FAUNA OF MEGHALAYA
PART 1
( VERTEBRATES )
Foreword

The Convention on Biological Diversity (CBD) of which India is a signatory, makes it obligatory for each contracting party to assess the biological resources and to take appropriate action for its conservation for sustainable development.

The State of Meghalaya occupies an unique area in biography of India. The faunal diversity of the state can be co-related with ecosystem diversity, from the foothills areas of Khasi, Jaintia and Garo hills, to the Nokrek and Bolphakram region, the vegetation and forest cover aided by congenial climatic condition, the faunal diversity show one of the richest assemblage.

The present document record a total of 5538 species out of total of 81,000 species known from the India. In some groups viz. Mammalia, more than 35% of total Indian species are found in the state; similarly for birds nearly 50% of the species known from India find shelter in the state. Along with species diversity, the state has a significant percentage of endemic elements. The present document, to be published in 10 parts, would undoubtedly provide the first consolidated account of faunal diversity and thereby would be useful for conservation of biodiversity of the state in pursuance of National Biodiversity Action Plan. I would also like to put on record my deep sense of appreciation for Dr. J. R. B. Alfred, Additional Director and In-Charge of Publications and also Co-ordinator of this programme, Mr. B. C. Saha, Officer-in-Charge of Publication Division, Mr. G. Sivagurunathan, former Publication Production Officer, Mr. M. L. De, Assistant Zoologist and all members of the Publication Production Division for their untiring efforts to bring out this document in time.

Calcutta

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THE STATE OF MEGHALAYA - AN OVERVIEW

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INTRODUCTION

Meghalaya came into being first as an autonomous state within Assam on 2nd April, 1970. Very soon the parliament passed the North Eastern Areas (Re-Organisation) Act on 30th December, 1971 thus conferring full statehood on Meghalaya. Meghalaya became a full-fledged State on 21st January, 1972.

The word Meghalaya from Sanskrit meaning the abode of clouds, was coined and given to this Khasi-Garo Plateau by Dr. Suniti Kumar Chatterjee, Professor Emeritus, Calcutta University an internationally famed linguist and Scholar Extraordinary. Meghalaya is situated in the North-East region of India and lies between 25.47° and 26.10° North latitude and 89.45° and 92.47° East longitude. It extends for about 300 kilometers in length and about 100 kilometers in breadth.

The State is divisible into three hilly regions:

a) The Garo Hills (Western Meghalaya),
b) the Khasi Hills (Central Meghalaya) and
c) the Jaintia Hills (Eastern Meghalaya), and accordingly being the homeland of Garo, Khasi and Jaintia tribes. Meghalaya covers a total geographical area of 22,429 sq.km. of basically hilly terrain, bounded on the north by Goalpara, Kamrup and Nowgong districts on the east by Karbi Anglong and North Cachar Hills districts on the south and west by Bangladesh. The State has a population of 17,74,778 with a density of 79 persons per sq.km. and a total literacy percentage of 48.26 (1991 Census).

TOPOGRAPHY

The whole of Meghalaya is a plateau called the Meghalaya Plateau and sometimes referred to as the Shillong Plateau or Ri Khasi. Its height varies from 150 m to 1961 m from sea level and is characterised by great diversities in relief. The plateau is highly dissected with irregular terrain on the northern and western sides with steep, regular slopes on the south, while in the north the plateau is not well defined due to broken hill ranges.

The Garo Hills in the western part of the Meghalaya Plateau is highly dissected. It is about 600 m above sea level. This portion is separated by the Moheshkola-Adaguri range from the central part.
of the plateau. The Tura range, the Moheshkola-Adaguri range and the Simsang Valley are some of the important physiographic features here.

The Tura range extends for nearly 15 km. in a east-west direction from Siju to Tura. 13 km. south-west of Tura is Nokrek (1412 m.), the highest peak of this range. The Tura range itself is a typical horst (black mountain) bounded by two faults. The Simsang river flows for 45 km. east along the northern faults, and thereafter southwards through a gorge which separates the Tura range from the Kylas range. The latter lies east of the Simsang river and is higher than the surrounding hills. The Arbela range and hills north of Tura range are low but gradually rise and join the Tura peak in the south. All other parts of Garo Hills are also hill ranges with peaks between 450 and 600 m running north to south.

It is the Central and Eastern part (Khasi and Jaintia Hills) of the Meghalaya Plateau which is a true plateau. Three distinct units can be recognised here:

1) the undulating hills of the north
2) the central upland zone
3) the southern face of the plateau

The hills in the northern portion of the central and eastern parts of the plateau vary in height between 170 and 820 m. Local inhabitants call this the Bhoi area. This gradually slopes towards the Brahmaputra valley from the sub-montane region of the central plateau and possesses two peneplaned surfaces one stretching from Nongpoh to Burnihat and other from Jorabat to Khanapara. Most of these hills are flat topped and above 490 m.

The most important physiographic unit of the plateau occupying more than one-third of Central and Eastern Meghalaya is the central upland zone running west to east. A contour of 1500 m marks its outer boundary. The zone consists mainly of rolling uplands intersected by river and dotted with rounded hills of soft rocks. It also contains remnants of seven peneplaned surfaces located at varying altitudes. Shillong peak (1961m) is the highest point of the central upland zone situated to the south of Shillong town. The others peaks are Mawthoren peak (1485m), Diengiei peak (1770m), Sohpetbneng peak (1320m) and the Mawpat peak (1590m). On the north west is the Kyllang Rock (1705m) composed of hard granite rock. Between Mairang and Nongstoin there is an unnamed peak (locally known as Thadraishan 1893m) the second highest in Meghalaya.

The steepest parts of the plateau lies on its southern face also called War country by local inhabitants. The northern fringe area possesses a typical granite topography with rounded hills and shallow valleys. The southern part comprises of a vast structural platform, built of gently dripping sandstones of Cretaceous age, the edge of which is the magnificent Mawsmai falls. The structural platform is an escarpment with its surfaces deeply eroded by fluvial erosion resulting from heavy rainfall. Deep valleys have divided the area into three platforms - the Cherrapunji, the Lyngkyrdem and the Mawsynram. Cherrapunji is characterised by a number of small, rounded limestone hills containing caves with narrow underground tunnels with limestone features such as stalactites and stalagmites. The edge of the plateau towards Bangladesh plains is characterised by deep precipices.
ALFRED: Overview

The eastern parts of the Meghalaya plateau i.e. the Jaintia Hills form a contiguous part of the central Meghalaya with the same physiographic divisions as the northern hills, the central Jowai upland and the southern escarpment. However, it is relatively lower, averaging around 1200m. It is the Jowai uplands, its ridges with an altitude of 1500m extending from east to west that acts as a watershed between the Surma valley (Bangladesh) and the Brahmaputra Valley. The hills of Jaintia in general have more flat lands than the Khasi Hills.

GEOLOGY

The hills of Meghalaya are very old, formed at least 135 million years ago during the early Tertiary period. There are some rocks with intrusive character, like the granite rocks near Nongpoh and Kyllang which are perhaps 700 million years old. They are Pre-cambrian rocks, old and rare. Meghalaya is known to consist of five geologic formations: the Shillong group of rocks, the lower Gondwana rocks, the Archaean Gneissic complex, the Sylhet trap and the Cretaceous Tertiary Sediments.

Quartzite, granite, schist, conglomerate and a few others make up the Shillong Group of rocks. They occur in the eastern and central parts of Meghalaya, and generally lie over the gneissic complex and are characterised by silts and dykes.

The Archaean Gneissic complex occupies the central and northern parts of Meghalaya. Here gneiss, quartzite and schist are the main rock formations.

The western parts of the Garo hills is occupied by the lower Gondwana rocks and include pebble beds, sandstones and shale.

The Sylhet traps lie exposed in a narrow belt, extending in the east-west direction along the southern border of the Khasi hills. The Sylhet traps consists mainly of basalt and rhyolites and overlie the eroded precambrian basement, and are themselves overlain by the upper Cretaceous-Eocene Sediments.

The Cretaceous-Tertiary Sediments occupying the southern parts of the State are very thick and extensive and are considered to be the continuation of the Cretaceous-Tertiary Sediments of the Bengal plains. The chief rocks include Sandstone, Shale and Limestone. The formations are divided into three groups: (1) the Khasi group, (2) the Jaintia group and (3) the Garo group. The Khasi group is further divided into the Jadukata, the bottom conglomerate and the Mahadeck formations.

The Quarternary deposits (older alluvium) overlie the Tertiary rocks but in isolated patches along the southern, western and northern borders of Garo Hills and along the southern fringe of Khasi Hills. The deposits are usually assorted pebbles with coarse sand and brownish clay. However, recent alluvium is found in the river valleys of the northern and southern foothills of Garo and Khasi hills and along the western border of Garo hills. Here they consist of fine sifting sand and light to dark greyish clay with occasional pockets and layers of coarse sand and shingles.

CLIMATE

The climate of Meghalaya is varied and at least 4 climatic zones exist here: (1) the temperate raining climate zone, (2) the warm midlatitude climatic zone with high rainfall, (3) the
Mediterranean-type zone with high seasonal rainfall and (4) the west equatorial type climatic zone with seasonal rainfall.

The climate of Meghalaya is influenced by its topography. Broadly the year may be divided into four seasons: (1) a warm spring season in March and April, (2) a hot rainy summer season (Monsoon) from May to September, (3) a pleasant Autumn season from October to mid November, and (4) a cold winter season from mid November to February. Garo hills, which is relatively lower in altitude, experiences a fairly high temperature for greater part of the year with April (33°C) as the hottest month and January (12°C) the coldest. The average rainfall in western Meghalaya is 330 cm of which more than 2/3rds occur during the four months of May, June, July and August. Winter in these parts is particularly dry with about 2 cm of rainfall between December and February. The amount of rainfall decreases from south to north due to the moist south-west monsoon winds striking the southern hills first and causing heavy rainfall. In the north these winds are obstructed by the Tura range and rainfall is low.

The Shillong area has very cold nights in winter when the temperature sometimes falls to 1.7°C. In the Cherrapunji-Mawsynram area in the extreme south the range of temperature is 7.6°C to 23°C. But the characteristics of this area is its very heavy rainfall (average 1270 cm).

In Central and Eastern Meghalaya the average annual rainfall is around 770 cm and 2/3rds of it falls between May and September. The east-west alignment of the high hill ranges of the central uplands exerts a rainshadow effect on the areas in the north where there is low rainfall. Mawsynram, a village situated 16 km west of Cherrapunji records the worlds highest rainfall - 1392 cm. Cherrapunji which held the record earlier has 1142 cm of rainfall.

SOIL

The soil of Meghalaya may be broadly classified into four categories: red loamy soil, laterite soil, red and yellow soil and alluvial soil. The red loamy soil is found in the central part of Garo Hills and the Central Uplands in Central and Eastern Meghalaya. The surface which is about 30 cm thick has a colour range of reddish brown to dark reddish brown. The soils are rich in organic matter and nitrogen but deficient in phosphate and potash.

The laterite soils occur in a broad belt extending west to east in the northern part of the State. The colour of these soils are reddish or yellowish red. They are poor in organic matter.

The red and yellow soils are found in a belt running from west to east in the southern parts of the State. The colour of these soils vary from yellow to red, reddish yellow and yellowish brown. These soils are fine textured varying from loam to silty loam.

The alluvial soils are found all along the northern, western and southern border areas of the State. Their texture varies from sandy to clayey loam. The soils are rich in potash, varying in amounts of nitrogen but poor in phosphate and are highly acidic.

The character of the soils of Meghalaya is largely determined by the terrain of the State. On the hill tops, the soil is generally thin, immature, light in colour, less clayey and less fertile, while they are more fertile and clayey in the valleys and the alluvial lowlands.
RIVERS, WATERFALLS AND WETLANDS

The rivers of the State flow down from the watershed of the Tura range in Garo Hills and the Central uplands in Khasi and Jaintia Hills towards the Bangladesh plains in the south and the Brahmaputra valley in the north. Important rivers of the northern group in Garo Hills from west to east are the Kulu, Ringgi, Didak, Didram, Krishnai and Dudhani. Of these only Kalu and Krishnai are navigable. The southern groups of rivers in Garo Hills from west to east are Sanda, Bandra, Bhogai, Dareng, Nitai and Simsang. Of all rivers of Garo Hills and in fact of all Meghalaya, the Simsang is longest— but is navigable for only 30 kms.

In the Khasi and Jaintia hills also, there are two groups of rivers, one flowing north and others towards south. In the northern group the important rivers are the Khri, Digaru, Kupli and Umiam, while those of the Southern groups are the Kynchiang, Umiew, Umngot and Myntdu.

The drainage pattern in the State is formed by 5 types—the dendritic, the parallel, the radial, the rectangular and the trellis patterns.

The Um)unar river and its tributaries in Jaintia Hills and the Wahlaw river and its tributaries in Khasi Hills are of dendritic pattern. The rivers Umiew and Umshoshing Kiew with their tributaries in the southern part of Khasi Hills display a typical parallel drainage. The radial pattern is common throughout the State but most dominant in Garo and Jaintia Hills. The rivers Hari and Kharkar with their tributaries, form the rectangular pattern in the central part of Jaintia Hills. The last type of drainage—the trellis pattern is displayed by the Umngot river.

The State of Meghalaya is well known for its waterfalls. In fact Meghalaya is also called the land of waterfalls. Most of these waterfalls occur in the northern slope of the State. Some of the important and picturesque are the Sweet falls on the Umkhein River, the Rongbang Falls on the Simsang River, the Beadon Falls, Bishop Falls, Spread Eagle Falls and Elephant Falls in the neighbourhood of Shillong, the Nohsngithiang, Dainthleen, Nohkalikai and Kynrem Falls near Cherrapunji. Others are the Kshiad Thum Thum Falls, Kymshiang Falls, the Wainnia Falls, Umar Falls, Krystoh Falls, the Iale Falls, the Imilchang Dare and the Rongbang Dare.

Meghalaya also has some of the clean, unpolluted wetlands of the country. One such of tourist importance is the War'd's lake in Shillong, Khasi Hills. The Umiam lake formed by the stage I of the Umiam Hydel Project by the side of the main Guwahati-Shillong road and Kyrdemkalai lake formed by stage III of the same Project are reservoir wetlands. The Tasek lake in the East Garo Hills, the Kata Beel in West Garo Hills are the important Wetlands in Garo Hills, while the Syntuksiai, the Thadlaskein lake and the Umhang are important wetlands of Jaintia Hills.

FOREST AND VEGETATION

The State of Meghalaya comprises of nearly eight forest types—Sal, Mixed Deciduous, Evergreen, Bamboo, Grasslands, very moist Sal, Eastern Himalayan Moist Deciduous, and Assam sub-Tropical Pine.

The Sal forests are made up of Alluvial Sal and Foothill and Plateau Sal. The former type occurs in continuous stretches in Chimabangshi, Dhma, Angratoli and Dibru Hill reserves which are
situated on lowlying flatlands near the border of East Garo Hills. The foothills and Plateau type Sal forests are generally found in East and West Garo Hills. Besides Sal, other principal associations are Schima wallichi, Largerstroemia parviflora, Streblerepermum chelonides, Gmelina arborea, Toona ciliata, Terminalia belerica and others.

The deciduous forests are found between the Sal forests. They are more on the ridges and slopes. These comprise of Schima wallichi, Alstonia scholaris, Sterculia villosa, Garunnga pinnata, Aidina cordifolia, Albizzia procera and others.

The Evergreen forests are mainly confined to the areas near the streams and swamps. The Evergreen forests are mainly confined to the areas near the streams and swamps. The lower portions of the Emangiri reserve is gradually turning into the evergreen forests. The species found here are Castanopsis and Quercus species, Duabanga sonneratoides, Syzygium cumini, Artocarpus chapalasna, Mesna ferrde, Dysokyplum binectariferum, Dillenia indica, Palaquium polyanthum, Podocarpusa meriflora, etc.

The Bamboo forests are confined to the areas which have been subjected to the extensive slash and burn agriculture. Bamboo is found in three main associations: Pure, mixed with Sal, and mixed with other Deciduous species. Bamboo forests are distributed in all the districts of the State in almost all the reserves of the Khasi, Jaintia and Garo Hills. There are nearly 30 species of bamboo available in Meghalaya. The genus Arundinaria has 4 species, Bambusa has 5 species, Cephalostachyum 2 species, Chimonobambusa has 5 species, Dendrocalamus is made up of 4 species, Gigantochloa 2 species, Melocanna one species, Neohouzeana 2 species, Phyllostachys, Pseudostachysius and Oxytenantbha one species each, while Teinstachyum has 2 species.

One tree which is common on the higher altitude is the Pinus kesiya. They occur principally in Khasi and Jaintia Hills between 24°58’ to 26°07’N latitude and 90°45’ to 92°51’ E longitude, in the forests of Shillong, Jowai, Pynursula, Cherrapunji and Nongstoin areas.

The total forest cover of the State is estimated at 9496 sq km, which roughly corresponds to 38% of the geographical area of the State. The Government Reserve Forests hardly constitute 4.4% of the geographical area and the rest of the forests are under the Private ownership or are owned by the community which is nearly 8500 sq km. termed unclassed forest. The Government forests are categorised into Reserved, Protected, National Parks and Wildlife Sanctuaries with 713.12 sq.km., 12.39 sq.km., 386.77 sq.km. and 34.20 sq.km. respectively. There are three Reserve forests in Jaintia Hills, nine in East Garo Hills seven in West Garo Hills and five in East Khasi Hills. The protected forests are five in number and are mostly in East Khasi Hills. The two National Parks Balphakaram and Nokrek are in Garo Hills, while the Wildlife Sanctuaries are three in number Nongkhyllen in East Khasi Hills and Siju and Bagmara Pitcher Plant Sanctuaries in West Garo Hills.

An astonishingly striking feature of Meghalaya is the presence of the remnants of innumerable small primary forests revered as sacred forests or Law Lyngdoh in the Khasi and Jaintia Hills. Most villages in Garo Hills also keep aside such forests untouched for the departed to rest. From time immemorial the plants in these forests are left unhindered to grow, live, decay and re-grow, without any interference from man. Nobody even collects fallen leaves, twigs or branches nor does anyone pluck fruits. Nothing is taken out for timber, fuel, medicines or ornamentation. The villagers protect
these forests and consider them sacred, where deities are supposed to reside. Their belief is that if anyone cuts trees or plucks flowers from here, the wrath of the deities would befall them. That is why for centuries these primordial forests are intact and remain unspoilt by man. Of these sacred groves, one at Mawphlang and another at Shillong Peak deserves mention. Even in the heart of the town, in Jowai, there is a tiny sacred grove—a pleasing sight to the eyes.

Sadly enough the State of Meghalaya also has barren/degraded wasteland amounting to 8150 sq.km. This barren land is primarily the result of shifting cultivation known locally as Jhum. Jhum or Jhumming is a practice of cultivation where forests are cut and burned, followed by multicropping (e.g. rice, barley, cucumber, etc.) for usually a year, after which it is abandoned as fallow for an indefinite period. This period which used to be 20-30 yrs. has now been reduced to 4-5 yrs due to increased human pressure. This renders the land totally degraded. Most important Jhum also renders the usual forest corridors bare leading to large scale depredation by elephants. The population of Gibbons and other non-human primates is being reduced to non-availability or territory. The forest Department of Meghalaya has taken steps to rectify the situation. Nearly 430 sq.km. of barren land have been brought under artificial plantation up to the seventh plan. The species planted are mostly Khasi Pine and broad leaved economic and fast growing species. The physical target for the eighth plan is proposed to be 620 sq.kms.

AGRICULTURE

More than 80% of the total population of Meghalaya depends on agriculture for their livelihood. Though agriculture is important only 8% of the total geographical area is available for cultivation, due primarily to the rugged terrain and low productive soils except in the valleys. Of the State's total geographical area of 22.429 lakh hectares, the gross cropped area is 2.37 lakh hectares, while the net cropped area is 1.98 lakh hectares and the area sown is the more than 39000 hectares. Of the gross cropped area, 1.33 lakh hectares is under foodgrains. The large varieties of crops that Meghalaya produces can be placed under four major heads, viz., Food grains, Commercial crops, Horticulture crops and other crops. 62% of the total cropped area is from food grains, while 25% and 9% is attributed to commercial crops and horticulture respectively. Among the food grains Rice is the most important and occupies 50% of the cropped area of the State while Maize being the next important is harvested from only 8% of the cropped area. Potato like Maize occupies 8% and forms one of the most important commercial crop of Meghalaya. Other important agriculture products are Oil seeds, Cotton, Jute, Mesta, Ginger and Sugarcane.

Of the horticulture crops Orange, Pineapple and Banana are the important ones of the State. The War area of Khasi Hills grows extensive oranges, while Shella and Cherrapunji areas are known for the best quality of oranges. One of these—the Khasi Mandarin is known to be the best. Similarly the pineapple comes from the Southern parts of Khasi Hills where the climate is warm and humid and the drainage is good. Some of the best varieties like Kew and Queen are grown. Bananas also form one of the best horticulture crops and varieties like Cavendish, Malbhog and Chinichampa are grown in the State. Peaches, Plums and Pears are grown in the higher altitudes.
The economy of the State of Meghalaya is also linked largely to animal husbandry and dairy farming. More than 50% of the cattle of the State are found in Khasi Hills, while Garo Hills has nearly 70% of the Buffaloes. Piggery in the State is of immense importance, since pork forms a major part of the diet of the tribal people of Meghalaya. In addition to the major Pig farms at Shillong and Tura, where special breeds such as Berkshire and Saddleback are bred, other farms have been established in Nongstoin, Jowai and Rongjieng. Dairy farming as an industry has been flourishing quite well in Meghalaya, with a milk chilling plant at Naya Bungalow (Umning) in East Khasi Hills supplying nearly 5000 litres of milk every day. High quality butter, ghee and cream is produced in one of the dairy extension centres at Jowai as also at Tura and Rongram in Garo Hills.

MINERAL RESOURCES

Meghalaya is blessed with a number of economic minerals. The important ones are Coal, Limestone, Clay and Sillimanite. Coal is found throughout the State. Its ash content is much lower than the best quality coal in the country. But it suffers badly due to its high sulphur content. Limestone occurs along the southern border of Meghalaya and is of good quality (cement grade to chemical grade). White clay is found deposited in various parts of the State. The sedimentary or Lithomargic clays occur in Tertiary Formation, while Kaolin (China clay) is associated with the Archaean gneissic rock. Fine clay with refractory characteristics occur in Garo Hills. The Sillimanite deposits found in the Sonapahar region of West Khasi Hills are said to be one of the best deposits of Sillimanite of the world. The other minerals are Phospherite, Glass-sand, Quartz and Feldspar, Gypsum, Base metals like Copper, Zinc, Nickel, Cobalt, etc., other iron ores, Gold and Mineral Oil.

FAUNAL RESOURCES

The Fauna of the State of Meghalaya has always attracted both naturalists and zoologists for more than 150 years. Records are available that Mammals have been surveyed in Meghalaya as early as 1847, and from 1851 1875 many famous naturalists had surveyed, collected and described the fauna of Meghalaya.

As of July 1, 1916, with the establishment of the Zoological Survey of India, systematic survey, collection and inventorisation was initiated in the present West Garo Hills District. The Indo-German Expedition (1956-57) of which the Zoological Survey of India was a partner, surveyed Meghalaya also. With the establishment of the Eastern Regional Station, in Shillong in 1959, the first regional station to be opened by the Zoological Survey of India, various workers of that station as well as experts from Headquarters, Calcutta had made a number of collections. All such surveys and collections were carried out by group specialists who specialised in surveying and recording species of their specialisation.

However, during 1989-90 to 1993-94 scientists of all disciplines from Zoological Survey of India, both from the Eastern Regional Station and Headquarters were given a mandate to systematically survey each and every district of Meghalaya and that too for all groups of fauna from Protozoa to Mammalia (see list of localities in the appendix). The results of these recent surveys
along with the material, records and results of earlier surveys have all been consolidated in the following chapters of this part and subsequent parts as "Fauna of Meghalaya."

The analysis of the Fauna of Meghalaya, which will be brought out in ten volumes reveals, that there are 5538 species of animals in 2545 genera. Of these the largest group belongs to the Insects comprising of 3624 species in 1662 genera, and the smallest known in Porifera which has only one species in one genus. Next in order of abundance after the insects, birds are the largest group with about 540 species in 232 genera. Mollusca and Arachnids come next with 223 species (67 genera) and 217 species (104 genera) respectively. Total vertebrate fauna reveals 958 species under 451 genera. The fishes and mammals of Meghalaya are well represented in that they are 152 species (74 genera) and 139 species (83 genera) respectively. These faunal records more than amply reveal the rich biodiversity of the State of Meghalaya.

SELECTED READING

Geography of Meghalaya
The Khasi Canvas
Our Environment
The Pitcher Plant of Meghalaya
Orchids of Meghalaya
Beautiful Orchids
Flora of Nongpoh
Flora of Jowai and Vicinity
The Book of Indian Animals
The Book of Indian Birds
Butterflies of Shillong and its Environs

Meghalaya States of Our union
Meghalaya Yesterday, Today and Tomorrow
Tribes of Assam
Art and Culture of North East India
The Origin And early History of
The Khasi-Synteng People.
A Study of The Land System of Meghalaya

by D.T. Zimba
by J.N. Chowdhury
by Laceq Futehally
by Dr. R.P. Momim Bordoloi
by Dr. S.K. Kataki
by R.K. Mckenzec
by Dr. J. Joseph
by Dr. N.P. Balakrishnan
by S.H. Prater, C.M.Z.S.
by Salim Ali
by C. Radhakrishnan,
Dr. J.R.B. Alfred and
M.R. Rynth
by I.M. Simon
by P.R. Kyndiah
by S. Barkataki
by L.P. Vidyarthi
by Namita Catherine
Shadap-Sen (Mrs. A.L. Bhasam)
by J.N. Das

Eighth Five Year Plan (1990-95)

Recommendations of the Meghalaya State Planning Board

Eighth Five Year Plan (1990-95)

Annual Plans 1990-91 and 1991-92

Budget Speech 1991-92


Govt. of Meghalaya Publications
ALFRED: Overview

COLLECTION LOCALITIES LISTED DISTRICTWISE
(alphabetically arranged)

EAST KHASI HILLS DISTRICT


RI-BHOI DISTRICT


WEST KHASI HILLS DISTRICT

Balat, Halmaudon, Jakrem, Magumai, Mairang, Markasa, Mawlong, Mawphlong, Mawsynram, Moaloi, Molong, Mylliem, Nongbroi, Nongfa River, Nonghla, Nongstoin, Ranikor, Rambahari, Riangdo, Sejlich, Sonapahar, Umlam, Weitoi.

JAINTIA HILLS DISTRICT

Badarpalli, Chonpung, Dawki, Dymtring, Garampani, Jalong, Jaran, Jowai, Khanduli, Khelichri, Khonshnong, Kollasiv, Koushnong, Kullehrnei, Lokadong, Luchook, Mawastam, Mawiyngkneng, Mihmgntoa Village, Modymani, Mooralong, Mukala, Muktapur, Mynsaw, Myntdu River, Nartiang, Nontiang, Raliang, Rangapani, Ratachara, Reithesim, Sahai Basti, Saphi, Shangpung, Sonapur, Sutanga, Syndai, Thadlakai Lake, Thadlaskein, Umkiang, Umlatham River, Ummulung, Umphrenais, Umsignia, Zoranthanga.

WEST GARO HILLS DISTRICT

Alogiri, Anogiri, Antiangiri, Arcuilla, Ashangiri, Babupara, Badmagiri, Banmandinga, Baranepara, Bhatbari, Bodhmar, Bogai River, Bokongiri, Bolchugiri, Bolchugiri, Bongai River,

EAST GARO HILLS DISTRICT


SOUTH GARO HILLS DISTRICT

Baghmara, Balphakram, Dobigiri, Metahkgiri, Narangiri. Nongwalhibra, Rongnachok, Rongra, Ronsakgiri, Siju Cave.

FAUNAL EXPLORATIONS

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**FAUNAL WEALTH OF MEGHALAYA: AN INDEX**

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MEGHALAYA
NATURAL VEGETATION

MEGHALAYA
TEMPERATURE IN SUMMER

MIXED TROPICAL FOREST
GRASSLAND
TEMPERATE FOREST

Km

10 0 10 20 30

Km

10 0 10 20 30
MAMMALIA

P. K. DAS, R. K. GHOSE, T. K. CHAKRABORTY
T. P. BHATTACHARYYA and M. K. GHOSH
Zoological Survey of India, Calcutta

INTRODUCTION

Out of a total of 4,232 species of mammals known from the world, 372 species occur in the Indian Union (Corbet & Hill 1986). Of these, 139 species are being reported from Meghalaya.

COLLECTORS OF MAMMALS FROM MEGHALAYA

As far as the history can be traced, Mr. J. W. Laidlay appears to be the first collector who procured specimens of mammals from the present state of Meghalaya, for taxonomic study. Among the early collectors of mammals from Meghalaya, the name of Lt. Col. H. H. Godwin-Austen should be recorded with much emphasis. This famous Malacologist explored various hilly areas of erstwhile Assam, including those in Meghalaya, besides other parts of India. Other notable collectors of mammals of Meghalaya, during the twentieth century, along with the period of their collecting, are given in the following table —

<table>
<thead>
<tr>
<th>Name of collector</th>
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<td>Bourne, J. H.</td>
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During the first two decades of the twentieth century, a number of collectors obtained specimens
of mammals from various parts of Meghalaya. Thus, Mr. B. Warren and Mr. R. Freil collected in 1909 and 1914 respectively. After the establishment of the Zoological Survey of India in the year 1916, Dr. S. W. Kemp of that department collected mammalian specimens in the present West Garo Hills district. Mr. H. W. Wells, collector for the Bombay Natural History Society's Mammal Survey of India, Burma and Ceylon, collected different species of mammals in South and East Garo Hills districts, East Khasi Hills district, Ri-Bhoi district and Jaintia Hills district, during October 1919 to July 1920. Dr. S. W. Kemp and Dr. B. N. Chopra of the Zoological Survey of India procured five species of mammals from the Siju Cave, South Garo Hills district, in the year 1922. In 1949, the Zoological Survey of India could obtain a considerable number of mammalian specimens, firstly, through the efforts of Mr. R. V. Sherard, Zoological Collector of the department, and secondly, by way of purchase from Mr. H. L. Hiteshi, a private collector.

The Zoological Survey of India participated in the Indo-German Expedition (1956 - 1957) which made collections in Meghalaya also. After the Eastern Regional Station of the Zoological Survey of India was established at Shillong, various workers of that Regional Station surveyed different parts of Meghalaya and obtained substantial amount of mammalian specimens. During the sixth decade of the present century, two foreign mammalogists also collected in Meghalaya, viz.—Mr. G. Topal of the Hungarian Natural History Museum, Budapest (bats only, in 1967) and Mr. R. M. Mitchell of the Bishop's Museum, Honolulu (small mammals, in 1968).

After the initiation of the departmental project, 'State fauna of Meghalaya' Dr. R. K. Ghose from the headquarters of the Zoological Survey of India surveyed some areas of Meghalaya, especially for mammals, in 1988. In 1989, Dr. A. K. Mandal, also from the headquarters, surveyed Jaintia Hills district and procured some interesting examples of small mammals. In the same year, the Zoological Survey of India could procure some mammalian specimens as donation from Dr. S. Gangwar. From the Eastern Regional Station of the Zoological Survey of India, Dr. Y. P. Sinha continued collecting bats from the Siju Cave.

EARLIER PUBLICATIONS

Horsfield (1851) listed some species of mammals from the present Meghalaya. In the following year, Blyth (1852) reported on a collection of mammals from Cherra Punji. This latter author (Blyth 1863a) listed all specimens of mammals present in the museum of the Asiatic Society. Jerdon (1867) provided a preliminary descriptive account of mammals of India which also included those from Meghalaya. Dobson (1874) published a list of bats of Khasi Hills. Two years afterward, the same author (Dobson 1876) published his monumental work on the Asiatic Chiroptera in which descriptions, distributions, etc., of all the bats known from Meghalaya up to that time were provided. The first complete faunal account on Indian mammals was authored by Blanford (1888, 1891). During this period, Anderson (1881) and Sclater (1891) published catalogues of mammalian specimens present in the Indian Museum, which naturally included those from the present state of Meghalaya.

At the beginning of the twentieth century, Allen (1906) gave brief accounts of large and medium-sized carnivores and ungulates of different areas of Meghalaya, with their habitat preference and relative abundance in some instances. Kemp (1924) reported on five species of mammals collected from the Siju Cave. Hinton & Lindsay (1926) gave an account of the various groups of mammals collected
from different localities of the present Meghalaya. It is quite pertinent here to mention the publication of the second edition of the 'Fauna of India, Mammalia' (orders Primates and Carnivora only) by Pocock (1939, 1941), a checklist of Indian mammals by Ellerman & Morrison-Scott (1951, 1966), and the revised faunal account of Indian rodents by Ellerman (1961).


The present paper is based mainly on the specimens of mammals from Meghalaya present in the Zoological Survey of India, Calcutta and its Eastern Regional Station, Shillong, as also partly on published literature.

Complete synonymies have not been given, as these are available in Blyth (1863a), Jerdon (1867), Dobson (1876), Anderson (1881), Blanford (1888, 1891), Sclater (1891), Pocock (1939, 1941), Ellerman & Morrison-Scott (1951) and Ellerman (1961). Current synonymies have, however, been discussed under ‘Remarks’

Measurements have been expressed in millimetres (except where stated otherwise) and have been taken after Pocock (1939, 1941) for Primates and Carnivora, Khajuria (1953) for Chiroptera, and Ellerman (1961) for Rodentia. The figures (up to first place of decimal) in parentheses immediately after the range of measurements indicate arithmetic means (for more than two specimens), those (whole numbers) placed in parentheses immediately after the abbreviated form of measurement indicate the number of specimens available for a particular measurement.

