous buff marked with black, wing feathers brown tipped with white; tail black tipped buff, central tail-feathers barred black and cinnamon; breast buff mottled with brown; underparts white; under tail-coverts banded buff and black. Sexes alike.

Distribution : India : Nagaland; found throughout India except Lakshadweep.

Elsewhere : Bangladesh, Pakistan, Bhutan, Nepal, Sri Lanka, Maldive Islands and Myanmar. Breeds in Eastern Siberia West to the Yenisey, north to c.lat. 67° south to east Turkestan, North Tibet, the upper Hoanng-Ho. Amureland and Sakhalin. Winters in India, Myanmar, Indochinese countries, Southern China, Hainan, Formosa, the Greater Sunda Islands and Timor.

409. ***Gallinago gallinago gallinago*** (Linnaeus).

1758. *Scolopax Gallinago* Linnaeus, *Syst. Nat., ed.* 10, **1** : 147 (in Europe = Sweden)

1969. *Gallinago gallinago gallinago* (Linnaeus) Ali and Ripley, Vol. **2** : 287.

Common name : Common or Fantail Snipe.

Diagnostic characters : Size larger than the Grey Quail (length including bill 270 mm). Back dark brown, heavily streaked with black, rufous and buff; underparts whitish; bill straight slender yellowish horny on basal half, dark horny brown on terminal half; three outer pairs of the tail feathers marked with dusky spots and bars. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Maldive Islands, Indochinese countries, China, Japan, Sunda Islands, Mediterranean region, Egypt, East Africa south to Kenya and Persia. Breeds in Europe and Asia from Scandinavia to eastern Siberia, north to lat-66°30' to 70°, South to the British Isles, Pyrenees, the alps Balkan States, Caucasus, Kirghiz Steppes, the Pamirs, Himalayas, Transbaikalia, the Amur River, Hokkaido and Kurile Is.

410. ***Gallinago minima*** (Brunnich).

1764. *Scolopax Minima* Brunnich, *Orn. Boreal* : 49 (E. Christianso, Denmark).

1969. *Gallingago minima* (Brunnich) Ali and Ripley, Vol. 2 : 290

Common name : Jack Snipe.

Diagnostic characters : Size, that of the Grey Quail (length including bill 210 mm). Back metallic green and purple sheen in the streaked dark brown; crown without the central strike; tail wedge-shaped, uniformly dark and pointed; bill shorter and stouter. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Myanmar, West Europe, Mediterranean region, Egypt, Iraq and Asia from N. Norway east to the Kolyma Delta, south to Denmark, E. Prussia, Baltic States, Central Russia and the forest steppe of Minussinsk; Southward limit in W. and E. Siberia not known.

Genus ***Scolopax*** Linnaeus, 1758

411. ***Scolopax rusticola rusticola*** Linnaeus

1758. *Scolopax Rusticola* Limmaeus, *Syst. Nat., ed.* 10, 1 : 146 (Europe, restricted type locality, sweden)

1969. *Scolopax rusticola rusticola* Linnaeus Ali and Ripley, Vol. 2 : 292.

Common name : Woodcock.

Diagnostic characters : Size smaller than the Partridge (length including bill, 360 mm). Back brownish grey blotched and barred with black, rufous and buff; hind crown, neck and rump cross barred with black and rufous; Chin white; throat, breast and abdomen brownish white cross barred with dark brown; nape with alternate pale bars; large eyes are situated high up and far back in the head. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Bhutan, Pakistan, Nepal, Sri Lanka and Myanmar. Breeds in the British Isles, Scandinavia, Russia and across Asia, south to the Pyrennes, Alps, northern Balkan States, Kashmir the Himalaya, Ussuri and Japan. Winters in the southern parts of its range, the Mediterranean region, Egypt, India, Sri Lanka, South China and Japan.

Genus ***Calidris*** Merrem, 1804

416. ***Calidris minutus*** (Leisler)

1812. *Tringa minuta* Leisler, *Nachtrage zu Bechstein's Naturg. Deutschl* : 74 (Hanauy am Main, Germany)

1969. *Calidris minutus* (Leisler) Ali and Ripley, Vol 2 : 301.

Common name : Little Stint.

Diagnostic characters : Size smaller than the Grey Quail (length 150 mm). Back motted greyish brown; underparts white; outer tail-feathers smoky brown; bill and legs black; wings with narrow wingbar. Sexes alike.

Distribution : India : Nagaland : Throughout the Indian Union except Nicobar Islands.

Elsewhere : Pakistan, Nepal, Sri Lanka, Myanmar. Breeds in 'the arctic tundra from 30°E long. eastward to about the delta of the Yana, and also Kolguev and Vaigach islands, southern Novaya Zemlya and New Siberian Archipelago'. Winters in Africa south to Cape Province, and from the southern shores of the Caspian to Ceylon.

417. ***Calidris temminckii*** (Leisler)

1812. *Tringa Temmincki* Leisler, *Nachtrage zu Bechstein's Naturg. Deutschl.* : 64 (Hanau am Main, (Germany)

1969. *Calidris temminckii* (Leisler) Ali and Ripley, Vol. 2 : 303.

Common name : Temminck's Stint.

Diagnostic characters : Size larger than the House Sparrow(length 150 mm). Upper plumage grey brown; Wing—bars faint; outer tail-feathers white; breast suffused ash-brown; under plumage white; legs olive-brown. Sexes alike.

Distribution : India : Nagaland; found throughout India.

Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Myanmar and Maldive, China, Iran, Iraq,

Japan, Malay Peninsula, North-east Africa and Europe to northern Asia (Siberia), migrating south of its breeding range.

Genus ***Philomachus*** Merrem, 1804

426. ***Philomachus pugnax*** (Linnaeus)

1758. *Tringa pugnax* Linnaeus, *Syst. Nat., ed.* 10, **1** : 148 (in Europe minus boreali = Southern Sweden)

1969. *Philomachus pugnax* (Linnaeus) Ali and Ripley, Vol. **2** : 318.

Common name : Ruff.

Diagnostic characters : Size that of the Grey Partridge (length ♂ 310 mm, ♀ 250 mm) upper plumage greyish brown, mottled with black and buff; wings brownish buff, marked with a narrow white wing-band; rump and tail dark brown, the latter with a white patch on either side at its base; breast pale buff; lower plumage buff-white; bill short and straight. Sexes indistinguishable in winter.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Nepal, Pakistan, Sri Lanka, Myanmar, Africa, America (North), Atlantic Island (eastern), Antilles (Lesser). Breeds in Palaearctic region, migrates south of its breeding.

Family ROSTRATULIDAE

Genus ***Rostratula*** Vieillot, 1816

429. ***Rostratula benghalensis benghalensis*** (Linnaeus)

1758. *Rallus benghalensis* Linnaeus, *Syst. Nat.*, ed. 10, 1 :153 (Asia)

1969. *Rostratula benghalensis benghalensis* Ali and Ripley, Vol. **2** : 325

Common name : Painted Snipe.

Diagnostic characters : Size larger than the Grey Quail (length 250 mm). Upperparts metallic olive or bronze-green with buff and blacky streaks; Chin, throat and upper breast chestnut; lower breast blackish; belly and vent white; whitish 'spectacles' with a white patch behind eye and white bands over shoulders to sides of breast. Outside breeding period the sexes more or less alike and difficult to distinguish.

Distribution : India : Nagaland; throughout the India mainland.

Elsewhere : Africa south of the Sahara to Cape Province; Egypt, Madagascar, South Asia from Asia Minor through Persia to South and East China and Japan, South to Arabia, Sind, Myanmar, Sri Lanka, Malay Peninsula, Cambodia, Philippines, Borneo, Sumatra and Java.

Family RECURVIROSTRIDAE

Genus ***Himantopus*** Brisson, 1760

430. ***Himantopus himantopus himantopus*** (Linnaeus)

1758. *Charadrius Himantopus* Linnaeus, *Syst. Nat., ed.* 10, **1** : 151 (Southern Europe).

1969. *Himantopus himantopus himantopus* (Linnaeus) Ali and Ripley, Vol. **2** : 329.

Common name : Indian Blackwinged Stilt.

Diagnostic characters : Size that of the Grey Partridge, with bare slender legs (length 250 mm). Male : Upper plumage glistening white; mantle and wings glossy metallic black; head spotted with black; tail pale grey brown; under surface of wings black; lower plumage glistening white. Female has black portions of male replaced by brown, and the white head and hindneck sullied with brownish grey.

Distribution : India : Nagaland; throughout the Indian Union except Andaman and Nicobar Islands and Lakshadweep.

Eleswhere : Bangladesh, Pakistan, Bhutan, Nepal and Myanmar. Breeds in the Mediterranean region; about the mouth on the Danube; steppes of the South Russia; South Asia east to China and South Arabia, India and Malay States; Egypt; Africa south of the Sahara; Madagascar. Migrating only in the northern part of its range.

Family BURHINIDAE

Genus *Burhinus* Illiger, 1811

436. *Burhinus oedicnemus indicus* (Salvadori)

1865. *Oedicnemus indicus* Salvadori, *Atti Soc. Ital. Sci. Nat, Milano* 8 : 381(India)

1969. *Burhinus oedicnemus indicus* (Salvadori) Ali and Ripley, Vol. 3 : 2

Common name : Indian Stone Curlew.

Diagnostic characters : Size, larger than the Grey Partridge (length 410 mm). Upper plumage sandy greyish brown with rufescent-edged feathers and black shaft stripes; a black line through eye; white streak below and behind eyes; wings blackish brown with white marks on primaries; wing coverts brown with two prominent whitish and dark brown bars; tail ashy brown tipped with black and crossed by a subterminal white bar; breast streaked with dark brown; abdomen whitish; under tail-coverts pale rufous. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland.

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

Genus *Esacus* Lesson, 1831

437. *Esacus magnirostris recurvirostris* (Cuvier)

1829. *Odicnemus recurvirostris* Cuvier, *Regne. Anim. ed.* 2, 1 : 500, note (No locality = Nepal, *fide* Baker)

1969. *Esacus magnirostris recurvirostris* (Cuvier), Ali and Ripley, Vol. 3 : 5

Common name : Great Stone Plover.

Diagnostic characters : Size equal to the domestic hen (length 510 mm). Upper mandible more or less straight, lower mandible slightly upturned; eyes large; head and forehead darkly striped, spectacled white; upper plumage grey; wing-coverts darker; grey band conspicuous; underparts whitish; black and white patch on primaries conspicuous in flight. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Hainan Island, Myanmar, Nepal, Pakistan, Sri Lanka and Central Vietnam.

Family LARIDAE

Genus *Sterna* Linnaeus, 1758

463. *Sterna aurantia* J.E. Gray

1831. *Sterna aurantia* J.E. Grey, in Hardwicke's *Ill. Ind. Zool.* 1(5) : pl. 69, f. 2 (India)

1969. *Sterna aurantia* J.E. Gray, Ali and Ripley, Vol. 3 : 48.

Common name : Indian River Tern.

Diagnostic characters : Size that of the House Crow (length 380-460 mm). Summer : Upper plumage pale grey; crown and sides of head and nape black glossed with green; a white spot under each eye; underparts white. Sexes alike. Winter : Upper plumage grey to pale grey; crown light grey flecked and streaked with black; underparts white.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Bangladesh, Malay Peninsula, Myanmar, Nepal (lowlands) and Pakistan.

470. *Sterna acuticauda* J.E.Gray

1831? (1830-1832), *Sterna acuticauda* J.E. Gray, in Hardwicke's *Ill. Ind. Zool.* 1(6) : pl. 70, f 3 (Cawnpore, India).

1969. *Sterna acuticauda* J.E.Gray, Ali and Ripley, Vol. 3 : 57.

Common name : Blackbellied Tern.

Diagnostic characters : Size smaller than the House Crow (length 330 mm). Summer : Upper plumage ashy grey; head and nape black; cheeks, chin and throat white; innermost primaries tinged brown, outer whitish; tail pale grey; neck grey passing to Chocolate on upper breast; breast black. Sexes alike. Winter : Forehead white, streaked black; a black patch behind the eye; underparts light greyish white.

Distribution : India : Nagaland; throughout the Indian Union.

Elsewhere : Southern Baluchistan, Bangladesh, Myanmar, Nepal, Pakistan, Western Indochina and Thailand.

Family COLUMBIDAE

Genus *Treron* Vieillot, 1816

494. *Treron sphenura sphenura* (Vigors)

1832 (1831). *Vinago sphenura* Vigors, *Proc. zool, Soc. Lond.*, : 173 (Himalayas)

1969. *Treron sphenura sphenura* (Vigors), Ali and Ripley, Vol. **3** : 96.

Common name : Kokla or Wedgetailed Pigeon.

Diagnostic characters : Size equal to the Pigeon (length 330 mm). Overall yellowish green. Male has the crown tinged with orange-rufous; mantle largely maroon; Chin and throat yellow; breast orange-pink. Female like male but without rufous crown and maroon in upper parts.

Distribution : India : Nagaland; Arunachal Pradesh, Assam (hilly region south of Brahmaputra river), Himachal Pradesh, Kashmir and Sikkim.

Elsewhere : Bhutan, Chin Hills, Myanmar and Nepal.

495. *Treron curvirostra nipalensis* (Hodgson)

1836. *Toria Nipalensis* Hodgson, *Asiat. Res.* **19**(1) : 164 (Nepal).

1969. *Treron curvirostra nipalensis* (Hodgson), Ali and Ripley, Vol. **3** : 97.

Common name : Thickbilled Green Pigeon.

Diagnostic characters : Size smaller than the Pigeon (length 270 mm). Male with chestnut-maroon mantle, a prominent yellow wing-bar, and grey and olive-green tail ; rest of upper parts olive-green. The thick bright red and greenish bill, and green naked skin round eye are recognition points. Female similar to male but lacks the chestnut on mantle and has whitish under tail-coverts barred with a dark green instead of uniform pale cinnamon in male.

Distribution : India : Nagaland; Arunachal Pradesh, Assam (hills south of Brahmaputra river), Manipur, Mizoram, Sikkim and northern West Bengal (the Duars).

Elsewhere : Bangladesh, Bhutan, Indochinese countries, Myanmar, Nepal and Thailand.

499. *Treron pompadora phayrei* (Blyth)

1862. *Osmotreron Phayrei* Blyth, *J. Asiat. Soc. Beng.*, **31** : 344 (Tounghoo, Burma)

1969. *Treron pompadora phayrei* (Blyth), Ali and Ripley, Vol. **3** : 102

Common name : Ashyheaded Green Pigeon.

Diagnostic characters : Size smaller than the Pigeon (length 280 mm). Entire plumage yellowish green with crown and nape dark ashy grey. Back and scapular Chestnut-maroon. Wings black with a broad yellow band. Middle tail feathers olive-green. Breast orange; rest of underparts olive-green. Female similar to male, but lacks chestnut mantle and orange breast.

Distribution : India : Nagaland; Arunachal Pradesh, Assam (north and south of Brahmaputra river) Manipur and West Bengal (recorded south to Kolkata).

Elsewhere : Bangladesh, Indochinese countries, Myanmar and Thailand.

501. *Treron bicincta bicincta* (Jerdon)

1840. *Vinago bicincta* Jerdon, Madras *Jour. Lit. sci.* **12** : 13 (Sea Coast south of Tellicherry).

1969. *Treron bicincta bicincta* (Jerdon), Ali and Ripley, Vol. **3** : 104.

Common name : Indian Orangebreasted Green Pigeon.

Diagnostic characters : Size equal to Pigeon (length 290 mm). In male back olive-green, head light yellow. Underparts yellow with green marked with a lilac band on upper breast followed by orange band across lower breast. Tail slaty with a broad subterminal band, black below with a grey tip. In female, back olive-yellow. Female lacks lilac and orange breast bands; under tail-coverts pale cinnamon with greenish mottling.

Distribution : India : Nagaland; Assam (north and south of Brahmaputra river) Bihar, Karnataka, Manipur, Orissa, Uttar Pradesh (terai and the lower Himalayas c-15000 m.) and West Bengal.

Elsewhere : Bangladesh, Malay Peninsula, Myanmar, Nepal, Thailand and South Vietnam.

Genus ***Ducula*** Hodgson, 1836

512. ***Ducula badia griseicapilla*** Walden

1875. *Ducula griseicapilla* Walden, *Ann. and Mag. Nat. Hist.* (4), **16** : 228 (Kareen Hills, between 4000 and 4200 feet).

1969. *Ducula badia griseicapilla* Walden, Ali and Ripley, Vol. **3** : 119.

Common name : Greyheaded Imperial Pigeon.

Diagnostic characters : Size similar that of the Jungle Crow (length 510 mm). Crown grey, contrasting with lilac hindneck; back and mantle maroon tinged copper-brown; rump ashy; tail black and brownish grey; sides of head grey; throat white; rest vinous grey. Sexes alike.

Distribution : India : Nagaland; Manipur.

Elsewhere : Myanamar, all the Indochinese countries, Thailand, and SW Yunnan to N. Tenasserim.

Genus ***Columba*** Linnaeus, 1758

520. ***Columba hodgsonii*** Vigors

1832. *Columba Hodgsonii* Vigors, *Proc. zool. Soc. London*, pt. 2 : 16 (Nepal)

1969. *Columba hodgsonii* Vigors, Ali and Ripley, Vol. **3** : 131.

Common name : Speckled Wood Pigeon.

Diagnostic characters : Size larger than the Pigeon (length 380 mm). Head and neck grey, the latter speckled with blackish behind. Mantle claret-maroon speckled with white on coverts. Rest of upper plumage dark brown and slaty grey; tail blackish brown; upper breast speckled with blackish grey and claret; lower breast uniformly claret; abdomen and under tail-coverts deep slaty. Female has the head brownish grey and red of mantle and breast duller and browner.

Distribution : India : Nagaland; Arunachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Sikkim and Uttar Pradesh (hilly region-high altitude).

Elsewhere : Bhutan, Western China, Myanmar and Nepal.

523. ***Columba pulchricollis*** Hodgson.

1846 (1845). *Columba pulchricollis* 'Hodgson'=Blyth. *J. Asiat. Soc. Beng.*, **14**(2) : 866 (Wooded region of eastern Himalaya, i.e. Nepal)

1969. *Columba pulchricollis* Hodgson, Ali and Ripley, Vol. **3** : 134.

Common name : Nepal or Ashy Wood Pigeon.

Diagnostic characters : Size somewhat smaller than the House Crow (length 360mm). Head and nape pale grey; a prominent buff collar, broad and black-stippled on hindneck, narrow in front. Upper back blackish with green and lilac sheen; lower back and rump blackish laden grey excepting the blackish brown wings and tail; chin white; throat buff; breast dark slaty blue; abdomen and vent brownish buff. Sexes alike.

Distribution : India : Nagaland; Arnunachal Pradesh, Sikkim and West Bengal (Duars).

Elsewhere : Arakan, NE Myanmar, Nepal (West-Central), Taiwan and N. Thailand.

524. ***Columba punicea*** Blyth

1842. *Columba (Alsocomus) puniceus* 'Tickell' = Blyth. *J Asiat. Soc. Beng.*, **11**(1) : 461 (Chyebassa = Chaibasa, Bihar).

1969. *Columba punicea* Blyth, Ali and Ripley, vol **3** 135.

Common name : Purple Wood Pigeon.

Diagnostic characters : Size equal to the Rock Pigeon (length 360 mm). Male-upperparts chestnut-brown; crown and nape greyish white; rump slaty; tail blackish brown; underparts vinous chestnut. Female somewhat smaller and duller. Head browner grey with a lilac gloss.

Distribution : India : Nagaland; Assam, Bihar, eastern Madhya Pradesh (Bastar dist), Manipur, Orissa and West Bengal.

Elsewhere : Bangladesh, Laos, northern Malay, Myanmar, Thailand and Central Vietnam.

Genus ***Macropygia*** Swainson, 1837

526. ***Macropygia unchall tusalia*** (Blyth)

1843. *Columba tusalia* Hodgson' = Blyth, *J. Asiat Soc Beng.*, **12**(2) : 936 (Darjeeling)

1969. *Columba unchall tusalia* (Blyth), Ali and Ripley, Vol. **3** : 138.

Common name : Bartailed Cuckoo-Dove.

Diagnostic characters : Size equal to Pigeon but with longer tails (length 410 mm). Male—Forehead buff; crown lilac purple; hindneck metallic green. Rest of upperparts rufous barred with black; Chin and throat lilac-buff; breast and abdomen dark and metallic lilac; lower breast dull lilac; abdomen buff. In female the upperparts duller; head and breast barred with dark brown.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Uttar Prradesh and West Bengal.

Elsewhere : Bhutan, Myanmar, Nepal, W. Szechuan and Thailand.

Genus ***Streptoplelia*** Bonaparte, 1855

532. ***Streptopelia orientalis agricola*** (Tickell)

1833. *Columba agricolla* Tickell, *J. Asiat. Soc. Beng*, **2** : 518 (Jangles of Borabhum and Dholbhum).

1969. *Streptipetia orientalis agricola* (Tickell), Ali and Ripley, Vol. **3** : 145.

Common name : Eastern Turttle-Dove.

Diagnostic characters : Size similar to Pigeon (length 330 mm). Upper plumage with rufous and blackish scally patterned ; rump slaty grey ; hindneck bears a black and grey 'Chessboard' ; tail black with a broad slaty band at end; Chin and throat whitish; breast pale vinous-rufous ; abdomen and vent white. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam (hilly region south of Brahmaputra rive), Manipur, Mizoram and Sikkim.

Elsewhere : Bangladesh, Bhutan and Central Nepal.

536. ***Streptopelia tranquebarica humilis*** (Temminck)

1842. *Columba humilis* Temminck, *Pl. Col. Livr.* **44** : 259 [but not pl. 258] (Bengal and Luzon).

1969. *Streptopelia tranquebarica humilis* (Temminck), Ali and Ripley, Vol. **3** : 151.

Common name : Burmese Red Turtle-Dove.

Diagnostic characters : Size almost like the Ring Dove (length 230 mm). Male : upper plumage vinous red ; head, lower back and rump dark ashy to slaty grey; a black collar round the hind neck; wings dark grey and black, white at the end; lower plumage vinous-red; under tail-coverts white. Female : upper plumage brown; head grey; breast light brownish; collar as in male.

Distribution : India : Nagaland; Andaman Islands, Arunachal Pradesh, Assam, Manipur, Meghalaya, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, North China, Indochinese Countries, Myanmar, Philippines, Thailand and Tibet.

Family PSITTACIDAE

Genus ***Psittacula*** Cuvier, 1800

545. ***Psittacula eupatria nipalensis*** (Hodgson)

1836. *Palaeornis Nipalensis* Hodgson, *Asiat. Res.*, **19**(1) : 177 (Nepal)

1969. *Psittacula eupatria nipalensis* (Hodgson), Ali and Ripley, Vol. **3** : 164.

Common name : Large Indian Parakeet.

Diagnostic characters : Size that of the Pigeon minus the long pointed tail (length 530 mm). Entire plumage grass green with a red shoulder patch. Male has a prominent rose pink collar on hind neck, joined to lower mandible by a broad black band. Female lacks the pink collar and black band.

Distribution : India : Nagaland; Andhra Pradesh (northern part), Arunachal Pradesh , Assam, Gujarat, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Orissa, Punjab, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and West Pakistan.

551. *Psittlacula alexandri fasciata* (P.L.S. Muller)

1776. *Psittacula fasciatus* P.L.S. Muller, *Natursyst., Suppl* : 74 (Pondicherry, errore, restricted to Arakan by Ticehurst, 1933, *J. Bombay nat. Hist. Soc*, **36** : 934)

1969. *Psittacula alexandri fasciata* (P.L.S. Muller), Ali and Ripley, Vol. 3 : 172.

Common name : Indian Redbreasted Parakeet.

Diagnostic characters : Size slightly smaller than the Pigeon, with long pointed tail (length 380 mm). In male, head greyish pink; forehead black; a broad black line extending from lower mandible to sides of head; a prominent yellow shoulder patch; throat and breast vinaceous-red. Female has the head tinged with blue-green ; breast redder and darker; bill black against yeallow in male.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim.

Elsewhere : Bangladesh, Bhutan, Hainan Island, Myanmar, Indochinese Countries, N. Vietnam, S. China and Sw. Yunnan.

563. *Psittacula finschii* (Hume)

1874. *Palaeornis Finschii* Hume, *Stray Feathers*, 2 : 509 (Kollidoo, 3500-5000 ft., upper Salween River, Burma)

1969. *Psittacula finschii* (Hume), Ali and Ripley, Vol. 3 : 184.

Common name : Eastern Slatyheaded Parakeet.

Diagnostic characters : Size equal to Myna but with a long, pointed tail (length 360mm).Entire head slate colour. Back and wings greenish yellow. Central tail feathers longer and narrower, lilac blue in the middle and duller lilac yellow on the terminal halves. A prominent dark red patch on wing shoulder. In female, the red shoulder patch absent.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh (Sylhet-Chittagang area), Southern Laos, Myanmar, N. Thailand, Central Vietnam and W. Yunnan.

Genus *Loriculus* Blyth, 1850

566, 567. *Loriculus vernalis* (Sparrman)

1787. *Psittacus vernalis* Sparrman, *Mus. carls. fasc.* 2, no xxix and pl. (No locality=Cachar)

1969. *Loriculus vernalis* (Sparrman), Ali and Ripley, Vol 3 : 188.

Common name : Indian Lorikeet.

Diagnostic characters : Size equal to the House Sparrow (lenth 140 mm). Entire plumage bright grass green; rump with rich crimson patch. Sexes alike, but male has a small blue throat-patch which female lacks.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Kerala (associated hills), Madhya Pradesh (eastern parts), Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu (assooiated hills), Tripura and Andaman & Nicobar Islands.

Elsewhere : Arakan, Bangladesh (Sylhet, Chittagang), Indochinese Countries, Central and Southern Myanmar, Nepal and Thailand.

Family CUCULIDAE

Genus *Clamator* Kaup, 1829

569. *Clamator coromandus* (Linnaeus)

1766. *Cuculus coromandus* Linnaeus, *Syst. Nat. ed.* 12, 1 : 171 (Coromandel = Pondichery)

1969. *Clamator coromandus* (Linnaeus), Ali and Ripley, Vol. 3 : 192.

Common name : Redwinged Crested Cuckoo.

Diagnostic characters : Size equal to House Crow (length 470 mm). Back and head with crest glossy metallic black; a white half-collar on hindneck; wings chestnut; chin, throat and breast rust colour; rest whitish. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Celebes, China, Indochinese Countries, Indonesia, Malay Peninsula, Myanmar, Nepal, Philippines and Thailand.

Genus *Cuculus* Linnaeus, 1758

572. *Cuculus sparverioides sparverioides* Vigors

1832 (1831). *Cuculus sparverioides* Vigors, *Proc, zool. Soc. London,* **1** : 173 (Himalayas)

1969, *Cuculus sparverioides sparverioides* Vigors, Ali and Ripley, Vol. **3** : 198.

Common name : Large Hawk-Cuckoo.

Diagnostic characters : Size smaller than the House Crow (length 380 mm). Upper back ashy brown; crown, nape and sides of neck ashy grey. Tail brown banded with blackish and tipped with white. Throat white streaked with ashy and rufous. Breast deep rufous. Lower breast and belly rufous tinged with white and Crossbarred with brown. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Himachal Pradesh, Karnataka, Kashmir, Kerala, Manipur, Madhya Pradesh, Orissa, Sikkim and Tamil Nadu.

Elsewhere : Bhutan, China (migratory), Myanmar (hills), Nepal, S.Vietnam, Szechuan and Thailand. In winter–Borneo, Celebes (Sulawei), Java, Malay Peninsula, Philippines and Sumatra—Peters.

575. *Cuculus fugax nisicolor* Blyth

1843. *Cuculus nisicolor* Blyth, *J. Asiat. Soc. Beng.*, **12**(2) : 943 (Nepal)

1969. *Cuculus fugax nisicolor* Blyth, Ali and Ripley, Vol. **3** : 203.

Common name : Hodgson's Hawk-Cuckoo.

Diagnostic characters : Size smaller than the Pigeon (length 290 mm). Head, hindneck slaty grey. Wings brownish; tail alternately banded grey and black, tipped with rufous; chin grey; throat white streaked with grey. Rest of underparts rufous; under tail-coverts white. Sexes alike.

Distribution : India Nagaland : Arunachal Pradesh, Assam (hills), Manipur and Sikkim.

Elsewhere : Bangladesh, Bhutan and Nepal. Breeds in S. China, Indochinese Countries, Myanmar and Thailand.

579. *Cuculus canorus bakeri* Hartert

1912. *Cuculus canorus bakeri* Hartert, *Vog. pal. Fauna,* **2** : 948 (Shillong = Meghalaya)

1969, *Cuculus canorus bakeri* Hartert, Ali and Ripley, Vol. **3** : 210.

Common name : Khasi Hills Cuckoo.

Diagnostic characters : Size equal to Blue Jay (length 330 mm) Male : upper plumage blackish slaty; wings brown; inner webs of quills barred with white; tail blackish brown, spotted and tipped with white, long and graduated; Chin, throat and ear-coverts ashy-grey; lower plumage white, closely barred with dark brown and black; under tail-coverts white. Female : Overall brown; a buffy brown breast band; lower plumage tinged with rufous; lower throat and upper breast buff and brown. Hepatic variety in female not uncommon which reddish or barred chestnut with blackish brown; closely resembles the plumage of the Kestrel.

Distribution : India : Nagaland; Arunachal Pradesh (hilly region South of Brahmaputra river), Assam, Manipur, Meghalaya, Mizoram and Sikkim.

Elsewhere : Bangladesh, Bhutan, W.Kansu, Myanmar and W. Szechuan.

580. *Cuculus saturatus saturatus* Blyth

1843. *Cuculus saturatus* 'Hodgson' = Blyth, *J. Asiat. Soc. Beng.*, **12**(2) : 942 (Nepal)

1969. *Cuculus saturatus saturatus* Blyth, Ali and Ripley, Vol. **3** : 211.

Common name : Himalayan Cuckoo.

Diagnostic characters : Size smaller than the Pigeon (length 310 mm). Similar to the preceeding bird but with the edge of the wing-shoulder pure white without any brown barring. Black bars on underparts bolder and wider.

Distribution : India : Nagaland; Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Rajasthan, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, China, Myanmar, Nepal, Pakistan, Taiwan and Thailand.

581. *Cuculus poliocephalus poliocephalus* Latham

1790. *Cuculus poliocephalus* Latham, *Index Orn.*, 1 : 214 (India)

1969. *Cuculus poliocephalus poliocephalus* Latham. Ali and Ripley, Vol. 3 : 213.

Common name : Small Cuckoo.

Diagnostic characters : Size larger than the Myna with longer tail (length 250 mm). Upperparts slaty grey. Throat and upper breast suffused with buff; lower breast and belly white with black bars. Sexes more or less alike.

Distribution : India : Nagaland; Andaman Islands, Andhra Pradesh, Arunachal Pradesh, Assam (hills), Gujarat, Karnataka, Kashmir, Kerala, Madhya Pradesh, Maharashtra, Sikkim and Tamil Nadu (Nilgiris).

Elsewhere : Afghanistan, Bhutan and Nepal. Breeds in W. and Central China, Japan and Manchuria.

Genus *Cacomantis* S. Muller, 1843.

582. *Cacomantis sonneratii sonneratii* (Latham)

1790. *Cuculus sonneratii* Latham, *Index Orn.*, 1 : 25 (India).

1969. *Cacomantis sonneratii soneratii* (Latham), Ali and Ripley, Vol. 3 : 215. 19

Common name : Indian Baybanded Cuckoo.

Diagnostic characters : Size equal to the common Myna (length 240 mm). Above bright rufous colour, prominently crossbarred with brown; tail rufous, the feathers tipped white and subtipped black; below whitish, with fine wavy brown cross-bars. Sexes alike.

Distribution : India : Nagaland; Lower Himalays—from Kumaon through Sikkim, Assam and plains of Gujarat, Madhya Pradesh, Orissa, West Bengal, Maharashtra, Andhra Pradesh, Tamil Nadu, Mysore and Kerala.

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

585. *Cacomantis merulinus querulus* Heine

1863. *Cacomantis querulus* Heine, *Jour-f- Orn.*, 11 : 352 New name for *Polyphasia tenuirostris* Jerdon, not *Cuculus tenuirostris* Gray, 1834, which=*Cacomantis passerinus* (Vahl) (Lower Bengal, Assam, Sylhet, Burma and China)

1969. *Cacomantis merulinus querulus* Heine, Ali and Ripley, Vol. 3 : 220.

Common name : Rufousbellied or Burmese Plaintive Cuckoo.

Diagnostic characters : Size equal to the Common Myna (length 230 mm). Upperparts slaty and brown. Tail blackish with white tips to the feathers, the outer one also barred with white; chin and throat grey; rest of underparts rufous-brown to rusty red. Sexes alike. Hepatic variety in female not uncommon which reddish or barred chestnut with blackish brown, closely resembles the plumage of the Kestrel.

Distribution : India : Nagaland; Andhra Pradesh, Assam, Arunachal Pradesh, Madhya Pradesh, Meghalaya, Manipur, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Bangladesh, China, Myanmar, Thailand, Indochinese Countries, Northern Malay and Hainan.

Genus *Chalcites* Lesson, 1830

587. *Chalcites xanthorhynchus xanthorhynchus* (Horsfield)

1821. *Cuculus xanthorhynchus* Horsfield, *Trans. Linn Soc London*, 13(1) : 179 (Java).

1969. *Chalcities xanthorhynchus xanthorhynchus* (Horsfield), Ali and Ripley, Vol. 3 : 223.

Common name : Violet Cuckoo.

Diagnostic characters : Size large than the House Sparrow (length 170 mm). Male : Upperparts glistening metallic violet. Tail blackish, all the feathers tipped with white, the outermost barred with white. Chin to upper breast glistening violet; rest of underparts banded with

broad white and violet bands. Female : greenish bronze with copperly tinge above, and sometimes a little white on forehead; tips of primaries and rectrices greener. Tail banded with green and chestnut and tipped with white on all except the central pair of feathers. Below, including sides of head and neck, alternately banded with white and bronze green, the band narrowest on chin and throat, broadest on vent.

Distribution : India : Nagaland; Andaman Island, Assam, Meghalaya, Manipur, Mizoram, Tamil Nadu, Tripura and West Bengal.

Elsewhere : Bangladesh, SW. Yunnan, Central Vietnam, Malay Peninsula, Thailand, South Vietnam, Sumatra, Lingga, Archipelago, Java and Borneo.

Genus ***Surniculus*** Lesson, 1830

588. ***Surniculus lugubris dicruroides*** (Hodgson)

1839. *Pseudornis Dicruroides* Hodgson, *J. Asiat. Soc. Beng,* **8** : 136 and pl. (Mountains of Nepal)

1969. *Surniculus lugubris dicruroides* (Hodgson), Ali and Ripley, Vol. **3**; 224.

Common name : Indian Drongo-Cuckoo.

Diagnostic characters : Size that of the Common Myna with longer forked tail (length 250 mm) Entire pumage glossy metallic black. Tail forked. Outermost tail-feathers near their base barred with white. Sexes alike.

Distribution : India : Nagaland; Northern India from Jammu & Kashmir to Arunachal Pradesh, Assam, Manipur, Meghalaya and Southern India upto Kerala.

Elsewhere : Bangladesh, Myanmar, Nepal, Pakistan, China, Indochinese Countries, Hainan and Thailand.

Genus ***Eudynamys*** Vigors & Horsfield, 1826

591.***Eudynamys scolopacea malayana*** Cabanis & Heine

1863,(1862-63). *Eudynamys malayana* Cabanis & Heine, Mus.Hein., Th. **4**(1) : 52 (Sunda Islands and Sumatra).

1969. *Eudynamys scolopacea malayana* Cabanis & Heine, Ali and Ripley, Vol. **3** : 229.

Common name : Malay Koel.

Diagnostic characters : Size equal to House Crow with longer tail (length 430 mm). In male, entire plumage glistening metallic black. Bill yellowish green. Eyes crimson. Female, dark brown spotted, barred and mottled with white.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya and Tripura.

Elsewhere : Bangladesh, Myanmar, Indonesia, Malayasia and Thailand.

Genus ***Rhopodytes*** Cabanis & Heine, 1863.

593. ***Rhopodytes tristis tristis*** (Lesson)

1830. *Melias tristis* Lesson, *Traite d'Orn., livr.* **2** : 132 (Sumatra, errore = Bengal)

1969. *Rhopodytes tristis tristis* (Lesson), Ali and Ripley, Vol. **3** : 231

Common name : Large Greenbilled Malkoha.

Diagnostic characters : Size equal to the Pigeon with long tail (length 510 mm). Back dark ashy grey with deep green gloss; bill yellowish green; tail green glossed black, graduated long and broad tipped with white, conspicuous in flight. Chin and throat yellowish ashy grey darkening to blackish on abdomen and vent.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Meghalaya, Bihar, Madhya Pradesh (eastern), Manipur, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan and Nepal.

Genus ***Centropus*** Illiger, 1811

601. ***Centropus sinensis intermedius*** (Hume)

1873. *Centrococcyx intermedius* A.O.H. (=Hume), *Stray Feathers*, **1** : 454, in text (Dhoon, Dacca and Thayetmyo).

1969. *Centropus sinensis intermedius* (Hume), Ali and Ripley, Vol. **3** : 242.

Common name : East Pakistan Crow-Pheasant.

Diagnostic characters : Size more or less Jungle Crow (length 480 mm). Wing short and

round, the chestnut of the wing have the shoulder feathers black and flight feathers tipped with dusky, tail black with a bronze-green tinge feathers graduated; head, neck and breast coarse glossed with purple blue; lower plumage dark brown; eyelashes long and bristly. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya, Mizoram, Tripura and West Bengal.

Elsewhere : China, Hainan, Indochinese Countries, Myanmar and Thailand.

605. *Centropus toulou bengalensis* (Gmelin)

1788. *Cuculus bengalensis* Gmelin, *Syst. Nat.*, 1(1) : 412 (Bengal).

1969. *Centropus toulou bengalenis* (Gmelin), Ali and Ripley, Vol. 3 : 246.

Common name : Lesser Coucal.

Diagnostic characters : Size, smaller than the House Crow with long graduated tail (length ♂ 330 mm, ♀ 370 mm). Upperparts glistening blue balck; wings chestnut. Tail feathers with white tipped. Sexes alike.

Distribution : India : Nagaland; Assam, Bihar, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Myanmar, China, Indochinese Countries, Hainan, Nepal and Thailand.

Family STRIGIDAE

Genus *Tyto* Billberg,1828

606. *Tyto alba stertens* Hartert

1929. *Tyto alba stertens* Hartert, *Nov. zool.*, 35 : 98 (Cachar)

1969. *Tyto alba stertens* Hartert, Ali and Ripley, Vol. 3 : 250.

Common name : Indian Barn Owl.

Diagnostic characters : Size smaller than the House Crow (length 360 mm). Upperparts orange buff, finely stippled with black and white; facial disc well developed, heart-shaped, silky white, ruff brown, eyes large and round having ruff around eyes which meet at forehead; tail grey, barred with brown; silky white, tinged with buff and spotted dark brown below. Sexes alike.

Distribution : India : Nagaland; All India excepting Andaman and Nicobar Islands, Laccadwip and Sikkim.

Elsewhere : Sri lanka (rare and restricted to Jaffna and Aripo districts on the NW Coasts) and Myanmar (northern portion).

Genus *Phodilus* G. Saint-Hilaire, 1830

609. *Phodilus badius saturatus* Robinson.

1927. *Phodilus badius saturatus* Robinson, *Bull. Brit. Orn Cl.*, 47 : 121 (Native Sikkim).

1969. *Phodilus badius saturatus* Robinson, Ali and Ripley, Vol. 3 : 253.

Common name : Sikkim Bay Owl.

Diagnostic characters : Size of Myna (length 290 mm). Back and wings chestnut spotted with black and buff. Two short ear like tufts projecting above sides of head. Outer web of first two primaries barred white and black; facial disc vinous-pink surrounded with white ruff tipped black and chestnut. Underparts vinous-pink spotted with black and white. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Myanmar, Nepal, Thailand, Vietnam and Pakistan.

Genus *Otus* Pennant, 1769

612. *Otus spilocephalus spilocephalus* (Blyth)

1846. *Ephialtes spilocephalus* Blyth, *J. Asiat. Soc. Beng.*, 15 : 8 (Darjeeling)

1969. *Otus spilocephalus spilocephalus* (Blyth), Ali and Ripley, Vol. 3 : 257.

Common name : Eastern Spotted Scops Owl.

Diagnostic characters : Size equal to Myna (length 210 mm). Entire plumage rustly brown. Crown and nape marked with twin spots of balck and white. Face whity brown undistinctly barred, encircled by a buffish ruff. Wing and tail quills

brown profusely pale banded. Below speckled and stippled brown and white. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and Tripura.

Elsewhere : Nepal, Bhutan and Bangladesh.

616. ***Otus scops sunia*** (Hodgson).

1836. *Scops sunia* Hodgson, *Asiat. Res.*, **19** : 175 (Nepal)

1969. *Outs scops sunia* (Hodgson), Ali and Ripley, Vol. **3** : 262.

Common name : North Indian Scops Owl.

Diagnostic characters : Size smaller than the Myna (length 190 mm). Back, wing and tail delicately vermiculated greyish brown; facial disc light brown and ear tufts prominent. Various phases dark, rufous and greyish. Lowerparts less streaked and rather more barred. Sexes alike.

Distribution : India : Nagaland; Assam, Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal and Pakistan.

624. ***Otus bakkamoena lettia*** (Hodgson)

1836. *Scops lettia* Hodgson, *Asiat. Res.*, **19** : 176 (Nepal).

1969. *Otus bakkamoena lettia* (Hodgson), Ali and Ripley, Vol. **3** : 270.

Common name : Burmese Collared Scops Owl.

Diagnostic characters : Size slightly bigger than the preceeding bird. Back rufous brown, mottled and vermiculated with whitish. Tursus feathered only to base of toes.A prominent pale collar on hindneck. Chin and throat whitish, the later barred and stippled with black and with fine wavy bars of reddish brown. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Bihar, Manipur, Meghalay, Mizoram, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Nepal and Thailand.

Genus ***Bubo*** Dumeril, 1806

627. ***Bubo bubo bengalensis*** (Franklin)

1831(1830-31). *Otus Bengalensis* Franklin, *Proc. zool. Soc. London* : 115 (The Ganges between Calcutta and Benaras and in the Vindhyan Hills between the latter place and Gurra Mundela).

1969. *Bubo bubo bengalensis* (Franklin), Ali and Ripley, Vol. **3** : 273.

Common name : Indian Great Horned or Eagle-Owl.

Diagnostic characters : Size equal to Pariah Kite (length 560 mm). Head with two prominent blackish horns or ear-tufts. Upperparts blackish brown streaked and mottled with tawny buff and black. Wing feathers chestnut; chin whitish, throat light rufous with dark spots; underparts buff, finely vermiculated and cross barred and tawny; legs long and thickly feathered to the toes. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Bhutun, Myanmar, Nepal and Pakistan.

628. ***Bubo nipalensis nipalensis*** Hodgson.

1836. *Bubo nipalenis* Hodgson, *Asiat. Res.*, **19** : 172 (Nepal)

1969. *Bubo nipalensis nipalensis* Hodgson, Ali and Ripley, Vol. **3** : 276.

Common name : Forest Eagle-Owl.

Diagnostic characters : Size equal to the Pariah Kite (length 610 mm). A large powerful nocturnal brown owl with two projecting black and white ear-tufts, fully feathered legs and brown eyes. Dark brown above, scalloped with buff; fulvous white below, barred with blackish on throat and spots on abdomen. Sexes alike.

Distribution : India : Nagaland; Assam, Goa, Karnataka, Kerala, Manipur, Meghalaya, Sikkim, Tamil Nadu and West Bengal.

Elsewhere : Nepal, Bhutan, Myanmar (north and central), Thailand, Laos and Vietnam (central).

630. ***Bubo coromandus coromandus*** (Latham)

1790. *Strix Coromanda* Latham, *Index. Orn.* **1** : 53 (Coromandel Coast).

1969. *Bubo coromandus coromandus* (Latham), Ali and Ripley, Vol. 3 : 278.

Common name : Dusky Horned Owl.

Diagnostic characters : Size that of the Pariah Kite (length 580 mm). Upperparts grey; head with two horns; wing and tail brown, the latter streaked with black. Underparts whitish with fine wavy brown cross band and bold blackish streaks. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland.

Elsewhere : Bangladesh, Bhutan, Nepal and Pakistan.

631. *Bubo zeylonica leschenault* (Temminck)

1820. *Strix leschenault* Temminck, *Pl. Col. livr.* 4, pl. 20 (Eastern provinces of India = Chandernagare).

1969. *Bubo zeylonica leschenault* (Temminck), Ali and Ripley, Vol. 3 : 280.

Common name : Brown Fish Owl.

Diagnostic Characters : Size that of the Pariah Kite (length 560 mm). Upperparts rufous brown streaked with black; ear tufts on head well developed. Underparts white, streaked and barred; wings and tail brown; upper breast bears a large white patch; feathers on legs replaced by granular scales. Sexes alike.

Distribution : India : Nagaland; the entire Indian Union excepting Andaman and Nicobar Islands and Lakhadwip.

Elsewhere : Bangladesh, Myanmar, Indochinese Countries and Indonesia.

633. *Bubo flavipes* (Hodgson)

1836. *Cultrunguis Flavipes* Hodgson, *J. Asiat. Soc. Bengal*, 5 : 364, pl. 26 (Nepal).

1969. *Bubo flavipes* (Hodgson), Ali and Ripley, Vol. 3 : 283.

Common name : Tawny Fish Owl.

Diagnostic characters : Size similar to that of the Pariah Kite (length 610 mm). Upperparts rufous brown heavily streaked with black. Scapular and wing-coverts buff. Underparts rich orange-rufous with dark brown shaft stripes, broadest on breast. A white throat patch. Eyes yellow. Legs unfeathered. Sexes alike.

Distribution : India : Nagaland; Assam, Bihar, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Sikkim. Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan Myanmar, China, Indochinese Countries, Nepal, Pakistan and Taiwan.

Genus *Glaucidium* Boie, 1826

635. *Glaucidium brodiei brodiei* (Burton)

1836 (1835). *Noctua Brodiei* Burton, *Proc. zool. Soc. London*, : 152 (Himalayas, restricted to Simla by Baker, 1927, Fauna 4 : 450)

1969. *Glaucidium brodiei brodiei* (Burton), Ali and Ripley, Vol. 3 : 285.

Common name : Collared Pigmy Owlet.

Diagnostic characters : Size equal to the Quail (length 170 mm). Entire plumage barred grey brown, Supercilium white. A rufous half collar on upper back. A white patch on throat. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram,

Elsewhere : Bangladesh, Bhutan, China, Hainan, Malay Peninsula, Nepal, Pakistan and Vietnam.

640. *Glaucidium cuculoides austerum* Ripley

1948. *Glaucidium cuculoides austerum* Ripley, Zoologica, 33 : 200 (Tezu, Mishmi Hills).

1969. *Glaucidium cuculoides austerum* Ripley, Ali and Ripley, Vol. 3 : 291.

Common name : East Himalayan Barred Owlet.

Diagnostic characters : Size equal to the Myna (length 230 mm). Back dark rufous brown, closely barred with whitish above and below. Abdomen whitish with fine dark striations; a prominent white throat patch. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh and Sikkim.

Elsewhere : Bhutan and Myanmar (northwestern).

641. *Glaucidium cuculoides rufescens* Baker

1926. *Claucidium cuculoides rufescens* Baker, *Bull. Brit. Orn. Cl.* **47** : 59 (Noong-zai-ban = I at. 24°48'E., Manipur).

1969. *Glaucidium cuculoides refescens* Baker, Ali and Ripley, Vol. **3** : 291.

Common name : Burmese Barred Owlet.

Diagnostic characters : Size equal to the Myna (length 230 mm). A 'Hornless' rufous-brown owlet, barred with whitish above and below, breast streaked; a prominent white throat patch. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya, Tripura and West Bengal.

Elsewhere : Bangladesh, Myammar, Laos and Vietnam.

Genus *Ninox* Hodgson, 1837

643. *Ninox scululata burmanica* Hume

1876. *Ninox burmanica* Hume, *Stray Feathers*, 4 : 285 (Pegu and Tenasserim)

1969. *Ninox scutulata burmanica* Hume, Ali and Ripley, Vol. **3** : 294.

Common name : Burmese Brown Hawk-Owl.

Diagnostic characters : Size equal to the Pigeon (length 320 mm). Upperparts dark greyish brown; forehead white; shoulders marked with white patches; tail barred with black and white tipped; throat fulvous; streaked with brown; rest of underparts white with reddish brown drops forming broken bars. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya, Mizoram and Tripura.

Elsewhere : Bangladesh, Myanmar, China, Indochinese Countries, Malay Peninsula and Thailand.

Genus *Strix* Linnaeus, 1758

658. *Strix leptogrammica newarensis* (Hodgson)

1836. *Ulula newarensis* Hodgson, *Asiat. Res.* **19** : 168 (Nepal).

1969. *Strix leptogrammica newarensis* (Hodgson), Ali and Ripley, Vol. **3** : 307.

Common name : Himalayan Brown Wood Owl.

Diagnostic characters : Size smaller than the Pariah Kite (length 530 mm). Upperparts chocolate brown; wings and upper tail-coverts barred with white, tail brown, barred with fulvous and tipped with white; facial disc whitish, bordered with brown; a prominent white supercilium; rest of lower plumage buffish tinged with brown on breast and closely barred with dark borwn; throat patch white. Sexes alike.

Distribution : India : Nagaland; Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Nepal, Pakistan, Myanmar and Thailand.

662. *Strix aluco nivicola* (Blyth)

1845. *Syrnium nivicola* 'Hodgson' = Blyth, *J. Asiat. Soc. Beng.*, **14** (1) : 185 ('Himalaya', i.e. Nepal)

1969. *Strix aluco nivicola* (Blyth), Ali and Ripley, Vol. **3** : 311

Common name : Himalayan Wood owl.

Diagnostic characters : Size equal to the Jungle Crow (length 450 mm). A large brown owl with whitish facial disc and no ear-tufts. Grey brown above, barred with dark brown and mottled with whitish. White below, closely barred with dark brown on chin and throat; streaked and barred on rest of underparts. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and Uttar Pradesh.

Elsewhere : Nepal, Pakistan, Myanmar (north) and China.

Genus *Asio* Brisson, 1760

664. *Asio flammeus flammeus* (Pontoppidan)

1763. *Strix Flammea* Pontoppidan, *Dansk. Atlas*, **1** : 617, pl. 25 (Sweden)

1969. *Asio flammeus flammeus* (Pontoppidan), Ali and Ripley, Vol. **3** : 314.

Common name : Shorteared Owl.

Diagnostic characters : Size more or less of the House Crow (length 380 mm). Upperparts buff, heavily streaked with dark brown; head grey; facial disc white bodered by a dark brown ruff; wings and tail barred with rufous and black; underparts pale buff, streaked with brown on breast. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union except Andaman and Nicobar Islands, Lakhadwip Islands.

Elsewhere : Bangladesh, Nepal, Sri Lanka, Maldive Islands and Pakistan. Breeds in Europe and Asia north to C. 7°N. lat. south to Italy, The Balkan Peninsula, Caucasus, Turkestan, N. Mongolia, SE Manchuria and Sakhalin Islands. Also in N.America. In the old World winters south to the Mediterranean, N. Africa, Palestine, Ethiopia and Aden besides India.

Family PODARGIDAE

Genus ***Batrachostomus*** Gould, 1838

667. ***Batrachostomus hodgsoni hodgsoni*** (G.R. Gray)

1859. *Otothrix hodgsoni* G.R.Gray, *Proc. zool. Soc. London*, : 101, pl. 152, Aves (Northern India = Darjeeling).

1970. *Batrachostomus hodgsoni hodgsoni* (G.R.Gray), Ali and Ripley, Vol. 4 : 3.

Common name : Hodgson's Frogmouth.

Diagnostic characters : Size equal to Myna (length 270 mm) Male : Entire plumage grey brown, vermiculated and mottled with white, buff, brown, black and chestnut. Scapular with broad white patches. Tail with pale and dark mottled cross-bands. Female : Chestnut-rufous; upper wing-coverts spotted with black-edged white spots; throat band white. A whitish collar round hindneck.

Distribution : India : Nagaland; Assam, Manipur, Mizoram, Sikkim and Tripura.

Elsewhere : Bhutan, Bangladesh and hills of North Myanmar.

Family CAPRIMULGIDAE

Genus ***Eurostopodus*** Gould, 1838

668. ***Eurostopodus macrotis cerviniceps*** (Gould)

1838. *Lyncornis cerviniceps* Gould, Icones Avium, (2), pl. 14 and text ('said to be a native of China or the adjacent islands' = Trang, Peninsular Siam by designation of Robinson and Kloss, 1923, Jour. *Nat. Hist. Soc. Siam*, 5 : 140)

1970. *Eurostopodus macrotis cerviniceps* (Gould), Ali and Ripley, Vol. 4 : 5.