ABBREVIATIONS

Adol. = adolescent; AMNH = American Museum of Natural History, New York; apf = length of anterior palatal foramina; b = length of bulla; BNHS = Bombay Natural History Society, Bombay; c = length of lower tooth-row; cr = cranial rostrum; cw = cranial width; d = length of diastema; E = length of ear; Fa = length of forearm; F & Cl = length of foot and claw; H & B = length of head and body; Hf = length of hindfoot; iw = least interorbital width; l = greatest length of skull; m1 = length of first upper molar; m1 = distance between outer surfaces of first upper molars; m2 = distance between outer surfaces of second upper molars; m3 = distance between outer surfaces of third upper molars; m3 = mandibular length; ms = width of mesopterygoid space; mtr = length of maxillary tooth-row; mw = maxillary width; n = nasal length; on = occipitonasal length; orb = length of orbit; pl = palatal length; pm4 = length of fourth upper premolar; pow = postorbital width; Subad. = subadult; Tb = length of tibia; Tl = length of tail; Tr = length of tragus; ZSI = Zoological Survey of India; zw = zygomatic width.

In most cases, authority citations for locality records have not been provided, as these have either been given by Agrawal et al. (1992) or have been mentioned above under ‘Earlier publications’
### District-wise distribution of mammals in Meghalaya

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<th>EAST GARO HILLS</th>
<th>SOUTH GARO HILLS</th>
<th>WEST KHASI HILLS</th>
<th>RI-BHOT</th>
<th>EAST KHASI HILLS</th>
<th>JAINTA HILLS</th>
<th>GARO HILLS</th>
<th>KHASI HILLS</th>
<th>KHASI-JAINTIA HILLS</th>
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**ORDER INSECTIVORA**  
Family TALPIDAE
1. *Talpa micrura* Hodgson  
2. *Talpa leucura* Blyth  

Family SORICIDAE
3. *Suncus murinus soccatus* (Hodgson)  
4. *Suncus murinus griffithi* (Horsfield)  
5. *Suncus murinus fulvocinereus* (Anderson)  
6. *Suncus etruscus nudipes* (Blyth)  
7. *Crocidura attenuata rubricosa* (Anderson)  
8. *Crocidura fuliginosa* (Blyth)  
9. *Anourosorex squamipes* (Milne-Edwards)  

**ORDER SCANDENTIA**  
Family TUPAIIDAE
10. *Tupaia glis belangeri* (Wagner)  
11. *Tupaia glis assamensis* Wroughton  

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**District-wise distribution of mammals in Meghalaya**

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<th>Sl. No.</th>
<th>Name of taxon</th>
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| 12. *Rousettus leschenaulti*  
  *leschenaulti* (Desmarest) &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| 13. *Pteropus giganteus giganteus*  
  (Brunnich) &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| 14. *Cynopterus sphinx sphinx* (Vahl) &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| 15. *Eonycteris spelaea spelaea*  
  (Dobson) &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| 16. *Macroglossus sobrinus sobrinus*  
  Andersen &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| **Family MEGADERMATIDAE** |
| 17. *Megaderma lyra lyra*  
  E. Geoffroy &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| **Family RHINOLOPHIDAE** |
| 18. *Rhinolophus affinis himalayanus*  
  Andersen &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| 19. *Rhinolophus pusillus blythi*  
  Andersen &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| 20. *Rhinolophus lepida lepida*  
  Blyth &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| 21. *Rhinolophus subbadius*  
  Blyth &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
| 22. *Rhinolophus luctus perniger*  
  Hodgson &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ &nbsp;&nbsp;&nbsp;&nbsp;&nbsp;+ |
### District-wise distribution of mammals in Meghalaya

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<th>Sl. No.</th>
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<th>RI-BHOI</th>
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<th>KHASI-JAINTIA HILLS</th>
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<td>23.</td>
<td><strong>Rhinolophus pearsoni</strong> Horsfield</td>
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<td><strong>Hipposideros larvatus</strong> leptophyllus (Dobson)</td>
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<td><strong>Hipposideros lankadiva</strong> Kelaart</td>
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<td><strong>Hipposideros pomona gentilis</strong> Andersen</td>
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<td><strong>Coelops frithi frithi</strong> Blyth</td>
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<td><strong>Myotis siligorensis</strong> siligorensis (Horsfield)</td>
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<td><strong>Myotis formosus formosus</strong> (Hodgson)</td>
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<td><strong>Myotis horsfieldii</strong> (Temminck)</td>
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<td><strong>Eptesicus pachyotis</strong> (Dobson)</td>
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<th>KHASI-JANTIA HILLS</th>
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<td>35.</td>
<td><em>Pipistrellus coromandra</em> coromandra (Gray)</td>
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<td><em>Pipistrellus minus</em> Wroughton</td>
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<td><em>Pipistrellus austenianus</em> Dobson</td>
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<td><em>Pipistrellus circumdatus</em> (Temminck)</td>
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<td>39.</td>
<td><em>la io</em> Thomas</td>
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<td>40.</td>
<td><em>Tylonycteris pachypus fulvida</em> (Blyth)</td>
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<td><em>Barbastella leucomelas darjelingensis</em> (Hodgson)</td>
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<td>42.</td>
<td><em>Scotomanes ornatus ornatus</em> (Blyth)</td>
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<td>43.</td>
<td><em>Scotophilus kuhli kuhli</em> Leach</td>
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<td><em>Scotophilus heathi heathi</em> (Horsfield)</td>
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<td><em>Plecotus auritus homochrous</em> Hodgson</td>
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<td><em>Miniopterus schreibersi fuliginosus</em> (Hodgson)</td>
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<td><em>Murina tubinaris</em> (Scully)</td>
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<td>48.</td>
<td><em>Murina cyclotis cyclotis</em> Dobson</td>
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<td>49.</td>
<td><em>Harpiocephalus mordax</em> Thomas</td>
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<th>KHASI-JAITIA HILLS</th>
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<td>50.</td>
<td><em>Kerivoula hardwickei depressa</em></td>
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<td><em>Nycticebus coucang bengalensis</em> (Lacepede)</td>
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<td>52.</td>
<td><em>Macaca nemestrina leonina</em></td>
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<td><em>Macaca mulatta</em> (Zimmermann)</td>
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<td><em>Macaca assamensis</em> (M'Clelland)</td>
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<td><em>Presbytis entellus</em> (Dufresne)</td>
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<td><em>Presbytis pileatus</em> (Blyth)</td>
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<td><em>Hylobates hoolock</em> (Harlan)</td>
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<td><em>Manis pentadactyla aurita</em></td>
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*Note: + indicates presence in the respective district.*
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<td><em>Vulpes bengalensis</em> (Shaw)</td>
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<td><em>Cuon alpinus</em> (Pallas)</td>
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<td><em>Selenarctos thibetanus</em> (G. Cuvier)</td>
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<td><em>Martes flavigula flavigula</em></td>
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<td><em>Melogale personata nipalensis</em></td>
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<td><em>Lutra perspicillata</em> perspicillata I. Geoffroy</td>
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**District-wise distribution of mammals in Meghalaya**

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<td><em>Felis temmincki</em> Vigors &amp; Horsfield</td>
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<td><em>Panthera pardus fusca</em> (Meyer)</td>
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<td><em>Panthera tigris tigris</em> (Linnaeus)</td>
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### District-wise distribution of mammals in Meghalaya

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<td><strong>Elephas maximus indicus</strong> G. Cuvier</td>
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<td><strong>Sus scrofa cristatus</strong> Wagner</td>
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<td><strong>Muntiacus muntjak vaginalis</strong></td>
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<td><strong>Axis porcinus</strong> (Zimmermann)</td>
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<td><strong>Cervus unicolor equinus</strong></td>
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<td><strong>Cervus duvaucelli</strong> G. Cuvier</td>
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<td>96</td>
<td><strong>Tetracerus quadricornis</strong></td>
<td>(Blainville)</td>
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<td>97</td>
<td><strong>Bos gaurus</strong> H. Smith</td>
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<td><strong>Capricornis sumatraensis</strong></td>
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<td>100.</td>
<td><em>Nemorhaedus goral</em> (Hardwicke)</td>
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<td>101.</td>
<td><em>Lepus nigricollis ruficaudatus</em> Geoffroy</td>
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<td><em>Belomys pearsoni</em> (Gray)</td>
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<td><em>Petaurista petaurista lylei</em> Bonhote</td>
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<td>104.</td>
<td><em>Petaurista petaurista albivent</em> (Gray)</td>
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<td>105.</td>
<td><em>Petaurista alborufus candidulus</em> Wroughton</td>
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<td><em>Hyolpetes alboniger alboniger</em> (Hodgson)</td>
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<td><em>Callosciurus erythraeus erythraeus</em> (Pallas)</td>
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<td><em>Callosciurus pygerythrus blythi</em> (Tytler)</td>
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<td>Family MURIDAE</td>
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<td>120.</td>
<td><em>Chiropodomy s gliroides gliroides</em></td>
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<td>121.</td>
<td><em>Vandeleuria oleracea dumeticola</em></td>
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<td>122.</td>
<td><em>Micromys minutus erythrotis</em></td>
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<td>123.</td>
<td><em>Rattus rattus rufescens</em></td>
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### District-wise distribution of mammals in Meghalaya

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of taxon</th>
<th>WEST GARO HILLS</th>
<th>EAST GARO HILLS</th>
<th>SOUTH GARO HILLS</th>
<th>WEST KHASI HILLS</th>
<th>RI-BHAI</th>
<th>EAST KHASI HILLS</th>
<th>JINTIA HILLS</th>
<th>GARO HILLS</th>
<th>KHASI HILLS</th>
<th>KHASI-JINTIA HILLS</th>
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<tr>
<td>124.</td>
<td><em>Rattus rattus brunneusculus</em></td>
<td>(Hodgson) + + + + + + +</td>
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<td>125.</td>
<td><em>Rattus rattus tistae</em> Hinton</td>
<td>+ + + + + + +</td>
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<td>126.</td>
<td><em>Rattus nitidus nitidus</em> (Hodgson)</td>
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<td>127.</td>
<td><em>Rattus norvegicus</em> (Berkenhout)</td>
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<td>128.</td>
<td><em>Rattus ?bowersi mackenziei</em> (Thomas)</td>
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<td>129.</td>
<td><em>Rattus sabanus garonum</em> Thomas</td>
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<td>130.</td>
<td><em>Niviventer niviventer mentosus</em> Thomas</td>
<td>+ + + + + + +</td>
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<td>131.</td>
<td><em>Niviventer fulvescens fulvescens</em> (Gray)</td>
<td>+ + + + + + +</td>
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<td>132.</td>
<td><em>Mus musculus castaneus</em> Waterhouse</td>
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<td>133.</td>
<td><em>Mus musculus homourus</em> Hodgson</td>
<td>+ + + + + + +</td>
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<td>134.</td>
<td><em>Mus booduga booduga</em> (Gray)</td>
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<td>135.</td>
<td><em>Mus cervicolor cervicolor</em> Hodgson</td>
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<td>136.</td>
<td><em>Mus cervicolor nagarum</em> (Thomas)</td>
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<td>137.</td>
<td><em>Mus pahari jacksoniae</em> (Thomas)</td>
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<td>138.</td>
<td><em>Bandicota bengalensis bengalensis</em> (Gray)</td>
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<td>139.</td>
<td><em>Bandicota indica nemorivaga</em> (Hodgson)</td>
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Order INSECTIVORA

Small animals with short, closely set fur, pointed snout projecting beyond lower jaw, small ears and eyes, short fore limbs and five toes; orbits open posteriorly; zygomatic arches may be present or absent; upper and lower incisors conical, unicuspidate or with basal cusp only, lower ones unpectinate; upper true molars broad, multicuspidate, with more or less well defined W-shaped crown.

The order Insectivora is represented in Meghalaya by two families, namely, Talpidiaceae and Soricidae.

Key to the families of the order INSECTIVORA

Zygomatic arches present, bullae ossified ............................................................. TALPIDAE
Zygomatic arches absent, bullae imperfect ............................................................ SORICIDAE

Family TALPIDAE

Only the genus Talpa of the family Talpidae occurs in Meghalaya.

Genus Talpa Linnaeus, 1758

Very short velvety fur; minute eyes; pinnae absent; broad fore paws; outwardly directed heavy claws; scantily haired small tail.

Two species of the genus Talpa occur in Meghalaya.

Key to the species of the genus Talpa

Tail very short, concealed by fur ........................................................................ Talpa micrura
Tail club-shaped, about one twelfth of total length ................................................... T. leucura

1. Talpa micrura Hodgson

Common names: Eastern Mole, Short-tailed Mole (Eng.).
Material examined: None.
Measurements: Nil.
Diagnosis: Small, about 130.0 mm in head and body length; tail about 3 mm, buried in fur; colour steely black or brown; snout and feet flesh-coloured.
Distribution: India: Meghalaya: West Garo Hills district; Arunachal Pradesh; Assam; Nagaland; Sikkim; West Bengal. Nepal, Bangladesh.

2. Talpa leucura Blyth

Common names: Eastern Mole, White-tailed Mole (Eng.).


Measurements: External: 1 ♂: HB 112.0; TL 13.0; Hf 14.0.

Diagnosis: Smaller than Talpa. micrura, but with shorter muzzle and longer tail; covered with long white hairs.

Distribution: India: Meghalaya: East Khasi Hills district, Jaintia Hills district; Assam, Myanmar, Thailand.

Family SORICIDAE

Small, mouse-like mammals covered with velvety fur; muzzle narrow and elongated; eyes very small; ear-conch small, protruding through fur or covered by it; limbs short; soles of fore feet smaller than those of hind feet; zygomatic arches absent; auditory bones not forming bullae but possessing annular shape.

Three genera of the family Soricidae occur in Meghalaya.

Key to the genera of the family SORICIDAE

1. Ear-conch and tail well developed ................................................................. 2
   Ear-conch small; tail very short ................................................................. Anourosorex

2. 18 teeth in upper jaw ................................................................................... Suncus
   16 teeth in upper jaw ................................................................................... Crocidura

Genus Suncus Ehrenberg, 1833

Two species of the genus Suncus occur in Meghalaya

Key to the species of the genus Suncus

Head and body length more than 93.0 mm ...................................................... Suncus murinus
Head and body length less than 48.0 mm ...................................................... Suncus etruscus

*Suncus murinus* (Linnaeus)

Three subspecies of *Suncus murinus* occur in Meghalaya.

Key to the subspecies of *Suncus murinus*

Tail compressed toward tip, somewhat rectangular in cross-section, interspersed with a few long hairs, ................................................................. *Suncus murinus* soccatus

Tail gradually tapering toward tip, circular in outline and interspersed with many long hairs ........
Tail swollen at base, rather long and densely haired  ....................  *Suncus murinus fulvocinereus*

3. *Suncus murinus soccatus* (Hodgson)


*Common name*: House Shrew (Eng.).


*Measurements*: Nil.

*Diagnosis*: Fur long, 8.0 mm or more; dorsal colour uniform sorbid to brownish slaty.

*Distribution*: India: Meghalaya: East Khasi Hills district; Arunachal Pradesh; Assam; Nagaland; Sikkim; West Bengal. Nepal, Bhutan.

4. *Suncus murinus griffithi* (Horsfield)


*Common name*: House Shrew (Eng.).


*Measurements*: External: 1 ♂ : HB 130.0; TI 70.0; Hf 20.0; E 12.0. 1 ♀ : HB 116.0; TI 65.0; Hf 18.0; E 13.0. Cranial: 1 ♂ : l 30.5; cb 30.1; pl 14.7; mtr 14.2; cw 11.3; iw 6.0. 1 ♀ : l 28.4; cb 28.2; pl 13.9; mtr 14.0; cw 10.2; iw 5.7.

*Diagnosis*: Fur thick, more than 8.0 mm long; dorsal surface brown with rusty wash; ventral surface slightly lighter.

*Distribution*: India: Meghalaya: West Garo Hills district, Khasi and Jaintia Hills district; Arunachal Pradesh; Assam; Manipur; Nagaland; Uttar Pradesh; West Bengal. Bhutan, Bangladesh.

5. *Suncus murinus fulvocinereus* (Anderson)


*Common name*: House Shrew (Eng.).


*Measurements*: External: 5 ♂ : HB 110.0 183.0(144.8); TI 62.0 78.0(70.0); Hf 20.0 22.0(21.0); E 10.0 14.0(12.0). 4 ♀ : HB 119.0 142.0(128.0); TI 62.5 76.0(69.1); Hf 19.5 23.5(20.8). Cranial: 2 ♂ : l 35.3, 37.8; cb 34.1, 36.5; pl 16.4, 18.4; mtr 14.5,
Diagnosis: Similar to *Suncus murinus griffithi* and *S. m. soccatus*, but tail swollen at base, rather long and densely haired.

Distribution: India: Meghalaya: Est Khasi Hills district; Assam.

*Suncus etruscus* Savi

One subspecies of *Suncus etruscus* occurs in Meghalaya.

6. *Suncus etruscus nudipes* (Blyth)


Common name: Savi’s Pygmy Shrew (Eng.).

Material examined: East Khasi Hills district: 1 unsexed, Cherra Punji (c 1,417 m), coll. R. W. G. Frith, 1861.

Measurements: Nil.

Diagnosis: A very tiny shrew (head and body length about 44.0 mm) with a very short hind foot (c 7.9 mm) and seminude snout; dorsal surface rusty brown, ventral surface brownish.

Distribution: India: Meghalaya: East Khasi Hills district, Jaintia Hills district; Assam. Myanmar.

Genus *Crocidura* Wagler, 1832

Only three small conical teeth behind each anterior upper incisor.

Two species of the genus *Crocidura* are found in Meghalaya.

Key to the species and subspecies of the genus *Crocidura*

Snout moderately long, not much pointed and not densely clad with hairs; ears rather large, seminude

........................................................................................................................................... *Crocidura fuliginosa*

Snout pyramidal, well-clad with hairs; ears of moderate size, sparsely clad with hairs.............................

........................................................................................................................................... *Crocidura attenuata rubricosa*

7. *Crocidura attenuata rubricosa* Anderson


Common name: Grey Shrew (Eng.).

Material examined: Jaintia Hills district: 1 ♂ Shangpung (c 1,219 m), coll. H. W. Wells, 11.vii.1920.
Measurements: Nil.

Diagnosis: Dorsal colour dark or reddish brown, ventral colour grey-brown with a silvery sheen; tail somewhat tetragonal, not swollen at base, 75.6 100% or more of head and body length; condylobasal length less than 21.6 mm.

Distribution: India; Meghalaya; West Garo Hills district, East Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Jammu & Kashmir; Punjab; Uttar Pradesh; West Bengal. Bhutan.

8. Crocidura fuliginosa (Blyth)


Common name: None.


Measurement: Nil.

Diagnosis: Dorsal colour dark grey to blackish with dull silvery sheen, ventrally lighter; tail rounded and rather thick at base (more so in breeding season), 59 92% of head and body length; condylobasal length more than 22.0 mm.

Distribution: India: Meghalaya: West Garo Hills district, East Khasi Hills district; Assam. Southern China, Malaysia, Sumatra, Java, Borneo, Sulawesi.

Genus Anourosorex Milne-Edwards, 1872

The genus Anourosorex is monospecific.

9. Anourosorex squamipes Milne-Edwards


Common name: Sichuan Burrowing Shrew (Eng.).

Material examined: East Khasi Hills district: 1 ♂ 1 ♀, 1 unsexed, Laban (c 1,430 m), Shillong, coll. A. K. Mandal, 4.iii.1964, 19, 28.vi.1964. Jaintia Hills district: 2 ♂ 1 ♀, Jowai (c 1,370 m), coll. H. W. Wells, 13, 30.vi.1920, 6.vii.1920; 1 ♂, 1 ♀ Shangpung (c 1,220 m), coll. H. W. Wells, 6, 7.viii.1920.

Measurements: External: 4 ♂ : HB 92.0 105.0(99.5); Tl 12.5 16.0(14.0); Hf 14.5 18.0 (15.8). 3 ♀ : HB 85.0 110.0(96.7); Tl 12.0 16.0(13.7); Hf 15.0 18.0(16.3). Cranial: 2 ♂ : l 26.2, 27.8; cb 23.9, 26.0; pl 10.8, 10.9; cw 14.5, 15.3; mtr 11.5, 12.0. 2 ♀ : l 26.6, 26.9; cb 24.5, 25.2; pl 11.4, 11.5; cw 13.9, 14.2; mtr 11.9, 12.1.

Diagnosis: Seminude snout; naked, scaly feet; hind foot from heel one and a half times the length of fore foot from wrists; tail about one sixth the length of head and body, naked and scaly.

Distribution: India: Meghalaya: East Khasi Hills district, Jaintia Hills district; Arunachal
Pradesh; Assam; Manipur (Mandal et. al., in press). Bhutan, Myanmar, southern China, Taiwan, Vietnam, Thailand.

Remarks: Geographic variation in Anourosorex squamipes is rather confusing, more so in Indian limits. Mandal & Das (1970) have treated the Assam, Meghalaya and Arunachal Pradesh populations (except the Bomdila population, treated as A. s. schmidi Petter, 1963) as A. s. assamensis Anderson, 1875, while Mandal et al. (in press) have considered the Manipur population as A. s. squamipes.

Order SCANDENTIA
Squirrel-like in appearance; snout long; long whiskers absent.
The order Scandentia comprises the family Tupaiidae only.

Family TUPAIIDAE
Lower lobe of ears smaller than upper; inner side of ears scantily haired.
Only one genus of the family Tupaiidae, namely, Tupaia, occurs in Meghalaya.

Genus Tupaia Raffles, 1821
The genus Tupaia is represented in Meghalaya by a single species, Tupaia glis, with two subspecies under it.

Key to the subspecies of Tupaia glis
Tail shorter than head and body, ventral colour ranging from Buff Yellow to Orange Buff
............................................................................................................ Tupaia glis assamensis
Tail generally longer than head and body, ventral colour ranging from Maize Yellow to Buff Yellow
............................................................................................................ Tupaia glis belangeri

10. Tupaia glis belangeri (Wagner)
1841 Cladobates belangeri Wagner, Schriber's Saugeth. Suppl., 2 : 42 (Siriam, near Yangon, Pegu, Myanmar).

Common name: Common Tree-Shrew (Eng.).

Material examined: East Khasi Hills district: 1 unsexed, Cherra Punji (c 1,400 m), coll. R. W. G. Frith, 1857.

Measurements: External: None. Cranial: 1 unsexed: l 46.8; on 43.6; cb 43.3; pl 24.1; mtr 23.4; b 9.1; cw 18.7; zw 25.3; iw 13.2


11. Tupaia glis assamensis Wroughton
Common name: Common Tree-Shrew (Eng.).


Measurements: External: 2 ♂: HB 188.0, 200.0; TI 160.0, 175.0; Hf 41.0(2); E 16.0, 17.0. 1 ♀: HB 98.0; TI 88.0; Hf 28.0; E 11.0. Cranial: 2 ♂: l 48.8, 49.7; cb 46.6, 47.2; pl 26.1, 26.5; mtr 24.9, 25.8; cw 19.1, 19.2; iw 13.6, 14.5.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district. East Khasi Hills district; Arunachal Pradesh; Assam; Manipur; Nagaland.

Order CHIROPTERA

Forelimbs modified into wings; wing-membrane (patagium) supported by elongated metacarpals and phalanges (except first) and extends to sides of body and leg; an interfemoral membrane between legs and tail; claw on first digit (also on second digit in many); knee directed outward and backward; legs weak; all digits end in curved and pointed claw; size generally small; eyes usually small; ears moderate to large; testes abdominal, descending into temporary scrotum during reproductive phase only.

The order Chiroptera is divided into two suborders, both of which are represented in Meghalaya.

Suborder MEGACHIROPTERA

Second finger bears a claw (except Eonycteris) and more or less independent of third finger; noseleaf absent; eyes large; margin of ear forms complete ring; tragus absent; tail rod-like and short, often absent; premaxilla well-developed, but lacks palatal branch; postorbital process usually well-developed; bony palate continued behind last molars; cochlea small, does not compress basioccipital; molars not tuberculate, with a longitudinal furrow; lower incisors never more than two; frugivorous or nectarivorous; orientation by eyes.

Family PTEROPODIDAE

The suborder Megachiroptera consists of the single family Pteropodidae whose characters have been enumerated above.

Two subfamilies of the family Pteropodidae occur in Meghalaya.

Key to the subfamilies of the family PTEROPODIDAE

Inner margin of nostril projecting, muzzle moderate to short, teeth strong .......... PTEROPODINAE

Inner margin of nostril not projecting, muzzle long and slender, teeth weak .... MACROGLOSSINAE
Three species and subspecies belonging to three different genera of the subfamily Pteropodinae occur in Meghalaya.

Key to the genera, species and subspecies of the subfamily PTEROPODINAE

1. Upper part of one colour throughout ................................................................. 2

Upper part not of one colour throughout. ......................................................... Pteropus giganteus giganteus

2. Five upper and six lower cheek-teeth ................................................ Rousettus leschenaulti leschenaulti

Four upper and five lower cheek-teeth ............................................................ Cynopterus sphinx sphinx

Genus Rousettus Gray, 1821

Only one species and subspecies of the genus Rousettus occur in Meghalaya.

12. Rousettus leschenaulti leschenaulti (Desmarest)


Common name: Indian Fulvous Fruit Bat (Eng.).


Measurements: External: 10♂: Fa 67.2 88.3(79.9); Ti 11.0 20.7(16.7); E 16.6 21.0 (18.9); Tb 30.5 - 41.7 (36.5); F & Cl 18.5 23.0(20.3). 5♀: Fa 71.9 85.0(76.5); Ti 11.0 16.0 (14.5); E 15.6 21.0 (17.7); Tb(2) 29.9, 32.5; F & Cl 15.3 24.0(20.7). Cranial: 6♂: l 36.0 39.5 (38.0); cr 11.0 12.1(11.5); mtr 12.0 14.8(13.9); c1 7.7 8.4(8.1); iw 7.4 8.7(8.0); cw 15.0 - 16.0(15.6); zw 20.7 24.2(23.0); m3 10.7 11.6(11.2); ml 27.2 29.5(28.6). 3♀: l(2) 35.8, 38.0; cr(2) 10.5, 11.5; mtr 13.3 14.0(13.5); c1 7.2; iw(1) 8.8; cw 15.0 16.0 (15.4); zw 20.2 27.0(23.0); m3 10.2 11.0(10.6); ml 26.8 30.0(28.4).

Diagnosis: A medium-sized (forearm around 80.0 mm) fruit bat with longish muzzle and large eyes; tail reduced and rod-like; ear with a notch at lower edge; dorsal colour light brown with a rufescent tone, ventral colour a shade lighter; back of neck and shoulders sparsely haired; last lower molar elliptical.

Distribution: India: Meghalaya: West Garo Hills district (specimen in AMNH), East Garo Hills district, South Garo Hills district (Das 1986b), East Khasi Hills district, Jaintia Hills district; widely distributed in the Indian mainland, east to Arunachal Pradesh (Rookmaekar & Bergmans 1981), north to Jammu & Kashmir (Chakraborty 1983) and south to Kerala (Wroughton 1921). Pakistan (Siddiqi

Remarks: Ellerman & Morrison-Scott (1966) have treated Rousettus seminudus (Kelaart, 1850) of Sri Lanka as a species distinct from Rousettus leschenaulti, but Sinha (1969), finding no valid differences between Indian population of Rousettus leschenaulti and the Sri Lankan Rousettus seminudus, has synonymised the latter with the former.

Genus Pteropus Brisson, 1762

Only one species and subspecies of the genus Pteropus occurs in Meghalaya.

13. Pteropus giganteus giganteus (Brünnich)


Common name: Indian Flying Fox (Eng.).

Material examined: None.

Measurement: Nil.

Diagnosis: Largest bat of Meghalaya; rufous-brown around head and neck; a conspicuous orange or honey-coloured band across upper back; lower back blackish brown; ventral parts dark chestnut brown; naked skin of wings, uropatagium, ears and muzzle jet black; no external tail; a narrow flap of skin inside each leg.

Distribution: India: Meghalaya: West Garo Hills district (specimen in AMNH); widely distributed throughout the Indian Union, including Andaman Islands (Mason 1908), Pakistan (Blanford 1891), Nepal, Sri Lanka, Bangladesh (Blyth 1863a), Myanmar.

Remarks: Ellerman & Morrison-Scott (1966) have treated the Nepal, Assam and Manipur populations as Pteropus giganteus leucocephalus. But most of earlier workers (Blyth 1863a; Hutton 1872; Dobson 1876, 1878; Blanford 1891) have considered both the Nepal and Assam populations of the Indian Flying Fox not different from those of other parts of India. Hutton (1872) has discussed colour variation in this species and has concluded that there is ‘an almost endless variety of colouring’. Also, Siddiqi (1961a) has identified Pteropus giganteus giganteus from Shillong, Meghalaya (part of undivided Assam). Recently, Agrawal & Bhattacharyya (1977) have found overlapping characters between leucocephalus and the nominate subspecies, and, therefore, have questioned the validity of leucocephalus. On the basis of the above-mentioned findings, Pteropus giganteus leucocephalus is hereby treated as a synonym of the nominate subspecies.

The Indian Flying Fox comes to the hills for feeding at night, and apparently does not roost there.

Genus Cynopterus F. Cuvier, 1824

Only one species and subspecies of the genus Cynopterus occurs in Meghalaya.
14. *Cynopterus sphinx sphinx* (Vahl)


**Common name**: Short-nosed Fruit Bat (Eng.)


**Measurements**: External: 33 ♂: Fa 60.0 73.5(67.9); Ti 10.0 16.6(12.3); E 17.8 22.0 (20.0); Tb 23.2 30.0(25.8); F & CI 11.7 17.0(14.5). 12 ♀: Fa 63.6 71.4 (68.8); Ti(5) 11.0 16.0(13.2); E 14.0 21.0(19.3); Tb 21.3 28.5(25.3); F & CI 12.3 16.4(14.4). Cranial: 10 ♂: 1 31.4 33.1(32.2); cb 29.6 31.9(30.7); cr 7.3 8.1(7.9); mtr 10.7 11.7(11.4); c 1 6.3 7.0(6.7); iw 5.5 6.6(6.1); cw 13.2 13.9(13.5); zw 19.6 - 21.0(20.3); m 1 1.9 1.9(1.4); c m 1 11.7 12.2; ml 22.2 24.7(23.2). 10 ♀: I 30.0 32.3(31.5); cb 29.9 30.7(30.2); cr 7.3 8.2 (7.6); mtr 10.3 11.3(10.7); c 1 1 6.1 7.0(6.6); iw 5.6 6.7(6.1); cw 12.9 13.8(13.4); zw 18.9 20.7(19.6); m 1 1.9 1.9(1.4); c m 2 11.3 12.2(11.5); ml 21.4 23.2(22.6).

**Diagnosis**: Medium-sized (forearm around 70.0 mm) fruit bat white margin to ears; metacarpals and phalanges whitish; nostrils divergent with deep internarial groove; dorsal colour grey or greyish brown, paler ventrally (often with a broad rufescent or chestnut area around shoulders and throat); naked skin of wings, muzzle, etc., blackish brown; tail reduced and rod-like.

**Distribution**: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, East Khasi Hills district Dobson 1876, Jaintia Hills district; widely distributed throughout the mainland of the Indian Union. Pakistan (Anderson 1881), Nepal (Fray 1925), Sri Lanka, Bangladesh, Myanmar.

**Remarks**: Name of the specimens reported from the Siju Cave, South Garo Hills district by Kemp (1924) as *Cynopterus sphinx gangeticus* Andersen, 1910 and subsequently listed as *Cynopterus sphinx sphinx* by Kurup (1968), belong to the present taxon.

The Short-nosed Fruit Bat is one of the commonest bats of Meghalaya.

**Subfamily MACROGLOSSINAE**

Two species and subspecies belonging to two genera of the subfamily Macroglossinae occur in Meghalaya.

**Key to the genera, species and subspecies of the subfamily MACROGLOSSINAE**

Size large (forearm around 70.0 mm), no claw on second finger of wing ... *Eonycteris spelaea spelaea*
Size small (forearm around 50.0 mm), claw on second finger of wing ..........................................

Macroglossus sobrinus sobrinus

Genus *Eonycteris* Dobson, 1873

Only one species and subspecies of the genus *Eonycteris* occurs in Meghalaya.

15. *Eonycteris spelaca spelaca* (Dobson)


*Common name*: Dobson’s Long-tongued Fruit Bat (Eng.).


*Measurements*: External: 2♂: Fa 73.0(2); Tl 15.0, 19.0; E 20.0, 21.0; F & Cl 19.0, 20.0. 5♀: Fa 67.0 72.5(69.6); Tl(4) 17.0 14.0(15.5); E(4) 17.5 18.0 (17.9); Tb(2) 28.0, 30.0; F & Cl(4) 16.0 19.0(18.0). Cranial: 3♀: l 34.0 35.5(35.0); cr(2) 7.0, 7.6; mtr 12.0 13.0 (12.5); cw 14.0 15.0(14.6); zw(2) 19.0, 20.0; $m^2$ 8.3 9.2(8.8); c m3 13.0 13.5(13.2); ml 26.0 27.0(26.5).

*Diagnosis*: Very much like the Indian Fulvous Fruit Bat, but second finger lacks a claw; small reniform perianal gland on either side of anus; fur short and scanty; back brownish, head darker, ventral surface rather greyish; back of neck more thinly haired; adult males with yellowish red ruff on neck.

*Distribution*: India: Meghalaya: South Garo Hills district (Sinha 1990), East Khasi Hills district, Jaintia Hills district; Uttar Pradesh (Bhat 1968a); Karnataka (Bhat et al. 1980); Andhra Pradesh (specimens in ZSI); West Bengal (specimens in ZSI); Sikkim (Mistry 1991); Assam (Ghose & Bhattacharyya 1976); Arunachal Pradesh (specimens in ZSI); Andaman Islands (Bhattacharyya 1975). Myanmar, southern China (Honacki et al. 1982), Vietnam, Laos, Cambodia, Thailand, Malay Peninsula and nearby islands, Sumatra, possibly Borneo.

*Remarks*: One of the specimens reported as *Cynopterus sphinx gangeticus* by Kemp (1924) is actually an example of the present taxon (reported by Sinha 1990).

Genus *Macroglossus* F. Cuvier, 1824

Only one species and subspecies of the genus *Macroglossus* occurs in Meghalaya.

16. *Macroglossus sobrinus sobrinus* Andersen

Common name: Greater Long-tongued Fruit Bat (Eng.).


Measurements: External: 1 ♂: Fa 48.3; Tl 17.3; Tb 18.8; F & Cl 11.9. Cranial: 1 ♂: l 30.3; cr 10.8; mtr 9.6; c1 6.1; iw 4.9; cw 12.1; zw 16.3; m1 6.5; c m3 11.0; ml 22.1.

Diagnosis: A small (forearm around 50.0 mm) fruit bat (smallest of fruit bats of Meghalaya) with very long head; pelage longish and light reddish brown, chest more brown; tail rod-like and short; interfemoral membrane narrow; muzzle long and cylindrical; nostrils upward-pointing and separated by an ill-defined groove; tongue quite long with feathery tip.

Distribution: India: Meghalaya: Jaintia Hills district; West Bengal; Tripura (specimen in ZSI); Arunachal Pradesh (Saha 1985, as Macroglossus minimus). Myanmar, and Thailand to Sumatra, Nias Island, Krakatoa Island and Java (Hill 1983).


Suborder MICROCHIROPTERA

Second finger does not bear a claw and closely associated with third finger; noseleaf present in many; eyes small; margin of ear not forming complete ring; tragus usually present; tail partly or wholly associated with interfemoral membrane, often quite long, absent in some; premaxilla with or without maxillary branch; postorbital process usually reduced or absent; bony palate does not continue laterally behind last molars; cochlea large, usually compresses basioccipital; molars with sharp cusps; lower incisors usually three; usually insectivorous, few also carnivorous.

The suborder Microchiroptera in Meghalaya consists of four families.

Key to the families of the SUBORDER MICROCHIROPTERA

1. Both noseleaf and tragus present ............................................... MEGADERMATIDAE
   Either noseleaf or tragus present, but not both ................................................. 2
2. A noseleaf, but no tragus present ..................................................... RHINOLOPHIDAE
   No nose leaf, but tragus present ................................................................. 3
3. Tail entirely enclosed in interfemoral membrane ................................... VESPERTILIONIDAE
   Distal portion of tail free from interfemoral membrane ................................ MOLOSSIDAE

Family MEGADERMATIDAE

Only one species and subspecies of the genus Megaderma of the present family occurs in Meghalaya.
Genus *Megaderma* E. Geoffroy, 1810

Only one species and subspecies of the genus *Megaderma* occurs in Meghalaya.

17. *Megaderma lyra lyra* E. Geoffroy


*Common name*: Indian False Vampire (Eng.).


*Measurements*: External: 1 σ : Fa 62.5; E 36.7; Tr 15.7; Tb 33.3; F & Cl 19.4. Cranial: 1 σ : l 28.5; ccl 24.6; cr 7.3; mtr 11.2; c1 5.4; iw 5.0; cw 12.4; zw 16.1; m3 10.0; c m3 12.5; ml 19.1.

*Diagnosis*: A medium-sized (forearm 60.0 70.0 mm) bat with large ears, noseleaf and large tragus, but without externally visible tail; dorsal colour slaty grey, ventral colour paler (darty white); ears conjoined for nearly half the length of inner margin; tragus bifid, posterior portion long, narrow and acutely pointed.

*Distribution*: India: Meghalaya: West Garo Hills district; widely distributed throughout the Indian mainland from Jammu & Kashmir to Cape Camorin (Dobson 1876) and from Gujarat to Assam (Hinton & Lindsay 1926). Afghanistan (Aellen 1959), Pakistan, Nepal (Anderson 1881), Sri Lanka, Bangladesh (Dobson 1876).

*Remarks*: Ellerman & Morrison-Scot (1951) considered the western Indian population of the species as *Megaderma lyra caurina*, but Sinha (1977), after reviewing the species, concluded that the entire Indian population belonged to the nominate subspecies.

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 interfemoral membrane (except Coelops); 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 noseleaf consists of three main parts, viz., (i) anterior horizontal portion, (ii) median perpendicular portion and (iii) posterior erect portion.

The family Rhinolophidae has been divided into two subfamilies, viz. Rhinolophinae and Hipposiderinae.

Subfamily RHINOLOPHINAE

The anterior portion of the noseleaf is a thin, horseshoe shaped disc of naked skin with an angular deep median notch on its lower margin which partially or completely covers the muzzle. This anterior
The horizontal part of the noseleaf is called the **horseshoe**. The nostrils lie recessed in the middle of this part. The median portion of the noseleaf is called the **sella**. It is an upright thickened structure. Behind the sella and between the eyes lies the third portion of the noseleaf, known 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; sagittal 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** Lacepe de, 1799

Six species and subspecies of the genus *Rhinolophus* occur in Meghalaya.

**Key to the species and subspecies of the genus Rhinolophus**

1. Base of sella expanded making a trifolium-shaped structure, frontal depression very deep .................. ................................................................. *Rhinolophus luctus perniger*  
   Base of sella not expanded and does not make a trifolium-shaped structure, frontal depression shallow .......................................................... 2

2. Connecting process beneath top of sella ........................................... *Rhinolophus pearsoni*  
   Connecting process as high as or higher than top of sella .......................................................... 3

3. Connecting process level with top of sella forming a shallow notch between them .................. ................................................................. *Rhinolophus affinis himalayanus*  
   Connecting process higher than top of sella forming a deep notch between them ................... 4

4. Zygomatic width less than 8.0 mm, maxillary tooth-row less than 6.0 mm ......................... ................................................................. *Rhinolophus pusillus blythi*  
   Zygomatic width more than 8.0 mm, maxillary tooth-row more than 6.0 mm ....................... 5

5. Metacarpal of fourth finger more than 79% of the length of forearm .......................... ................................................................. *Rhinolophus lepidus lepidus*  
   Metacarpal of fourth finger less than 79% of the length of forearm ........... *Rhinolophus subbadius*

18. *Rhinolophus affinis himalayanus* Andersen


*Common names*: Intermediate Horseshoe Bat or Allied Horseshoe Bat (Eng.).


*Measurements*: External: 3 ♂: Fa 44.9 52.3(49.7); TI 25.0 32.0(28.7); E 19.0 21.0(19.7);
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Tb 19.9 25.0(22.8); F & CI 10.4 11.0(10.8); F: Fa 50.0 51.4(50.6); Tl 24.0 30.0(25.5); E: 17.0 18.0(17.3); Tb 22.4 24.4(23.7); F & CI 10.3 11.9(11.3). Cranial: 3 Φ: l 20.2 22.5(21.7); ccl 16.8 19.4(18.4); mtr 7.6 9.0(8.5); c1 4.9 5.3(5.1); iw 2.2 2.5(2.4); cw 8.1 9.2(8.8); zw 9.9 11.5(10.8); m3 8.5 9.5(9.2); ml 13.1 15.5(14.5). 4 Φ: l 21.8 23.0(22.2); ccl 18.0 18.8(18.6); mtr 8.5 -8.8(8.6); c1(3) 4.7 5.6(5.1); iw 2.2 2.5(2.4); cw 9.0 9.3(9.1); zw 10.8 11.3(11.1); c m3(3) 8.7 9.2(9.0); ml 14.7 15.1(15.0).

**Diagnosis**: A medium-sized (forearm around 50.0 mm) horseshoe bat with moderate ears (around 17.0 mm) and noseleaf; frontal sac absent; lower lip with three prominent mental grooves.

**Distribution**: India: Meghalaya: East Khasi Hills district (Hinton & Lindsay 1926), Jaintia Hills district (Hinton & Lindsay 1926); Uttar Pradesh: Tamil Nadu (specimen in ZSI); West Bengal. Nepal, Sri Lanka (Blyth 1863a, Sinha 1973), Bangladesh (Dobson 1876), Bhutan (Saha 1980), northern Myanmar, southern China.

**Remarks**: The Intermediate Horseshoe Bat is essentially a montane form.

19. *Rhinolophus pusillus blythi* Andersen


**Common name**: Least Horseshoe Bat (Eng.).

**Material examined**: None.

**Measurements**: Nil.

**Diagnosis**: Small (forearm nearly 40.0 mm) horseshoe bat with horizontal base of sella arched and equal in width to vertical part; connecting process triangular in lateral view; tibia shorter (16.0 mm or less).

**Distribution**: India: Meghalaya: South Garo Hills district (Sinha 1973); Uttar Pradesh: West Bengal (Sinha 1973); Sikkim (specimen in ZSI); Assam (Hinton & Lindsay 1926; Sinha 1973). Nepal (Sinha 1973).

**Remarks**: Ellerman & Morrison-Scott (1966) considered *Rhinolophus blythi* and *Rhinolophus blythi szechwanus* Andersen, 1918 as two separate subspecies of *Rhinolophus cornutus* Temminck, 1835. Hill & Yoshiyuki (1980) have treated *Rhinolophus pusillus* Temminck, 1834 as a species distinct from the Japanese species *Rhinolophus cornutus*. Sinha (1973) has synonymised *szechwanus* with *blythi*. However, authors like Lekagul & McNeely (1977), Hill & Yoshiyuki (1980) have maintained these two as separate subspecies. Hill & Yoshiyuki’s (1980) view that *blythi* is distributed in northern India and *szechwanus* in Sichuan, China, has been accepted here.

20. *Rhinolophus lepidus lepidus* Blyth


**Common name**: Little Indian Horseshoe Bat (Eng.).

Measurements: External: 1 ♂: Fa 36.0; Ti 18.0; E 16.0; Tb 16.0; F & Cl 8.5. 2 ♀: Fa 39.0; 40.0; Ti(1) 20.0; E(1) 16.0; Tb(1) 15.0; F & Cl (1) 8.0. Cranial: 1 ♂: l 15.9; mtr 5.6; cw 7.3; zw 7.2; m³ m³ 5.5; c m³ 6.7; ml 9.6. 2 ♀: l(1) 15.5; mtr 5.6, 5.8; cw 6.3, 7.1; zw 7.1, 7.3; m³ m³ 5.4, 5.5; c ml 6.5, 7.0; ml 10.0, 10.8.

Diagnosis: Very much similar to Rhinolophus pusillus blythi, but slightly larger (forearm around 40.0 mm, on average) with relatively larger ears and noseleaf.

Distribution: India: Meghalaya: Jaintia Hills district (Hinton & Lindsay 1926); Delhi (Brosset 1962); Rajasthan (Prakash 1956); Uttar Pradesh; Madhya Pradesh; Maharashtra (Wroughton 1916); Karnataka (Wroughton 1913); Kerala (Blanford 1891); Tamil Nadu (Das 1986b); Andhra Pradesh (Das 1986b); Orissa (Das & Agrawal 1973); Bihar (Blyth 1863a, Wroughton 1915); West Bengal. Nepal (Mitchell 1980), possibly Bangladesh (Siddiqi 1961a).

Remarks: In recent years, there has been much discussion on the limits and different subspecies of Rhinolophus lepidus. Das (1986b) has summarised relevant details on these aspects.

21. Rhinolophus subbadius Blyth


Common name: Nepal Horseshoe Bat (Eng.).

Material examined: West Garo Hills district: 1 ♀, Siju Cave, coll. S. W. Kemp & B.N. Chopra, 1921. 1 ♀, Garo Hills (Holotype of Rhinolophus garoensis Dobson, 1872).

Measurements: External 2 ♀: Fa 34.0, 37.3; Ti(1) 16.0; E(1) 12.6; Tb 12.6, 13.5; F & Cl 6.5, 7.0. Cranial: 2 ♀: l 14.0, 15.9; cb(1) 12.2; ccl(1) 13.2; mtr 5.3, 5.6; c¹ c¹ 3.6(2); iw(1) 2.1; cw(1) 6.5; zw(1) 7.3; m³ m³ 5.6(2); c m³ 5.9, 6.1.

Diagnosis: Smallest (forearm around 34.0 mm) Rhinolophus; noseleaf very similar to Rhinolophus pusillus blythi, but connecting process curved horn-like and anterior surface conspicuously concave.


Remarks: Nepal Horseshoe Bat appears to be a montane species.

22. Rhinolophus luctus perniger Hodgson


Common name: Great Eastern Horseshoe Bat (Eng.).

Material examined: None.

Measurements: Nil.

Diagnosis: Largest (forearm up to 78.0 mm) horseshoe bat of Meghalaya; horseshoe broad; sella
trifoliate; lower lip with one mental groove; tip of tail included in interfemoral membrane; frontal sac present, smaller in females; fur dense and woolly, usually blackish.

**Distribution**: India: Meghalaya: Khasi Hills (Jerdon 1867, Dobson 1874), Jaintia Hills district (Hinton & Lindsay 1926); Uttar Pradesh; Madhya Pradesh (Sinha 1973); West Bengal (Blyth 1863a); Sikkim; Assam (Sinha 1973); Nagaland (Sinha 1973). Nepal, Myanmar, possibly Thailand (Lekagul & McNeely 1977).

**Remarks**: Great Eastern Horseshoe Bat, is essentially a montane form.

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23. *Rhinolophus pearsonii* Horsfield


**Common name**: Pearson’s Horseshoe Bat (Eng.).


**Measurements**: External: 4♂: Fa 52.0 54.0(52.9); Ti(3); 23.0 24.0(23.7); E(3) 20.7 25.0(23.2); Tb 24.5 27.8(26.0); F & Cl(3) 10.1 12.2(11.1). 1♀: Fa 52.0; Ti 24.0; E 24.0; Tb 25.7; F & Cl 10.3. Cranial: 4♂: l 23.2 24.3(23.7); ccl 19.0 20.8(20.2); cw 9.0 9.7(9.3); mtr 9.1 9.8(9.5); c1 5.6 - 6.3(5.7); iw 2.3 2.6(2.5); zw 11.1 12.2(11.6); m3 m3 8.2 9.0(8.7); ml(1) 15.2; c m3 9.7 10.3(10.0). 1♀: l 23.8; ccl 20.1; cw 9.5; mtr 9.4; c1 5.6; iw 2.1; m3 m3 8.6; zw 11.3; c m3 9.9.

**Diagnosis**: A medium-sized (forearm 50.5 to 55.0 mm) horseshoe bat, with horseshoe completely covering muzzle; sella not trifoliate; base of sella broader than vertical part; lower lip with single mental groove.

**Distribution**: India: Meghalaya: Garo Hills (Dobson 1876), West Khasi Hills district (Dobson 1876), East Khasi Hills district (Hinton & Lindsay 1926), Jaintia Hills district (Hinton & Lindsay 1926); Uttar Pradesh; West Bengal; Sikkim (Hill 1987). Nepal (Hinton & Fry 1923), (?)Bangladesh (Khan 1982), Bhutan (Saha 1980), Myanmar (Hill 1987), southern China (Corbet & Hill 1986) including Tibet (Dobson 1876, Cai & Zhang 1981), Vietnam, Thailand (Lekagul & McNeely 1977), Malaya (Honacki et al. 1982).

**Remarks**: Hill (1987) considers the validity of *chinensis* Andersen, 1905 as a subspecies of *Rhinolophus pearsoni* doubtful due to overlapping measurements of *pearsoni* and *chinensis*.

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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 median portion of the noseleaf consists of a prominent transverse bar 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 Meghalaya, two genera of the subfamily Hipposiderinae, viz., Hipposideros and Coelops, are found

Key to the genera, species and subspecies of the subfamily HIPPOSIDERINAE

1. Anterior noseleaf not divided ........................................................................................................ 2
   Anterior noseleaf divided into distinct lappets ................................................................. Coelops frithi frithi

2. Larger (forearm more than 82.0 mm) .................................................................................. 3
   Smaller (forearm less than 65.0 mm) .................................................................................. 4

3. Posterior noseleaf narrower than anterior noseleaf; frontal sac present ........................................ Hipposideros armiger armiger
   Posterior noseleaf not narrower than anterior noseleaf; frontal sac absent.................. Hipposideros lankadiva

4. Medium-sized (forearm less than 45.0 mm) .......................................................... Hipposideros larvatus leptophyllus
   Small-sized (forearm less than 45.0 mm) ............................................................................. 5

5. Forearm more than 38.5 mm .......................................................................................... Hipposideros pomona gentilis
   Forearm less than 37.0 mm ........................................................................................ Hipposideros cineraceus

Genus Hipposideros Gray, 1831

Five species and subspecies of the genus Hipposideros are known from Meghalaya, the key for which has been given above.

24. Hipposideros larvatus leptophyllus Horsfield


Common name: Khasi Leaf-nosed Bat (Eng.)


Measurement: External: 8♂: Fa 61.2 63.3(62.0); TI(5) 37.2 42.3(38.9); E(5) 20.3 23.9 (22.1); Tb 23.4 25.2(24.2); F & Cl 10.9 13.1(11.6). 4♀: Fa 61.7 63.5(62.5); TI(3) 41.5 45.6(43.0); E 22.9 25.3(24.0); Tb 23.0 26.0(25.0); F & Cl 10.0 12.5(11.7). Cranial: 8♂: l(5) 23.6 24.9(24.5); ccl 20.6 21.5(20.9); mtr 8.6 9.6(9.1); c 5.2 5.5(5.4); iw 2.8 3.4(3.2); cw 9.6 10.2(9.8); zw 13.3 14.0(13.6); m1 9.0 9.5(9.3); m3 9.7 10.2(9.9); ml(3) 15.6 16.0(15.9). 4♀: l(3) 24.5 25.2 (24.9); ccl 20.0 20.5(20.2); mtr 9.3 9.5(9.4); c 5.3
5.8(5.5); iw 3.2(4); cw 9.4 10.1(9.7); zw 13.5 14.2(13.9); m3 m3 9.3 9.6(9.4); c m4 9.7 10.0(9.9); ml(3) 16.0 16.1(16.0).

**Diagnosis**: Ears large, rather broad, triangular, posterior margins concave behind tip, small process at antitragal fold; anterior neseleaf with median emargination; narial lappets well developed; median portion of noseleaf slightly expanded; upper edge of posterior noseleaf more or less semicircular; frontal sac in both sexes, reduced in females.

**Distribution**: India: Meghalaya: West Garo Hills district, Ri-Bhoi district (Hinton & Lindsay 1926), East Khasi Hills district (Hinton & Lindsay 1926), Khaki Hills; Assam. Bangladesh (Blyth 1963a).

**Remarks**: Blyth (1863a) reported four specimens from Sylhet, northern Bangladesh, as *H. larvatus* (Horsefield, 1823). A specimen from the same locality is in no way different from those listed above.

**25. Hipposideros lankadiva** Kelaart


**Common names**: Sri Lanka Gigantic Leaf-nosed Bat or Kelaart's Leaf-nosed Bat (Eng.).


**Measurements**: External: 11 ♂: Fa 85.5 92.7(88.6); Tl 40.0 56.5(50.1); E 23.6 28.5 (26.2); Tb 32.0 36.7(34.2); F & Cl 15.0 19.0(17.1). 4 ♀: Fa 86.5 93.4(89.2); Tl 48.0 55.9 (51.6); E 24.2 28.0(25.6) Tb 31.4 35.9(33.3); F & Cl 16.0 18.5 (17.3). Cranial: 6 ♂: l 31.2 33.5(32.2); mtr 13.6 14.5(14.0); c1 7.9, 8.0; iw(3) 3.3 3.6(3.4); cw 12.0 14.0(13.3); zw 20.0(3); m3 m3 12.6 13.2(13.0); c m3 16.0(3); ml(4) 24.0 25.5(24.7). 3♀: l (1) 30.1; mtr(2) 13.2, 13.9; c1 c1(2) 7.2, 7.9; iw(1) 3.6; cw(1) 13.7; zw(1) 19.0; m3 m3(2) 12.3, 13.0; c m3(1) 14.2; ml(2) 23.0, 23.2.

**Diagnosis**: Ears large, acutely pointed, posterior margins slightly concave behind tip; noseleaf with four supplementary leaflets, fourth much reduced, often absent; posterior portion of noseleaf high and broad, upper margin semicircular and supported by three septa.

**Distribution**: India: Meghalaya: South Garo Hills district (Kemp 1924); Karnataka; Andhra Pradesh (specimens in ZSI); Maharashtra (Sapkal & Bhandarkar 1984); Madhya Pradesh; Orissa (Das et al. 1993); West Bangal (Agarwal et al. 1992); Tripura (specimen in ZSI). Sri Lanka. northern Myanmar (Andersen 1907).

**Remarks**: Ellerman & Morrison-Scott (1951) have recognised three subspecies of *Hipposideros lankadiva* from the Indian mainland, viz. *H. l. indus*, *H. l. mixtus* and *H. l. unitus*, and *H. schistaceus* as a separate species. Brosset (1962) has studied *H. lankadiva* from several localities of western and central India and has found that colour variation is a rule rther than an exception in this
species. He (Brosset 1962), therefore, has not recognised any of the above-named subspecies (as also schistaceus, which he erroneously mentioned as a subspecies). Hill (1963), in his review of the genus Hipposideros, has maintained all these subspecies (and schistaceus as a separate species), but has also stated that indus and mixtus are likely to prove synonymous. A tentative examination of the good collection of Hispoosideros lankadiva present in the Zoological Survey of India, as also those in the Bombay Natural History Society and the American Museum of Natural History, U.S.A. (brought on loan for study) has revealed that though the peninsular Indian population is rather smaller as compared to that of Sri Lanka, at least some of the specimens from northeastern India are as large as those from Sri Lanka. A thorough analysis of the data is, therefore, necessary to resolve the problem of subspecies in H. lankadiva vis-a-vis the taxonomic status of Hipposideros schistaceus.

26. Hipposideros pomona gentilis Andersen


Common name : Indian Bicoloured Leaf-nosed Bat (Eng.).


Measurements : External : 1 ♂ : Fa 40.0; Tt 28.0; E 22.0; Tb 17.5; F & Cl 8.7. 3 ♀ : Fa 40.0 43.0 (41.4); Tt 28.0 35.0(32.3) E 18.4 24.0(21.5); Tb 18.1 20.0(19.4); F & Cl 7.7 8.2(8.0). Cranial : 1 ♂ : l 18.2; ccl 15.7; mtr 6.3; c1 1 3.2; iw 2.6; cw 8.2; zw 8.5; m3 6.1; c m3 6.9; ml 10.6. 3 ♀ : l 17.9 18.2(18.0); ccl 15.1 15.9(15.6); mtr 6.0 6.3(6.2); c1 1 3.2 3.3(3.3) iw 2.6 2.9(2.7); cw 7.8 8.3(8.1); zw(2) 8.7, 9.0; m3 5.8 6.1(5.9); c m3(2) 6.4. 6.8; ml(1) 10.7.

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; intermaxillary 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 (length about half the length of, height two third that of last lower premolar).

Distribution : India : Meghalaya : East Khasi Hills district (Hinton & Lindsay 1926), Garo Hills (Hinton & Lindsay 1926); Uttar Pradesh (Andersen 1918); West Bengal (Agarwal et al. 1992), Sikkim (Hill et al. 1986); Assam (Hinton & Lindsay 1926); Arunachal Pradesh (Hinton & Lindsay 1926). Nepal, Bangladesh, Myanmar, southern Thailand (Lekagul & McNeely 1977, Hill et al. 1986) and northern Malay Peninsula (Hill et al. 1986).

Remarks : Hill (1963), in his review of the genus Hipposideros, considered Hipposideros bicolor (Temminck, 1834) of Java, Hipposideros pomona Andersen, 1918 (type-locality : Haleri, N. Coorg = Haleri, Kodagu district, Karnataka, India) and Hipposideros gentilis as conspecific, with pomona and gentilis as subspecies. Hill et al. (1986) have, however, shown that H. bicolor and H. pomona are distinct species. The former does not occur in India and that the latter is represented in India by two
subspecies, the nominate subspecies occurring in the southern areas and *H. p. gentilis* in northeastern parts. Incidentally, Ellerman & Morrison-Scott (1951) also considered *gentilis* as a subspecies of *pomona*. Specimens (present in ZSI) reported from Nepal by Scully 1888 as *Phyllorhina fulva* and referred to *Hipposideros fulvus* by Hinton & Fry (1923), are actually examples of *H. pomona gentilis*. A female specimen (examined) collected by major Godwin-Austen from ‘Khasia Hills’ (= Cherra Punji, East Khasi Hills district, Meghalaya), was reported by Dobson (1874), as *Ph. fulva* and subsequently listed by the same author (Dobson 1876), as *Phyllorhina fulva*, is in fact, an example of *H. pomona gentilis*. Similarly, specimens from Assam, Bangladesh and Myanmar listed by Dobson (1876) as *Phyllorhina fulva* are actually examples of *Hipposideros pomona gentilis*. On the other hand, while referring specimens from Vietnam to *H. gentilis*, Osgood (1932) doubted the validity of *sinensis* as a subspecies. It is quite possible, even probable that *sinensis* may ultimately have to be considered as a synonym of *H. p. gentilis*, but the same need to be formally established by studying sufficient material. Till then, Vietnam should better be excluded from the distributional range of *H. pomona gentilis*.

27. *Hipposideros cineraceus* Blyth


*Common names:* Least Leaf-nosed Bat or Blyth's Leaf-nosed Bat (Eng.).


*Measurements:* External : 1 ♀ : Fa : Tl 29.7; E 14.6; Tb 15.7; F & C 6.1. Cranial : 1 ♀ / 15.9; ccl 14.0; mtr 5.2; c 1 2.7; iw 2.6; cw 6.8; zw: m 3 5.0; ml 8.9.

*Diagnosis:* Smallest *Hipposideros* of Meghalaya; externally similar to *Hipposideros pomona gentilis*, but smaller (forearm around 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 parallel-sided and inflated; zygomatic arch narrow and delicate; anterior upper premolar small, compressed between canine and posterior upper premolar, not extruded from tooth-row (canine and posterior premolar do not touch at any point.)

*Distribution:* India : Meghalaya : East Khasi Hills district, Jaintia Hills district (Hinton & Lindsay 1926); Haryana (Hinton & Thomas 1926); Uttar Pradesh; West Bengal (Siddiqui 1961a); Assam (Hinton & Lindsay 1926); Arunachal Pradesh (Hinton & Lindsay 1926). Pakistan, Nepal (Hinton & Fry 1923), Myanmar, Vietnam, Laos (Phillips 1967), Thailand, Malaya Peninsula, Rhio Archipelago, Anamba Islands, Borneo, ? Philippine Islands (Hill & Francis 1984).

*Remarks:* Ellerman & Morrison-Scott (1966) have recognised two subspecies of *Hipposideros cineraceus*, viz., the nominate one and *H. c. micropus* (Peters, 1872). Hill & Francis (1984) have, however, synonymised *micropus* with the nominate subspecies. These authors (Hill & Francis 1984) have also tentatively considered *Hipposideros wrighti* Taylor, 1834 of Philippine Islands as a
synonym of *H. cineraceus*.

28. **Hipposideros armiger armiger** (Hodgson)


**Common name**: Great Himalayan Leaf-nosed Bat (Eng.).


**Measurements**: External: 6 ♀: Fa 86.2 91.0(89.0); Tl 50.0 60.0(55.2); E 30.0 31.0(30.1); Tb 33.0 38.6(35.7); F & Cl 13.8 20.6(16.9). 9 ♀: Fa 80.9 91.0(86.6); Tl 48.0 59.0(53.3); E 28.0 30.2(29.3); Tb 33.9 39.8(36.0); F & Cl 14.8 18.2(16.5). Cranial: 2 ♂: I(1) 31.1; ccl(1) 25.8; mtr 12.0(2); c 1 c(1) 6.3, 6.8; iw(2) 4.1, 4.4; cw(1) 11.2; zw(1) 17.0. 3 ♀: I 29.0 -30.1(29.5); ccl(2) 24.4, 25.1; mtr 11.4 11.6(11.5); c 1 c 1 6.2 6.8(6.6); iw 3.8 4.6(4.2); cw 11.1(2); zw(2) 16.9, 17.0; ml(2) 14.8, 20.6.

**Diagnosis**: Largest (forearm may reach 96.0 mm or even more) leaf-nosed bat of Meghalaya; ears large, broad and acutely pointed, posterior margins concave behind tip, slight thickening at antitragal region; noseleaf with four supplementary leaflets, fourth rudimentary; median portion of noseleaf slightly inflated with a prominent eminence at middle: upper edge of posterior noseleaf flattened, thickened and trilobate, and supported by one prominent median and two less evident lateral septa; frontal sac prominent in males, small in females.

**Distribution**: India: Meghalaya: East Khasi Hills district (Dobson 1874), Jaintia Hills district (Hinton & Lindsay 1926), Garo Hills; Uttar Pradesh; West Bengal (Blyth 1863a); Sikkim (Blanford 1891); Assam (Hinton & Lindsay 1926). Nepal, Myanmar, southeastern China (Sichuan, Yunan, Fujian, etc.), Hong Kong, (Phillips & Wilson 1968), Vietnam, Thailand (Lekagul & McNeely 1977), Malaya Peninsula, and nearby islands (Anderson 1881).

**Remarks**: Ellerman & Morrison-Scott (1951) recognised a number of subspecies of *Hipposideros armiger*, of which Hill (1963) has synonymised *swinhooii* Peters, 1871 (type-locality: Amoy, Fujian, China) and *debilis* Andersen, 1906 (type-locality: Province Wellesley, Federation of Malaya) with the nominate subspecies. The distribution of *H. a. armiger*, as given above, is based on Hill’s (*loc. cit.*) concept.

**Genus Coelops** Blyth, 1848

One species and subspecies of the genus *Coelops* occurs in Meghalaya.

29. **Coelops frithi frithi** Blyth

1848. *Coelops frithii*, *J. Asiat. Soc. Beng.*, 17: 251 (Sundarbans, Bengal, India = Sundarban, South 24-Parganas district, West Bengal, India*).

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* The type-specimen possibly or even probably came from Bangladesh part of Sundarban, because Mr. R. W. C. Frith, the collector, was posted at Mymensingh, part of erstwhile eastern Bengal, now in Bangladesh.
Common name: Tailless leaf-nosed Bat (Eng.).

Material examined: None.

Measurements: Nil.

Diagnosis: A small (forearm around 35.0 mm), rather unusual looking leaf-nosed bat with no visible external tail, ears funnel-shaped, whole surface hairy, antitragal lobe very broad; supplementary lappets of anterior noseleaf come forward beyond end of muzzle; face and sides of noseleaf covered with long hairs; thumb included in wing almost to base of claw; wing from tarsus close to ankle; tail about 2.0 mm, concealed under hairs; colour of fur shining brown above and below, bases of hairs much paler.


Remarks: The Tailless Leaf-nosed Bat is one of the rarest bats of Meghalaya.

Family MOLOSSIDAE

Muzzle broad, obtuse and obliquely truncate; nostrils open on a specialised pad; lips large, upper lip furrowed by vertical wrinkles; ears large, broad with distinct antitragus and united at bases across forehead; tragus small; wing narrow; wing membranes thick and leathery; tail projecting far beyond free edge of interfemoral membrane; foot short and broad; toes unequal, bear long stiff bristles; claws dissimilar.

The family Molossidae is represented in Meghalaya by the genus Tadarida only.

Genus Tadarida Rafinesque. 1814

Only one species and subspecies of the genus Tadarida occurs in Meghalaya.


Common name: Wrinkle-lipped Bat (Eng.).

Material examined: None.

Measurements: Nil.

Diagnosis: Muzzle broad and thick; upper lip overhanging the lower, marked by pronounced vertical wrinkles; ears large, thick and rounded, joined in front of orbits by band of skin; antitragus well defined; lower part of legs free from wing; wing and ankle connected by raphae.

Distribution: India: Meghalaya: East Khasi Hills district (Blyth 1852); Punjab (Blyth 1863a); Rajasthan; Uttar Pradesh (Dobson 1876); Madhya Pradesh (Kashyap 1982); Tamil Nadu (Jerdon 1867); West Bengal (Blyth 1863a). Myanmar, southern China (Honacki et al. 1982) including Hainan. Hong Kong (Romer 1960), Tibet (Hill 1961), Vietnam (Honacki et al. 1982), Cambodia (Yoshiyuki 1966), Thailand (Hill & Thonglongya 1972), Malaya Peninsula, Singapore (Dobson 1878), Sumatra, Borneo.
Remarks: The Wrinkle-lipped Bat is a rare bat in Meghalaya. So far, only one specimen has been reported from this state.

Family VESPERTILIONIDAE

Noseleaf absent; inner margin of ear arises from side of head (not forehead); tragus well developed; eyes minute; tail long (about as long as forearm) and included in interfemoral membrane from base to tip or to penultimate joint; interfemoral 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. Nostrils laterally elongated and tubular ................................................................. MURININAE
   Nostrils not elongated ........................................................................................... 2
2. Ears funnel-shaped ................................................................................................. KERIVOULINAE
   Ears not funnel-shaped ....................................................................................... 3
3. Second phalanx of third finger much elongated, nearly three times as long as first .................. MINIOPTERINAE
   Second phalanx of third finger not elongated .................................................. VESPERTILIONINAE

Subfamily VESPERTILIONINAE

Key to the genera of the subfamily VESPERTILIONINAE

1. Cheek-teeth six on each side of upper and lower jaw .............................................. Myotis
   Cheek-teeth less than six on each side of upper and lower jaw ............................. 2
2. Upper premolars 2 2 ................................................................................................. 3
   Upper premolars 1 1 .............................................................................................. 6
3. Lower premolars 3 3 ................................................................................................. Plecotus
   Lower premolars 2 2 .............................................................................................. 4
4. Ears joined ................................................................................................................. Barbastella
   Ears separate .......................................................................................................... 5
5. Forearm less than 45.0 mm .................................................................................. Pipistrellus
   Forearm more than 70.0 mm ................................................................................. 8
7. Skull noticeably flattened; soles of feet expanded into fleshy pads ............... *Tylonycteris*
   Skull not noticeably flattened; soles of feet normal ........................................ *Eptesicus*

8. First and second upper molars with ‘W’ pattern distorted or nearly absent .......... *Scotophilus*
   First and second upper molars with ‘W’ pattern not distorted .......................... *Scotomanes*

**Genus Myotis** Kaup, 1829

Three species and subspecies of the genus *Myotis* occur in Meghalaya.