Common name : Burmese Great Eared Nightjar.

Diagnostic characters : Size smaller than the House Crow (Length 410 mm). Plumage mottled, vermiculated, barred and streaked with grey, black, buff and chestnut; rictal bristles absent; two prominent ear-tufts on side of head behind the eyes. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Mizoram and Tripura.

Elsewhere : Bangladesh, Southern Yunnan south through Myanmar and Malaya Peninsula and Penang; SE. Thailand and South Vietnam.

Genus ***Caprimulgus*** Linnaeus, 1758

670. ***Caprimulgus indicus hazarae*** Whistler & Kinnear

1935. *Caprimulgus indicus hazarae* Whistler & Kinnear, *Jour. Bombay nat. Hist. Soc.*, 38 : 37 (Abbottabad, Hazara, Himalayas).

1970. *Caprimulgus indicus hazarae* Whistler & Kinnear, Ali & Ripley, Vol. 4 : 8.

Common name : Himalayan Jungle Nightjar.

Diagnostic characters : Size that of the Spotted Dove (length 320 mm). Upper plumage grey brown mixed with buff and fulvous, mottled, streaked and vermiculated with black; centre of the crown streaked with black; mouth widely gaped, fringed with numerous strong bristles; tail graduated, narrowly barred, in male the 4 outer pairs of tail feathers have subterminal white spots. Female similar to male but tail feathers without the white tips.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Sikkim and Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Nepal, Malaya Peninsula and Pakistan.

675. ***Caprimulgus macrurus albonotatus*** Tickell

1833. *Caprimulgus Albonotatus* Tickell, *Jour. Asiat. Soc. Bengal.* **2** : 580 (Dampara, Dholbhum, Bengal) [Now in Chaibasa dist., Bihar]

1970. *Caprimulgus macrurus albonotatus* Tickell, Ali and Ripley, Vol. **4** : 16.

Common name : Indian Longtailed Nightjar.

Diagnostic characters : Size equal to the Pigeon (length 330 mm). Very similar to the preceeding bird including white spots on first 4 primaries, but outer two pairs of tail feathers broadly tipped whitish. In female, the outer tail feathers pale yellowish buff.

Distribution : India : Nagaland; Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Haryana, Himachal Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan and Nepal.

678. ***Caprimulgus macrurus ambiguus*** Hartert.

1896. *Caprimulgus macrurus ambiguus* Hartert, *Ibis* : 373 (Malay Peninsula, Burma, Assam and the eastern Himalayas. Restricted to southern Tenasserim by Kloss, 1918, *Ibis* : 95-6)

1970. *Caprimulgus macrurus ambiguus* Hartert, Ali and Ripley, Vol. **4** : 19.

Common name : Burmese Longtailed Nightjar

Diagnostic characters : Size equal to the Pigeon (length 330 mm). Plumage overall, mottled, streaked, vermiculated and barred with brownish buff, grey, rufous, black and white. Tail long and graduated. A white spot on 1st four primaries in male. In female, the outer tail feathers, pale yellowish buff.

Distribution : India : Nagaland; Manipur and Mizoram.

Elsewhere : Possibly the Chittagang Hill tracts in Bangladesh, Myanmar and southern Yunnan, south to Tenasserim, Thailand and the Indochinese Countries.

Family APODIDAE

Genus ***Collocalia*** G.R.Gray, 1840

683. ***Collocalia brevirostris brevirostris*** (Horsfield)

1840. *Hirundo brevirostris* Horsfield, *Proc. zool. Soc. London* : 155 (Assam)

1970. *Collocalia brevirostris brevirostris* (Horsfield), Ali and Ripley, Vol. 4 : 26.

Common name : Himalayan Swiftlet.

Diagnostic characters : Size smaller than the House Sparrow (length 140 mm). Upperparts dark brown; rump pale brown; wings narrow; tail forked; underparts greyish brown. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Thailand.

Genus ***Chaetura*** Stephens, 1826

690. ***Chaetura* (Caudacuta) *cochinchinensis*** Oustalet

1878. *Chaetura cochinchinesis* Oustalet, *Bull. Soc. Philom. Paris* (7) **2** : 52 (Saigon, Cochinchina [=South Vietnam])

1970. *Chaetura (Caudacuta) cochinchinensis* Oustalet, Ali and Ripley, Vol. 4 : 35.

Common name : Cochinchina Spinetail Swift.

Diagnostic characters : Size equal to the Bulbul (Length 210 mm). Back glossy black except middle of back which is pale whitish brown. Long and narrow wings pointed and bow shaped; tail short; chin and throat smoky grey; rest dark brown. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Myanmar, Malayasia and Indochinese countries.

691. ***Chaetura gigantea indica*** Hume.

1873. *Chaetura indica* Anonymous = Hume, Stray Feathers 1 : 471, (Andaman Islands and southern India)

1970. *Chaetura gigantea indica* Hume, Ali and Ripley, Vol. 4 : 36.

Common name : Brownthroated Spinetail Swift.

Diagnostic characters : Size, similar that of the Myna (length 230 mm). Head, wings and lower part of back glossy metallic black.Middle of back pale brown. A black spot in front of each eye and a white spot on either side of forehead. Chin and throat pale brown, under tail-coverts white, rest of underparts dark brown with a white patch on the flanks above the thighs. Sexes alike

Distribution : India : Nagaland; Assam, Andaman Islands, Goa, Karnataka, Kerala, Manipur, Meghalaya,

Elseehwere : Myanmar, Indochinese countries, Sri Lanka and Thailand.

Genus ***Apus*** Scopoli, 1777

699. ***Apus pacificus pacificus*** (Latham)

1801. *Hirundo pacifica* Latham, Indiex Orn., Suppl., viii (new Holland = New South Wales apud Mathews); the terra typica has been fixed as the vicinity of Vladivostok by Domaniewski, 1933, *Acta Orn. Mus. Zool. Polonici*, 1 : 80

1970. *Apus pacificus pacificus* (Latham), Ali and Ripley, Vol. 4 : 47.

Common name : Large Whiterumped Swift.

Diagnostic characters : Size smaller than the Bulbul (length 180 mm). Back blackish brown; rump white; tail deeply forked. Below squamated or mottled with black and white with chin and throat whitish. Sexes alike.

Distribution : India : Nagaland; Manipur.

Elsewhere : Breeds in Eastern Asia from the Western Altai and Yakutsk east to Kamchatka and Korea, Northern Mongolia and eastern China westward to Kansu and Szechauan.

706. ***Apus affinis subfurcatus*** (Blyth)

1849. *Cypselus subfurcatus* Blyth, *Jour. Asiat. Soc. Bengal* 18(2) : 807 (Penang).

1970. *Apus affinis subfurcatus* (Blyth), Ali and Ripley, Vol. 4 : 55.

Common name : Malay House Swift.

Diagnostic character : Size similar that of the House Sparrow (length 150 mm). Upperparts, wings, head and tail black; rump with a conspicuous white patch; wings long narrow sickle shaped ; tail slightly forked; mouth broad; a deep black spot in front of the eye; chin and throat white; rest smoky black. Sexes alike

Distribution : India : Nagaland; Assam, Manipur, Meghalaya and Tripura.

Elsewhere : Bangladesh, Myanmar, Malay Peninsula, Thailand and the Indochinese countries, the Indonesian Islands and China.

Genus ***Cypsiurus*** Lesson, 1843

708. ***Cypsiurus parvus infumatus*** (Sclater)

1865. *Cypselus infumatus* Sclater, *Proc. zool. Soc. London* : 602 (Banjermassing, Borneo)

1970. *cypsiurus parvus infumatus* (Sclater), Ali and Ripley, Vol. 4 : 57.

Common name : Eastern Palm Swift.

Diagnostic characters : Size, smaller than the House Sparrow (length 130 mm). Upperback blackish brown; wings and tail black with a slight gloss; chin and throat greyish; rest of lower part dark brown. Tail less forked. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and Tripura.

Elsewhere : Bangladesh, Myanmar, Hainan Island, Indoneisa, Malay Peninsula, Tambalan Islands and Thailand.

Family TROGONIDAE

Genus ***Harpactes*** Swainson, 1833

713. ***Harpactes erythrocephalus hodgsonii*** (Gould)

1838. *Trogon (Harpactes) Hodgsonii* Gould, Monogr. Trogonidel, List of pl. No. 34 (Nepal). Restricted by Biswas to Hitaura, Chisapani, Garhi Province, Nepal

1970. *Harpactes erythrocephalus hodgsonii* (Gould), Ali and Ripley, Vol. **4** : 64.

Common name : Nepal Redheaded Trogon.

Diagnostic characters : Size larger than the Myna with longer tail (length 350 mm). In male back and upperparts chiefly rusty brown; wings finely vermiculated with black and white; head , neck and breast deep crimson, sometimes with traces of a white breast band; tail broad and long with black and white tips; rest of underparts lighter crimson. In female head, neck and breast dull orange brown; rest as in male including crimson underparts.

Distribution : India : Nagaland; Assam , Manipur, Meghalaya, Uttar Pradesh and Sikkim.

Elsewhere : Nepal and Bhutan.

Family ALCEDINIDAE

Genus ***Ceryle*** Boie, 1828

718. ***Ceryle lugubris guttulata*** Stejneger

1892. *Ceryle guttulata* Stejneger, *Proc. U.S. Nat. Mus*, **15** : 294, in text (India and China, here restricted to Ningpo, China) New name for *Alcedo guttulata* Vigors, 1831, not *Alcedo guttulata* Boddaert, 1783.

1970. *Alcedo lugubris guttulata* Stejneger, Ali and Ripley, Vol. **4** : 70.

Common name : East Himalayan Pied Kingfisher.

Diagnostic characters : Size equal to the House Crow (length 400 mm). Plumage black and white; crest large spotted and streaked with white; nuchal band white; wings and tail blackish grey, barred and spotted with white; rest white with a broad breast band of black and rufous-brown spots; flanks and under tail-coverts barred with blackish. Female similar but with pale rusty coloured axillaries, diagnostic in flight.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan and Nepal.

Genus ***Alcedo*** Linnaeus, 1758

721 ***Alcedo hercules*** Laubmann

1845. *Alcedo grandis* Blyth, *Jour. Asiat. Soc. Bengal*, **14**(1) : 190 (Darjeeling). Not *Alcedo grandis* Gmelin, 1788.

1970. *Alcedo hercules* Laubmann, Ali and Ripley, Vol. **4** : 74.

Common name : Blyth's or Great Blue Kingfisher.

Diagnostic characters : Size smaller than the Myna (length 200 mm). Blue and green above, a broad band along middle of back bright pale blue, tail deep blue, prominent in flight. Crown and nape black, barred with bluish white. Chin and throat white; rest deep ferruginous. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, North Vietnam and Hainan Island.

725. ***Alcedo meninting coltarti*** Baker

1821. *Alcedo Asiatica* Swainson, *Zool. Ill.* 1, pl. 50 ('Some part of India' = Bengal) Not *Alcedo asiatica* Menschen, 1787, Mus. Geversianum : 54, no. 262

1970. *Alcedo meninting coltarti* Baker, Ali and Ripley, Vol. **4** : 78

Common name : Assam Blue-eared King fisher.

Diagnostic characters : Size similar that of the House Sparrow (length 160 mm). Back deep purple blue; ear-coverts blue; forehead and crown barred and tipped greenish; chin and throat white; rest deep ferruginous. Sexes alike.

Distribution : India : Nagaland; Assam, Goa, Karnataka, Manipur, Meghalaya, Orissa, Tamil Nadu, Tripura and West Bengl.

Elsewhere : Bangladesh, Nepal, Bhutan, Myanmar, Indochinese Countries and Thailand.

Genus ***Ceyx*** Lacepede, 1799

727. ***Ceyx erithacus erithacus*** (Linnaeus)

1758. *Alcedo erithaca* Linnaeus, *Syst. Nat., ed.* 10, **1** : 115(Benghala)

1970. *Alcedo erithacus erithacus* (Linnaeus), Ali and Ripley, Vol. 4 : 81.

Common name : Indian Threetoed Forest Kingfisher.

Diagnostic Characters : Size smaller than the House Sparrow (length 130 mm). Crow and nape deep rust coloured; mantle purple blue; rump brilliant amethyst; chin and throat light yellowish; a deep blue patch on either side of the neck; breast, abdomen orange yellow. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Goa, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Sikkim and Tamil Nadu.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Hainan, Indochinese Countries, Malay Peninsula, Nepal and Thailand.

Genus ***Pelargopsis*** Gloger, 1842 (1841)

730. ***Pelargopsis capensis capensis*** (Linnaeus)

1766. *Alcedo capensis* Linnaeus, *Syst. Nat. ed.* 12, 1 : 180 (Cape of Good Hope = Chandernagar, fide Stresemann, 1952, *Ibis* 94 : 517-21)

1970. *Pelargopsis capensis capensis* (Linnaeus), Ali and Ripley, Vol. 4 : 84

Common name : Brownheaded Storkbilled Kingfisher.

Diagnostic characters : Size equal to the Pigeon including the large bill (length 380 mm). Upperparts brilliant pale greenish blue with a yellowish collar on hind neck; head dark greyish brown; chin and throat whitish; rest of underparts ochraceous buff; the bird distinguished by its large size and enormous blood-red dagger-shaped bill. Sexes alike.

Distribution : India : Nagaland; Assam, Gujarat, Madhya Pradesh, Manipur, Meghalaya, Sikkim, Uttar Pradesh, West Bengal and entire Peninsular India.

Elsewhere : Bangladesh, Bhutan, Nepal and Sri Lanka.

Genus ***Halcyon*** Swainson, 1821

733. ***Halcyon coromanda coromanda*** (Latham)

1790. *Alcedo coromanda* Latham, Index Orn. 1 : 252 (Coromandel, India)

1970. *Halcyon coromanda coromanda* (Latham), Ali and Ripley, Vol. 4 : 87

Common name : Indian Ruddy Kingfisher.

Diagnostic characters : Size larger than the Myna (Length 260 mm). Head, neck and mantle rufous chestnut with a lilac bloom; lower back and rump white tinged with violet; below rufous throughout. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Sikkim and West Bengal.

Elsewhere : Nepal, Bhutan, Myanmar and Malay Peninsula to northern Johore, south-eastern China, Thailand, Indochinese Countries and SE Sumatra.

737. ***Halcyon smyrnensis perpulchra*** Madarasz

1904. *Halcyon perpulchra* Madarasz, *Ann. Mus. Nat Hunger*, 2 : 85 (Singapore).

1970. *Halcyon symyrnenis perpulchra* Madarasz, Ali and Ripley, Vol. 4 : 92.

Common name : Eastern Whitebreasted Kingfishere

Diagnostic characters : Size that of the Common Myna (length 280 mm). Upperparts torquoise-blue and chocolate brown; wings black; a white wing-patch very prominent in flight; crown and nape deep chestnut brown; tail blue tinged with greenish; chin, throat and centre of breast white; rest of the lower plumage deep chocolate brown; Sexes alike.

Distribution : India : Nagaland, Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Hainan, Indochinese Countries, Malay Peninsula, Taiwan, Thailand and Nepal.

739. ***Halcyon pileata*** (Boddaert)

1783. *Alcedo pileata* Boddaert, *Table pl. enlum.* : 41 (China, ex Dauberton, pl. enlum., no. 673)

1970. *Halcyon pileata* (Boddaert), Ali and Ripley, Vol 4 : 94.

Common name : Blackcapped Kingfisher.

Diagnostic characters : Size larger than the Myna (length 300 mm). Back deep cobalt blue; wing patch white; crown velvety black; nape band white; rest of underparts pale rusty. Sexes alike.

Distribution : India : Nagaland; Andhra Pradesh, Andaman & Nicobar Islands, Assam, Bihar, Gujarat, Goa, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Myanmar, Thailand, Malay Peninsula and islands, the Indochinese Countries, China, Korea, Hainan and Indonesian Islands.

Family MEROPIDAE

Genus ***Merops*** Linnaeus, 1758

744. ***Merops leschenaulti leschenaulti*** Vieillot

1817. *Merops leschenault* Vieillot, *Nauv. Dict. d'Hist. Nat.* **14** : 17 (Java, Error = Ceylon).

1970. *Merops leschenaulti leschenaulti* Vieillot, Ali and Ripley, Vol. 4 : 99.

Common name : Chestnutheaded Bee-eater.

Diagnostic characters : Size equal to the Bulbul (length 210 mm). Crown, hindneck and upper back bright cinnamon chestnut; upperparts grass-green; chin and throat yellow, bordered by a rufous and black gorget; rest of underparts grass-green. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Goa, Karnataka, Kerala, Manipur, Meghalaya, Orissa, Tamil Nadu, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Indochinese Countries, Malay Peninsula, Nepal, Sri Lanka and Thailand.

Genus *Nyctyornis* Jardine & Selby, 1830

753. *Nyctyornis athertoni athertoni* (Jardine & Selby)

1830. *Merops athertoni* Jardine & Selby, Ill. *Orn.* 2, pl. 58 and text (India = Bangalore)

1970. *Nyctyornis athertoni athertoni* (Jardine & Selby), Ali and Ripley, Vol. 4 : 112.

Common name : Bluebearded Bee-eater.

Diagnostic characters : Size equal to the Pigeon (length 360 mm). Back, wings and tail grass-green; forehead pale greenish blue; upper breast verditer blue; a light blue edongated feathers on lower throat; rest of lowerparts rusty buff, broadly streaked with green. Sexes alike.

Distribution : India : Nagaland, Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Punjab, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Thailand, Indochinese Countries, Hainan Islands and Nepal.

Family CORACIIDAE

Genus ***Coracias*** Linnaeus, 1758

757. ***Coracias benghalensis affinis*** Horsfield

1839. *Coracias affinis* Horsfield, *Proc. zool. Soc. London* Pt., 7 : 164 (Assam)

1970. *Coracias benghalensis affinis* Horsfield, Ali and Ripley, Vol. 4 : 119.

Common name : Burmese Roller.

Diagnostic characters : Size equal to the Pigeon (length 310 mm). Upper plumage brownish rufous ; wings blue; crown light blue; hindneck marked with a red collar; under wing coverts deep purple blue, conspicuous in flight, throat and breast rufous-brown; former streaked with blue; rest of the lower plumage pale blue. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya, Sikkim, Tripura and West Bengal (Northern and eastern parts).

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Indochinese countries, Nepal and Thailand.

Genus ***Eurustomus*** Vieillot, 1816

758(761). ***Eurystomus orientalis cyanicollis*** Vieillot

1819. *Eurystomus cyanicollis* Vieillot, *Nouv. Dict. D'Hist. Nat.*, **29** : 425 ('les Indies' = Chandernagar, Bengal, fide Stresemann, 1952, *Ibis* **94** : 511, 519)

1970. *Erystomus orientalis cyanicollis* Vieillot, Ali and Ripley, Vol. 4 : 120.

Common name : Himalayan Broadbilled Roller.

Diagnostic characters : Size similar that of the Pigeon (length 310 mm). Entire plumage greenish brown and purple blue-black except the blackish head; a large pale blue roundish patch on wings. Sexes alike.

Distribution : Inida : Nagaland; Arunachal Pradesh, Assam, Haryana, Himachal Pradesh, Manipur, Meghalaya, Sikkim and Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Japan, Indochinese countries, Nepal and Thailand.

Family BUCEROTIDAE

Genus *Aceros* J.E. Gray, 1844

771. ***Aceros nipalensis*** (Hodgson)

1829. *Buceros nipalensis* Hodgson, *Asiat. Res.*, **18**(1) : 178, 2 pls (Nepal)

1970. *Aceros nipalensis* (Hodgson), Ali and Ripley, Vol. 4 : 135.

Common name : Rufousnecked Hornbill.

Diagnostic characters : Size equal to the Vulture (length 1220 mm). In male-Upperparts black glossed with green; head, neck and breast rufous; terminal half of tail white; rest of underparts maroon and black; chin, cheeks and throat bright scarlet. In female all black, but with outer primaries white tipped as in male and terminal half of the tail also white.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and Sikkim.

Elsewhere : Bangladesh, Bhutan, Myanmar, Indochinese Countries, Nepal and Thailand.

Genus ***Rhyticeros*** Reichenbach, 1849

772. ***Rhyticeros undulatus ticehursti*** Deignan

1941. *Rhyticeros undulatus ticehursti* Deignan, Auk **58** : 397 (Huai Oi, 14 km. north of the Ban Pak li, Nan Province, Thailand)

1970. *Rhyticeros undulatus tieehursti* Deignan, Ali and Ripley, Vol. 4 : 137.

Common name : Assam Wreathed Hornbill.

Diagnostic characters : Size similar that of the Vulture (length 1140 mm, female with shorter bill 980 mm). In male-back glossy black; naked throat patch bright yellow; tail all white; forehead, crown and nape deep-chestnut passing into black on hindneck. In female all black, except tail which is white.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and West Bengal.

Elsewhere : Bhutan, Myanmar, Indochine countries, Malay Peninsula and Thailand.

Genus ***Anthracoceros*** Reichenbach, 1849

774. ***Anthracoceros malabaricus malabaricus*** (Gmelin)

1788. *Buceros malabaricus* Gmelin, *Syst. Nat.* **1** (1) : 359, (India = Chandernagar, apud Baker)

1970. *Anthracoceros malabaricus malabaricus* (Gmelin), Ali and Ripley, Vol. 4 : 140.

Common name : Indian Pied Hornbill.

Diagnostic characters : Size smaller than the Vulture (length 900 mm). Back, head, neck and upper breast black; underparts white; bill pale yellow and black; surmounted by a ridge-like casque; outer tail-feathers black, only white at the ends. Sexes alike, female slightly smaller.

Distribution : India : Nagaland; Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Haryana, Madhya Pradesh, Manipur, Meghalaya, Orissa, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar and Nepal.

Genus ***Buceros*** Linnaeus, 1758

776. ***Buceros bicornis homrai*** Hodgson

1832. *Buceros homrai* Hodgson, *Jour. Asiat. Soc., Bengal*, **1** : 251(Nepal)

1970. *Buceros bicornis homrai* Hodgson, Ali and Ripley, Vol. **4** : 143.

Common name : Great Pied Hornbill.

Diagnostic characters : Size equal to the Vulture (length 1300 mm). A great black and white Hornbill with a huge beak topped by a large yeallow flattened Casque. Neck is white; tail entirely white with a single black band. In flight-white neck, broad white wing-bars and black banded white tail are pointer. Sexes alike, female somewhat smaller.

Distribution : India : Nagaland; Arunachal Pradesh, Assam,Goa, Karnataka, Kerala, Maharashtra, Manipur, Mizoram, Sikkim and Tripura.

Elsewhere : Bhutan, Nepal,Bangladesh, Myanmar, Thailand, Malay peninsula, Indochinese countries and Sumatra.

Family CAPITONIDAE

Genus ***Megalaima*** G.R.Gray 1842

778. ***Megalaima virens magnifica*** Baker

1926. *Megalaima virens magnifica* Baker, *Bull. Brit. Orn.* Cl-**47** : 43 (Machi, Manipur)

1970. *Megalaima virens magnifica* Baker, Ali and Ripley, Vol. **4** : 149.

Common name : Assam Great Barbet.

Diagnostic characters : Size larger than of the Myna (length 330 mm). Entire head violet blue-black; upper back maroon-brown; lower back, wings and tail bluish green; breast olive-brown; abdomen marked with blue-yellow longitudinal stripes; under tail-coverts bright scarlet. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Bangladesh, Bhutan and Nepal.

787. ***Megalaima franklinii franklinii*** (Blyth)

1842. *Bucco Franklinii* Blyth, *Jour. Asiat. Soc. Bengal*, **11**(1) : 167 (Darjeeling)

1970. *Megalaima franklinii franklinii* (Blyth), Ali and Ripley, Vol. **4** ; 157.

Common name : Goldenthroated Barbet.

Diagnostic characters : Similar size of the Myna (length 230 mm). Entire plumage grass-green except the head; crown golden and crimson; ear-coverts grey; supercilium black; chin and throat golden yellow; an orange spot on each side of base of bill near gape.Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Vietnam.

788. ***Megalaima asiatica asiatica*** (Latham)

1790. *Trogon asiaticus* Latham, Index Orn. **1** : 201 (India = Calcutta fide Baker)

1970. *Megalaima asiatica asiatica* (Latham), Ali and Ripley, Vol. **4** : 158.

Common name : Bluethroated Barbet.

Material examined : Kohima-1♀+(15 Feb. 1935); Kherzhabama 1♀+ (26 Jan. 1936).

Diagnostic characters : Size equal to the Myna (length 230 mm). Entire plumage grass-green; forehead and crown crimson; supercilium black; ear-coverts, chin and throat verditer-blue; a crimson spot on each side of base of the lower mandible; bill surrounded by conspicuous black bristles.

Measurements :

	Wing	Tail	Bill
2♀	100	58	25
	102	63	26

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Punjab, Sikkim, Uttar Pradesh, Tripura and West Bengal.

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

789. *Megalaima australia cyanotis* (Blyth)

1847. *Bucco cyanotis* Blyth, *Jour. Asiat. Soc. Bengal* **16** (1) : 465 (Arakan)

1970. *Megalaima australis cyanotis* (Blyth), Ali and Ripley, Vol. 4 : 160.

Common name : Indian Blue-eared Barbet.

Diagnostic characters : Size larger than the Sparrow (length 170 mm). Entire plumage bright grass-green; forehead and forecrown blue-black; hind crown cobalt blue; ear-coverts pale verditer blue with a crimson patch above and another below; chin and throat verditer blue; a patch below eye mixed with yellow and bright scarlet, separated from chin by a moustachial stripe. Sexes alike.

Distribution : India: Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Indochinese countries, Nepal and Thailand.

Family INDICATORIDAE

Genus *Indicator* Stephens, 1815

795. *Indicator xanthonotus fulvus* Ripley

1951. *Indicator xanthonotus fulvus* Ripley, *Postilla*, No. 6, Feb.28 : 2 (Pfutsero, eastern Naga hills, Assam)

1970. *Indicator xanthonotus fulvus* Ripley, Ali and Ripley, Vol. 4 : 167.

Common name : Nagaland Orangerumped Honeyguide.

Diagnostic characters : Size equal to the House Sparrow (length150 mm). Back olive-brown; forehead and cheeks orange yellow; middle of back pure yellow; lower back and rump orange yellow; tail blackish brown; rest of the underparts olive-brown. Female more or less similar.

Distribution : India : Nagaland; Arunachal Pradesh, Assam (NE Portion), Manipur and Mizoram.

Elsewhere : Myanmar (NE portion).

Family PICIDAE

Genus *Jynx* Linnaeus, 1758

797. *Jynx torquilla chinensis* Hesse

1911. *Jynx torquilla chinensis* Hesse, *Orn. Monatsb.*, **19** : 181 (China, Tsingtao, Shantung).

1970. *Jynx torquilla chinensis* Hesse, Ali and Ripley, Vol. 4 : 170.

Common name : Chinese Wryneck.

Material examined : Chizami-1 (unsexed) (19 Feb., 1935).

Diagnostic characters : Size smaller than the Bulbul (length 190 mm.) Back Silvery dark grey brown, streaked and vermiculated with black and fulvus; Underparts whitish; nape, back and scapulars carry dask markings.

Measurements :

	Wing	tail	bill
1 unsexed	80	67	16

Distribution: India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Indo-chinse countries and Thailand.

Genus *Picumnus* Temminck, 1825

799. *Picumnus innominatus malayorum* Hartert

1912. *Picumnus innominatus malayorum* Hartert, *Vog. pal. Fauna* **2** : 937 (Gunong, Ijau, Perak, Malaya)

1970. *Picumnus innominatus malayorum* Temminck, Ali and Ripley, Vol. 4 : 174.

Common name : Southern Speckled Piculet.

Diagnostic characters : Size smaller than the House Sparrow (length 100 mm). In male-back and mantle yellowish olive; forecrown black and orange; a broad blackish olive band behind eye ; moustachial stripe black; tail black and white; below pale yellow with bold black spots. Female similar to male but has the whole crown yellowish olive, uniform with black.

Distribution : India : Nagaland; Andhra Pradesh,Arunachal Pradesh, Assam, Goa, Karnataka Kerala, Madhya Pradesh, Manipur,

Meghalaya, Mizoram, Orissa, Tripura and West Bengal.

Elsewhere : Bangladesh, Eastern Myanmar, Shan States, Thailand, Malay Peninsula, Vietnam, Laos, Sumatra and Borneo.

Genus ***Sasia*** Hodgson, 1836

801. ***Sasia ochracea reichenowi*** Hesse

1911. *Sasia ochracea reichenowi* Hesse, *Orn. Monatsb.*, 19 : 181 (Burma, type from Thayetchaung, Tenasserim)

1970. *Sasia ochracea reichenowi* Hesse, Ali and Ripley, Vol. **4** : 176.

Common name : Burmese Rufous Piculet.

Diagnostic characters : Size smaller than the House Sparrow (length 90 mm). In male -back deep rufous and pale olive; forehead with rufescent olive; supercilium short and white; tail stumpy and black; rest of the underparts orange-rufous. Female similar to male, but lacking the golden forehead which is concolorous with the crown.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh, Myanmar, Thailand and Vietnam.

Genus ***Micropternus*** Blyth, 1845

803. ***Micropternus brachyurus phaioceps*** Blyth

1845. *Micropternus phaioceps* Blyth, *Jour. Asiat. Soc. Bengal*, **14**(1) : 195 (Arrakan) [near Calcutta vide Ticehurst JBNHS 35:32]

1970. *Micropternus brachyurus phaioceps* Blyth, Ali and Ripley, Vol. **4** : 178.

Common name : Eastern Rufous Woodpecker.

Diagnostic characters : Size equal to the Myna (length 250 mm). Entire plumage chestnut rufous , narrowly cross-barred with black on back, wings and tail; feathers of throat pale-edged producing a scaly pattern. Male differs from female by a crescent shaped crimson patch on feathers under the eye.

Distribution : India : Nagaland; Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Nepal and Thailand.

Genus ***Picus*** Linnaeus, 1758

810. ***Picus canus gyldenstolpei*** Baker

1918. *Picus canus gyldenstolpei* Baker, *Bull, Brit, Orn. Cl.*, **39** : 19 (Sadiya, north Lakhimpur, Assam)

1970. *Picus canus gyldenstolpei* Baker, Ali and Ripley, Vol. **4** : 188.

Common name : Assam Blacknaped Green Woodpecker.

Diagnostic characters : Size equal to the Pigeon (length 320 mm). Male-upperparts green with a strong bronze sheen; rump bright yellow; wings dark brown with white bars; tail dark brown imperfectly barred; forehead and forecrown crimson; hindcrown, occipital crest and nape black; supercilium grey; chin and throat grey; a black malar stripe from lower mandible down each side; rest of underparts yellow. Female similar but with no crimson on forehead and forecrown which are black like hindcrown; nape streaked with grey.

Distribution : India : Nagaland: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, Indochinese countries and Thailand.

813. ***Picus flavinucha flavinucha*** Gould

1834 (1833). *Picus flavinucha* Gould, *Proc. zool. Soc. London*, (**1**) : 120 (Himalayas, Darjeeling)

1970. *Picus flavinucha flavinucha* Gould, Ali and Ripley, Vol. **4** : 190.

Common name : Eastern Large Yellownaped Woodpecker

Diagnostic Characters : Size equal to the Pigeon (length 330 mm). Back Yellowish green; nuchal crest golden yellow; wings dark brown banded with rufous; tail black throughout; underparts olive-grey. Male has the chin and throat bright lemon-yellow; forecrown rich brown streaked with white. Female similar but chin and throat rufous brown instead of yellow.

Distribution : India : Nagaland; Arunachal pradesh,Assam, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Southern Shan States.

815. ***Picus chlorolophus chlorolophus*** Vieillot

1818. *Picus chlorolophus* Vieillot, *Nouv. Dict. d'Hist. Nat.*, **26** : 78 (Bengal)

1970. *Picus chlorolophus chlorolophus* Vieillot, Ali and Ripley, Vol. 4 : 193.

Common name : East Himalayan Small Yellownaped Woodpecker.

Diagnostic Characters : Size larger than the Myna (length 270 mm). In male-back yellowish green; nuchal crest golden yellow; wings green and maroon-red; forehead, supercilia and moustachial stripe streaked with crimson; tail blackish and bronze-green; chin and throat brown barred with whitish; breast olive-brown; rest of the underparts barred with brown and white. Female similar to male but no crimson on forehead; malar stripe absent; crimson restricted to a short broad line behind eye to nape.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Thailand.

Genus ***Gecinulus*** Blyth, 1845

827. ***Gecinulus grantia grantia*** (Horsfield)

1840 (1839). *Picus* (Chrysonotus Swainson) Grantia Horsfield, *Proc. zool. Soc. London*, (7) : 165(Assam)

1970. *Gecinulus grantia grantia* (Horsfield), Ali and Ripley, Vol. 4 : 205.

Common name : Paleheaded Woodpecker.

Diagnostic characters : Size larger than the Myna (length 250 mm). Male : upper plumage dull crimson; forehead and sides of head pale golden olive-brown; a crimson-pink patch on crown; tail brown and crimson; chin and throat dark olive-yellow and rest of underparts brownish olive. Female similar to male but lacks the crimson-pink patch on crown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and Sikkim.

Elsewhere : Bhutan, Nepal and Myanmar.

Genus ***Hypopicus*** Bonaparte, 1854

833. ***Hypopicus hyperythrus hyperythrus*** (Vigors)

1831(1830-31). *Picus hyperythrus* Vigors, *Proc. sool. Soc. London*, (1) : 23 (Himalayas, restricted to the eastern Himalayas by Hartert, 1912).

1970. *Hypopicus hyperythrus hyperythrus* (Vigors), Ali and Ripley, Vol. 4 : 211

Common name : Eastern Rufousbellied Woodpecker.

Diagnostic characters : Size equal to the Bulbul (length 200 mm). Male has and crimson crown and nape; upper plumage barred with black and white; wings and tail black, barred with white; chin grey; throat and underparts bright chestnut; under tail coverts pale crimson. Female similar but crown and nape black, spotted with white.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Mizoram, Sikkim, Tripura and Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan, Nepal, Northern Myanmar, Western Yunnan and northern Thailand.

Genus ***Picoides*** Lecepede, 1799

834. ***Picoides major stresemanni*** (Rensch)

1924, *Dryobates major stresemanni* Rensch, *Abh. Ber. Mus Dresden* 16(2) : 38 (Tsalila, on the Yunnan-Sikang border)

1970, *Picoides major stresemanni* (Rensch), Ali and Ripley, Vol. 4 : 213.

Common name : Blackcrowned Pied Woodpecker.

Diagnostic characters : Size equal to the Myna (length 240 mm). Crown black; occiput crimson; upperparts black with a white patch on each shoulder; wing quills barred with white; tail black throughout; lores, supercilium, ear-coverts and cheeks white; moustachial streak black; below fulvous paler on chin and throat; abdomen and

under tail-coverts crimson. Female similar but with crown and occiput black.

Distribution : India : Nagaland; Assam (Cachar district) and Manipur.

Elsewhere : Western China in Western Szechuan, eastern Sikang etc. extending north to c-33° and southward into northern Myanmar.

838, 839. ***Picoides darjellensis darjellensis*** (Blyth)

1845. *Picus (Dendrocopus) darjellensis* Blyth, *Jour. Asiat. Soc. Bengal*, **14** (1) : 196 (Darjeeling and Nepal)

1970. *Picoides darjellensis darjellensis* (Blyth), Ali and Ripley, Vol. **4** : 218.

Common name : Darjeeling Pied Woodpecker.

Diagnostic characters : Size, equal to the Myna (length 250 mm). In male-back and middle tail-feathers entirely black, outer barred with white; hind crown and nape crimson; breast and abdomen yellowish fulvous streaked with black; vent and under tail-coverts pale crimson. Female similar to the male but the hind crown and nape black.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal and Myanmar.

841. ***Picoides cathpharius pyrrhothorax*** (Hume)

1881. *Picus pyrrhothorax* Hume, *Stray Feathers*, **10** : 150 (Aimole, eastern Manipur Hills)

1970. *Picoides cathpharius pyrrhothorax* (Hume), Ali and Ripley, Vol. **4** : 221

Common name : Manipur Crimsonbreasted Pied Woodpecker.

Diagnostic Characters : Size smaller than the Bulbul (length 180 mm). In male-back and tail black, the latter with outer feathers barred whitish; foreneck and occipital crest crimson; underparts fulvous with a diffuse crimson patch on breast; under tail-coverts fulvous streaked with black and tipped crimson. Female similar to the male but with the entire crown black; sides of neck whitish faintly tinged with crimson.

Distribution: India: Nagaland; Assam, Manipur, Meghalaya and Mizoram.

845. ***Picoides macei macei*** (Vieillot)

1818. *Picus Macei* Vieillot, *Nouv. Dict. d'Hist, Nat.*, **26** : 80 (Bengal)

1970. *Picoides macei macei* (Vicillot), Ali and Ripley, Vol. **4** : 224

Common name : Indian Fulvousbreasted Pied Woodpecker.

Diagnostic characters : Size smaller than the Bulbul (length 190 mm). In male-upperparts black, barred with white; crown and crest crimson; moustachial streak black; chin, throat, sides of head and foreneck uniform pale rufous brown; breast and adbomen fulvous, faintly streaked with black. Female similar to the male except crown and crest black.

Distribution : India : Nagaland; Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere. Bangladesh, Bhutan, Nepal, Pakistan and Myanmar.

Genus ***Blythipicus*** Bonaparte, 1854

857. ***Blythipicus pyrrhotis pyrrhotis*** (Hodgson)

1837. *Picus Pyrehotis* Hodgson, *Jour. Asiat. Soc. Bengal*, **6** : 108 (Nepal)

1970. *Blythipicus pyrrhotis pyrrhotis* (Hodgson), Ali and Ripley, Vol. **4** : 238.

Common name : Redeared Bay Woodpecker.

Diagnostic characters : Size smaller than the Pigeon (length 270 mm). In male—head and upper back rufous; lower back, wings and tail rufous barred with black; a prominent scarlet crossband on nape extending to the sides of neck behind the ear-coverts; bill greenish yellow. Female lacks the scarlet nape band.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and Sikkim.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, northern Thailand and northern Vietnam.

Genus ***Chrysocolaptes*** Blyth, 1843

861. ***Chrysocolaptes lucidus guttacristatus*** (Tickell)

1833. *Picus Guttacristatus* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 578 (Jungles sof Borabhum and Dholbhum).

1970. *Chrysocolaptes lucidus guttacristatus* (Tickell), Ali and Ripley, Vol. 4 : 243.

Common name : Eastern Larger Goldenbacked Woodpecker.

Diagnostic characters : Size equal to the Pigeon (length 330 mm). In male-back and mantle golden olive; crown, crest and rump crimson; nape and hindneck white; tail and upper tail-coverts black; cheeks and chin white; two black lines on each cheek upto the throat; a fifth broader black stripe down centre of chin and foreneck; breast black, spotted with white; below buffy white. Female similar to the male but the crown and crest black, stippled with white.

Distribution : India : Nagaland; Andhra Pradesh, Arunachal Pradesh, Assam, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, Thailand and Vietnam (Southern portion).

Family EURYLAIMIDAE

Genus ***Serilophus*** Swainson, 1837

864. ***Serilophus lunatus rubropygius*** (Hodgson)

1839. *Raya Rubropygia* Hodgson, *Jour. Asiat. Soc. Bengal* 8 : 36 (No locality = Nepal)

1970. *Serilophus lunatus rubropygius* (Hodgson), Ali and Ripley, Vol. 4 : 247.

Common name : Nepal Collared Broadbill.

Diagnostic characters : Size equal to the Bulbul (length 190 mm). Male has crown and upper back grey and a short crest on the nape. Lower back chestnut; wings black with contrasting chestnut, blue and white markings; tail black, the lateral rectrices white tipped; eye surrounded by a yellow skin. Female similar to male but provided with a demi-gorget of white tipped feathers of either side of neck.

Distribution : India : Nagaland; Arunachal Pradesh, Assam,Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

Genus ***Psarisomus*** Swainson, 1837

865. ***Psarisomus dalhousiae dalhousiae*** (Jameson)

1835. *Eurylaimus dalhousiae* Jameson, Edinburgh New Philos. Jour., 18 : 589 (Northern India, probably near Simla)

1970. *Psarisomus dalhousiae dalhousiae* (Jameson), Ali and Ripley, Vol. 4 : 248

Common name : Longtailed Broadhill.

Diagnostic characters : Size larger than the Bulbul (length 270 mm). Back and wings grass-green; tail long and bright blue above but black below; crown black with an oblong yellow spot on either side; a bright blue patch in the centre of neck. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, Indochinese countries and Thailand.

Family PITTIDAE

Genus ***Pitta*** Vieillot, 1816

866. ***Pitta nipalensis nupalensis*** (Hodgson)

1837. *Paludicola nipalensis* Hodgson, *Jour. Asiat. Soc Bengal*, 6 : 103 (Nepal).

1970. *Pitta nipalensis nipalensis* (Hodgson), Ali and Ripley, Vol. 4, p. 250

Common name : Bluenaped Pitta.

Material examined : Kherzhabama-1 ♀ (24 Jan. 1936); Tekhubama-1 ♂ (27 Jan. 1936).

Diagnostic characters : Size larger than the Quail (length 250 mm). In male back and wings greenish brown; hindneck and nape bright blue; tail brown tinged with green; underparts fulvous. Female like male but hind crown rufous-fulvous and hind neck green; throat whitish.

Measurements :

	Wing	Tail	Bill
1 ♂	126	64	30
1 ♀	123	61	28

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Nepal and Vietnam.

869. ***Pitta sordida cucullata*** Hartlaub

1843. *Pitta cucullata* Hartlaub, *Rev. Zool.* : 65 (Malacca).

1970. *Pitta sordida cucullata* Hartlaub, Ali and Ripley, Vol. **4** : 254

Common name : Hooded or Greenbreasted Pitta.

Diagnostic characters : Size equal to the Quail (length 190 mm). Upper back and mantle dark glossy bluish green; upper tail-coverts and a patch on wing shoulder bright ultramarine blue; crown and nape rich rufous-brown; lores, cheeks, ear-coverts, chin, throat and collar surrounding the head black; primaries black with a prominent white patch; tail black tipped with blue; breast and sides of body pale greenish blue; abdomen black; lower adbomen, vent and under tail-coverts bright crimson. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Indochinese countries and Malaya Peninsula.

871. ***Pitta cyanea cyanea*** Blyth

1843. *Pitta cyanea* Blyth, *Jour. Asiat. Soc. Bengal*, **12** : 1008 (Arakan)

1970. *Pitta cyanea cyanea* Blyth, Ali and Ripley, Vol. **4** : 256

Common name : Blue Pitta.

Diagnostic characters : Size larger than the Quail (length 230 mm). Male has upperparts and tail blue; forehead and crown greenish grey with a black median line; nuchal crest scarlet; a black line from bull through eye to nape; moustachail streak black; wing-patch white, prominent in flight; throat white; rest of underparts pale blue, spolled and brokenly barred with black. Female has upperparts dull brownish, suffused with pale blue; rump, upper tail-coverts and tail pure blue.

Distribution : India : Nagaland; Arunachal Pradesh, Asam, Manipur and Mizoram.

Elsewhere : Bangladesh, Bhutan, Myanmar south to Tenasserim, Thailand and Indochinese countries.

Family ALAUDIDAE

Genus ***Mirafra*** Horsfield, 1821

873. ***Mirafra assamica assamica*** Horsfield

1839. *Mirafra assamica* Horsfield, *Proc. zool. Soc. London* : 162 (Assam).

1972. *Mirafra assamica assamica* Horsfield, Ali and Ripley, Vol. **5** : 4

Common name : Bengal Bush Lark.

Diagnostic characters : Size that of the sparrow (length 150 mm). A hen-sparrow like bird, ashy brown above, streaked with blackish; wings provided with chestnut patch; below fulvous, streaked with triangular brown marks. Sexes alike.

Distribution : India : Nagaland; Haryana (Jagadhri, Ambala dist.), Uttar Pradesh, Jalpaiguri duars, Bihar and West Bengal to Assam and Manipur; south to northern Orissa and northern Madhya Pradesh.

Elsewhere : Nepal(lowlands), Bangladesh, Myanmar.

Family HIRUNDINIDAE

Genus ***Hirundo*** Linnaeus, 1758

918. ***Hirundo rustica tytleri*** Jerdon

1864. *Hirundo Tytleri* Jerdon, *Bds India*, 2(3) : 870 (Dacca).

1972. *Hirundo rustica tytleri* Jerdon, Ali and Ripley, Vol. **5** : 60.

Common name : Tytler's or Chestnutbellied Swallow.

Diagnostic characters : Size that of the House Sparrow (length 180 mm). Forehead and throat chestnut, presence of a broken pectoral band; upperparts glossy, steel-blue; wings long; tail long forked, white spots on tail conspicuous in flight; abdomen chestnut. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Tripura and West Bengal.

Elsewhere : Bhutan, Bangladesh, Myanmar. Breeds in extreme NE Asia and Kamchatka.

929. *Hirundo striolata mayri* Hall

1953. *Hirundo striolata mayri* Hall. *Ibis* **95** : 547 (Singhaling, Hkamiti, Upper Chindwin, Burma).

1972. *Hirundo striolata mayri* Hall, Aliand Ripley, Vol. **5** : 73.

Common name : Chinese Striated or Redrumped Swallow.

Diagnostic characters : Size that of the House Sparrow (length 190 mm) minus the tail. Glossy Steel blue above, with a bright chestnut cap; supercilium chestnut; rump chestnut; fulvous white streaked with dark brown below. Sexes alike.

Distribution : India : Nagaland; Assam hills south of Brahmaputra river (Khasi, North Cachar etc.), Margherita area (Lakhimpur dist.), Manipur.

Elsewhere : Myanmar, Thailand and Indochinese countries.

Genus *Delichon* Horsfield & Moore, 1854

932. *Delichon nipalensis nipalensis* Moore

1854. *Delichon nipalensis* 'Hodgson' = Moore in Horsfield & Moore, *Cat. Bds. Mus. E.I. Co.*, 1 : 384 (Nepal)

1972. *Delichon nipalensis nipalensis* Moore, Ali and Ripley, Vol. **5** : 76.

Common name : Nepal House Martin.

Diagnostic characters : Size that of the House Sparrow (length 130 mm). Back, wings and tail steel blue-black; rump glistening white; hindneck with a broken white collar; chin and throat black; breast and abdomen white; under tail-coverts glossy black. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and Uttar Pradesh.

Elsewhere : Nepal, Bhutan, North Myanmar and N. Vietnam.

Family LANIIDAE

Genus *Lanius* Linnaeus, 1758

945. *Lanius tephronotus tephronotus* (vigors)

1831. *Collurio tephronotus* vigors, *Proc. zool. Soc. London* : 43 (Himalayas, restricted to Gyantse, Tibet, by Baker, 1924, FBI 2 : 297; re-restricted to 'Foothills of the Himalayas near Darjeeling, where breeding birds of the Gyantse district may be expected to winter' by Mayr, 1947, loc. at. : 127)

1972. *Lanius tephronotus tephronotus* (Vigors), Ali and Ripley, Vol. **5** : 92.

Common name : Eastern Tibet Greybacked Shrike.

Material examined : Chizami 1♂(23 Feb. 1936).

Diagnostic characters : Back slaty; wings black; rump and upper tail-coverts rufous; tail chestnut-brown; chin, throat and breast rufous; abdomen paler; a black line through eyes to ear-coverts.

Measurements :

	Wing	Tail	Bill
1♂	98	112	-

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Indochinese countries and Thailand.

948. *Lanius schach tricolor* (Hodgson)

1837. (*Collurio*) Tricolor Hodgson. Ind. Rev. 1(10) 446 (Nepal, restricted to Kathmandu, Nepal Valley, by Biswas, 1950, loc-cit., below : 451)

1972. *Lanius schach tricolor* (Hodgson) Ali and Ripley, Vol **5** : 96

Common name : Black headed Shrike.

Diagnostic characters : Size between Bulbul and Myna (length 250 mm). Crown, sides of head, nape and hindneck black; upper back ashy grey, lower back light chestnut; wings black, primaries bear a white patch at the base; tail blackish, tipped with rufous; chin and throat white; breast pale rufous; rest of lower plumage bright rufous; belly whitish. Sexes alike.

Distribution : India : Nagaland; Assam, Bihar, Manipur, Meghalaya, Orissa, Punjab, Sikkim, Uttar Pradesh and West Bengal.

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

949. ***Lanius cristatus cristatus*** Linnaeus

1758. *Lanius eristatus Linnaeus, Syst. Nat. ed.* 10, **1** : 93 (Benghala)

1972. *Lanius cristatus cristatus* Linnaeus, Ali and Ripley, Vol. **5** : 98.

Common name : Brown Shrike.

Diagnostic characters : Size equal to the Bulbul (length 190 mm). Crown, mantle, rump and upper tail-coverts reddish brown; forehead and supercilium white; a black line through eyes to ear-coverts; wings brown; tail rufous brown; chin and throat white; rest pale fulvous, tinged with rufescent on breast and belly. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union except Arunachal Pradesh, Haryana, Himachal Pradesh, Punjab, Jammu & Kashmir and Rajasthan.

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

Family ORIOLIDAE

Genus ***Oriolus*** Linnaeus, 1766

958. ***Oriolus xanthornus xanthornus*** (Linnaeus)

1758. *(Coracias) xanthornus* Linnaeus, *Syst. Nat. ed.*, 10, **1** : 108 (in America = Chandernagar, Bengal)

1972. *Oriolus xanthornus xanthornus* (Linnaeus) Ali and Ripley, Vol. **5** : 108.

Common name : North Indian Blackheaded Oriole.

Diagnostic characters : Size between the Bulbul and Myna (length 250 mm). Entire plumage golden yellow; head, throat and upper breast jet black and some black in wings and tail; crimson eyes and flesh pink bill conspicuous. Sexes alike but underparts of female tinged with olive.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Sikkim, Uttar Pradesh, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Nepal and Thailand.

961. ***Oriolus traillii traillii*** (Vigors)

1832. *Pastor Traillii* Vigors, *Proc. zool. Soc. London*, Pt. **1** : 175 (Himalayas-Darjeeling Vide Baker, 1921, *Jour. Bombay nat.Hist. Soc.* **27** : 698)

1972. *Oriolus traillii traillii* (Vigors), Ali and Ripley, Vol. **5** : 112.

Common name : Indian Maroon Oriole.

Material examined : Emilomi—1 ♀ (26 Feb. 1936).

Diagnostic characters : Size larger than the Myna (310 mm). In male entire head, neck and wings black; back, breast and belly glossy crimson-maroon ; tail chestnut-maroon. Female similar but underparts greyish white streaked with blackish.

Measurements :

	wing	tail	bill
1 ♀	142	110	31

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Indochinese countries, Nepal and Thailand.

Family DICRURIDAE

Genus *Dicrurus* Vieillot, 1816.

962. *Dicrurus adsimilis albirictus* (Hodgson)

1836. *(Bhuchanga) Albirictus* Hodgson, Ind. Rev., 1(8) : 326 (Nepal)

1972. *Dicrurus adsimilis albirictus* (Hodgson), Ali and Ripley, Vol. 5 : 114.

Common name : North Indian Black Drongo or King Crow.

Diagnostic characters : Size greater than Bulbul (length including tail 310mm). A black bird with a long deeply forked tail, a small white spot below the eyes; bill strong and slightly hooked; tail much longer than the wings; legs short. Sexes alike.

Distribution : India : Nagaland; Assam, Bihar, Haryana, Delhi, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Punjab, Rajasthan, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Afghanistan, Bangladesh, Bhutan, Myanmar, Iran (south eastern part), Nepal and Pakistan.

966. *Dicrurus leucophaeus hopwoodi* Baker

1918. *Dicrurus leucophaeus hopwoodi* Baker, *Novit. Zool.* 25 : 294 (Dacca).

1972. *Dicrurus leucophaeus hopwoodi* Baker, Ali and Ripley, Vol. 5 : 121.

Common name : Assam Grey Drongo.

Material examined : Emilomi 1♂ (26 Feb. 1935).

Diagnostic Characters : Size larger than the Bulbul (length 300 mm). A slim glossy slate-black drongo with long deeply forked tail and conspicuous crimson eyes. Underparts dull slaty. Sexes alike.

Measurements :

	wing	tail	bill
1♀	143	152	25

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Meghalaya and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar and Indochinese countries.

970. *Dicrurus annectans* (Hodgson)

1836. *(Bhuchanga)* Annectans Hodgson, *Ind. Rev.* 1(8) : 326 (Nepal)

1972. *Dicrurus annectans* (Hodgson), Ali and Ripley, Vol. 5 : 125

Common name : Crowbilled Drongo.

Diagnostic characters : Size larger than the Myna (length 250 mm). Entire plumage glossed with steel blue; under wing coverts dark black with a round and white spot at tip of each feather; tail less deeply forked, outer rectrices curving outward; bill black, large and heavy. Sexes alike.

Distribution : India : Nagaland; Arunchal Pradesh, Assam, Manipur, Meghalaya, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Indonesian Islands, Nepal, Malaya Peninsula and Thailand.