**Key to the species and subspecies of the genus *Myotis***

1. Length of foot and claw less than half the length of tibia ................................................... 2
   Length of foot and claw equal to, or more than half the length of tibia ........... *Myotis horsfieldii*

2. Forearm more than 50.0 mm.................................................................................. *Myotis formosus formosus*
   Forearm less than 40.0 mm ................................................................................. *Myotis siligorensis siligorensis*

31. *Myotis siligorensis siligorensis* (Horsfield)


**Common names**: Tarai Bat, Shiliguri Whiskered Bat (Eng.).

**Material examined**: None.

**Measurements**: Nil.

**Diagnosis**: A small-sized (forearm around 33.0 mm) *Myotis*; upperparts dark brown; paler, tinged with cinnamon or buff; ears long, antitragal lobe distinct; tragus long (about half the length of ear), narrow and pointed; wing from base of toes; tip of tail free; lower canine about equal in height to posterior lower premolar.

**Distribution**: India: Meghalaya: Jaintia Hills district (Hinton & Lindsay 1926); West Bengal, Nepal (Hinton & Fry 1923).

**Remarks**: The Shiliguri Whiskered Bat is very rare in Meghalaya. Only a couple of specimens of this bat has so far been reported from this state.

32. *Myotis formosus formosus* (Hodgson)


**Common name**: Hodgson’s Bat (Eng.).

**Material examined**: East Khasi Hills district : 1 ♀, Cherra Punji, coll. H. H. Godwin-Austen. 1871.

**Measurements**: Nil.
Diagnosis: A large (forearm may reach up to 53.0 mm) *Myotis*; fur thick and woolly; dorsal colour fawn to golden brown, often tinted with rusty red; ventral colour slightly paler; wing-membrane variegated with orange and blackish brown; wing from base of toes.

Distribution: India: Meghalaya: East Khasi Hills district (Dobson 1876); Jammu & Kashmir (specimens in ZSI); Himachal Pradesh (Sinha 1986); Punjab; Uttar Pradesh; Maharashtra (D'Abreu 1925); Bihar; West Bengal (Jerdon 1867); Sikkim (Jerdon 1867); Assam (Blanford 1891, Sinha 1986). Eastern Afghanistan (Meyer-Oehme 1965), Nepal, possibly Bangladesh (Khan 1982).

Remarks: Hodgson's Bat is a rare bat in Meghalaya. It has only once been collected in the nineteenth century from this state.

33. *Myotis horsfieldii* (Temminck)


Measurements: Nil.

Diagnosis: A medium-sized (forearm around 37.0 mm) *Myotis* with long feet; upperparts greyish brown, underparts greyer; wing-membranes dark grey; wing from midway between ankle and outer toe; second premolars not much reduced and not displaced inward.


Remarks: Hinton & Lindsay (1926) reported the above-mentioned specimen as *Leucoloe* sp. The specimen is not only young, but its skull is also badly damaged. Even then dental characters and wing-attachment peculiar to *M. horsfieldii* is clearly discernible in the specimen. This specimen constitutes the basis for the first authentic record of *M. horsfieldii* proper for India, from Meghalaya. The specimen is not suitable for subspecific determination.

Genus *Eptesicus* Rafinesque, 1820

One species of the genus *Eptesicus* occurs in Meghalaya.

34. *Eptesicus pachyotis* (Dobson)


Common name: Thick-eared Bat (Eng.).

Material examined: Khasi Hills: 1 ♂ 1 ♀, Khasi Hills, coll. J. H. Bourne, 1872 (Syntypes of *Vesperugo pachyotis*).

Measurements: External: 1 ♂: Fa 40.8; Tl 41.3; E 13.0; Tr 4.7; Tb 16.9; F & Cl 8.6. 1 ♀: Fa 41.2; Tl 39.6; E 14.0; Tr 3.6; Tb 17.1; F & Cl 8.6.
Diagnosis: A medium-sized (forearm around 41.0 mm) vespertilionine bat; dark brown above, lighter brown below; ears triangular, tips rounded, outer margins straight, lower halves very thick and fleshy; wings from base of toes; inner incisors bifid, larger and longer than outer ones.


Remarks: The Thick-eared Bat is another rare bat of Meghalaya. No other specimen beyond the type-series has yet been collected, neither from Meghalaya, nor from any other part of India.

Genus Pipistrellus Kaup, 1829

Four species and subspecies of the genus Pipistrellus occur in Meghalaya.

Key to the species and subspecies of the genus Pipistrellus

1. Larger (forearm 40.0 mm or more) ............................................................... 2
   Smaller (forearm 33.0 mm or less) ............................................................... 3

2. Anterior upper premolar minute and inwardly displaced from tooth-row, posterior upper premolar and canine touch each other .................................................. Pipistrellus circundatus
   Anterior upper premolar small and in tooth-row, posterior upper premolar and canine do not touch each other................................................................. Pipistrellus austenianus

3. Forearm less than 29.0 mm .................................................................. Pipistrellus minus
   Forearm more than 29.0 mm ................................................................. Pipistrellus coromandra coromandra


Common name: Indian Pipistrelle (Eng.).


Measurements: External: 2 ♂: Fa 29.8, 30.7; Tl 25.0, 35.0; E 10.8, 11.0; Tb 11.3, 12.7; F & Cl 5.6, 6.7. 1 ♀: Fa 32.9; Tl 30.0; E 15.0; Tb 12.8; F & Cl 6.5. Cranial: 1 ♂: l 12.0; ntr 4.4; cw 6.5; zw 8.0; m3 5.5; c m3 5.0; ml 9.0.

Diagnosis: A small-sized pipistrelle (forearm 31.0 mm, on average); dorsal fur blackish brown, tips of hairs slightly rufescent; ventral fur slightly paler brown; tragus forward curving and bluntly rounded; calcarial lobe small.

Distribution: India: Meghalaya: Jaintia Hills district (Hinton & Lindsay 1926); widely distributed in peninsular India, north to Jammu (Sharma & Sharma 1976) & Kashmir (Chakraborty 1983), east to northeastern states including Tripura (Agrawal & Bhattacharyya 1977). The present species has also been reported from Car Nicobar Island (Bhattacharyya 1977). Afghanistan (Meyer-Oehme 1965), Pakistan (Walton 1974), Nepal (Hinton & Fry 1923), Sri Lanka. Bangladesh (Khan 1982).
Remarks: The Indian Pipistrelle, though quite common in most other parts of India, is rather uncommon in Meghalaya.

36. **Pipistrellus minus** Wroughton


Common name: Indian Pygmy Pipistrelle (Eng.).


Measurements: External: 1 ♀ : Fa 27.0; Tb 11.5; F & Cl 6.1. Cranial: 1 ♀ : l 1.3; mtr 3.7; cw 6.2; zw 7.1; m³ 4.9; c m³ 4.0; ml 7.4.

Diagnosis: Smallest (forearm around 28.0 mm) pipistrelle of Meghalaya; 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 and scarcely triangular; tragus short and curved forward; post-calcarial lobe present; wings from base of toes.

Distribution: India: Meghalaya : West Garo Hills district, East Khasi Hills district (Hinton & Lindsay 1926); widely distributed throughout the mainland of Indian Union. Afghanistan (Meyer-Oehme 1965), Pakistan, Nepal (Hinton & Fry 1923), Sri Lanka, possibly Bangladesh (Khan 1982), Myanmar, Vietnam, Thailand (Lekagul & McNeely 1977).

Remarks: Following recent revisions (Sinha 1980, Hill & Harrison 1987), *Pipistrellus minus* has been considered here as monotypic.

37. **Pipistrellus austenianus** Dobson


Common name: Godwin-Austen's Bat (Eng.).


Measurements: External: 1 ♂ : Fa 40.0; Ti 34.0; E 12.2; Tr 6.0; Tb 15.0; F & Cl 7.9. Cranial: 1 ♂ : l 5.5; mtr 5.8; c₁ 4.8; iw 3.8; cw 7.9; zw 9.2; c m³ 6.8; ml 11.4.

Diagnosis: A medium-sized (forearm around 40.0 mm) pipistrelle; dark sooty brown in colour, hairs on back and lower parts tipped light grey; post-calcarial lobe well developed, rounded; anterior upper premolar, though small, visible from outer side; posterior upper premolar and canine do not touch each other.


Remarks: Opinions differ as to the exact taxonomic status of the present taxon. Pending further studies, *P. austenianus* has been treated here as a distinct species closely related to *P. savii* (Bonaparte, 1837).
38. *Pipistrellus circumdatus* (Temminck)


*Common name*: Large Black Pipistrelle (Eng.).


*Measurements*: External: 1 ♀ : Fa 41.3; Ti 33.5; E 13.0; Tr 5.9; Tb 15.0; F & Cl 5.9.

*Diagnosis*: Similar to *Pipistrellus austenianus*, but upper parts deep black, hairs tipped bright ferrugineous, underparts dull black, hairs tipped greyish; no post-calcarial lobe; anterior upper premolar minute, displaced inwardly from tooth-row; posterior upper premolar and canine touch each other.


*Remarks*: The only other specimen of the Large Black Pipistrelle from (some undiagnosed locality of) India is supposed to be present in the British Museum (Natural History), London. The present specimen, therefore, forms the basis for its occurrence in Meghalaya in particular and India in general.

**Genus *Ia* Thomas, 1902**

The genus *Ia* is monospecific.

39. *Ia io* Thomas


*Common name*: Great Pipistrelle (Eng.).

*Material examined*: None.

*Measurements*: Nil.

*Diagnosis*: Largest vespertilionine (forearm may be more than 76.0 mm) bat of Meghalaya and India; upperparts sooty brown, underparts dark greyish brown; face thinly haired; ears short, inside of tips densely haired; tragus short, tip bluntly rounded; outer upper incisor not extending beyond cingulum of inner; anterior upper premolar minute and displaced inward; posterior upper premolar and canine touch each other.


*Remarks*: Mr. G. Topal of the Hungarian Natural History Museum collected a single specimen of the Great Pipistrelle from the Mawsami Cave, near Cherra Punji, in 1967. Till date, this is the only specimen of the present species known from Meghalaya and India.
Genus *Tylonycteris* Peters, 1872

The genus *Tylonycteris* is represented in Meghalaya by one species and subspecies.

40. *Tylonycteris pachypus fulvida* (Blyth)


*Common name*: Club-footed Bat (Eng.).


*Measurements*: External: 1 ♀: Fa 23.5; Tl 26.0; E 6.0; Tb 10.4; F & Cl 4.7. Cranial: 1 ♀: l 10.4; mtr 3.3; c1 1 3.6; iw 3.3; cw 6.0; zw 7.4; m3 3 m3 3.6; c m3 3.6; ml 7.3.

*Diagnosis*: One of the two smallest bats of India and Meghalaya (the other is *Piipistrellus minus*); reddish brown above and below; ear shorter, tip rounded; tragus short, tip rounded; fleshy pads at junction of thumb and second finger, and on soles; skull dorsoventrally flattened, braincase and rostrum at same level.

*Distribution*: India: Meghalaya: West Garo Hills district; West Bengal (Dobson 1876); Sikkim; Tripura (specimen in ZSI); Manipur; Andaman Islands (Dobson 1876). Bangladesh (Ahmed & Husain 1982), Myanmar, southern China, Vietnam, Laos, Thailand (Lekagul & McNeely 1977).

*Remarks*: Thomas (1915) described *Tylonycteris aurex* on the basis of its coloration, but also indicated that it might be conspecific with the Myanmarese form as well. Ellerman & Morrison-Scott (1951) have considered *aurex* as a subspecies of *T. pachypus*. Under the circumstances, further specimens from the distributional range of *T. aurex* need to be compared with specimens from the distributional range of *T. P. fulvida* to assess the taxonomic status of *T. aurex*.

Genus *Barbastella* Gray, 1821

A single species and subspecies of the genus *Barbastella* is found in Meghalaya.

41. *Barbastella leucoleneas darjelingensis* (Hodgson)


*Common name*: Eastern Barbastelle (Eng.).

*Material examined*: None.

*Measurements*: Nil.

*Diagnosis*: A medium-sized (forearm around 40.0 mm) bat; ears large, joined across forehead, squarish and forward-sloping; posterior margin lacks projections or notches; tragus half the length of ear and triangular; two dark lines on interfemoral membrane from heel to base of pelvis; dorsal fur long, silky with blackish grey base and pale golden brown tips; underparts paler greyish brown.
Distribution: India: Meghalaya: Khasi Hills (Dobson 1874), Jaintia Hills district (Hinton & Lindsay 1926); Jammu & Kashmir (Sharma & Sharma 1976, Scully 1881); Himachal Pradesh (Dobson 1876); Rajasthan; Uttar Pradesh (Blyth 1863a); West Bengal; Sikkim. Southern Russia, Afghanistan (Meyer-Oehme 1965), Pakistan (Roberts 1977), Nepal, western China, possibly erstwhile Indo-China, Japan.

Remarks: The Eastern Barbastelle has only twice been collected from Meghalaya. As such, it appears to be a rare bat of this state.

Genus Scotomanes Dobson, 1875

The genus Scotomanes is represented in Meghalaya by a single species and subspecies.

42. Scotomanes ornatus ornatus (Blyth)


Common name: Harlequin Bat (Eng.).

Material examined: None.

Measurements: Nil.

Diagnosis: A large (forearm around 55.0 mm) vespertilionine bat: orange-brown above, with some white spots and streaks; hairs dark brown at base, then isabelline, tips brownish yellow; a broad white V-shaped band extends from shoulders to abdomen, a white collar commencing beneath each ear, rest of lower parts brown; ears moderate, subtriangular, tips rounded; tragus bluntly pointed, a pointed projecting lobule at base; tip of tail free.

Distribution: India: Meghalaya: East Garo Hills district (Hinton & Lindsay 1926), East Khasi Hills district, Jaintia Hills district (Thomas 1921); West Bengal (Blyth 1863a), Sikkim, Manipur (Anderson 1881), Arunachal Pradesh (Robinson 1913). Possibly Bangladesh (Khan 1982), northern Myanmar (Hill 1962).

Remarks: Ellerman & Morrison-Scott (1951) have recognised two subspecies in the non-Chinese range of Scotomanes ornatus, viz., S. o. imbrensis Thomas, 1921 apparently for the Jaintia Hills population and the nominate subspecies for other areas, including the Khasi Hills. Thomas (1921), while reviewing Scotomanes ornatus, erroneously took Darjiling as the type-locality of S. o. ornatus, while in reality, it is Cherra Punji, Khasi Hills. Thomas (loc. cit.) also stated that imbrensis (form Jaintia Hills) was to be found in 'Assam Hills' and also referred specimens from the Khasi Hills and the Garo Hills to it. Thus, Thomas (1921) himself could not find any difference between the Khasi Hills and Jaintia Hills populations. It, therefore, automatically follows that imbrensis does not warrant recognition. Hence, Scotomanes ornatus imbrensis is hereby synonymised with the nominate subspecies.

Sinha & Chakraborty (1971) have studied the skull of the holotype of Nycticeius emarginatus Dobson, 1871 and have transferred that species to the genus Scotomanes on account of its similarities with that genus, but maintained the same as a separate species for its alleged differences (smaller
forearm and tooth-row, and the absence of white spots) from *Scotomanes ornatus*. The small differences between the lengths of forearm, upper tooth-row and lower tooth-row of the holotype of *N. emarginatus* (55.2, 7.2 and 8.0, respectively) and those of three examples of *Scotomanes ornatus* (58.0, 58.5, 64.0; 8.0, 8.0, 8.2 and 8.6, 9.0, 9.0, respectively) may appear to be of some significance when the sample-size is small (as is here), but these may not be maintained at all when large series is measured, especially so in a species where there is 'wide range of size variation', as noted by Hill (1962) who provided range of forearm measurements as 53.0–60.0 for the Myanmarese population. Further, Blanford (1891) has stated, 'in females [of *Scotomanes ornatus*] the markings [white patches] are much less distinct'. The holotype of *Nycticejus emarginatus* (♀, preserved in rectified spirit) was examined. Its phalangeal epiphyses are rather swollen. Therefore, the specimen is not fully adult. Thus, the small morphometric differences between the holotype of *emarginatus* and only three examples of *ornatus* (possibly from the same area too), as noted by Sinha & Chakraborty (loc. cit.), do not appear to be sufficient enough to justify maintaining *emarginatus* as a distinct species. *Nycticejus emarginatus* is, therefore, considered here as a synonym of *Scotomanes ornatus*. Incidentally, Dr. Karl. F. Koopman (personal communication), after examining the type-specimen of *emarginatus* has agreed that it should be treated synonymous with *ornatus*.

**Genus *Scotophilus* Leach, 1821**

Two species and subspecies of the genus *Scotophilus* occur in Meghalaya.

**Key to the species and subspecies of the genus *Scotophilus***

Larger (forearm more than 55.0 mm) .............................................. *Scotophilus heathi heathi*

Smaller (forearm 55.0 mm or less) ................................................ *Scotophilus kuhli kuhli*

43. *Scotophilus kuhli kuhli* Leach


*Common name*: Lesser Yellow Bat (Eng.).

*Material examined*: None.

*Measurements*: Nil.

*Diagnosis*: Ears small, tips rounded; tragus semilunar, posterior border markedly convex, anterior border concave, tip slender and forward pointing; wing from side of foot near base of toes; tip of tail free; fur short, dense and sleek; dorsal colour olive-brown, ventral colour creamy white with a tinge of red.

*Distribution*: India: Meghalaya: Garo Hills (Hinton & Lindsay 1926); widely distributed practically throughout the Indian Union, including Nicobar Islands (Blyth 1863b, Hill 1967). Pakistan (Walton 1974), Sri Lanka, Bangladesh (Blyth 1963a), Myanmar.

*Remarks*: Ellerman & Morrison-Scott (1951) have used *Scotophilus temmincki wroughtoni* Thomas, 1897 for the Lesser Yellow Bat of India, Sri Lanka and Myanmar. Hill & Thonglongya (1972), however, have shown that the name *Scotophilus kuhli kuhli* Leach should be used for this.
44. *Scotophilus heathi heathi* (Horsfield)


**Common name**: Greater Yellow Bat (Eng.).

**Material examined**: West Garo Hills district: 1 ♀, Tura, coll. S. W. Kemp, 1917.

**Measurements**: External: 1 ♀: Fa 58.5; Tl 15.5; Tb 22.7; F & Cl 10.4. Cranial: 1♀: I 20.9; cb 20.1; ccl 19.2; mtr 7.5; c1 6.9; iw 5.8; cw 10.4; zw 9.5; c 8.5; ml 15.1.

**Diagnosis**: Very much similar to the Lesser Yellow Bat, but larger; ventral parts lemon-yellow to orange-yellow.

**Distribution**: India: Meghalaya: West Garo Hills district; widely distributed throughout the Indian mainland, east at least to Tripura (specimen in ZSI). Afghanistan (Meyer-Öehme 1965), Pakistan, Nepal (Agrawal & Chakraborty 1971), Sri Lanka, Bangladesh (Hutton 1872), Myanmar.

**Remarks**: Ellerman & Morrison-Scott (1951) have recognised two subspecies of the Greater Yellow Bat, viz., *S. h. heathi* and *S. h. belangeri* (I. Geoffroy, 1834), for the Indian populations. Siddiqi (1961b) has, however, synonymised *belangeri* with the nominate subspecies.

**Genus Plecotus** E. Geoffroy, 1818

One species and subspecies of the genus *Plecotus* has been recorded from Meghalaya.

45. *Plecotus auritus homochrous* Hodgson


**Common name**: Long-eared Bat (Eng.).

**Material examined**: None.

**Measurements**: Nil.

**Diagnosis**: A medium-sized (forearm around 38.0 mm) vespertilionine bat with very large ears, nearly as long as forearm, joined by low band across forehead at bases of inner margins; tragus very long; upper parts greyish; lower parts dirty white.

**Distribution**: India: Meghalaya: Khasi Hills (Dobson 1876); Jammu & Kashmir (Sharma & Sharma 1976, Chakraborty 1983); Himachal Pradesh (Hutton 1872); Uttar Pradesh; West Bengal: Sikkim (Ali 1981). Pakistan (Dobson 1876), Nepal (Sanborn 1950).

**Remarks**: Ellerman & Morrison-Scott (1951) have treated *homochrous*, *puck* Barrett-Hamilton, 1907 (type-locality: Murree, The Punjab, Pakistan) and *wardi* Thomas, 1911 (type-locality: Leh, Ladakh, Jammu & Kashmir, India) as subspecies of *Plecotus auritus* (Linnaeus, 1758). Most of recent
authorities, however, consider puck as a synonym of homochoirus, while wardi is a subspecies of the allied species P. austriacus Fischer, 1829. Incidentally, Tate (1942) also indicated that puck might be the same as homochoirus. It is quite interesting to note that Dobson (1876) also considered homochoirus nothing but a subspecies of P. auritus.

Subfamily MINIOPTERINAE

The subfamily Miniopterinae consists of the single genus Miniopterus.

Genus Miniopterus Bonaparte, 1837

One species and subspecies of the genus Miniopterus occurs in Meghalaya.


Common names: Schreiber’s Long-fingered Bat, Long-winged Bat or Bent-winged Bat (Eng.).


Measurements: External: 31 ♂ : Fa 49.0 52.0(51.0); Tl 55.0 67.0(61.0); E 11.0 14.0(12.0); Tb 20.0 23.0(22.0); F & Cl 10.0 12.0(11.5). 19 ♀ : Fa 47.0 53.0(50.0); Tl 56.0 64.0(58.0); E 11.0 12.0(11.6); Tb 21.0 22.0(21.5); F & Cl 10.0 11.0(10.5). Cranial: 5 ♂ : l 16.6 17.7(17.1); mt 7.0(5); cw 8.0 8.7(8.4); zw 9.5 10.0(9.9); m3 3 m3 7.3 8.0(7.6); ml 12.7 -13.5(13.1). 5 ♀ : l 16.5 17.1(16.9); mt 6.9 7.1(7.0); cw 8.2 9.0(8.6); zw 9.4 10.0(9.8); m3 3 m3 7.5 8.3(7.8); ml 12.1 12.5(12.3).

Diagnosis: A medium-sized (forearm between 45.0 and 50 mm) vespertilionid bat; head greatly elevated above faceline; ears much shorter than head, inner margin much convex, outer margin emarginate opposite base of tragus; terminal phalanx of longest finger flexed forward on under surface of metacarpal; wings from near the ankle; tail totally included within interfemoral membrane; colour of fur varies from blackish brown to reddish brown.

Distribution: India: Meghalaya: South Garo Hills district; Uttar Pradesh; Maharashtra (Wroughton 1916); Karnataka (Bhat & Sreenivasan 1981); West Bengal (Allen 1908). Eastern Afghanistan (Gaisler 1970), possibly Pakistan (Gaisler 1970), Nepal, Sri Lanka, Myanmar.

Remarks: In recent years, there has been much discussion on the taxonomy of the genus Miniopterus. Hill's (1983) view has principally been accepted here to enumerate the distributional range of Miniopterus schreibersi fuliginosus.

Subfamily MURININAE

Two genera of the subfamily Murininae occur in Meghalaya.
Key to the genera of the subfamily MURININAE

Last upper molar normal.......................................................................................... Murina
Last upper molar much reduced, often deciduous ................................................ Haripocephalus

Genus Murina Gray, 1842

Two species and subspecies of the genus Murina have been reported from Meghalaya.

Key to the species and subspecies of the genus Murina

Upper half of outer margin of ear concave ........................................................ Murina tubinaris
Upper half of outer margin of ear convex ......................................................... Murina cyclotis cyclotis

47. Murina tubinaris (Scully)


Common name: Scully’s Tube-nosed Bat (Eng.).

Material examined: None.

Measurements: External: I 19; Fa 33.0; Ti 33.0; E 14.0; Tb 15.0; F & CI 8.0. Cranial: 1 q: l 16.0; mtr 5.5; c 4.0; cw 7.2; zw 9.2; m 3 6.0; c m 3 6.0; ml 11.0.

Diagnosis: Small (forearm around 31.0 mm) tube-nosed bat; ears rather broader and rounder, small lobe at base of anterior margin, less prominent emargination on posterior margin; dorsal surface grey, ventral surface greyish white, pelage dark brown at base; forearms, tail, legs and upper surface of interfemoral membrane thinly covered with hair; anterior upper and lower premolars reduced.

Distribution: India: Meghalaya: Jaintia Hills district (Hinton & Lindsay 1926); Jammu & Kashmir; Himachal Pradesh (specimen in AMNH); West Bengal; Sikkim (Sanborn 1932); Arunachal Pradesh (Hinton & Lindsay 1926). Pakistan (Koopman & Danforth 1989), Myanmar, Vietnam, Laos, Thailand (Hill 1983).

Remarks: Ellerman & Morrison-Scott (1951) listed tubinaris as a tentative subspecies of Murina huttoni, but Hill (1962, 1964) has shown that tubinaris should be treated as a species distinct from huttoni, on grounds of its pelage characteristics and size.

48. Murina cyclotis cyclotis Dobson


Common name: Round-eared Tube-nosed Bat (Eng.).


Measurements: External: 1 q: Fa 33.0; Ti 33.0; E 14.0; Tb 15.0; F & CI 8.0. Cranial: 1 q: l 16.0; mtr 5.5; c 1 4.0; cw 7.2; zw 9.2; m 3 6.0; c m 3 6.0; ml 11.0.
Diagnosis: Medium-sized (forearm 33.5, on average); ears broad, rounded, small lobe at base of anterior margin, posterior margin without emargination; dorsal surface warm rufous brown to ferruggenous, ventral surface greyish white with brownish tinge, especially along flanks, individual hairs brown at bases; forearms, tail, feet and upper surface of interfemoral membrane covered with hairs; anterior upper and lower premolars less reduced.

Distribution: India: Meghalaya: East Khasi Hills district, Jaintia Hills district (Hinton & Lindsay 1926); Andhra Pradesh (Ghosh 1989); West Bengal; Sikkim. Nepal (specimen in ZSI, Myanmar, southern China (Honacki et al. 1982) including Hainan Island, Vietnam, Laos, Thailand (Hill & Thonglongya 1972), Philippine Islands.

Remarks: Scully (1888) reported a specimen of Harpyiocephalus leucogaster from Nepal. This specimen (present in ZSI, examined) is, in fact, an example of Murina cyclotis cyclotis.

Genus Harpyiocephalus Gray, 1842

One species of the genus Harpyiocephalus occurs in Meghalaya.

49. Harpyiocephalus mordax Thomas


Common name: Broad-skulled Hairy-winged Bat (Eng.).


Measurement: External: 1 ♀: Fa 50.2; Ti 54.0; E 15.5; Tb 22.5; F & Cl 11.2. Cranial: 1 ♀: l 22.9; cr 5.3; mtr 7.2; c₁ 6.7; iw 5.9; cw 10.6; zw 14.5; m₃ 7.8; c₃ 8.4; ml 15.3.

Diagnosis: Very much like a tube-nosed bat, but larger; fur thick and woolly, extends to legs, feet, interfemoral membrane and tail; wings haired on both surfaces, thinly haired toward tips; bright rusty or bright rufous above, greyish buff below; cranial rostrum well developed, broad and heavy; incisors, canines and premolars much enlarged, stouter and heavier; last premolar often slightly broader than first molar.

Distribution: India: Meghalaya: East Khasi Hills district (Dobson 1876, as H. harpia; Das 1986a, as H. harpia lasyurus); West Bengal (specimen in ZSI); Sikkim (Das 1986a, as H. harpia lasyurus). Myanmar, Thailand (McBee et al. 1986), Borneo (Hill & Francis 1984).

Remarks: Ellerman & Morrison-Scott (1951) considered Harpyiocephalus mordax as a subspecies of Harpyiocephalus harpia (Temminck, 1840), with some doubt. But McBee et al. (1986) have treated it as a distinct species.

Subfamily KERIVOULINAE

The subfamily Kerivoulineae is represented in Meghalaya by the genus Kerivoula only.
Genus *Krivoula* Gray, 1842

The genus *Krivoula* is represented in Meghalaya by a single species and subspecies.

50. *Krivoula hardwickei depressa* Miller


**Common name**: Hardwicke’s Bat (Eng.).


**Measurements**: External: 2 ♂: Fa 34.0(2); Tl 44.0, 47.0; E 14.0(2); Tb 16.1, 16.2; F & Cl 7.5, 7.7. 3 ♀: Fa 34.0 35.0(34.5); Tl(2) 37.0, 46.0; E(2) 12.0, 14.0; Tb 16.2 17.4(16.8); F & Cl 7.2 8.9(7.8). Cranial: 2 ♂: l 13.6, 15.0; cb 12.4, 14.6; mtr 5.4, 5.5; c 1 c 1 3.0, 3.1; iw 3.2, 3.4; cw (1) 7.0; m 3 m 3 5.3, 5.5; c m3(1)6.1; ml 9.7, 9.8. 2 ♀: l 13.9, 14.0; cb(1) 13.2; mtr 5.6(2); c 1 - c 1(1) 3.4; iw(1) 3.3; cw 6.9, 7.4; zw 8.7, 8.8; m 3 m 3 5.4, 5.5; c m3 5.8, 5.9; ml 9.2, 9.9.

**Diagnosis**: A rather medium sized (forearm around 34.0 mm) kerivouline bat; 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 hair dark brown.

**Distribution**: India: Meghalaya: South Garo Hills district, East Khasi Hills district (Dobson 1876), Jaintia Hills district (Hinton & Lindsay 1926); Jammu & Kashmir (Chakraborty 1983); Madhya Pradesh (specimen in ZSI); West Bengal; Assam (Dobson 1876); Nagaland (Khajuria 1953). Pakistan (Blanford 1891), Myanmar, southern China, Vietnam (Osgood 1932), Cambodia (Dobson 1878), Thailand (Lekagul & McNeely 1977).

**Remarks**: Ellerman & Morrison-Scott (1951) have considered the northern Indian population as belonging to the nominate subspecies. Hill (1965), however, has shown that this population should be regarded as *K. h. depressa*.

**ORDER PRIMATES**

Flattened or cupped nails on elongated fingers and toes; arms and legs adapted for climbing and other purposes; first digit of hind foot largest, opposable and prehensile, that of fore foot usually smaller; large skull; complete bony rim around orbits; reduced dentition; complete set of collar bones; distinctness of radius and ulna and of tibia and fibula; well developed brain; eyes provide two separate overlapping visual images, resulting in three dimensional vision.

Three families of the order Primates occur in Meghalaya.
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 limb with small claw ......................................................... Lorisidae

Family LORISIDAE

One species and subspecies of the genus Nycticebus of the present family occurs in Meghalaya.

Genus *Nycticebus* E. Geoffroy, 1812

51. *Nycticebus coucang bengalensis* (Lacepédé)

*Common names*: Slow Loris (Eng.), Gilwe (local).


*Measurements*: External: 1 ♀ : HB 340.0; Hf 55.0; E 23.0.

*Diagnosis*: About the size of a half-grown cat; short ears and stumpy tail almost hidden in thick fur, which varies in colour; brown ring round owl-like eyes; brown streak on crown and back.

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, East Khasi Hills district; Assam; Tripura. Bangladesh, Myanmar, Thailand.

Family CERCOPITHECIDAE

In Meghalaya, the family Cercopithecidae is represented by two genera.

Key to the genera of the family CERCOPITHECIDAE

Cheek-pouch present; tail variable but generally smaller than head and body; face reddish ..... *Macaca*

Cheek-pouch absent; tail always longer than head and body; face blackish ....................... *Presbytis*

Genus *Macaca* Lacepede, 1799

Four species of the genus *Macaca* occur in Meghalaya.

Key to the species of the genus *Macaca*

1. Tail inconspicuous, reduced to a stump and seldom longer than 30.0 mm ............... *M. arctoides*
   Tail conspicuous, less than half or about half the length of head and body .................... 2

2. Tail thin and short-haired, less than half the length of head and body, carried in an arch above; hairs on crown short, radiating to form a dark blackish cap ................................. *M. nemestrina*
Tail normally haired, generally about half the length of head and body, pendulous and not carried in an arch above; no definite cap on crown ................................................................. 3

3. Hind quarters brighter than fore quarters and orange-red to reddish in colour; hairs on crown not radiating from centre; skin naked around the ischial callosities .............................. M. mulatta

Hind quarters typically duller than fore quarters and greyish (never reddish or orange-red) in colour; hairs on crown indistinctly radiating from centre, at least behind the brow-ridge; skin haired to edge of ischial callosities .............................................. M. assamensis

_Macaca nemestrina_ (Linnaeus)

Only one subspecies of _Macaca nemestrina_ occurs in Meghalaya.

52. _Macaca nemestrina_ leonina Blyth


_Common name_: Pig-tailed macaque (Eng.).

_Material examined_: None.

_Measurements_: Nil.

_Diagnosis_: A long-muzzled, long-legged, short-tailed, rather baboon-like monkey; coat light brown; a conspicuous black crown-patch and a black stripe running down top of tail; tail thin, densely furred, not much longer than head.

_Distribution_: India: Meghalaya: East Garo Hills district; Assam; Nagaland. Myanmar, Thailand, Malaya Peninsula.

53. _Macaca mulatta_ (Zimmermann)

The nominate subspecies of _Macaca mulatta_ occurs in Meghalaya.

_Macaca mulatta_ mulatta (Zimmermann)


_Common name_: Rhesus Macaque (Eng.), Makk-re (local).

_Material examined_: None.

_Measurement_: Nil.

_Diagnosis_: Medium-sized monkey with tail about half of head and body length; hair on head lying straight back; fur on loins and rump orange-red coloured; face flesh-coloured.

_Distribution_: India: Meghalaya: Garo Hills district; Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Delhi; Gujarat; Himachal Pradesh; Jammu & Kashmir; Madhya Pradesh; Orissa; Punjab; Rajasthan; Sikkim; Tripura; Uttar Pradesh; West Bengal. Bangladesh, Bhutan, China; Myanmar, Thailand, Vietnam.