971. *Dicrurus aeneus aeneus* Vieillot

1817. *Dicrurus aeneus* Vieillot, *Nouv. Dict.d' Hist. Nat* 9 : 586 (Bengal restricted to Dacca by Baker, 1924. Fauna Br. India, Birds 2 : 368)

1972. *Dicrurus aeneus aeneus* Vieillot, Ali and Ripley. Vol. 5 : 126.

Common name : Bronzed Drongo.

Diagnostic characters : Size, larger than the Bulbul, minus the tail (length 240 mm). Whole plumage highly glossy black with bronze-green and blue; rump and upper tail-coverts grey; tail less deeply forked as against Black Drongo. Bill broad and depressed like a flycatcher. Sexes alike.

Distribution : India : Nagaland; Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, Indochinese countries, Malayasia, Thailand and Yunnan.

972. ***Dicrurus remifer tectirostris*** (Hodgson)

1836. *(Bhringa) tectirostris* Hodgson, *Ind. Rev.* 1(8) : 325 (Nepal).

1972. *Dicrurus remifer tectirostris* (Hodgson), Ali and Ripley, Vol. **5** : 128.

Common name : Lesser Racket-tailed Drongo.

Diagnostic characters : Size larger than the Myna (length 300 mm). Whole plumage glossy metallic black; a velvety pad like tuft of feathers above the base of the bill; two elongated "wire"like outer tail-feathers ending in spatulate as "rackets" fully webbed on both sides of the shaft. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, China, Indochinese countries and Thailand.

973. ***Dicrurus hottentottus hottentottus*** (Linnaeus)

1766. *Corvus hottentottus* Linnaeus, *Syst, Nat., ed.*, 12, **1** : 155 (Cape of Good Hope, restricted to Sikkim by Baker, 1919, re-restricted to 'region between Ayuthia and head of the Gulf', Siam by Kloss, 1921, *Jour. Fed. Malay States Mus.* **10** : 223. Re-restricted to chandernagar by Stresemann, 1952, *Ibis* **94** : 517, 521)

1972. *Dicrurus hottentottus hottentottus* (Linnaeus) Ali and Ripley, Vol. **5** : 131.

Common name : Haircrested or Spangled Drongo.

Diagnostic characters : Size equal to the Myna, minus the tail (length 300 mm). Whole plumage irrideseent glossed and spangled blue black; a few hair-like plumes springing from forehead and extending over hindcrown and upper back; bill long, pointed and downcurved; tail long, square, curled up at the outer ends. Sexes alike.

Distribution : India : Nagaland; throughout the Indian Union except Gujarat, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Mizoram, Punjab, Rajasthan.

Elsewhere : Bangladesh, Bhutan and Nepal.

976. ***Dicrurus paradiseus grandis*** (Gould)

1836. *Edolius grandis* Gould, *Proc. zool. Soc. London* : 5 (Nepalia).

1972. *Dicrurus paradiseus grandis* (Gould), Ali and Ripley, Vol. **5** : 136.

Common name : Northern Large Racket -tailed Drongo.

Diagnostic characters : Size equal to the Myna, minus the tail (length 350 mm). Whole plumage metallic black; a prominent backward curving large tuft or crest feathers on forehead, curving back over the entire crown; tail with two long "wires" like spatula tipped streamers. Sexes alike.

Distribution : India : Nagaland; throughout the Indian mainland except Haryana, Himachal Pradesh Goa, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Punjab and Rajasthan.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, Vietnam and Yunnan.

Family STURNIDAE

Genus ***Sturnus*** Linnaeus, 1758

989. ***Sturnus malabaricus nemoricola*** (Jerdon)

1862. *Sturnia nemoricola* Jerdon. *Ibis* : 22 (Thayetmyo, Upper Burma)

1972. *Sturnus malabaricus nemoricola* (Jerdon), Ali and Ripley, Vol. **5** : 155.

Common name : Whitewinged Myna.

Diagnostic characters : Size smaller than the common Myna (length 210 mm). Forehead,crown pearly grey; shaft of feathers of head and neck whitish; upperparts dark grey tinged with ferruginous on rump; central tail feathers frosted grey, rest balckish at base, dark ferruginous at tips; chin, throat and breast pearly grey; rest of underparts pale rosy buff to almost white. Sexes alike.

Distribution : India : Nagaland; Assam and Manipur.

Elsewhere : Myanmar, Thailand, Yunnan and Indochinese countries.

Genus ***Acridotheres*** Vieillot, 1816

1011. ***Acridotheres fuscus fumidus*** Ripley

1950. *Acridotheres cristatellus fumidus* Ripley, Postilla, Yale Peabody Mus., No. 1 : 4 (Sadiya northeastern Assam)

1972. *Acridotheres fuscus fumidus* Ripley, Ali and Ripley, Vol. 5 : 186.

Common name : Eastern Jungle Myna.

Diagnostic characters : Size equal to the Common Myna (length 230 mm). Head and neck slaty grey, forehead with a prominent tuft of erect black feathers at base of bill; feathers of crown narrow and greyish brown; primaries of wings brown with a large white patch; tail black tipped white; rest of the underparts grey brown; bill yellow orange; legs and feet yellow ochre. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh and Assam.

Genus ***Gracula*** Linnaeus, 1758

1015. ***Gracula religiosa intermedia*** A. Hay

1844. *Gracula intermedia* A. Hay, *Madras Jour. Lit. Sci.* 13 : 157 (Cachar)

1972. *Gracula religiosa intermedia* A. Hay, Ali and Ripley, Vol. 5 : 191.

Common name : Northern Hill Myna.

Diagnostic characters : Size larger than the Common Myna (length 290 mm). Whole plumage black; central crown, hindneck , mantle and breast glossed with purple; lateral crown velvety black; rest of the plumage glossed with greenish; wing with a broad white patch on primaries; irregular shaped patch of feathers from posterior rim of eye just fails to divide the bare patch below eye from that over the ear-coverts; the latter patch joins the occipital wattle. Sexes alike.

Destribution : India : Nagaland ; Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Nepal, Bhutan, Myanmar, Indochinese countries and Thailand.

Family CORVIDAE

Genus ***Garrulus*** Brisson, 1760

1021. ***Garrulus glandarius interstinctus*** Hartert

1918. *Garrulus bispecularis interstinctus* Hartert, *Novit. zool.*, 25 : 430 (Darjeeling)

1972. *Garrulus glandarius interstinctus* Hartert, Ali and Ripley, Vol. 5 : 201.

Common name : East Himalayan Redcrowned Jay.

Diagnostic characters : Size that of the Dove (length 330 mm). Head, upper back, throat, breast and abdomen rufous coloured; wings bright blue, closely barred with black; moustachial band black; tail velvety black; rump and vent white. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Tibet.

Genus ***Cissa*** Boie, 1826

1023. ***Cissa chinensis chinensis*** (Boddaert)

1783. *Coracias chinensis* Boddaert, Table pl. enlum : 38 (China, corrected to southern Thailand by Robinson & Kloss, 1923 = Mergui vide Stresemann, 1952, *Ibis* 94 : 516)

1972. *Cissa chinensis chinensis* (Boddaert), Ali and Ripley, Vol. 5, p. 204.

Common name : Green Magpie.

Diagnostic characters : Size that of the Common Myna, minus the tail (length 400 mm). Back and underparts bright leaf-green; wings cinnamon-red; a black band running backward through eyes to meet on nape; tail marked with black and white tip; bill and legs bright coral red. Sex similar.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, Thailand, N. Vietnam. The species

extends to Combodia, Malay Peninsula, Borneo, Sumatra and Java.

1028. ***Cissa erythrorhyncha magnirostris*** (Blyth)

1846. *Ps. (ilorhinus) magnirostris* Blyth, *Jour. Asiat. Soc. Bengal* **15** : 27, 28 (Ya-ma-dong Mountains, separating Arracan from Pegu).

1972. *Cissa erythrorhyncha magnirostris* (Blyth), Ali and Ripley, Vol. **5** : 212.

Common name : Burmese Redbilled Blue Magpie.

Diagnostic characters : Size that of the Rock Pigeon (length 700 mm). Head, neck and breast velvety black; nape with a large white patch; abdomen and vent greyish white; wings blue; tail long with white and black ring like markings. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

Genus ***Dendrocitta*** Gould, 1833

1035. ***Dendrocitta frontalis frontalis*** Horsfield

1840. *Dendrocitta frontalis* Horsfield, *Proc. zool. Soc. London* : 163(Assam).

1972. *Dendrocitta frontalis frontalis* Horsfield, Ali and Ripley, Vol. **5** : 222.

Common name : Blackbrowed Tree Pie.

Diagnostic characters : Size that of the common Myna, minus the tail (length 380 mm). Face, throat and foreneck black; back, abdomen and under tail-coverts chestnut; nape, sides of head and breast white; tail long, graduated, black throughout. Sexes similar.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Bangladesh and Myanmar.

1038,1039. ***Dendrocitta farmosae himalayensis*** Blyth

1865. *Dendrocitta himalayensis* Blyth, *Ibis* : 45 (Sikkim, restricted by Ticehurst, 1925, *Bull. Brit Orn. C* l. **46** : 22).

1972. *Dendrocitta formosae himalayensis* Blyth, Ali and Ripley, Vol. **5** : 226.

Common name : East Himalayan Tree Pie.

Diagnostic characters : Size that of the common Myna, minus the tail (length 410 mm). Forehead black, sides of head sooty; crown, nape and upper mantle ashy; back and scapulars buffy brown; rump paler; wings black marked with a white patch; chin and throat dark sooty; rest chiefly rusty and whitish; under tail-coverts chestnut. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, China, Hainan, Laos, Taiwan and Vietnam.

Genus ***Corvus*** Linnaeus, 1758

1055. ***Corvus macrohynchos levaillantii*** Lesson

1831. *Corvus levaillantii* Lesson, *Traite'd' Orn.*, : 328 (Bengal).

1972. *Corvus macrorhynchos levaillantii* Lesson, Ali and Ripley, Vol. **5** : 254.

Common name : Eastern Jungle Crow.

Diagnostic characters : Size between House crow and Pariah Kite (length 480 mm). Entire plumage glossy black washed with dark purple blue; base of nape feathers dusty-grey; bill heavy, curved and black. Sexes alike.

Distribution : India : Nagaland; Andaman Islands, Assam, Manipur, Meghalaya, Tripura and West Bengal.

Elsewhere : Myanmar and northern Thailand.

Family CAMPEPHAGIDAE

Genus ***Hemipus*** Hodgson, 1844

1064. ***Hemipus picatus capitalis*** (Horsfield)

1839. *Muscicapa? capitalis* Horsfield, *Proc. zool. Soc. London* : 157 (Assam)

1971. *Hemipus picatus capitalis* (Horsfield), Ali and Ripley, Vol. **6** : 1.

Common name: Brownbacked Pied Flycatcher-Shrike.

Diagnostic characters : Size equal to the Sparrow (length 140 mm). Head black; back, scapulars and rump smoky brown; wings and tail dark brown and white; a white collar round the hind neck; chin and throat pure white; breast and belly pinkish white. In female, black colour is replaced by sooty brown colour.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Himachal Pradesh (rare), Meghalaya, Manipur, Mizoram, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Nepal, Bhutan, Bangladesh, North Myanmar, North Thailand, Yunnan and the Indochinese Countries.

Genus ***Tephrodornis*** Swainson, 1832

1067. ***Tephrodornis gularis pelvica*** (Hodgson)

1837. *Tenthaca Pelvica* Hodgson, *Ind. Rev.*, 1(10) : 447 (Nepal)

1971. *Tephrodornis gularis pelvica* (Hodgson), Ali and Ripley, Vol. 6 : 6.

Common name : Nepal Wood Shrike.

Diagnostic characters : Size that of the Myna (length 230 mm). In male crown and nape ashy grey; back, wings and tail ashy brown; the last tipped with blackish and rufous; a broad black line from lores throught eyes to ear-coverts; rump white; chin, throat and breast pale ashy fawn; centre of abdomen whitish. In female, crown and back same colour, eye-line brown.

Distribution : India : Nagaland; Andhra Pradesh, Assam, Bihar, Manipur, Meghalaya, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Nepal and Bhutan.

Genus ***Coracina*** Vieillot, 1816

1077. ***Coracina melaschistos melaschistos*** (Hodgson)

1836. *Volvocivora Melaschistos* Hodgson, *Ind. Rev.*, 1(8) : 328 (Nepal)

1971. *Coracina melaschistos melaschistos* (Hodgson), Ali and Ripley, Vol. 6 : 19.

Common name : Dark Grey Cuckoo-Shrike.

Diagnostic characters : Size smaller than the Myna (length 220 mm). In male, overall dark bluish grey with a prominent black eye-stripe; wings and tail black, latter broadly white-tipped. Female similar but paler grey and with barred underparts; terminal margin of the tail is white.

Distribution : India : Nagaland; Andhra Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Meghalaya, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, China, Taiwan and Indochinese Countries

1079. ***Coracina melanoptera sykesi*** (Strickland)

1844. *Lalage sykesi* Strickland, *Ann. Mag. Nat. Hist.*, 13 : 36 (Calcutta vide Baker = Dukhun, Sykes, 1832, *Proc. zool. Soc. London*, pl. 2 : 77, 87).

1971. *Coracina melanoptera sykesi* (Strickland), Ali and Ripley, Vol. 6 : 22.

Common name : Peninsular Blackheaded Cuckoo shrike.

Diagnostic characters : Size equal to the Bulbul (length 190 mm). In male, back light grey with black head, wings and tail, the latter prominently white-tipped on all except the middle pair of rectrices; abdomen and vent white. In female, browner, no black on head, underparts buff and white, barred with dark brown except on the abdomen, vent and under tail-coverts.

Distribution : India : Nagaland; Andhra Pradesh, Assam, Goa, Gujarat, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Manipur, Mizoram, Meghalaya, Orissa, Tamil Nadu, Tripura and West Bengal.

Elsewhere : Bangladesh.

Genus ***Pericrocotus*** Boie, 1826

1082. ***Pericrocotus flammeus fraterculus*** Swinhoe

1870. *Pericrocotus fraterculus* Swinhoe, *Ibis* : 244 (Hainan)

1971. *Pericrocotus flammeus fraterculus* Swinhoe, Ali and Ripley, Vol. **6** : 28

Common name : Burmese Scarlet Minivet.

Diagnostic characters : Size larger than the Bulbul (length 230 mm). In male—head, neck and upper back gloss blue-black; lower back and rump deep scarlet; wings and longish graduated tail particoloured black and scarlet; the first two primaries lack the red spot and the central rectrices are wholly black; throat black; rest bright scarlet. Female—crown, nape and back yellowish grey; forehead and short supercilium bright yellow; underparts bright yellow; wings marked with two yellow bars; first three primaries lack the yellow spot.

Distribution : India : Nagaland; Meghalaya.

Elsewhere : Myanmar and Bangladesh.

1084. ***Pericrocotus brevirostris brevirostris*** (Vigors)

1830. *Muscicapa brevirostris* Vigors, *Proc. zool. Soc. London* : 43 (Himalayas = Sikkim foothills, Vide Mayr, 1940)

1971. *Pericrocotus brevirostris brevirostris* (Vigors), Ali and Ripley, Vol. **6** : 30.

Common name : Shortbilled Minivet.

Diagnostic characters : Size smaller than the Bulbul (length 180 mm). In male, entire head and back black, rump scarlet; a broad scarlet band running through the black wing; tail steeply graduated. In female, back grey; throat yellow and all the red parts of male replaced by yellow.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar, China and Vietnam.

1087. ***Pericrocotus ethologus mariae*** Ripley

1952. *Pericrocotus ethologus mariae* Ripley, *Jour. Bombay nat, Hist. soc.* **50** : 486 (Phek, eastern Naga Hills).

1971. *Pericrocotus ethologus mariae* Ripley, Ali and Ripley, Vol. **6** : 35.

Common name : Nagaland Longtailed Minivet.

Diagnostic characters : Size smaller than the Bulbul (length 180 mm). Male-entire head and mantle black; lower back and rump scarlet-crimson; tail graduated, black and crimson; wings black with a large crimson patch; throat and upper breast glossy black; rest bright crimson. Female has grey crown and mantle; rump and upper tail-coverts orange-yellow; lower throat, breast and abdomen washed with orange-yellow.

Distribution : India : Nagaland; Manipur, Mizoram and Tripura.

Elsewhere : Bangladesh, Chin hills to Myanmar and ranges east to central Vietnam and north to Manchuria.

1089. ***Pericrocotus roseus roseus*** (Vieillot)

1818. *Muscicapa rosea* Vieillot, *Nauv. Dict. d'Hist, Nat. Nauv. Ed.* **21** : 486 (Bengal)

1971. *Pericrocotus roseus roseus* (Vieillot), Ali and Ripley, Vol. **6** : 37.

Common name : Rosy Minivet.

Diagnostic characters : Size smaller than the Bulbul (length 190mm). In male, crown and back ashy brown; rump and upper tail-coverts rosy pink; wings and tail deep pink; underparts rosy pink. Female similar to male, but rosy and pink portion replaced by pale yellow colour.

Distribution : India : Nagaland; Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal, Pakistan, Myanmar, China and Vietnam.

1095,1092. ***Pericrocotus cinnamomeus vividus*** Baker

1920. *Pericrocotus cinnamomeus vividus* Baker, *Bull. Brit. Orn*, cl. **40** : 114 (Attaran River, Amherst Dist; Tenasserim Div., Burma, restricted to Pabyouk, 22 m. SE. of Moulmein by Deignan)

1971. *Pericrocotus cinnamomeus Vividus* Baker, Ali and Ripley, Vol. **6** : 44.

Common name : Eastern Small Minivet.

Diagnostic characters : Size smaller than the sparrow (length 150 mm. with longer tail). In male-head, throat and back dark grey; rump orange-red; wings black with a yellow orange patch; tail black above, yellow-orange below; breast bright orange becoming yellow on belly. In female, upperparts as in male but paler; underparts whitish grey suffused with yellow; wings as in male but yellow patch smaller and less bright; tail as in male.

Distribution : India : Nagaland; Andaman Islands, Andhra Pradesh, Assam, Manipur, Meghalaya, Orissa, Tripura and West Bengal.

Elsewhere : Bangladesh, Nepal, Myanmar, Thailand and Laos.

Family IRENIDAE

Genus *Aegithina* Vieillot, 1816

1098. *Aegithina tiphia tiphia* (Linnaeus)

1758. *Motacilla Tiphia* Linnaeus, *Syst. Nat. Ed.*, 10, 1 : 186 (Benghala = neighbourhood of Calcutta)

1971. *Aegithina tiphia tiphia* (Linnaeus), Ali and Ripley, Vol. 6 : 49.

Common name : Common Iora.

Diagnostic characters : Size that of the House Sparrow (length 140 mm). In male-crown, nape and back greenish-Yellow; chin, throat and breast yellow; black wings with two white wing bars; tail black. In non-breeding plumage similar to female but retaining black tail.

In female—yellowish green throughout; wings and tail greenish brown instead of black; wings also with two white bars.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

Genus *Chloropsis* Jardine & Selby, 1827

1106. *Chloropsis hardwickii hardwickii* Jardine & Selby

1830. *Chloropsis hardwickii* Jardine & Selby, *Ill. Orn., Add.*, 2 :1 (Nepal)

1971. *Chloropsis hardwickii hardwickii* Jardine & Selby. Ali and Ripley, Vol. 6 : 59.

Common name : Orangebellied Chloropsis.

Diagnostic characters : Size that of the Bulbul (length 190 mm). In male—crown, nape and back leaf green; shoulder patch blue; tail black; chin, throat, sides of head and breast deep bluish black; abdomen orange; moustachial streak cobalt-blue. Female has head and back leaf green; wings brown; tail green; moustachial streak paler blue; chin and throat leaf green; underparts pale blue.

Distribution : India : Nagaland; Assam, Bihar, Himachal Pradesh, Manipur, Meghalaya, Punjab, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Thailand.

Family PYCNONOTIDAE

Genus *Spizixos* Blyth, 1845

1111. *Spizixos canifrons canifrons* Blyth

1845. *Spizixos canifrons* Blyth, *Jour. Asiat. Soc. Bengal*, 14 : 571 (Khasia Hills)

1971. *Spizixos canifrons canifrons* Blyth, Ali and Ripley, Vol. 6 : 66.

Common name : Finchbilled Bulbul.

Diagnostic characters : Size equal to the Redvented Bulbul (length 200 mm). Back, wings and tail green, the latter provided with a broad black band; head slaty with black creast; throat slaty with whitish patch on sides of neck; abdomen yellowish. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur, and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

Genus *Pycnonotus* Boie, 1826

1112. *Pycnonotus atriceps atriceps* (Temminck)

1822. *Turdus atriceps* Temminck, *Pl. col., livr.* 25, pl. 147 (Java and Sumatra, restricted to Java by Robinson & Kloss, 1923, Jour. Fed. Malay States Mus, 11 : 55)

1971. *Pycnonotus atriceps atriceps* (Temminck), Ali and Ripley, Vol. 6 : 63.

Common name : Blackheaded Bulbul.

Diagnostic characters : Size smaller than the Redvented Bulbul (length 180 mm). It has two colour phases. *Normal Phase*—Entire head, throat and upper breast glossy black; upperparts olive; rump olive mottled with black; wings olive and black; tail olive with a black subterminal band; lower breast olive; abdomen yellow. *Grey Phase*—All yellow or olive parts replaced by ashy grey; terminal band of tail white.

Distribution : India : Nagaland; Assam, Manipur, Meghalaya and Tripura.

Elsewhere : Bangladesh, Borneo, Myanmar, throughout the Indochinese subregion, Malayasia, Palawan and Sunda Islands.

1115. ***Pycnonotus melanicterus flaviventris*** (Tickell)

1833. *Vanga flaviventris* Tickell, *Jour. Asiat. Soc. Bengal* **2** : 573 (Dampara in Dholbhum).

1971. *Pycnonotus melanicterus flaviventris* (Tickell), Ali and Ripley, Vol. **6** : 72.

Common name : Blackcreasted yellow Bulbul.

Material examined :

Chizami — 1 ♀ (26 Jan. 1936)

Ptutse — 1 ♂ (27 Jan. 1937)

Diagnostic characters : Size that of the Redvented Bulbul (length 180mm). Entire head, throat and pointed crest glossy black; rest of upper parts olive-yellow; tail brown; eyes pale yellow colour; breast and abdomen yellow. Sexes alike.

Measurements :

	Wing	Tail	Bill
1 ♀	91	86	12
1 ♂	90	86	13

Distribution : India : Nagaland; Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Nepal, Bhutan, Myanmar and China.

1121a. ***Pycnonotus jocosus monticola*** (McClelland)

1840. *Ixos monticola McClelland, Proc. zool. Soc. London* pt. **7** : 160 ('Khasia mountains', Assam)

1971. *Pycnonotus jocosus monticola* (McClelland), Ali and Ripley, Vol. **6** : 80.

Common name : Assam Redwhiskered Bulbul.

Diagnostic characters : Size that of the Redvented Bulbul (length 200 mm). A dark brown bird with a prominent black crest and a white patch on cheeks; a crimson tuft below the eyes and below the base of the tail and marked with white tips except the central tail feathers. A black band on the sides of the breast. Underparts white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Meghalaya and West Bengal.

Elsewhere : Bhutan.

1132. ***Pycnonotus cafer stanfordi*** Deignan

1949. *Pycnonotus cafer stanfordi* Deignan, *Jour. Washington Acad. Sci.*, **39** : 277 (Taro or Dalu, Upper Chindwin Dist., Burma)

1971. *Pycnonotus cafer stanfordi* Deignan, Ali and Ripley, Vol. **6** : 91.

Common name : Burmese Redvented Bulbul.

Material examined :

Kekrima—1 ♀ (17 Feb, 1935)

Chizami —1 ♂ (23 Jan, 1936)

Diagnostic Characters : Size, smaller than the Common Myna, but slender (length 200 mm). Head black with less crested feathers; back earth-brown; feathers of back and breast with scale like markings with broad pale edges; rump white; tail brown rear portion almost black, tip white and a red patch under the base. Sexes alike.

Measurements :

	Wing	Tail	Bill
1 ♂	103	93	22
1 ♀	101	94	–

Distribution : India : Nagaland; Arunachal

Pradesh, Assam, Manipur, Meghalaya and Tripura.

Elsewhere : Bangladesh, Myanmar and Yunnan (S. China).

1134. ***Pycnonotus striatus arctus*** Ripley

1948. *Pycnonotus striatus arctus* Ripley, *Proc. zool. Soc.* Washington, **61** : 101 (Dregi, Mishmi Hills).

1971. *Pycnonotus striatus arctus* Ripley, Ali and Ripley, Vol. **6** : 94.

Common name : Mishmi Striated Green Bulbul.

Diagnostic characters : Size equal to the Redvented Bulbul (length 200mm). Back and wings olive-green with fine white streaks. Crest brownish. Wings and tail olive and brown; lores yellow; chin and throat yellow, the latter with dark stipples. Breast dark grey; below olive striped with pale yellow. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh and Assam.

Elsewhere : Northern Myanmar.

1137. ***Pycnonotus flavescens flavescens*** Blyth

1845. *Pycnonotus flavescens* Blyth, *Jour. Asiat. Soc. Bengal* **14** : 568 (Arakan)

1971. *Pycnonotus flavescens flavescens* Blyth, Ali and Ripley, Vol. **6** : 96.

Common name : Blyth's Bulbul.

Diagnostic characters : Size equal to the Redvented Bulbul (length 200 mm). Back and wings olive; head greyish brown; supercilium and lores white; under tail-coverts bright yellow. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

Genus ***Criniger*** Temminck, 1821

1140. ***Criniger flaveolus flaveolus*** (Gould)

1836. *Trichophorus flaveolus* Gould, *Proc. zool. Soc. London* : 6 (Nepal vide Koelz, 1954, Contrib, Inst, Regional Exploration, No. 1 : 10)

1971. *Criniger flaveolus flaveolus* (Gould), Ali and Ripley, Vol. **6** : 100.

Common name : Whilethroated Bulbul.

Diagnostic characters : Size that of the Myna (length 230 mm). Back olive-green; crown with rufous-brown crest; wings and tail rufous-brown; supercilium whitish; sides of head grey; chin and throat white; rest lemon-yellow. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh and Myanmar.

Genus ***Hypsipetes*** Vigors, 1831

1141. ***Hypsipetes viridescens cacharensis*** (Deignan)

1948. *Microscelis viridescens cacharensis* Deignan, *Proc. zool. Biol. Soc., Washington*, **61** : 3 ('Chutla Bhil', Surma Valley and Hill Division, Cachar)

1971. *Hypsipetes viridescens cacharensis* (Deignan), Ali and Ripley, Vol. **6** : 102.

Common name : Olive Bulbul.

Diagnostic characters : Size that of the Redvented Bulbul (length 190 mm). Back and wings olive; tail rufous-brown; throat and breast greyish-yellow; abdomen bright yellow; under tail-coverts tawny. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Myanmar, Shan States and Thailand.

1146. ***Hypsipetes mcclellandi mcclellandi*** Horsfield

1840 (1839), *Hypsipetes Mcclellandi* Horsfield, *Proc zool Soc. London* : 159 (Assam)

1971. *Hypsipetes mcclellandi mcclellandi* Horsfield, Ali and Ripley, Vol. **6** : 107.

Common name : Rufousbellied Bulbul.

Kekrima—1 ♀ (17 Feb. 1935); Chizami—1 ♀ (20 Feb.1935); Sakhai— 1 ♂, 1 ♀ (23 Feb. 1935).

Diagnostic characters : Size that of the Myna (length 230 mm). Crown dark brown, slightly crested, finely streakled with whitish; rest of upperparts olive-green; chin and throat dark grey, the latter streaked with whitish; breast cinnamon finely streaked with white; abdomen paler; under tail-coverts yellowish. Sexes alike.

Measurements :

	Wing	Tail	Bill
1 ♂	108	112	24
3 ♀	105-110	102-107	24
	(107)	(104)	(broken-2)

Distribution : India : Nagaland; Northern Himalayas from Uttar Pradesh to Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Bhutan and Nepal.

1147. ***Hypsipetes flavalus flavalus*** (Blyth)

1845. *Hemixos flavala* Blyth, *Jour. Asiat. Soc. Bengal*, **14** : 572 (Sub-Himalayan Ranges)

1971. *Hypsipetes flavalus flavalus* (Blyth), Ali and Ripley, Vol. **6** : 108.

Common name : Browneared Bulbul.

Chizami—1 ♀ (24 Jan. 1935), 1 ♂ (24 Jan. 1936)

Diagnostic characters : Size that of the Redvented Bulbul (length 200 mm). Head and back dark grey with short tuft like crest; cheeks black; ear-coverts light brown with a silky sheen; wings brown with a large olive-yellow patch; tail brown edged with olive-yellow; throat and belly white; breast pale grey. Sexes alike.

Measurements :

	Wing	Tail	Bill
1 ♂	101	92	22
1 ♀	92	81	21

Distribution : India : Nagaland; Northern Himalayas from Himachal Pradesh to Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

1151. ***Hypsipetes madagascariensis nigrescens*** Baker

1917. *Hypsipetes psaroides nigrescens* Baker, *Bull. Brit. Orn. cl.*, **38** : 15 (Upper Chindwin)

1971. *Hypsipetes madagascariensis nigrescens* Baker, Ali and Ripley, Vol. **6** : 114.

Common name : Assam Black Bulbul.

Chizami—1 ♂ (24 Jan. 1936)

Kohima—1 ♂ (29 Jan. 1936)

Diagnostic characters : Size that of the Redvented Bulbul (length 230 mm). Back, wings and tail slaty grey; crest black; tail slightly forked; bill, legs and feet bright red. Sexes alike.

Measurements :

	Wing	Tail	Bill
2 ♂	117, 120	102, 103	28

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

Family MUSCICAPIDAE

Genus ***Pellorneum*** Swainson, 1832

1156. ***Pellorneum ruficeps chamelum*** Deignan

1947. *Pellorneum ruficeps chamelum* Deignan, Smith Misc. Coll. **107** : 6 (Gunjong, Cachar)

1971. *Pellorneum ruficeps chamelum* Deignan, Ali and Ripley, Vol. **6** : 119.

Common name : Assam Spotted Babbler.

Diagnostic characters : Size smaller than the Redvented Bulbul (length 160 mm). Upper back rufous brown; crown dark chestnut-brown; supercilium pale; ear-coverts brown; throat white; rest buff boldly streaked and spotted with blackish. Sexes alike.

Distribution : India : Nagaland; Assam and Meghalaya.

Elsewhere : Bangladesh.

1164. ***Pellorneum albiventre albiventre*** (Godwin-Austen)

1876. *Neornis albiventris* Godwin-Austen, *Jour. Asiat. Soc. Bengal* 45 :199 (Manipur Valley)

1971. *Pellorneum albeventre albiventre* (Godwin-Austen), Ali and Ripley, Vol. 6 : 125.

Common name: Assam Brown Babbler.

Diagnostic characters : Size that of the House sparrow (length 150 mm). Back, wings and tail brown; throat white with faintly spotted; belly whitish; breast and vent whitish with a rusty wash. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

Genus ***Trichastoma*** Blyth, 1842

1167. ***Trichastoma abbotti abbotti*** (Blyth)

1845. *Malacocincla Abbotti* Blyth, *Jour. Asiat. Soc. Bengal* 14 : 601 (Ramree Island, Arakan)

1971. *Trichastoma abbotti abbotti* (Blyth), Ali and Ripley, Vol. 6 : 127

Common name : Abbott's Babbler.

Diagnostic characters : Size that of the House Sparrow (length 150 mm). Upperparts Olive-brown; throat greyish-white; breast and flanks washed with olive; centre of belly whitish; under tail-coverts bright ochraceous. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Thailand.

Genus ***Pomatorhinus*** Horsfield, 1821

1169. ***Pomatorhinus schisticeps schisticeps*** Hodgson

1836. *Pomatorhinus schisticeps* Hodgson, *Asiat. Res.* 19 : 181 (Nepal)

1971. *Pomatorhinus schisticeps schisticeps* Hodgson, Ali and Ripley, Vol. 6 : 131.

Common name : East Himalayan Slatyheaded Scimitar Babbler.

Diagnostic characters : Size that of a slender Myna (length 220 mm). Upperparts olive-brown; crown dark slaty; a conspicuous white supercilium extending behind the eye; a blackish band through eye to ear-coverts; chin, throat, breast and belly whitish, bordered with chestnut; under tail-coverts olive-brown. Sexes alike.

Distribution : India : Nagaland; Northern Himalayas foothills from Uttar Pradesh to Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Bhutan, Myanmar and Nepal.

1180. ***Pomatorhinus ruficollis bakeri*** Harington

1941. *Pomatorhinus ruficollis bakeri* Harington, *Jour. Bombay Nat. Hist. soc.* 23 : 336 (Shillong, Khasia Hills)

1971. *Pomatorhinus ruficollis bakeri* Harington, Ali and Ripley, Vol. 6 : 140.

Common name : Cachar Rufousnecked Scimitar Babbler.

Diagnostic characters : Size that of the Redvented Bulbul (length 190 mm). Back, wings and tail olive-brown; crown dark slaty; a conspicuous white eye-brow; a black band from lores to ear-coverts; a rufous chestnut patch on sides of neck; white limited to throat; breast rusty brown streaked with black and yellow bill. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

1184. ***Pomatorhinus erythrogenys mcclellandi*** Godwin-Austen

1873. *Pomatorhinus McClellandi* Godwin-Austen, *Jour. Asiat. Soc, Bengal*, 39 : 103, pl. 2 (Khasia Hills)

1971. *Pomatorhinus erythrogenys mcclellandi* Godwin-Austen, Ali and Ripley, Vol. 6 : 143.

Common name : Assam Rustycheeked Scimitar Babbler.

Diagnostic characters : Size that of the Myna

(length 250 mm). Upperparts olive-brown; sides of head, lores and neck rusty; no supercilium; bill long curved; chin, throat and upper breast dusky grey; lower breast and under tail-coverts ferruginosus. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

1187. ***Pomatorhinus ferruginosus formosus*** Koelz

1952. *Pomatorhinus ferruginosus formosus* Koelz, *Jour. zool. Soc. India*, **4** : 39 (Tura Mountain, Garo Hills)

1971. *Pomatorhinus ferruginosus formosus* Koelz, Ali and Ripley, Vol. **6** : 146.

Common name : Assam Coralbilled Scimitar Babbler.

Diagnostic characters : Size larger than the Redvented Bulbul (length 220 mm). Crown black; back, wings and tail olive-brown; supercilium white; a black band from lores to ear-coverts; a malar and chin white; throat and breast ferruginosus; rest olive-brown; bill coral red. Sexes alike.

Distribution : India : Nagaland; Assam : Manipur and Meghalaya.

1190. ***Pomatorhinus ochraceiceps austeni*** Hume

1881. *Pomatorhinus austeni* Hume, *Stray Feathers*, **10** : 152 (E. Manipur)

1971. *Pomatorhinus ochraceiceps austeni* Hume, Ali and Ripley, Vol. **6** : 148.

Common name : Manipur Longbilled Scimitar Babbler.

Diagnostic characters : Size larger than the Redvented Bulbul (length 220 mm). Crown and nape tawny-olive; back olive; wings and tail brown; supercilium white; lores black; chin and throat white; breast and belly creamy white washed with buff; bill long, curved and orange. Sexes alike.

Distribution : India : Nagaland; Assam, Manipur and Meghalaya.

Genus ***Xiphirhynchus*** Blyth, 1842

1192. ***Xiphirhynchus superciliaris intextus*** Ripley

1948. *Xiphirhynchus superciliaris intextus* Ripley, *Proc. Biol. Soc. Washington*, **61** :105 (Dreyi, Mishmi Hills, NE. Assam)

1971. *Xiphirhynchus superciliaris intextus* Ripley, Ali and Ripley, Vol. **6** : 151.

Common name : Assam Slenderbilled Scimitar Babbler.

Diagnostic characters : Size that of the Redvented Bulbul minus the bill (length 200 mm). Back rufous-brown; head slaty; supercilium white; wings and tail dark brown; throat ashy streaked with white; rest cinnamon; bill black, long, slender and curved. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh.

Genus ***Rimator*** Blyth, 1847

1193. ***Rimator malacoptilus*** Blyth

1847. *Rimator malacoptilus* Blyth, *Jour. Asiat. Soc, Bengal* **16** : 154 (Darjeeling).

1971. *Rimator malacoptilus* Blyth, Ali and Ripley, Vol. **6** : 151.

Common name : Longbilled Wren-Babbler.

Diagnostic characters : Size that of the House Sparrow (length 120 mm). Back, wings and tail dark rufescent brown with buff shaft streak; moustachial stripe black; chin white; throat, breast and abdomen pale rufescent brown with whitish shaft streaks; under tail-coverts ferruginosus. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and Sikkim.

Elsewhere : Bhutan, Myanmar, Indonesia and Vietnam.

Genus ***Napothera*** G.R. Gray, 1842

1195. ***Napothera epilepidota roberti*** (Godwin-austen & Walden)

1875. *Pnoepyga roberti* Godwin-Austen & Walden, *Ibis* : 252 (Chakha, Manipur)

1971. *Napothera epilepidota roberti* Godwin-Austen & Walden, Ali and Ripley, Vol. 6 : 154.

Common name : Austen's Small Wren-Babbler.

Diagnostic characters : Size similar that of the House Sparrow but slightly smaller (length 100 mm). Back, wings and tail dark brown, feathers give a scally appearance; a bright supercilium from lores to nape; throat white streaked with dark brown; centre of breast and belly whitish. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Genus ***Pnoepyga*** Hodgson, 1844

1198. ***Pnoepyga albiventer albiventer*** (Hodgson)

1837. *Tesia albiventer* Hodgson, *Jour. Asiat. Soc.* Bengal G : 102 (Nepal, restricted by Ripley (Synopsis : 357) to Ilam dist., eastern Nepal, re-restricted to Chandragiri above Thankot by Biswas (JBNHS 59 : 204-5)

1971. *Pnoepyga albiventer albiventer* (Hodgson), Ali and Ripley, Vol. 6 : 156.

Common name : Eastern Scalybreasted Wren-Warbler.

Diagnostic characters : Size slightly smaller than the House Sparrow (length 100 mm). A tailless, squamated little Babbler in two colour phases. White phase: Back and head olive-brown with a slightly scaly appreance. Throat, breast and belly white, each feather with dark centre and dark narrow margin produced a scaly effect. Fulvous phase : Upperparts olive-brown, spotted with fulvous. Underparts as in white phase but white replaced by fulvous. Sexes alike in both phases.

Distribution : India : Nagaland; Aurnachal Pradesh, Assam, Meghalaya and Sikkim.

Elsewhere : Bhutan, Nepal, China and Vietnam.

1199. ***Pnoepyga pusilla pusilla*** Hodgson

1945. *Pnoepyga pusilla* Hodgson, *Proc. zool. Soc.* London, pt. 13 : 25 (Nepal)

1971. *Pnoepyga pusilla pusilla* Hodgson, Ali and Ripley, Vol. 6 : 158.

Common name : Brown Wren-Warbler.

Diagnostic characters : Size smaller than the House Sparrow (length 90 mm). Similar to the preceeding bird, only distinguished it from the former by smaller size.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar, Thailand and Vietnam.

Genus ***Spelaeornis*** David & Oustalet, 1877

1203. ***Spelaeornis chocolatinus chocolatinus*** (Godwin-Austen & Walden)

1875. *Pnoepyga chocolatina* Godwin-Austen & Walden, *Ibis* : 252 (Kedimai, Manipur)

1971. *Spelaelornis chocolatinus chocolatinus* Godwin-Austen & Walden), Ali and Ripley, Vol. 6 : 163.

Common name : Streaked Longtailed Wren-Warbler.

Diagnostic characters : Size smaller than the House Sparrow (length 100mm). In male-crown and back dark brown with a scaly appreance; chin and throat white, the latter finely speckled; abdomen white. In female-rufescent above and below.

Distribution : India : Nagaland; Assam, Maniput and Meghalaya.

1206. ***Spelaeornis formosus*** (Walden)

1874. *Troglodytes formosus* Walden, *Ibis* : 91 (Darjeeling)

1971. *Spelaeornis formosus* (Walden), Ali and Ripley, Vol 6 : 166.

Common name : Spotted Short-tailed Wren-Warbler.

Diagnostic characters : Size smaller than the House Sparrow (length 100 mm). Head, back and

wing coverts olive-brown speckled with white; rump, wings and tail chestnut-brown barred with black; throat and breast cinnamon densely spotted with white; abdomen cinnamon speckled with black. Sexes similar.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar and China.

Genus ***Sphenocichla*** Godwin-Austen & Walden, 1875

1208. ***Sphenocichla humei roberti*** Godwin-Austen & Walden

1875. *Sphenocichla roberti* Godwin-Austen& Walden, *Ibis* : 251(Hemes Peak, North Cachar hills)

1971. *Sphenocichla humei roberti* Godwin-Austen & Walden, Ali and Ripley, Vol. **6** : 168.

Common name : Cachar Wedgebilled Wren.

Diagnostic characters : Size smaller than the Redvented Bulbul (length 180 mm). Lower back, wings and tail dark brown, finely barred; crown and upper back mottled with golden brown and with fine white shaft streaks; throat and breast ashy brown with black margins and white submargins. Sexes similar.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Myanmar.

Genus ***Stachyris*** Hodgson, 1844

1209. ***Stachyris rufifrons ambigua*** (Harington)

1915. *Stachyridopsis rufifrons ambigua* Harington, JBNHS **23** : 631 (Gunjong, north Cachar)

1971. *Stachyris rufifrons ambigua* (Harington), Ali and Ripley, Vol. **6** : 169.

Common name : Assam Redfronted Babbler.

Diagnostic characters : Size smaller than the House Sparrow (length 120 mm). Upperparts olive-brown tinged with rufous; crown rufous; supercilium pale grey; chin white; throat ochraceous and abdomen white; vent washed with ochraceous. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Bangladesh.

1210. ***Stachyris ruficeps ruficeps*** Blyth

1847. *Stachyris ruficeps* Blyth, *Jour. Asiat. Soc. Bengal*, **16** : 452 (Darjeeling).

1971. *Stachyris ruficeps ruficeps* Blyth, Ali and Ripley, Vol. **6** : 170.

Common name : Redheaded Babbler.

Diagnostic characters : Size smaller than the House Sparrow (length 120 mm). Back greyish olive-brown; crown rufous-brown; lores and orbital area pale yellowigh; chin and throat pale yellow streaked with black; rest pale yellow tinged with olivaceous on lower belly and flanks. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Orissa, Sikkim and West Bengal.

Elsewhere : Nepal, Myanmar, China, Taiwan, Hainan and vietnam.

1212. ***Stachyris chrysaea chrysaea*** Blyth

1844. *Stachyris chrysaea* Blyth, *Jour. Asiat. Soc. Bengal*, **13** : 379 (Nepal)

1971. *Stachyris chrysaea chrysaea* Blyth, Ali and Ripley, Vol. 6, p. 172.

Common name : Nepal Goldenheaded Babbler.

Diagnostic characters : Size smaller than the House Sparrow (length 100 mm). Forehead, crown and nape golden yellow, the last two strteaked with black; back yellow. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Nepal, Bhutan, Myanmar and China.

1217. ***Stachyris nigriceps coltarti*** Harington

1913. *Stachyris nigriceps coltarti* Harington, *Bull. Brit. Orn. Cl.*, **33** : 61 (Margherita, Assam)

1971. *Stachyris nigriceps coltarti* Harington, Ali and Ripley, Vol. 6 : 177.

Common name : Nagaland Blackthroated Babbler.

Diagnostic characters : Size, smaller than the House Sparrow (length 120 mm). Back, wings and tail olive-brown; crown blackish striped with white; supercilium black and extending to nape; ear-coverts rufous-brown;chin and throat slaty grey bordered by white malar stripe; rest fulvous tinged with olivaceous on lower belly. Sexes similar.

Distribution : India : Nagaland; Margherita (North-east Assam).

Elsewhere : Northern Myanmar.

Genus ***Macronous*** Jardine & Selby, 1835

1228. ***Macronous gularis rubricapilla*** (Tickell)

1833. *Motacilla rubricapilla* Tickell, *Jour. Asiat. Soc. Bengal*, 2 : 576 (Borabhum).

1971. *Macronous gularis rubricapilla* (Tickell), Ali and Ripley, Vol. 6, p. 185.

Common name : Yellow breasted Babbler.

Diagnostic characters : Size smaller than the House sparrow (length 110 mm). Upperparts greyish olive; crown with tawny olive cap; supercilium pale yellow; rest of the underparts pale yellow with fine dark streaks on chin, throat and breast. Sexes alike.

Distribution : India : Nagaland; Andhra Pradesh, Assam, Bihar, Karnataka, Madhya Pradesh, Manipur, Meghalaya. Orissa, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh and Nepal.

Genus ***Timalia*** Horsfield, 1821

1229. ***Timalia pileata bengalensis*** Godwin- Austen

1872. *Timalia bengalensis* Godwin-Austen, *Jour., Asiat. Soc. Bengal*, 41 : 143 (Khasi Hills).

1971. *Timalia pileata bengalensis* Godwin-Austen, Ali and Ripley, Vol. 6 : 187.

Common name : Redcapped Babbler.

Diagnostic characters : Size larger than the House Sparrow (length 170 mm). Forehead white; crown chestnut; lores and bill black; ear-coverts white; sides of neck slaty grey; back olive-brown, lightly streaked on upper back; tail brown, narrowly barred; throat white finely black streaked; rest of underpaarts buff and olive- brown. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

Genus ***Chrysomma*** Blyth, 1843

1231. ***Chrysomma sinense sinense*** (Gmelin)

1789. *Parus sinense* Gmelin, *Syst. Nat.*, 1 : 1012 (China)

1971. *Chysomma sinense sinense* (Gmelin), Ali and Ripley, Vol. 6 : 190.

Common name : Yellow-eyed Babbler.

Diagnostic characters : Size smaller than the Redvented Bulbul (length 180 mm). A small brown bird with a long graduated tail and cinnamon wings. Lores and supercilium white. Bill black; eye-lids orange-yellow; glistening white. Bill black; eye-lids orange-yeallow; glistening white and buff below. Sexes alike.

Distribution : India : Nagaland; Andhra Pradesh, Assam, Bihar, Goa, Karnataka, Kerala, Manipur, Maharashtra, Meghalaya, Orissa, Sikkim,Tamil Nadu, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Vietnam and Kwangtung through south China.

1234. ***Chrysomma altirostre griseigularis*** (Hume)

1877. *Pyctorhis griseigularis* Hume, *Stray Feathers*, 5 : 116 (Assam).

1971. *Chrysomma altirostre griseigularis* (Hume), Ali and Ripley, Vol. 6 : 194.

Common name : Hume's Babbler.

Diagnostic characters : Size smaller than the Redvented Bulbul (length 170 mm). Upperparts dark ferruginous brown, paler on rump;

supercilium hoary grey; chin and throat ashy grey; lowerparts brownish buff. Sexes alike.

Distribution : India : Nagaland; Assam and West Bengal.

Elsewhere : Bhutan, Bangladesh and Northeastern Myanmar.

Genus ***Paradoxornis*** Gould, 1836

1242. ***Paradoxornis nipalensis poliotis*** (Blyth)

1851. *Suthora poliotis* Blyth, *Jour. Asiat. Soc. Bengal*, **20** : 522 (Cherrapoonji, Khasi Hills).

1971. *Paradoxornis nipalensis poliotis* (Blyth), Ali and Ripley, Vol. 6 : 203.

Common name : Blyth's Assam Orange Parrotbill.

Diagnostic characters : Size smaller than the House Sparrow (length 100 mm). Back tawny olive, brighter on rump; wings blackish with rufous and white edges; crown and ear-coverts ochraceous; a broad white moustache; chin and throat black; sides of neck grey; breast pale grey; belly tawny white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bhutan, Myanmar and China.

1246. ***Paradoxornis atrosuperciliaris atrosuperciliaris*** (Godwin-Austen)

1877. *Chleuasicus ruficeps var. atrosuperciliaris* Godwin-Austen, *Proc. Asiat. Soc. Bengal*, **46** : 147 (Sadiya, Assam)

1971. *Paradoxornis atrosuperciliaris atrosuperciliaris* (Godwin-Austen), Ali and Ripley, Vol. **6** : 206.

Common name : Blackbrowed Parrotbill

Diagnostic characters : Size that of the House Sparrow (length 150 mm). Back rufous olive-brown; wings rufous and brown; tail brown, graduated; crown nape and sides of neck rufous; ear-coverts ochraceous; supercilium short and black; underparts creamy buff. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh and Assam.

Elsewhere : Bangladesh, Myanmar, China and Laos.

1248. ***Paradoxornis ruficeps bakeri*** (Hartert)

1900. *Scaeorhynchus ruficeps bakeri* Hartert, *Novit. Zool.*, **7** : 548 (Hungrum, N. Cachar)

1971. *Paradoxornis ruficeps bakeri* (Hartert), Ali and Ripley, Vol. **6** : 208.

Common name : Assam Redheaded Parrotbill.

Diagnostic characters : Size between House sparrow and Bulbul (length 180 mm). Back, wings and tail olive-brown; crown deep ferruginous; underparts buff; orbital skin blue. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Mizoram,

Elsewhere : Bangladesh and Myanmar.

1250. ***Paradoxornis gularis transfluvialis*** (Hartert)

1900. *Scaeorhynchus gularis transfluvialis* Hartert, *Novit. Zool.*, **7** : 584 (Guilang, N. Cachar)

1971, *Paradoxornis gularis transfluvialis* (Hartert), Ali and Ripley, Vol. **6** : 209.

Common name : Assam Greyheaded Parrotbill.

Diagnostic characters : Size between the House Sparrow and Bulbul (length 160 mm). Upperparts rufous-brown; wings and tail darker; forehead black; head dark grey; supercilium black; lores and eye-ring white; underparts white with a black bib. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Myanmar and Thailand.

1251. ***Paradoxornis flaviventris flaviventris*** Gould

1836. *Paradoxornis flaviventris* Gould, *Proc. zool. Soc. London* : 17 (Nepal)

1971. *Paradoxornis flaviventris flaviventris* Gould, Ali and Ripley, Vol. **6** : 210.

Common name : Gould's or Blackthroated Parrotbill.

Diagnostic characters : Size equal to the Redvented Bulbul (length 190 mm). Back olive-brown; wings and tail brown; crown and nape rufous chestnut; ear-coverts black; cheeks white; bill yellow; chin black; upper throat barred with white and brown; throat deep brown; rest of underparts fulvous. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh and Bhutan.

1252. *Paradoxornis guttaticollis* David

1871. *Paradoxornis guttaticollis* David, *Nauv. Arch. Mus. Paris*, 7 : 14 (Moupin, east Chwanben, China)

1971. *Paradoxornis guttaticollis* David, Ali and Ripley, Vol. 6 : 212.

Common name : Whitethroated Parrotbill.

Diagnostic characters : Size equal to the Redvented Bulbul (length 190 mm). Similar to the preceeding bird. Differs from the former in lacking the dark brown throat and having crown and nape rufous-cinnamon; throat pale creamy buff lightly speckled with black. Sexes alike.

Distribution : India : Nagaland, Assam and Meghalaya.

Elsewhere : Bangladesh and extends east to Vietnam.

Genus *Garrulax* Lesson, 1831

1275. *Garrulax monileger monileger* (Hodgson)

1836. *Cinclosoma monileger* Hodgson, *Asiat. Res.* 19 : 147 (Nepal).

1972. *Garrulax monileger monileger* (Hodgson), Ali and Ripley, Vol. 7 : 6.

Common name : Necklaced Laughing Thrush.

Diagnostic characters : Size larger than the Myna (length 250 mm). Back olive-brown; underparts fulvous; nuchal collar narrow; necklace much narrower on the breast and nearly covered by the rufous of the lower throat; shoulder olive-brown; concolours with the back. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

1278. *Garrulax pectoralis melanotis* Blyth

1843. *Garrulax melanotis* Blyth, *Jour. Asiat. Soc. Bengal*, 12 : 949 (Arracan)

1972. *Garrulax pectoralis melanotis* Blyth, Ali and Ripley, Vol. 7 : 8.

Common name : Assam Blackgorgeted Laughing Thrush.

Material examined : Mokokchang—1 ♂, 1 ♀ (2 Mar.1935)

Diagnostic characters : Size larger than the preceeding bird (length 300 mm). Back olive - brown; underparts fulvous; nuchal collar rufous; supercilium white extends to collar; cheek stripe black; throat buff bordered by a black broad necklace; legs slaty grey. Sexes alike.

Measurements :

	Wing	Tail	Bill
1♂	145	138	27
1♀	143	132	28

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar and China.

1282. *Garrulax striatus cranbrooki* (Kinnear)

1932. *Grammatoptila striata cranbrooki* Kinnear, *Bull Brit. Orn. Cl.* 53 : 79 (Adung Valley, Burma)

1972. *Garrulax striatus cranbrooki* (Kinnear), Ali and Ripley, Vol. 7 : 13.

Common name : Assam Striated Laughing Thrush.

Diagnostic characters : Size that of the Myna (length 250 mm). Back umber-brown with fine

white streaks; crest dark brown; a broad black stripe from eye to nape; tail chestnut brown; throat and sides of head densely streaked; breast and belly brownish grey with paler streaks; bill blackish brown. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam and Meghalaya.

Elsewhere : Bhutan and Myanmar.

1284. *Garrulax leucolophus patkaicus* Reichenow

1913. *Garrulax patkaicus* Reichenow, *Jour. f. Orn.*, **61** : 557 (Patkai Mountains, Upper Burma)

1972. *Garrulax leucolophus patkaicus* Reichenow, Ali and Ripley, Vol. 7 : 16.

Common name : Assam White crested Laughing Thrush.

Diagnostic characters : Size larger than the Myna (length 300 mm). Entire head with crest white and a black band from base of bill through eye to end of head; rest of upperparts olive-brown; chin to upper breast white; lower breast nuchal collar and pectoral belt chestnut; belly olive-brown. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

1285. *Garrulax chinensis nuchalis* Godwin-Austen

1876. *Garrulax nuchalis* Godwin-Austen, *Ann. Mag. Nat. Hist.*, **18** : 411 (Khasi-Naga Hills, North Bengal).

1972. *Garrulax chinenis nuchalis* Godwin-Austen, Ali and Ripley, Vol. 7 : 17.

Common name : Chestnutbacked Laughing Thrush.

Diagnostic characters : Size that of the Myna (length 230 mm). Forehead, lores, eye-ring and a short stripe behind eye black. Lowerback, inner edge of wing and tail olive-brown. Outer edge of wing light grey. Tip of tail black. Ear-coverts and sides of neck white. Crown slaty with a few small white feathers infront. Chin and throat black. Breast pale grey. Belly olive-brown. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Myanmar.

1286. *Garrulax galbanus galbanus* Godwin-Austen

1874. *Garrulax galbanus* Godwin-Austen, *Proc. zool. Soc., London* : 44, pl. 10 (Manipur Valley, NE. Bengal)

1972. *Garrulax galbanus galbanus* Godwin-Austen, Ali and Ripley, Vol. 7 : 18.

Common name : Yellowthroated Laughing Thrush.

Diagnostic characters : Size that of the Myna (length 230 mm). Upperparts ochraceous brown; crown and nape ashy-brown; head black; supercilium white; outer rectrices tipped with white preceeded by black; chin black; rest pale yellow washed with olive on flanks; under tail-coverts white. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Mizoram.

Elsewhere : Bangladesh and Myanmar.

1288. *Garrulax delesserti gularis* (McClelland)

1839 (1840). *Ianthocincla gularis* McClelland, *Proc. zool. Soc., London* : 159 (Assam)

1972. *Garrulax delesserti gularis* (Mc Clelland), Ali and Ripley, Vol. 7 : 21.

Common name : Yellowbreasted Laughing Thrush.

Diagnostic characters: Size that of the Myna (length 230 mm). Crown and nape slaty-grey; back olive-brown tinged with rufous; tail largely rufous; chin and throat primrose-yellow; sides of breast dark grey. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Bhutan, Myanmar and Vietnan.

1291. *Garrulax cineraceus cineraceus* (Godwin-Austen)

1874. *Trochalopteron cineraceum* Godwin-Austen, *Proc. zool. Soc, London* : 45 (Manipur Valley, NE. Bengal)

1972. *Garrulax Cineraceus cineraceus* (Godwin-Austen), Ali and Ripley, Vol. 7 : 24.

Common name : Ashy Laughing Thrush.

Diagnostic Characters : Size that of the Myna (length 230 mm). Back and sides of crown umber-brown; forehead, centre of crown and nape black; eye-stripe and moustachial stripe black; lores , ear-coverts and orbital area white; tail umber-brown with a black sub terminal band and tipped with a thin white crescent; throat buffish with black streaks; breast pinkish grey; belly and under tail-coverts tawny-olive. Sexes alike.

Distribution : India : Nagaland, Assam and Manipur.

Elsewhere : Myanmar.

1295a *Garrulax rufogularis rufiberbis* (Koelz)

1954. *Ianthocincla rufogularis rufiberbis* Koelz, *Contrib., Inst. Regional Exploration* No. 1 : 3 (between Langyang and Htawgaw, Kachin State, Upper Burma)

1972. *Garrulax rufogularis rufiberbis* (Koelz), Ali and Ripley, Vol. 7 : 28.

Common name : Burmese Rufouschinned Laughing Thrush.

Diagnostic characters : Size that of the Myna (length 220 mm). Back black spotted umber-brown; crown and ear-coverts black; tail chestnut with subterminal white-tipped black-band; chin pale rufous; throat rusty; breast grey; flanks olive-brown, both black spotted; belly whitish. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh.

Elsewhere : Northern Myanmar.

1302. *Garrulax caerulatus livingstoni* Ripley

1952. *Garrulax caerulatus livingstoni* Ripley, *Jour. Bombay nat. Hist. Soc.*, 50 : 497 (Mt. Japvo, Naga Hills, Assam)

1972. *Garrulax caerulatus livingstoni* Ripley, Ali and Ripley, Vol. 7 : 35.

Common name : Nagaland Greysided Laughing Thrush

Diagnostic characters : Size equal to the Myna (length 250 mm). Forehead and round the eye black; ear-coverts whitish; crown rufous-brown, nape olive-brown, both black barred giving the head a scaly appearence; back rufous; sides of throat olive-brown; wings rufous-brown; tail chestnut; underparts white; flanks slaty grey. Sexes alike.

Distribution : India : Nagaland, Assam and Manipur.

Elsewhere : Myanmar, Yunnan, Fukien and Formosa.

1305. *Garrulax merulinus toxostominus* (Koelz)

1952. *Stactocichla merulina toxostomina* Koelz, *Jour. zool Soc. India*, 4 : 38 (Karong, Manipur)

1972. *Garrulax merulinus toxostominus* (Koelz), Ali and Ripley, Vol. 7 : 38.

Common name : Manipur Spottedbreasted Laughing Thrush.

Diagnostic characters : Size that of the Myna (length 220 mm). Back, wings and tail dark brown; crown olive-brown; throat and breast spotted with dark brown; centre of belly buff; vent brown; under tail-coverts ferruginosus; a white stripe behind the eye. Sexes alike.

Distribution : India : Nagaland, Assam and Manipur.

Elsewhere : Myanmar and Vietnam.

1306. *Garrulax sannio albosuperciliaris* Godwin-Austen

1874. *Garrulax albosuperciliaris* Godwin-Austen, *Proc Zool. Soc. London* : 45 (Manipur Valley, NE Bengal).

1972. *Garrulax sannio albosuperciliaris* Godwin-Austen, Ali and Ripley, Vol. 7 : 39.

Common name : Whitebrowed Laughing Thrush.

Diagnostic characters : Size that of the Myna (lengrth 230 mm). Upperparts olive-brown; head dark brown; tail olive-brown; lores buff; supercilium white; cheek patch buffish white;

throat olive-brown; centre of belly buff; under tail-coverts ferruginosus. Sexes alike.

Distribution : India : Nagaland; Assam and Manipur.

Elsewhere : Szechuan and Hupeh and east through northern Myanmar to Fokien, Kwangtung and Vietnam.

1317. ***Garrulax virgatus*** (Godwin-Austen)

1874. *Trochalopteron virgatum*Godwin-Austen, *Proc. zool. Soc. London* : 46 (Razami under Kopamedza Ridge, Naga Hills)

1972. *Garrulax virgatus* (Godwin-Austen), Ali and Ripley, Vol. 7 : 49.

Common name : Manipur Streaked Laughing Thrush.

Diagnostic characters : Size larger than the Myna (length 250 mm). Crown and back dark brown with white shaftstreaks; forehead and supercilium to nape white; lores rufous-chestnut; rump olive-brown with pale streaks; tail olive-brown finely cross-rayed; wing rufous-chestnut with whitish shoulder patch; chin and throat chestnut shading into ochraceous-buff on rest of underparts, all except chin with white shaft-streaks; flanks olive-brown. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Mizoram.

Elsewhere : The Chin Hills of Myanmar.

1318. ***Garrulax austeni austeni*** (Godwin-Austen)

1870. *Trochalopteron austeni* Godwin-Austen, *Jour. Asiat. Soc. Bengal* **39** :105 (Hengdan Peak, N.Cachar)

1972. *Garrulax austeni austeni* (Godwin-Austen), Ali and Ripley, Vol. 7 : 50.

Common name : Browncapped Laughing Thrush.

Diagnostic characters : Size that of the Myna (length 220mm). Entire plumage rufous-brown; underparts barred and mottled with whitish and brown; wing with a pale wing bar and pale grey outer edge; sides of neck finely streaked with white; tail blackish below with white tips. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya and Mizoram.

1319. ***Garrulax squamatus*** (Gould)

1835. *Iantho cincla squamata* Gould, *Proc. zool. Soc. London* : 48(Sikkim)

1972. *Garrulax squamatus* (Gould), Ali and Ripley, Vol. 7 : 51

Common name: Bluewinged Laughing Thrush.

Diagnostic characters : Size larger than the Myna (length 250 mm). Back olive-brown with black scally markings over the entire body. Supercilium black. Eye white. Wings black with a rufous shoulder patch. Both upper and under tail-coverts chestnut. Tail blackish with rufous terminal band. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, China and Vietnam.

1329. ***Garrulax erythrocephalus godwini*** (Harington)

1914. *Trochalopteron erythrocephalus godwini* Harington, *Bull. Brit. Orn. Cl.*, **33** : 92 (Hengdan Peak, N. Cachar Hills).

1972. *Garrulax erythrocephalus godwini* (Harington), Ali and Ripley, Vol. 7 : 61.

Common name : Nagaland Redheaded Laughing Thrush.

Diagnostic characters : Size larger than the Myna (length 280 mm). Upperparts olive-brown, crown and nape rufous-chestnut; forehead and supercilium grey; throat and breast chestnut; ear-coverts pinkish rufous, back and breast spotted with brown; wings and tail olive-yellow; a chestnut shoulder patch; underparts deep ferruginous. Sexes alike.

Distribution : India : Nagaland, Assam and Western Manipur.

1332. *Garrulax phoeniceus bakeri* (Hartert)

1909. *Trochalopteron phoeniceum bakeri* Hartert, *Bull. Brit. Orn. Cl.*, **33** : 10 (Laisung, North Cachar)

1972. *Garrulax phoeniceus bakeri* (Hartert), Ali and Ripley, Vol. 7 : 63.

Common name : Crimsonwinged Laughing Thrush.

Diagnostic characters : Size that of the Myna (length 230 mm). Back olive-brown, with bright crimson sides of head, wings and tips of under tail-coverts. Crown streaked with black. Supercilium black. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh and Myanmar.

Genus *Leiothrix* Swainson, 1832

1334. *Leiothrix argentauris vernayi* (Mayr & Greenway)

1938. *Mesia argentauris vernayi* Mayr & Greenway, *Proc. New England. Zool. cl.* **17** : 3 (Hai Bum, Upper Burma).

1972. *Leiothrix argentauris vernayi* (Mayr & Greenway), Ali and Ripley, Vol. 7, p. 67.

Common name : Burmese Silvereared Mesia.

Material examined : Chizami—2♂ (20 Feb. 1935, 26 Jan. 1936); Kekrima—1♂ (17 Feb.1935); Kohima—2♂ (15 Feb. 1935); Phutse-ro—1♀ (28 Jan. 1936).

Diagnostic characters : Size that of the Sparrow (length 150 mm). Male—Forehead yellow; crown and moustachial stripe black; ear-coverts silvery; nape yellowish-olive; breast orange-yellow; crown and moustachial stripe black; ear-coverts silvery; nape yellowish-olive; breast orange-yellow; throat ochraceous; wings edged with yellow and with a crimson patch; upper and under tail-coverts crimson. In female upper tail-coverts olive-yellow; under ochraceous.

Measurements:

	Wing	Tail	Bill
5 ♂	73-78 (75)	65-69 (67)	15-16 (16)
1 ♀	72	64	16

Distribution : India : Nagaland, Arunachal Pradesh, Assam and Manipur.

Elsewhere : Northern Myanmar and Western Yunnan.

1336, 1337. *Leiothrix lutea calipyga* (Hodgson)

1837. *Bahila calipyga* Hodgson, *Ind. Rev.* **2**(2) : 88 (Nepal)

1972. *Leiothrix lutea calipyga* (Hodgson), Ali and Ripley, Vol. 7 : 68.

Common name : Eastern Redbilled Leiothrix.

Diagnostic characters : Size smaller than the Sparrow (length 130mm). In male head and back greyish olive; bill coral red; eye-patch yellow; wings black with yellow and crimson edges; throat, breast bright yellow. In female crimson on wings replaced by yellow.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Nepal, Bhutan and Myanmar.

Genus *Cutia* Hodgson, 1836

1339. *Cutia nipalensis nipalensis* Hodgson

1836. *Cutia nipalensis* Hodgson, *Jour. Asiat. Soc. Bengal*, **5** : 774 (Nepal)

1972. *Cutia nipalensis nipalensis* Hodgson, Ali and Ripley Vol. 7 : 71.

Common name : Nepal Cutia.

Diagnostic characters : Size that of the Bulbul (length 200 mm). Male-Crown slaty blue; eye-band black; back rufous; flanks barred with black; underparts white. Female is brown above streaked with black; eye-band chocolate-brown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Mizoram, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar, Malaya Peninsula and east to Vietnam.

Genus *Pteruthius* Swainson, 1832

1340. *Pteruthius rufiventer* Blyth

1842. *Pteruthius rufiventer* Blyth, *Jour. Asiat. Soc. Bengal*, **11** : 183 (no locality = Darjeeling)

1972. *Pteruthius rufiventer* Blyth, Ali and Ripley, Vol. 7 : 73.

Common name : Rufousbellied Shrike-Babbler

Diagnostic characters : Size that of the Bulbul (length170 mm). Male–black and chestnut above; throat and breast ashy; a yellow patch on each side of breast; rest vinous-brown, darker on flanks. Female–grey, black, greenish yellow and chestmut above; tail mostly (black, narrowly tipped with chestnut; below as in male.

Distribution : India : Nagaland, Arunachal Pradesh, Manipur and West Bengal.

Elsewhere : Nepal, Bhutan and Myanmar.

1341. ***Pteruthius flaviscapis validirostris*** Koelz

1831. *Lanius erythropterus* Vigors, *Proc. zool. Soc. London* : 22 (Himalaya Mountains = Murree, Punjab, Vide Baker, 1922, 'Fauna' 1 : 331), nec *Lanius erythropterus* Shaw, 1809, Preoccupied.

1951. *Pteruthius erythropterus validirostris* Koelz, *Jour. zool. Soc. India*, 3 : 28 (Kohima, Naga Hills, Assam)

1972. *Pteruthius flaviscapis validirostris* Koelz, Ali and Ripley, Vol. 7 : 74.

Common name : Redwinged Shrike-Babbler.

Diagnostic characters : Size smaller than the Myna (length 160 mm). In male, back ashy grey; head black with a broad white stripe behind eye; wings black and chestnust tipped with white; tail black; underparts pale buff with vinous-brown flanks. In female, head grey; back brownish grey; wings chestnust and black edged with yellowish green; central rectrices green; outer blackish tipped with yellow; rest of underparts as in male.

Distribution : India : Nagaland, Northern India from Arunachal Pradesh to Jammu and Kashmir, Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh, Bhutan, Pakistan and Myanmar.

1344. ***Pteruthius xanthochlorus hybridus*** Harington

1919. *Pterythius [sic] pallidus hybrida* Harington, *Bull. Brit. Orn. cl.*, 33 : 82 (Mt. Victoria Chin Hills)

1972. *Pteruthius xanthochlorus hybridus* Harington, Ali and Ripley, Vol. 7 : 78.

Common name : Chin Hills Green Shrike-Babbler.

Diagnostic characters : Size smaller than the Sparrow (length 130mm). Male-Head grey, back olive-brown; wings greenish with pale wing-bar; shoulder patch black; tail tipped with white; throat and breast ashy; belly yellow. Female Similar but duller.

Distribution : India : Nagaland, Mizoram.

Elsewhere : Myanmar, Western Szechuan, Southeastern Yunnan and northwestern Fukien.

1345. ***Pteruthius melanotis melanotis*** Hodgson

1847. *Pteruthius melanotis* Hodgson, *Jour. Asiat. Soc. Bengal*, **16** : 448 (Terai, Southeast Himalayas = Nepal fide Gadow, 1883, *Cat. Bds. Brit. Mus.* **8** : 118)

1972. *Ptcruthius melanotis melanotis* Hodgson, Ali and Ripley, Vol. 7 : 79.

Common name: Chestnut-throated Shrike-Babbler.

Diagnostic characters : Size smaller than the Sparrow (length 110 mm). In male, upperparts olive-green with yellow forehead and grey nuchal collar; a conspicuous white eye-ring and greyish supercilium; a black cresentic line behind yellow ear-coverts; wings grey with a broad black bar between two narrow white ones; tail greenish black with white outer rectrices and tips; throat and upper breast chestnut; rest yellow. Female has head markings less distinct; throat buffish with cinnamon moustache; wings-bar salmon-rufous instead of white.

Distribution : India : Nagaland; Arunachal Pradesh, Manipur, Meghalaya, Sikkim and West Bengal.

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

Genus ***Gampsorhynchus*** Blyth, 1844

1347. ***Gampsorhynchus rufulus rufulus*** Blyth

1844. *Gampsorhynchus rufulus* Blyth, *Jour. Asiat. Soc. Bengal*, **13** (1) : 371 (Darjeeling).

1972. *Gampsorhynchus rufulus rufulus* Blyth, Ali and Ripley, Vol. 7 : 81.

Common name : Whiteheaded Shrike-Babbler.

Diagnostic characters : Size larger than the Bulbul (length 230 mm). Back and wings olive-brown, the last with a white shoulder patch and buff inner edge. Entire head, throat and breast white excepting the buffish abdomen. Tail graduated tipped with buff. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

Genus ***Actinodura*** Gould, 1836.

1350. ***Actinodura egertoni khasiana*** Godwin-Austen

1876. *Actinodura khasiana* Godwin-Austen, *Jour. Asiat. Soc. Bengal*, 45 : 76 (Khasia Hills)

1972. *Actinodura egertoni khasiana* Godwin-Austen, Ali and Ripley, Vol. 7 : 85.

Common name : Assam Barwing.

Diagnostic characters : Size that of the Bulbul (length 230 mm). Forehead rufous; flappy crest brown; crown brown; back, rump and upper tail-coverts ochraceous; wings barred and with a black patch within a large rufous patch; rufous brown tail graduated, cross-barred and white tipped; chin rufous; throat and breast pinkish brown; rest tawny olive; belly white. Sexes alike.

Distribution : India : Nagaland, Assam and Manipur.

1355. ***Actinodura waldeni waldeni*** Godwin-Austen

1874. *Actinodura waldeni* Godwin-Austen, *Proc. Zool. Soc. London* : 46, pl.12 (Japoo Peak, Naga Hills)

1972. *Actinodura waldeni waldeni* Godwin-Austen, Ali and Ripley, Vol. 7 : 89.

Common name : Manipur Barwing.

Material examined : Naga Hills—1 unsexed (x).

Diagnostic characters : Size that of the Bulbul (length 200 mm). Forehead and flappy crest brown with pale shaft streaks; a pale eye-ring; moustachial stripe black; back and rump rufous brown; wings rufous, narrowly barred with black; a black shoulder-patch and a grey patch above it; tail graduated, central rectrices narrowly barred, terminal third and outer rectrices black, the latter tipped with white; underparts tawny brown; throat and breast streaked with fulvous. Sexes alike.

Measurements :

1 unsexed Wing-x; tail-x; bill-x

Distribution : India : Nagaland, Manipur.

Genus ***Minla*** Hodgson, 1837.

1357. ***Minla ignotincta ignotincta*** Hodgson

1837. *Minla ignotincta* Hodgson, *Ind. Rev.*, 2(1) : 32, 44 (Central and northern regions of the hills, Nepal)

1972. *Minla ignotincta ignotincta* Hodgson, Ali and Ripley, Vol. 7 : 90.

Common name : Redtailed Minla.

Diagnostic characters : Size that of the House Sparrow (length 140 mm). In male, back chocolate-brown; wings black with white tip and crimson outer edges; tail black with crimson outer edges at tip and a white patch at base; head black; supercilium long and white; chin and throat whitish; rest of underparts pale yellow. Female like male but back olive-brown, red in wings and tail; yellow of underparts paler.

Distribution : India : Nagaland, Arunachal Pradesh, Assam Manipur, Sikkim and West Bengal.

Elsewhere : Nepal, Bhutan, Bangladesh, Myanmar, Szechuan, Kwangsi and Vietnam.

1360. ***Minla strigula yunnanensis*** (Rothschild)

1921. *Siva strigula ynnanensis* Rothschild, *Novit Zool.*, 28 : 40 (Lichiang Range NW Yunnan)

1972. *Minla strigula yunnanensis* (Rothschild), Ali and Ripley, Vol. 7 : 94.

Common name : NEFA Barthroated Siva.

Material examined : Ptutse-ro—2♂ (29 Jan. 1936)

Diagnostic characters : Size that of the Sparrow (length 140 mm). Slightly tufted crown orange-brown; eye-ring and post ocular stripe pale yellow; back slaty; wing with bright orange outer edge and a black shoulder-patch; secondaries ashy and black, tipped with white; tail chestnut edged and tipped with bright yellow; chin orange, malar stripe black; throat whitish, narrowly black-barred; rest yellow. Sexes alike.

Measurements :

	wing	Tail	Bill
2 ♂	72, 73	71, 72	15(2)

Distribution : India : Nagaland, Arunachal Pradesh.

Elsewhere : Tibet, Myanmar, Yunnan and Vietnam.

1361. ***Minla strigula cinereigenae*** (Ripley)

1952. *Siva strigula cinreigenal* Ripley, *J. Bombay nat. Hist. Soc.*, **50** : 500 (Mt. Japvo, western Naga Hills, Assam)

1972. *Minla strigula cinereigenae* (Ripley), Ali and Ripley, Vol. **7** : 95

Common name: Assam Barthroated Siva.

Diagnostic characters : Size that of the preceeding bird (length 140 mm). Differs from the *Minla strigula yunnanensis* in having a whitish eye-ring and whitish supercilium; sides of cheek grey, mottled with whitish and dusky; rest similar. Sexes alike.

Distribution : India : Nagaland (Western); Assam and Manipur (northwestern)

1362. ***Minla cyanouroptera cyanouroptera*** (Hodgson)

1837. *Siva cyanouroptera* Hodgson, *Ind. Rev.*, **2**(2) : 88 (Nepal).

1972. *Minla cyanouroptera cyanouroptera* (Hodgson), Ali and Ripley, Vol. **7** : 95.

Common name : Bluewinged Siva.

Diagnostic characters : Size that of the House Sparrow (length 150 mm). Back fulvous, paler on rump; tuffed crown dark blue; wings blue with a white spot and white tips; tail grey with blue edges, tipped with white; supercilium and eye-ring white; rest of underparts vinous-grey, whitish on belly. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam Bihar, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Nepal, Bhutan and Myanmar.

Genus ***Yuhina*** hodgson, 1836

1364. ***Yuhina castaniceps plumbeiceps*** (Godwin-Austen)

1877. *Staphida plumbeiceps* Godwin-Austen, *Ann. Mag. Nat. Hist.*, **20** : 519 (near Sadiya and Brahmakhend, Eastern Assam).

1972. *Yuhina castaniaceps plumbeiceps* (Godwin-Austen), Ali and Ripley, Vol. **7** : 99.

Common name : Mishmi Whitebrowed Yuhina.

Diagnostic characters : Size smaller than the House Sparrow (length 130 mm). Back and wings grey brown; crown and crested head grey scalloped with paler grey; ear-coverts rufous-brown; supercilium white; tail dark brown, outer rectrices tipped with white; rest of underparts greyish white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh.

Elsewhere : Myanmar and Yunnan.

1365. ***Yuhina castaniceps castaniceps*** (Moore)

1854. *Ixulus castanicep* Moore, in Horsfield & Moore, *Cal. Bds. Mus. E. I. Co.* **1** : 411 (Afghanistan, erore = Cachar)

1972. *Yuhina castaniceps castaniceps* (Moore), Ali and Ripley, Vol. **7** : 99.

Common name : Chestnut-headed Yuhina.

Diagnostic Characters : Size smaller than the House Sparrow (length 130 mm). Back and wings grey-brown; tail dark brown with white tips on outer rectrices; crown and crest grey scalloped with paler grey on forehead; supercilium white;

ear-coverts brown; rest of underparts greyish white. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

1366. *Yuhina bakeri* Rothschild

1844. *Siva occipitalis* Blyth, *Jour. Asiat. Soc. Bengal* 13 : 937 (Darjeeling).

1926. *Yuhina bakeri* Riothschild, *Novit. Zool.* 33 : 276.

1972. *Yuhina bakeri* Rothschild, Ali and Ripley, Vol. 7 : 100

Diagnostic characters : Size that of the preceeding bird (length 130 mm). Lower back olive-brown with inconspicuous white shaft-streaks; head, crest, upperback and sides of neck rusty brown; nape patch white; throat white; breast vinaceous with dark streaks; abdomen olivaceous; vent ferruginous. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

1370. *Yuhina flavicollis rouxi* (Oustalet)

1896. *Ixulus rouxi* Oustalet, *Bull. Mus. d'Hist. Nat. Paris* 2 : 184, 186 (Ly-Sien Kiang or Black River, Yunnan).

1972. *Yuhina flaviscollis rouxi* (Oustalet), Ali and Ripley, Vol. 7 : 103.

Common name: Assam Yellownaped Yuhina.

Material examined :

Chizami — 2 ♂ (25 Jan. 1935, 26 Jan. 1936)

Diagnostic characters : Size that of the preceeding bird (length 130 mm). Back olive-brown; crested head chocolate-brown; eye-ring white; malar stripe dark-brown; nuchal collar rusty yellow; chin and throat white, the latter with fine dark streaks; vent and under tail-coverts buff. Sexes alike.

Measurements :

	Wing	Tail	Bill
2 ♂	58,62	51,53	11(2)

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh.

1372. *Yuhuina gularis gularis* Hodgson

1836. *Yuhina gularis* Hodgson. *Asiat. Res.*, 19 : 166 (Nepal)

1972. *Yuhina gularis gularis* Hodgson, Ali and Ripley, Vol. 7 : 104.

Common name : Eastern Stripethroated Yuhina.

Diagnostic characters : Size that of the House Sparrow (length 140 mm). Upperparts olive-brown; wings black with an orange-fulvous longitudinal bar; crest brown; underparts vinaceous and tawny brown with dark brown streaking on throat. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Manipur, Sikkim and West Bengal.

Elsewhere : Nepal, Bhutan, Bangladesh, Myanmar, Szechuan and Vietnam.

1374. *Yuhina nigrimenta nigrimenta* Hodgson

1845. *Yuhina nigrimenta* Hodgson, in Blyth, *Jour. Asiat. Soc. Bengal*, 14 : 562 (Nepal)

1972. *Yuhina nigrimenta nigrimenta* Hodgson, Ali and Ripley, Vol. 7 : 107

Common name : Blackchinned Yuhina.

Diagnostic characters : Size smaller than the House Sparow (length 110 mm). Upper back, wings and tail olive-brown; head with erectile black crest with scale-like grey edging; lores black; bill black and red; nape and sides of head grey; chin black; throat white; breast and abdomen pale fulvous. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, China and Vietnam.

1375. *Yuhina xantholeuca xantholeuca* (Hodgson)

1844. *Erp[ornis] zantholeuca* [sic] Hodgson, In Blyth, *Jour. Asiat. Soc. Bengal*, **13** : 380 (Central region of Nepal)

1972. *Yuhina xantholeuca xantholeuca* (Hodgson), Ali and Ripley, Vol. **7** : 108.

Common name : Whitebellied Yuhina.

Diagnostic characters : Size that of the preceeding bird (length 110 mm). A small slightly tufted babbler; olive-brown above; greyish white below with yellow under tail-coverts. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Bangladesh, Bhutan, Nepal Myanmar and Thailand.

Genus *Alcippe* Blyth, 1844

1377. *Alcippe chrysotis albilineata* (Koelz)

1954. *Lioparus chrysotis albineatus* Koelz, *Contrib. Inst. Regional Exploration*, No. **1** : 7 [Karong (Sungtun), Manipur].

1972. *Alcippe chrysotis albilineata* (Koelz), Ali and Ripley, Vol. **7** : 111.

Common name : Assam Goldenbreasted Tit-Babbler.

Diagnostic characters : Size smaller than the House sparrow (length 110 mm). Back olive; crown blackish with white streaks; ear-coverts silver-grey; wings blackish with orange-yellow outer edge and an orange longitudinal patch; secondaries tipped with white; tail brown, the basal two thirds edged with orange-yellow; throat grey with silvery tips; rest of underparts yellow. Sexes alike.

Distribution : India : Nagaland, Assam and Manipur.

1378. *Alcippe cinerea* (Blyth)

1847. *Minla cinerea* Blyth, *Jour. Asiat. Soc. Bengal*, **16** : 449 (Darjeeling).

1972. *Alcippe cinerea* (Blyth), Ali and Ripley, Vol. **7** : 112.

Common name : Dusky Green or Yellow throated Tit-Babbler.

Diagnostic characters : Size smaller than the House sparrow (length 100 mm). Back, wings and tail greyish olive; crown and nape yellowish green with black scaly markings; a black stripe along the side of the crown above yellow supercilium and another through eye below supercilium; rest of underparts yellow; abdomen olivaceous. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

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

1379. *Alcippe castaneceps castaneceps* (Hodgson)

1837. *Minla castaneceps* Hodgson, *Ind. Rev.*, **2**(1) : 33 (Nepal restricted to Chandragiri Pass, Central Nepal by Ripley, 1950, JBNHS **49** : 397)

1972. *Alcippe castaneceps castaneceps* (Hodgson), Ali and Ripley, Vol. **7** : 113.

Common name: Chestnut-headed Tit-Babbler.

Material examined : Ptutse-ro—1 ♂, 1 ♀ (29 Jan. 1936)

Diagnostic characters : Size equal to the preceeding bird (length 100 mm). Back olive; forehead, crown and nape chestnut, streaked with white and rufous; a broad white supercilium and blackish post ocular stripe; ear-coverts white; a narrow black malar stripe; wing with a black and rufous shoulder patch; underparts whitish with olive-rufous side. Sexes alike.

Measurements :

	Wing	Tail	Bill
1 ♂	61	45	13
1 ♀	55	45	13

Distribution : India : Nagaland, Arunachal Pradesh, Assam manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Thailand.

1383. ***Allcippe vinipectus austeni*** (Ogilvie-Grant)

1895. *Proparus austeni* Ogilvie-Grant, *Bull. Brit. Orn, Cl.*, 5 : 3 (Manipur and the Naga Hills)

1972. *Alcippe vinipectus austeni* (Ogilvie-Grant), Ali and Ripley, Vol. 7 : 116.

Common name : Assam Whitebrowed Tit-Babbler.

Diagnostic characters : Size smaller than the House Sparrow (length 110 mm). Back brown; rump and wings rusty, the latter with a black line and pale outer edge; crown and ear-coverts brown; a broad white supercilium from eye to nape, a black line above this; throat and breast white streaked with brown; lower belly olive-brown. Sexes alike.

Distribution : India : Nagaland, Assam and Manipur.

Elsewhere : Myanmar.

1385. ***Alcippe cinereiceps manipurensis*** (Ogilvie-Grant)

1906. *Proparus manipurensis* Ogilvie-Grant, *Bull. Brit. Orn. Cl.* **16** : 123 (Owenkulno Peak, Manipur Hills)

1972. *Alcippe cinereiceps manipurensis* (Ogilvie-Grant), Ali and Ripley, Vol. 7 : 118.

Common name : Manipur Brownheaded Tit-Babber.

Diagnostic characters : Smaller than the House Sparrow (length 110 mm). Differs from the preceeding bird in having the head chocolate brown instead of brown; no supercilium; throat smoke grey instead of white; otherwise rest of the plumage similar. Sexes alike.

Distribution : India : Nagaland, Assam and Manipur.

Elsewhere : Myanmar and Yunnan.

1387. ***Alcippe rufogularis collaris*** Walden

1874. *Alcippe collaris* Walden, *Ann. Mag. Nat. Hist.*, 14 : 156 (Sadiya, Upper Assam)

1972. *Alcippe rufogularis collaris* Walden, Ali and Ripley, Vol. 7 : 120.

Common name : Assam Redthroated Tit-Babbler.

Diagnostic characters : Size smaller than the House Sparrow (length 120 mm). Upperparts rufescent brown; crown dark rufous brown, bordered by a black stripe from forehead to nape; a white supercilium and eye-ring; chin and throat white with a broad chestnut band; abdomen whitish; flanks olive-brown. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam and Manipur.

Elsewhere : Bangladesh.

1388. ***Alcippe brunnea mandelli*** (Godwin-Austen)

1876. *Minla mandelli* Godwin-Austen, *Ann. Mag. Nat. Hist.* **18** : 33 (Naga Hills, North Bengal)

1972. Alcippe brunnea mandelli (Godwin-Austen), Ali and Ripley, Vol. 7 : 121.

Common name : Rufousheaded Tit-Babbler.

Diagnostic characters : Size smaller than the House Sparrow (length 130 mm). Back, wings and tail olive-brown; supercilium broad and white; lores dark brown; ear-coverts umber-brown; crown rufous brown; black stripes starting above the eye and meeting on the upper back; rest of underparts buffish white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam and Manipur.

Elsewhere : Myanmar.

1391. ***Alcippe poioicephala fusca*** Godwin-Austen

1877. *Alcippe fusca* Godwin-Austen, *Jour. Asiat Soc Bengal*, **45** : 197 (Naga Hills)

1972. *Alcippe poioicephala fusca* Godwin-Austen, Ali and Ripley, Vol. 7 : 124.

Common name : Assam Quaker Babbler.

Diagnostic characters : Size that of the House Sparrow (length 150 mm). Back, wings and tail olive-brown; edges of wing and tail fulvous; crown and nape brownish grey; ear-coverts and sides of neck ochraceous; breast and abdomen ochraceous. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya and Tripura.

Elsewhere : Bangladesh.

1393. ***Alcippe nipalensis commoda*** Ripley

1948. *Alcippe nipalensis commoda* Ripley, *Proc. Biol. Soc. Washington*, **61** : 104 (Dening, Mishmi Hills, NE. Assam).

1972. *Alcippe nipalensis commoda* Ripley, Ali and Ripley, Vol. **7** : 126.

Common name : Mishmi Quaker Babbler.

Material examined : Chizami—2♂ (20 Feb. 1935).

Diagnostic characters : Size smaller than the House Sparrow (length 120 mm). Head grey; a blackish supercilium from eye to nape; a conspicuous white eye-ring; rest of upperparts fulvous-brown; uniformly buff below. Sexes alike.

Measurements :

	Wing	Tail	Bill
2 ♂	60,64	61,56	12(2)

Distribution : India : Nagaland, Arunachal Pradesh, Assam and Manipur.

Elsewhere : Bangladesh and Myanmar.

Genus ***Heterophasia*** Blyth, 1842

1395. ***Heterophasia annectens annectens*** (Blyth)

1847. *Leioptila annectens* [sic] Blyth, *Jour. Asiat. Soc. Bengal*, **16** : 450 (Darjeeling)

1972. *Heterophasia annectens annectens* (Blyth), Ali and Ripley, Vol. **7** : 128.

Common name : Chestnutbacked Sibia.

Material examined : Sakhalu—1♀ (25 Feb. 1935).

Diagnostic Characters : Size that of the Bulbul (length 180 mm). Crown, hindneck and upperback black; hindneck streaked with white; centre of back and rump chestnut; wings black with a chestnut bar; primaries edged with ashy; tertials tipped with white; rest of underparts white; flanks and vent fulvous. Sexes alike.

Measurements :

	Wing	Tail	Bill
1 ♀	79	85	16

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Mizoram, Sikkim and West Bengal.

Elsewhere : Bhutan, Myanmar and Yunnan.

1399. ***Heterophasia gracilis*** (Mc Clelland)

1839 (1840). *Hypsipetes gracilis* McClelland, *Proc. Zool. Soc. London* : 159 (Assam, restricted to Naga Hills by Koelz, 1954, loc. cit. below; but see Biswas, 1963 JBNHS 60 : 683)

1972. *Heterophasia gracilis* (McClelland), Ali and Ripley, Vol. **7** : 132.

Common name : Grey Sibia.

Material examined : Kohima-3 ♂ (14 Feb. 1935, 20 and 26 Jan.1936); Chizami—1♂ (26 Jan. 1936) and Sakhai —1♀ (25 Feb. 1936).

Diagnostic characters : Size that of the Bulbul (length 210 mm). Back and rump grey; wings black; tail grey with broad black outer edges and subterminal band, tipped with grey; crown and ear-coverts black; throat and centre of abdomen white; sides pale ashy; under tail-coverts buff. Sexes alike.

Measurements :

	Wing	Tail	Bill
4 ♂	91-98 (94)	111-116 (114)	21-22(22)
1 ♀	89	109	22

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Myanmar and Yunnan.

1400. ***Heterophasia pulchella*** (Godwin-Austen)

1874. *Sibia pulchella* Godwin-Austen, *Ann. Mag. Nat. Hist.* **13** : 160 (Kunhi Peak, eastern Barail Range, Naga Hills).

1972. *Heterophasia pulchella* (Godwin-Austen), Ali and Ripley, Vol. **7** : 133.

Common name : Beautiful Sibia.

Diagnostic characters : Size larger than the Bulbul (length 220 mm). Back and rump slaty; head bluish slaty; forehead and a line through eye black; wings with a black shoulder-patch; centre of tail dark brown with black edge and subterminal black band and slaty terminal band; rest of the underparts uniform pale slate-grey. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Myanmar and China.

1401. ***Heterophasia picaoides picaoides*** (Hodgson)

1839. *Sibia picaoides* Hodgson, *Jour. Asiat. Soc. Bengal*, 8 : 38 (Nepal)

1972. *Heterophasia picaoides picaoides* (Hodgson), Ali and Ripley, Vol. 7 : 134.

Common name : Longtailed Sibia.

Diagnostic characters : Size that of the Bulbul, minus the lail (length 300 mm). Upperparts dark slaty grey; wings blackish with a white patch; tail long, graduated, tipped with whitish; underparts uniform pale grey; under surface of tail barred with black and grey. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Sikkim and West Bengal.

Elsewhere : Nepal, Bhutan and Myanmar.

Genus ***Muscicapa*** Brisson, 1760.

1408. ***Muscicapa muttui muttui*** (Layard)

1854. *Butalis muttui* Layard, *Ann. Mag. Nat. Hist.*, 13 : 127 (Pt. Pedro, Ceylon).

1972. *Muscicapa muttui muttui* (Layard), Ali and Ripley, Vol. 7 : 148.

Common name : Brownbreasted Flycatcher.

Diagnostic characters : Size that of the House Sparrow (length 130 mm). Back olive-brown; rump and tail rufous-brown; wing feathers with rusty edges; diffuse brownish breast-band on breast; lores and eye-ring white; throat and belly white. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya, Mizoram and Sikkim.

Elsewhere : Myanmar, Thailand, Yunnan and Szechuan.

1410. ***Muscicapa ferruginea*** (Hodgson)

1845. *Hemichelidon ferruginea* Hodgson, *Proc. zool. Soc. London* : 32 (Nepal)

1972. Muscicapa ferruginea (Hodgson), Ali and Ripley, Vol. 7 : 152.

Common name : Ferruginous Flycatcher.

Diagnostic characters : Size Smaller than the House Sparrow (length 130 mm). Head blackish with a prominent eye-ring; back rusty brown and ferruginous; wings blackish, the tertials prominently edged with pale rufous, tail chestnut; chin, throat and centre of belly white; breast darkly spotted with olive brown; rest pale grey. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, China, Tibet, Myanmar, Indochinese Countries, Indonesia and Malayasia.

1412. ***Muscicapa parva albicilla*** Pallas

1811. *Muscicapa albicilla* Pallas, *Zoogr. Rosso. Asiat.* 1 : 462, Aves pl-1 (Dauria)

1972. *Muscicapa parva albicilla* Pallas, Ali and Ripley, Vol. 7 : 156.

Common name : Eastern Redbreasted Flycatcher.

Diagnostic characters : Size smaller than the House Sparrow (length 130 mm). Back pale brown; tail black with a white patch on each side of basal half; chin and throat orange-rufous; breast grey; rest white. Female has whitish throat and greyish breast.

Distribution : India : Nagaland, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar, Indochinese Countries and Thailand.

1414. *Muscicapa strophiata strophiata* (Hodgson)

1837. *Siphia strophiata* Hodgson, *Ind. Rev.* 1(12) : 651-2 (Nepal).

1972. *Muscicapa strophiata strophiata* (Hodgson), Ali and Ripley, Vol. 7 : 159.

Common name : Orangegorgeted Flycatcher.

Material examined: Chakhabama-1♂ (21 Jan-1936)

Diagnostic characters : Size smaller than the House Sparrow (length 130 mm). Male-Upperparts olive-brown; tail black, white on each side of basal half; forehead white; chin and upper throat black; an orange-rufous patch on lower throat bounded below and on sides by dark slaty; abdomen ashy, paling to white on vent; flank olive-brown. Female-paler, with smaller orange-gorget and ashy throat; rest as in male.

Measurements :

	Wing	Tail	Bill
1♂	70	56	×

Distribution : India : Nagaland, from Arunachal Pradesh to Uttar Pradesh, Manipur, Meghalaya and Sikkim.

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

1416. *Muscicapa monileger leucops* (Sharpe)

1888. *Digenea leucops* sharpe, *Proc. zool. Soc. London* : 246 (Shillong)

1972. *Muscicapa monileger leucops* (Sharpe), Ali and Ripley, Vol. 7 : 162.

Common name : Assam Whitegorgeted Flycatcher.

Diagnostic characters : Size smaller than the House sparrow (length 110 mm). Upperparts olive-brown; supercilium white which meets on forehead; tail ferruginous; lower plumage paler; a conspicuous white gorget bordered with black; centre of belly whitish. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

1417. *Muscicapa hyperythra hyperythra* Blyth

1842. *M.(uscicapa) hyperythra* Blyth, *Jour. Asiat. Soc. Bengal*, **11** : 885, new name for *D.(imorpha) superciliaris* Blyth, 1841, *Jour. Asiat. Soc. Bengal*, **11** : 190 (Darjeeling), nec. *M. superciliaris* Jerdon, 1840

1972. *Muscicapa hyperythra hyperythra* Blyth, Ali and Ripley, Vol. 7 : 163.

Common name : Rufousbreasted Blue flycatcher.

Diagnostic characters : Size smaller than the House Sparrow (length 110 mm). In male back and crown slaty blue; forehead and cheeks black; supercilium white; tail blue-black above; chin black; rest orange-rufous. In female, upperparts olive-brown; supercilium and eye-ring fulvous; orange-rufous below, duller than male, paler on throat and belly.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and Uttar Pradesh.

Elsewhere : Bhutan, Nepal, Myanmar and Thailand.

1418. *Muscicapa hodgsonii* (Verreaux)

1871. *Siphia hodgsonii* Verreaux, *Bull. Nouv. Arch. Mus. Hist. Nat. Paris*, **6** : 34 (Chinese Tibet = Paohing, eastern Sikang).

1972. *Muscicapa hodgsonii* (Verreaux), Ali and Ripley, Vol. 7 : 164.

Common name: Rustybreasted Blue flycatcher.

Diagnostic characters : Size, smaller than the House Sparrow (length 130 mm). In male back slaty blue; tail blackish with bases of all rectrices white except central pair; lores and cheeks velvety black; throat, breast and flanks orange-rufous; abdomen and vent buffish. In female, back olive-brown; eye-ring pale; underparts olive-buff; abdomen whitish.

Distribution : India : Nagaland, Arunachal

Pradesh, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Nepal, Myanmar, China and Thailand.

1420. ***Muscicapa westermanni australorientis*** Ripley

1952. *Muscicapa westermanni australorientis* Ripley, *Proc. Biol. Soc. Washington*, 65 : 72 (Phou Kobo, Laos)

1972. *Muscicapa westermanni australorientis* Ripley, Ali and Ripley, Vol. 7 : 167.

Common name : Eastern Little Pied Flycatcher.

Diagnostic characters : Size smaller than the House Sparrow (length 100 mm). In male upperparts black with a broad white supercilium from lores to nape, wing patch white and white sides to base of tail; rest of underparts white. In female, upperparts olive-brown with a pale wing bar; upper tail-coverts bright rufous-brown; throat white; rest smoky white.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bhutan, China and Vietnam.

1422. ***Muscicapa superciliaris aestigma*** Gray

1846. *Muscicapa aestigma* Gray, *Cat. Mamms. Bds. Nepal* : 90, 155. Ex Hodgson in Gray, *Muscicapa Aestigma* [sic], 1844, *Zool. Misc* : 84, nom. nud. (Nepal)

1972. *Muscicapa superciliaris aestigma* Gray, Ali and Ripley, Vol. 7 : 169.

Common name : Little Blue-and-white Flycatcher.

Diagnostic characters : Size, smaller than the House sparrow (length 100 mm). In male back, wings and tail deep blue; sides of head and neck blue; centre of throat, breast and whole belly white. In femal back and head mouse-grey tail blackish edged with blue; sides of neck and breast greyish white; underparts glistening white.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, China and Tibet.

1425. ***Muscicapa leucomelanura cerviniventris*** (Sharpe)

1879. *Digenea cerviniventris* Sharpe, *Cat. Bds. Brit. Mus.* 4 : 460 (Manipur)

1972. *Muscicapa leucomelanura cerviniventris* (Sharpe), Ali and Ripley, Vol. 7 : 172.

Common name : Manipur Slaty Blue Flycatcher.

Diagnostic characters : Size, smaller than the House Sparrow (length 100 mm). In male-back and wings slaty blue, brighter on forehead; tail black, on either side of base white; sides of head and throat blackish slate; throat white; rest of underparts white tinged with rufous. In female-back and head olive-brown, tail rufous; underparts fulvous.

Distribution : India : Nagaland, Assam and Manipur.

Elsewhere : Myanmar.

1426. ***Muscicapa sapphira*** (Blyth)

1843. *Muscicapula sapphira* Blyth, *Jour. Asiat. Soc. Bengal*, 12 : 939 (Darjeeling)

1972. *Muscicapa sapphira* (Blyth), Ali and Ripley, Vol. 7 : 173.

Common name : Sapphireheaded Flycatcher.

Diagnostic characters : Size smaller than the House Sparrow (length 120 mm). In male-forehead, crown, rump and tail bright ultramarine blue; a black line through eye; sides of head and back deep purplish blue; chin, throat and upper breast orange-rufous; breast band deep blue; abdomen ashy. In female-back rufescent olive-brown; rump rufous-brown; eye-ring ochraceous; chin, throat and breast orange-rufous and olive-brown; abdomen whitish.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, china and Vietam.

1428. ***Muscicapa grandis grandis*** (Blyth)

1842. *Chaitaris grandis* Blyth, *Jour. Asiat. Soc. Bengal*, 11 : 189 (Darjeeling)

1972. *Muscicapa grandis grandis* (Blyth), Ali and Ripley, Vol. 7 : 176.

Common name : Large Niltava.

Diagnostic characters : Size that of the Bulbul (length 200 mm). In male-crown, rump and neck patch cobalt blue; sides of head, forehead and wing black; throat and breast black; abdomen purplish blue. In female-forehead, sides of head and back fulvous brown, neck-patch pale blue; wings and tail rufous-brown; chin and throat fulvous and abdomen fulvous-brown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar, Indochinese Countirs and Malaya Peninsula.

1430. *Muscicapa macgrigoriae signata* (Horsfield)

1840. *Leiothrix signata* Horsfield, *Proc. zool. Soc. London* : 162 (Assam)

1972. *Muscicapa macgrigoriae signata* (Horsfield), Ali and Ripley, Vol. 7 : 179.

Common name : Eastern Small Niltava.

Diagnostic characters : Size smaller than the House Sparrow (length 110 mm). In male-back, wings, crown and throat deep purplish blue; forecrown, rump and a patch on either side of neck brilliant ultramarine blue; forehead and lores black; abdomen whitish. In female-back rufescent olive-brown; wings and tail rusty brown; throat fulvous; a pale blue patch on either side of neck; rest of underparts fulvous olive-brown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Bhutan.

1432. *Muscicapa sundara sundara* (Hodgson)

1837. *Niltava sundara* Hodgson, *Ind. Rev.*, 1(2) : 650 (Nepal)

1972. *Muscicapa sundara sundara* (Hodgson), Ali and Ripley, Vol. 7 : 181.

Common name : Eastern Rufousbellied Niltava.

Material examined : Chizami—1♂ (25 Jan. 1936).

Diagnostic characters : Size that of the House Sparrow (length 150 mm). Male: Back and sides of head purplish blue-black; forehead black; crown, rump, shoulders and a patch on each side of neck ultramarine blue; throat black; rest orange-rufous. Female : Upperparts olive-brown; ochraceous on rump; a pale eye-ring; a blue patch on each side of the neck; tail rusty brown; chin and upper throat fulvous-olive; tower throat white; rest olive-brown.

Measurements :

	Wing	Tail	Bill
1♂	82	69	16

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and Tripura.

Elsewhere : Bangladesh, Nepal, Bhutan, China and Vietnam.

1433. *Muscicapa vivida oatesi* (Salvadori)

1887. *Niltava oatesi* Salvadori, *Ann. Mus. Civ. Stor. Nat. Genoa* 5(2) : 514 (Muleyit).

1972. *Muscicapa vivida oatesi* (Salvadori), Ali and Ripley, Vol. 7 : 182.

Common name : Rufousbellied Blue Flycatcher.

Diagnostic characters : Size larger than the House Sparrow (length 180mm). Male : Very similar to the preceeding bird but lacks the prominent blue patch on either sides of neck. Female: upperparts dark olive-brown; crown grey brown; a fulvous eye-ring; throat fulvous; rest olive-brown.

Distribution: India : Nagaland, Arunachal Pradesh,Assam, Manipur and Sikkim.

Elsewhere : Myanmar, Szechuan and northern Vietnam.

1437. *Muscicapa poliogenys cachariensis* (Madarasz)

1884. *Siphia cachariensis* Madarasz, Zeitschr, *Ges. Orn* : 52, pl. 1, fig. 2 (Dilkusha, Cachar).

1972. *Muscicapa poliogenys cachariensis* (Madarasz), Ali and Ripley, Vol. 7 : 188

Common name : Eastern Brook's Flycatcher.

Diagnostic characters : Size smaller than the House Sparrow (length 140 mm). Upperparts brown; tail rufous-brown; a pale eye-ring; rest of underparts ochraceous. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam and Manipur.

Elsewhere : Myanmar.

1439. *Muscicapa unicolor unicolor* (Blyth)

1843. *Cyornis unicolor* Blyth, *Jour. Asiat. Soc. Bengal*, 12 : 1007 (Darjeeling).

1972. *Muscicapa unicolor unicolor* (Blyth), Ali and Ripley, Vol. 7 : 189.

Common name : Pale Blue Flycatcher.

Diagnostic characters : Size equal to the House sparrow (length 160 mm). In male, back blue, brighter on forehead, supercilium and shoulder; tail blue; throat pale blue; breast blue; abdomen whitish; under tail-coverts scalloped grey and white. In female, back olive-brown; wings brown; tail reddish-brown; lores and eye-ring pale; rest of underparts pale grey-brown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan and Nepal.

1440. *Muscicapa rubeculoides rubeculoides* (Vigors)

1831. *Phoenicurus rubeculoides* Vigors, *Proc. zool. Soc. London*, : 35 (Darjeeling)

1972. *Muscicapa rubeculoides rubeculoides* (Vigors) Ali and Ripley, Vol. 7 : 190.

Common name : Bluethroated Flycatcher.

Diagnostic characters : Size smaller than the House sparrow (length 140 mm). In male, upperparts dull ultramarine blue; forehead and supercilium brighter; lores black; throat dark blue; breast rufous; abdomen and vent white washed with buff. In female, upperparts olive-brown tinged with rufous on rump; lores and eye-ring pale; throat buff; breast ochraceous; abdomen and vent white.

Distribution : India : Nagaland; Breeds from Jammu and Kashmir to Arunachal Pradesh, Manipur, Meghalaya and Mizoram. In summer, Andhra Pradesh, Karnataka, Kerala, Orissa, Tamil Nadu, Tripura and West Bengal.

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

1441. *Muscicapa banyumas magnirostris* (Blyth)

1849. *Cyornis magnirostris* Blyth, *Jour. Asiat. Soc. Bengal*, 18 : 814 (Darjeeling)

1972. *Muscicapa banyumas magnirostris* (Blyth), Ali and Ripley, Vol. 7 : 192.

Common name : Largebilled Blue Flycatcher.

Diagnostic characters : Size smaller than the House Sparrow (length 140 mm). In male-back, wings, crown and tail indigo-blue; brighter on forehead and shoulders; lores black; throat, breast and flanks orange-rufous; abdomen white. In female-back, wings and crown olive-brown; throat, breast and flanks as in male; abdomen white washed with buff.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Bangladesh, Nepal and Myanmar.