_Remarks_: The Rhesus Macaque, though common in other parts of India, is rather uncommon in Meghalaya.
Macaca assamensis (M'Clelland)

The nominant subspecies of Macaca assamensis occurs in Meghalaya.

54. Macaca assamensis assamensis (M'Clelland)


Common name: Assamese Macaque (Eng.), Makk-re (local).

Material examined: None.

Measurement: Nil.

Diagnosis: Almost like the Rhesus Macaque, but distinguished by absence of orange-red hue on loins and rump.

Distribution: India: Meghalaya: Garo Hills district; Arunachal Pradesh; Assam; Nagaland. Bangladesh, Myanmar, east to Vietnam, southern China.

Remarks: The Assamese Macaque is restricted to hilly areas.

55. Macaca arctoides (I. Geoffroy)


Common name: Stump-tailed Macaque (Eng.), Makk-re (local).

Material examined: None.

Measurement: Nil.

Diagnosis: Tail stump-like, almost naked, hardly 50.0 mm in length; colour dark brown with bare red face.

Distribution: India: Meghalaya: Garo Hills district; Arunachal Pradesh; Assam; Nagaland. Bangladesh, Myanmar, southern China, erstwhile Indochina, northern Malaya Peninsula.

Remarks: The Stump-tailed Macaque is rare in Meghalaya.

Genus Presbytis Eschscholtz, 1821

Two species of the genus Presbytis occur in Meghalaya.

Key to the species of the genus Presbytis

Hairs on crown radiating in all directions from a point on forehead ......................... P. entellus
Hairs on crown directed backward to form a distinct cap ................................. P. pileatus

56. Presbytis entellus (Dufresne)

Common name : Langur, Entellus Monkey (Eng.).

Material examined : None.

Measurement : Nil.

Diagnosis : A black-faced, grey-bodied monkey with long limbs and tail; coat ashy grey, darker on shoulders and rump, paler on head and lower parts.

Distribution : India : Meghalaya : East Garo Hills district; Bihar; Delhi; Gujarat; Haryana; Madhya Pradesh; Orissa; Punjab; Rajasthan; Uttar Pradesh; West Bengal. Bangladesh.

Remarks : The occurrence of the langur in Meghalaya is very doubtful.

*presbytis pileatus* (Blyth)

Only the nominate subspecies of *Presbytis pileatus* occurs in Meghalaya.

57. *Presbytis pileatus pileatus* (Blyth)


Common name : Capped Monkey (Eng.), *Rangol* (local).


Measurements : Cranial : 1♂ : l 106.5; cb 82.1; mw 36.2; mtr 42.5; orb 26.1; zw 78.0.

Diagnosis : 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 : Meghalaya : West Garo Hills district, East Garo Hills district, South Garo Hills district, West Khasi Hills district, Ri-Bhoi district, East Khasi Hills district, Jaintia Hills district; Assam; Nagaland. Bangladesh.

Remarks : The Capped Monkey is quite common in Meghalaya and is seen in all the districts of the state.

Family HYLOBATIDAE

The family Hylobatidae consists of the genus *Hylobates*.

Genus *Hylobates* Illiger, 1811

Only one species of the genus *Hylobates* occurs in Meghalaya. It is the only ape found in India.

58. *Hylobates hoolock* (Harlan)

**Common name**: Hoolock Gibbon (Eng.), *Hu-ro* (local).

**Material examined**: Ri-Bhoi district: 1 ♂, 8 km E of Nongpoh (c 1,067 m), coll. H. L. Hiteshi, 28. v. 1949; 1 ♂, 11 km W of Nongpoh (c 1,219 m), coll. H. L. Hiteshi, 10. v. 1949; 1 ♀, 1 Juv., Manihar Basti (c 762 m), 13 km N of Nongpoh, coll. H. L. Hiteshi, 15. vi. 1949.

**Measurement**: External: 1 ♂: HB 500.0; Hf 152.0, 160.0; E 28.0, 35.0. Cranial: 1 ♂: l 112.8; cb 95.1; mw 36.3; mtr 44.8; orb 23.0; zw 71.5. 1 ♀: l 111.7; cb 94.3; mw 36.2; mtr 44.1; orb 23.1; zw 69.5.

**Diagnosis**: About 600.0 mm in head and body length; males and young females black, adult females yellowish-grey; eye-brow white.

**Distribution**: India: Meghalaya; West Garo Hills district, East Garo Hills district, South Garo Hills district, West Khasi Hills district, Ri-Bhoi; Assam; Tripura. Bangladesh, Myanmar, China.

**Remarks**: The Hoolock Gibbon is fairly common in suitable localities of Meghalaya.

**Order PHOLIDOTA**

Elongated, tapering body; posterodorsal area of head, dorsal and lateral aspects of body and tail covered with large, imbricate scales; ventral surface covered with coarse, bristly hairs; limbs short; toes with powerful claws; jaws devoid of teeth; tongue vermiform and highly protrusible.

Order Pholidota consists of a single family.

**Family MANIDAE**

The family Manidae consists of only one genus.

**Genus Manis** Linnaeus, 1758

One species and subspecies of the genus *Manis* has been reported from Meghalaya.

59. *Manis pentadactyla aurita* Hodgson


**Common name**: Chinese Pangolin (Eng.) *Kewate* (local).


**Measurements**: Nil.

**Diagnosis**: Head and body length 480.0 580.0 mm; body covered with 15 18 rows of longitudinal overlapping scales; dark brown in colour; bare skin of ventral surface flesh-coloured.

**Distribution**: India: Meghalaya; South Garo Hills district, East khasi Hills district; Assam; Nagaland. Nepal, Myanmar, southern China.

**Order CARNIVORA**

Skull robust; front teeth consists of a pair of long sharp and sturdy canines with six closely set
incisors between them in each jaw; diastema between last incisor and upper canine, into which lower canine fits when mouth is closed; fourth upper premolar and first lower molar developed into carnassial (flesh-cutting) teeth; movement of jaw only up and down.

Six families of the order Carnivora occur in Meghalaya.

Key to families of the order CARNIVORA

1. Bulla much dilated, rounded but not divided into chambers by a septum; head elongate, with a long muzzle; limbs fairly developed; feet digitigrade; toes 5-4; two middle toe-pads placed much in advance of others; fifth toe of fore foot very short and not reaching ground; claws non-retractilea ................................................................. CANIDAE

Bulla much dilated, rounded, and 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 somewhat roundish, with shortened muzzle ............................................. FELIDAE

6 teeth in molar series of each jaw (except in Prionodon); toes usually 5-5; claws variable; head elongated .................................................................................................................. 3

3. Auditory bulla oval or subconical; apex of paroccipital process projecting slightly beyond bulla; no bony tube to auditory orifice; ear moderate in size, with well developed bursa; claws curved and more or less retractile; prescrotal gland generally present .................. VIVERRIDAE

Auditory bulla somewhat pear-shaped; paroccipital process not projecting beyond bulla; but spread out, and in adult, lost on its posterior surface; well developed bony tube to auditory orifice; ear much reduced, and lacking any marginal bursa; claws lengthened, exserted, non-retractile; prescrotal gland absent ........................................................................... HERPESTIDAE

4. True molars 1 1 in upper jaw, 2 2 in lower jaw; alisphenoid canal absent; body long and sinuous; soles of feet not entirely covered with hairs; skull sturdy ............... MUSTELIDAE

True molars 2 2 in upper jaw; alisphenoid canal present; no carnassials, cheek-teeth tuberculate..

............................................................................................................................... 5

5. True molars 2 2 in lower jaw; small-sized animals; tail moderately large; soles of feet completely covered by hairs; planter pads not very wide ....................... PROCYONIDAE

True molars 3 3 in lower jaw large animals; tail reduced to a mere stump; soles of feet not completely covered by hairs; planter pads very wide ............................................. URSIDAE

Family CANIDAE

The family Canidae is represented by three genera in Meghalaya. Each genus has one species in this state.

Key to the genera and species of the family CANIDAE

1. Tail less than half the length of head and body; female usually has 10 or 12-14 mammæ; forehead of skull elevated; frontal sinus present; postorbital process smooth and convex ........ 2
Tail more than one-half the length of head and body; female usually has 6 mammae; forehead of skull flattened; no frontal sinus; postorbital process concave above. *Vulpes bengalensis*

2. Ears more pointed at the tip; female usually has 10 mammae; 7 teeth in lower molar series ..........

Ears more rounded at the tip; female usually has 12–14 mammae; six teeth in lower molar series ................................................................. *Cuon alpinus*

**Genus Canis** Linnaeus, 1758

One species of the genus *Canis* is reported from Meghalaya.

**60. Canis aureus** Linnaeus


*Common name*: Asiatic Jackal (Eng.).

*Material examined*: Nil.

*Measurements*: None.

*Diagnosis*: Smaller in built than Wolf, lacking the arching brows and elevated forehead. Coat colour variable-typically, a mixture of black and white, washed with buff about the shoulders, ears and legs.

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Bihar; Manipur; Nagaland; Sikkim; Tripura; West Bengal. Bhutan, Myanmar, Thailand.

**Genus Vulpes** Oken, 1816

The genus *Vulpes* is represented in Meghalaya by one species.

**61. Vulpes bengalensis** (Shaw)


*Common name*: Bengal Fox (Eng.).

*Material examined*: Nil.

*Measurements*: None.

*Diagnosis*: A slender-limbed animal of about 45–60 cm in head and body length. Coat colour grey; back of ears sandy brown; tail-tip black.


**Genus Cuon** Hodgson, 1838

The genus *Cuon* is represented in Meghalaya by one species.
62. *Cuon alpinus* (Pallas)


*Common names*: Dhole, Indian Wild Dog, Red Dog (Eng.), *Achak burung* (local).

*Material examined*: Nil.

*Measurements*: None.

*Diagnosis*: General appearance like a domestic dog, with long, lanky body, and short legs and muzzle. Ears rounded at tip and tail quite bushy. Body colour deep red.

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district; Sikkim; Uttar Pradesh; West Bengal. Nepal, Bhutan.

Family **URSIDAE**

Three genera of the family Ursidae occur in Meghalaya.

Key to the genera and species of the family **URSIDAE**

1. Six incisors in the upper jaw ........................................................................................ 2

2. Larger, length usually over 150 cm; coat long; a white or buff V-shaped mark from the upper breast to both shoulders; claws black ................................................... *Selenarctos thibetanus*

   Smaller, length usually under 130 cm or so; coat very short; a white, U-shaped mark from upper breast to throat; claws pale horny, sometimes dusky ......................... *Helarctos malayanus*

Genus **Selenarctos** Heude, 1901

The genus *Selenarctos* is represented in Meghalaya by one species.

63. *Selenarctos thibetanus* (G. Cuvier)


*Common name*: Asiatic Black Bear (Eng.), Makbil-wak (local).

*Material examined*: Nil.

*Measurements*: None.

*Diagnosis*: Large-sized bear, 140-190 cm in head and body length; coat smooth, short and black; claws black; white or buff coloured V-shaped breast patch present.

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district; Jammu & Kashmir; Mizoram; Sikkim; Uttar Pradesh; West Bengal. Pakistan, Bangladesh.

Genus **Helarctos** Horsfield, 1825

The genus *Helarctos* is represented in Meghalaya by one species.
64. *Helarctos malayanus* (Raffles)


*Common name*: Malayan Sun Bear (Eng.).

*Material examined*: Nil.

*Measurement*: None.

*Diagnosis*: Smallest of bears, about 125 cm in head and body length; hairs short and close, black in colour; muzzle grey; white or yellow crescent on chest; claws large, white in colour.

*Distribution*: India Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district; Assam. Myanmar, Thailand, Malaysia, Sumatra, Borneo.

Genus *Melursus* Meyer, 1793

The genus *Melursus* is represented in Meghalaya by one species.

65. *Melursus ursinus* (Shaw)


*Common name*: Sloth Bear (Eng.).

*Material examined*: East Khasi Hills district: 1 unsexed, near Shillong, 29. iv. 1879.

*Measurements*: None.

*Diagnosis*: A large-sized bear of 140–170 cm in head and body length. Coat rough and black, with or without a V-shaped breast patch. Claws ivory white in colour.

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, Ri-Bhoi district, East Khasi Hills district; Assam; Bihar; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Orissa; Uttar Pradesh; West Bengal. Bangladesh.

Family PROCYONIDAE

Only one genus of the family Procyonidae occurs in Meghalaya.

Genus *Ailurus* Cuvier, 1825

The genus *Ailurus* is monospecific. One subspecies occurs in Meghalaya.

66. *Ailurus fulgens fulgens* Cuvier


*Common names*: Red Panda (Eng.), *Matchibel* (local).

*Material examined*: Nil.

*Measurements*: None.
Diagnosis: Head rounded; muzzle stumpy; ears long, pointed; sole hairy. Dorsum bright chestnut; face and lower lip white. A red stripe runs from above the eye to the gape. Tail ringed.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district; Arunachal Pradesh; Sikkim; West Bengal. Nepal.

Family MUSTELIDAE

Six genera of the family Mustelidae occur in Meghalaya.

Key to the genera of the family MUSTELIDAE

1. Body long and slender, with short limbs and small ears; feet adapted for running and climbing; claws short, sharp and partially retractile; primarily terrestrial ............................................ 2

Body stout, bear-like, with broad feet and long sturdy nonretractile claws; adapted for digging... 3

Body long and slender, head broad and flat, feet rather large; tail thick and muscular; hind feet wider than fore feet; adapted to aquatic life ................................................................. 4

2. Larger animals, body less elongate; muzzle, limbs and tail relatively longer; nose long and pointed; ears larger; head and body over 450 mm; total 38 teeth in upper and lower jaws ............

Smaller animals, body more elongate; muzzle, limbs and tail relatively shorter; nose short and broad; ears smaller; head and body under 350 mm; total 34–36 teeth in upper and lower jaws ..... 5

3. Smaller animals; distinctive black and white facial marks; ears with bursa; feet narrower; planter pads strongly arched; toes partly webbed; head and body under 400 mm .................. Melogale

Larger animals; poorly marked facial marks; ears without bursa; feet broader and plantigrade; planter pads not arched; toes not webbed; head and body over 550 mm ................... Arctonyx

4. Smaller animals; paws relatively smaller; claws small; relatively little webbing between toes; head and body normally under 550 mm; total 34 teeth in upper and lower jaw .................. Aonyx

Larger animals; paws relatively larger; claws longer; more complete webbing between toes; head and body normally over 550 mm; total 36 teeth in upper and lower jaw ...................... Lutra

Genus Martes Pinel, 1792

The genus Martes is represented in Meghalaya by one species and subspecies.

67. Martes flavigula flavigula (Boddaert)

1785. Mustela flavigula Boddaert, Elench. Anim.: 88 (Locality unknown, traditionally fixed as Nepal (Pocock).

Common name: Yellow-throated Marten (Eng.)
Material examined: Nil.

Measurements: None.

Diagnosis: Head and body length 40–65 cm, tail long and bushy. Colour variegated; crown, nape and extremities black; throat and cheeks white; chest yellow; rest of coat light brown.

Distribution: India: Meghalaya: West Garo Hills district; Arunachal Pradesh; Assam; Himachal Pradesh; Jammu & Kashmir; Nagaland; Sikkim; Uttar Pradesh; West Bengal. Afghanistan, Pakistan, Nepal, Bhutan, Myanmar, China.

Genus Mustela Linnaeus, 1758

The genus Mustela is represented in Meghalaya by one species.

68. Mustela kathiah Hodgson


Common name: Yellow-bellied Weasel (Eng.).


Measurements: External 1 ♀: HB 240.0; Tl 135.0; Hf 36.0; E 14.5. Cranial: 1 ♂: l 41.4; cw 21.7; pm4 3.5; pm3 3.3; mtr 11.3; orb 6.7; c1 6.9; iw 9.1. 1 ♀: l 41.0; cw 22.0; pm4 3.8; pm3 3.5; mtr 10.6; orb 6.8; c1 6.4; iw 8.9. 2 unsexed: l 42.8, 43.8; cw 21.3, 21.4; pm4 4.7, 4.8; pm3 4.4, 4.5; mtr 13.7, 13.8; orb 6.6, 6.7; c1 7.2, 7.4; iw 9.0(2).

Diagnosis: Small, about 28 cm in head and body length. Coat dark chocolate-brown above, yellow below. Tail not bushy.

Distribution: India: Meghalaya: West Khasi Hills district, East Khasi Hills district; Arunachal Pradesh; Assam; Nagaland; Sikkim; Uttar Pradesh; West Bengal. Bhutan, Myanmar, China.

Genus Melogale I. Geoffroy, 1831

The genus Melogale is represented in Meghalaya by one species and subspecies.

69. Melogale personata nipalensis (Hodgson)


Common name: Burmese Ferret-Badger (Eng.).

Material examined: Khasi Hills, 1 unsexed, coll. T. LaTouche.
Measurements: None.

Diagnosis: Coat deep purplish grey to brown; face-marks and underside yellow; a narrow whitish stripe runs from crown down the middle of back to rump. Molar tooth massive and broad.

Distribution: India: Meghalaya: Khasi Hills district; Sikkim; West Bengal. Nepal.

Genus Arctonyx F. Cuvier, 1825

The genus Arctonyx is represented in Meghalaya by one species and subspecies.

70. Arctonyx collaris collaris F. Cuvier


Common names: Hog-Badger (Eng.), Wak-sel (local).

Material examined: Nil.

Measurements: None.

Diagnosis: Short-tailed animal of 55-70 cm in head and body length; snout long and pig-like, limbs and gait bear-like; claws powerful. Coat is coarse, grey and rough on body, close and white with longitudinal black streaks on head, and black or very dark on limbs.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, West Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Manipur; Nagaland; Sikkim; West Bengal, Nepal, Bangladesh.

Genus Lutra Brisson, 1762

The genus Lutra is represented in Meghalaya by two species and subspecies.

71. Lutra lutra monticola Hodgson


Common name: Common Otter (Eng.).

Material examined: Nil.

Measurements: None.

Diagnosis: 60-80 cm in head and body length. Tail thick and muscular. Feet paddle-like, the hind larger than fore. Colour brown, grizzled above; cheeks, throat and underparts whitish. Hairs of the muzzle terminate in an angular line above the naked part of nose.

Distribution: India: Meghalaya: Jaintia Hills district; Arunachal Pradesh; Assam; Punjab; Sikkim; Uttar Pradesh; West Bengal. Nepal.

72. Lutra perspicillata perspicillata I. Geoffroy


Common name: Smooth-coated Indian Otter (Eng.).
Material examined: Nil.

Measurements: None.

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 muzzle terminate in a straight line above naked part of nose.

Distribution: India: Meghalaya: West Garo Hills district; Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Karnata; Kerala; Madhya Pradesh; Nagaland; Orissa; Pondicherry; Tamil Nadu; Uttar Pradesh; West Bengal. Bangladesh, Myanmar, China, Vietnam, Malaysia, Indonesia.

Genus Aonyx Lesson, 1827

The genus Aonyx is represented in Meghalaya by one species and subspecies.

73. Aonyx cinerea concolor (Rafinesque)

1832. Amblonyx concolor Rafinesque, Atlantic J., 1: 62 (Garo Hills, Meghalaya, India).

Common name: Oriental small-clawed Otter (Eng.).

Material examined: Nil.

Measurements: None.

Diagnosis: Small-sized otter of about 60 cm in head and body length. Two middle toes of feet noticeably longer than others. Colour, dark brown above, paler below; white underparts limited to neck and shades into brown on chest.

Distribution: India: Meghalaya: West Garo Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Himachal Pradesh; Mizoram; Nagaland; Sikkim; Uttar Pradesh; West Bengal. China.

Family VIVERRIDAE

Five genera of the family Viverridae occur in Meghalaya.

Key to the genera of the family VIVERRIDAE

1. Ears tufted; tail prehensile ................................................................. Arctictis
   Ears not tufted; tail not prehensile .................................................... 2

2. Feet terrestrial and digitigrade; carpal pad single; metacarpal pads absent; scent glands opening into highly specialised pouches .............................................................. 3
   Feet scansorial and semi-plantigrade; carpal and metacarpal pads double; glandular pouches less specialised .......................................................... 4

3. Anterior edge of ears widely separated; a dorsal crest of hairs extends posteriorly at least from shoulders ................................................................. Viverra
Anterior edge of ears set close together; no dorsal crest of long hairs ................. *Viverricula*

4. A definite pattern of dorsal stripes and lateral spots present at least in new coat .... *Paradoxurus*

No pattern of stripes or spots present .......................................................... *Paguma*

**Genus Viverra Linnaeus, 1758**

The genus *Viverra* is represented in Meghalaya by one species and subspecies.

74. *Viverra zibetha zibetha* Linnaeus


*Common name* : Large Indian Civet (Eng.).


*Measurements* : External : 1 ♀ : HB 810.0; Tl 442.0; Hf 127.0; E 50.0

*Diagnosis* : Markings of body indistinct and cloudy; complete dark and light rings on tail; crest present on back of long, black, erectile hairs; anterior upper molar distinctly triangular.

*Distribution* : India : Meghalaya : West Garo Hills district (Agrawal *et al.*, 1992), Ri-Bhoi district, East Khasi Hills district, jaintia Hills district (Agrawal *et al.* 1992); Arunachal Pradesh; Assam; Bihar; Madhya Pradesh; Mizoram; Nagaland; Sikkim. Bangladesh, Myanmar, Thailand, Vietnam, Malaysia, Singapore.

**Genus Viverricula Hodgson, 1838**

The genus *Viverricula* is represented in Meghalaya by one species.

75. *Viverricula indica* (Desmarest)


*Common name* : Small Indian Civet (Eng.).

*Material examined* : Nil.

*Measurements* : None.

*Diagnosis* : Smaller than a common cat, shorter legs longer tail. Coat greyish-brown, more or less striped and spotted lengthways with black; tail ringed with black and white. Muzzle short and weak. No dorsal crest of long hairs on back.

*Distribution* : India : Meghalaya : West Garo Hills district; Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Goa; Gujarat; Himachal Pradesh; Jammu & Kashmir; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Manipur; orissa; Sikkim; Tamil Nadu; Tripura; Uttar Pradesh; West Bengal. Sri Lanka, Bhutan, Bangladesh.
Genus *Paradoxurus* Cuvier, 1821

The genus *Paradoxurus* is represented in Meghalaya by one species.

76. *Paradoxurus hermaphroditus* (Pallas)


*Common names*: Common Palm Civet, Toddy Cat (Eng.).

*Material examined*: Nil.

*Measurements*: None.

*Diagnosis*: About 55 cm in head and body length with tail nearly as long; fur coarse, long and ragged with an indistinct mixture of black and grey. Muzzle and extremities blackish; young often striped or spotted.

*Distribution*: India: Meghalaya: East Garo Hills district; throughout India. Sri Lanka, China, Malaysia, Indonesia, Philippines.

Genus *Paguma* Gray, 1831

The genus *Paguma* is represented in Meghalaya by one species and subspecies.

77. *Paguma larvata neglecta* Pocock


*Common name*: Masked Palm Civet (Eng.).

*Material examined*: Khasi Hills: 1 unsexed, coll. T. LaTouche, -.

*Measurements*: None.

*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. Underwool brownish or grey. A white band on forehead, nose and beneath ears, and a blotch below eyes.

*Distribution*: India: Meghalaya: East Garo Hills district; Khasi Hills district; Assam; Nagaland; Sikkim. Myanmar.

Genus *Arctictis* Temminck, 1824

The genus *Arctictis* is represented in Meghalaya by one species.

78. *Arctictis binturong* (Raffles)


*Common names*: Binturong (Eng.), *Matchuri Rongol* (local).

*Material examined*: Nil.
Measurements: None.

Diagnosis: About the size of a pariah dog, but with short legs and very long tail; head short and broad, muzzle narrow; eyes and ears small, latter tufted. Fur coarse, ragged, black in colour, more or less grizzled on forequarters.

Distribution: India: Meghalaya: Garo Hills district; Assam; Sikkim. Nepal, Bhutan, Myanmar, Thailand, Malaysia, Sumatra, Java, Borneo.

Family HERPESTIDAE

The family Herpestidae is represented in Meghalaya by the genus *Herpestes* only.

Genus *Herpestes* Illiger, 1811

The genus *Herpestes* is characterised by elongated body and short, rounded ears, mostly concealed by hairs; contour hairs with alternate dark and light bands, giving a speckled appearance; post-dental portion of palate extending to back side halfway over the mesopterygoid fossa.

Three species of the genus *Herpestes* are known from Meghalaya.

Key to the species of the genus *Herpestes*

1. A conspicuous white stripe on either side of neck ................................................... *H. urva*

   Absence of any stripe on sides of neck ........................................................................ 2

2. Contour hairs long, many banded and usually coarse; legs darker than body .............. *H. edwardsi*

   Contour hairs short, with less number of bands, and soft; legs not darker than body ........

   ............................................................................................................................... *H. auropunctatus*

79. *Herpestes auropunctatus* (Hodgson)


Common name: Small Indian Mongoose (Eng.).

Material examined: Nil.

Measurements: None.

Diagnosis: Size smaller, about 25 cm in head and body length, sleek in appearance. Tail shorter than head and body. Fur short, silky, olive-brown in colour and gold-flecked.

Distribution: India: Meghalaya: Jaintia Hills district; Arunachal Pradesh; Assam; Bihar Himachal Pradesh; Jammu & Kashmir; Manipur; Nagaland; Orissa; Sikkim; Uttar Pradesh; West Bengal. Nepal, Bhutan.

80. *Herpestes edwardsi* (Geoffroy)

Common name: Indian Grey Mongoose (Eng.).


Measurements: External: 1♂: HB 326.0; TI 373.0; Hf 68.0; E 18.0.

Diagnosis: Tawny yellowish-grey in colour, no stripes on sides of neck. Fur grizzled, rather rough, rusty on head and feet. Eyes reddish brown, claws dark brown. Tail as long as body, tipped with white or yellowish-red.

Distribution: India: Meghalaya: West Garo Hills district; Assam; Bihar; Gujarat; Madhya Pradesh; Orissa; Sikkim; Uttar Pradesh; West Bengal. Nepal, Bangladesh.

81. Herpestes urva (Hodgson)

Common name: Crab-eating Mongoose (Eng.).

Material examined: Nil.

Measurements: None.

Diagnosis: A white stripe running along each side of neck to shoulders distinguishes it from other mongooses. Fur, coarse, ragged, dusky iron-grey in colour; under-fur woolly, dark brown at bases, pale brownish-yellow at tips.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district; Arunachal Pradesh; Assam; Nagaland; Tripura; West Bengal. Bangladesh, Myanmar, Thailand, China, Taiwan, Vietnam.

Family FELIDAE

Three genera, namely, of the family Felidae occur in Meghalaya.

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

Medium or small-sized cats; hyoidean apparatus of normal mammalian type, suspensor consists of a chain of bones jointed end to end ................................................................. 2

2. Small-sized cats; postorbital process long and well developed; canines relatively short; post-canine space normal ................................................................. Felis

Medium-sized cat; postorbital process short; canine long; post-canine space large ........ Neofelis

Genus Felis Linnaeus, 1758

Four species of the genus Felis occur in Meghalaya.
Key to the species of the 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; nasal branch of premaxilla broad. ............... *F. chaus*
   Outer chamber of bulla small, partition arising close to orifice; tip of postorbital process in front on 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.................................
   Skull long, narrow and low; mastoid width more than half of condylobasal length; shallow emargination on each side of hinder edge of palate; mesopterygoid fossa truncated, with median notch in front ........................................................................... 3

3. Larger; nasal branch of premaxilla slender; maxilla not extended above; nasals not compressed. ...............................................................................................................
   Smaller; nasal branch of premaxilla broad; maxilla expanded above; nasals compressed. .............................................................................................................. 82. *Felis chaus* Gülenstaedt


*Common names*: Jungle Cat (Eng.), *Mengo burung* (local).

*Material examined*: Nil.

*Measurements*: None.

*Diagnosis*: Medium-sized, 60–75 cm in head and body length; tail shorther, tipped black. General colour light reddish-grey, unspotted except on lower flanks and efnbor; black horizontal stripes present on inner side of fore legs. Ears reddish chestnut with a rudimentary hair tuft.

*Distribution*: India: Meghalaya; West Garo Hills district, East Garo Hills district; South Garo Hills district; Assam; Arunachal Pradesh; Himachal Pradesh; Jammu & Kashmir; Manipur; Nagaland; Sikkim; Uttar Pradesh; West Bengal. Nepal.

83. *Felis marmorata* Martin


*Common names*: Marbled Cat (Eng.), *Mengo burung* (local).

*Material examined*: Nil.

*Measurements*: None.

Distribution: India: Meghalaya: Garo Hills district; Arunachal Pradesh; Assam; Nagaland; Sikkim; West Bengal. Nepal, Bhutan, Myanmar.

84. *Felis temmincki* Vigors & Horsfield


Common name: Golden Cat (Eng.).

Material examined: Nil.

Measurements: None.

Diagnosis: A fairly large cat, 76–84 cm in head and body length; long-tail. Colour chestnut; a horizontal white cheek-stripe from below eyes to behind gape; ears black or brownish-black on outer side with pale central spot; imperfect bands on throat; chin and under-part of tail white; underparts generally pale with dusky spots.

Distribution: India: Meghalaya: East Garo Hills district; South Garo Hills district; Arunachal Pradesh; Assam; Mizoram; Nagaland; Sikkim; Tripura; West Bengal. Nepal, Bangladesh, Myanmar, China, Malaysia, Vietnam, Borneo, Indonesia.

85. *Felis bengalensis bengalensis* Kerr


Common names: Leopard Cat (Eng.), *Mengo apru* (local).


Measurements: None.

Diagnosis: Small-sized cat, 61–66 cm in head and body length, rather short tail. Colour variable, pelage ornamented with blackish brown spots; back of ears black with round whitish spot in centre; four longitudinal black bands from forehead to neck which break up into short bands or elongated spots on shoulders; tail spotted above.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, Ri-Bhoi district, East Khasi Hills district, Jaintia Hills district; Andhra Pradesh; Arunachal Pradesh; Assam; Maharashtra; Manipur; Nagaland; Orissa; Karnataka; Kerala; Tamil Nadu; Tripura; West Bengal. Bangladesh, Myanmar, Thailand, Yunan, erstwhile Indo-China.

Genus *Neofelis* Gray, 1867

The genus *Neofelis* is represented in Meghalaya by one species.

86. *Neofelis nebulosa* (Griffith)

1821 *Felis nebulosa* Griffith, *Descr. Anim. (Carn.)* : 37, pl. (Canton, Kwantung, southern China).
Common names: Clouded Leopard (Eng.), Matcha Bolgasonakani (local).

Material examined: Nil.

Measurements: None.

Diagnosis: Large-sized cat, 66–117 cm in head and body length, tail long; fur close and sleek with a distinct pattern of large patches placed close together and edged behind with black; ground colour grey or buff, the patches darker. Head and limbs with black spots, tail black-ringed.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district; Arunachal Pradesh; Assam; Mizoram. Nepal, Bhutan, Myanmar.

Genus Panthera Oken, 1816

Two species of the genus Panthera occur in Meghalaya.

Key to the species of the genus Panthera

Ground colour of body orange-tawny, with black stripes......................P. tigris

Ground colour of body yellow, with distinct black spots arranged in rosettes..............P. pardus

87. Panthera pardus fusca (Meyer)


Common names: Leopard (Eng.), Matcha-peng (local).

Material examined: Nil.

Measurements: None.

Diagnosis: A sleek, short-haired animal; colour pale fulvous yellow, with clearly defined black spots in rosettes.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, Ri-Bhoi district, East Khasi Hills district; throughout India in suitable habitats. Sri Lanka, Bangladesh, Myanmar, China.

88. Panthera tigris tigris (Linnaeus)


Common names: Tiger (Eng.), Matcha (local).

Material examined: Nil.

Measurements: None.

Diagnosis: A large, heavy-bodied animal with short, close hairs, colour varies from pale yellow ochre to burnt sienna, with black stripes arranged irregularly.

Order PROBOSCIDEA

Only the family Elephantidae occurs in Meghalaya.

Family ELEPHANTIDAE

The family Elephantidae is represented in Meghalaya by a single genus.

Genus *Elephas* Linnaeus, 1758

The genus *Elephas* is represented in Meghalaya by a single species and subspecies.

89. *Elephas maximus indicus* G. Cuvier


*Common names*: Indian Elephant (Eng.), *Mongma* (local).

*Material examined*: None.

*Measurements*: Nil.

*Diagnosis*: Largest of land animal of India; well-known by its trunk, at the end of which nostrils are placed; lower lip small, pointed and spout-like; body blackish grey throughout; tail thin, long with coarse bristles at end; eyes very small, ears large and flat.

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, Ri-Bhoi district; Arunachal Pradesh; Assam; Bihar; Karnataka; Kerala; Mizoram; Nagaland; Orissa; Tamil Nadu; Tripura; Uttar Pradesh; West Bengal. Bangladesh, Bhutan, Myanmar, Thailand, Vietnam, Malaya, Sumatra, Borneo.

ORDER ARTIODACTYLA

Animals belonging to the order Artiodactyla are even-toed; axis of foot passes between third and fourth toes; toes enclosed in horny hooves of approximately equal size, giving the appearance of a single hoof split down in the middle.

The order Artiodactyla is represented by three families in Meghalaya.

Key to the families of the order ARTIODACTYLA

1. Upper incisors absent; horns or antlers present, at least in males... ........................................ 2
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 shed periodically ...... CERVIDAE
Family SUIDAE

The family Suidae is represented in Meghalaya by a single genus, species, subspecies.

90. Sus scrofa cristatus Wagner


*Common names:* Wild Boar (Eng.), Wak burung (local).

*Material examined:* West Garo Hills district: 1 $\varnothing$ above Tura (c 1,214 m), coll. S. W. Kemp.—

*Measurement:* None.

*Diagnosis:* 76 102 cm Height at shoulders; coat coarse, a crest of black bristles from nape to back; tail long, thin, fringed at tip, barely reaching hocks; first coat of pig dark brown, striped lengthways with buff.


Family CERVIDAE

Three genera of the family Cervidae occur in Meghalaya.

Key to the genera of the family CERVIDAE

1. Upper canine tusk-like in males; antlers short, consisting of a short brow-tine and an unbranched beam......................................................... \textit{Muntiacus}

   upper canine, when present, not tusk-like; antlers long and branched; bony phalanges present in lateral digits ........................................................................................................... 2

2. Body, of adults distinctly spotted; brow-tine set at right angle to beam of antler ............ \textit{Axis}

   Body unspotted; brow-tine form an acute angle with beam of antler ................. \textit{Cervus}

Genus \textit{Muntiacus} Rafinesque, 1815

The genus \textit{Muntiacus} is represented in Meghalaya by one species and subspecies.

91. \textit{Muntiacus muntjak vaginalis} (Boddaert)


*Common name:* Barking Deer (Eng.), Balgatchak (local).

*Material examined:* Nil.

*Measurements:* None.

*Diagnosis:* Antler small, consisting of a short brow-tine and an unbranched beam, set on bony
hair-covered pedicel, extending down on each side of face as bony ridges. Upper canines tusk-like. Tail about as long as head. Coat close, sleek, bright bay in colour, with black streaks along face-ridges inside, extending to pedicel in buck; throat, groin and under-side of tail white.

_Distributions_: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, Ri-Bhoi district, East Khasi Hills district; Arunachal Pradesh; Assam; Bihar; Sikkim; Tripura; Uttar Pradesh; West Bengal. Bhutan, Bangladesh, northern Burma, Yunan, northern Vietnam.

**Genus Axis** Smith, 1827

Two species of the genus _Axis_ occur in Meghalaya.

**Key to the species of the genus Axis**

Small in size, height at shoulders less than 76.0 cm; generally not spotted .................. _A. porcinus_
Larger in size, height at shoulders more than 76.0 cm; adults spotted .................................... _A. axis_

92. _Axis axis axis_ (Erxleben)

1777. _Cervus axis_ Erxleben, _Syst. Regn. Anim._ : 312 (Bank of the Ganges, India.).

_Common names_: Spotted Deer, Chital (Eng.).

_Material examined_: Nil.

_Measurements_: None.

_Diagnosis_: Coat bright rufous-fawn, with white spots; lower series of spots on flanks arranged in longitudinal rows. Antlers with three lines, a long brow-tine set at right angles to beam and two branches (tines) at top; outer tine, continuation of beam, is longer.

_Distribution_: India: Meghalaya: Ri-Bhoi district, East Khasi Hills district; peninsular India, northward to Kumaon in Uttar Pradesh and Sikkim, and eastward to West Bengal and Assam. Sri Lanka, Nepal, Bangladesh.

93. _Axis porcinus_ (Zimmermann)

1780. _Cervus porcinus_ Zimmermann, _Geogr Gesch._, 2 : 131 (Bengal).

_Common name_: Hog Deer (Eng.).

_Material examined_: Nil.

_Measurements_: None.

_Diagnosis_: Fur brown with a yellowish or reddish tinge, more or less marked with white or pale spots above. Underparts of body paler, inside of ears and under-side of tail white. Antlers small, set upon long bony pedicel, brow-tine slanting sharply upwards, beam almost straight, divides into longer-fore and shorter hind tine.
Distribution: India: Meghalaya Ri-Bhoi district; Arunachal Pradesh; Assam; Bihar; Punjab; Tripura; Uttar Pradesh; West Bengal. Nepal, Sri Lanka (introduced).

Genus *Cervus* Linnaeus, 1758

Two species of the genus *Cervus* occur in Meghalaya.

Key to the species of the genus *Cervus*

Each antler, in adults, normally with more than 3 tines; brow-tine forming an angle of 90° with beam.......................... *C. duvauceli*

Each antler, in adults, normally with 3 tines; brow-antler forming an acute angle with beam; latter bifurcates to give rise to two strong tines only ........................................ *C. unicolor*

94. *Cervus unicolor equinus* G. Cuvier


Common names: Sambar (Eng.), *Matchok* (local).

Material examined: Nil.

Measurements: None.

Diagnosis: Largest Indian deer; coat coarse and shaggy; a mane present, in stag, about neck and throat; general colour brown with yellowish or greyish tinge; old stag very dark, almost black; underparts paler; females lighter in tone. Antler stout and rugged, brow-tine forming acute angle with main beam which forks at summit into two equal tines.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, Ri-Bhoi district, East Khasi Hills district; Arunachal Pradesh; Assam; West Bengal. Myanmar, China, Thailand, Malaysia, Sumatra, Yunan, erstwhile Indo-China.

95. *Cervus duvauceli* G. Cuvier


Common names: Swamp Deer, Barasingha (Eng.).

Material examined: Nil.

Measurements: None.

Diagnosis: Large in size, height at shoulders 105 – 130 cm; coat almost woolly in texture, brown to yellowish brown; summer coat paler. A mane over neck present in stag.

Distribution: India: Meghalaya: East Khasi Hills district; Assam; Uttar Pradesh; West Bengal. Nepal.

Family BOVIDAE

Five genera of the family Bovidae occur in Meghalaya.
Key to the genera of the family BOVIDAE

1. Size small; horns in males only, not so long as head; generally 4 horns; tail short. ... *Tetracerus*
   - Size large; horns in both sexes, not much different in size .................................................. 2

2. Horns inserted far apart, at the extremities of vertex ............................................................ 3
   - Horns closely set, conical, backwardly curved and ringed ...................................................... 4

3. horns triangular in cross section, transversely ridged, exceeding 92 cm in length ........... *Bubalus*
   - Horns oval in cross-section, smooth, less than 92 cm in length ........................................... *Bos*

Measurements: None.

Diagnosis: Males 175-196 cm in height at shoulders, females a little smaller. A muscular ridge, present on shoulders, slopes down to middle of 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: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district; Arunachal Pradesh; Andhra Pradesh; Assam; Bihar; Goa; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Mizoram; Nagaland; Orissa; Rajasthan; Tamil Nadu; Uttar Pradesh; West Bengal. Nepal. Bangladesh.

Genus *Bubalus* H. Smith, 1827

One species of the genus *Bubalus* occurs in Meghalaya.


Common names: Indian Buffalo. Water Buffalo (Eng.).

Material examined: Nil.

Measurements: None.


Distribution: India: Meghalaya: Occurrence of the present species in Meghalaya is yet to be confirmed; Assam; Madhya Pradesh; Maharashtra; Orissa; West Bengal. Sri Lanka (probably feral).

Genus *Capricornis* Ogilby, 1837

The genus *Capricornis* is represented by one species.


Common names: Serow (Eng.), Matrong (local).

Material examined: Nil.

Measurements: None.

Diagnosis: Males 100-110 cm height at shoulders, with large head and thick neck; ears like those of donkeys. Coat coarse, grizzled black on back, rusty red on shoulders, flanks and thigh; limbs chestnut above, dirty white below.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, South Garo Hills district, East Khasi Hills district; Arunachal Pradesh; West Bengal.

Genus *Nemorhaedus* H. Smith, 1827

The genus *Nemorhaedus* is represented by one species.
100. *Nemorhaedus goral* (Hardwicke)


*Common name*: Goral (Eng.).

*Material examined*: Nil.

*Measurements*: None.

*Diagnosis*: Height at shoulder 65 - 75 cm. Coat golden or rufous brown, speckled black; throat white; black spinal stripe up to root of tail, indistinct on rump; tail black above. Both the sexes have conical, backwardly curved horns, nearly parallel, 12 - 15 cm in length.

*Distribution*: India: Meghalaya: West Garo Hills district; Sikkim; West Bengal.

**Order LAGOMORPHA**

Only one family of the order Leporidae occur in Meghalaya.

**Family LEPORIDAE**

Only one genus of the family Leporidae occurs in Meghalaya.

Genus *Lepus* Linnaeus, 1758

One species of the genus *Lepus* occurs in Meghalaya.

101. *Lepus nigricollis ruficaudatus* Geoffroy


*Common name*: Black-naped Hare (Eng.).


*Measurements*: Nil.

*Diagnosis*: Head and body 40 - 50 cm in length; ears longer than 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 nape.

*Distribution*: India: Meghalaya: East Garo Hills district, South Garo Hills district; Assam; Madhya Pradesh; Nagaland; Orissa; Rajasthan; Sikkim; Tripura; Uttar Pradesh; West Bengal. Nepal, Bangladesh.

**Order RODENTIA**

Rodents which are cosmopolitan in distribution, are characterised by having a pair of chisel-shaped incisors in each jaw, and a distinct diastema between incisors and molar teeth. In Meghalaya, they are represented by four families.
Key to the families of the order RODENTIA

1. Body covered with spines or quills: angular portion of mandible arising from outer side of body socket of incisor; cheek-teeth 4/4 ................................................................. HYSTRICIDAE

   Body not covered with spines or quills; angular portion of mandible arising from lower edge of body socket of incisors ............................................................................. 2

2. Skull with distinct postorbital process; premolars 2 on each side in upper jaw, only 1 in the lower; cheek-teeth (except in the genus Ratufa) 5/4 ........................................... SCIURIDAE

   Skull with no postorbital process; premolars absent; cheek-teeth 3/3 ........................................... 3

3. Slender in form; tail long, scaly and clothed with short hairs ........................................... MURIDAE

   Heavy in form, cylindrical, mole-like; tail short or rudimentary, almost naked and not scaly; limbs short ................................................................. RHIZOMYIDAE

Family SCIURIDAE

In Meghalaya, the family Sciuridae is represented by seven genera.

Key to the genera of the family SCIURIDAE

1. Presence of flying membrane (patagium) on both sides of body ........................................... 2

   Absence of flying membrane ........................................................................................ 4

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. Interfemoral membrane absent; ear-tuft present; size small, less than 20 cm in head and body length ................................................................. Belomys

   Interfemoral membrane present; ear-tuft absent; size large, more than 30 cm in head and body length ................................................................. Petaurista

4. Size large, over 28 cm in head and body length maxillary teeth 4 in number .......... Ratufa

   Size small, less than 28 cm in head and body length; maxillary teeth 5 in number .......... 5

5. Dorsal side of body prominently striped; stripes more than one in number .......... 6

   Dorsal side of body usually unstriped ........................................................................... 7

6. Larger; median stripe of body white or buff ................................................................. Funambulus

   Smaller; median stripe of body black ........................................................................... Tamiops

7. Length of nasal exceeds interorbital width of skull ......................................................... Dremomys

   Length of nasal does not exceed interorbital width of skull ........................................ Callosciurus

Genus Belomys Thomas, 1908

The genus Belomys is monospecific.
102. *Belomys pearsoni* (Gray)


*Common name*: Hairy-footed Flying Squirrel (Eng.).

*Material examined*: None.

*Measurements*: Nil.

*Diagnosis*: Small-sized, head and body length about 20 cm; fur rufous brown; undersurface fulvous white; a long pencil of hairs on base of ear-conch.

*Distribution*: India: Meghalaya: Garo Hills district; Arunachal Pradesh; Assam; Nagaland; Sikkim, Bhutan.

**Genus Petaurista** Link, 1795

Three species of the genus *Petaurista* occur in Meghalaya.

**Key to the species of the genus *Petaurista***

1. Size large, hind foot over 80 mm .......................................................... 2
   Size smaller, hind foot 65–78 mm .......................................................... 3

2. Shoulder patch very indistinct; head including forehead white, strongly contrasted with back; ears white .......................................................... *P. alborufus*

3. Shoulder patch indistinct, more or less concolourous with back; ears red .......... *P. petaurista*
   Shoulder patch distinct and confined to pectorals, remaining dorsal surface uniformly coloured; ear almost the same colour as the body .................................................. *P. magnificus*

**Petaurista petaurista** (Pallas)

The species is represented by two subspecies in Meghalaya.

**Key to the subspecies of *Petaurista petaurista***

Occipitonasal length not less than 77 mm .................................................. *P. p. lylei*
Occipitonasal length not exceeding 73.1 mm ........................................ *P. p. albiventer*

103. *Petaurista petaurista* lylei Bonhote


*Common name*: Common Giant Flying Squirrel (Eng.).


*Measurements*: External: 1 ♂ : HB 415.0; TI 570.0; Hf 78.5; E 45.0. 1 ♀ : HB 480.0; TI 540.0; Hf 90.0; E 50.0. Cranial: 1 ♀ : on 79.7; n 24.1; pl 40.2; mtr 17.2; b 13.6; iw 20.1; orb 28.8.

104. **Petaurista peteurista albiventer** (Gray)


Common name: Common Giant Flying Squirrel (Eng.).

Material examined: East Khasi Hills district: 1 unsexed, Cherra Punji, coll. F. Skipwith, —

Measurements: None.

Distribution: India: Meghalaya: West Garo Hills district; Ri-Bhoi district, East Khasi Hills district; Jammu & Kashmir; Nagaland; Punjab; Uttar Pradesh, Nepal.

105. **Petaurista alborufus candidulus** Wroughton


Common name: Red-and-White Flying Squirrel (Eng.).


Measurements: None.

Distribution: India: Meghalaya: East Khasi Hills district; Assam; Manipur; Nagaland, Myanmar.

106. **Petaurista magnificus** (Hodgson)


Common name: Hodgson's Flying Squirrel (Eng.).


Measurements: None.

Distribution: India: Meghalaya: East Garo Hills district, Khasi Hills; Sikkim; West Bengal, Nepal.

Genus *Hylopetes* Thomas 1908

The genus *Hylopetes* is represented in Meghalaya by one species and subspecies.

107. **Hylopetes alboniger alboniger** (Hodgson)


Common name: Phayre's Flying Squirrel (Eng.).

Measurements: External: None. Cranial: 2 \( \sigma \) : on 47.7, 47.9; n 13.3, 14.0; pl 23.1, 23.8; mtr 9.0, 10.5; b 8.7, 9.1; iw 10.1 (2)orb. (1)17.1. 2 \( \varphi \) : on 47.5, 49.7; n 13.9, 14.1; pl 24.3, 25.7; mtr 10.9/8, 10.9/8; b 8.5, 8.6, 3/9; iw 10.2, 9.8=2; orb 15.2.

Diagnosis: Dorsal colour greyish to reddish brown; white or light patches present in the region of shoulder; undersurface greyish; throat and chest tends to be whitish. Occipitonasal length mostly over 45 mm.

Distribution: India: Meghalaya: East Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Manipur; Nagaland; West Bengal. Nepal, Bangladesh, Myanmar, China.

Genus Callosciurus Gray, 1867

The genus Callosciurus is represented by two species in Meghalaya.

Key to the species of the genus Callosciurus

Width of frontals usually approximates to one-third of occipitonasal length or less..............................................
............................................................................................................ C. pygeratus

Width of frontals clearly in excess of one third of occipitonasal length................................................................. C. erythraeus

108. Callosciurus erythraeus erythraeus (Pallas)

1779. Sciurus erythraeus Pallas, Nov. Sp. quad. glir. Ord : 377 (Locality unknown, but may be assumed to be some part of Assam).

Common name: Pallas’s Squirrel (Eng.).

Material examined: West Garo Hills district: 2 \( \sigma \), Tura (c 398 m), coll. H. W. Wells, 22. ii. 1920; 2 \( \varphi \), Tura (c 1,189 m), coll S. W. Kemp, 1 \( \sigma \), Degrangiri, c 5 km from Rongram, coll. S. Biswas, 10. xi. 1973. East Garo Hills district: 2 \( \sigma \), Rongrengiri (c 450 m), coll. H. Khajuria, 11. i. 1957, 5. ii. 1957. Ri-Bhoi district: 4 \( \sigma \), 3 \( \varphi \), Nongpoh Valley (c 940 m), coll H. L. Hiteshi, 22. iv. 1949 13. vii. 1949. East Khasi Hills district: 1 unsexed, Shillong, coll. T. Latoucha, —

Measurements: External: 5 \( \sigma \): HB 228.0 245.0(237.0); Tl 202.0 227.0 (212.0); Hf 51.0 55.0(52.0); E 12.0 22.0(19.0). 6 \( \sigma \) : HB 233.0 263.0(243.0); Tl 220.0 244.0(229.0); Hf 48.0 54.0(51.0); E 12.0 25.0(19.0). Cranial: 2 \( \sigma \) : on 56.1, 57.1; n 16.8, 18.0; pl 26.8, 28.4; mtr 10.0,10.1; n 16.3, 16.6; pl 27.0, 27.1; mtr 10.2, 10.8; b 10.1, 11.1; iw 19.0, 21.0; orb 17.1, 17.4.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, Ri-Bhoi district, East Khasi Hills district, Jaintia Hills district; Assam; Mizoram.

109. Callosciurus erythraeus erythrogastr (Blyth)


Common name: Pallas’s Squirrel (Eng.).

Material examined: Nil.
Measurements: None.

Distribution: India: Meghalaya: East Khasi Hills district, Jaintia Hills district; Assam; Manipur; Mizoram; Nagaland. Bangladesh Myanmar.


Common name: Irrawaddy Squirrel (Eng.).


Measurements: External: 4♂: HB 145.0 202.0(182.0); TL 144.0 191.0(168.0); Hf 38.0 46.0(42.0); E 18.0 21.0(20.0). 8♀: HB 180.0 202.0(191.0); TL 145.0 194.0(183.0); Hf 37 42.5(40.0); E 17.0 -20.5(19.0). Cranial: 1♂: on 47.5; n 13.6; pl 23.5; mtr 9.2; b 8.5; iw 16.1; orb 15.9. 4♀: on 47.2 49.2(48.5); n 12.9 14.6(13.7); pl 23.3 24.6(23.8); mtr 8.7 9.4(9.0); b 8.8 8.9(8.8); iw 16.8(16.5); orb 14.9 16.3(15.7).

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, Ri-Bhoi district, East Khasi Hills district, Jaintia Hills district; Assam; Nagaland; Manipur; Tripura. Bangladesh Myanmar.

Genus *Tamiops* J. Allen, 1906

One species of the genus *Tamiops*, occurs in India as also in Maghalaya.


Common name: Himalayan Striped Squirrel (Eng.).

Material examined: East Khasi Hills district: 1♂: Mawphlang (c 1,670 m), coll. A. K. Mandal, 29. i. 1964.

Measurements: None.

Distribution: India: Meghalaya: East Khasi Hills district; Assam; Manipur; Mizoram; Sikkim. Nepal, Bhutan Myanmar.

Genus *Dremomys* Heude, 1898

One species and two subspecies of the genus *Dremomys* occur in Meghalaya.

Key to the subspecies of *Dremomys lokriah*

Belly washed with rich ochraceous; ear-patches white; back entirely without median black line .......... .................................................. *D. l. lokriah*
Belly washed with buffy or yellowish; ear-patches rufous; a dark median dorsal line usually present......

112. *Dremomys lokriah lokriah* (Hodgson)


*Common name*: Orange-bellied Himalayan Squirrel (Eng.), *Matwan* (local).


*Measurements*: External: None. Cranial: 1 ♂ unsexed: \( n = 12.7, 16.3; \) \( pl = 22.6, 24.5; \) \( mtr = 8.9(2); \) \( b = 8.3; 13.3, 13.4; \) \( orb = 14.1, 15.0. \)

*Distribution*: India: Meghalaya: East Khasi Hills district, Assam; Mizoram; Sikkim. Nepal, Myanmar.

113. *Dremomys lokriah macmillani* Thomas


*Common name*: Orange-bellied Himalayan Squirrel (Eng.).


*Measurements*: External: 1 ♂: HB 168.0; TI 122.0; Hf 49.0; E 18.0. 1 unsexed: HB 185.0; TI 118.0; Hf 45.0; E 17.0. Cranial: None.

*Distribution*: India: Meghalaya: West Garo Hills district, Jaintia Hills district; Assam; Nagaland. Myanmar.

Genus *Funambulus* Lesson, 1835

One species of the genus *Funambulus* occurs in Meghalaya.

114. *Funambulus pennanti* Wroughton


*Common name*: Northern Palm Squirrel (Eng.).

*Material examined*: Nil.

*Measurements*: None.

*Distribution*: India: Meghalaya: Khasi and Jaintia Hills; Andaman Islands; Bihar; Gujarat; Jammu & Kashmir; Madhya Pradesh; Maharashtra; Orissa; Punjab; Rajasthan; Sikkim; Uttar Pradesh; West Bengal. Iran, Pakistan, Nepal, Bangladesh.
Genus *Ratufa* Gray, 1867

The genus *Ratufa* is represented in Meghalaya by one species and subspecies.


*Common name*: Malayan Giant Squirrel (Eng.).


*Measurements*: External: 3♀: HB 360.0 407.0(382.3); Tl 470.0 499.0(479.6); Hf 70.0 90.0(80.3); E 25.0 32.0(29.0). Cranial: 1♀: on 74.1; n 22.1; pl 32.6; ntr 14.1; iw 29.1; orb 25.1.

*Diagnosis*: A large-sized diurnal squirrel; dorsal colour varies from brown to black; venter buff.

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, Ri-Bhoi district; Arunachal Pradesh; Assam; Mizoram; Nagaland; Sikkim; Tripura; West Bengal. Bhutan. Myanmar. China.

Family HYSTRICIDAE

Two genera, of the family Hystricidae are known from Meghalaya.

Key to the genera of the family HYSTRICIDAE

Tail short, clothed with spines, with hollow quills at the end .............................................. *Hystrix*

Tail long, clothed with scales, with a tuft of bristles at the end ............................................ *Atherurus*

Genus *Hystrix* Linnaeus, 1758

Two species, of the genus, *Hystrix* occur in Meghalaya.

Key to the species of the genus *Hystrix*

A crest of bristles, 15 30 cm long, present on crown; quills bear several alternating white and blackish brown bands ................................................................. *Hystrix indica*

No crest of bristles present on crown; quills bear only one dark band in the middle, rest white .......... ................................................................. *Hystrix hodgsoni*


*Common name*: Asiatic Brush-tailed Porcupine (Eng.).

*Material examined*: Nil.
Measurements: None.

Distribution: India: Meghalaya: East Khasi Hills district; Arunachal Pradesh.

117. *Hystrix hodgsoni* (Gray)


Common name: Crestless Himalayan Porcupine, Chinese Porcupine (Eng.).

Material examined: Nil.

Measurements: None.

Distribution: India: Meghalaya: West Garo Hills district; Arunachal Pradesh; Assam; Nagaland; Sikkim; West Bengal. Nepal, Bangladesh.

Family RHIZOMYIDAE

The family Rhizomyidae is represented by two genera, in Meghalaya. Both the genera are adopted to subterranean mode of life. They have large proodont incisors, small eyes and ears, short limbs armed with strong claws.

Key to the genera of the family RHIZOMYIDAE

Size large, condylobasal length of skull 57.0 mm; sole of feet granulated; mammae 10 .......................................................... *Rhizomys*

Size small, condylobasal length of skull less than 55.0 mm; sole pads not granulated; mammae 8.............. .......................................................... *Canomys*

Genus *Rhizomys* Gray, 1831

One species and subspecies of the genus *Rhizomys* occurs in Meghalaya. Much larger than any other Indian rodent; colour dark brown; grizzled.

118. *Rhizomys pruinosus pruinosus* Blyth


Common name: Hoary Bambou Rat (Eng.).


Measurements: External: 1 Juv. ♂: HB 110.0; Tl 25.0; Hf 18.0; E 9.0. 1 ♀: HB 315.0; Tl 115.0; Hf 48.0; E 22.0. Cranial: 1 ♀: on 64.3; cb 68.1; n 24.4; pl 40.7; mtr 13.4; b 11.2; zw 51.2; iw 10.4; apf 6.3; d 22.1.

Distribution: India: Meghalaya: East Garo Hills district, East Khasi Hills district; Assam; Manipur; Nagaland. Myanmar, erstwhile Indo-China.
Genus *Cannomys* Thomas, 1915

One species and subspecies of the genus *Cannomys* Hodgson occurs in Meghalaya. Smaller than *Rhizomys*, head and body about 20 cm; colour chestnut bay or ashy brown; not grizzled; tail about 7 cm or so; condylobasal length 49 – 53 mm.

119. *Cannomys badius badius* (Hodgson)


*Common name*: Bay Bamboo Rat, Lesser Bamboo Rat (Eng.).


*Measurements*: External: 2 ♂: HB 170.0, 203.0; Ti 58.0(2); Hf 28.0, 29.0; E 9.0(2). 4 ♀: HB 215.0 231.0(221.0); Ti 55.0 68.0(60.0); Hf 32.0 33.0(32.0); E 12.0 15.0(14.0). Cranial: 2 ♂, on 40.4, 44.3; cb 44.5, 48.2; n 14.2, 15.8, pl 27.7, 30.7; mtr 10.3, 10.5; b 10.1, 10.3; d 15.0, 17.6. 2 ♀: on 46.3, 48.1; cb 51.1, 52.7; n 16.0, 16.2; pl 32.6, 33.1; mtr 10.0(2); b 11.0, 11.2; d 19.1, 19.5.

*Diagnosis*: Condylobasal length less than 55 mm; diastema more than 40% of occipitonasal length; colour chestnut bay or ashy brown.

*Distribution*: India: Meghalaya: East Garo Hills district, East Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Nagaland; West Bengal. Nepal, Myanmar.

Family MURIDAE

In Meghalaya, the family Muridae is represented by to seven genera.

Key to the genera of the family MURIDAE

1. Postero-internal cusp of upper molars present .......................................................... 2
   Postero-internal cusp of upper molars absent ............................................................ 3
2. Tail non-prehensile; mammae 4 in number ............................................................... *Chiropodomys*
   Tail prehensile; mammae 8 in number .................................................................... *Micromys*
3. Hallux opposable; hallux and fifth toe having flat nail; coat silky .......................... *Vandeleuria*
   Hallux not opposable; hallux and fifth toe provided with claw ................................ 4
4. Size large; coat harsh; condylobasal length exceeds or equal to occipitonasal length; upper incisors prodont; anterior palatine foramina more than 7 mm in length and extended between maxillary tooth-row ................................................................. *Bandicota*
   Size smaller; condylobasal length less than occipitonasal length; upper incisors opisthodont or orthodont .......................................................... 5
5. First upper molar more than half the length of cheek tooth-row and its antero-internal cusp distorted inwards to reach the level of second lamina; third molar extremely reduced ........... *Mus*

First upper molar less than half the length of cheek tooth-row and its antero-internal cusp not distorted inwards to reach the second lamina; third molar not so reduced................................. 6

6. Palate short, less than one-half of occipitonal length; anterior palatine foramina less than one-fifth of occipitonal length ................................................................. *Niviventer*

Palate long; more than one-half of occipitonal length; bulla more than 15% of occipitonal length................................................................. *Rattus*

**Genus *Chiropodomys* Peters, 1868**

The genus *Chiropodomys* is represented in Meghalaya by one species and subspecies.

120. *Chiropodomys gliroides gliroides* (Blyth)


*Common name* : Pencil-tailed Tree Mouse (Eng.).


*Measurements* : None.


**Genus *Vandeleuria* Gray, 1942**

The genus *Vandeleuria* is represented in Meghalaya by one species and subspecies.

121. *Vandeleuria oleracea dumeticola* (Hodgson)


*Common names* : Palm Mouse, Indian Long-tailed Tree Mouse (Eng.)

*Material examined* : Jaintia Hills district : 1♀, Shangpung (c 1, 219 m), coll. H. W. Wells, 10.viii. 1920.

*Measurements* : External : 1♀ : HB 70.0; TI 100.0; Hf 17.0; E 12.0. Cranial : 1♀ : on 20.1; n 5.9; pl 9.7; mtr 3.0; b 2.4; apf 3.3; d 5.0.

*Diagnosis* : Occipitonal length less than 23.0 mm; tail over 150% of head and body length; colour bright red on back.

*Distribution* : India : Meghalaya : East Khasi Hills district, Jaintia Hills district; Arunachal
Pradesh; Assam; Bihar; Manipur; Nagaland; Orissa; Sikkim; Uttar Pradesh; West Bengal. Nepal, Myanmar.

Genus *Micromys* Dehne, 1841

The genus *Micromys* is represented in Meghalaya by one species and subspecies.

122. *Micromys minutes erythrotis* (Blyth)


*Common name*: Harvest Mouse (Eng.).


*Measurements*: None.


Genus *Rattus* Fischer, 1803

Five species of the genus *Rattus* occurs in Meghalaya.

Key to the species of the genus *Rattus*.

1. Small-sized, head and body length approximately ranges between 170 and 190 mm .................. 2
   Large-sized, head and body length approximately ranges between 230 and 250 mm .................. 3

2. Nasals long, usually exceeding 38% of occipitonasal length ........................................... *R. nitidus*
   Nasals short, usually less than 38% of occipitonasal length ........................................... *R. rattus*

3. Fur shaggy; tail shorter than head and body length, vaguely white underneath ........ *R. norvegicus*
   Fur moderately soft; tail usually longer than head and body length, not very well haired .......... *

*Rattus rattus* Linnaeus

*Rattus rattus* is represented in Meghalaya by three subspecies. Commonly found in houses, fields, forests and other habitats.

Key to the subspecies of *Rattus rattus*

1. Underparts of body dull or dark .......................................................................................... 2

   Underparts of body white or dirty white; maxillary tooth-row more than 6.6 mm or more than 16% of occipitonasal length ................................................................. *R. r. brunneusculus*

2. Maxillary tooth-row rarely reaches 6.6 mm in length ................................................. *R. r. rufescens*
Maxillary toothrow 6.6 mm or more than 16% of occipito-nasal length ...................... *R. r. tistae*

123. **Rattus rattus rufescens** (Gray)


*Common names*: House Rat, Black Rat (Eng.).


*Measurements*: Cranial: 1 Subad. ♂: on 35.7; n 12.3; pl 17.6; mtr 6.2; b 6.9; apf 5.8; d 8.9.

*Distribution*: India: Meghalaya: East Khasi Hills district; widely distributed throughout India. Pakistan, Thailand, Malaysia.

124. **Rattus rattus brunneusculus** (Hodgson)


*Common names*: House Rat, Black Rat (Eng.).


*Measurements*: External: 2 ♂: HB 170.0, 175.0; Tl 175.0, 200.0; Hf 30.0, 31.0; E 21.0, 24.0. 4 ♀: HB 142.0 188.0(162.0); Tl 150.0 228.0(195.0); Hf 29.0 31.0(30.0); E 15.0 25.0(20.0). Cranial: 2 ♂: on 40.7, 43.4; n 14.4, 15.8; pl 21.9, 23.3; mtr 7.22; b 7.0, 7.1; 11.3, 11.8; apf 6.9, 7.0. 2 ♀: on 37.9, 43.0; n 14.1, 15.0; pl 20.6, 24.0; mtr 7.0, 7.4; b 7.0(2); d 9.9, 12.0; apf 6.6, 7.4.

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, West Khasi Hills district, Ri-Bhoi district, East Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Jammu & Kashmir; Manipur; Nagaland; Sikkim; West Bengal. Nepal, Bhutan.

125. **Rattus rattus tistae** Hinton


*Common names*: House Rats, Black Rat (Eng.).

Measurements: External: 4♂: HB 132.0 - 190.0(154.0); TI 140.0 190.0(160.0); Hf 30.0 34.0(33.0); E 18.0 21.5(20.0). 3♀: HB 147.0 158.0(152.0); TI 148.0 157.0(152.0); Hf 29.0 30.0(29.0); E 19.0 20.0(19.0). Cranial: 2♂: on 40.5, 40.7; n 14.7, 15.7; pl 21.8, 21.8; mtr 6.5, 6.8; b 6.5, 7.2; d 10.9, 11.1; apf 7.8, 8.0.

Distribution: India: Meghalaya: West Garo Hills district, East Garo Hills district, Ri-Bhoi district, East Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Manipur; Nagaland; Sikkim; West Bengal. Bhutan.

126. Rattus nitidus nitidus (Hodgson)


Common name: Himalayan Rat (Eng.).


Measurements: Cranial: 1 unsexed: cb 48.7; pl 27.1; mtr 7.0; b 7.7; apf 8.3; d 14.3; iw 7.4.

Diagnosis: Parietal ridges straight, parallel, close together on top of cranium.

Distribution: India: Meghalaya: East Khasi Hills district; Jammu & Kashmir; West Bengal. Siberia and Southern China, introduced worldwide, particularly in large cities and ports.
128. *Rattus ? bowersi mackenziei* (Thomas)


*Common name*: Bower's Rat (Eng.).


*Measurements*: External: 1 ♂: HB 164.0; TI 160.0; Hf 35.0; E 20.0. Cranial: 1 ♂, 1 unsexed: on 41.4, 42.0; n 15.7, 16.3; pl 22.7, 22.8; mtr 6.4, 6.5; b 6.2(2), apf 7.2, 7.1; d 11.7, 11.8. 1 ♀: on 48.9; n 18.9; pl 26.3; mtr 7.1; b 7.2; apf 8.3; d 13.8.

*Diagnosis*: Giant size; hind foot about 50 mm in length; recurved incisors; small bullae; 2 + 2 mammae.

*Distribution*: India: Meghalaya: East Khasi Hills district; Assam; Manipur; Nagaland. Myanmar.

129. *Rattus sabanus garonum* Thomas


*Common name*: Noisy Rat (Eng.).


*Measurements*: External: 1 ♂: HB 222.0; Hf 46.0; E 29.0. Cranial: 1 ♂: on 53.8; n 20.4; pl 26.3; mtr 9.0; b 5.5; apf 7.8; d 14.0

*Distribution*: India: Meghalaya: West Garo Hills district, East Garo Hills district, Ri-Bhoi district, Jaintia Hills district; Assam.

Genus *Niviventer* Marshall, 1976

Two species of the genus *Niviventer* occur in Meghalaya. Tail in this genus is generally bicoloured; underside normally white or dirty white.

Key to the species of the genus *Niviventer*

Tail not much elongated, less than 140% of head and body length ....................... *N. niviventer*

Tail elongated, approximately 140% of head and body length ............................. *N. fulvescens*
130. *Niviventer niviventer mentosus* (Thomas)


*Common name*: White-bellied Rat (Eng.).