1445. *Muscicapa thalassina thalassina* Swainson

1838. *Muscicapa thalassina* Swainson, *Nat. Library, Flycatchers* 21 : 252 (India)

1972. *Muscicapa thalassina thalassina* Swainson, Ali and Ripley, Vol. 7 : 198.

Common name : Verditer Flycatcher.

Diagnostic characters : Size that of the House Sparrow (length 150mm). A blue Flycatcher with black patch in front of eyes. Male: Upper plumage bule-green with a tinge of bronze; head and throat bright verdigris. Female duller and greyer.

Distribution : India : Nagaland, throughout India.

Elsewhere : Bangladesh, Pakistan, Myanmar, China, Indochinese Countries and Vietnam.

Genus ***Muscicapella*** Bianchi, 1907

1447. ***Muscicapella hodgsoni hodgsoni*** (Moore)

1854. *Nemura hodgsoni* Moore, in Horsfield & Moore, *Cat. Bds. Mus. E. I. Co.***1** : 300 (Nepal)

1972. *Muscicapella hodgsoni hodgsoni* (Moore), Ali and Ripley, Vol. **7** : 201.

Common name : Pigmy Blue Flycatcher.

Diagnostic characters : Size smaller than the House Sparrow (length 80 mm). In male back dark cyan blue, brighter on crown; forehead and sides of head blue-black; orange-yellow below. In female, back olive-brown, more rufous on rump; rest of underparts pale yellow.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Yunnan and northern Thailand.

Genus ***Culicicapa*** Swinhoe, 1871

1448. ***Culicicapa ceylonensis calochrysea*** Oberholser

1848. *'Cryptolopha cinereocapilla* (Vieillot)' Hutton, *Jour. Asiat. Soc. Bengal* **17** : 689 (Himalayas). Nom. nud.

1923. *Culicicapa ceylonensis calochrysea* Oberholser, Smith. *Misc. Coll.* **76** : 8 (Quaymoo Choung = Left bank of Thaungying River, lat. 17°15′. Amherst Dist., Tenasserim)

1972. *Culicicapa ceylonensis calochrysea* Oberholser, Ali and Ripley, Vol. **7** : 202.

Common name : Northern Greyheaded Flycatcher.

Diagnostic characters : Size smaller than the House Sparrow(length 90mm). Back yellowish green; rump yellow; wings and tail brown edged with yellow; head, neck, throat and breast ashy grey, darker on crown; rest of the underparts bright yellow. Sexes alike.

Distribution : India : Nagaland, throughout the Indian mainland except Kerala and Tamil Nadu.

Elsewhere : Bangladesh, Bhutan, Nepal, Pakistan, Myanmar, Borneo, China, Indochinese Countries, Pulawan, Sunda Islands and Taiwan.

Genus ***Rhipidura*** Vigors & Horsfield, 1827

1450. ***Rhipidura hypoxantha*** Blyth

1843. *Rhipidura hypoxantha* Blyth, *Jour. Asiat. Soc. Bengal*, **12** : 930, 935 (Darjeeling)

1972. *Rhipidura hypoxantha* Blyth, Ali and Ripley, Vol. **7** : 206.

Common name : Yellowbellied Fantail Flycatcher

Diagnostic characters : Size smaller than the House sparrow (length 90 mm). In male head, wings and back dark greyish-olive; tail brown conspicuously white shafted and white tipped; forehead and supercilium yellow; a broad black band from lores through eye and ear-coverts. In female-similar to male, only the eye band blackish olive instead of black.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim and Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, China, Indochinese Countries and Tibet.

1456. ***Rhipidura albicollis stanleyi*** Baker

1916. *Rhipidura albicollis stanleyi* Baker, *Bull. Brit. Orn. Cl.* **36** : 81 new name for *R. albicollis kempi* Baker, 1913 (Sept), Rec.Ind.Mus **8** : 275 (Abor Hills), Preoccupied by *R. flabellifera kempi* Mathews & Iredale, 1913 (July)

1972. *Rhipidura albicollis stanleyi* Baker, Ali and Ripley, Vol. **7** : 213.

Common name : NEFA Whitethroated Fantail Flycatcher.

Material examined : Chizami—1♂ (23 Jan. 1936).

Diagnostic characters : Size smaller than the Bulbul (length 170 mm). Back, wings and tail dark slaty brown. A prominent white band or semi-collar across the throat. Supercilium white.

Tail fan shaped, outer rectrices tipped with white. Sexes alike.

Measurements :

	Wing	Tail	Bill
1♂	82	69	×

Distribution: India : Nagaland, Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangaldesh and Bhutan.

Genus ***Terpsiphone*** Gloger, 1827

1463. ***Terpsiphone paradisi saturatior*** (Salomonsen)

1933. *Tchitrea affinis saturatior* Salomonsen, *Ibis* : 732 (Buxa, Duars, Bhutan)

1972. *Terpsiphone paradisi saturatior* (Salomonsen), Ali and Ripley, Vol. 7 : 221.

Common name : East Himalayan Paradise Flycatcher.

Diagnostic characters : Size that of the Bulbul (length 200+streamers 500 mm). Head and throat black glossed with dark blue; body and tail white; tail sharply graduated, central pair of feathers exceeding the body length including the head; upper plumage faintly streaked with black; wings and tail feathers conspicuously black shafted; breast grey; belly white. In Female, head and neck bluish black; upper plumage, wings and tail bright chestnut; neck collared; chin, throat and upper breast ashy grey; belly white. Intermediate stages of plumage quite common irrespective of sex.

Distribution : India : Nagaland, Andhra Preadesh, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu and West Bengal.

Elsewhere : Myanmar, Turkestan and Afghanistan.

Genus ***Tesia*** Hodgson, 1837

1471. ***Tesia cyaniventer*** Hodgson

1837. *Tesia cyaniventer* Hodgson, *J. Asiat. Soc. Beng.*, **6** : 101 (Nepal).

1973. *Tesia cyaniventer* Hodgson : Ali and Ripley, Vol. 8 : 1.

Common name : Yellowbrowed Ground Warbler.

Diagnostic characters : Size smaller than the House Sparrow (length 90 mm). Upperparts olive-green; a long yellowish supercilium; a black stripe behind eye between the supercilium and grey sides of head; underparts ashy-grey. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Tibet, Indochinese countries and Thailand.

1472. ***Tesia olivea*** (McClelland)

1839, (1840). *Saxicolla ? olivea* McClelland, in Horsfield, *Proc. Zool. Soc. Lond.*, : 161 (Assam).

1973. *Tesia olivea* (McClelland) Ali and Ripley, Vol. 8 : 3.

Common name : Slatybellied Ground Warbler.

Diagnostic characters : Size smaller than the House Sparrow (length 90 mm). Upperparts dark olive-green; crown yellowish-green; an in-distinct dark post-ocular stripe; underparts dark slaty. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Extends to China and Vietnam.

1473. ***Tesia castaneocoronata castaneocoronata*** (Burton)

1836. *Sylvia castaneo-coronata* Burton, *Proc. zool. Soc. Lond.*, : 152 (Himalayas, restricted to Nepal by Ripley, Synopsis : 441)

1973. *Tesia castaneocoronata castaneocoronata* (Burton) Ali and Ripley, Vol. 8 : 4.

Common name : Chestnut-headed Ground Warbler.

Diagnostic characters : Size smaller than the House Sparrow (length 80 mm). Back, wings and short tail olive-green; forehead, crown and nape bright chestnut; throat bright lemon-yellow; breast and adbomen yellow washed with olive; flanks olive. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Mizoram, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

Genus ***Cettia*** Bonaparte, 1834.

1480. ***Cettia major vafer*** (Koelz)

1954. *Homochlamys major vafer* Koelz, *Contrib. Inst. Regional Exploration*, No. **1** : 18 (Phulbai, Garo Hills).

1973. *Cettia major vafer* (Koelz) Ali and Ripley, Vol. **8** : 13.

Common name : Assam Large Bush Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 130 mm). Upper plumage brown; forehead and crown chestnut; supercilium whitish, rusty anteriorly; lower plumage dull whitish. Sexes alike.

Distribution : India : Nagaland, Meghalaya.

1483. ***Cettia flavolivacea alexanderi*** Ripley

1951. *Cettia flavolivacea alexanderi* Ripley, *Postilla, Yale Peabody Mus.*, No. **6** : 6 (Phek-Meluri Road, 60 miles east of Kohima, Naga Hills).

1973. *Cettia flavolivacea alexanderi* Ripley, Ali and Ripley, Vol. **8** : 15.

Common name : Manipur Aberrant Bush Warbler.

Diagnostic characters : Size, smaller than the Sparrow (length 130). Upperparts olive-brown; supercilium yellowish; a black line through eye; sides of head mottled yellow and brown; underparts olive-buff with dark buffy breast and flanks. Sexes alike.

Distribution : India : Nagaland, Manipur and Mizoram.

Elsewhere : Northern Vietnam and Fukien.

Genus ***Bradypterus*** Swainson, 1837

1493. ***Bradypterus luteoventris luteoventris*** (Hodgson)

1845. *Tribura luteoventris Hodgson, Proc. zool. Soc. Lond.*, : 30 (Nepal).

1973. *Bradypterus luteoventris luteoventris* (Hodgson), Ali and Ripley, Vol. **8** : 25.

Common name: Brown Bush Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 130 mm). Back, tail and wings rufous-brown; supercilium short and pale; chin, throat, breast and abdomen white tinged with buff on sides; throat sometimes with the fine dark specks; upper breast,flanks and vent rufous - brown. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Meghalaya and Sikkim.

Elsewhere : Bhutan, Nepal, China and Vietnam.

Genus ***Prinia*** Horsfield, 1821

1501. ***Prinia rufescens rufescens*** Blyth

1847. *Pr. (inia) rufescens* Blyth, *J. Asiat. Soc. Beng.*, **16** : 456 (Arracan).

1973. *Prinia rufescens rufescens* Blyth, Ali and Ripley, Vol. **8** : 38.

Common name : Rufous Wren-Warbler.

Diagnostic characters : Size, smaller than the Sparrow (length 110 mm). Upperparts rufous-brown, tail tipped with black and white; supercilium buff; crown and nape ashy brown in summer, nearly concolorous with back in winter, underparts pale buff; more ochraceous on flanks and abdomen. Sexes alike.

Distribution : India : Nagaland, Manipur, Meghalaya, Mizoram, Orissa (north-eastern portion) and Sikkim.

Elsewhere : Bhutan, Nepal and extension range upto Vietnam.

1502. ***Prinia hodgsonii rufula*** Godwin-Austen

1874. *Prinia rufula* Godwin-Austen, *Proc. zool. Soc. Lond.*, 47 (Naga Hills)

1973. *Prinia hodgsonii rufula* Godwin-Austen, Ali and Ripley, Vol. **8** : 40.

Common name : Northern Ashy-grey Wren-Warbler

Diagnostic characters : Size smaller than the Sparrow (length 110 mm). A small rufous-brown, long-tailed Warbler similar to *P. rufescens*, distinguished from it by the grey tail instead of rufous; and in summer, by a cloudy grey band across the breast. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Nepal, Pakistan and Myanmar.

1512. *Prinia subflava fusca* (Hodgson)

1845. *Drymoica fusca Hodgson, Proc. zool. Soc. Lond.*, : 29 (Nepal).

1973. *Prinia subflava fusca* (Hodgson) Ali and Ripley, Vol. 8 : 55.

Common name : Eastern Plain Wren-Warbler.

Diagnostic characters : Size that of the Munia(length 130 mm). Upper plumage sandy brown; supercilium, sides of head and outer rectrices whitish; underparts cream to yellowish. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Sikkim and West Bengal.

Elsewhere: Bhutan. The species extends east to Vietnam and south to Java.

1525. *Prinia flaviventris flaviventris* (Delessert)

1840. *Orthotomus flaviventris* Delessert, *Rev. Zool.* : 101 (N. Bengale).

1973. *Prinia flaviventris flaviventris*. (Delessert), Ali and Ripley, Vol. 8 : 67.

Common name : Assam Yellowbellied Wren-Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 130 mm). Upperparts olive-green; tail-tipped whitish and faintly subtipped brown; forecrown and sides of head grey; a faint supercilium; throat and breast whitish cream; belly lemon yellow. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and West Bengal.

Elsewhere : Bangladesh and Myanmar. The species extends east to Vietnam and south to Sumatra.

1528. *Prinia criniger catharia* Reichenow

1908. *Prinia catharia* Reichenow, *Orn. Monatsb.* **16** : 13 (Ta-tsieng-lu-ting, Sets chuan).

1973. *Prinia criniger catharia* Reichenow, Ali and Ripley, Vol. 8 : 71.

Common name: Assam Brown Hill Warbler.

Diagnostic characters : Size smaller than the Sparrow, with a long a tail (length 160 mm). Upper plumage brown with distinctly streaked; tail long, steeply graduated, the rectrices buff-tipped with dusky subterminal spot; underparts pale fulvous (summer) or mottled with dusky on sides of throat and breast (winter); flanks olive-brown. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Myanmar and China.

1530. *Prinia atrogularis khasiana* (Godwin-Austen)

1876. *Suya khasiana* Godwin-Austen, *Ann. Mag. Nat. Hist.*, **18** : 412 (Khasia Hills)

1973. *Prinia atrogularis khasiana* (Godwin-Austen), Ali and Ripley, vol. 8 : 73.

Common name : Assam Blackthroated Hill Warbler.

Diagnostic characters : Size. smaller than the sparrow, with a long tail (length 170 mm). Back dark olive-brown; wings and tail rufous-brown; tail long, graduated, paler at tip; head and nape grey; throat black bordered with white—moustachial stripe; breast spotted with black and white; abdomen fulvous; flanks olive. Sexes alike.

Distribution : India : Nagaland, Manipur and Meghalaya.

Elsewhere : Bangladesh and Myanmar.

Genus ***Orthotomus*** Horsfield, 1821

1537. ***Orthotomus sutorius luteus*** Ripley

1948. *Orthotomus sutorius luteus* Ripley, *Proc. Biol. soc. Washington* **61** : 105 (Tezu, Mishmi Hills, NE Assam).

1973. *Orthotomus sutorius luteus* Ripley, Ali and Ripley, Vol. **8** : 84.

Common name : Mishmi Tailor Bird.

Diagnostic characters : Size that of the Munia (length 130 mm). Upper plumage yellowish-green; forehead rufous; crown and sides of head ashy brown; a concealed dark spot on each side of the neck; underparts rufous-buff; tail brown, central tail feathers long and pointed in breeding male, less pointed in female.

Distribution : India : Nagaland, Arunachal Pradesh and Northern Manipur.

1540. ***Orthotomus atrogularis nitidus*** Hume

1874. *Orthotomus nitidus* Hume, *Str. Feath.*, 2 : 478, 507 (Pahpoon, Tenasserim)

1973. *Orthotomus atrogularies nitidus* Hume, Ali and Ripley, Vol. **8** : 86.

Common name : Blacknecked Tailor Bird.

Diagnostic characters : Size smaller than the Sparrow (length 130 mm). In male head chestnut; wings and back olive-green; cheeks and chin whitish grey; throat black; sides of breast grey; abdomen greenish yellow; vent whitish; under tail-coverts yellow. Female similar to male excepting the throat lacks black.

Distribution : India : Nagaland, Assam, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh.

1541. ***Orthotomus cucullatus coronatus*** Blyth

1861. *Orthotomus cucullatus coronatus* Blyth, *Proc. zool. Soc. Lond.* : 200 (Sikkim).

1973. *Orthotomus cucullatus coronatus* Blyth, Ali and Ripley, Vol. **8** : 87.

Common name : Goldenheaded Tailor Bird.

Diagnostic characters : Size that of the Munia (length 120 mm). Back and wings olive-green; rump yellow; tail brown, outermost rectrices partly white; forehead and acrown rufous; supercilium yellow; sides of head and a nuchal collar dark grey; throat and breast pale grey; rest bright yeallow. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh and Nepal.

Genus ***Megalurus*** Horsfield, 1821

1548. ***Megalurus palustris toklao*** (Blyth)

1843. *Turdus toklao* Blyth, *J. Asiat. Soc. Beng.*, **12** : 179 (Calcutta), ex 1842, *J. Asiat. Soc. Beng.*, **11** : 603 and 1843, *Ann. Mag. Nat. Hist.*, **12** : 99; *ibid.* Blyth, 1844, J.A.S.B., **13** : 372.

1973. *Megalurus palustris toklao* (Blyth), Ali and Ripley, Vol. **8** : 96.

Common name : Striated Marsh Warbler.

Diagnostic characters : Size larger than the Bulbul (length 250 mm). Back and wings fulvous brown with broad black stripes; tail long, pointed, graduated, fulvous-brown; supercilium white; underparts fulvous-white; finely brown streaked on breast, flanks and under tail-coverts. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Orissa, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Pakistan, Myanmar, China, Indochinese countries, Indonesian Islands, Philippines and Thailand.

Genus ***Acrocephalus*** Naumann, 1811

1556. ***Acrocephalus dumetorum*** Blyth

1849. *Acrocephalus dumetorum* Blyth, *J. Asiat. Soc. Beng.*, **18** : 815 (No locality = Calcutta, see Biswas, 1962, JBNHS **59** : 410)

1973. *Acrocephalus dumetorum* Blyth, Ali and Ripley, Vol. **8** : 109.

Common name : Blyth's Reed Warbler.

Diagnostic characters : Size that of the Sparrow or less (length 140 mm). Upper plumage

olive-brown; supercilium pale buff; wings and tail brown; primaries tinged with olive; underparts pale buff, chin and throat paler. Sexes alike.

Distribution : India : Nagaland, throughout India.

Elsewhere : Bangladesh, Bhutan, Nepal, Sri Lanka, Myanmar, Breeds in central Eurasia from Lake Baikal west to southern Finland and south to Iran.

Genus ***Phylloscopus*** Boie, 1826

1588, 1589. ***Phylloscopus pulcher pulcher*** Blyth

1845. *Ph. (ylloscopus) pulcher* Blyth, *J. Asiat. Soc. Beng.*, **14** : 592 (Nepal, restricted to Nepal vally by Biswas, 1962, JBNHS **59** : 413; cf. also 414)

1973. *Phylloscopus pulcher pulcher* Blyth, Ali and Ripley, Vol. **8** : 152.

Common name : Eastern Orangebarred Leaf Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Back olive; wings provided with two orange-yellow bars; rump pale yellow; crown sooty olive with an indistinct median stripe, supercilium yellow, extends to nape; tail olive, outer rectrices partly white; lower parts pale yellow, greyish on breast. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar and China.

1591. ***Phylloscopus inornatus mandellii*** (Brooks)

1879. *Reguloides mandellii* Brooks, *Str. Feath.*, **8** : 389 (Sikkim).

1973. *Phylloscopus inornatus mandellii* (Brooks), Ali and Ripley, Vol. **8** : 155.

Common name : Mandelli's Yellowbrowed Leaf Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Upperparts greenish-olive; two buffish wing bars, supercilium and eye-ring yellowish; underparts yellowish-white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere. Bangladesh, Myanmar, China and Tibet.

1592. ***Phylloscopus inornatus inornatus*** (Blyth)

1842. *Regulus inornatus* Blyth, *J. Asiat. soc. Beng.*, **11** : 191 (Darjeeling)

1973. *Phylloscopus inornatus inornatus* (Blyth), Ali and Ripley, Vol. **8** : 156.

Common name : Siberian Yellowbrowed Leaf Warbler.

Diagnostic characters: Size smaller than the Sparrow (length 100 mm). Wings and tail brown edged with greenish, the former provided with two white bars; rest of upperparts pale brown; entire lower plumage sullied white. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Breeds in siberia and winters in Indochinese countries, southern China and Formosa.

1596. ***Plylloscopus proregulus newtoni*** Gatke

1889. *Phylloscopus newtoni* Gatke, *Ibis* : 579 (India = Darjeeling)

1973. *Phylloscopus proregulus newtoni* Gatke, Ali and Ripley, Vol. **8** : 160.

Common name : Eastern Pallas's Leaf Warbler.

Diagnostic characters : Size smaller than the Munia (length 90 mm). Upperparts olive-green; two yellow wing-bars; rump. band yellow; two dusky olive coronal band with a prominent yellowish median stripe; supercilium yellow; a black line through eye; rest of lowerparts yellowish white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Myanmar, China and Vietnam.

1599. ***Phylloscopus maculipennis maculipennis*** (Blyth)

1867. *Abrornis maculipennis* Blyth, *Ibis* : 27 (Nepal, restricted to Ilam District, eastern Nepal, by Ripley, 1950, *Proc. Biol. Soc. Washington* **63** : 106)

1973. *Phylloscopus maculipennis maculipennis* (Blyth), Ali and Ripley, Vol. **8** : 162.

Common name : Eastern Greyfaced Leaf Warbler.

Diagnostic characters : Size smaller than the Munia (length 90 mm). Olive-green above; yellow wing bars; yellow rump; white in tail; brownish grey head; yellow supercilium; grey throat and breast; yellow below identifies this species. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Szechuan and Yunnan to northern Vietnam.

1604. ***Phylloscopus trochiloides trochiloides*** (Sundevall)

1838. *Acathiza trochiloides* Sundevall, *Fysiogr Sallskap. Tidskr. Lund.*, **1** : 76 (Calcutta)

1973. *Phylloscopus trochiloides trochiloides* (Sundevall), Ali and Ripley, Vol. **8** : 169.

Common name : Eastern Greenish Leaf Warbler.

Diagnostic characters : Size smaller than the sparrow (length 100 mm). Upperparts dull greenish; supercilium yellow; cheeks mottled yellow; rest of underparts sullied yellowish white. Sexes alike.

Distribution : India : Nagaland, Andaman Islands, Arunachal Pradesh, Assam, Kerala, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, China and the Indochinese countries.

1607. ***Phylloscopus occipitalis coronatus*** (Temminck & Schlegel)

1847. *Ficedula coronata* Temminck & Schlegel, in *Siebold's Fauna, Japan., Aves* : 48, pl. 18 (Japan).

1973. *Phylloscopus occipitalis coronatus* (Temminck & Schlegel), Ali and Ripley, Vol. **8** : 174.

Common name : Eastern Crowned Leaf Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Back light greyish-olive; yellower on wings; wing bars double; crown dusky olive; supercilium pale yellow; eye-streak black; lower plumage whitish with contrasting yellow under tail-coverts. Sexes alike.

Distribution : India : Nagaland, Manipur, Meghalaya and Sikkim.

Elsewhere : Bangladesh. Breeds in Korea Amurland, Japan and Szechuan. Winters also in the Indochinese countries, Sumatra and Java.

1610. ***Phylloscopus reguloides assamensis*** Hartert

1921. *Phylloscopus trochiloides assamensis* Hartert, *Vog. pal. Fauna* (3) : 2139, new name for *Acanthopneuste trochiloides harterti* Baker, 1913, Bull. *Brit. orn. cl.*, **31** : 36 (Peak near Shillong, Khasia Hills) nee *Phylloscopus bonelli harterti* Zedlitz, 1912.

1973. *Phylloscopus reguloides assamensis* Hartert, Ali and Ripley, Vol. **8** : 178.

Common name : Assam Crowned Leaf Warbler.

Diagnostic characters : Size smaller than the Munia (length 90 mm). Very similar to *P. occipitalis coronatus* but smaller, under tail-coverts concolourous with whitish underparts, not yellow. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elsewhere : Bangladesh.

Genus ***Seicercus*** Swainson, 1837

1613. ***Seicercus affinis*** (Hodgson)

1854. *Abrornis affinis* Hodgson, in Horsfield & Moore, *Cat Bds. E. I. Co.* **1** : 341 (Nepal).

1973. *Seicercus affinis* (Hodgson), Ali and Ripley, Vol. 8 : 180.

Common name : Allied Flycatcher-Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Back, wings and tail olive-green; outer tail feathers partly white; crown striped grey and black; sides of head yellow; eye with white eye-ring; underparts bright yellow. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere: Bhutan, Nepal, Myanmar, Thailand and Vietnam.

1615. *Seicercus burkii burkii* Burton

1836. *Sylvia burkii* Burton, *Proc. Zool. Soc. Lond.*, : 153 (Himalaya Mts, restricted to Sikkim by Ticehurst, 1925, *Bull. Brit. Cl.*, 46 : 23).

1973. *Seicercus burkii burkii* Burton, Ali and Ripley, Vol. 8 : 183.

Common name : Eastern Blackbrowed Flycatcher-Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Upperparts olive-green including sides of head and supercilium; eye-ring yellow; crown banded with two black stripes; underparts deep yellow. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Orissa, Sikkim and West Bengal.

Elsewhere: Bangladesh, Bhutan, Nepal, China and Indochinese Countries.

1619. *Seicercus xanthoschistos tephrodiras* Sick

1939. *Seicercus xanthoschistos tephrodiras* Sick, *Orn. Monatsb.*, 47 : 78 (Mt. Victoria, Chin Hills).

1973. *Seicercus xanthoschistos tephrodiras* Sick, Ali and Ripley, Vol. 8 : 187.

Common name : Assam Greyheaded Flycatcher-Warbler.

Diagnostic characters: Size smaller than the Sparrow (length 100 mm). Back and crown grey; rump and wings greenish yellow; supercilium long, white; outer tail feathers white; lowerparts bright yellow. Sexes alike.

Distribution : India : Nagaland, Assam, Meghalaya and Manipur.

Elsewhere : Myanmar.

1621. *Seivercus castaniceps castaniceps* (Hodgson)

1845. *Abromis castaniceps* Hodgson, in Blyth *J. Asiat. Soc. Beng.*, 14 : 593 (Nepal).

1973. *Seicercus castaniceps castaniceps* Hodgson, Ali and Ripley, Vol. 8 : 189.

Common name : Chestnut-headed Flycatcher-Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Back and wings yellowish-olive; outer tail feathers largely white; two yellow wing bar; rump bright yellow; crown chestnust; nape and sides of head grey; throat and upper breast bluish ashy; rest of underparts bright yellow. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Myanmar and China.

Genus **Abroscopus** Baker, 1930

1622. *Abrosopus superciliaris flaviventris* (Jerdon)

1863. *Abromis flaviventris* Jerdon, *Bds. India* 2(1) : 203 (Darjeeling, northern West Bengal). New name for *Abromis albogularis* Blyth, 1861, preoccupied.

1973. *Abroscopus superciliaris flaviventris* (Jerdon), Ali and Ripley, Vol. 8 : 190.

Common name : Sikkim Yellowbellied Flycatcher Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 90 mm). Back, wings and tail yellowish-olive; forehead brownish grey; crown washed with olive-green; supercilium broad, white; chin and throat white; rest bright yellow: Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Myanmar.

1627. ***Abroscopus hodgsoni hodgsoni*** (Moore)

1954. *Abrornis ? hodgsoni* Moore, in Horsfield & Moore, *Cat. Bds. Mus. E. I. Co.* **1** : 412 (Nepal)

1973. *Abroscopus hodgsoni hodgsoni* (Moore), Ali and Ripley, Vol. **8** : 195.

Common name : Broadbilled Flycatcher-Warbler.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Upperparts olive-green; rump yellow; forehead and crown chestnut; supercilium ashy; chin and breast dark grey; throat pale grey; rest of underparts bright yellow. Sexes alike.

Distribution : India : Nagaland (No recent data), Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal and Myanmar.

Genus ***Brachypteryx*** Horsfield 1822

1636. ***Brachypteryx hyperythra*** Jerdon & Blyth

1861. *Brachypteryx hyperythra* Jerdon & Blyth, *Proc. zool. Soc. Lond.*, : 201 (Darjeeling)

1973. *Brachypteryx hyperythra* Jerdon & Blyth, Ali and Ripley, Vol. **8** : 205.

Common name : Rustybellied Shortwing.

Diagnostic Characters : Size, smaller than the Sparrow (length 130 mm). In male, upperparts deep blue; lores and a frontal line black; supercilium short, white; underparts entirely ferruginosus. In female, upperparts olive-brown; underparts pale ferruginosus; centre of abdomen whitish.

Distribution : India : Nagaland, Arunachal Pradesh, Sikkim and West Bengal.

1639. ***Brachypteryx loecophrys nipalensis*** Moore

1854. *Brachypteryx nipalensis* 'Hodgson' = Moore, In Horsfield & Moore' *Cat. Bds. Mus. E. I. Co.* **1** : 397 (Nepal).

1973. *Brachypteryx leucophrys nipalensis* Moore, Ali and Ripley, Vol. **8** : 207

Common name : Lesser Shortwing.

Diagnostic characters : Size smaller than the sparrow (length 130 mm). In male, upperparts dark slaty blue; supercilium white; throat white; breast-band and flanks smoky-grey; abdomen white. In female, upperparts rusty olive-brown; supercilium white; throat white; breast-band and flanks rusty-brown; abdomen white.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar and China.

Genus ***Erithacus*** Cuvier, 1800

1643. ***Erithacus calliope*** (Pallas)

1776. *Motacilla calliope* Pallas, *Reise. Russ.* Reichs., **3** : 697 (Yenisei).

1973. *Erithacus calliope* (Pallas), Ali and Ripley, Vol. **8** : 215.

Common name : Rubythroat.

Diagnostic characters : Size equal to the sparrow (length 150 mm). In male, back olive-brown; supercilium white; chin and throat scarlet bordered with a black line on sides of chin; breast and flanks pale buffish brown; abdomen white. Female like male, with white supercilium, but throat white or pinkish without the black line; adbomen and vent buff.

Distribution : India : Nagaland, Assam, Andhra Pradesh, Bihar, Madhya Pradesh, Manipur, Meghalaya, Orissa, Rajasthan, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, Indochinese countries and southern China to Formosa (=Taiwan) and Philippines. Breeds in Siberia from the Ural Mts. to Anadyr, Kamchatka and Hokkoido.

1658. ***Erythacus chrysaeus chrysaeus*** (Hodgson)

1845. *Tarsiger chrysaeus* Hodgson, *Proc. zool. Soc. Lond.*, : 28 (Nepal)

1973. *Erithacus chrysaeus chrysaeus* (Hodgson), Ali and Ripley, Vol. 8 : 234.

Common name : Eastern Golden Bush Robin.

Diagnostic characters : Size equal to the Sparrow(length 150 mm). In male, upper back and crown olive-brown; scapulars, sides back and rump orange; supercilium yellow; a black band from lores through eyes; wings olive-brown; tail orange, central rectrices and terminal band black; underparts orange with narrow dusky, crescent-shaped markings. In female, crown and back olive; supercilium yellowish olive : eye-ring buff; rest of underparts ochre-yellow.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar and China.

1659. *Erithacus indicus indicus* (Vieillot)

1817. *Sylvia indica* Vieillot, *Nauv. Dict. D'Hist. Na. nouv, ed.*, 11 : 267 (India ex Sonnerat = Darjeeling)

1973. *Erithacus indicus indicus* (Vieillot), Ali and Ripley, Vol. 8 : 236.

Common name : Whitebrowed Bush Robin.

Diagnostic characters : Size equal to the Sparrow (length 150 mm). Upper plumage slaty blue; supercilium white; lower plumage orange ochraceous. In female, upper plumage olive-brown; supercilium white; lower plumage dull rufous-ochre; belly paler.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan and Nepal.

Genus *Copsychus* Wagler, 1827

1663. *Copsychus saularis erimelas* Oberholser

1923. *Copsychus saularis erimelas* oberholser, *Smiths. Misc. Coll.*, 76 : 1-2 (Kaukarit, Houndraw Branch, Tenasserim).

1973. *Copsychus saularis erimelas* Oberholser, Ali and Ripley, Vol. 8 : 243.

Common name : Assam Magpie-Robin.

Diagnostic characters : Size equal to the Bulbul (length 200 mm). In male-head, throat, breast, back and tail glossy blue-black; wings blackish brown with a prominent long with patch; tail graduated, with white outer rectrices, 4th rectrices from outer edge of tail black. In female-back slaty and grey on throat and breast, otherwise similar to male.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh, Bhutan and Myanmar.

1667. *Copsychus malabaricus indicus* (Baker)

1927. *Kittacinela malabarica indica* Baker, *Fauna Brit. India Birds*, 2 : 118 (Bhutan duars).

1973. *Copsychus malabaricus indicus* (Baker), Ali and Ripley, Vol. 8 : 246.

Common name : Indian Shama.

Diagnostic characters : Size that of the Bulbul with a long tail (length 250 mm). In male-head, upper back, throat, breast and wings glossy black; rump white; tail graduated, outer rectrices white, central rectrices black and elongated; abdomen and under tail-coverts rufous. Female similar to male but black replaced by grey; tail shorter.

Distribution : India : Nagaland, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Orissa, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Burma, Thailand, Indochinese countries, Hainan, Java, Borneo and introduced on Kauai (Hawaii).

Genus *Phoenicurus* Forster, 1817

1674. *Phoenicurus hodgsoni* (Moore)

1854. *Ruticilla hodgsoni* Moore, in Horsfield & Moore, *Cat. Bels. Mus. E. I. Co.* 1 : 303 (Bootan)

1973. *Phoenicurus hodgsoni* (Moore), Ali and Ripley, Vol. 8 : 257.

Common name : Hodgson's Redstart.

Diagnostic characters : Size equal to the Sparrow(length 150 mm). In male-crown, nape and mantle ashy grey; wings brown with a prominent white patch; rump and tail rufous, central rectrices dark brown; forehead to ear-coverts black; forecrown and supercilium white; throat and breast black; rest rufous. In female-upper plumage greyish brown; no wing patch; rump and tail as in male; throat and breast pale grey-brown fading to whitish on belly.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Jammu & Kashmir, Manipur, Sikkim and Uttar Pradesh.

Elsewhere : Bhutan, Nepal, Myanmar, Tibet and China.

1675. ***Phoenicurus frontalis*** (Vigors)

1832. *Phoenicurus frontalis* Vigors, *Proc. zool. Soc. Lond.* : 172 (Himalayas = Garhwal, Vide Baker, 1924 (April), FBI 2 : 69)

1973. *Phoenicurus frontalis* (Vigors), Ali and Ripley, Vol. **8** : 258.

Common name : Bluefronted Redstart.

Diagnostic characters : Size equal to the Sparrow (length 150 mm). In male (summer) forehead and supercilium bright blue; crown and back blackish blue; wings brown; rump and tail rufous, central rectrices, outer edge of outer rectrices and a broad terminal band blackish; throat dark blue forming a rounded bib on breast; rest of underparts orange-chestnut. In winter, crown and back fringed with rusty brown and tertial edged with buff. In female, upper plumage olive-brown; eye-ring buffish; tail as in male; throat and breast olive-brown; rest orange-brown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Nepal, Pakistan, Myanmar, China, Vietnam and Tibet.

1677. ***Phoenicurus auroreus leucopterus*** (Blyth)

1843. *Phoenicura leucoptera* Blyth, *J. Asiat. Soc. Beng.*, **12** : 962 (Malay Peninsula).

1973. *Phoenicurus auroreus leucopterus* (Blyth), Ali and Ripley, Vol. **8** : 262.

Common name : Daurian Redstart.

Diagnostic characters : Size that of the Sparrow (length 150 mm). In male (Summer)-Crown, nape and upper back slaty grey; lower back and wings black, the latter provided with a white patch; rump and tail rufous, central rectrices blackish; sides of neck and throat black; breast, abdomen and vent rufous. In winter-grey and black parts fringed with brown. In female, back olive-brown; rump and tail rufous; wing–patch cream coloured; throat paler; breast refous-brown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Sikkim and West Bengal.

Elsewhere : China, Hainan, Japan, Russia, Indochinese countries, Tibet and Taiwan.

Genus ***Rhyacornis*** Blanford, 1872

1679. ***Rhyacornis fuliginosus fuliginosus*** (Vigors)

1831. *Phoenicura fuliginosa* Vigors, *Proc. zool. Soc. Lond.*, : 35 (Himalayas, restricted to Simla—Almora by Ticehurst & Whistler, 1924, *Ibis* : 471).

1973. *Rhyacornis fuliginosus fuliginosus* (Vigors), Ali and Ripley, Vol. **8** : 266.

Common name : Plumbeous Redstart.

Diagnostic characters : Size Smaller than the Sparrow (length 120 mm). In male—entire head, neck, back, throat and breast bluish slaty; tail and lower belly chestnut. In female, upperparts dark grey-brown; wings spotted with white; base of tail white; rectrices partly white, tipped with brown; underparts mottled slate and white.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : China, Hainan, Indochinese countries, Japan, Tibet and Taiwan.

Genus ***Cinclidium*** Blyth, 1842.

1681. ***Cinclidium leucurum*** (Hodgson)

1845. *M. (uscisylvia) leucura* Hodgson, *Proc. zool. Soc.* Lond., : 27 (Nepal)

1973. *Cinclidium leucurum* (Hodgson), Ali and Ripley, Vol. 9 : 1.

Common name : Whitetailed Blue Robin.

Diagnostic characters : Size smaller than the Bulbul (length 170 mm). In male, back and wings dark indigo; forehead, supercilium and shoulders blue, lores and sides of head black; tail blackish with two white patches on basal half; throat and breast black; neck marked with concealed white patch; belly dark indigo. In female, upper plumage rufous olive-brown; tail dark brown with two white patches on basal half; eye-ring ferruginosus; throat ochraceous; breast rufous brown; belly greyish brown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram and Sikkim.

Elsewhere : Nepal, Bhutan and extends east to Hupeh Kweichow and Vietnam, and south through the Malaya Peninsula.

Genus *Enicurus* Temminck, 1822

1684. *Enicurus scouleri scouleri* Vigors

1832. *Enicurus Scouleri* Vigors, *Proc. zool. Soc. Lond.*, : 174 (Himalayas = Simla).

1973. *Enicurus scouleri scouleri* Vigors, Ali and Ripley, Vol. 9 : 7.

Common name : Little Forktail.

Diagnostic characters : Size smaller than the Sparrow (length 120 mm). Head, neck and back black; forehead white; wing with a triangular bar across; lower back and base of tail white; rump provided with a black band; tail slightly forked blackish brown, outer rectrices white; chin and throat black; rest of underparts white smeared with black on breast and flanks. Sexes alike.

Distribution: India : Nagaland, Arunachal Pradesh,Jammu & Kashmir, Meghalaya, Sikkim and Uttar Pradesh.

Elsewhere : Bangladesh, Nepal, Pakistan, China and Vietnam.

1685. *Enicurus immaculatus* (Hodgson)

1836. *Motacilla (Enicurus) immaculatus* Hodgson, *Asiat. Res.* 19 : 190 Nepal).

1973. *Enicurus immaculatus* (Hodgson), Ali and Ripley, Vol. 9 : 9.

Common name : Blackbacked Forktail.

Diagnostic characters : Size that of the Bulbul with a long tail (length 250 mm). Head and back black; forehead and supercilium white; rump white as a white band across black wings; tail long deeply forked; outer rectrices white; upper throat black and rest of underparts white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and Uttar Pradesh.

Elsewhere : Bangladesh, Bhutan, Myanmar, Nepal and Thailand.

1686. *Enicurus schistaceus* (Hodgson)

1836. *Motacilla (Enicurus) schistaceus* Hodgson. *Asiat. Res.* 19 : 189 (Nepal).

1973. *Enicurus schistaceus* (Hodgson), Ali and Ripley, Vol. 9 : 11.

Common name : Slatybacked Forktail.

Diagnostic characters : Size that of the Bulbul, with a long tail (length 250 mm). Crown and back slaty; wings black with a broad white band across; a small white patch on primaries; rump white; tail long, deeply forked; inner rectrices black with white tips; outer rectrices white; a narrow frontal band and short supercilium white; chin and sides of throat black; throat, breast and vent white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Myanmar and east through the Indochinese countries and southern China to Fukein.

1687. *Enicurus leschenaulti indicus* Hartert

1909. *Enicurus leschenaulti indicus* Hartert, *Vog. pal Fauna* 1 : 760 (Margherita, Upper Assam).

1973. *Enicurus leschenaulti indicus* Hartert, Ali and Ripley, Vol. 9 : 12.

Common name : Leschenault's Forktail.

Diagnostic characters : Size that of the Bulbul with a long tail (280 mm). Very similar to Blackbacked Forktail *E. immaculatus* but larger. White of forehead extends to crown (not only as a supercilium); black of underparts extends to breast and flanks. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Meghalaya, Manipur, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan Myanmar, Thailand and Vietnam.

1689. ***Enicurus maculatus guttatus*** Gould

1865. *Enicurus guttatus* Gould, *Proc. zool. Soc. Lond.*, : 664 (Sikkim = Darjeeling).

1973. *Enicurus maculatus guttatus* Gould, Ali and Ripley, Vol. **9** : 15.

Common name : Eastern Spotted Forktail.

Diagnostic characters : Size that of the Bulbul with a long tail (length 250 mm). Back black spotted with white; rump white; wing provided a white bar; tertials white-tipped; tail forked, outer rectrices white, the others black tipped with white; forehead and forecrown white; side of head and nape black; throat and breast black; rest white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Manipur, Meghalaya, Mizoram.

Elsewhere : Bangladesh, Nepal, Myanmar and China.

Genus ***Saxicola*** Bechstein, 1803

1696. ***Saxicola torquata przevalskii*** (Pleske)

1889. *Pratincola maura var Przevalskii* Pleske, *Wiss. Res. Przevalskii's Reise, Th.Vog.* **2** : 46, pl, 4 (Kansu).

1973. *Saxicola torquata przevalskii* (Pleske), Ali and Ripley, Vol. **9** : 27.

Common name : Tibetan Collared Bush Chat.

Diagnostic characters : Size smaller than the Sparrow (length 130 mm). In male (Summer) Head, back, tail and wings black; wing with white wing-bar; rump white; throat black; collar white; breast rufous-chestnut; belly buff. (Winter) Feathers of upperparts broadly fringed with brown. In female; back, wings and tail rufous brown streaked with dark brown; rump pale rufous; tail blackish brown; rest of underparts rufous.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Tripura.

Elsewhere : Nepal. Breeds in Tibet and in the mountains of Western China.

1701. ***Saxicola caprata burmanica*** Baker

1923. *Saxicola caprata burmanica* Baker, *Bull. Br. Orn. Cl.*, **43** : 9 (Pegu)

1973. *Saxicola caprata burmanica* Baker, Ali and Ripley, Vol. **9** : 34.

Common name : Burmese Bush Chat.

Diagnostic characters : Size smaller than the Sparrow (length 130 mm). In male-head, back, wing and tail jet-black; wing patch and upper tail-coverts white; belly and under tail-coverts white; rest black. In female-head, back and wing brown; upper tail-coverts rusty; tail blackish brown; breast and belly tinged with rusty; chin and throat fulvous; vent and under tail-coverts buff.

Distribution : India : Nagaland, Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Tripura, West Bengal.

Elsewhere : Bangladesh, Myanmar, Indo-chinese countries and Thailand.

1704. ***Saxicola jerdoni*** (Blyth)

1867. *Oreicola jerdoni* Blyth, *Ibis* : 14, new name for *Rhodophila melanoleuca* Jerdon, 1863, Bds. India **2** : 128 (Purneah) nec Oenanthe melanoleuca Vieillot, 1818.

1973. *Saxicola jerdoni* (Blyth), Ali and Ripley, Vol. **9** : 36.

Common name : Jerdon's Bush Chat.

Diagnostic characters : Size that of the Sparrow (length 150 mm). Male-upper plumage entirely glossy black; lower plumage entirely white. Female upper plumage brown; rump rufous; throat white; rest pale fulvous.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Tripura and West Bengal.

Elsewhere : Bangladesh, Myanmar, Thailand and Vietnam.

1705. *Saxicola ferrea* Gray

1846. *Saxicola ferrea* Gray, *Cat. Mamms. Bds. Nepal* : 71, 153 (Nepal).

1973. *Saxicola ferrea* Gray, Ali and Ripley, Vol. 9 : 37.

Common name : Dark-grey Bush Chat.

Diagnostic characters : Size that of the Sparrow (length 150 mm). Male-upper parts ashy grey with black streaks; supercilium white; sides of head black; tail black with white edge; shoulder patch white; throat white; breast and flanks grey; belly whitish. In winter, feathers of upper parts and breast tipped with rufous-brown. Female-upper parts rufous brown; sides of head dark brown; rump rusty; tail blackish with rufous edge; chin and throat white; rest fulvous.

Distribution : India: Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Pakistan, Nepal, Myanmar, China, Indochinese countries and Thailand.

Genus *Chaimarrornis* Hodgson, 1844

1716. *Chaimarrornis leucocephalus* (Vigors)

1831. *Phoenicura leucocephaa* Vigors, *Proc. zool. Soc. Lond.*, : 35 (Himalaya = Simla =Almorah area).

1973. *Chaimarrornis leucovephalus* Hodgson, Ali and Ripley, Vol. 9 : 57.

Common name : Whitecapped Redstart or River Chat.

Diagnostic characters : Size that of the Bulbul (length 190 mm). Crown and nape white; forehead, sides of head, back and wings black; rump and tail chestnut, the latter with black terminal band; throat and breast black; rest chestnut. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Sikkim and Uttar Pradesh.

Elsewhere : Afghanistan, Bhutan, China, Nepal and Tibet.

Genus *Monticola* Boie, 1822

1723. *Monticola cinclorhynchus* (Vigors)

1832. *Petrocincla cinclorhynchus* Vigors, *Proc. zool. Soc. Lond.*, : 172 (Himalayan Mountains = Simla)

1973. *Monticola cinclorhynchus* (Vigors), Ali and Ripley. Vol. 9 : 67.

Common name : Blueheaded Rock Thrush.

Diagnostic characters : Size that of the Bulbul (length 170 mm). Male-Back black; wings marked with a white patch; rump rufous; throat blue; rest of underparts orange-rufous. In winter black feathers of back edged with fulvous. Female-above olive-brown; underparts squamated whitish and dark brown.

Distribution : India : Nagaland, Summer (breeding) visitor. Himalayas from Jammu & Kashmir to Arunachal Pradesh, Assam. Winter Visitor—Gujarat, Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra and Tamil Nadu.

Elsewhere : Afghanistan, Bhutan, Pakistan and Myanmar.

1724. *Monticola rufiventris* (Jardine & Selby)

1832. *Turdus erythrogaster* Vigors, *Proc. zool. Soc. Lond.*, : 171 (Himalayan mountains)

1973. *Monticola rufiventris* (Jardine& Selby), Ali and Ripley. Vol. 9 : 70.

Common name : Chestnut bellied Rock Thrush.

Diagnostic characters: Size equel to the Myna (length 240 mm). In male-crown, mantle cobalt blue with some blackish; lores, ear-coverts and sides of neck black; throat blackish blue; rest chestnut. In female-upper plumage olive-brown with dark crescent-shaped bars; lower plumage squamated dark brown and buff.

Distribution : India : Nagaland, Arunachal

Pradesh, Assam, Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Manipur, Maghalaya, Mizoram, Punjab, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Pakistan, Nepal and China.

1726. ***Monticola solitarius pandoo*** (sykes)

1832. *Petrocincla Pandoo* Sykes *Proc. zool. Soc. Lond.*, : 87 (Ghauts, Dukhun)

1973. *Monticola solitarius pandoo* (Sykes), Ali and Ripley, Vol. **9** : 73.

Common name : Indian Blue Rock Thrush.

Diagnostic characters : Size larger than the Bulbul (length 230 mm). In male-Very bright almost azure blue plumage in summer, tail and wings brown. In winter, plumage are fringed with fulvous above. Breast brown, belly white. In female-grey-brown on back; throat and breast with fine dark shaft-streaks. Rump barred with blackish.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Meghalaya, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Punjab, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal, Pakistan, Sri Lanka, Myanmar, Tibet and Turkestan.

Genus ***Myiophonus*** Temminck, 1822

1729. ***Myiophonus caeruleus temminckii*** (Vigors)

1832. *Myophonus Temminckii* Vigors, *Proc. zool. Soc. Lond.*, (Himalayan Mountains = Simla = Almorah area)

1973. *Myiophonus caeruleus temminckii* (Vigors), Ali and Ripley, Vol. **9** : 79.

Common name : Himalayan Whistling Thrush.

Diagnostic characters: Size that of the Pigeon (length 350 mm). Upper and lower plumage dark purple blue spotted with glistening blue; forehead, shoulders, edges of wings and tail brigthter blue; median wing-coverts spotted with white (half-dozen); bill yellow. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Punjab, Tripura, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Afghanistan, Bhutan, Nepal, Pakistan, China, Japan, Indochinese countries, Indonesian Islands and Turkestan.

Genus ***Zoothera*** Vigors, 1832

1740. ***Zoothera dixoni*** (Seebohm)

1881. *Geocichla dixoni* Seebohm, *Cat. Bds. Br. Mus.* **5** : 161 (Himalays, Spp. from Nepal and Darjeeling).

1973. *Zoothera dixoni* (Seebohm), Ali and Ripley, Vol. **9** : 5.

Common name: Longtailed Mountain Thrush.

Diagnostic characters : Size larger than the Myna (length 270 mm). Upper plumage olive-brown; two buff wing bars; a concealed buff wing patch (prominent in flight, pale eye-ring conspicuous; throat, breast and flanks plumage buff changing to white on belly, boldly spotted with dark brown. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.*

Elsewhere : Bhutan, Nepal, southern Szechuan and northern Yunnan. Winters to the Indochinese countries.

1745. ***Zoothera monticola monticola*** Vigors

1832. *Zoothera monticola* Vigors, *Proc. zool. Soc. Lond.*, : 172 (Himalayas = Simla-Almorah area).

1973. *Zoothera monticola monticola* Vigors, Ali and Ripley, Vol. **9** : 101.

Common name : Large Brown Thrush.

Diagnostic characters : Size larger than the Myna (length 300 mm). Crown, back and tail dark slaty brown; bill curved and large; throat whitish with a few dark brown spots; breast and flanks olive-brown, the breast with blackish and buff spots; abdomen white, spotted with blackish; a large under wing patch prominent in flight. Sexes alike.

Distribution : India : Nagaland, Arunachal

Pradesh, Assam, Bihar, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal and Myanmar.

1746. *Zoothera marginata* Blyth

1847. *Z. (oothera) marginata* Blyth *J. Asiat. Soc. Beng.* **16** : 141 (Arracan).

1973. *Zoothera marginata* Blyth, Ali and Ripley, Vol. 9 : 104.

Common name : Lesser Brown Thrush.

Diagnostic characters : Size larger than the Myna (length 250 mm). Crown, back, wings and tail rufescent olive-brown; throat whitish, bounded on each side by a blackish streak; breast and belly buffish white scalloped with olive-brown; flanks olive-brown with whitish streaks; a buff underwing patch prominent in flight.

Distribution: India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

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

Genus *Turdus* Linnaeus, 1758

1747. *Turdus dissimilis dissimilis* Blyth

1847. *T.(urdus) dissimilis* Blyth, *J. Asiat. Soc. Beng.* **16** : 144 (Lower Bengal).

1973. *Turdus dissimilis dissimilis* Blyth, Ali and Ripley, Vol. 9 : 106.

Common name : Blackbreasted Thrush.

Diagnostic characters : Size that of the Myna (length 220 mm). In male-back slaty; head and nape black; throat and breast black; belly, flanks and axillaries orange rufous; centre of belly and undertail-coverts white. In female-back dark olive -brown; throat whitish streaked with brown; breast olivaceous streaked with black; rest of underparts as in male.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya and Tripura.

Elsewhere : Bangladesh, China and Vietnam.

1749. *Turdus albocinctus* Royle

1835. *Turdus albocollis* Royle, *Bot. Himalayan Mountains* 2 (1839), pt. 8, fig. 3 (Himalayas) nec *Turdus albicollis* Vieillot.

1973. *Turdus albocinctus* Royle, Ali and Ripley, Vol. 9 : 110.

Common name : Whitecollared Blackbird.

Diagnostic characters : Size that of the Myna (length 250 mm). In male entire body black; a broad white collar around the neck and upper back; throat white; bill, legs and feet yellow. In female rufous brown above, paler below and scalloped; collar dull ashy instead of white.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Sikkim and Uttar Pradesh.

Elsewhere : Bhutan, Nepal and Tibet.

1750. *Turdus boulboul* (Latham)

1790. *Lanius boulboul* Latham, *Index Orn.* **1** : 80 (India = Darjeeling).

1973. *Turdus boulboul* (Latham), Ali and Ripley, Vol. 9 : 112.

Common name : Grey winged Blackbird.

Diagnostic characters : Size larger than the Myna (length 300 mm). In male entire plumage black; wing patch grey; feathers of belly and vent with whitish fringes; eye-rim yellow; bill orange. In female entire plumage ashy tinged with olivaceous; a rufous-brown wing patch instead of male's grey.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Haryana, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Punjab, Rajasthan, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal, Myanmar, Pakistan, Thailand, Vietnam and Kwangsi.

1759. *Turdus rubrocanus gouldii* (Verreaux)

1871. *Merula Gouldii* Verreaux, *Nouv. Arch. Mus. Hist. Nat. Paris* **6** : 34 (Setchuan Occidental = Paohung)

1973. *Turdus rubrocanus gouldii* (Verreaux), Ali and Ripley, Vol. 9 : 124.