*Measurements*: External: 4 ♂: HB 163.0 179.0(171.0); TI 184.5 207.0(195.1); Hf 31.0 33.0(31.6); E 20.0 25.0(21.6). 1 ♀, 2 ♂: on 39.5, 39.9; n 15.1, 15.5; pl 18.4, 19.1; mtr 6.1; b 5.0, 5.2; apf 6.5, 6.7; d 9.8, 9.9. 1 ♀: on 38.2; n 13.5; pl 18.0; mtr 6.0; b 5.3; apf 6.4 d 10.0.

*Distribution*: India: Meghalaya: Ri-Bhoi district, East Khasi Hills district; Arunāchal Pradesh; Assam. Myanmar.

131. *Niviventer fulvescens fulvescens* (Gray)


*Common name*: Chestnut Rat (Eng.).


*Measurements*: External: 3 ♂: HB 143.0 146.0(144.6); TI 172.0 203.0(191.6); HF 28.0 30.0(28.6); E 21.0 22.0(21.3). 4 ♀: HB 133.0 148.0(139.5); TI 20.0 23.0(20.7). Cranial: 5 ♂: on 34.3 37.2(36.1); n 12.7 13.3(12.9); pl 16.5 18.2(17.4); mtr 5.6 6.0(5.8); b 4.8 5.5(5.0); apf 4.9 6.3(5.8); d 8.8 - 10.0(9.2). 7 ♀: on 34.7 38.0(36.2); n 12.0 14.2(12.9); pl 116.6 18.2(17.3); mtr 5.5 5.9(5.7); b 4.7 5.1(4.9); apf 4.9 6.3(5.6); d 8.7 10.0(9.2).

*Distribution*: India: Meghalaya: West Garo Hills district, Ri-Bhoi district, East Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Nagaland; Sikkim; West Bengal. Nepal, Myanmar.

Genus *Mus* Linnaeus, 1758

Four species of the genus *Mus* occur in Meghalaya.

Key to the species of the genus *Mus*

1. Anterior palatine foramina short, less than one-fifth of occipitonasal length and not extending between maxillary tooth-rows ................................................................. *M. pahari*

Anterior palatine foramina long, more than one-fifth of occipitonasal length and extending posteriorly between maxillary tooth-rows ..................................................... 2
2. Tail unicoloured and longer than head and body ................................................. $M. \text{ musculus}$
   Tail bicoloured (pale below) and equal to or shorter than head and body ..................... 3

3. Larger in size, occipitonasal length more than 20 mm ............................................ $M. \text{ cevicolor}$
   Smaller in size, occipitonasal length less than 20 mm ............................................... $M. \text{ booduga}$

**Mus musculus** Linnaeus

Two subspecies of *Mus musculus* occur in Meghalaya.

Key to the subspecies of *Mus musculus*

Undersurface of body light grey ................................................................. $M. m. homourus$

Undersurface of body dark brown ............................................................... $M. m. castaneus$

132. *Mus musculus castaneus* Waterhouse


*Common name*: House Mouse (Eng.).


*Measurements*: External: 1 $\sigma$: HB 61.0; TI 83.0; Hf 15.0; E 12.0. 2 $\Phi$: HB 63.0(2); TI 76.0(2); Hf 16.0(2); E 12.0 (2). 1 unsexed: HB 63.5; TI 78.5; Hf 16.5; E 11.0. Cranial: 1 $\sigma$: on 19.7; n 6.3; pl 9.7; mtr 3.3; b 3.2; apf 3.7; d 4.9. 2 $\Phi$: on 17.8, 18.3; n 5.8, 5.9; pl 8.9, 9.0; mtr 3.1, 3.2; b 3.4(2); apf 3.7, 3.8; d 4.2, 4.4.

*Distribution*: India: Meghalaya: East Khasi Hills district, Jaintia Hills district; Andhra Pradesh; Assam; Bihar; Delhi; Gujarat; Jammu & Kashmir; Karnataka; Kerala; Orissa; West Bengal. Africa, Sri Lanka, Myanmar, China, Thailand, Malaysia, Philippines, New Guinea.

133. *Mus musculus homourus* Hodgson


*Common name*: Southern Himalayan House Mouse (Eng.).

*Material examined*: Nil

*Measurements*: None.

*Distribution*: India: Meghalaya: Garo Hills, Khasi and Jaintia Hills; Assam; Himachal Pradesh; Jammu & Kashmir; Manipur; Nagaland; Sikkim; Tamil Nadu; Uttar Pradesh; West Bengal. Nepal, Myanmar, China, Taiwan, Vietnam, Java.
134. *Mus booduga booduga* (Gray)


**Common name**: Little Indian Field Mouse (Eng.).


**Measurements**: Cranial: 1♀: on 19.6; n 7.1; pl 10.0; mtr 3.1; b 3.1; apf 3.9; d 5.4.

**Distribution**: India; Meghalaya; West Garo Hills district, East Garo Hills district, East Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Assam; Bihar; Goa; Gujarat; Himachal Pradesh; Jammu & Kashmir; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Orissa; Tamil Nadu; Tripura; West Bengal. Bangladesh.

**Remarks**: The female specimen foetuses.

135. *Mus cervicolor cervicolor* Hodgson


**Common name**: Fawn-coloured Mouse (Eng.).

**Material examined**: East Khasi Hills district: 3 unsexed, Charra Punji, coll. F. Skipwith, 1855 (syntypes of *Mus cunicularis* Blyth, 1856).

**Measurements**: None.


136. *Mus cervicolor nagarum* (Thomas)


**Common name**: Fawn-coloured Mouse (Eng.).


**Material examined**: External: 3♂: HB 66.0 68.0(67.3); TI 62.0 -68.0(64.3); Hf 14.0 15.0 (14.3); E 11.0 12.0(11.6). 5♀: HB 60.0 73.0(65.2); TI 59.0 78.0(64.8); Hf 14.0 17.0 (14.8) E 12.0 14.0(12.4). Cranial: 1♂: on 18.3; n 6.0; pd 9.2; mtr 2.8; b 4.0; apf 3.9. 4.8. 2♀: on 18.1(2); n 6.2, 6.3; pl 9.3, 9.5; mtr 2.8, 2.9; bl 3.5, 3.8; apf 3.7, 3.9; d 4.9. 5.0.

**Distribution**: India: Meghalaya: East Khasi Hills district, Jaintia Hills district; Arunachal Pradesh; Assam.

137. *Mus pahari jacksoniae* (Thomas)

Common name: Sikkim Mouse (Eng.).

Material examined: Nil.

Measurements: None.

Distribution: India: Meghalaya: West Garo Hills district; East Khasi Hills district, Jaintia, Hills district; Arunachal Pradesh; Assam; Nagaland. Northern Myanmar.

Genus Bandicota Gray, 1873

Two species of the genus Bandicota occur in Meghalaya.

Key to the species of the genus Bandicota

Size large, head and body length more than 220 mm; anterior palatal foramina equally broad at both ends; nasals more than one-third of occipitonasal length .................................................. B. indica

Size small, head and body length less than 220 mm; anterior palatal foramina narrower posteriorly; nasals short, less than one-third of occipitonasal length ........................................... B. bengalensis

138. Bandicota bengalensis bengalensis (Gray)

1835. Arvicola bengalis bengalensis Gray, Ill Indian Zool., 2 : pl. 21 (Bengal).

Common name: Lesser Bandicoot Rat (Eng.).


Measurements: External: 6 ♂: HB 175.0 195.0(188.0); Tl 120.0 - 161.0(143.3); Hf 29.0 34.5(32.3); E 17.0 25.0(21.1). 6 ♀: HB 181.0 192.0(185.8); Tl 140.0 - 151.0(147.2); Hf 29.0 35.0(32.5); E 19.0 24.0(21.1). Cranial: 4 ♂: on 37.8 42.3(39.9); n 11.8 14.0(12.9); pl 22.9 25.6(24.1); mtr 7.1 7.3(7.2); b 8.3 9.3(8.7); apf 6.5 8.3(7.7); d 11.9 - 14.2(13.0). 5 ♀: on 38.1 40.2(38.9); n 12.1 13.4(12.5); pl 23.0 24.1(23.4); mtr 6.8 7.2; b 8.1 9.3(8.6); apf 7.3 7.9(7.7); d 12.2 13.4(12.7).


139. Bandicota indica nemorivaga (Hodgson)


Common name: Large Bandicoot Rat (Eng.).


Measurements: External: None. Cranial: 1 ♀: on 55.0; cb 55.7; n 16.5; pl 33.3; mtr 10.2; b 9.8; apf 9.3; d 17.5.
**Distribution**: India: Meghalaya: East Khasi Hills district, Jaintia Hills district; Assam; Bihar; Manipur; Sikkim; West Bengal. Nepal, Bangladesh, Thailand, Taiwan.

**SUMMARY**

An account of the mammalian fauna of Meghalaya, based on the specimens present in the Zoological Survey of India as also on published literature, is provided. A total of 139 species and subspecies belonging to 83 genera, 27 families and 10 orders have been reported.

Keys and/or diagnostic characters for the identification of all the taxa have been given.

Detailed district-wise distribution in Meghalaya, along with the distributional range in India and outside for every taxon has been provided.

Taxonomic comments have been made with respect to *Hipposideros lankadiva* and *Hipposideros pomona gentilis. Pteropus giganteus leucocephalus* and *Scotomanes ornatus imbreensis* have been synonymised with respective nominate subspecies, while *Nycticejus emarginatus* has been synonymised with *Scotomanes ornatus. Harpiocephalus mordax* has been accepted as a distinct species and reported for the first time for India, from Meghalaya, West Bengal and Sikkim.

*Pteropus giganteus giganteus, Macroglossus sobrinus sobrinus, Megaderma lyra lyra, Myotis horsfieldi, Pipistrellus circumpolatus, Tylonycteris pachypus fulvida, Scotophilus heathi heathi* and *Miniopterus schreibersi fuliginosus* have been reported for the first time from Meghalaya. Besides, a number of species of bats have also been reported for the first time from some other states of India to complete their so far imperfectly known distributional range.

Relative abundance of a number of large mammals and several species of small mammals has also been included.

**ACKNOWLEDGEMENTS**

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**REFERENCE**


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INTRODUCTION

Extensive work has been done on the taxonomy of birds pertaining to Meghalaya, erstwhile Khasi and Jaintia Hills and Garo Hills districts of Assam State. The earliest record from this area is that of Blyth (1845-1865) who described some new birds from this region and included some data in his catalogue. Subsequently, Godwin-Austen (1870-1882) published a series of papers, including some new birds from this region. Most important work was done by Hume (1888). He reported 276 species of birds from this region. The other significant contribution is that of Baker (1907-1925). Besides these, the work of Gould (1838-1874), Sharpe (1883), Walden (1871, 1872) and Harington (1914) etc., are worth mentioning. In recent years Koelz (1952-1954) contributed further towards the avifauna of Meghalaya. The compiled work of Ali and Ripley (1969-1974) and Ripley (1982) help to get an overall picture of the avifauna of Meghalaya.

This paper is mainly based on the collections of birds made by different survey parties of the Zoological Survey of India under the leadership of the following persons during the years 1949-1988.

(i) B. Nath
    May-July, 1949
    Khasi, Jaintia and Garo Hills

(ii) H. Khajuria
    Nov. 1956-Feb. 1957
    Khasi and Garo Hills
    May 1957
    Khasi Hills

(iii) A.S. Rajagopal
    Feb. 1965
    Garo Hills

(iv) G.M. Yazdani
    Feb. 1971
    Garo Hills
    May 1978
    Khasi Hills

(v) R.S. Pillai
    May 1972
    Khasi Hills

(vi) S. Biswas
    April-May 1973
    Garo Hills
    Nov. 1973
    Garo Hills
    Feb. 1975
    Garo Hills

(vii) T.D. Soota
     January-February 1974
     Khasi Hills

(viii) A.K. Ghosh
      January, 1976
      Jaintia Hills
Besides, stray collections present in the Z.S.I., Calcutta and the Eastern Regional Station, Z.S.I., Shillong, as well as data published in literature have also been included.

For wing, tail and bill measurements, the standard methods were followed (Ali and Ripley, 1968). All the measurements are expressed in millimeters. The range of measurements are given, along with the arithmetical mean in parenthesis.

The sex was determined from the actual examination of gonads.

Local names were gathered from various sources in the field.

Ali and Ripley's (1968-1974) classification of taxa has been adopted in the present account. The keys to the families and the genera given here deal with those occurring in Meghalaya only. Total number of families, genera and species and subspecies known from India are 78, 405 and 2,110 respectively (Majumdar et al., 1991), of which 57 families, 232 genera, 540 species and subspecies occur in Meghalaya.

The important places of collection have only been plotted in the map.

LIST OF IMPORTANT PLACES OF COLLECTION AND OBSERVATION IN MEGHALAYA STATE FOR BIRDS

(1) Tura  (2) Selbergiri  (3) Nokrek
(4) Kherapara  (5) Kylaspeak  (6) Dalu
(7) Barangapara  (8) Damra  (9) Rongrenggiri
(10) Songsak  (11) Williamnagar  (12) Siju
(13) Baghmara  (14) Byrnihat  (15) Umsa
(16) Nongpoh  (17) Nongkhari  (18) Umran
(19) Barapani  (20) Shillong  (21) Nongrang
(22) Mawphlang  (23) Cherrapunjee  (24) Thadeskein
(25) Shangpung  (26) Garampani  (27) Umkiang
Text - Fig. 1  Map of Meghalaya, showing the important places of collection and observation for birds. The Arabic numerals against the localities correspond to the numbers given in the text under the collecting localities.
SYSTEMATIC LIST OF BIRDS FROM MEGHALAYA STATE
AS REPORTED IN THIS PAPER

Order   PODICIPEDIFORMES
Family  PODICIPIDAE
  1. Podiceps ruficollis capensis Salvadori

Order   PELICANIFORMES
Family  PHALACROCORACIDAE
  2. Phalacrocorax carbo sinensis (Shaw)
  3. Phalacrocorax niger (Vieillot)
  4. Anhinga rufa melanogaster Pennant

Order   CICONIIFORMES
Family  ARDEIDAE
  5. Ardea cinerea rectirostris Gould
  6. Ardea purpurea manilensis Meyen
  7. Ardea alba modesta J.E. Gray
  8. Ardeola striatus chloriceps (Bonaparte)
  9. Ardeola grayii grayii (Sykes)
 10. Bubulcus ibis coromandus (Boddaert)
 11. Egretta intermedia intermedia (Wagler)
 12. Egretta garzetta garzetta (Linnaeus)
 13. Nycticorax nycticorax nycticorax (Linnaeus)
 14. Ixobrychus cinnamomeus (Gmelin)
 15. Ixobrychus sinensis (Gmelin)
 16. Ixobrychus flavicollis flavicollis (Latham)

Family  CICONIIDAE
  17. Mycteria leucocephala (Pennant)
  18. Anastomus oscitans (Boddaert)
  19. Ciconia episcopus episcopus (Boddaert)

Family  THRESKIORNITHIDAE
  20. Threskiornis aethiopica melanoccephala (Latham)
  21. Platalea leucorodia major Temminck & Schlegel
<table>
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<tr>
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<th>ANSERIFORMES</th>
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<td>Family</td>
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<td><em>Anser anser rubirostris</em> Swinhoe</td>
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<td>23.</td>
<td><em>Dendrocygna javanica</em> (Horsfield)</td>
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<td>24.</td>
<td><em>Anas acuta</em> Linnaeus</td>
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<td>25.</td>
<td><em>Anas crecca crecca</em> Linnaeus</td>
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<td>26.</td>
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<td>30.</td>
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<td>31.</td>
<td><em>Mergus merganser merganser</em> Linnaeus</td>
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<td>Order</td>
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<td>41.</td>
<td><em>Accipiter nisus nisasinilis</em> (Tickell)</td>
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<td>42.</td>
<td><em>Accipiter nisus molaschistos</em> Hume</td>
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<td>43.</td>
<td><em>Buteo buteo japonicus</em> (Temminck &amp; Schlegel)</td>
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<td>44.</td>
<td><em>Spizaetus cirrhatus linnacetus</em> (Horsfield)</td>
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<td>45.</td>
<td><em>Aquila rapax nipalensis</em> Hodgson</td>
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<td>46.</td>
<td><em>Aquila pomarina hastata</em> (Lesson)</td>
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<tr>
<td>47.</td>
<td><em>Sarcogyps calvus</em> (Scopoli)</td>
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<td>48.</td>
<td><em>Circus macrourus</em> (S.G. Gmelin)</td>
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<td>49.</td>
<td><em>Circus aeruginosus aeruginosus</em> (Linnaeus)</td>
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</tbody>
</table>
50. *Spilornis cheela burmanicus* Swann
51. *Pandion haliaetus haliaetus* (Linnaeus)

**Family FALCONIDAE**

52. *Microhierax caerulescens caerulescens* (Linnaeus)
53. *Falco subbuteo centralasiae* (Buturlin)
54. *Falco tinnunculus tinnunculus* Linnaeus

**Order GALLIFORMES**

**Family PHASIANIDAE**

55. *Francolinus francolinus melanotus* Hume
56. *Francolinus gularis* (Temminck)
57. *Coturnix coturnix coturnix* (Linnaeus)
58. *Coturnix coromandelica* (Gmelin)
59. *Coturnix chinensis chinensis* (Linnaeus)
60. *Arborophila atrogularis* (Blyth)
61. *Bambusicola fytchil hopkinsoni* Godwin-Austen
62. *Lophura leucomelana lathami* (J.E. Gray)
63. *Gallus gallus murghi* Robinson & Kloss
63a. *Polyplectron bicalcarafum bakeri* (Lowe)
64. *Pavo cristatus* Linnaeus

**Order GRUIFORMES**

**Family TURNICIDAE**

65. *Turnix sylvatica dussumier* (Temminck)
66. *Turnix suscitator plumbipes* (Hodgson)

**Family RALLIDAE**

67. *Rallus striatus albiventer* Swainson
68. *Porzana pusilla pusilla* (Pallas)
69. *Amaurornis fusca bakeri* (Hartert)
70. *Amaurornis bicolor* (Walden)
71. *Amaurornis akool akool* (Sykes)
72. *Gallicrex cinerea cinerea* (Gmelin)
73. *Gallinula chloropus indica* Blyth
74. *Fulica atra atra* Linnaeus
Order CHARADRIIFORMES

Family JACANIDAE
75. *Hydrophasianus chirurgus* (Scopoli)
76. *Metopidius indicus* (Latham)

Family CHARDRIIDAE

Subfamily CHARADRIINAE
77. *Vanellus indicus indicus* (Boddaert)
78. *Vanellus spinosus duvancelii* (Lesson)
79. *Pluvialis dominica fulva* (Gmelin)
80. *Charadrius dubius curonicus* Gmelin
81. *Charadrius dubius jerdoni* (Legge)

Subfamily SCOLOPACINAE
82. *Tringa totanus totanus* (Linnaeus)
83. *Tringa stagnatilis* (Bechstein)
84. *Tringa nebularia* (Gunnerus)
85. *Tringa ochropus* Linnaeus
86. *Tringa glareola* Linnaeus
87. *Tringa hypoleucos hypoleucos* Linnaeus
88. *Gallinago solitaria solitaria* Hodgson
89. *Gallinago nemoricola* Hodgson
90. *Gallinago stenura* (Bonaparte)
91. *Gallinago gallinago gallinago* (Linnaeus)
92. *Gallinago minima* (Brunnich)
93. *Scolopax rusticola rusticola* Linnaeus
94. *Calidris minuta* (Leisler)
95. *Calidris temminckii* (Leisler)
96. *Philomachus pugnax* (Linnaeus)

Family ROSTRATULIDAE
97. *Rostratula benghalensis benghalensis* (Linnaeus)

Family RECURVIROSTRIDAE
98. *Himantopus himantopus himantopus* (Linnaeus)

Family BURHINIDAE
99. *Burhinus oedicnemus indicus* (Salvadori)
<table>
<thead>
<tr>
<th>Family</th>
<th>Order</th>
<th>Species</th>
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<tr>
<td>GLAREOLIDAE</td>
<td></td>
<td>100. <em>Glareola pratincola maldivarum</em> J.R. Forster</td>
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<td>LARIDAE</td>
<td>COLUMBIFORMES</td>
<td>101. <em>Larus brunnicephalus</em> Jerdon</td>
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<td>102. <em>Sterna aurantia</em> J.E. Gray</td>
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<td>103. <em>Sterna hirundo tibetana</em> Saunders</td>
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<td>104. <em>Sterna acuticauda</em> J.E. Gray</td>
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<td>COLUMBIDAE</td>
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<td>105. <em>Treron sphenura sphenura</em> (Vigors)</td>
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<td>106. <em>Treron curvirostra nipalensis</em> (Hodgson)</td>
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<td>107. <em>Treron pompadora phayrei</em> Blyth</td>
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<td>108. <em>Treron bicincta bicincta</em> Jerdon</td>
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<td>109. <em>Treron phoenicoptera phoenicoptera</em> (Latham)</td>
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<td>110. <em>Ducula aenea sylvatica</em> (Tickell)</td>
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<td>111. <em>Ducula badia insignis</em> Hodgson</td>
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<td>112. <em>Columba livia intermedia</em> Strickland</td>
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<td>113. <em>Macropygia unchall tusila</em> Blyth</td>
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<td>114. <em>Streptopelia orientalis agricola</em> (Tickell)</td>
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<td>115. <em>Streptopelia decaocto decaocto</em> (Frivaldszky)</td>
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<td>116. <em>Streptopelia transquebarica humilis</em> (Temminck)</td>
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<td>117. <em>Streptopelia chinensis suratensis</em> (Gmelin)</td>
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<td>118. <em>Streptopelia chinensis tigrina</em> (Temminck)</td>
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<td>119. <em>Chalcophaps indica indica</em> (Linnaeus)</td>
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<tr>
<td>PSITTACIDAE</td>
<td>PSITTACIFORMES</td>
<td>120. <em>Psittacula eupatria avensis</em> (Kloss)</td>
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<td>121. <em>Psittacula krameri borealis</em> (Neumann)</td>
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<td>122. <em>Psittacula alexandri fasciata</em> (P.L.S. Muller)</td>
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<td>123. <em>Psittacula cyanocephala bengalensis</em> (Forester)</td>
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<td>124. <em>Psittacula himalayana himalayana</em> (Lesson)</td>
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<td>125. <em>Psittacula finschii</em> (Hume)</td>
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<td>126. <em>Loriculus vernalis</em> (Sparrman)</td>
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</tbody>
</table>
Order CUCULIFORMES

Family CUCULIDAE

127. Clamator coromandus (Linnaeus)
128. Clamator jacobinus serratus (Sparrman)
129. Cuculus sparverioides sparverioides Vigors
130. Cuculus varius varius Vahl
131. Cuculus fugax nisicolor Blyth
132. Cuculus micropterus micropterus Gould
133. Cuculus canorus bakeri Hartert
134. Cuculus saturatus horsfieldi Moore
135. Cuculus poliocephalus poliocephalus Latham
136. Chalcites maculatus (Gmelin)
137. Surniculus lugubris dicruroides (Hodgson)
138. Eudynamys scolopacea scolopacea (Linnaeus)
139. Eudynamys scolopacea malayana Cabanis & Heine
140. Rhopodytes tristis tristis (Lesson)
141. Centropus sinensis intermedius (Hume)
142. Centropus toulou bengalensis (Gmelin)

Order STRIGIFORMES

Family STRIGIDAE

Subfamily TYTONINAE

143. Tyto capensis longimembris (Jerdon)
144. Phodilus badius saturatus Robinson

Subfamily STRIGINAE

145. Otus scops sunia (Hodgson)
146. Otus bakkamoena leetia (Hodgson)
147. Bubo bubo bengalensis (Franklin)
148. Bubo coromandus coromandus (Latham)
149. Bubo zeylonensis leschelault (Temminck)
150. Bubo flavipes (Hodgson)
151. Glaucidium brodiei brodiei (Burton)
152. Glaucidium cuculoides rufescens Baker
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153. *Ninox scutulata burmanica* Hume

154. *Athene brama indica* (Franklin)

155. *Strix leptogrammica newarensis* (Hodgson)

156. *Strix leptogrammica indranee* Sykes

157. *Asio flammeus flammeus* (Pontoppidan)

Order CAPRIMULGIFORMS

Family CAPRIMULGIDAE

158. *Caprimulgus indicus hazarae* Whistler & Kinnear

159. *Caprimulgus indicus jotaka* Temminck & Schlegel

160. *Caprimulgus macrurus albonotatus* Tickell

161. *Caprimulgus affinis monticola* Franklin

Order APODIFORMES

Family APODIDAE

Subfamily APODINAE

162. *Collocalia brevirostris brevirostris* (Horsfield)

163. *Chaetura (caaudacuta) cochinchinensis* Oustalet

164. *Chaetura gigantea indica* Hume

165. *Apus pacificus leuconyx* (Blyth)

166. *Apus affinis subfurcatus* (Blyth)

167. *Cypsiurus parvus infumatus* (Sclater)

Subfamily HEMIPROCNINAE

168. *Hemiprocn longipennis coronata* (Tickell)

Order TROGONIFORMES

Family TROGONIDAE

169. *Harpactes erythrocephalus erythrocephalus* (Gould)

Order CORACIIFORMES

Family ALCEDINIDAE

170. *Ceryle rudis leucomelanura* Reichenbach

171. *Alcedo hercules* Laubmann

172. *Alcedo atthis bengalensis* Gmelin

173. *Alcedo meninting coltarti* Baker

174. *Ceyx erithacus erithacus* (Linnaeus)
175. Pelargopsis capensis capensis (Linnaeus)
176. Halcyon smyrnensis perpulehra Madarasz

Family MEROPIDAE
177. Merops leschenaulti leschenaulti Vieillot
178. Merops philippinus philippinus Linnaeus
179. Merops orientalis orientalis Latham
180. Merops orientalis birmanus Neumann
181. Nyctyornis athertoni athertoni (Jardine & Selby)

Family CORACIIDAE
182. Coracias benghalensis affinis Horsfield
183. Eurystomus orientalis cyanicollis Vieillot

Family UPUPIDAE
184. Upupa epops longirostris Jerdon

Family BUCEROTIDAE
185. Ptilolaemus tickelli austeni (Jerdon)
186. Aceros nipalensis (Hodgson)
187. Rhyticeros undulatus ticehursti Deignan
188. Anthracoceros malabaricus malabaricus (Gmelin)
189. Anthracoceros coronatus coronatus (Boddart)

Order PICIFORMES

Family CAPITONIDAE
190. Megalaima virens marshallorum Swinhoe
191. Megalaima virens magnifica Baker
192. Megalaima lineata hodgsoni Bonaparte
193. Megalaima franklinii franklinii (Blyth)
194. Megalaima asiatica asiatica (Latham)
195. Megalaima australis cyanotis (Blyth)
196. Megalaima hemacephala indica (Latham)

Family PICIDAE

Subfamily JYNGINAE
197. Jynx torquilla chinensis Hesse
Subfamily PICUMNINAE
198. Picumnus innominatus innominatus Burton
199. Sasia ochracea reichenowi Hesse

Subfamily PICINAE
200. Micropterus brachyurus phaiocceph Blyth
201. Picus myrmecophoneus Stresemann
202. Picus canus hessei (Gyldenstolpe)
203. Picus chlorolophus chlorolophus Viellot
204. Dinopium benghalense benghalense (Linnaeus)
205. Dinopium shorii shorii (Vigors)
206. Gecinulus granti granti (Horsfield)
207. Mulleripicus pulvulentus hartertii Hesse
208. Picoides darjellensis darjellensis (Blyth)
209. Picoides cathpharius pyrrhothorax (Hume)
210. Picoides atratus (Blyth)
211. Picoides macei macei (Vieillot)
212. Picoides mahattensis mahattensis (Latham)
213. Picoides canicapiiis semicoronaus (Malherbe)
214. Picoides nanus nanue Vigors
215. Hemicircus canente canent (Lesson)
216. Blythipicus pyrrhotis (Hodgson)
217. Chrysocaptes lucidus sultaneus (Hodgson)
218. Chrysocaptes lucidus guttacristatus (Tickell)

Order PASSERIFORMES

Family EURYLAIMIDAE
219. Serilophus lunatus rubropygius (Hodgson)
220. Psarisomus dalhousia dalhousia (Jameson)

Family PITIIDAE
221. Pitta nipalensis nipalensis (Hodgson)
222. Pitta sordida cucullata Hartlaub

Family ALAUDIDAE
223. Eremopterix grisea (Scopoli)
224. Calandrella cinerea dukhunensis (Sykes)
Family HIRUNDINIDAE
225. Hirundo rustica rustica Linnaeus
226. Hirundo rustica tytleri Jerdon
227. Delichon nipalensis nipalensis Moore

Family LANIIDAE
228. Lanius tephronotus tephronotus (Vigors)
229. Lanius schach tricolor (Hodgson)
230. Lanius cristatus cristatus Linnaeus

Family ORIOLIDAE
231. Oriolus xanthornus xanthornus (Linnaeus)
232. Oriolus traillii traillii (Vigors)

Family DICRURIDAE
233. Dicrurus adsmilis albirictus (Hodgson)
234. Dicrurus leucophaeus longicaudatus Hay
235. Dicrurus leucophaeus hopwoodi Baker
236. Dicrurus caerulescens caerulescens (Linnaeus)
237. Dicrurus annectans (Hodgson)
238. Dicrurus aeneus aeneus Vieillot
239. Dicrurus remifer tectirostris (Hodgson)
240. Dicrurus hottentottus hottentottus (Linnaeus)
241. Dicrurus paradiseus grandis (Gould)

Family ARTAMIDAE
242. Artamus fuscus Vieillot

Family STURNIDAE
243. Saroglossa spiloptera (Vigors)
244. Aplonis panayensis affinis (Blyth)
245. Sturnus malabaricus malabaricus (Gmelin)
246. Sturnus contra contra Linnaeus
247. Acridootheres tristis tristis (Linnaeus)
248 Acridootheres fuscus fuscus (Wagler)
249. Gracula religiosa intermedia A.Hay
Family CORVIDAE

250. *Garrulus glandarius bispecularis* Vigors
251. *Garrulus glandarius interstinctus* Hartert
252. *Cissa chinensis chinensis* Boddaert
253. *Cissa erythrorhyncha magnirostris* (Blyth)
254. *Dendrocitta vagabunda vagabunda* (Latham)
255. *Dendrocitta frontalis frontalis* Horsfield
256. *Dendrocitta formosae himalayana* Jerdon
257. *Corvus splendidens splendidens* Vieillot
258. *Corvus macrorhynchos levaillanti* Lesson

Family CAMPEPHAGIDAE

259. *Hemipus picatus picatus* (Sykes)
260. *Tephrodornis virgatus pelvica* (Hodgson)
261. *Tephrodornis pondicerianus pondicerianus* (Gmelin)
262. *Coracina novaehollandiae macei* (Lesson)
263. *Coracina novaehollandiae nipalensis* (Hodgson)
264. *Coracina melaschistos melaschistos* (Hodgson)
265. *Pericrocotus flammeus fraterculus* Swinhoe
266. *Pericrocotus brevirostris brevirostris* (Vigors)
267. *Pericrocotus ethologus laetus* Mayr
268. *Pericrocotus solaris solaris* Blyth
269. *Pericrocotus roseus roseus* (Vieillot)

Family IRENIDAE

270. *Aegithina tiphia tiphia* (Linnaeus)
271. *Chloropsis aurifrons aurifrons* (Temminck)
272. *Chloropsis hardwickii hardwickii* Jardine & Selby
273. *Chloropsis cochinchinensis cochinchinensis* (Gmelin)
274. *Irena puella puella* (Latham)

Family PYCNONOTIDAE

275. *Spizixos canifrons canifrons* Blyth
276. *Pycnonotus atriceps atriceps* (Temmick)
277. *Pycnonotus melanicterus flaviventris* (Ticwell)
278. *Pycnonotus jocosus monticola* (Mc Clelland)
279. *Pycnonotus jocosus emeria* (Linnaeus)
280. *Pycnonotus cafer bengalensis* Blyth
281 *Pycnonotus cafer stanfordi* Deignan
282. *Pycnonotus striatus striatus* (Blyth)
283. *Pycnonotus flavescens flavescens* Blyth
284. *Criniger flaveolus flaveolus* (Gould)
285. *Hypsipetes viridescens cacharensis* (Deignan)
286. *Hypsipetes mcclelandi mcclelandi* Horsfield
287. *Hypsipetes flavalus flavalus* (Blyth)
288. *Hypsipetes madagascatariensis nigrescens* Baker