Common name : Eastern Greyheaded Thrush.

Diagnostic characters : Size larger than the Myna (length 270 mm). In male back rusty; wings and tail blackish; head smoky grey; throat, upper breast and centre of belly whitish; upper belly and flanks chestnut. In female head darker and brownish; back pale chestnut and marginated below with pale greyish.

Distribution : India : Nagaland, Assam and Meghalaya.

Elsewhere : Nepal, Myanmar, China and Tibet.

1761. ***Turdus feai*** (Salvadori).

1887. *Merula feai* Salvadori, *Ann. Mus. Civ. Genova* (2) **5** : 514 (Muleyit Mt., Tenasserim).

1973. *Turdus feai* (Salvadori), Ali and Ripley, Vol. **9** : 125.

Common name : Fea's Thrush.

Diagnostic characters : Size that of the Myna (length 230 mm). In male crown, back, wings and tail russet brown; supercilium white; lores black; a white spot under eye; throat, sides of head and upper breast grey more or less suffused with rusty hue; abdomen and vent white; under tail-coverts with broad grey-brown margins. In female, similar to male except chin and throat white speckled with brown. The grey colouration of male replaced by fulvous grey.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya.

Elsewhere : Myanmar and China.

1762. ***Turdus obscurus*** Gmelin

1789. *Turdus obscurus* Gmelin, *Syst. Nat.* **1** : 816 (Siberia = Lake Baikal).

1973. *Turdus obscurus* Gmelin, Ali and Ripley, Vol. **9** : 126.

Common name : Dark Thrush.

Diagnostic characters : Size, that of the Myna (length 230 mm). In male, back olive brown; sides of head and nape grey; lores black; supercilium white; a white spot under eye; chin white; throat slaty grey; breast and flanks pale fulvous brown; belly white; under tail-coverts white, edged with brown at base. Female similar, but throat white streaked with brown; ear-coverts streaked with white.

Distribution : India : Nagaland, Andaman Islands, Arunachal Pradesh, Assam, Karnataka, Manipur, Meghalaya, Mizoram and Sikkim.

1763. ***Turdus ruficollis atrogularis*** Jarocki

1819. *Turdus atrogularis* Jarocki, *Ptakow Krol. Warszawa* : 14 (Poland).

1973. *Turdus ruficollis atrogularis* Jarocki, Ali and Ripley, Vol. **9** : 127.

Common name : Blackthroated Thrush.

Diagnostic characters : Size that of the Myna (length 250 mm). In male, upperparts greybrown, spotted with blackish on crown and nape; lores, sides of neck and supercilium black; throat and breast black (whitish fringes in winter); rest white. In female, upperparts brown, throat streaked with dark brown and whitish; breast band blackish, with whitish fringes to the feathers; rest white; belly streaked with brown.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal and Pakistan. Breads in Eastern Russia and eastward through the Siberian taiga to the yenisey.

1764. ***Turdus ruficollis ruficollis*** Pallas

1776. *Turdus ruficollis* Pallas, *Reise Russ Reichs*, **3** : 694 (Dauria)

1973. *Turdus ruficollis ruficollis* Pallas, Ali and Ripley, Vol. **9** : 129.

Common name : Redthroated Thrush.

Diagnostic characters : Size that of the Myna (length 250 mm). Male like the preceding bird, *T. ruficollis atrogularis* but black of the throat and supercilium replaced by chestnut (the feathers with whitish fringes in winter); tail rufous except central rectrices. Female variable; mostly like male

but the chestnut paler, mottled with white and spotted with black; a moustachial line of dark brown spots.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and Sikkim.

Elswehere : Bangladesh, Bhutan, Nepal, Myanmar, China and Tibet. Breeds in Siberia.

Family PARIDAE

Genus *Melanochlora* Lesson, 1839

1789. *Melanochlora sultanea sultanea* (Hodgson)

1837. *Parus sultaneus* Hodgson, *Ind. Rev.*, 2(i) : 31 (Central and northern regions of the Hills, Nepal).

1973. *Melanochlora sultanea sultanea* (Hodgson), Ali and Ripley, Vol. 9 : 162.

Common name : Sultan Tit.

Material examined : Naga Hills–1♂ (x)

Diagnostic characters : Size that of the Bulbul (length 200 mm). In male head, back, wings and tail black with a metallic greenish cast; forehead, crown and long crest bright yellow; chin and throat black; breast, abdomen and vent bright yellow. In female–back, wings and tail blackish olive; throat yellowish olive.

Measurements : 1♂ wing 108; tail 92; bill-x

Distribution : India : Nagaland; Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan and Nepal.

Genus *Parus* Linnaeus, 1758

1793. *Parus major nipalensis* Hodgson

1837. *Parus nipalensis* Hodgson, *Ind. Rev.*, 2(1) : 31 (Nepal).

1973. *Parus major nipalensis* Hodgson, Ali and Ripley, Vol. 9 : 68.

Common name : Nepal Grey Tit.

Diagnostic characters : Size that of the Sparrow (length 130 mm). Back grey; crown black; cheeks white; a white patch on nape; wings dark brown; tertials edged with pale ashy; a white wing bar; tail blackish with white outer rectrices; throat black continued in a broad black band running down the middle of underparts.

Distribution : India : Nagaland, Assam, Bihar, Manipur, Meghalaya, Punjab, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Nepal, Pakistan and Myanmar.

1799. *Parus monticolus monticolus* Vigors.

1831. *Parus monticolus* Vigors, *Proc. zool. Soc. Lond.* : 22 (Himalayan Mountains = Simla).

1973. *Parus monticolus monticolus* Vigors, Ali and Ripley, Vol. 9 : 174.

Common name : Greenbacked Tit.

Material examined : Samagooting —1♀ (x)

Diagnostic characters : Size that of the sparrow (length 130 mm). Back yellowish olive; nuchal patched with white; rump green; wings bluish with two white wing bars; tail blueish with white tips on outer rectrices; crown and sides of neck black; cheeks white; throat black and broad black band running down the middle of yellow belly. Sexes alike.

Measurements : 1 ♀ wing 64; tail 53; bill-11

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Punjab, Uttar Pradesh and West Bengal.

Elsewhere : Bhutan, Nepal, Pakistan, China, Japan, Taiwan and Vietnam.

1806a. *Parus rubidiventris saramatii* Ripley

1961. *Parus rubidiventris saramatii* Ripley, *J. Bombay nat. Hist. Soc.*, 58 : 282 (Mount Saramati, Naga Hills).

1973. *Parus rubidiventris saramatii* Ripley, Ali and Ripley, Vol. 9 : 184.

Common name : Nagaland Black Tit.

Diagnostic characters : Size smaller than the sparrow (length 120 mm). Head, throat and crest black; back buffy olive; cheeks and nuchal patch

white; underparts deep olive-grey washed with drab, more particularly on centre of belly and under tail-coverts. Sexes alike.

Distribution : India : Nagaland at 3200 m.

1812a. ***Parus spilonotus subviridis*** Blyth

1855. *Parus subviridis* Blyth (ex Tickell MS.) *J. Asiat. Soc. Beng.*, **24** : 267 (Tenasserim).

1973. *Parus spilonotus subviridis* Blyth, Ali and Ripley, Vol. **9** : 191.

Common name : Burmese Blackspotted Yellow Tit.

Diagnostic characters : Size that of the sparrow (length 140 mm). Back olive-green streaked with black; crest black; forehead and lores yellow; supercilium long, yellow meeting with yellow nape-patch; lower plumage bright yellow with a broad black median band from Chin to Vent. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Myanmar, China, Thailand and Vietnam.

Genus ***Sylviparus*** Burton, 1836

1814. ***Sylviparus modestus modestus*** Burton

1836 (1835) *Sylviparus modestus* Burton, *Proc. zool. Soc. Lond.*, : 154 (apud Montes Himalayensis = Nepal vide Baker, 1920, Handlist : 8)

1973. *Sylviparus modestus modestus* Burton, Ali and Ripley, Vol. **9** : 193.

Common name : Eastern Yellowbrowed Tit.

Diagnostic characters : Smaller than the Sparrow (length 90 mm). Upper plumage olive-green with a pale eye-ring; a short crest; supercilium short, yellow; lower plumage olive buff. Sexes alke.

Distribution : India : Nagaland, Arunachal Pradesh, Manipur, Mizoram, Sikkim and Tripura.

Elsewhere : Bhutan, Nepal, Myanmar, Tibet Szechuan, Yunnan, Vietnam and Fukein.

Genus ***Aegithalos*** Hermann, 1804

1820. ***Aegithalos concinnus manipurensis*** (Hume)

1888. *AE (githaliscus) mnipurensis* Hume, *Srt. Feath.* **11** : 254 (Eastern Hills, Manipur).

1973. *Aegithalos concinnus manipurensis* (Hume), Ali and Ripley, Vol. **9** : 202.

Common name : Manipur Redheaded Tit.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Back slaty grey; wings brown with a darker shoulder-patch; tail brown, edged and tipped with white; crown chestnut; supercilium mixed with black and white; a black band through eye and ear-coverts chin and sides of throat white; centre of throat black; rest rusty buff. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Myanmar.

Family SITTIDAE

Genus ***Sitta*** Linnaeus, 1758

1826. ***Sitta europaea nagaensis*** Godwin-Austen

1874. *Sitta europaea nagaensis* Godwin-Austen, *Proc. zool. Soc. Lond.*, : 44 (Naga Hills).

1973. *Sita europea nagaensis* Gowdin-Austen, Ali and Ripley, Vol. **9** : 211.

Common name : Naga Nuthatch.

Diagnostic characters : Size smaller than the sparrow (length 120 mm). In male-crown, back and wings bluish slaty; a black band from lores through eyes to nape; tail blackish with white subterminal spots; chin, throat, breast and sides of head pure ashy; flanks chestnut. Female similar to male but paler below.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya.

Elsewhere : Myanmar.

1829. ***Sitta castanea koelzi*** Vaurie

1950. *Siltta europaea* Vaurie, *Amer. Mus. Novit.*, No. 1472 : 5 (Patkai Hills; Assam-Burma border).

1973. *Sitta castanea koelzi* Vaurie, Ali and Ripley, Vol. 9 : 215.

Common name : Naga Chestnutbellied Nuthatch.

Diagnostic characters : Size smaller than the sparrow (length 120 mm). In male, back bluish slaty; a black band from lores through eye to upper back; a malar patch white; chin white; rest dark chestnut-brown; under tail-coverts white and chestnut. Female similar to male but underparts rich cinnamon.

Distribution : India : Nagaland, Arunachal Pradesh and Assam.

1835. *Sitta himalayensis australis* Koelz

1951. *Sitta himalayensis australis* Koelz, *J. zool. Soc. India* 3 : 29 (Tekhubama, Naga Hills, Assam).

1973. *Sitta himalayensis australis* Koelz, Ali and Ripley, Vol. 9 : 221.

Common name : Assam Whitetailed Nuthatch.

Diagnostic characters : Size smaller than the sparrow (length 120 mm). Entire back bluish state; a black eye stripe from lores to nape; tail black with a prominent white patch at base; chin and throat white; breast ochraceous, rest deep rufous. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Mizoram.

Elsewhere : Myanmar.

1837. *Sitta formosae* Blyth.

1843. *Sitta formosae* Blyth, *J. Asiat. Soc. Beng.*, 12 : 938 (Darjeeling).

1973. *Sitta formosae* Blyth, Ali and Ripley, Vol. 9 : 223.

Common name : Beautiful Nuthatch.

Diagnostic characters : Size that of the Sparrow (length 150 mm). Crown and upper back black with brilliant blue and lilac streaks; wings black and blue with two white wing bars; scapulars and rump pale blue; tail blue with black shaft lines; sides of head buffish white; ear-coverts black; chin and upper breast creamy white; rest rufous. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim and West Bengal.

Elsewhere : Bangladesh. Extends east to northern Vietnam.

1938. *Sitta frontalis frontalis* Swainson

1820. *Sitta frontalis* Swainson, *Zool.* III (i), pl. 2 (Ceylon).

1973. *Sitta frontalis frontalis* Swainson, Ali and Ripley, Vol. 9 : 224.

Common name : Velvetfronted Nuthatch.

Diagnostic characters : Size smaller than the sparrow (length 100 mm). In male back purplish blue; forehead velvety black; orbital skin orange-yellow, bill coral red; supercilium black; tail black with greyish terminal band; chin and throat white grading to brownish tinged with lavender on belly. Female similar to male but without black supercilium.

Distribution : India : Nagaland, throughout India except Bihar, Jammu & Kashmir, Gujarat, Himachal Pradesh, Haryana, Punjab and Rajasthan.

Elsewhere : Bangladesh, Bhutan, Hainan, Indochinese countries and Indonesia, Sri Lanka and Myanmar.

Family CERTHIIDAE

Genus *Certhia* Linnaeus, 1758

1843. *Certhia familiaris mandellii* Brooks

1874. *Certhia Mandellii* Brooks, *J. Asiat. Soc. Beng.*, 42 : 256 (Sikkim).

1973. *Certhia familiaris mandellii* Brooks. Ali and Ripley, Vol. 9 : 233.

Common name : Mandelli's Tree creeper.

Diagnostic characters : Size smaller than the sparrow (length 120 mm). Back, crown and wings rufous brown spotted with whitish; supercilium white; a short wing bar and an oblique buff band across wing; tail brown and unbarred; flanks and vent rufous; rest white. Sexes alike.

Distribution : India : Nagaland, Arunachal

Pradesh, Assam, Himachal Pradesh, Meghalaya, Sikkim and Uttar Pradesh.

Elsewhere : Bhutan and Nepal.

1850. *Certhia discolor manipurensis* Hume

1881. *Certhia manipurensis* Hume, *Str. Feath.*, **10** : 151 (Eastern Hills, Manipur).

1973. *Centhia discolor manipurensis* Hume, Ali and Ripley, Vol. **9** : 239.

Common name : Manipur Tree Creeper.

Diagnostic characters : Size smaller than the sparrow (length 120 mm). Upper parts dark brown streaked with fulvous; supercilium fulvous; a short wing bar and an oblique buff band across wing; rump ferreginosus; tail rufous brown; chin, throat and upper breast reddish fulvous; belly and flanks tinged with fulvous. Sexes alike.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Myanmar.

Family MOTACILLIDAE

Genus *Anthus* Bechstein, 1805

1852. *Anthus hodgsoni hodgsoni* Richmond

1907. *Anthus trivialis hodgsoni* Richmond, in Blackwelder, Res. in China, (2) : 493, new name for *Anthus maculatus* Jerdon, 1864, *Bds. India* **3** : 873 [Type locality from 1863, *ibid.* **2** : 228 (Calcutta)] nec *Anthus maculatus* Vieillot.

1973. *Anthus hodgsoni hodgsoni* Richmond, Ali and Riply, Vol. **9** : 243.

Common name : Indian Tree Pipit.

Diagonostic characters : Size that of the sparrow (length 150 mm). Crown and back greenish brown streaked with darker brown; supercilium, wing bars (two) and outer rectrices whitish; lowerparts buffish white, boldly streaked with dark brown on breast and flanks. Sexes alike.

Distribution : India : Nagaland, throughout India except Kashmir and Rajasthan.

Elsewhere : Bangladesh, Bhutan, Myanmar, China, Indochinese countries, Japan, Korea, Malayasia and Philippines.

1859. *Anthus novaeseelandiae rufulus* Vieillot.

1818. *Anthus rufulus* Vieillot, *Nouv. Dict. d'Hist. Nat.* **26** : 494 (Bengal).

1973. *Anthus novaeseelandiae rufulus* Vieillot, Ali and Ripley, Vol. **9** : 253.

Common name : Indian Paddyfield Pipit.

Diagnostic characters : Size that of the Sparrow (length 150 mm). Upper plumage dark brown with fulvous streaks; wings provided with a wing-bar; tail longish, outermost feathers white; a fulvous streaked distinct supercilium; lower plumage buff streaked with brown on breast. Sexes alike.

Distribution : India : Nagaland, all India except Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Kerala, Punjab, Rajasthan, Uttar Pradesh and West Bengal.

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

1865. *Anthus roseatus* Blyth.

1847. *Anthus roseatus* Blyth, *J. Asiat. Soc. Beng.*, **16** : 437 (Nepal).

1973. *Anthus roseatus* Blyth, Ali and Ripley, Vol. **9** : 261.

Common name : Vinaceousbreasted Pipit.

Diagnostic characters : Size that of the sparrow (length 150 mm). In summer, crown and back grey with dark brown streaks; supercilium buff; wings brown with greenish edges and two pale bars; tail brown with whitish outer edges; throat and breast pale pink, faintly streaked on breast; rest buffish, streaked on flanks with dark brown. Sexes alike. In autumn, crown and back olive-brown instead of grey; supercilium tinted yellow; throat lighter pink; breast heavily streaked.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Nepal, Bhutan, Pakistan, China and Indochinese countries.

Genus *Motacilla* Linnaeus, 1758

1874. *Motacilla indica* Gmelin

1789. *Motacilla indica* Gmelin, *Syst. Nat.*, 1 : 962 (India ex Sonnerat, restricted to Malabar by Ripley, 1961, Synopsis : 574).

1973. *Motacilla indica* Gmelin, Ali and Ripley, Vol. 9 : 273.

Common name : Forest Wagtail.

Diagnostic characters : Size larger than the sparrow (length 170 mm). Back olive-brown; tail blackish with the outer feathers white; wings blackish with two yellowish bands across coverts; supercilium and eye-ring pale; pale yellowish white below; blackish collar across lower throat; a second interrupted band on breast. Sexes alike.

Distribution : India : Nagaland, Andaman Islands, Andhra Pradesh, Bihar, Goa, Gujarat, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Madhya Pradesh, Meghalaya, Orissa, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Combodia, Java, Malay Penninsula, Sumatra, Thailand and Vietnam.

1884. *Motacilla caspica caspica* (Gmelin)

1774. *Parus Caspicus* Gmelin, *Reise d. Russ.* 3, pl. 20, fig. 2 : 104 (southern shore of Caspian Sea).

1973. *Motacilla caspica caspica* (Gmelin), Ali and Ripley, Vol. 9 : 285.

Common name : Grey Wagtail.

Diagnostic characters : Size that of the sparrow with long tail (length 170 mm). Male (summer) - Head and back grey, rump greenish yellow; supercilium white; wings blackish with white edges to tertials showing as a prominent V on back at rest; tail blackish with white outer edges; throat black; malar stripes white; rest bright yellow. In winter–throat buffish; underparts paler yellow except brighter vent and white V on back indistinct. Female (summer) with buff throat mottled with black and paler yellow underparts. Sexes indistinguishable in winter.

Distribution : India : Nagaland, throughout India except Rajasthan and Gujarat.

Elsewhere : Bangladesh, Bhutan, Pakistan and Sri Lanka. Breeds in Kamchatka, Japan, Kansu and Szechuan, British Isles and Morocco. Winters in the Mediterranean region, Africa south to Congo and Kenya, the middle East, Turkestan, southern China, Taiwan, the Indochinese countries, Indonesia including West Iran and the Philippines.

1887. *Motacilla alba alboides* Hodgson

1836. *(Motacilla) Alboides* Hodgson, *Asiat. Res.*, 19 : 191 (Nepal).

1973. *Motacilla alba alboides* Hodgson, Ali and Ripley, Vol. 9 : 292.

Common name : Hodgson's Pied Wagtail.

Diagnostic characters : Size that of the Bulbul (length 180 mm). Forehead white; crown, nape, ear-coverts, all round neck, back and rump black; wings black with large white patches on coverts and tertials; tail black with white outer reactrices; chin, throat and breast black; rest white. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Bihar, Kashmir, Ladakh, Manipur, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Pakistan and Nepal. Breeds in Tibet, Szechuan, Yunnan, Vietnam. Winters south to Tenasserim, Thailand and Combodia.

1888. *Motacilla alba leucopsis* Gould

1838. *Motacilla leucopsis* Gould, *Proc. zool. Soc. Lond.*, 78 (India)

1973. *Motacilla alba leucopsis* Gould, Ali and Ripley, Vol. 9 : 293.

Common name : Whitefaced Pied Wagtail.

Diagnostic characters : Size that of the Bulbul (length 180 mm). Entire back and rump black; forehead and round eyes white; crown and nape black; ear-coverts and neck white; wings black with large white patches on coverts and tertials; tail black with white outer rectries; chin throat and breast black; rest white. Sexes almost alike.

Distribution : India : Nagaland, Andaman Islands, Assam, Bihar, Himachal Pradesh, Manipur, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh and Nepal. Breeds in China, Korea and Amurland. Winters in southern China and Indochinese countries.

1889. ***Motacilla alba ocularis*** Swinhoe

1860. *Motacilla ocularis* Swinhoe, *Ibis* : 55 (Amoy, China).

1973. *Motacilla alba ocularis* Swinhoe, Ali and Ripley, Vol. **9** : 294.

Common name : Streaked Pied Wagtail.

Diagnostic characters : Size that of the Bulbul (length 180 mm). Male in winter, entire back and rump ashy grey; wings blackish, coverts and tertials broadly white margined; tail blackish with white outer rectrices; forehead and face white; a black streak through eye to nape; breast marked with a crescent-shaped black patch; sides of breast and flanks ashy. Sexes almost alike. In winter neck and throat also black.

Distribution : India : Nagaland, Uncommon winter visitor to Assam and Manipur.

Elsewhere : Bangladesh and Central Nepal (rare). Breeds in Siberia. Winters in southeastern Asia.

Family DICAEIDAE

Genus ***Dicaeum*** Cuvier, 1817

1892, 1894. ***Dicaeum agile agile*** (Tickell)

1833. *Fringilla Agilis* Tickell, *J. Asiat. Soc. Bengal*, **2** : 578 (Borabhum and Dholbhum).

1974. *Dicaeum agile agile* (Tickell), Ali and Ripley, Vol. **10** : 2.

Common name : Indian Thickbilled Flowerpecker.

Diagnostic characters : Size smaller than the Sparrow (length 90 mm). Upper plumage olive-grey; rump green; tail banded with white; lower plumage greyish white; breast streaked with brown; eyes orange-red; bill short, horny grey coloured. Sexes alike.

Distribution : India : Nagaland, throughout the Indian mainland except Punjab and Rajasthan.

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

1895. ***Dicaeum chrysorrheum chrysochlore*** Blyth

1843. *Dicaeum chrysochlore* Blyth, *J. Asiat Soc. Bengal* **12** : 1009 (Arracan).

1974. *Dicaeum chrysorrheum chrysochlore* Blyth, Ali and Ripley, Vol. **10** : 5.

Common name : Yellowvented Flowerpecker.

Diagnostic characters : Size smaller than the sparrow (length 90 mm). Upper plumage olive-green; wings and tail dark brown; moustachial streak black; lower plumage buffish white streaked with dark brown; under tail-coverts bright yellow. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Tripura and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar, Indochinese countries, Thailand and Vietnam.

1896. ***Dicaeum melanoxanthum*** Blyth

1843. *P. (achyglossa) melanozantha* 'Hodgson' = Blyth *J. Asiat. Soc. Bengal*, **12** : 1010 (Nepal)

1974. *Dicaeum melanoxanthum* (Blyth), Ali and Ripley, Vol. **10** : 6.

Common name : Yellowbellied Flowerpecker.

Diagnostic characters : Size smaller than the Sparrow (length 120 mm). In male, upper plumage slaty black; tail spotted with white; sides of head, neck and breast slaty black; a white band chin down centre of throat and breast; rest bright yellow. Female like male but black replaced by olive-brown; sides of head, neck and breast paler coloured; central band greyish white; belly and vent yellow.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Sikkim and Uttar Pradesh.

Elsewhere : Bhutan, Nepal, Yunnan (North), Myanmar, Thailand (North) and Vietnam (East and North).

1901. *Dicaeum concolor olivaceum* Walden

1875. *Dicaeum olivaceum* Walden, *Ann. Mag. Nat. Hist.* **15** : 401 (Tounghoo)

1974. *Dicaeum concolor olivaceum* Walden, Ali and Ripley, Vol. **10** : 13.

Common name : Plaincoloured Flowerpecker.

Diagnostic characters : Size smaller than the Sparrow (length 80 mm). Upper plumage olive-green; lower plumage greyish buff. Sexes alike.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bhutan, Nepal, Bangladesh, Myanmar, Indochinese countries, southern China to Kwangtung.

1904. *Dicaeum cruentatum cruentatum* (Linnaeus)

1758. *Certhice cruentata* Linnaeus, *Syst, Nat.*, ed. 10, **1** : 119 (Benghala)

1974. *Dicaeum cruentatum cruentatum* (Linnaeus), Ali and Ripley, Vol. **10** : 15.

Common name : Scarletbacked Flowerpacker.

Diagnostic characters : Size smaller than the Sparrow (length 70 mm). In male crown to rump crimson; sides of head black; wings and tail glossy blue-black; centre of throat, breast and belly pale buff; sides of throat and breast black; flanks grey. In female, upper plumage olive; upper tail-coverts crimson; tail black; wings dark brown; rest buff with grey sides.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Tripura, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Indochinese countries and southern China to Fukien.

1905. *Dicaeum ignipectus ignipectus* (Blyth)

1843. *M. (yzanthe) ignipectus* 'Hodgson' = Blyth, *J. Asiat. Soc. Bengal* **12** : 983 (Nepal and Bootan)

1974. *Dicaeus ignipectus ignipectus* (Blyth), Ali and Ripley. Vol. **10** : 17.

Common name : Firebreasted Flowerpecker.

Material examined : Khezhabama–1 ♂ (24 Jan. 1936)

Diagnostic characters : Size smaller than the Sparrow (length 70 mm). In male, entire upper plumage greenish black; lower plumage rich buff; breast with a scarlet patch and a black patch below it on centre of belly; flanks olive. In female, upper plumage olive-green; rump yellow; lower plumage pale buff washed olive on sides.

Measurements :

	Wing	Tail	Bill
1 ♂	49	29	9

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Sikkim and Uttar Pradesh.

Elsewhere : Bhutan, Myanmar, Nepal, China, Fukien, Hupch and Indochinese countries.

Family NECTARINIDAE

Genus *Anthreptes* Swainson, 1837

1906. *Anthreptes singalensis rubinigentis* (Baker)

1930. *Chalcoparia singalensis rubinigentis* Baker (23 April, or more probably 14 March) [cf. Biswas *JBNHS* 60 : 684], *Fauna Br. India Bds.* **7** : 282, new name for *Chalcopadia singalensis lepida* (Latham), cited in Baker, 1926, *FBI* **3** : 370 (India, restricted to Cachar), nec. *Certhia lepida* Latham, 1790, nor *Certhice lepida* Sparrman, 1787 = *Certhia malacensis* Scopoli, 1786.

1974. *Anthreptes singalensis rubinigentis* (Baker), Ali and Ripley, Vol. **10** : 19.

Common name : Rudycheek.

Diagnostic characters : Size smaller than the House Sparrow (length 100 mm). In male, upper plumage glossy green; ear-coverts copper

coloured, bordered below by a glossy velvet-purple line; throat and breast ferruginosus; rest of lower plumage lemon-yellow. In female, upper plumage olive-green; yellowish on wing; lower plumage like male.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Thailand.

Genus ***Aethopyga*** Cabanis, 1851

1920. ***Aethopyga gouldiae isolata*** Baker

1925. *Aethopyga gouldiae isolata* Baker, *Bull. Br. Orn.* cl. **46** : 13 (Manipur)

1974. *Aethopyga gouldiae isolata* Baker, Ali and Ripley, Vol. **10** : 40.

Common name : Manipur Yellowbacked Sunbird.

Diagnostic characters : Size smaller than the Sparrow (length female 100 mm; male 150 mm including long tail). In male crown, ear-coverts and a patch on sides of neck glossy purple blue; sides of head, neck, supercilium, nape and back crimson; rump yellow; upper tail coverts and upper surface of tail metallic purple-blue; tail graduated, outer rectrices brown tipped with buffish, central tail-feathers elongated; throat metallic purple-blue; breast yellow streaked with scarlet; vent olive. In female, head and nape grey; rest of upperparts olive, yellowish on rump; throat pale grey; rest of under parts yellow.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Bangladesh.

1921. ***Aethopyga gouldiae dabryii*** (Verreaux)

1867. *Nectarinia Dabryii* Verreaux, *Rev. Mag. Zool.* **19** : 173, pl. 15 (Tu-tsien-leou, Setchuan O.)

1974. *Aethopyga gouldiae dabryii* (Verreaux), Ali and Ripley, Vol. **10** : 41.

Common name : Dabry's Sunbird.

Diagnostic characters : Size smaller than the Sparrow (length female 100mm and male 150 mm including long tail). It differs from the preeceding bird *A. g. isolata* in having a scarlet breast instead of yellow. Metallic colour of crown and throat more lilac on purple than blue. Otherwise similar.

Distribution : India : Nagaland, Manipur.

1924. ***Aethopyga nipalensis Koelzi*** Ripley

1948. *Aethopyga nipalensis koelzi* Ripley, *Proc. Biol. Soc.* Washington **61** : 106 (Dening-Dreyi, Mishmi Hills, NE. Assam)

1974. *Aethopyga nipalensis koelzi* Ripley, Ali and Ripley Vol. **10** : 44.

Common name : Eastern Yellowbacked Sunbird.

Diagnostic characters : Size smaller than the Sparrow (length female 100 mm and male 150 mm including long tail). In male, crown and nape metallic blue-green; sides of neck and upper back maroon; middle back and wings olive-green; rump bright yellow; tail metallic blue-green; cheeks black; throat metallic blue-green; rest bright yellow. In female, entire plumage olive-green; tail short, outer rectrices tipped with white.

Distribution : India : Nagaland, Arunachal Pradesh, Manipur, Meghalaya.

Elsewhere : Bangladesh, Bhutan, Yunnan (northwestern) and Vietnam (northern).

1926. ***Aethopyga saturata assamensis*** (McClelland)

1839. *Cinnyris Assamensis* McClelland, *Proc. zool. Soc.* London : 167 (Assam, restricted to neighbourhood of Sadiya by Deignan, 1948, *J. Washington Acad. Sci* **38** : 22).

1974. *Aethopyga saturata assamensis* (McClelland), Ali and Ripley, Vol. **10** : 46.

Common name : Assam Blackbreasted Sunbird.

Diagnostic characters : Size smaller than the smaller (length female 100 mm and male 150 mm with elongated tail). In male, back and sides of neck maroon; crown and nape metallic purple; wings blackish; rump. band narrow and yellow;

tail-coverts and tail metallic purple; throat and breast dull blackish; malar streak broad and metallic purple; rest greyish olive. In female, entire plumage grey-green; rump faint yellow; under tail-coverts tipped with whitish.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Myanmar and China.

1928. ***Aethopyga siparaja labecula*** (Horsfield)

1839 (1840), *Cinnyris labecula* Horsfield, *Proc. zool. Soc.* London : 167 (Assam)

1974. *Aethopyga siparaja labecula* (Horsfield), Ali and Ripley, Vol. **10** : 49.

Common name : Assam yellowbacked Sunbird.

Diagnostic characters : Size smaller than the sparrow (length female 100 mm and male 150 mm including long pointed tail). In male, crown metallic green; back and sides of neck dark crimson; rump bright yellow; tail metallic green; chin and throat scarlet with metallic purple malar streaks; abdomen yellowish-olive. Female entirely olive, yellowish below.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya.

Elsewhere : Bangladesh and Bhutan.

1930. ***Aethopyga ignicauda ignicauda*** (Hodgson)

1836. *(Cinnyris) ignicauda* Hodgson, *Ind. Rev.* **1** (7) : 273 (Nepal)

1974. *Aethopyga ignicauda ignicauda* (Hodgson), Ali and Ripley, Vol. **10** : 50.

Common name : Firetailed Yellowbacked Sunbird.

Diagnostic characters : Size smaller than the sparrow (length female 100 mm. and male 150 mm including long pointed tail). In male, crown metallic purple; sides of head, nape, back, tail-coverts and tail bright red; rump bright yellow; throat metallic purple; rest yellow, washed with scarlet on breast; bright red elongated pointed tail diagnostic. In female, upper plumage olive; rump and abdomen yellow; tail short.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh and China.

Genus ***Arachnothera*** Temminck, 1826

1932. ***Arachnothera magna magna*** (Hodgson)

1836. *Cinnyris Magna* Hodgson, *Ind. Rev.* **1**(7) : 272 (Nepal).

1974. *Arachnothera magna magna* (Hodgson), Ali and Ripley, Vol. **10** : 54.

Common name : Streaked Spiderhunter.

Material examined : Khezhabama–1 ♂ (24 Jan. 1936).

Diagnostic characters : Size that of the Sparrow (length including long bill 170 mm). Upper plumage yellowish olive streaked with black; tail tipped with buffish spots with a blackish subterminal band; lower plumage yellowish white with bold black streaks. Sexes alike.

Measurements : 1 ♂ : wing-82; tail-44; bill-36

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Yunnan.

Family ZOSTEROPIDAE

Genus ***Zosterops*** Vigors & Horsfield, 1827

1933. ***Zosterops palpebrosa palpebrosa*** (Temminck)

1824. *Sylvia palpebrosa* Temminck, *Pl. Col. d' Ois* 49, pl 293, fig. 3 (Bengale)

1974. *Zosterops palpebrosa palpebrosa* (Temminck), Ali and Ripley, Vol. **10** : 57.

Common name : Indian White-eye.

Diagnostic characters : Size smaller than the Sparrow (length 100 mm). Upper plumage olive-yellow; a distinct eye-ring; lores and a patch under eye blackish; throat and under tail-coverts bright yellow; rest of the plumage greyish white. Sexes alike.

Distribution : India : Nagaland, throughout Indian Union excepting Andhra Pradesh, Kerala and Tamil Nadu.

Elsewhere : Bangladesh, Myanmar, China, Nepal, Pakistan, Indochinese countries and Tibet.

Family PLOCEIDAE

Genus ***Passer*** Brisson, 1760

1938. ***Passer domesticus indicus*** Jardine & Selby

1835. *Passer indicus* Jardine & Selby, *Ill. Orn.* 3, pl. 118 (India, restricted to Bangalore by Kinnear, 1925, *Ibis* : 751.)

1974. *Passer domesticus indicus* Jardine & Selby, Ali and Ripley, Vol. **10** : 63.

Common name : Indian House Sparrow.

Diagnostic characters : Size smaller than the Bulbul (length 150 mm). In male, crown ashy-grey; a broad line above eye chestnut-black; nape and upper back chestnut; rump ashy grey; wings rufous and dark brown with two pale white bars; tail dark brown; chin to upper breast black, remaining underparts white; flanks ashy grey. In female, upper plumage greyish brown streaked with dark brown on the upper back; wings dark rufous-brown and with two white wing bars; underparts ashy white.

Distribution : India : Nagaland, throughout the Indian Union including Andaman Islands excepting Jammu & Kashmir and Sikkim.

Elsewhere : Introduced in South Africa, Comoro and Mascarene Islands.

1944. ***Passer montanus hepaticus*** Ripley

1948. *Passer montanus hepaticus* Ripley *Proc. Biol. Soc. Washington* **61** : 106 (Tezu, Mishmi Hills, NE Assam)

1974. *Passer montanus hepaticus* Ripley, Ali and Ripley, Vol. **10** : 73.

Common name : Mishmi Tree Sparrow.

Diagnostic characters : Size smaller than the Bulbul (length 150 mm). Head purplish brown; back, rump and borders of wing feathers dark rich brown; wing margines rufous; sides of head white with a black patch on ear-coverts; chin and centre of throat black; rest greyish white washed with brown. Sexes alike.

Distribution : India : Nagaland; Arunachal Pradesh, Assam and Manipur.

1947. ***Passer rutilans intensior*** Rothschild

1922. *Passer rutilans intensior* Rothschild, *Bull. Br. Orn. Cl.* **43** : 11 (Mekong Valley)

1974. *Passer rutilans intensior* Rothschild, Ali and Ripley, Vol. **10** : 77.

Common name : Yunnan Cinnamon Tree Sparrow.

Diagnostic characters : Size smaller than the Bulbul (length 150 mm). In male, upperparts rufous-chestnut, streaked with black on back; two white wing-bars, one broad another narrow; chin and centre of throat black, sides of throat pale yellow. In female, upper parts brown, streaked with dark brown on back; supercilium white and double white wing bars; underparts pale yellowish ashy.

Distribution : India : Nagaland, Assam, Manipur, Meghalaya and Mizoram.

Elsewhere : Myanmar, China and Vietnam.

Genus ***Lonchura*** Sykes, 1832

1967. ***Lonchura striata acuticauda*** (Hodgson)

1836. *M. (unia) Acuticauda* Hodgson, *Asiat. Soc. Res.* **19** : 153 (Nepal).

1974. *Lonchura striata acuticuda* (Hodgson), Ali and Ripley, Vol. **10** : 107.

Common name : Whitebacked Munia.

Material examined : Chizami 3♂ (19 Feb. 1935 and 26 Jan. 1936)

Diagnostic characters : Size smaller than the House Sparrow (length 100 mm). Forehead, wings and tail blackish; back brown with fine pale shaft-streaks; rump white; throat and breast blackish; belly greyish white finely streaked with brown. Sexes alike.

Measurements :

	Wing	Tail	Bill
3♂	51-54 (52)	43-44(43.5)	12(3)

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, Bhutan, Nepal, Myanmar and Thailand.

Family FRINGILLIDAE

Genus *Mycerobus* Cabanis, 1847

1986. *Mycerobas melanozanthos* (Hodgson)

1836. *Coc. (cothraustes) Melanozanthos* Hodgson, *Asiat. Res.* 19 : 150 (Nepal).

1974. *Mycerobas melanozanthos* (Hodgson) Ali and Ripley, Vol. 10 : 130.

Common name : Spotted winged Grosbeak.

Diagnostic characters : Size that of the Myna (length 220 mm). In male, upper plumage blackish; wing-patch white; secondaries spotted with white; lower plumage black; abdomen yellow. In female, upper plumage like male, but crown, nape and back streaked with yellow; supercitium yellow; lower plumage yellow boldly streaked with blackish.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Sikkim and Uttar Pradesh.

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

Genus *Carduelis* Brisson, 1760

1992. *Carduelis spinoides heinrichi* Stresemann

1940. *Carduelis spinoides heinrichi* Stresemann *Mitt. Zool. Mus.* Berlin 24 : 153, 170 (Mt. Victoria)

1974. *Carduelis spinoides heinrichi* Stresemann, Ali and Ripley, Vol. 10 : 139.

Common name : Mt. Victoria Green finch.

Diagnostic characters : Size, smaller than the House Sparrow (length 140mm). In male, back blackish brown; rump yellow; wings dark brown with a large yellow patch; inner secondaries edged with white; tail dark brown, basal half of outer rectrices yellow; crown, cheek and malar streak black; forehead, supercilium and sides of neck yellow forming an indistinct collar below the nape; lower plumage entirely yellow. Female like male but duller, more washed with green above.

Distribution : India : Nagaland, Manipur.

Elsewhere : Myanmar.

Genus *Pyrrhula* Brisson,1760

2037. *Pyrrhula nipalensis ricketti* La Touche

1905. *Pyrrhula ricketti* La Touche, *Bull. Br. Orn. cl.* 16 : 21 (Mountains of northwest Fokien, south-east China).

1974. *Pyrrhula nipalensis ricketti*, La Touche, Ali and Ripley, Vol. 10 : 199.

Common name : Chinese Brown Bullfinch.

Diagnostic characters : Size larger than the House Sparrow (length 170 mm). In male back, wing-coverts and sides of neck brown; rump purplish black, lower part with a narrow white band; wings and tail glossy purplish black with a velvety black tips to the feathers, a white spot at tip of primary coverts and a thin crimson streak on innermost tertials; crown scaly and ashy-brown coloured; a dark brown band round base of bill; throat, breast and flanks pale brown; centre of abdomen white. Female similar to male but streak on tertials yellow.

Distribution : India : Nagaland, Arunachal Pradesh, Manipur.

Elsewhere : Tibet, south western Szechuan, northern Myanmar, Chin Hills, Yunnan, Northern Vietnam and Fukien.

Family EMBERIZIDAE

Genus *Emberiza* Linnaeus, 1758

2047. *Emberiza spodocephala sordida* Blyth

1845. *E. (mberiza) sordida 'Hodgson'* = Blyth *J. Asiat. Soc. Bengal* 13 : 958 (Nepal).

1974. *Emberiza spodocephala sordida* Blyth, Ali and Ripley, Vol. **10** : 215.

Common name : Blackfaced Bunting.

Diagnosis characters : Size that of the Sparrow (length 150 mm). In male, head and nape olive grey; back brown with blackish streaks; wing bar whitish and buff; outer rectrices white; base of bill, lores and round eye black; Chin black; throat and breast olive-grey; belly pale yellow. In female, crown rufous brown streaked with dark brown like back; a pale supercilium and ear-coverts; tail as in male; lowerparts pale yealiow with dark moustachial streak; breast and flanks streaked with dark brown.

Distribution : India : Nagaland, Assam, Manipur and Meghalaya.

Elsewhere : Bangladesh, Nepal, China, Yunan, Hupch and Tsinghai

2055a. ***Emberiza fucata fucata*** Pallas

1776. *Emberiza fucata* Pallas, *Reise Russ. Reichs,* **3** : 698 (Onon and Ingoda Rivers)

1974. *Emberiza fucata fucata* Pallas, Ali and Ripley, Vol. **10** : 227.

Common name : Amur Greyheaded Bunting.

Diagnostic characters : Size that of the Sparrow (length 150 mm). In male—crown, head and nape grey streaked with black; upperparts chestnut streaked with rufous-chestnut; outer rectrices white; ear-coverts chestnut; throat and upper breast white with black moustachial stripes; breast provided with a black gorget; lower breast chestnut; flanks rufous chestnut streaked with dark brown; belly with whitish buff. Female, similar to male but paler and duller; crown brown; supercilium short and white.

Distribution : India : Nagaland, Arunachal Pradesh, Assam, Manipur, Meghalaya and West Bengal.

Elsewhere : Bangladesh, Bhutan and Nepal. Breeds in Amurland, Manchuria and Japan. Winters in Southern China and Northern Indochinese Countries.

2056. ***Emberiza pusilla*** Pallas

1776. *Emberiza pusilla* Pallas, *Reise Russ. Reichs,* **3** : 697 (Transbaikalian Alps)

1974. *Emberiza pusilla* Pallas, Ali and Ripley, Vol. **10** : 228.

Common name : Little Bunting.

Diagnostic characters : Size smaller than the House Sparrow (length 140 mm). In male, upperparts rufous brown streaked with blackish; tail blackish, forked and with a rich rufous median band; supercilium pale rufous; a black line behind eye looping round rich rufous ear-coverts; chin, cheeks and sides of throat pale rufous; rest white, streakled with black on breast and flanks. Female similar but duller.

Distribution : India : Nagaland, Andaman Islands, Arunachal Pradesh, Assam, Manipur, Maghalaya, Sikkim and West Bengal.

Elsewhere : Bangladesh, Bhutan, Myanmar, Nepal, Northern Indochinese Countries and Southern China. Breeds in Tundra and Forest Tundra of Eurasia from Finland to the sea of Okhotsk.

Genus ***Melophus*** Swainson, 1837

2060. ***Melophus lathami*** (Gray)

1831, *Emberiza lathami* Gray, *Zool mise.* **1** : 2 (Canton, Kwangtung)

1831, *Melophus lathami* Gray, Ali and Ripley, Vol. **10** : 232.

Common name: Crested Bunting.

Diagnostic characters : Size that of the House Sparrow (length 150 mm). In male-head, mantle and crest glistening black; wings and tail chestnut; underparts glistening black. In female, upper plumage olive-brown, feathers streaked with brown; crest shorter; wings and tail dark brown, edged rufous; lower plumage yellowish buff; breast mottled with dark brown; a black moustachial stripe present.

Distribution : India : Nagaland, Andhra Pradesh, Assam. Bihar, Gujarat, Haryana, Madhya

Phulsero Forest, Nagaland

Montane rainforest in Mokokchung District, Nagaland

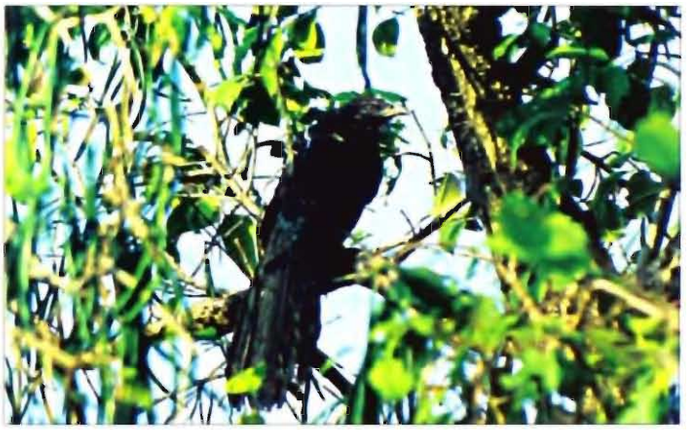
Open bill stork

White backed Vulture

Peregrine Falcon

Common Pea Fowl

Red watled Lapwing



Indian Koel–Male

Indian Koel–Female

Lesser Whistling Teal

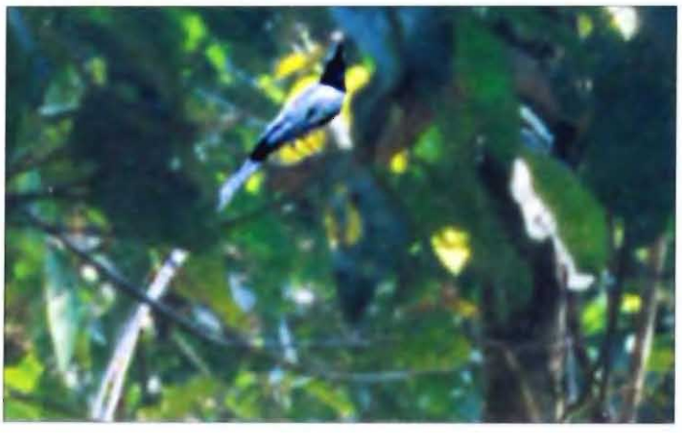
Brahminy Duck

River Tern

White breasted King Fisher

Black-headed oriole

Black Drongo or King Crow



Paradise Fly Catcher

Assam Mag-pie Robin

East Pakistan Crow-Pheasant

Pradesh, Maharashtra, Manipur, Meghalaya, Rajasthan, Sikkim, Uttar Pradesh, Tripura and West Bengal.

Elsewhere : Bangladesh, Pakistan, Nepal and Bhutan.

SUMMARY

A list of 428 species and subspecies of birds found in Nagaland is dealt herewith. It includes 205 genera, 50 families and 16 orders.

The family Musicapidae with 174 species and subspecies forms the largest representative group in the avian fauna of Nagaland.

ACKNOWLEDGEMENTS

The authors are grateful to the Director, Zoological Survey of India for providing facilities to carry out the work. We are thankful to Dr. Ramakrishna, Scientist 'E' of the department for guidance and continuous encouragement. Our sincere thanks are to the Govt. of Nagaland for enriching us with some valuable information. Shri T.P. Bhattacharyya, Asstt. Zoologist and Shri S.S. Saha, Scientist 'C' (Retd.) of this department provided tremendous support during finalization of this work. We are particularly indebted to Shri J.M. Dasgupta, Sr. Zool. Asstt. (Retd.) also from this department as but for his help and suggestion it could have been an uphil tusk.

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Zool. Surv. India
Fauna of Nagaland, State Fauna Series 12 : 579-620, 2006

MAMMALS

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INTRODUCTION

Our recent knowledge of mammalian fauna of India owes largely to the "Mammal Survey of India, Burma and Ceylon", conducted practically all over the present Indian Union, Pakistan, Burma and Sri Lanka under the auspices of the Bombay Natural History Society during the period from 1911 to 1930. Since Nagaland became the part of Indian Union in December 1963, no report on the mammalian fauna of this state is available, except the report of the survey carried out by Mills in 1923 of Assam and Nagahills, when he collected some specimens from Mokokchung and Margherita.

Under the programme of the faunistic survey of Indian States, Zoological Survey of India initiated the project on the mammalian fauna of Nagaland. Scientists from Mammal and Osteology Section conducted four faunistic surveys of the State during October-November, 1996; March-April, 1997; November, 1997; and March-April, 1998.

Out of the total 393 species of mammals known till date from the Indian Union (Wilson and Reeder, 1993 and Carbet and Hill, 1992), 92 species and subspecies are being reported from Nagaland.

Pending a full report, some interesting observations on the mammalian fauna of the State were also published (Mandal *et al.* 2000 and Srivastava *et al.* 2000).

The present paper is based on the collection of mammals brought by recent surveys of different parts of Nagaland as also on the specimens already present in the National Zoological Collection of India and on the published literature.

All measurements are in millimeters and have been taken after Khajuria (1953) for Chiroptera and Ellerman (1961) for Rodentia. The figure in parenthesis followed by range of measurements indicate arithmatic means (for more than two specimens). The whole number in parenthesis placed before the range of a measurements indicates the number of specimens available for the particular measurements.

Following is a list of abbreviations used for various measurements :

apf = length of anterior palatal formina;
b = length of bulla;
c^1-c^1 = distance between outer surfaces of upper canines;
cb = condylobasal length;
cr = cranial rostrum;
cw = cranial width;
d = length of diastema;
E = length of ear;
Fa = length of forearm;
F & Cl = length of foot & claw;
H & B = length of head & body;
Hf = length of hindfoot;

iw = least interorbital width;
l = greatest length of skull;
ml = mandibular length;
mtr = length of maxillary tooth-row;
n = nasal length;
on = occipitonasal length;
pl = palatal length;
Tb = length of tibia;
Tl = length of tail;
Tr = length of tragus;
zw = zygomatic width.

SYSTEMATIC LIST

Order SCANDENTIA

Family TUPAIIDAE

1. *Tupia belangeri assamensis* Wroughton

Order INSECTIVORA

Family TALPIDAE

2. *Talpa micrura* Hodgson
3. *Talpa leucura* Blyth

Family SORICIDAE

4. *Suncus murinus griffithi* (Horsfield)
5. *Suncus murinus soccatus* (Hodgson)
6. *Crocidura attenuata rubricosa* Anderson
7. *Chimmarogale platycephala himalayica* (Gray)

Order CHIROPTERA

Suborder MEGACHIROPTERA

Family PTEROPODIDAE

8. *Rousettus leschenaulti leschenaulti* (Desmarest)
9. *Pteropus giganteus giganteus* (Brünnich)
10. *Cynopterus sphinx sphinx* (Vahl)
11. *Megaerops niphanae* Yenbutra & Felten

Suborder MICROCHIROPTERA

Family EMBALLONURIDAE

12. *Taphozous longimanus longimanus* Hardwicke

Family MEGADERMATIDAE

13. *Megaderma lyra lyra* E. Geoffroy

Family RHINOLOPHIDAE

Subfamily RHINOLOPHINAE

14. *Rhinolophus lepidus lepidus* Blyth
15. *Rhinolophus luctus perniger* Hodgson
16. *Rhinolophus ferrumequinum tragatus* Hodgson

Subfamily HIPPOSIDERINAE

17. *Hipposideros pomona gentilis* Anderson
18. *Hipposideros cineraceus* Blyth

Family VESPERTILIONIDAE

19. *Pipistrellus coromandra coromandra* Gray
20. *Pipistrellus mimus mimus* Wroughton
21. *Scotozous dormeri* Dobson
22. *Scotophilus kuhli kuhli* Leach
23. *Scotophilus heathi heathi* (Horsfield)
24. *Nyctalus noctula labiatus* (Hodgson)
25. *Kerivoula hardwickei depressa* Miller

Order PRIMATES

Family LORISIDAE

26. *Nycticebus coucang bengalensis* (Lacepéde)

Family CERCOPITHECIDAE

27. *Macaca mulatta mulatta* (Zimmermann)
28. *Macaca assamensis assamensis* (M'Clelland)
29. *Macaca arctoides* (I. Geoffroy)
30. *Presbytis pileatus pileatus* (Blyth)
31. *Presbytis pileatus durga* Wroughton

Family HYLOBATIDAE

32. *Hylobates hoolock* (Harlan)

Order PHOLIDOTA

Family MANIDAE

33. *Manis pentadactyla aurita* Hodgson

Order CARNIVORA

Family CANIDAE

34. *Canis aureus indicus* Hodgson
35. *Vulpes bengalensis* (Shaw)

36. *Cuon alpinus* (Pallas)

Family FELIDAE

37. *Felis chaus* Güldenstaedt
38. *Felis bengalensis bengalensis* Kerr
39. *Felis marmorata* Martin
40. *Panthera pardus fuscus* (Meyer)
41. *Panthera tigris tigris* (Linnaeus)

Family HERPESTIDAE

42. *Herpestes auropunctatus* (Hodgson)
43. *Herpestes urva* (Hodgson)

Family MUSTELIDAE

44. *Martes flavigula flavigula* (Boddaert)
45. *Mustela kathiah* Hodgson
46. *Melogale moschata millsi* (Thomas)
47. *Arctonyx collaris collaris* F. Cuvier
48. *Lutra perspicillata perspicillata* I. Geoffroy
49. *Aonyx cinerea concolor* (Rafinesque)

Family URSIDAE

50. *Selenarctos thibetanus* (G. Cuvier)

Family VIVERRIDAE

51. *Viverra zibetha zibetha* Linnaeus
52. *Viverricula indica indica* (Desmarest)
53. *Paradoxurus hermaphroditus* (Pallas)
54. *Arctogalidia trivirgata millsi* Wroughton
55. *Paguma larvata neglecta* Pocock

Order PROBOSCIDEA

Family ELEPHANTIDAE

56. *Elephas maximus indicus* G. Cuvier

Order ARTIODACTYLA

Family SUIDAE

57. *Sus scrofa cristatus* Wagner

Family CERVIDAE

58. *Muntiacus muntjak vaginalis* (Boddaert)

Family BOVIDAE

59. *Capricornis sumatraensis* (Bechstein)
60. *Bos gaurus* H. Smith

Order LAGOMORPHA

Family LEPORIDAE

61. *Lepus nigricollis* Cuvier

Order RODENTIA

Family SCIURIDAE

62. *Belomys pearsoni* (Gray)
63. *Petaurista alborufus candidulus* Wroughton
64. *Petaurista petaurista albiventer* (Gray)
65. *Petaurista petaurista yunanensis* Anderson
66. *Hylopetes alboniger alboniger* (Hodgson)
67. *Callosciürus erythraeus erythrogaster* (Blyth)
68. *Callosciurus pygerythrus* blythi (Tytler)
69. *Callosciurus pygerythrus stevensi* Thomas
70. *Tamiops macclellandi macclellandi* (Horsfield)
71. *Dremomys pernyi* Milne-Edwards
72. *Dremomys rufigenis rufigenis* Blanford
73. *Dremomys lokriah macmillani* Thomas
74. *Ratufa bicolor gigantea* (M'Clelland)

Family HYSTRICIDAE

75. *Hystrix brachyura* Linnaeus

Family RHIZOMYIDAE

76. *Rhizomys pruinosus pruinosus* Blyth
77. *Cannomys badius badius* (Hodgson)

Family MURIDAE

78. *Vandeleuria oleracea dumeticola* (Hodgson)
79. *Niviventer fulvescens fulvescens* (Gray)
80. *Rattus rattus rufescens* (Gray)
81. *Rattus rattus brunneusculus* (Hodgson)
82. *Rattus rattus tistae* Hinton
83. *Rattus rattus arboreus* Horsfield
84. *Rattus manipulus manipulus* (Thomas)
85. *Rattus mackenziei* (Thomas)
86. *Rattus edwardsi* (Thomas)
87. *Mus musculus homourus* Hodgson
88. *Mus musculus urbanus* Hodgson
89. *Mus famulus cooki* Ryley
90. *Mus pahari jacksoniae* (Thomas)
91. *Bandicota bengalensis bengalensis* (Gray)
92. *Bandicota savilei* Thomas

SYSTEMATIC ACCOUNT

Order SCANDENTIA

Squirrel-like in appearance with long snout; whiskers absent.

The order scandentia comprises of a single family Tupaiidae.

Family TUPAIIDAE

Only one genus *Tupaia* represents the family Tupaiidae in Nagaland.

Genus *Tupaia* Raffles, 1821

The genus *Tupaia* is represented in Nagaland by a single species and subspecies.

1. *Tupaia belangeri assamensis* Wroughton

1921. *Tupaia* belangeri assamensis Wroughton, *J. Bombay nat. Hist. Soc.*, **27** : 599 (Mokokchung, *c* 1524m, Nagaland, India.

Common name : Northern Tree Shrew (Eng.).

Diagnosis : Tail usually shorter than head and body; colour grizzled yellowish-brown on the back, ventral colour yellowish buff or arrange buff; fur long, soft and thick, with long dark brown hairs.

Distribution : India : Nagaland : Mokokchung district (Wroughton 1921); Arunachal Pradesh; Assam; Manipur; Tripura.

Order INSECTIVORA

Animals usually small in size. Snout pointed and projecting far beyond the lower jaw. Body covered with short closely-set fur. Eyes and ear small. Orbits open posteriorly. Limbs short and five-toed. Zygomatic arch may be present or absent.

The order is represented in Nagaland by two families, namely, Talpidae and Soricidae.

Key to the families of the order INSECTIVORA

1. Zygomatic arches present, bulla Ossified.. ..... TALPIDAE

– Zygomatic arches absent, bulla imperfect. ..... SORICIDAE

Family TALPIDAE

One genus of the family Talpidae occurs in Nagaland.

Genus *Talpa* Linnaeus, 1758

Body covered with very short velvety fur; eyes minute; pinna absent; forepaws broad, with outwardly directed heavy claws; small tail scantily haired.

Two species of the genus *Talpa* occurs in Nagaland.

Key to the species of the genus *Talpa*

1. Tail very short, concealed by fur..... ..... *T. micrura*

– Tail club-shaped, about one twelfth of total length ..... *T. leucura*

2. *Talpa micrura* Hodgson

1841. *Talpa micrurus* Hodgson, *Calcutta J. nat. Hist.*, **2** : 221 (Nepal).

Common name : Eastern Mole, Short-tailed Mole (Eng.).

Diagnosis : The species has a very small tail, usually concealed by fur; colour steel black or brown; feet usually flesh-coloured as also the snout; premolars 4/4 in number.

Distribution : India : Nagaland (Das *et al.* 1995); Arunachal Pradesh; Assam; Manipur; Meghalaya; Mizoram; Sikkim; West Bengal.

Elsewhere : Nepal and Bangladesh.

3. *Talpa leucura* Blyth

1850. *Talpa leucura* Blyth, *J. Asiat. Soc. Beng.*, **19** : 215 (Cherra Punji, East Khasi Hills district, Meghalaya, India).

Common names : Eastern Mole, White-tailed Mole (Eng.).

Diagnosis : Smaller than *T. micrura*, but with shorter muzzle and longer tail; covered with long white hairs.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Meghalaya; Assam.

Elsewhere : Myanmar; Thailand.

Family SORICIDAE

Mouse-like small animals with velvety fur; muzzle elongated and narrow; eyes very small; ear-conch small; limbs short; zygomatic arches absent; auditory bones of annular shape.

Three genera of the family Soricidae occur in Nagaland.

Key to the genera of the family SORICIDAE

1. Tail with a fringe of white hairs ..... ***Chimmarogale***
– Tail without a fringe of white hairs 2
2. 18 teeth present in the upper jaw..... ***Suncus***
– 16 teeth present in the upper jaw ..... ***Crocidura***

Genus *Suncus* Ehrenberg, 1833

The genus *Suncus* is represented in Nagaland by a single species *Suncus murinus* and two subspecies.

Key to the subspecies of *Suncus murinus*

1. Tail gradully tapering towards the tip and interspersed with many long hairs ..... *suncus murinus griffithi*
–. Tail compressed towards the tip and interspersed with a few long hairs ..... *Suncus murinus soccatus*

4. *Suncus murinus griffithi* (Horsfield)

1851. *Sorex griffithi* Horsfield, *Cat. Mammalia Mus. Hon. East India Co.*, : 134 (Assam, India).

Common names : House Shrew (Eng.)

Material examined: Nagaland : Kohima district: 2♂; Kohima, Coll. J. P. Srivastava, 24.IX.1996 & 8.XI.1997; 1♂; Dimapur, coll. J. P. Srivastava, 22.IX.1996.

Measurements : External 3♂: HB 170.0-182.0 (175.0); Tl 105-110 (107.0); Hf 22.0-23.0 (22.30); E 11-12 (11.70). Cranial : 1♂: *l* 41.5; *cb* 40.3; *pl* 17.0; *cw* 13.0.

Diagnosis : Dorsal colour brown with rusty wash; ventral colour lighter; hair thick and long, more than 8.0 mm.

Distribution : India : NagalandKohima district; Arunachal Pradesh; Assam; Manipur; Meghalaya; Uttar Pradesh; West Bengal.

Elsewhere : Bhutan and Bangladesh.

5. *Suncus murinus soccatus* (Hodgson)

1845. *Sorex soccatus* Hodgson, *Ann. Mag. Nat. Hist.*, **15** : 270 (Central region of Nepal).

Common name : House Shrew (Eng.)

Diagnosis : Dorsal colour uniform sorbid or brownish slaty. Fur long, usually more than 8 mm.

Distribution : India : Nagaland (Das *et al.* 1995); Arunachal Pradesh; Assam; Meghalaya; Sikkim; West Bengal.

Elsewhere : Nepal; Bhutan.

Genus *Crocidura* Wagler, 1832

One species of the genus *Crocidura* is found in Nagaland.

6. *Crocidura attenuata rubricosa* Anderson

1877. *Crocidura rubricosa* Anderson, *J. Asiat. Soc Beng.*, **46**(2) : 280 (Sibsagar, Sibsagar district, Assam, India).

1877. *Crocidura Kingiana* (Anderson, *J. Asiat Soc. Beng.*, **46** : 282 (Mungpo, Darjeeling district, West Bengal, India).

Common name : Grey Shrew (Eng.)

Diagnosis : Dorsal colour dark or reddish brown, ventral colour grey-brown with silvery

sheen; tail more or less tetragonal, not swollen at base; snout well-clad with hairs; ears sparsely clad with hairs; condylobasal length less than 21.6 mm.

Distribution : India : Nagaland (Hinton & Lindsay 1926); Arunachal Pradesh; Assam; Jammu & Kashmir; Manipur; Meghalaya; Punjab; Uttar Pradesh; West Bengal.

Elsewhere : Bhutan.

Genus ***Chimmarogale*** Anderson, 1877

This genus is represented in Nagaland by a species and subspecies.

7. ***Chimmarogale platycephala himalayica*** (Gray)

1842. *Crossopus himalayicus* Gray, *Ann. Mag. nat. Hist.*, **10** : 261 (Chamba, Himachal Pradesh, India).

Common name : Himalayan Water-Shrew (Eng.).

Diagnosis : Large shrews, head and body 80-120 mm; body slaty grey or brownish above and paler below; tail bicoloured, dark above and pale below and thinly clad with short whitish hairs; ear-conch hairy and entirely concealed by fur.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Himachal Pradesh; Jammu and Kashmir; Punjab; Sikkim; West Bengal.

Elsewhere : Myanmar; China; Borneo; Taiwan and Japan.

Order CHIROPTERA

Chiroptera is the only order of mammals which has wings and is capable of the true flight.

The order Chiroptera is divided into two suborders.

Suborder MEGACHIROPTERA

Bats of this suborder are characterized by the absence of nose-leaf and tragus; tail reduced, rod-like and often absent. Second finger bears a claw (except *Eonycteris)* and more or less independent of third finger; crown of molar teeth with longitudinal furrow. The suborder Megachiroptera consists of a single family Pteropodidae.

Family PTEROPODIDAE

Four genera of the family Pteropodidae occur in Nagaland. Each of the genera is represented by single species and subspecies.

Key to the genera, species and subspecies of the family PTEROPODIDAE.

1. Upper part of the body of one colour throughout 2
– Hind neck and shoulder paler than back.. ..... *Pteropus giganteus giganteus*
2. Five upper and six lower cheek-teeth .... *Rousettus leschenaulti leschenaulti*
– Four upper and five lower cheek-teeth .. 3
3. Two pairs of lower incisors .... *Cynopterus sphinx sphinx*
– One pair of lower incisors..... ..... *Megaerops niphanae*

Genus ***Rousettus*** Gray, 1821

The genus *Rousettus* is represented by a single species and subspecies in Nagaland.

8. ***Rousettus leschenaulti leschenaulti*** (Desmarest)

1820. *Pteropus leschenaulti* Desmarest, *Encycl. Méth. Mammal.*, **1** : 110 (Environments of Pondicherry, India).

Common name : Indian Fulvous Fruit Bat (Eng.).

Material examined: Mon district : 1♂, Mon, coll. J. P. Srivastava, 15.IV.1998.

Measurements : 1♂: Fa 78.0; Tl 15.0; E 20.2; Tb 39.5; F & Cl 22.9. Cranial : 1♂ : 1

37.5; *cr* 11.8; *mtr* 13.2; c^1-c^1 *iw* 8.0; *cw* 15.3; *zw* 22.8; m^3-m^3 11.2; *ml* 28.3.

Diagnosis : A medium-sized (forearm around 80.0 mm) fruit bat with longish muzzle and large eyes; tail reduced and rod-like; ears with a notch at the lower-edge; dorsal colour light brown with a rufescent tone, ventral colour of lighter shade; back of neck and shoulders sparsely haired; last lower molar elliptical.

Distribution : India : Nagaland : Mon district; widely distributed throughout Indian mainland.

Elsewhere : Pakistan (Mirza 1965); Sri Lanka; Nepal; Bhutan (Chakraborty 1975); Myanmar; southern China including Tibet, Hong Kong; Thailand; Laos; possibly Cambodia and Vietnam.

Genus ***Pteropus*** Brisson, 1762

Only one species and subspecies of the genus *Pteropus* occurs in Nagaland.

9. ***Pteropus giganteus giganteus*** (Brünnich)

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

Common name : Indian Flying Fox (Eng.).

Diagnosis : Largest bat of Nagaland; rufous-brown around head and neck; a conspiccous orange or honey-coloured band across upper back; lower back blackish brown; ventral parts dark chestnut brown; no external tail; a narrow flap of skin inside each leg.

Distribution : India : Nagaland : Kohima district; widely distributed throughout the Indian Union including Andaman Islands (Mason 1908).

Elsewhere : Pakistan (Blanford 1891); Sri Lanka; Nepal; Bangladesh (Anderson 1912) and Myanmar.

Genus *Cynopterus* F. Cuvier 1824

The genus *Cynopterus* is represented by a single species and subspecies in Nagaland.

10. ***Cynopterus sphinx sphinx*** (Vahl)

1797. *Vespertilio sphinx* Vahl, *Skr. Selsk. Copenhagen*, **4**(1) : 123 (Tranquebar, Thanjavur district, Tamil Nadu, India).

Common name : Short-nosed Fruit Bat (Eng.).

Material examined: Kohima district : 1♂, Kohima, coll. J. P. Srivastava, 23.III.1997; 1♀, 1♂, Dimapur, coll. J. P. Srivastava, 22.IX.1996 & 23.III.1997; 1♂, Medziphema, coll. J. P. Srivastava, 28.III.1997.

Measurements : External : 3♂: Fa 68.0-72.9 (71.5); Tl 12.0-14.0 (13.0); E 18.2-21.5 (20.2); Tb 22.9-25.2 (23.5); F & cl 12.3-14.1 (13.30). 1♀: Fa 67.0; Tl 13.3; E 19.2; Tb 23.5; F & cl 13.1. Cranial 1♂: l 32.3; *cb* 30.2; *cr* 8.0; *mtr* 11.0; c^1-c^1 6.5; *iw* 6.0; *cw* 13.5; *zw* 20.0; m^3-m^3 9.5. 1♀: l 31.9; *cb* 29.9; *cr* 7.8; *mtr* 11.0; c^1-c^1 6.6; *iw 6.2; cw* 12.9; *zw* 19.8; m^3-m^3 9.2.

Diagnosis : Medium-sized fruit bat with white margin to ears; metacarpals and phalanges whitish; nostrils divergent with deep inter-narial groove; dorsal colour grey or greyish brownpaler ventrally (often with a broad rufescent or chestnut coloured area around shoulders and throat); tail reduced and rod like.

Distribution : India : Nagaland : Kohima district, Wokha district, Mokokchung district; widely distributed throughout the mainland of the Indian Union.

Elsewhere : Pakistan (Andersen 1881); Sri Lanka; Nepal (Fry 1925); Bangladesh and Myanmar.

Genus ***Megaerops*** Peters, 1865

The genus *Megaerops* is represented by one species in Nagaland.

11. ***Megaerops niphanae*** Yenbutra & Felten

1983. *Megaerops niphanae* Yenbutra & Felten. *Senckenberg biol.*, **64** : 2 (Sakaerpt Environmental Research Station (14°30'N-101°56'E). Amphoe Pak Thong Chai, Prov. Nakhon Ratchasima, Thailand).

Common name : Niphan's Fruit Bat (Eng.).

Material examined: Kohima district : 1♂, 2♀, Kohima, coll. J.P. Srivastava, 7.IV.1998; 2♂, Dimapur, coll. J.P. Srivastava, 5.IV.1998 Mokokchung district: 3♂, 2♀, Mokokchung, coll. J.P. Srivastava, 14.IX.1997, 3.IV.1997.

Measurements : External : 1♂, 1♀, Fa 58.7, 59; E 20.1, 19.8; Tb 22.9, 22.4; F & cl 15.0, 14.0. Cranial : 1♂, 1♀: **1** 27.5, 26.8; *cr* 6.2, 6.3; *mtr* 8.5, 8.4; *iw* 5.0, 5.0; *cw* 12.0, 12.2; *zw* 17.2, 17.3; *ml*, 21, 19.8.

Diagnosis : Similar to the Short-nosed Fruit Bat, but ears without white edges; nostrils are more subtubulor, no external tail; wing membrances attached to second phalanx of first toe; colour dusky brown above, light greyish brown below.

Distribution : India : Nagaland : Mokokchung district; Manipur; West Bengal.

Elsewhere : Thailand and Vietnam.

Remarks : This species has been recorded for the first time from Nagaland (Srivastava *et al.* 2000).

Suborder MICROCHIROPTERA

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

The suborder Microchiroptera in Nagaland consists of four families.

Key to the families of the suborder MICROCHIROPTERA

1. Both nose-leaf and tragus present ..... MEGADERMATIDAE
– Either nose-leaf or tragus present 2
2. A nose-leaf but no tragus present ..... RHINOLOPHIDAE
– No nose-leaf but a tragus present 3
3. Tail entirely enclosed in inter-femoral membrane ..... VESPERTILIONIDAE
– Tail emeging from the upper surface of the inter-femoral membrane ..... EMBALLONURIDAE

Family EMBALLONURIDAE

This family is represented in Nagaland by a single genus *Taphozous* E. Geoffroy.

Genus ***Taphozous*** E. Geoffory, 1818

Only species and subspecies of the genus *Taphozous* occurs in Nagaland.

12. ***Taphozous longimanus longimanus*** Hardwicke

1825. *Taphozous longimanus* Hardwicke, *Trans. Linn. Soc. London*, **4** : 525 (Calcutta, West Bengal, India).

Common name : Long-armed Sheeth-tailed Bat (Eng.).

Material examined: Kohima district : 1♂, Dimapur, coll. J.P. Srivastava, 24.IX.1996.

Measurements : External : 1♂: Fa 58.5; Tl 11.5; Tb 25; F & cl 11.8 Cranial : 1♂: **1** 20.9; c^1-c^1 4.8; *iw* 5.2; *cw* 10.5; *zw* 12.7; m^3-m^3 6.5; *ml* 15.5.

Diagnosis : A dark brown, medium-sized bat with broad tragus; gular sac moderately developed in males and in females represented by a rudimentary fold of naked skin; radio-meta carpal pouch moderately developed; inner margin of ear smooth.

Distribution : India : Nagaland : Kohima district; widely distributed in Indian penisula, northwards to Gujarat and Rajasthan (Sinha 1976) on the west and West Bengal and Tripura (Agrawal and Bhattacharyya 1977).

Elsewhere : Sri Lanka; Nepal; Bangladesh; Myanmar; Thailand (Leakagul & McNelly 1977) and Combodia (Hill Thonglongya 1972).

Family MEGADERMATIDAE

Family Megadermatidae is represented in Nagaland by a single genus *Megaderma.*

Genus *Megaderma* E. Geoffroy, 1810

A single species of Megaderma is found in Nagaland.

13. *Megaderma lyra lyra* E. Geoffroy

1810. *Megaderma lyra* E. Geoffroy. *Ann. Mus. Hist. nat. Paris,* **15** : 190 (India, possibly Chennai, Chennai district, Tamil Nadu).

Common name : Indian False Vampire (Eng.).

Material examined: Kohima district : 2♂, 1♀, Kohima, coll. J.P. Srivastava, 22.III.1997; Dimapur, 2♀, coll. J.P. Srivastava, 22.IX.1996.

Measurements : External : 1♂, 1♀, Fa 63, 62; E 37, 36; Tr 16.2, 16.4; Tb 33, 34; F & Cl 20.2, 19.5. Cranial : 1♂, 1♀: **1** 29.2, 28.9; *cr* 7.5, 7.3; *mtr* 11.6, 11.0; c^1-c^1 5.5, 5.3; *iw* 5.2, 5.0; *cw* 12.5, 12.4; *zw* 16.2, 16.1; m^3-m^3 10.3, 10.1; *c*-m_3 12.5, 12.3; *ml* 19.7, 19.2.

Diagnosis : A medium-sized (forearm 60.0-70.0) bat with large ears, noseleaf and large tragus but without externally visible tail; dorsal colour slaty grey, ventral colour paler; ears conjoined for nearly half the length of inner margin; tragus bifid, posterior portion long, narrow and acutely pointed.

Distribution : India : Nagaland : Kohima district; widely distributed throughout the Indian mainaland from Jammu and Kashmir to Cape Commorin (Dobson 1876) and from Gujarat to Assam (Hinton & Lindsay 1926).

Elsewhere : Afganistan; Pakistan; Nepal; Sri Lanka and Bangladesh.

Family RHINOLOPHIDAE

Noseleaf well-developed and most complicated; ears rather large; tragus absent; eyes quite small; tail long (longer than femur) and mostly included in the inter-femoral membrane; inguinal false teats present; premaxillae partly cartilagenous and have palatal branches only, the two neither fusing with each other nor with maxillae; upper incisors minute; nasal region inflated; postorbital process absent; palate deeply emerginate both anteriorly and posteriorly; auditory bulla small; second digit of wing has no phalanges.

The nose-leaf consists of three main parts *viz.*, (i) antenior horizantal portion, (ii) median perpenducular portion and (iii) posterior erect portion.

The family Rhinolophidae has been divided into two sub-families, *viz.*, Rhinolophinae and Hipposiderinae.

Subfamily RHINOLOPHINAE

The anterior portion of the noseleaf is a thin, horseshoe shaped dise of naked skin with an angular deep median notch on its lower margin, which partially or completely covers the muzzle. This anterior horizontal part of the noseleaf is called the *horse-shoe.* The nostrils lie recessed in the middle of this part. The median portion of the noseleaf is called *sella.* It is an upright thickened structure. Behind the sella and between the eyes lies the third portion of the noseleaf, nown as the *lancet.* It is a narrow triangular structure whose distal part bends slightly forward. The base of the lancet is divided into cells by horizontal septa. A posterodorsal connecting process connects the sella with the lancet.

No frontal sac; basal portion of outer margin of ear deeply notched to form a distinct antitragus; sagital crest well-developed; cochlea large; hallux with two but other toes with three phalanges.

The subfamily Rhinolophinae consists of the genus *Rhinolophus* only.

Genus *Rhinolophus* Lacepéde, 1799

Three species and subspecies of the genus *Rhinolophus* occur in Nagaland.

Key to the species and subspecies of the genus *Rhinolophus*

1. Sella trifoliata ..... *R. luctus perniger*
- Sella not trifoliate 2
2. Connecting process high and prominent... ..... *R. lepidus lepidus*
- Connecting process low .... *R. ferrum-equinum tragatus*

14. *Rhinolophus lepidus lepidus* Blyth

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

Common name : Little Indian Horse-shoe Bat (Eng.).

Material examined: Wokha district : 1♂, Wokha, coll. J.P. Srivastava, 25.ix.1996.

Measurements : External : 1♂, 1♀, Fa 40; E 16; Tb 17.2; F & Cl 8.9. Cranial : 1♂, 1 17.5; *mtr* 6.6; c^1-c^1 4.6; *iw* 2.9; *cw* 8.8; *zw* 8.9; m^3-m^3 11.9.

Diagnosis : A small horse-shoe bat with horizental base of sella arched and equal in width to vertical part; connecting process triangular in lateral view; forearm 40.0 mm on average.

Distribution : India : Nagaland : Mokokchung district; Andhra Pradesh (Das 1986b); Bihar (Blyth 1963, Wroughton 1915); Delhi (Brosset 1962c); Karnataka (Wroughton 1913); Kerala (Blanford 1891); Madhya Pradesh; Maharashtra (Wroughton 1916a); Meghalaya (Hinton & Lindsay 1962a); Orissa (Das & Agrawal 1973); Rajasthan (Prakash 1965); Tamil Nadu (Das 1986b); Uttar Pradesh (Wroughton 1914).

Elsewhere : Nepal (Mitchel 1980) and Thailand (Leekagul & McNeely 1977).

15. *Rhinolophus luctus perniger* Hodgson

1843. *Rhinolophus perniger* Hodgson, *J. Asiat. Soc. Beng.*, **12** : 414 (Nepal).

Common name : Great Eastern Horse-shoe Bat (Eng.).

Material examined: Kohima district : 1♂, Chizoni, coll. Unknown.

Measurements : Nil.

Diagnosis : Largest among the horseshoe bats. Lower lip with a single mental groove. Horseshoe broad; sella trifoliate; vertical part of the sella making a trifolium shaped structure with the top; connecting process starting slightly below the tip of the sella, sloping towards the posterior noseleaf and forming a triangular structure in lateral view. Frontal sac present; it is smaller in females. Tail tip free from interfemoral membrane. Fur very long, dense and woolly and usually black with grey tips. Skull large; sagittal crest prominent bifurcating anteriorly, forming a deep and large depression just postior to bulbous nasal swelling; anterior opening of infaorbital canal very small, in the form of a foramen which lies between m^1 and m^3; basioccipital region between cochleae narrow (3-3.4 percent of total length of skull). First upper premolar large and the second lower premolar large and extruded.

Distribution : India : Nagaland (Sinha 1973); Assam (Sinha 1973); Madhya Pradesh (Sinha 1973); Meghalaya (Dobson 1874b); Sikkim; Uttar Pradesh; West Bengal (Blyth 1863).

Elsewhere : Nepal; Myanmar and possibly Thailand (Lekegul & Mcneely 1977).

16. *Rhinolophus ferrumecuinum tragatus* Hodgson

1835. *Rhinolophus tragatus* Hodgson, *J. Asiat. Soc. Beng.*, **4** : 699 (Nepal).

Common name : Greater Horse-shoe Bat (Eng.).

Diagnosis : Medium-sized nose-leaf bat (length 12-15 mm); width of the horsehoe always less than 10 mm; sella pandurate the margin of its horizental base arched and broader than the base of the vertical transverse process. A shallow notch present between sella and connecting process. Posterior margin of the connecting process rounded and reaching the

level of the top of the sella, frontal sac absent. Ear large 19.5-25 mm in length. Lower lip with either one or three mental grooves, lateral ones reduced or absent. Forearm long (Length 53-63 mm); second finger shorter than the metacarpal of fourth finger; metacarpal of third finger short, 64-68 percent of the forearm length; metacarpals of fourth and fifth fingers longer than third metacarpal. Second phalanx of the third and fourth fingers longer than second phalanx of fifth finger. Skull medium-sized (20-23.7), sagittal crest prpminent and bifurcating anteriorly; nasals broad (width 5.2-7.2 mm); first upper premolar minute.

Distribution : India : Nagaland : Mokokchung district; Sikkim.

Elsewhere : Yunnan, China.

Subfamily HIPPOSIDERINAE

The noseleaf is more or less an oblong naked pad. Its anterior portion is not deeply notched in the middle (except Coelops). The nostrils are situated in the middle of this part and are separated by a longitudinal ridge. The mediam position of the noseleaf consists of a prominent transverse base behind the nostrils. The posterior portion of noseleaf is never triangular, its hinder margin is most usually rounded and curved forward. It is divided into cells by vertical septa. Some species have supplementary leaflets ventrolateral to the anterior portion of the noseleaf.

A glandular frontal sac present in some species whose pore opens behind posterior portion of noseleaf; no distinct antitragus; sagittal crest low; cochlea only moderately large; all toes with two phalanges.

In Nagaland, only one genus *viz.*, Hipposideros *Hipposideros* is found.

Genus *Hipposideros* Gray, 1831

Key to the species of the genus *Hipposideros*

1. Forearm more than 38.5 mm .... *H. pomona gentilis*

– Forearm less than 37.0 mm .... *Hipposideros cineraceus*

17. *Hipposideros pomona gentilis* Anderson

1918. *Hipposideros gentilis* Anderson, *Ann. Mag. nat. Hist.*, (9)2 : 380, 381 (Thayentmyo, Myanmar).

Common name : Indian Bicoloured leaf-nosed Bat (Eng.).

Diagnosis : A medium-sized (forearm 40.0 mm or more) leafnosed bat with large, rounded ears; anterior margin of ear strongly convex, posterior margin lacking concavity just behind tip; noseleaf Lacks lateral supplementary leaflets, internarial septum more or less triangular; posterior noseleaf supported by three septa; dorsal pelage brownish, ventral parts paler; posterior projecting portion of vomer thickened; anterior lower premolar less reduced.

Distribution : India : Nagaland : Mokokchung district; Arunachal Pradesh; Assam; Meghalaya; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Nepal; Bangladesh; Myanmar, southern Thailand; northern Malay Peninsula.

18. *Hipposideros cineraceus* Blyth

1853. *Hipposideros cineraceus* Blyth. *J. Asiat. Soc. Beng.*, 22 : 410 (Bhera, near Pind Dedan Khan, Punjab Salt Range-Bhera, *c* 32 Km Sw of Pind Dadan Khan, Salt Range, The Punjab, Pakistan).

Common name : Least Leaf-nosed Bat or Blyth's Leaf-nosed Bat (Eng.).

Diagnosis : Similar to *Hipposideros pomona gentilis* but smaller forearm (35.0 mm); dorsal colour dusky grey, basal three-fourth of hairs greyish white which show through, especially on head and neck; ventral parts greyish white; internarial septum more or less parallelsided and inflated; zygomatic arch narrow and delicate; anterior upper premolar small, compressed between canine and posteior upper premolar, not extruded from toothrow.

Distribution : India : Nagaland : Mokokchung district; Assam; Arunachal

Pradesh; Hariyana; Meghalaya; Uttar Pradesh; West Bengal.

Elsewhere : Pakistan; Nepal (Hinton & Fry, 1923); Myanmar; Vietnam; Laos (Phillips, 1967). Thailand; Malay Peninsula; Rhio Archipelago; Anamba Island; Borneo, Philippine Islands (Hill & Francis 1984).

Family VESPERTILLIONIDAE

Noseleaf absent; inner margin of ear arises from side of head (not forehead); tragus well-developed; eyes minute; tail long (about as longs as forearom) and included in the inter-femoral membrane from base to tip or penultimate joint; inter-femoral membrane wide;premaxillae separate, without palatal branches; upper incisors usually small, separated medially; no postorbital process; palate widely emarginate anteriorly, abruptly narrowed behind last molars.

Key to the subfamilies of the family VESPERTILIONIDAE

1. Ears funnel-shaped ..... KERIVOULINAE
- Ears not funnel-shaped ..... VESPERTILIONINAE

Key to the genera of the subfamily VESPERTILIONINAE

1. Outer upper incisor not extending beyond cingulum of inner ..... ***Scotozous***
- Outer upper incisor extending distinctly beyond cingulum of inner 2
2. Fifth finger only a little longer than the metacarpal of fourth and third ..... ***Nyctalus***
- Fifth finger longer than metacarpal and first phalanx of fourth and third 3
3. Upper premolars 2-2 ..... ***Pipistrellus***
- Upper premolars 1-1 ..... ***Scotophilus***

Genus *Pipistrellus* Kaup, 1829

Two species and subspecies of the genus *Pipistrellus* occur in Nagaland.

Key to the species and subspecies of the genus *Pipistrellus*

1. Forearm less than 29 mm on average .... *Pipistrellus minus minus*
- Forearm more than 29 mm on average ....*Pipistrellus coromandra cormomandra*

19. *Pipistrellus coromandra coromandra* (Gray)

1838. *Sctophilus coromandra* Gray. *Mag. zool. Bat.*, **2** : 498 (Pondicherry, Coromandal coast, India).

Common name : Indian Pipistrelle (Eng.).

Material examined: Kohima district : 1♀, Medziphema, coll. J. P. Srivastava, 28.III.1997; 1♂, Kohima, coll. J. P. Srivastava, 23.III.1997.

Measurements : External : 1♂, 1♀, Fa 29.6, 30.2; Tl 24.7, 27.2; E 11.2, 10.8; Tb 11.1, 11.9; F & Cl 5.9, 6.2. Cranial : 1♂, 1♀, **1** 12.2, 11.9; *mtr* 4.5, 4.6; *cw* 6.6, 6.5; *zw* 8.0, 7.9; m^3-m^3 5.5, 5.6; *c*-m_3 4.9, 5.2; *ml* 8.9, 9.3.

Diagnosis : Small-sized Pipistrelle with dorsal fur blackish brown, tips of hairs slightly rufescent; belly fur slightly paler brown; tragus forward curving and bluntly rounded; a small calcarial lobe present.

Distribution : India : Nagaland : Kohima district, Wokha district, Mokokchung district; widely distributed in peninsular India; north to Jammu (Sharma and Sharma 1976) & Kashmir (Chakraborty 1983); east to north eastern states including Tripura (Agrawal & Bhattacharyya 1977).

Elsewhere : Afghanistan (Meyer-Öchma 1965), Pakistan (Walton 1974), Sri Lanka, Nepal (Hinton & Fry 1923), Bangladesh (Khan 1982).

20. *Pipistrellus mimus mimus* Wroughton

1899. *Pipistrellus mimus* Wroughton *J. Bombay nat. Hist. Soc.*, **12** : 722 (Maheshkatri, Dangs district, Gujarat, India).

Common name : India Pigmy Pipistrelle (Eng.).

Material examined: Kohima district : 1♂, Dimapur, coll. J. P. Srivastava, 5.IV.1998; 1♀, Medziphema, coll. J. P. Srivastava, 28.III.1997.

Measurements : External : 1♂, 1♀, Fa 27.3, 27.8; Tb 11.9, 11.6; F & Cl 6.3, 6.4; Cranial : 1♂, 1♀, 1 11.5, 11.4; *mtr* 3.7, 3.8; *cw* 6.3, 6.3; *zw* 7.2, 7.1; m^3-m^3 5.0, 4.9; *c*-m_3 4.1, 4.0; *ml* 7.5, 7.2.

Diagnosis : Smallest (forearm 26.0 to 29.0 mm) Pipistrelle of Nagaland; fur dense and short; dorsal coloration bistre brown, base of hairs almost black; ventral parts lighter; face ears and wing membranes almost black, ears small scarcely triangular; tragus short and curved forward; post-calcarial lobe present; wings from base of toes.

Distribution : India : Nagaland : Kohima district; widely distributed throughout the mainland of Indian Union.

Elsewhere : Afghanistan (Meyer-Öehme 1965); Pakistan; Nepal (Hinton & Fry 1923); Sri Lanka; Bangladesh (Khan 1982); Mynamar; Vietnam; Thailand (Lekagul & McNeely 1977).

Ramarks : Sinha (1980) has synonymised *Pipistrellus mimus glaucillus* Wroughton, with *Pipistrellus m. mimus* Wroughton. Ellerman & Morrison Scott (1951) have considered *Pipistrellus principulus* Thomas (type-locality : Guwahati, Assam) as a subspecies of *P. minus* with hesitation. Hill & Harrison (1987) have considered *Principulus* conspecific with *mimus*. Specimens of *P. mimus* from Assam and adjoining areas do not differ from those of other parts of India.

Genus *Scotozous* Dobson, 1875

The genus *Scotozous* is represented by a single species in Nagaland.

21. *Scotozous dormeri* Dobson

1875. *Scotozous dormeri* Dobson, *Proc. zool. Soc. Lond.*, : 373 (Bellary Hill, Bellary district, Karnataka, India).

Common name : Dormer's Bat (Eng.).

Material examined: Kohima district : 1♂, Kohima, coll. J.P. Srivastava, 23.III.1997.

Measurements : External : 1♂, Fa 35.6; E 11.9, Tb 13.8; F & Cl 8.3. Cranial : 1♂, 1 14.6; *mtr* 5.4; c^1-c^1 4.8; *iw* 4.3; *cw* 8.2; *zw* 9.8; m^3-m^3 7.1; *ml* 10.1.

Diagnosis : A very small bat, similar to the Kelaart's pipistrelle, but second upper incisor very small, not extending beyond cingulum of inner incisor; underparts whitish, often lemon-yellow in live and freshy killed specimens.

Distribution : India : Nagaland : Kohima district; widely distributed in the Indian mainland from Jammu & Kashmir (Chakraborty 1983) south atleast to Karnataka and from Gujarat east to West Bengal.

Elsewhere : Pakistan (Roberts 1977) and possibly Taiwan.

Genus *Scotophilus* Leach, 1821

Two species and subspecies of the genus *Scotophilus* occur in Nagaland.

Key to the species and subspecies of the genus *Scotophilus*

1. Size smaller, forearm, on aveerage, less than 55.0 ..... *Scotophilus kuhli khuli*

– Size larger, forearm, on average, more than 53.0 mm ..... *Scotophilus heathi heathi*

22. *Scotophilus kuhli kuhli* Leach

1822. *Scotophilus kuhli kuhli* Leach, *Trans. Linn. Soc. Lond.*, 13 : 72 (Indian, according to Hill and Thonglongya 1972).

Common name : Lesser Yellow Bat (Eng.).

Diagnosis : Ears small, rounded tips; tragus semilunar, markedly convex on porterior, border concave anteriorly, tip slender and forward pointing; wing from side of foot near base of toe; tip of tail free; fur short, dense and sleek; dorsal colour olive-brown, ventral colour creamy white with a tinge of red.

Distribution : India : Nagaland : Mokokchung district; widely distributed throughout Indian Union including Nicobar Islands.

Elsewhere : Pakistan; Sri Lanka; Bangladesh and Myanmar.

23. ***Scotophilus heathi heathi*** (Horsfield)

1831. *Nycticejus heathi* Horsfield *Proc. zool. Soc. Lond.*, : 113 (Madras, Madras district, Tamil Nadu, India).

Common name : Greater Yellow Bat (Eng.).

Material examined: Wokha district : 1♀, Wokha, coll. J. P. Srivastava, 25.IX.1996. Mon district : 1♂, Chukutong, coll. J. P. Srivastava, 26.IX.1996.

Measurements : External : 1♂, 1♀ : Fa 58, 57; E 12, 12.5; Tb 23.8, 24.2; F & Cl 11, 12. Cranial: 1♂, 1♀: 1 22.9, 22.7; *mtr* 7.9, 7.8; c^1-c^1 8, 7.7; *iw* 5.8, 5.6; *cw* 10.8, 10.6; *zw* 16.4, 16.3; m^3-m^3 9.8, 9.9; *ml* 16.0, 16.1.

Diagnosis : Ears small, rounded at tips; tragus semilunar, markedly convex on posterior border, concave anteriorly, tip slender and forward pointing; wing from side of foot near base of toe. Ventral parts lemon-yellow to orange-yellow.

Distribution : India : Nagaland : Wokha district, Mon district; widely distributed through out Indian subcontinent.

Elsewhere : Afghanistan; Pakistan; Sri Lanka; Nepal; Bangladesh and Myanmar.

Genus ***Nyctalus*** Bowdich, 1825

Genus *Nyctalus* is represented in Nagaland by only one species and subspecies.

24. ***Nyctalus noctula labiatus*** (Hodgson)

1835. *Vespertilio labiata* Hodgson, *J. Asiat. Soc. Beng.*, **4** : 700 (Nepal).

Common name : Noctule Bat (Eng.).

Diagnosis : Ears nearly as broad as long, tip broadly rounded, outer margin in front of tragus forms thickned convex lobe; tragus short and curved towards tip with a small triangular projection at base; nostrils rather wide apart; wing from ankle; large, semicircular post-calcarial lobe; dorsal fur bright yellowish brown (often chestnut or bright chocolate coloured), ventral fur slightly paler; outer incisor short, its summit directed inwards towards inner incisor.

Distribution : India : Nagaland : Mokokchung district; Himachal Pradesh; Jammu and Kashmir; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Pakistan; Nepal and also Singapur.

Subfamily KERIVOULINAE

This subfamily is represented by a single genus *Kerivoula.*

Genus ***Kerivoula*** Gray, 1842

The genus *Kerivoula* is represented in Nagaland by a single species & subspecies.

25. ***Kerivoula hardwickei depressa*** Miller

1906. *Kerivoula depressa* Miller. *Proc. biol. Soc. Wash.*, **19** : 64 (Biapo, Karen Hills, southern Myanmar).

Common name : Hardwicke's Bat (Eng.).

Diagnosis : Ears longer, tip rounded, inner margin convex, outer margin deeply concave below tip; tragus long and slender; wing from base of toes; posterior margin of interfemoral membrane fringed with very few hairs; greyish brown above and below, basal half of hairs dark brown.

Distribution : India : Nagaland (Khajuria 1953); Assam; Jammu & Kashmir; Madhya Pradesh; Meghalaya; Karnataka; West Bengal.

Elsewhere : Pakistan; Myanmar; southern China; Vietnam; Combodia; Thailand.

Order PRIMATES

Primates, having evolved from arboreal ancestors, retain this characteristic in the form

of prehensile hands and feet, the thumb and big toe opposable to other digits, and each digit usually tipped with a flat nail. Other characters include an increase in the size and complexity of the brain, complete bony rim around the orbits and reduced dentition.

Three families of the order Primates occur in Nagaland.

Key to the families of the order PRIMATES

1. Fore limbs much longer than hind, tail absent ..... HYLOBATIDAE
- Fore limbs not longer than hind, tail present 2
2. All digits with nails CERCOPITHECIDAE
- Second digit of hind with small claw..... ..... LORISIDAE

Family LORISIDAE

One genus of the family Lorisidae occurs in Nagaland.

Genus *Nycticebus* E. Geoffroy, 1812

One species and subspecies of the genus *Nycticebus* occurs in Nagaland.

26. *Nycticebus coucang bengalensis* (Lacepéde)

1800. *Loris bengalensis* Lacepéde, *Seances des Écoles normales* Ton, 8 : 68 (Bengal).

Common name : Slow Loris (Eng.).

Diagnosis : About the size of a half-grown cat with short ears and stumpy tail almost hidden in thick fur; which varies in colour; brown ring round the eyes; brown streak on crown and back.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Arunachal Pradesh; Assam; Meghalaya; Mizoram; Manipur.

Elsewhere : Bangladesh; Myanmar and Thailand.

Family CERCOPITHECIDAE

In Nagaland, the family Cercopithecidae is represented by two genera.

Key to the genera of the family CERCOPITHECIDAE

1. Cheek-pouch present; tail generally smaller than head and body; face reddish... .... ***Macaca***
- Cheek-pouch absent; tail always longer than head and body; face blackish..... ***Presbytis***

Genus *Macaca* Lacepéde, 1799

Three species of the genus *Macaca* occur in Nagaland.

Key to the species of the genus *Macaca*

1. Tail inconspicuous, reduced to a stump and seldom longer than 30.0 mm..... ..... *Macaca arctoides*
- Tail conspicuous, generally about half the length of head and body 2
2. Hindquarter of the body brighter (of orange-red hue) than the forequarter; buttocks naked around ischial callosities *Macaca mulatta*
- Hindquarter of the body not brightly coloured than the forequarter; buttocks clad up to the edge of callosities..... *Macaca assamensis*

Macaca mulatta (Zimmermann)

The nominate subspecies of *Macaca mulatta* occurs in Nagaland.

27. *Macaca mulatta mulatta* (Zimmermann)

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

Common name : Rhesus Macaque (Eng.).

Diagnosis : Medium-sized, with a short tail (about half of the head and body length). Face light pink. Crown hairs grown back from brows. Upper back olive in colour; loins, rump and base of tail of orange-red hue, face flesh-coloured.

Distribution : India : Nagaland : Kohima district, Mokokchung district (Mills 1923); Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Delhi; Gujarat; Himachal Pradesh; Jammu & Kashmir; Madhya Pradesh; Manipur; Meghalaya; Orissa; Punjab; Rajasthan; Sikkim; Tripura (Agrawal & Bhattacharyya 1977); Uttar Pradesh; West Bengal.

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

Macaca assamensis (M'Clelland)

The nominate subspecies of *Macaca assamensis* occurs in Nagaland.

28. *Macaca assamensis assamensis* (M'Clelland)

1839. *Macacus assamensis* M'Clelland, in Horsfield, *Proc. zool. Soc. Lond.*, 148 (Assam).

Common name : Assamese Macaque (Eng.).

Diagnosis : Almost like the Rhesus Macaque, but distinguished by absence of orange-red hue on loins and rump.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Assam; Arunachal Pradesh; Manipur; Meghalaya; Mizoram.

Elsewhere : Bangladesh; Myanmar; East to Vietnam; southern China.

29. *Macaca arctoides* (I. Geoffroy)

1831. *Macaca arctoides* I. Geoffroy, *zool. Voy de Belanger Indes Orientales*, Mammiferies : 61 (Indochina).

Common name : Stump-tailed Macaque (Eng.).

Diagnosis : Tail stump-like, almost naked, not more than 50.0 mm in length, colour of body dark brown with bare-red face.

Distribution : India : Nagaland : Kohima district, Mokokchung district (Mills 1923), Wokha district; Arunachal Pradesh; Assam; Manipur; Meghalaya.

Elsewhere : Myanmar; southern China; earstwhile Indochina; northern Malay Peninsula.

Genus *Presbytis* Eschscholtz 1821

One species of the genus *Presbytis* occurs in Nagaland.

Presbytis pileatus (Blyth)

The species *Presbytis pileatus* is represented in Nagaland by the following two subspecies.

Key to the subspecies of the species *Presbytis pileatus*

1. Breast, throat, and whiskers pale .... *P. pileatus pileatus*

– Breast, throat, and whiskers bright rusty-red ..... *P. pileatus durga*

30. *Presbytis pileatus pileatus* (Blyth)

1843. *Semnopithecus pileatus* Blyth, *J. Asiat. Soc. Beng.*, **12** : 174 (Locality unknown).

Common name : Capped Monkey (Eng.).

Diagnosis : A slender-build monkey, with a crown of erect, long hairs directed backwards from forehead; colour dark grey on back and limbs, yellowish white on cheeks and underparts.

Distribution : India : Nagaland : Kohima district, Mokokchung district (Mills 1923); Assam; Manipur; Meghalaya; Mizoram.

Elsewhere : Bangladesh; Myanmar; China.

31. *Presbytis pileatus durga* Wroughton

1916. *Presbytis durga* Wroughton. *J. Bombay nat. Hist. Soc.*, **24** : 655. Cachar, Assam.

Common name : Capped Monkey (Eng.).

Diagnosis : Breast, throat, and whiskers bright rusty red. Upper side paler, head and nape nearly uniformly slaty-grey; red suffusing underside at least to groins.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Assam; Manipur; Meghalaya; Tripura.

Elsewhere : Bangladesh and Myanmar.

Family HYLOBATIDAE

The family Hylobatidae consists of the lone genus *Hylobates*. It is the only ape found in India.

Genus *Hylobates* Illiger, 1811

Only one species of the genus *Hylobates* occurs in Nagaland.

32. *Hylobates hoolock* (Harlan)

1834. *Simia hoolock* Harlan, *Trans. Am. phil. Soc.*, **4** : 52 (Garo Hills, Meghalaya, India).

Common name : Hoolock Gibbon (Eng.).

Diagnosis : Body devoid of a tail; head and body length about 600 mm; arms much longer than the legs; males and young females black, adult females yellowish-grey; eye-brows white.

Distribution : India : Nagaland : Kohima district, Mokokchung district (Mills 1923); Assam; Manipur; Meghalaya; Mizoram; Tripura.

Elsewhere : Bangladesh; Myanmar and China.

Order PHOLIDOTA

Elongated, tapering body; posterodorsal area of head, dorsal and lateral aspects of body and tail covered with large overlapping scales; ventral surface covered with coarse, bristly hairs; limbs short; toes with powerful claws; jaws devoid of teeth; vermiform tongue, highly protrusible.

Order pholidata consists of a single family Manidae.

Family MANIDAE

The family Manidae consists of only one genus *Manis*.

Genus *Manis* Linnaeus, 1758

One species of the genus *Manis* occurs in Nagaland.

33. *Manis pentadactyla aurita* Hodgson

1836. *Manis auritus* Hodgson, *J. Asiat. Soc. Beng.*, **5** : 234 (Lower and central Nepal).

Common name : Chinse Pangolin (Eng.).

Diagnosis : Body covered with 15-18 rows of longitudinal overlapping scales; dark brown in colour; bare skin of ventral surface flesh-coloured.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Arunachal Pradesh; Assam; Manipur; Meghalaya; Mizoram; Tripura.

Elsewhere : Nepal; Myanmar and southern China.

Order CARNIVORA

Six small, equal-sized incisors; a pair of large conical canines; last upper premolar and the first lower molar, having sharp-edged lobes, developed into carnassial (flesh-cutting teeth).

Six families of the order carnivora occur in Nagaland.

Key to the families of the order CARNIVORA

1. Bulla much dilated, rounded, but not divided into chambers by a septum ..... CANIDAE
- Bulla much dilated, rounded but divided into chambers by a septum 2
- Bulla not rounded but inflated, and not divided by a septum 4
2. 3-4 teeth in upper molar series of each jaw; toes 5-4; claws curved, sharp and retractile;

head short and some-what roundish with shortened muzzle ..... FELIDAE

– 6 teeth in upper molar series of each jaw (except *prionodon*); toes usually 5-5; claws variable; head elongated 3

3. Ears moderate in size, with well-developed bursa; auditory bulla oval or subconical; no bony tube to auditory orifice; claws curved and more or less retractile; pre-scrotal gland generally present ..... VIVERRIDAE

– Ears small and rounded, with vestigeal bursa; auditory bulla somewhat pear-shaped; a well-developed bony tube to the auditory orifice; claws lengthened, exserted, non-retractile; pre-scrotal gland absent ... HERPESTIDAE

4. True molars 1-1 in upper jaw, 2-2 in lower jaw ..... MUSTELIDAE

– True molors 2-2 in upper jaw, 3-3 in lower jaw ..... URSIDAE

Family CANIDAE

Family Canidae is represented by three genera in Nagaland.

Key to the genera and species of the family CANIDAE

1. A frontal sinus present; post-orbital process smooth and convex above; tail less than half the length of head and body 2

– No frontal sinus; postorbital process concave above; tail more than one-half the length of head and body ..... ***Vulpes*** *(V. bengalensis)*

2. Ears more pointed at the tip; seven teeth in lower molar series ..... ***Canis*** *(C. aureus)*

– Ears more rounded at the tip; six teeth in lower molar series ... ***Cuon*** *(Cuon alpinus)*

Genus *Canis* Linnaeus 1758

One species of the genus *Canis* occurs in Nagaland and is resented by one subspecies.

34. *Canis aureus indicus* Hodgson

1833. *Canis aureus indicus* Hodgson, *Asiat. Res.*, 18, **2** : 237 (Nepal).

Common name : Asiatic Jackal (Eng.).

Diagnosis : Smaller than the wolf; lacks the arching brows and elevated forehead. Dorsal colour typically a mixture of black and white, washed with buff at the shoulders, ears and legs.

Distribution : India : Nagaland (Hinton and Lindsay 1926); Arunachal Pradesh; Assam; Bihar; Manipur; Meghalaya; Mizoram; Sikkim; Tripura; West Bengal.

Elsewhere : Bhutan; Myanmar and Thailand.

Genus *Vulpes* Oken, 1861

One species of the genus *Vulpes* occurs in Nagaland.

35. *Vulpes bengalensis* (Shaw)

1800. *Canis bengalensis* Shaw, *Gen. Zool.*, **1**(2) : 330 (Bengal).

Common name : Bengal Fox (Eng.).

Diagnosis : A grey-coloured slender-limbed animal; head and body 45-60 cm in length; back of ears sandy brown; tail tip black.

Distribution : India : Nagaland : Kohima district; occurs throughout India.

Elsewhere : Pakistan; Nepal and Bangladesh.

Remarks : This species were seen at Kohima district during survey trips.

Genus *Cuon* Hodgson, 1838

This genus is represented by one species, namely, *Cuon alpinus* in Nagaland.

36. *Cuon alpinus* (Pallas)

1811. *Canis alpinus* Pallas, *Zoogr. Ross. Asiat.*, **1** : 34 (Near Udskoi Ostrog, Amurland).

Common name : Dhole or Indian Wild Dog (Eng.).

Diagnosis : Domestic dog like in appearance, with long, lanky body and short in legs and muzzle. Ears sounded at tip and tail quite bushy. Body deep red in colour.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Meghalaya; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Nepal; Bhutan.

Family FELIDAE

Two genera, *viz.*, *Panthera* and *Felis* of the family Felidae occur in Nagaland.

Key to the genera of the family FELIDAE

1. Large-sized cats; hyoidean apparatus modified by the conversion of median parts of suspensor into a long elastic tendon .... ***Panthera***

– Small sized cats, hyoidean apparatus of normal mammalian type, suspensor consists of a chain of bones, joined and end to end ..... ***Felis***

Genus *Felis* Linnaeus, 1758

Three species of the genus *Felis* occur in Nagaland.

Key to the species of genus *Felis*

1. Outer chamber of bulla relatively large, partition arising from some distance of orifice; tip of postorbital process about the middle of skull ..... *Felis chaus*

– Outer chamber of bulla small, partition arising close to orifice; tip of post-orbital process in front of the middle of skull .. 2

2. Skull short, wide and high mastoid width more than half of condylobasal length; posterior edge of palate deeply notched laterally; mesopterygoid fossa lanceolate or ovate in front ..... *Felis marmorata*

– Skull long, narrow and low; mastoid width less than half of condylobasal length; shallow margination on each side of hinder edge of palate; mesopterygoid fossa truncated; nasal branch of premaxille broad; nasal compressed ..... *Felis bengalensis*

37. *Felis chaus* Güldenstaedt

1776. *Felis chaus* Güldenstaedt, *Nov. Com. Acad. Petrop.*, **20** : 483 (Terak river, north of Caucasus).

Common name : Jungle Cat (Eng.).

Diagnosis : Medium-sized, head and body 60-75 cm in length; tail shorter, tipped black; general colour light reddish-grey, unspotted except on lower flanks and elbow; black horizontal stripes present on inner side of fore-legs; ears reddish chestnut with rudimentary hair tuft.

Distribution : India : Nagaland ; Arunachal Pradesh; Assam; Himachal Pradesh; Jammu & Kashmir; Manipur; Meghalaya; Mizoram; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Nepal.

38. *Felis bengalensis bengalensis* Kerr

1792. *Felis bengalensis* Kerr. *Anim. Kingd.* : 51 (Southern Bengal).

Common name : Leopard Cat (Eng.).

Diagnosis : Colour variable, pelage ornamented with blackish brown spots; back of ears black, with a whitish round spot in the centre; four longitudined black bands run from forehead to the neck, break up into short bands or elongated spots on shoulders; tail spotted above.

Distribution : India : Nagaland; Andhra Pradesh; Arunachal Pradesh; Assam; Maharashtra; Manipur; Meghalaya; Mizoram; Orissa; Karnataka; Kerala; Tamil Nadu; Tripura; West Bengal.

Elsewhere : Bangladesh; Myanmar; Thailand; Yunnan and erstwhile Indo-China.

39. *Felis marmorata* Martin

1837. *Felis marmorata* Martin, *Proc. zool. Soc. Lond.*, 1836 : 108 (Sumatra).

Common name : Marbled Cat (Eng.).

Diagnosis : Small-sized, 45-60 cm in head and body length. Body covered with irregular blotches with black spots on outer side of limbs, upper sunface of tail, and on the under sunface. Ears rounded. Ground colour brownish-grey.

Distribution : India : Nagaland; Arunachal Pradesh; Assam; Meghalaya; Sikkim; West Bengal.

Elsewhere : Nepal, Bhutan and Myanmar.

Genus ***Panthera*** Oken, 1816

Two species of the genus *Panthera* occur in Nagaland.

Key to the species of the genus *Panthera*

1. Ground colour of body yellow, with distinct black spots arranged in rosettes ..... *P. pardus*
- Ground colour of body Orange-Tawny, with vertical black stripes ..... *P. tigris*

The species *Panthera* pardus is represented by the following subspecies in Nagaland.

40. ***panthera pardus fusca*** (Meyer)

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

Common name : Leopard (Eng.).

Diagnosis : A sleek short-haired animal; colour pale fulvous yellow, with clearly defined black spots in rosettes.

Distribution : India : Nagaland; Throughout India in suitable habitats.

Elsewhere : Sri Lanka; Bangladesh; Myanmar and China.

The species *Panthera tigris* is represented in Nagaland by the nominate subspecies.

41. ***Panthera tigris tigris*** (Linnaeus)

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

Common name : Tiger (Eng.).

Diagnosis : A large heavey-bodied animal with short, close hair; colour varies from pale yellow ochre to burnt sienna, with black stripes arranged irregularly.

Distribution : India : Nagaland; throughout India except in deserts of Rajasthan; Punjab and Gujarat.

Elsewhere : Nepal; Bangladesh and Myanmar.

Family HERPESTIDAE

The family Herpestidae is represented, in Nagaland, by a single genus *Herpestes.*

Genus ***Herpestes*** Illiger, 1811

The genus *Herpestes* is characterized by its elongated body and short, rounded ears, mostly concealed by hairs; contour hairs blanded with pale and darker annulations, giving a speckled appearance; post-dental part of palate extending to back side half-way over mesopterygoid fossa.

Two species of the genus *Herpestes* occur in Nagaland.

Key to the species of the genus *Herpestes*

1. A conspicuous white stripe present on the sides of the neck ..... *H. urva*
- Absence of any stripe on sides of neck; muzzle dark brown ..... *H. auropunctatus*

42. ***Herpestes auropunctatus*** (Hodgson)

1836. *Mangusta auropunctatus* Hodgson, *J. Asiat. Soc. Beng.*, **5** : 235 (Nepal).

Common name : Small Indian Monsoose (Eng.).

Diagnosis : Sleek in appearance; about 25 cm in head and body length; tail shorter than head and body; fur soft, silky, olive-brown to golden in colour.

Distribution : India : Nagaland : Kohima district; Assam; Bihar; Gujarat; Madhya Pradesh; Manipur; Meghalaya; Orissa; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Nepal; Bhutan and Bangladesh.

Remarks : One specimen of this species was observed on the N.H. 39 on Dimapur Kohima road.

43. *Herpestes urva* (Hodgson)

1836. *Gulo urva* Hodgson, *J. Asiat. Soc. Beng.*, **5** : 238 (Nepal).

Common name : Crab-eating Monsoose (Eng.).

Diagnosis : A white stripe present on each side of the neck running up to shoulders; fur, coarse, ragged, dusky irongrey in colour; under-fur woolly, dark brown at base, brownish-yellow at tips.

Distribution : India : Nagaland; Arunachal Pradesh; Assam; Manipur; Meghalaya; Tripura; West Bengal.

Elsewhere : Bangladesh; Myanmar; Thailand; China; Taiwan and Vietnam.

Family MUSTELIDAE

Four genera belonging to family Mustelidae occur in Nagaland.

Key to the genera of the family MUSTELIDAE

1. Body long and slender; limbs short; ears small; claws short, sharp and partially retractile; metatarsal pads absent 2
- Body stout, bear-like; feet broad; claws strong, long and non-retractile metatarsal pads present 3
2. Muzzle, limbs and tail longer; body less elongated and cylindrical; ears larger; total 38 teeth in upper and lower jaws.....***Martes***
- Muzzle, limbs and tail shorter; body more elongated and cylindrical; ears smaller; total 34-36 teeth in upper and lower jaws ..... ***Mustela***
3. Smaller animals, head and body under 400 mm; distinctive black and white facial marks; ears with bursa; feet narrower; planter pads strongly arched ..... ***Melogale***
- Larger animals; head and body over 550 mm; poorly marked facial marks; ears without bursa; feet broader and plantigrade; planter pads not arched.....***Arctonyx***

Genus *Martes* Pinel, 1792

The genus *Martes* is represented by one species in Nagaland.

44. *Martes flavigula flavigula* (Boddaert)

1758. *Mustela flavigula* Boddaert, *Elench. Anim.*, 88 (Locality unknown, traditionally fixed as Nepal).

Common name : Yellow-throated Marten (Eng.).

Diagnosis : Head and body length 40-65 mm; with equally long bushy tail; colour variagated; the crown, nape and extremities black; throat and cheeks white; chest yellow; rest of the coat light brown.

Distribution : India : Nagaland : Kohima district; Arunachal Pradesh; Assam; Himachal Pradesh; Jammu & Kashmir; Manipur; Meghalaya; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Afghanistan; Pakistan; Nepal; Bhutan; Myanmar and China.

Genus *Mustela* Linnaeus, 1758

One species of the genus *Mustela* occurs in Nagaland.

45. *Mustela kathiah* Hodgson

1835. *Mustela (Putorius) kathiah* Hodgson, *J. Asiat. Soc. Beng.*, **4** : 702 (The Kachar, northern region of Nepal).

Common name : Yellow-bellied weasel (Eng.).

Diagnosis : Small, about 280 mm in head and body length. Coat dark Chocolate-brown above, and rich yellow below. Tail not bushy.

Distribution : India : Nagaland : Mokokchung district; Arunachal Pradesh;

Assam; Manipur; Meghalaya; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Bhutan; Myanmar and China.

Genus ***Melogale*** I. Geoffroy, 1831

One species of the genus *Melogale* occurs in Nagaland. It is represented by one subspecies.

46. ***Melogale moschata millsi*** (Thomas)

1922. *Helictis millsi* Thomas, *J. Bombay nat. Hist. Soc.*, **28** : 432 (Mokokchung, *c* 1524 m, Naga Hills, Nagaland).

Common name : Chinese Ferret-Badger (Eng.).

Diagnosis : Coat deep purplish grey to brown; light facial markings and under-side yellowish of buffy-white; narrow whitish stripe runs from the crown of the head down the middle of the back to belly; molar teeth small and narrow-crowned.

Distribution : India : Nagaland : Mokokchung district; Manipur.

Elsewhere : Northern Myanmar.

Genus ***Arctonyx*** F. Cuvier, 1825

One species and subspecies of the genus *Arctonyx* occurs in Nagaland.

47. ***Arctonyx collaris collaris*** F. Cuvier

1825. *Arctonyx collaris* F. Cuvier, *Hist. Nat. Mamm.*, 3(51), (Bhutan Duars, Jalpaiguri district, West Bengal, India).

Common name : Hog Badger (Eng.).

Diagnosis : Short-tailed animal; head and body length 55-70 cm; squat bear-like body; snout long, like that of a pig; legs stumpy, claws powerful; coat coarse, gney, and rough; head with longitudinal black streaks.

Distribution : India : Nagaland; Arunachal Pradesh; Assam; Manipur; Meghalaya; Sikkim; West Bengal.

Elsewhere : Nepal and Bangladesh.

Genus ***Lutra*** Brisson, 1762

The genus *Lutra* is represented in Nagaland by one species, *viz., Lutra perspicillata.*

48. ***Lutra perspicillata*** I. Geoffroy

1826. *Lutra perspicillata* I. Geoffroy, *Dict. Class. H. N.*, **5** : 519 (Sumatra).

Common name : Smooth coated India Otter (Eng.).

Diagnosis : Shorter and stoutly built with smooth sleek coat. Colour, blackish to rufous chocolate-brown, dorsal fur not grizzled; white on underparts not extending below chest. Hairs of the muzzle terminate in a straight line above the nacked part of the nose.

Distribution : India : Nagaland; Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Karnataka; Kerala; Madhya Pradesh; Meghalaya; Orissa; Pondichery; Tamil Nadu; Uttar Pradesh; West Bengal.

Elsewhere : Bangladesh; Myanmar; China; Vietnam; Malaysia and Indonesia.

Genus ***Aonyx*** Lesson, 1827

The genus *Aonyx* is represented in Nagaland by one species and subspecies.

49. ***Aonyx cinerea concolor*** (Rafinesque)

1832. *Amblonyx concolor* Rafinesque, *Atlantic J.*, **1** : 62 (Garo Hills, Meghalaya, India).

Common name : Oriental Small-clawed Otter (Eng.).

Diagnosis : Small-sized otter of about 60 cm in head and body length. In feet, the two middle toes noticeably longer than the others. Colour dark-brown above, paler below; white underparts limited to the neck, and shades into brown on the chest.

Distribution : India : Nagaland; Arunachal Pradesh; Assam; Himachal Pradesh; Mizoram; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : China.

Family URSIDAE

One genus of the family Ursidae occurs in Nagaland.

Genus *Selenarctos* Heudge, 1901

The genus *Selenarctos* is represented in Nagaland by one species.

50. *Selenarctos thibetanus* (G. Cuvier)

1823. *Ursus thibetanus* G. Cuvier, *Ossements Foss.*, 4 : 325 (Sylhet, Bangladesh).

Common name : Asiatic Black Bear (Eng.).

Diagnosis : Large-sized bear, 140-190 cm in head and body length; coat short smoth and black; claws black; a white or buff coloured v-shaped breast patch present.

Distribution : India : Nagaland : Mokokchung district; Jammu and Kashmir; Meghalaya; Manipur; Mizoram; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Pakistan and Bangladesh.

Family VIVERRIDAE

Five genera of the family Viverridae occur in Nagaland.

Key to the genera of the family Viverridae

1. Scent gland present in both sexs, in male perinacal, between scrotum and prepuce; in female behind or encircling vulva 2
- Scent gland absent in male; in female present in front of vulva ..... ***Arctogalidia***
2. Feet terrestrial and digitigrade; carpal pad single; metatarsal pads absent; scente gland opening into highly specialized pouches 3
- Feet scansorial and semi-plantigrade; carpal and metatarsal pads double; glandular pouches less specialized 4
3. Anterior edge of ears widely separated due to broad forehead; a dorsal crest of hairs extending posteriorly at least from the shoulders ..... ***Viverra***
- Anterior edge of ears set close together due to narrow forehead; no dorsal crest of long hairs ..... ***Viverricula***
4. A definite pattern of dorsal strips and lateral spots present at least in new coat ..... ***Paradoxurus***
- No pattern of stripes or spots present ..... ***Paguma***

Genus *Viverra* Linnaeus, 1758

One species and subspecies of the genus *Viverra* occurs in Manipur.

51. *Viverra zibetha zibetha* linnaeus

1758. *Viverra zibetha* Linnaeus, *Syst. Nat.* 10th ed., 1 : 44 (India).

Common name : Large Indian Civet (Eng.).

Diagnosis : Markings of body indistinct and cloudy; complete dark and light rings on tail; crest of long, black, erectile hairs present on the back; anterior upper molar distinctly triangular.

Distribution : India : Nagaland; Arunachal Pradesh; Assam; Bihar; Madhya Pradesh; Manipur; Meghalaya; Mizoram; Sikkim; Tripura; West Bengal.

Elsewhere : Bangladesh; Myanmar; Thailand; Vietnam; Malaysia and Singapore.

Genus *Viverricula* Hodgson, 1838

One species of the genus *Viverricula* occurs in Nagaland.

52. *Viverricula indica indica* (Desmarest)

1817. *Viverra indica* Desmerest, *Nouv. Dict. nat. Hist.* 7 170 (India).

Common name : Small Indian Civet (Eng.).

Diagnosis : Body pattern consists of small spots on the fore-quarters, larger spots tending to run into longitudinal lines on the flanks, and form six to eight stripes down the back; tail ringed with black and white; muzzle short

and weak; no dorsal crest of long hairs on back; claws unprotected by sheaths of skin.

Distribution : India : Nagaland : Mokokchung district; Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Goa; Gujarat; Himachal Pradesh; Jammu & Kashmir; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Manipur; Meghalaya; Orissa; Sikkim; Tamil Nadu; Tripura; Uttar Pradesh; West Bengal.

Elsewhere : Sri Lanka; Bhutan and Bangladesh.

Genus ***Paradoxurus*** Cuvier, 1821

One species of the genus *Paradoxurus viz., P. hermaphroditus* occurs in Nagaland.

53. ***Paradoxurus hermaphroditus*** (Pallas)

1777. *Viverra hermaphroditus* Pallas, *In* Schreber, *Die Saügethiere,* **3** : 426 (India).

Common name : Common Palm Civet or Toddy Cat (Eng.).

Diagnosis : About 55 cm in head and body length with tail nearly as long; for coarse long ragged, an indistinct mixture of black and grey; muzzle and extremeties blackish; young often striped or spotted.

Distribution : India : Nagaland : Kohima district throughout India.

Elsewhere : Sri Lanka; China; Malaysia, Indonesia and Philippines.

Genus ***Arctogalidia*** Merriam, 1897

The genus is represented by one species *viz., Arctogalidia trivirgata.*

54. ***Arctogalidia trivirgata millsi*** Wroughton 1921

1921. *Arctogalidia millsi* Wroughton, *J. Bombay N. H. Soc.* **27** : 600. Mokokchung, Naga Hills, 5000 ft. Nagaland, India.

Common name : Three-banded Palm Civet (Eng.).

Diagnosis : Body-pattern, when present, consists of three dark stripes on dorsum and a white streak on the nose; ears with poorly developed bursa; area between plantar and digital pads naked.

Distribution : India : Nagaland : Mokokchung districts; West Bengal.

Elsewhere : Myanmar; China; Thailand; Malaysia and Indonesia.

Genus ***Paguma*** Gray, 1831

One species of the genus *Paguma* occurs in Nagaland.

55. ***Paguma larvata neglecta*** Pocock

1934. *paguma larvata neglecta* Pocock, *J. Bombay nat. Hist. Soc.,* **37** : 334 (Mokokchung, *c* 1372 m, Naga Hills, Nagaland, India).

Common name : Masked Palm Civet (Eng.).

Diagnosis : Absence of spots or stripes on body and presence of white whiskers distinguishes it from other Indian civets. Coat colour grey to tawny; underparts white. A white band on forehead, nose and beneath ears; a blotch below eyes.

Distribution : India : Nagaland : Mokokchung district; Assam; Manipur; Meghalaya; Sikkim.

Elsewhere : Myanmar.

Order PROBOSCIDEA

Only the family Elephantidae occurs in Nagaland.

Family ELEPHANTIDAE

The family Elephantidae is represented in Nagaland by single genus, namely, *Elephas.*

Genus ***Elephas*** Linnaeus, 1758

The genus *Elephas* is represented in Nagaland by a single species and subspecies.

56. *Elephas maximus indicus* G. Cuvier

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

Common name : Indian Elephant (Eng.).

Diagnosis : Largest of land animals of India; well-known by its trunk, at the end of which the nostrils are placed; lower lip small, pointed and spout like; body blackish grey throughout, tail thin, long, with coarse bristles at the end; eyes very small, ears large and flat.

Distribution : India : Nagaland : Arunachal Pradesh; Assam; Bihar; Karnataka; Kerala; Meghalaya; Mizoram; Orissa; Tamil Nadu; Tripura; Uttar Pradesh; West Bengal.

Elsewhere : Bangladesh; Bhutan; Myanmar; Thailand; Vietnam; Malaya; Sumalia; Borneo.

Order ARTIODACTYLA

Animals belonging to this order are even-toed; axis of foot passes between third and fourth toes; toes enclosed in horny hooves of approximately equal size and giving the appearance of a single hoof, split down in the middle.

This order is represented in Nagaland by three families.

Key to the families of the order ARTIODACTYLA

1. Upper incisors absent; horns or antlers present, at least in males 2
– Upper incisors present; animals devoid of horns or antlers ..... SUIDAE
2. Horns consist of a hollow outer sheath and an inner bony core, unbranched and permanent ..... BOVIDAE
– Antlers solid, branched, ornamented with knot and ridges, and periodically shed ..... CERVIDAE

Family SUIDAE

This family is represented in Nagaland by a single genus and species, *Sus scrofa* Linnacus, 1758

57. *Sus scrofa cristatus* Wagner

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

Diagnosis : 76-102 cm in height at shouldars; coat coarse, a crest of black bristles present from nape to the back; tail long, thin, fringed at the tip, barely reaching the hocks; first coat of young pigs dark brown striped length-ways with buff.

Distribution : India : Nagaland; throughout India in forested tracts.

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

Family CERVIDAE

Only one genus *viz.*, *Muntiacus* Rafinesque, occurs in Nagaland.

Genus *Muntiacus* Rafinesque, 1815

The genus is represented in Nagaland by one species, *Muntiacus muntjak* Zimmerman. This species represented by the following subspecies.

58. *Muntiacus muntjak vaginalis* (Boddaert)

1785. *Cervus vaginalis* Boddaert, *Elench. Anim.*, 1 : 136 (Bengal).

Common name : Barking Deer (Eng.).

Diagnosis : Antlers small, consisting of a short brow-time and an unbranched beam, set on bony hair covered pedicels, extending down on each of the faces as bony ridges. Upper canines tusk-like. Tail about as long as head. Coat close, sleek, bright bay in colour, with black streaks along the face-ridges inside, extending up the pedicels in the buck; throat, groin, and under-side of tail white.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Arunachal

Pradesh; Assam; Bihar; Meghalaya; Sikkim; Tripura; Uttar Pradesh; West Bengal.

Elsewhere : Bhutan; Bangladesh; northern Myanmar; Yunan and northern Vietnam.

Family BOVIDAE

The family Bovidae is represented in Nagaland by two genera.

Key to the genera of the family Bovidae

1. Horns inserted far apart, at the extremeties of vertex ..... ***Bos***
- Horns closely-set, conical backwardly carved and ringed ..... ***Capricornus***

Genus *Capricornis* Ogilby, 1837

The genus *Capricornis* is represented by one species, *Capricornis sumatraensis* Bechstein, 1799.

59. *Capricornis sumatraenis* (Bechstein)

1799. *Antilope sumatraensis* (Bechstein) *Ubers. vierf. Thiere.*, **1** : 98 (Sumatra).

Common name : Serow (Eng.).

Diagnosis : Males 100-110 cm height at shoulders, with large head, thick neck, ears like those of donkeys. Coat coarse, grizzled black on the back, rusty red on shoulders, flanks and thigh; limbs chestnut above, dirty white below.

Distribution : India : Nagaland; Mokokchung district (Mills 1923); Arunachal Pradesh; Meghalaya; West Bengal.

Genus *Bos* Linnaeus, 1758

One species of the genus *Bos* occurs in Nagaland.

60. *Bos gaurus* H. Smith

1827. *Bos gaurus* H. Smith, Griffith's *Cuvier Anim. Kingd.*, **4** : 399 (Manipat, Sarguja, Madhya Pradesh, India).

Common name : Gaur, Indian Bison (Eng.).

Diagnosis : Males 175-196 cm in height at shoulders, females a little smaller. A muscular ridge, present on shoulders, slopes down to the middle of the back where it ends in an abrupt dip. General colour coffee or reddish brown, jet black in old bulls; forehead ashy; stockings yellowish or white.

Distribution : India : Nagaland : Das *et al.* 1995); Arunachal Pradesh; Andhra Pradesh; Assam; Bihar; Goa; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Meghalaya; Mizoram; Orissa; Rajasthan; Tamil Nadu; Uttar Pradesh; West Bengal.

Elsewhere : Nepal and Bangladesh.

Order LAGOMORPHA

Two pairs of incisors in the upper jaw, placed one behind the other; cheek-teeth adapted for grinding fibrous food, and separated from incisors by a wide diastema, tail very short or absent. Ears short or very long.

Only one family, namely, Leporidae, occurs in Nagaland.

Family LEPORIDAE

Only one genus, namely, *Lepus* occurs in Nagaland.

Genus *Lepus* Linnaeus, 1758

One species of the genus *Lepus* occurs in Mizoram.

61. *Lepus nigricollis* Cuvier

1823. *Lepus nigricollis* F. Cuvier, *Diet. Sci. Nat.*, **26** : 307 (Madras).

Common names : Black-naped Hare (Eng.).

Diagnosis : Head and body 40-50 cm in length; ears longer than the tail; fur coarse, reddish-brown mixed with black above; throat, belly and under side of tail white; upper side of tail brown; a grey patch on the nape.

Distribution : India : Nagaland (Agrawal *et*

al. 1992); Assam; Madhya Pradesh; Meghalaya; Orissa; Rajasthan; Sikkim; Tripura; Uttar Pradesh; West Bengal.

Elsewhere : Nepal and Bangladesh.

Order RODENTIA

Rodents are worldwide in distribution. They are characterized by the presence of a pair of chisel-shaped incisors in each jaw and a distinct diastema between incisors and cheekteeth. In Nagaland they are represented by four families, namely Sciuridae, Muridae, Rhizomyidae and Hystricidae.

Key to the families of the order RODENTIA

1. Fur modified into quills or long stiff hairs; cheekteeth 4/4 in number HYSTRICIDAE
- Fur not modified into quills 2
2. Skull with distinct postorbital process; premolars two on each side in upper jaw, except in the genus *Ratufa*, only one in the lower ..... SCIURIDAE
- Skull with no postorbital process; premolars absent 3
3. Slender in form; tail long, scaly and clothed with short hairs ..... MURIDAE
- From heavy, cylindrical, mole-like; tail short or rudimentary, almost naked and not scaly; limbs short ..... RHIZOMYIDAE

Family SCIURIDAE

Seven genera of the family Sciuridae occur in Nagaland.

Key to the genera of the family SCIURIDAE

1. Flying membrance present on both sides of the body 2
- Flying membrane absent 3
2. Surface-pattern of lower molar teeth simple and possesses a central depression ..... ***Hylopetes***
- Surface-pattern of lower molar teeth excessively wrinkled, and lacks a central depression 3
3. Inter femolar membrane present; ear-tufta present; size large, more than 200 mm in head and body length ..... ***Belomya***
- Interfemoral membrane present, ear-tufts absent; size large, more than 300 mm in head and body length ..... ***Petaurista***
4. Size large, over 280 mm in head and body length; maxillary teeth 4 in number ..... ***Ratufa***
- Size small, less than 280 mm in head and body length; maxillary teeth 5 in number 5
5. Dorsal surface of body prominently striped; stripes more than one in number; median stripes of body black ..... ***Tamiops***
- Dorsal surface of body unstriped or with a faint black stripe 6
6. Length of nasal exceeds inter-orbital width of skull ..... ***Dremomys***
- Length of nasal does not exceed inter-orbital width of skull ..... ***Callosciurus***

Genus Belomys Thomas, 1905

This genus *Belomys* is represented in Nagaland by one species.

62. *Belomys pearsoni* (Gray)

1842. *Sciuropterus pearsoni* Gray, *Ann. Mag. nat. Hist.*, **10** : 263 (Darjeeling, West Bengal, India).

Common name : Hairy-footed Flying Squirrel (Eng.).

Diagnosis : Small-sized, head and body length about 20 cm; fur rufous brown; under-surface fulvous white; tuft of long hairs at base of each ear-conch; upper cheektooth-row 9 mm or less.

Distribution : India : Nagaland; Arunachal Pradesh; Assam; Manipur; Meghalaya; Sikkim.

Elsewhere : Bhutan.

Genus ***Petaurista*** Link, 1795

Two species of this genus occur in Nagaland.

Key to the species of the genus *Petaurista*

1. Size large, hind foor over 80 mm .... *Petaurista alborufus*

– Size smaller, hind foot, 65-78 mm .... *Petaurista petaurista*

63. ***Petaurista alborufus candidulus*** Wroughton

1911. *Petaurista candidulus* Wroughton, *J. Bombay nat. Hist. Soc.*, **20**(4) : 1014, 1022 (Kindat, Western Myanmar).

Common name : Red and White Flying Squirrel (Eng.).

Diagnosis : Size large, hind foot over 80 mm; shoulder patch very indistinct; the head including fore-head white, strongly contrasted with the back; ears white.

Distribution : India : Nagaland; Assam; Manipur; Meghalaya.

Elsewhere : Myanmar.

Petaurista petaurista (Pallas)

The species is represented by two subspecies in Nagaland.

Key to the subspecies of *Petaurista petaurista*

1. Occipitonsal length not exceeding 73.1 mm ..... *P. p. albiventer*

– Occiptionasal length not less than 76 mm ..... *P. p. Yunanesis*

64. ***Petaurista petaurista albiventer*** (Gray)

1834. *Pteromys albiventer* Gray, *Illustr. Ind. Zool.*, pl. XVIII (Nepal).

Common name : Common Giant Flying Squirel (Eng.).

Diagnosis : Smaller than in *yunanensis*, the occipitonasal length not more than 73.1 mm. Colour above mostly reddish, chestnut, sometimes the head and back paler than the parachute.

Distribution : India : Nagaland; Jammu and Kashmir; Meghalaya; Punjab; Uttar Pradesh.

Elsewhere : Nepal.

65. ***Petaurista petaurista yunanensis*** Anderson

1875. *Pteromys yunanensis* Anderson, *Ann. Mag. N.H.* **16** : 282. Momein, Yunnan.

Common name :

Diagnosis : Larger than in *albiventer*, the occipitonasal length more than 76 mm. The unusually dark red dorsal coloration will distinguish this race from *albiventer*.

Distribution : India : Nagaland.

Elsewhere : Myanmar, China.

Genus ***Hylopetes*** Thomas, 1908

Genus *Hylopetes* is represented in Nagaland by one species.

66. ***Hylopetes alboniger alboniger*** (Hodgson)

1836. *Sciuropterus alboniger* Hodgson, *J. Asiat Soc. Beng.*, **5** : 231 (Nepal).

Common name : Parti-coloured Flying Squirrel (Eng.).

Diagnosis : Dorsal colour greyish to reddish-brown; white or light patches present in the region of shoulder; under-surface greyish; throat and chest tends to be whitish. Occipitonasal length mostly over 45 mm.

Distribution : India : Nagaland; Arunachal Pradesh; Manipur; Meghalaya; West Bengal.

Elsewhere : Nepal; Bangladesh; Myanmar and China.

Genus *Scotozous* Dobson, 1875

The genus *Scotozous* is represented by a single species in Nagaland.

Genus *Callosciurus* Gray, 1867

Two species of the genus *Callosciurus* occur in Nagaland.

Key to the species of the genus *Callosciurus*

1. Frontal width usually approximates to one-third of the occipitionasal length..... ..... *C. pygerythrus*

— Frontal width clearly more than one-third of the Occipitonasal length..... *C. erythraeus*

67. ***Callosciurus erythraeus erythrogaster*** (Blyth)

1842. *Sciurus erythrogaster* Blyth, *J. Asiat Soc. Beng.*, 11 : 970 (Manipur).

Common name : Pallas's Squirrel (Eng.).

Diagnosis : As given above in the key.

Distribution : India : Nagaland; Assam; Manipur; Meghalaya; Mizoram.

Elsewhere : Bangladesh and Myanmar.

Callosciurus pygerythrus (Geoffroy)

The species is represented by two subspecies in Nagaland.

Key to the subspecies of *Callosciurus pygerythrus*

1. The underparts dark grey (near blue-grey) ..... *C. P. stevensi*

– The underparts lighter, the thigh patches are white or whitish..... *C. P. blythi*

68. ***Callosciurus pygerythrus blythi*** (Tytler)

1845. *Sciurus blythi* Tyter, *Ann. Mag. nat. Hist.*, 14 : 172 (Dhaka, Bangladesh).

Common name : Irrawaddy Squirrel (Eng.).

Diagnosis : As given in the key.

Distribution : India : Nagaland; Assam; Manipur; Meghalaya; Tripura.

Elsewhere : Bangladesh and Myanmar.

69. ***Callosciurus pygerythrus stevensi*** Thomas

1908. *Sciurus Stevensi* Thomas, *J. Bombay. N. H. Soc.* 18. 2 : 248. Beni-Chang, 4000 ft., Abor. Miri Hills, northern frontier of Upper Assam.

Common name : Irrawaddy Squirrel (Eng.).

Diagnosis : As given in the key.

Distribution : India : Nagaland; Assam; Arunachal Pradesh.

Elsewhere : Myanmar.

Genus *Tamiops* J. Allen, 1906

One species of the genus *Tamiops* occurs in Nagaland.

70. ***Tamiops macclellandi macclellandi*** (Horsfield)

1839. *Sciurus macclellandi* Horsfield, *Proc. zool. Soc. Lond.*, 152 (Assam, India).

Common name : Himalayan Striped Squirrel (Eng.).

Diagnosis : Dorsal surface of body varies from greyish to brownish and striped, mediam stripe being black; ventral surface greyish white; ear tufts black, with conspicuoas white tip.

Distribution : India : Nagaland; Arunachal Pradesh; Assam; Manipur; Meghalaya; Mizoram; Sikkim.

Elsewhere : Nepal; Bhutan and Myanmar.

Genus *Dremomys* Heude, 1898

The genus *Dremomys* is represented by three species *viz.*, *D. pernyi* and *D. rufigenus* and *D. lokriah.*

Key to the species of genus *Dremomys*

1. The muzzle is on the whole less elongated. The underparts are bright yellow .... *D. lokriah*

– The muzzle is more elongated. The underparts are not bright yellow 2

2. The underside of the tail is bright red throughout its length ..... *D. rufigenis*

– The underside of the tail is not red .... *D. pernyi*

71. ***Dremomys pernyi*** (Milne-Edward)

1867. *Sciurus pernyi* Milne-Edwards, *Rev. Mag. Zool.*, 230, pl. 19. Szechuan, China.

Common name : Perny's Squirrel (Eng.).

Diagnosis : As given in the key.

Distribution : India : Nagaland : Kohima district; Assam; Manipur.

Elsewhere : Myanmar; China.

72. ***Dremomys rufigenis rufigenis*** Blanford

1878. *Sciurus rufigenis* Blanford, *J. Asiat Soc. Bengal*, 47, **2** : 156, pl. viii. Mt. Mulaiyit, Tenasserim.

Common name : Red-Cheeked Squirrel (Eng.).

Diagnosis : As given in the key.

Distribution : India : Nagaland : Mokokchung district, (Mills 1923).

Elsewhere : Myanmar, Thailand, Indo-China.

73. ***Dremomys lohriah macmillani*** Thomas

1916. *Dremomys macmillani* Thomas, *J. Bombay nat. Hist. Soc.*, **24**(2) : 238 (Tatkon, Western Myanmar).

Common name : Orange-bellied Himalayan Squirrel (Eng.).

Diagnosis : More or less like the Irrawaddy Squirrel in appearance, except that a mid-dorsal black stripe occassionally present; belly washed with buff or yellowish; ear patches rufous.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Assam; Manipur, Meghalaya.

Elsewhere : Myanmar.

Genus ***Ratufa*** Gray, 1867

One species of the *genus Ratufa* occurs in Nagaland.

74. ***Ratufa bicolor gigantea*** (M'Clelland)

1839. *Sciurus giganteus* M'Clelland, *Proc. zool. Soc. Lond.*, 150 (Assam, India).

Common name : Malayan Giant Squirrel (Eng.).

Diagnosis : A long-sized diurnal squirrel; dorsal colour varies from brown to black; venter buff.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Arunachal Pradesh; Assam; Manipur; Meghalaya; Sikkim; Tripura; West Bengal.

Elsewhere : Bhutan; Myanmar and China.

Family HYSTRICIDAE

Fur more or less modified into long spines or quills; angular portion of mandible arises from the bony socket of lower incisor.

Two genera, namely, *Hystix* and *Atherurus* occur in India, of which only the former genus is known to occur in Nagaland.

Genus ***Hystrix,*** Linnaeus, 1758

One species of the genus *Hystrix* occurs in Nagaland.

75. ***Hystrix brachyura*** Linnaeus

1758. *Hystrix brachyura* Linnaeus, *Syst. Nat.*, 10the ed., **1** : 57 (Malaysia, Malacca).

* Wilson and Reeder (1992) treated this family Rhizomyidae as Subfamily Rhizomyinae under Family Muridae.

Common name : Crestless Himalayan Porcupine (Eng.).

Diagnosis : No crest of bristles present on the crown; quills bear only dark band in the middle, rest white; tail less than one fifth of head and body length; caudal ratling quills of tail more open and more developed.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Manipur; Mizoram (Mandal *et al.* 2000).

Elsewhere : Myanmar; Thailand; southern China; Malaya; Sumatra; Barneo and earstwhile Indo-China.

Family RHIZOMYIDAE*

The family is represented by two genera in India and both of them occur in Nagaland. Both of the genera. *Rhizomys* and *Cannomys* are adapted to sub-terranean mode of life. They have large prodont incisors, small eyes and ears, short limba armed with strong claws.

Key to the genera of the family RHIZOMIDAE

1. Size large, condylobasal length of the skull is not less than 57.0 mm; soles of feet granulated; mammae 10; M_1 is larger than M_2 ..... ***Rhizomys***
– Size small, condylobasal length of skull less than 55.0 mm; sole of feet not granulated; mammae 8; M_1 is often smaller than M_2 ..... ***Cannomys***

Genus Rhizomys Gray, 1831

One species of the genus *Rhizomys* occur in Nagaland.

76. *Rhizomys pruinosus pruinosus* Blyth

1851. *Rhizomys pruinosus* Blyth, *J. Asiat. Soc. Beng.*, **20** : 519 (Cherrapunji, Meghalaya, India).

Common name : Hoary Bamboo Rat (Eng.).

Diagnosis : Much larger than any other rodent, head and body length 20 to 30 cm or more; colour dark-brown, grizzled; tail about 10 cm or so; palatal length 32.2 mm.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Assam; Manipur; Meghalaya.

Elsewhere : Myanmar; Thailand; earstwhile; Indo-China and China.

Genus *Cannomys* Thomas, 1915

One species of the genus *Cannomys* occurs in Nagaland.

77. *Cannomys badius badius* (Hodgson)

1814. *Rhizomys badius* Hodgson, *Calcutta J. nat. Hist.*, **2** : 410 (Nepal).

Common name : Bay Bamboo Rat (Eng.).

Diagnosis : Smaller than *Rhizomys;* head and body 19 to 20 cm; colour chestmut gray or ashy brown, not grizzled; tail about 7 cm or so.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Arunachal Pradesh; Assam; Manipur; Meghalaya; Mizoram (Mandal *et al.* 1994).

Elsewhere : Nepal; Bhutan; Bangladesh; Myanmar; China; Thailand and Combodia.

Family MURIDAE

The family Muridae is represented in Nagaland by five genera.

Key to the genera of the family MURIDAE

1. Hallux opposable; hallux and fifthe toe having a flat nail ..... ***Vandeleuria***
– Hallux not opposable; hallux and fifthe toe provided with a claw 2
2. Condylobasal length exceeds or equals to occipitonasal length, antenior palatal foramina more than 7 mm in length ..... ***Bandicota***

- Condylobasal length less than occipitonasal length; anterior palatal fromina less than 7 mm 3

3. First upper molar more than half the length of cheektooth row, and its antero-internal cusp distorted inwards to reach the level of second lamina; third molar extermely reduced ..... ***Mus***

- First upper molar less than half the length of cheek-tooth row and its antero-internal cusp not distorted inwards to reach the second lamina; third molar not so reduced; 4

4. Palate short, less than one-half of occipitonasal length; anterior palatal formina less than one-fifth of the occipitonasal length ..... ***Niviventer***

- Palate long, more than one-half of occipitonasal length; bulla more than 15% of occipitonasal length ..... ***Rattus***

Genus ***Vandeleuris*** Gray, 1842

One species of the genus *Vandeleuria* occurs in Nagaland.

78. *Vandeleuria oleracea demeticola* Hodgson

1845. *Mus demeticola* Hodgson, *Ann. Mag. nat. Hist.*, **15** : 268 (Nepal).

Common name : Indian Long-tailed Tree Mouse (Eng.).

Diagnosis : Occipitnasal length less than 23.0 mm; tail more than 150% of head and body length; colour bright red on back, white ventrally.

Distribution : India : Nagaland (Ellerman); Arunachal Pradesh; Assam; Bihar; Manipur; Meghalaya; Orissa; Sikkim; Uttar Pradesh; West Bengal.

Elsewhere : Nepal and Myanmar.

Genus ***Niviventer*** Marshall, 1976

One species of the genus *Niviventer viz.*, *Niviventer fulvesceus* occurs in Nagaland.

79. *Niviventer fulvesceus fulvesceus* (Gray)

1847. *Mus fulvesceus* Gray, *Cat. Hodgson Coll. Br. Mus.*, : 18 (Nepal).

Common name : Chestnut Rat (Eng.).

Diagnosis : Tail elongated, approximately 140% of head and body length. Size large, occipitonasal length more than 32 mm.

Distribution : India : Nagaland : Mokokchung district (Hinton & Lindsay 1926); Arunachal Pradesh; Assam; Meghalaya; Sikkim; West Bengal.

Elsewhere : Nepal and Myanmar.

Genus ***Rattus*** Fisher, 1803

Four species of the genus *Rattus* occur in Nagaland.

Key to the species of the genus *Rattus*

1. Tail unicolor ..... *Rattus rattus*

- Tail bicolour 2

2. Bullae very small, one-tenth of occipitonasal length at most ..... *Rattus edwardsi*

- Bullae large 3

3. Diastema more than 31% of occipitonasal length ..... *Rattus manipulus*

- Diastema less than 31% of occipitonasal length ..... *Rattus mackenziei*

Rattus rattus (Linnaeus)

Rattus rattus is represented in Nagaland by four subspecies.

Key to the subspecies of *Rattus rattus*

1. Underparts of body white or dirty white 2

- Underparts of body dull or dark 3

2. Maxillary toothrow less than 6.6 mm in length or less than 16% of occipitonasal length ..... *Rattus r. arboreus*

- Maxillary toothrow usually more than 6.6 mm in length or more than 16% of occipitonasal ..... *Rattus r. brunneusculus*

3. Maxillary toothrow rarely reaches 6.6 mm in length ..... *Rattus r. rufescens*

– Maxillary toothrow 6.6 mm or more in length or more than 16% of occipitonasal length ..... *Rattus r. tistae*

80. *Rattus rattus rufescens* (Gray)

1837. *Mus rufescens* Gray, *Ann. Mag. Nat. Hist.*, 1 : 35 (Dharwar, Karnataka, India).

Common name : House Rat (Eng.).

Diagnosis : Underparts of body dull or dark. Maxillary tooth-row rarely reaches 6.6 mm in length.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); now found in all major cities of India.

Elsewhere : Pakistan; Thailand and Malaysia.

81. *Rattus rattus brunneusculus* (Hodgson)

1845. *Mus brunneusculus* Hodgson, *Ann. Mag. nat. Hist.*, 15 : 276 (Nepal).

Common name : House Rat (Eng.).

Diagnosis : Size smaller; head and body length below 160 mm; tail larger, being 123-131% of head and body length.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Arunachal Pradesh; Assam; Jammu & Kashmir; Manipur; Meghalaya; Sikkim; West Bengal.

Elsewhere : Nepal and Bhutan.

82. *Rattus rattus tistae* Hinton

1918. *Rattus rattus tistae* Hinton, *J. Bombay nat. Hist. Soc.*, 26 : 68 (Pashok, Darjeeling district, West Bengal, India).

Common name : House Rat (Eng.).

Diagnosis : Under-parts of body dull or dark coloured; occipitonasal length normally not reaching 42 mm; tooth-row mostly over 6.6 mm.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Arunachal Pradesh; Assam; Manipur; Meghalaya; Sikkim; West Bengal.

Elsewhere : Bhutan (Chakraborty 1975).

83. *Rattus rattus arboreus* (Horsfield)

1851. *Mus arboreus* (Buchanan Hamilton) Horsfield, *Cat. E. Ind. Mus.*, 141. Bengal.

Common name : House Rat (Eng.).

Material examined: Nagaland: Kohima district: 2♂, 1♀, Dimapur, coll. J. P. Srivastava, 4-5.IV.1996 & 6.XI.1997; 1♀, Chumkedima, coll. J. P. Srivastava, 19.III.1997; 1♀, Mao, coll. J. P. Srivastava 23.III.1997. Zunheboto district : 2♂, Zunheboto, coll. J. P. Srivastava, 9.IV.1998. Phek district : 1♂, Meluri, coll. J. P. Srivastava, 1.X.1996; 1♀, Phek, coll. J. P. Srivastava, 30.IX.1996.

Measurements : External : 4♂, HB 140-168 (160.4); Tl 192-220 (208); Hf 31.0-35.0 (33.0); E 19.0-22 (20.5). 1♀ : HB 162; Tl 210; Hf 31.0; E 19.0. Cranial : 4♂, *on* 40.0-44.9 (42.8) : *cb* 36.6-42.0 (39.6); *n* 14.4-17.5 (15.8); *pl* 21.0-23.9 (22.8); *mtr* 6.3-6.5 (6.35); *b* 6.9-7.6 (7.2); *apf* 7.1-8.5 (7.9); *d* 10.3-12.2 (11.3); *zw* 18.4-21.3 (20.1) *iw* 6.3-6.7 (6.6); *ml* 21.0-22.5 (22.2). 1♀ : *on* 40.7; *cb* 38.0; *n* 14.2; *pl* 21.2; *mtr* 6.3; *b* 7.0. *apf* 7.1; *zw* 19.2; *iw* 6.4; *d* 10.9; *ml* 21.6.

Diagnosis : Under-parts of body white or dirty white. Maxillary toothrow less than 6.6 mm in length or less than 16% of occipitonasal length.

Distribution : India : Nagaland : Kohima district, Zunheboto district, Phek district; Tripura; West Bengal; Bihar; Orissa; Uttar Pradesh.

Elsewhere : Nepal.

Remarks : Reported for the first time from Nagaland (Mandal *et al.* 2000).

84. *Rattus manipulus manipulus* (Thomas)

1916. *Epimys manipulus* Thomas, *J. Bombay nat. Hist. Soc.*, 24 (3) : 413 (*c* 20 miles W of Kindat, Kabaw Valley, Myanmar).

Common name : The Manipur Rat (Eng.).

Diagnosis : Medium sized rat, head and body less than 200 mm; dorsal colour grizzly grey, darker mid-dorsally; ventral colour pure white, sharply demarcated from dorsum; tail dark above, pale yellow basally, pale at end; occipitonasal length 36-41 mm; length of bulla less than 6.0 mm; diastema lengthened, over 31% of occipitonasal length.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Meghalaya; Manipur.

Elsewhere : Myanmar and Thailand.

85. ***Rattus mackenziei*** (Thomas)

1916. *Epimys mackenziei* Thomas, *J. Bombay nat. Hist. Soc.*, **24** : 410 (Haingyan, 50 miles W of Kindat, Chin Hills, Myanmar).

Common name : Mackenziei's Rat (Eng.).

Diagnosis : A gaint sized rat, hind foot about 50 mm in length; opisthodont incisors; small bullae; 3+2 mammae.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Assam; Manipur; Meghalaya.

Elsewhere : Myanmar.

86. ***Rattus edwardsi*** (Thomas)

1882. *Mus edwardsi* Thomas, *Proc. zool. Soc. Lond.*, 587 (Mountains of western Fukien, probably Kuatun, China).

Common name : Edwards's Rat (Eng.).

Diagnosis : Bullae very small, one-tenth of occipitonasal length at most, occipitonasal length exceeds 56 mm.

Distribution : India : Nagaland : Mokokchung district (Mills 1923); Arunachal Pradesh; West Bengal; Sikkim.

Elsewhere : Myanmar; east to Vietnam and China.

Genus *Mus* Linnaeus, 1775

Three species of the genus *Mus* occur in Nagaland.

Key to the species of the genus *Mus*

1. Anterior palatal foramina short, less than one-fifth of occipitonasal length, and not extending between maxillary tooth-row .... *M. pahari*

– Anterior palatal formina long, more than one-fifth of occipitonasal length, and extending posteriorly between maxillary tooth rows 2

2. Tail unicolored and longer than head and body ..... *M. musculus*

– Tail bicolored (dark above, pale below) and equal to or shorter than head and body ... . *M. famulus*

Mus musculus Linnaeus

Two subspecies of *Mus musculus* occur in Nagaland.

Key to the subspecies of *Mus musculus*

1. Undersurface of body light grey ....*M. m. homourus*

2. Undersurface of body light or dark brown .....*M. m. urbanus*

87. ***Mus musculus homourus*** Hodgson

1845. *Mus homourus* Hodgson, *Ann. Mag. nat. Hist.*, **15** : 268 (Nepal).

Common name : Southern Himalayan House mouse (Eng.).

Diagnosis : As mentioned above in the key.

Distribution : India : Nagaland; Assam; Manipur; Meghalaya; Sikkim; Himachal Pradesh; Jammu & Kashmir; Tamil Nadu; Uttar Pradesh; West Bengal.

Elsewhere : Nepal; Myanmar; China; Formosa; Vietnam and Java.

88. ***Mus musculus urbanus*** Hodgson

1845. *Mus urbanus* Hodgson, *Ann. Mag. nat. Hist.*, **15** : 269 (Kathmandu, Nepal).

Common name : House Mouse (Eng.).

Diagnosis : As mentioned above in the key.

Distribution : India : Nagaland : Mokokchung district (Hinton & Lindsay 1926); Assam; Manipur; Meghalaya; Sikkim; Rajasthan; Tamil Nadu; Uttar Pradesh; West Bengal; Andaman Island.

Elsewhere : Nepal and Sri Lanka.

89. *Mus famulus cooki* Ryley

1914. *Mus cooki* Ryley, *J. Bombay nat. Hist. Soc.*, 22 : 664.

Common name : Cooki Mouse (Eng.).

Diagnosis : 70-90 mm in head and body; tail bicolour, more than 90% of head and body length; body colour light brown above, a little darker below.

Distribution : India : Nagaland : Mokokchung district (Ellerman 1961); Manipur.

Elsewhere : Myanmar.

90. *Mus pahari jacksoniae* (Thomas)

1921. *Leggada jacksoniae* Thomas, *J. Bombay nat. Hist. Soc.*, 27(3) : 596 (Laitkynsao, East Khasi Hills district, Meghalaya).

Common name : Sikkim Mouse (Eng.).

Diagnosis : The occipitonasal length does not reach 25 mm.

Distribution : India : Nagaland : Mokokchung district (Ellerman 1961); Arunachal Pradesh; Assam; Meghalaya.

Elsewhere : Northern Myanmar.

Genus *Bandicota* Gray, 1873

Two species of the genus *Bandicota* occur in Nagaland.

Key to the species of the genus *Bandicota*

1. Head and body size 208 mm or less and under parts dark gray ..... *B. bengalensis*

– Head and body more than 210 mm and under parts pale grayish ..... *B. savilei*

91. *Bandicota bengalensis bengalensis* (Gray)

1835. *Arvicola bengalensis* Gray, *Illustr. Ind. Zool.*, 2 : pl. 21 (Bengal).

Common name : Lasser Bandicoot Rat (Eng.).

Material examined: Nagaland: Kohima district: 1♂, Kohima, coll. J. P. Srivastava, 24.III.1996. 1♂; 1♀, Dimapur, coll. J. P. Srivastava, 23.X.1996 & 5.XI.1997; 1♂, Shevema, coll. J. P. Srivastava, 24.III.1997; 1♀, Hemingkunglwa, coll. J. P. Srivastava, 5.XI.1997. Mokokchung district : 1♂, Mokokchung, coll. J. P. Srivastava, 14.XI.1997.

Measurements : External : 3♂: HB 156-185 (175.70); Tl 103-143 (123); Hf 30-35 (32.30); E 16.0-20.0 (18.30). Cranial : 2♂, *on* 39.3, 38.2; *cb* 40.5, 39.6; *n* 13.0, 12.3; *pl* 23.8, 23.5; *mtr* 7.0, 6.9; *b* 8.5, 7.8; *apf* 8.5, 8.2; *d* 12.9, 12.7.

Diagnosis : Size small, head and body length less than 210 mm and under parts dark gray.

Distribution : India : Nagaland : Kohima district, Mokokchung district; throughout India.

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

92. *Bandicota savilei* Thomas 1916

1916. *Bandicota savilei* Thomas, *J. Bombay N. H. Soc.*, 24, 4 : 641. Mt. Popa, about 2500 ft., Myanmar.

Common name : Medium-sized Bandicoot Rat (Eng.).

Material examined: Nagaland : Teungsang district : 1♀, Tuli, coll. J. P. Srivastava, 17.XI.1997.

Measurements : External : 1♀, HB 210.0; Tl 192.0; Hf : 47.0; E 27.0. Cranial : 1♀, *on* 49.5; *n* 17.3; *pl* 29.1; mtr 8.7; b 8.5; apf 9.4; zw 25.2; d 14.6.

Diagnosis : Feet, tail and middle of back not black, hind-foot less than 50 mm. Tooth-

row less than 9.2 mm, skull less than 51 mm, incisors recurved.

Distribution : India : Nagaland : Teungsang district (Mandal, *et al.*, in press).

Elsewhere : Myanmar; Thailand; southern and northern Vietnam (Marshall 1977, Corbet and Hill 1992, Musser and Carleton 1993, Musser and Brothers 1994).

Remarks : The present specimen from Nagaland constitutes the first record of the species in India and extends its distributional range westwards.

SUMMARY

An account of the mammalian fauna of Nagaland, based mainly on the old and recent collections present in the Zoological Survey of India as well as those recorded in the literature, has been provided. Altogether 92 species and subspecies belonging to 61 genera, 27 families and 10 orders have been reported.

Keys and diagonostic characters for identification of all the species and subspecies have been given.

Detailed district-wise distribution in Nagaland, along with distributional range in India and outside for each described form have also been included.

Megaerops niphanae, Tapozous longimanus longimanus, Megaderma lyra lyra, Rhinolophus lepidus lepidus, Scotozous dormeri. Rattus rattus arboreus, Bandicota savilei have been reported for the first time from Nagaland. From the above new records, *Bandicota saviloi* has been reported for the first time from India also.

Taxonomic comments and other remarks on some of the described species have been given.

ACKNOWLEDGEMENTS

The authors are grateful to the Director Zoological Survey of India, for providing necessary facilities for this work. Sincere thanks are due to Dr. S. Chakraborty, Scientist 'E' for valuable suggestion regarding this manuscript. Thanks are also due to the Department of Forests, Govt. of Nagaland, for providing help during the field surveys. The authors are indebted to Shri A.K. Mandal, Scientist 'C' and other officers and staff members of the Mammal & Osteology Section for their active co-operation for completing this work in time.

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