Family MUSCICAPIDAE
Subfamily TIMALIIAE

289. *Pellorneum ruficeps mandelli* Blanford
290. *Pellorneum ruficeps chamelum* Deignan
291. *Pellorneum palustre* Gould
292. *Pellorneum albibventre albibventre* (Godwin-Austen)
293. *Trichastoma tickelli assamensis* (sharpe)
294. *Trichastoma abbotti abbotti* (Blyth)
295. *Pomatorhinus schisticeps schisticeps* Hodgson
296. *Pomatorhinus ruficollis bakeri* Harington
297. *Pomatorhinus erythrogenys mcclelandi* Godwin-Austen
298. *Pomatorhinus hypoleucos hypoleucos* (Blyth)
299. *Pomatorhinus ferruginosus formosus* Koelz
300. *Pomatorhinus ferruginosus phayrei* Blyth
301. *Pomatorhinus ochraceiceps austeni* Hume
302. *Xiphirhynchus superciliaris intextus* Ripley
303. *Rimator malacoptilus* Blyth
304. *Napothera brevicaudat astriata* (Blyth)
305. *Napothera epilepidota roberti* (Godwin-Austen & Walden)
306. *Pnoepyga albiventer albiventer* (Hodgson)
307. *Pnoepyga pusilla pusilla* Hodgson
308. *Spelaeornis longicaudatus* (Moore)
309. *Spelaeornis chocolatinus chocolatinus* (Godwin-Austen & Walden)
310. *Spelaeornis formosus* (Walden)
311. *Sphenocichla humeri roberti* Godwin-Austen & Walden
312. *Stachyris rufifrons ambiguus* (Harington)
313. *Stachyris ruficeps ruficeps* Blyth
314. *Stachyris chrysea chrysea* Blyth
315. *Stachyris nigriceps spadix* Ripley
316. *Macronous gularis rubricapilla* (Tickell)
317. *Timalia pileata bengalensis* Godwin-Austen
318. *Paradoxornis nipalensis poliotis* (Blyth)
319. *Paradoxornis atro-superciliaris atro-superciliaris* (Godwin-Austen)
320. *Paradoxornis ruficeps ruficeps* Blyth
321. *Paradoxornis ruficeps bakeri* (Hartert)
322. *Paradoxornis gularis transflavialis* (Hartert)
323. *Paradoxornis flavirostris flavirostris* Gould
324. *Paradoxornis guttaticollis* David
325. *Turdoides longirostris* (Hodgson)
326. *Turdoides striatus striatus* (Dumont)
327. *Garrulax moniliger moniliger* (Hodgson)
328. *Garrulax pectoralis melanotis* Blyth
329. *Garrulax striatus cranbrooki* (Kinnear)
330. *Garrulax leucolophus leucolophus* (Hardwicke)
331. *Garrulax leucolophus patkaicus* Reichenow
332. *Garrulax chinensis nuchalis* Godwin-Austen
333. *Garrulax delesserti gularis* (McClelland)
334. *Garrulax rufogularis rufitinctus* (Koelz)
335. *Garrulax caeruleus subcaeruleus* Hume
336. *Garrulax ruficollis* (Jardine & Selby)
337. *Garrulax merulinus merulinus* Blyth
338. *Garrulax austeni austeni* (Godwin-Austen)
339. *Garrulax squamatus* (Gould)
340. *Garrulax erythrocephalus chrysopterus* (Gould)
341. *Garrulax phoeniceus bakeri* (Hartert)
342. *Leiothrix argentauris argentauris* (Hodgson)
343. *Leiothrix lutea calipyga* (Hodgson)
344. *Pteruthius flaviscapis validirostris* Koelz
345. *Pteruthius melanotis melanotis* Hodgson
346. *Pteruthius aenobarbus aenobarbulus* Koelz
347. *Gampsohynchus rufulus rufulus* Blyth
348. *Actinodura egertoni khasiana* Godwin-Austen
349. *Minla strigula strigula* (Hodgson)
350. *Minla strigula cinereigenae* (Ripley)
351. *Minla cyanouroptera cyanouroptera* (Hodgson)
352. *Yuhina castaniceps castaniceps* (Moore)
353. *Yuhina bakeri* Rothschild
354. *Yuhina flavicollis flavicollis* Hodgson
355. *Yuhina flavicollis rouxi* (Oustalet)
356. *Yuhina occipitalis occipitalis* Hodgson
357. *Yuhina nigrimenta nigrimenta* Hodgson
358. *Yuhina xantholeuca xantholeuca* (Hodgson)
359. *Alcippe cinerea* (Blyth)
360. *Alcippe castaneiceps castaneiceps* (Hodgson)
361. *Alcippe brunnea mandelli* (Godwin-Austen)
362. *Alcippe poioicephala fusca* Godwin-Austen
363. *Alcippe nipalensis nipalensis* (Hodgson)
364. *Heterophasia gracilis* (Mc Clelland)
365. *Heterophasia pulchella* (Godwin-Austen)

Subfamily MUSCICAPINAE

366. *Muscicapa sibrica cacabata* Penard
367. *Muscicapa latirostris* Raffles
368. *Muscicapa muttui muttui* (Layard)
369. *Muscicapa ferruginea* (Hodgson)
370. *Muscicapa parva albicilla* Pallas
371. *Muscicapa strophiata strophiata* (Hodgson)
372. *Muscicana monileger leucope* (Sharpe)
373. *Muscicapa hyperythra hyperythra* Blyth
374. *Muscicapa hodgsoni* (Verreaux)
375. *Muscicapa westermanni australorientis* Ripley
376. *Muscicapa superciliaris superciliaris* Jerdon
377. *Muscicapa superciliaris aestigma* Grey
378. *Muscicapa leucomelanura minuta* (Hume)
379. *Muscicapa sapphira* Blyth
380. *Muscicapa grandis grandis* (Blyth)
381. *Muscicapa macgrigoriae signata* (Horsfield)
382. *Muscicapa sundara sundara* (Hodgson)
383. *Muscicapa poliogenys poliogenys* (Brooks)
384. *Muscicapa unicolor unicolor* (Blyth)
385. *Muscicapa rubeculoides rubeculoides* (Vigors)
386. *Muscicapa banyumas magnirostris* (Blyth)
387. *Muscicapa thalassina thalassina* Swainson
388. *Culicicapa ceylonensis calochrysea* Oberholser
389. *Rhipidura hypoxantha* Blyth
390. *Rhipidura albicollis stanleyi* Baker

Subfamily MONARCHINAE

391. *Terpisphone paradisi saturator* (Salomonsen)
392. *Hypothymis azurea styani* (Hartlaub)

Subfamily SYLVIINAE

393. *Tesia cyaniventer* Hodgson
394. *Tesia olivea* (Mclelland)
395. *Tesia castanaeocoronata castanaeocoronata* (Burton)
396. *Cettia pallidipes pallidipes* (Blanford)
397. *Cettia fortipes pallidus* (Brooks)
398. *Cettia fortipes fortipes* (Hodgson)
399. *Cettia major vafer* (Koelz)
400. *Cettia flavolivacea flavolivacea* (Hodgson)
401. *Cettia brunnifrons muroides* (Koelz)
402. *Bradypterus luteoventris luteoventris* (Hodgson)
403. *Cisticola juncidis cursitans* (Franklin)
404. *Prinia hodgsoni rufula* Godwin-Austen
405. *Prinia subflava inornata* Sykes
406. *Prinia socialis inglesi* Whistler & Kinnear
407. *Prinia criniger catharia* Reichenow
408. *Prinia atrogularis khasiana* (Godwin-Austen)
409. *Orthotomus sutorius patia* Hodgson
410. *Orthotomus atrogularis nitidus* Hume
411. *Orthotomus cucullatus coronatus* Blyth
412. *Locustella certhiola rubescens* Blyth
413. *Locustella naevia straminea* Seebohm
414. *Chaetornis striatus* (Jerdon)
415. *Megalurus palustris toklao* (Blyth)
416. *Phragmaticola aedon aedon* (Pallas)
417. *Phylloscopus affinis affinis* (Tickell)
418. *Phylloscopus fuscatus fuscatus* (Blyth)
419. *Phylloscopus pulcher pulcher* Blyth
420. *Phylloscopus inornatus mandellii* (Brooks)
421. *Phylloscopus inornatus inornatus* (Blyth)
422. *Phylloscopus proregulus newtoni* Gatke
423. *Phylloscopus magnirostris* Blyth
424. *Phylloscopus trochiloides viridanus* Blyth
425. *Phylloscopus trochiloides trochiloides* (Sundevall)
426. *Phylloscopus reguloides assamensis* Hartert
427. *Phylloscopus reguloides claudiae* (La Touche)
428. *Seicercus affinis* (Hodgson)
429. *Seicercus burkii burkii* (Burton)
430. *Seicercus xanthoschistos tephrodiras* Sick
431. *Seicercus poliogenys* (Blyth)
432. *Seicercus castaniceps castaniceps* (Hodgson)
433. *Abroscopus superciliaris flaviventer* (Jerdon)
Abroscopus albogularis albogularis (Horsfield & Moore)

Subfamily TURDINAE

435. Brachypteryx leucophrys nipalensis Hodgson
436. Brachypteryx montana cruralis (Blyth)
437. Erithacus calliope (Pallas)
438. Erithacus pectoralis confusus (Hartert)
439. Erithacus brunneus brunneus (Hodgson)
440. Erithacus pectardens (David)
441. Erithacus cyanurus rufilatus (Hodgson)
442. Erithacus chrysaeus chrysaeus (Hodgson)
443. Erithacus indicus indicus (Vieillot)
444. Erithacus hyperythrus (Blyth)
445. Copsychus saularis erimelas (Oberholser)
446. Copsychus malabaricus indicus (Baker)
447. Phoenicurus ochruros rufiventris (Vieillot)
448. Phoenicurus frontalis (Vigors)
449. Phoenicurus aureus leucopterus (Blyth)
450. Rhyacornis fuliginosus fuliginosus (Vigor)
451. Cinclidium leucurum (Hodgson)
452. Enicurus scouleri scouleri vigors
453. Enicurus immaculatus (Hodgson)
454. Enicurus schistaceus (Hodgson)
455. Enicurus leschenaulti indicus Hartert
456. Enicurus maculatus guttatus Gould
457. Cochoa purpurea Hodgson
458. Saxicola torquata przewalskii (Pleske)
459. Saxicola torquata indica (Blyth)
460. Saxicola caprata burmanica Baker
461. Saxicola jerdoni (Blyth)
462. Saxicola ferrea Gray
463. Chaimarrornis leucocephalus (Vigors)
464. Monticola cinclorhynchus (Vigors)
465. *Mondicola rufiventris* (Jardine & Selby)
466. *Monticola solitarius pandoo* (Sykes)
467. *Myiophonus caeruleus temminckii* Vigors
468. *Zoothera citrina citrina* (Latham)
469. *Zoothera mollissima mollissima* (Blyth)
470. *Zoothera dauma dauma* (Latham)
471. *Zoothera monticola monticola* Vigors
472. *Zoothera marginata* Blyth
473. *Turdus dissimilis dissimilis* Blyth
474. *Turdus unicolor* Tickell
475. *Turdus albocinctus* Royle
476. *Turdus boulboul* (Latham)
477. *Turdus rubrocanus rubrocanus* G.R. Gray
478. *Turdus rubrocanus gouldii* (Verreaux)
479. *Turdus feai* (Salvadori)
480. *Turdus obscurus* Gmelin
481. *Turdus ruficollis atrogularis* Jarocki
482. *Turdus ruficollis ruficollis* Pallas
483. *Turdus naumanni eunomus* Temminck

Family CINCLIDAE

484. *Cinclus pallasii dorjei* Kinnear

Family PARIDAE

Subfamily PARINAE

485. *Melanochlora sultanea sultanea* (Hodgson)
486. *Parus major nipalensis* Hodgson
487. *Parus monticola monticola* Vigors
488. *Parus spilonotus subviridis* Blyth

Subfamily AEGITHALINAE

489. *Aegithalos concinnus manipurensis* (Hume)

Family SITIIDAE

490. *Sitta europaea nagaensis* Godwin-Austen
491. *Sitta castanea cinnamoventris* Blyth
492. *Sitta formosa* Blyth
493. *Sitta frontalis frontalis* Swainson

**Family CERTHIIDAE**

494. *Certhia familiaris mandellii* Brook
495. *Certhia discolor manipurensis* Hume

**Family MOTACILLIDAE**

496. *Anthus hodgsoni hodgsoni* Richmond
497. *Anthus novaeseelandiae richardi* Vieillot
498. *Anthus novaeseelandiae rufulus* Vieillot
499. *Anthus godlewskii* (Taezanowski)
500. *Anthus cervinus* (Pallas)
501. *Anthus roseatus* Blyth
502. *Motacilla indica* Gmelin
503. *Motacilla citreola calcarea* Hodgson
504. *Motacilla cinerea cinera* Tunstall
505. *Motacilla alba dukhunensis* Sykes
506. *Motacilla alba personata* Gould

**Family DICAEIDAE**

507. *Dicaeum agile agile* (Tickell)
508. *Dicaeum chrysorrheum chrysochlore* Blyth
509. *Dicaeum erythrorhynchos erythrorhynchos* (Latham)
510. *Dicaeum concolor olivaceum* Walden
511. *Dicaeum cruentatum cruentatum* (Linnaeus)
512. *Dicaeum ignipectus ignipectus* (Blyth)

**Family NECTARINIIDAE**

513. *Anthreptes singalensis rubinigentis* (Baker)
514. *Nectarinia zeylonica sola* (Vieillot)
515. *Aethopyga Gouldiae isolata* Baker
516. *Aethopyga nipalensis nipalensis* (Hodgson)
517. *Aethopyga saturata assamensis* (Mc Clelland)
518. *Aethopyga siparaja scheriae* (Tickell)
519. *Aethopyga siparaja labecula* (Horsfield)
520. *Aethopyga ignicauda ignicauda* (Hodgson)
521. *Arachnothera longirostris longirostris* (Latham)
522. *Arachnothera magna magna* (Hodgson)
Family ZOSTEROPIDAE

523. Zosterops palpebrosa palpebrosa (Temminck)

Family PLOCEIDAE

Subfamily PASSERINAE

524. Passer domesticus indicus Jardine & Selby
525. Passer montanus malaccensis Dubois
526. Passer rutilans cinnamomeus (Gould)
527. Passer rutilans intensior Rothschild

Subfamily PLOCEINAE

528. Ploceus philippinus burmanicus Ticehurst

Subfamily ESTRILDINAE

529. Estrilda amandava amandava (Linnaeus)
530. Lonchura striata acuticauda (Hodgson)
531. Lonchura punctulata subundulata (Godwin-Austen)
532. Lonchura malacca rubroniger (Hodgson)
533. Lonchura malacca atricapilla (Vieillot)

Family FRINGILLIDAE

534. Mycerobas melanozanthos (Hodgson)
535. Carpodacus erythrinus roseatus (Blyth)
536. Propyrrhula subhimachala (Hodgson)
537. Haematospiza sipahi (Hodgson)

Family EMBERIZIDAE

538. Emberiza fucata arcuata Sharpe
539. Emberiza pusilla Pallas
540. Melophus latha mi (Gray)

SYSTEMATIC ACCOUNT

Order PODICIPEDIFORMES
Family PODICIPEDIDAE
Genus Podiceps LATHAM, 1787

1. Podiceps ruficollis capensis Salvadori

**Common name**: Little Grebe or Dabchick (English) and Pandubi (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: A small tailless aquatic bird with short pointed bill. Legs placed backwardly for swimming and diving. Crown of head dark brown, sides of head, throat and neck chestnut.

**Distribution**: India: Meghalaya (Ri-Bhoi Hills district): Throughout the Indian Union except the Andaman and Nicobar Islands. Elsewhere: Bangladesh, Bhutan, Madagascar, Middle East and Nepal, Northern Africa, Pakistan, Sri Lanka and S.E. Asia.

**Remarks**: Observed this bird at Barapani, the Ri-Bhoi Hills.

**Order**: PELICANIFORMES

**Family**: PHALACROCORACIDAE

**Key to the genera of the family Phalacrocoracidae**

Neck and body long, rather spindle-shaped, bill laterally compressed ............... **Phalacrocorax**

Neck very slender with a bend at the 8th & 9th vertebrae, bill slender, straight, very sharp-- pointed .................................................................................. **Anhinga**

**Genus** Phalacrocorax Braisson, 1760

2. **Phalacrocorax carbo sinensis** (Shaw)


**Common name**: Large Cormorant (English) and Pan-Kowwa (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: A black duck-like water bird with slender bill, hooked at tip. Tail longish, stiff. Facial skin and throat white, gular-pouch bright yellow.

**Distribution**: India: Meghalaya (Garo Hills district): Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Sri Lanka.

**Remark**: Godwin Austen (1870, P.275) recorded it from the Lumessary river near Rywick in the Garo Hills and mentioned it as Phalacrocorax carbo Linnaeus.

3. **Phalacrocorax niger** (Vieillot)


**Common name**: Little Cormorant (English) and Pan-Kowwa (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: Black bird with a bluish or greenish sheen. A short crest on occiput and neck. Bill stouter. Forehead domed shaped, tail longer.

Remarks: This bird was observed at Barapani, the Ri-Bhoi Hills district.

Genus Anhinga Brisson, 1760


Common name: Darter or Snake-bird (English) and Pandubi (Hindi).

Material examined: Nil

Diagnostic characters: A black water bird with longer and slender snake-like neck. Narrow head with straight and pointed bill. Tail long, stiff and fan-shaped.

Distribution: India: Meghalaya (Ri-Bhoi Hills district): Throught the Indian Union except Arunachal Pradesh, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh, Burma (Myanmar), Malaysia, Old Indochina, Pakistan and Sulawesi.

Remarks: Observed this bird at Barapani, the Ri-Bhoi Hills district.

Order CICONIIFORMES
Family ARDEIDAE

Key to the genera of the family Ardeidae

1. Large sized, wing above 320 mm. ................................................................. Ardea

Medium or small-sized, wing below 320 mm. .................................................... 2

2. Plumage mainly white coloured, breast with elongated plumes. ................. 3

Plumage mainly varied coloured. ............................................................... 4

3. Bill yellow ......................................................................................... Bubulcus

Bill black ............................................................................................... Egretta

4. Plumage mainly ashy grey with greenish black ............................................ Nycticorax

Plumage mainly chestnut, yellowish brown, slaty grey to almost black ............... 5

5. Feathers of head and neck elongated ..................................................... Ardeola

Feathers of head and neck not elongated ................................................... Ixobrychus

Genus Ardea Linnaeus, 1758

5. Ardea cinerea rectirostris Gould


Common name: Eastern Grey Heron (English) and Anjan (Hindi).
Material examined: Nil

Diagnostic characters: Ashy-grey with white crown and neck with a long black occipital crest below a prominent black-dotted line down the middle of foreneck. Leg and neck very long. Breast with elongated black-streaked white feathers. Abdominal feathers greyish white.

Distribution: India: Meghalaya (South Garo Hills district): Throughout the Indian Union. Elsewhere: Africa (Northern part) to Asia minor, Bangladesh, Burma, (Myanmar), China, Europe, Hainan, Indochina, Japan, Malaysia, Nepal, Pakistan, Siberia and Thailand.

Remarks: This bird observed on the bank of the river Phuleswar, Baghmara, the South Garo Hills.

6. Ardea purpurea manilensis Meyen


Common name: Eastern Purple Heron (English) and Lal Anjan (Hindi).

Material examined: Nil.

Diagnostic characters: Purplish blue or slaty bird with blackish wing and tail. Crown and crest slaty black, rest of head and neck ferruginous with boldly striped black, chin and throat white. Upper breast buffly-white, black and chestnut streaks. Abdomen slaty black and chestnut.

Distribution: India: Meghalaya (East Garo Hills district); Throughout the Indian Mainland. Elsewhere: Burma (Myanmar), China south of the Yangtze, Ryukyu Islands and Thailand.

Remarks: Observed on the bank of the river Simsang at Rongrenggiri, the East Garo Hills.

7. Ardea alba modesta J. E. Gray


Common name: Large Egret (English) and Bada bagla (Hindi).

Material examined: Nil.

Diagnostic characters: Snow white marsh bird with blackish legs. Head with long slender neck and pointed black and yellow bill. In the breeding season, a bunch of ornamental filamentous plumes develop on the back.


Remarks: This bird was seen in the marshy paddy field near Phulbari, the West Garo Hills.
Genus **Ardeola** Boie, 1822

8. **Ardeola striatus chloriceps** (Bonaparte)


*Common name*: Little Green Heron (English).

*Material examined*: Nil

*Diagnostic characters*: A slaty grey with dark-green and bronze-green bird. Crown and long occipital crest glossy, greenish black; cheek white. Head and neck grey; chin and centre of throat white. Undertail-coverts white with blackish tips.

*Distribution*: India: Meghalaya (West Garo Hills district): Throughout the Indian Union. Elsewhere: Bangladesh, Burma (Myanmar), Celebes (Sulawesi), Indochina, Indonesia, Malaysia, Pakistan, Philippines, Sunda Islands and Thailand.

*Remarks*: This bird was observed on the marshy areas near Barangapara, the West Garo Hills.

9. **ArdeoLa grayii grayii** (Sykes)


*Common name*: Indian Pond Heron or paddybird (English) and Kunch, bagla (Hindi).


*Diagnostic characters*: Earthy brown bird with head and neck dark brown, streaked with yelllowish buff. Chin and throat white; upper breast white streaked with brown. Rest of plumage white including tail. In breeding, long recumbent white or buff occipital crest of lanceolate plumes.

*Measurements*: 1 ♂: Wing 199, tail 73, bill 74.


*Remarks*: Seen it on the paddy field throughout East Garo Hills.

Genus **Bubulcus** Bonaparte, 1855

10. **Bubulcus ibis coromandus** (Boddaert)

1783. *Cancroma coromanda* Boddaert, *Tabl. pl., enlum.* : 54 (Coromandel, Tamil Nadu, India).


*Common name*: Cattle Egret (English) and Gai bagla (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: A snow white bird usually seen on grazing cattle. Bill yellow. Orbital and facial skin greenish yellow. Legs and feet black In breeding, head, neck and back golden buff feathers disintegrated and hair-like.
**Distribution**: India: Meghalaya (East, South and West Garo Hills districts): Throughout the Indian Union. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Celebes and Ceram, Formosa, Hainan, Indochinese countries, Korea, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, South America, South China, South Japan, Sunda Islands and U.S.A.

**Remarks**: Seen this bird throughout Garo Hills districts.

**Genus** *Egretta* Forster, 1817

11. *Egretta intermedia intermedia* (Wagler)


**Common name**: Smaller or Median Egret (English) and Karchia Bagla (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: Plumage entirely white. Occipital crest absent. In breeding, on back as well as breast, presence of decomposed filamentous plumes. Legs and feet black. Bill black; yellow at base (breeding).

**Distribution**: India: Meghalaya (East, South and West Garo Hills districts): Throughout the Indian Union. Elsewhere: Bangladesh, Burma (Myanmar), Indochinese countries, Japan, Malaysia, Nepal, Phillipines, Greater Sunda Island and Thailand.

**Remarks**: Observed this bird throughout the Garo Hills.

12. *Egretta garzetta garzetta* (Linnaeus)


**Common name**: Little Egret (English) and Kilchia (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: Size equal to Hen. Plumage showwhite; bill black. Legs black, feet orange-yellow. In breeding, nuchal crest of two long narrow plumes and filamentous feathers on back and breast.

**Distribution**: India: Meghalaya (South Garo Hills district): Throughout the Indian Union. Elsewhere: Afghanistan, Africa (east), Bangladesh, Burma (Myanmar), China, Europe (South and east), Hainan, Iran, Japan, Malaysia (Middle East) Nepal, Pakistan and Sri Lanka.

**Remarks**: Observed this bird near Baghmara, the South Garo Hills.

**Genus** *Nycticorax* T. Forster, 1817

13. *Nycticorax nycticorax nycticorax* (Linnaeus)


**Common name**: Night Heron (English) and Tarbagla (Hindi).

**Material examined**: Nil.

Distribution: India: Meghalaya (East Khasi Hills district and South Garo Hills district.) : Throughout the Indian Union. Elsewhere: Africa, Bangladesh, Burma (Myanmar), Bhutan, China, Indochinese countries, Japan, Malaysia, Middle East, Nepal, Pakistan and Sri Lanka.

Remarks: Observed this bird near Baghmara, the South Garo Hills. Hume (1888, p. 337) reported it from Shillong, the East Khasi Hills.

Genus *Ixobrychus* Billberg, 1828

14. *Ixobrychus cinnamomeus* (Gmelin)


Common name: Chestnut Bittern (English) and Lalbagla (Hindi).


Measurements: 2 ♂: Wing 147, 155; tail 47, 49; bill 62, 64.

Distribution: India: Meghalaya (East Garo Hills and Ri-Bhoi Hills districts): Throughout the Indian Union. Elsewhere: Bangladesh, Burma (Myanmar), China from Manchuria to Hainan, Celebes (Sulawesi) Malaysia, Pakistan, Philippines, Ryukhu Islands, Sri Lanka, Sundá Islands and Thailand.

15. *Ixobrychus sinensis* (Gmelin)


Common name: Yellow Bittern (English) and Funbagla (Hindi).

Material examined: Nil.


Remarks: Hume (1888, p. 336) reported this bird from near Shillong, the East Khasi Hills.
16. *Ixobrychus flavicollis flavicollis* (Latham)

1790. *Ardea flavicollis* Latham *Index, Orn.*, 2 : 701 (India).


*Common name*: Black Bittern (English) and Kalabagla (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Size slightly bigger than the Pond Heron. In male, head, back, wing and tail slaty grey to almost black. On either side of the neck bright ochre-yellow band. Chin and throat white with a rufous dotted line in the middle of neck. In female, head, back and wing more brown less slaty grey. Breast streaked with while and rufous.


*Remarks*: Observed this bird near Rongrenggiri, the East Garo Hills.

**Family** CICONIIDAE

**Key to the genera of the family Ciconiidae**

1. Mandibles leaving open space near middle of bill ........................................... *Anastomus*

   Mandibles not leaving any space ..................................................................... 2

2. Bill down curved, wedge-shaped, yellow; legs and feet pinkish brown.............. *Mycteria*

   Bill slightly upcurved, heavy pointed, red; legs and feet bright red ..................... *Ciconia*

**Genus** *Mycteria* Linnaeus, 1758

17. *Mycteria leucocephala* (Pennant),


*Common name*: Painted Stork (English) and Janghil (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Size equal to vulture. Face yellow, unfeathered, waxy; bill yellow and slightly curved; fleshy brown long-legged, neck long. Plumage white closely barred with metallic, greenish black on back. Breast acроссed with black band; delicate rosepink near the tail, shoulders and wing.


*Remarks*: Seen this bird at Barapani, the Ri-Bhoi Hills.
Genus  *Anastomus* Bonnaterre, 1791

18. *Anastomus oscitans* (Boddart)

1783. *Ardea oscitans* Boddart, Table Pl. enlum., 55 (Pondicherry, India).


*Common name*: Openbill Stork (English) and Ghonghila (Hindi).

*Material examined*: Nil.


*Remarks*: Observed it at Rongrenggiri, the East Garo Hills.

Genus  *Ciconia* Brisson, 1760

19. *Ciconia episcopus episcopus* (Boddart)

1783. *Ardea episcopus* Boddart, Table Pl. enlum., : 54 (Coromandel Coast, Tamil Nadu).


*Common name*: Whitenecked Stork (English) and Laglag (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Back, wing and short tail black glossed with purple or greenish blue. Crown black, neck white. Undertail-coverts white. Legs and feet long and red in colour.


*Remarks*: Seen it al Baghmara, the South Garo Hills.

Family  **Threskiornithidae**

Key to the genera of the family Threskiornithidae

1. Bill slender, slightly downcurved, neck bare .............................................. *Threskiornis*

2. Bill greatly flattened, becoming broader and spoonshaped at the tip, face and throat naked ........................................................................................ *Platalea*

Genus  *Threskiornis* G.R. Gray, 1842

20. *Threskiornis aethiopica melanocephala* (Latham)


*Common name*: White Ibis (English) and Munda (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Size equal to large domestic Hen. Entire plumage excepting head and neck
snow-white; head and neck black. Bill down curved, long and stout.

Distribution: India: Meghalaya (South Garo Hills district): Throughout the Indian mainland. Elsewhere: Bangladesh, Burma (Myanmar), China (Sporadically), Japan, Nepal, Pakistan and Sri Lanka.

Remarks: Observed it near Baghmara, the South Garo Hills.

Genus *Platalea* Linnaeus 1758

21. *Platalea leucorodia major* Temminck & Schlegel


Common name: Spoonbill (English) and Chamcha (Hindi).

Material examined: Nil.

Diagnostic characters: Size bigger than the domestic Duck; plumage snow-white. Long necked and long-legged (black). Bill black and yellow, spatula-shaped. Cinnamon-yellow patch at foreneck.


Remarks: Observed it on the bank of the river Sinsang, Rongrenggiri, the East Garo Hills.

Order ANSERIFORMES

Family ANATIDAE

Key to the genera of the family Anatidae

1. Hind toe not lobed .................................................. *Anser*

2. Hind toe lobed .......................................................... 2

3. Hind toe narrowly lobed ............................................. 3

4. Hind toe broadly lobed ............................................. 5

5. Bill short and goose-like .......................................... *Nettapus*

6. Bill rather flat and broad ........................................... 4

7. Primaries equal to secondaries in length .................... *Dendrocygna*

8. Primaries longer than the Secondaries ........................ *Anas*

9. Bill long and thin with sawlike teeth on edges of both mandibles .......................... *Mergus*

10. Bill of moderate length, lack of saw-like teeth .................................. *Aythya*

Genus *Anser* Brisson, 1760

22. *Anser anser rubrirostris* Swinhoe


Common name: Eastern Grey Lag Goose (English) and Rajhans (Hindi).

Material examined: Nil.

Diagnostic characters: Size bigger than the domestic Goose; plumage barred with ashy-brown. Uppertail-coverts white; bill, legs and feet pink.

Distribution: India: Meghalaya (South Garo Hills district): Throughout the Indian Mainland except Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. Elsewhere: Bangladesh, Black and Caspian sea, China, eastern Mediterranean and Seistan. Breeds eastward from c. 40° E. and South of 60° N. through Asia Minor and central Asia to Kamchatka.

Remarks: Observed this bird on the river Phuleswar near Baghmara, the South Goro Hills.

Genus Dendrocygna Swainson, 1837

23. Anas javanica Horsfield


Common name: Lesser Whistling Teal (English) and Seelkahi (Hindi).

Material examined: Nil.

Diagnostic characters: Size smaller than the domestic Duck. Uppertail-coverts uniformly chestnut.


Remarks: Seen it near Mawphlang, the East Khasi Hills.

Genus Anas Linnaeus, 1758

24. Anas acuta Linnaeus


Common name: Pintail (English), Seenkh par (Hindi) and Dogep (Garo).

Material examined: Nil.


Remarks: Observed it at Barapani, the Ri-Bhoi Hills.

25. *Anas crecca crecca* Linnaeus


Common name: Common Teal (English), Chhoti murghabi (Hindi) and Gagak (Garo).

Material examined: Nil.

Diagnostic characters: Size smaller than the domestic Duck. In male, head chestnut with a broad metallic green band running backward from in front of eye to nape. A speculum (Metallic green) backside of white wing-patch. In female, colouration mottled dark and light brown with black and green wing speculum.


Remarks: Observed it near Barapani, the Ri-Bhoi Hills.

26. *Anas strepera strepera* Linnaeus


Common name: Gadwall (English) and Myla (Hindi).

Material examined: Nil.

Diagnostic characters: In breeding male, general effect dark brown and grey with black tail. Chestnut patch with black and white speculum in wing. In female, duller and smaller, dark brown motled with buff; leg orange-yellow, wing with white wing mirror (Speculum).


Remarks: Observed it at Barapani, the Ri-Bhoi Hills.

27. *Anas penelope* Linnaeus


Common name: Wigeon (English) and Chhote lal Sir (Hindi).

Material examined: Nil.

Diagnostic characters: Size less than Domestic Duck. In breeding male, head and neck chestnut; forehead and crown cream colour, a white horizontal bar on closed wing. Tail black. In female, general aspect duller and less reddish brown, lesser wing-coverts grey.

Remarks: Observed it at Barapani, the Ri-Bhoi Hills.

28. Anas clypeata Linnaeus


Common name: Shoveller (English) and Chirah (Hindi).

Material examined: Nil.

Diagnostic characters: In breeding male, head and neck glossy metallic green, wing-shoulder-patch pale blue. A white bar between wing patch and metallic green speculum. Breast white, vent and abdomen reddish chestnut. In female, general aspect mottled dark brown and buff, with greyish blue shoulder-patch.


Remarks: Noticed it at Barapani, the Ribhoi Hills.

Genus Aythya Boie, 1822

29. Aythya ferina (Linnaeus)


Common name: common pochard (English) and Lal Sir (Hindi).

Material examined: Nil.

Diagonalistic characters: Size less than the domestic Duck. In breeding male, head and neck chestnut-red, breast black; vent and belly light grey finely vermiculated with black, rump black, a dull grey speculum on wing. In female, head, neck and breast rufous-brown.


Remarks: Observed it on the bank of the river, Phuleswar, near Baghmara, the South Garo Hills.

Genus Nettapus Brandt, 1836

30. Nettapus coromandelianus coromandelianus (Gmelin)


*Common name:* Cotton Teal or Quacky-duck (English) and Girja (Hindi).

*Material examined:* Nil

*Diagnostic characters:* In breeding male, crown blackish brown, back blackish-brown glossed with purple and green; black collar round the base of neck; wing with white wing-bar. In female, the colouration duller and browner with less contrasty white; wing-bar less prominent, eye with a dark line.

*Distribution:* India: Meghalaya (Ri-Bhoi Hills district): Throughout the Indian Union except in Kerala, Punjab and Rajasthan. Elsewhere: Bangladesh, Pakistan, Nepal, Burma (Myanmar), Sri Lanka, China, Malay and East Indies.

*Remarks:* Observed it at Barapani, the Ri-Bhoi Hills.

**Genus *Mergus* Linnaeus, 1758**

31. *Mergus marganser marganser* Linnaeus


*Common name:* Common Merganser or Goosander (English).

*Material examined:* Nil


*Distribution:* India: Meghalaya (Garo Hills and Khasi Hills districts): throughout northern India. Elsewhere Pakistan.

*Remarks:* Hume (1888, p. 347) observed this bird on the streams of the Garo and Khasi Hills.

**Order FALCONIFORMES**

**Family ACCIPITRIDAE**

Key to the genera of the family Accipitridae

1. Head and neck bare ................................................................. *Sarcogyps*

Head and neck feathered ........................................................................................................ 2

2. Tarsus feathered infront and behind .................................................. 11

Tarsus naked or partially feathered .............................................................................. 3

3. Upper mandible with two sharply pointed conical "teeth"......................... *Aviceda*

Upper mandible without teeth......................................................................................... 4

4. Tarsus long, two or more times length of bill from tip to gape ....................... 5
Tarsus short, less than two times length of bill from tip to gape.........................7

5. Feathers on sides of neck forming conspicuous ruff ........................................Circus
   Ruff not present.........................................................6

6. Nuchal crest absent or pointed ..............................................................Accipiter
   Nuchal crest broad..................................................Spilornis

7. Front of tarsus covered with hexagonal scales ...........................................8
   Front of tarsus scutellate .................................................9

8. Size small; 2nd primary longest .........................................................Elanus
   Size larger; 3rd or 4th primary longest ...............................................Pandion

9. Tail forked.................................................................................................Milvus
   Tail not forked..................................................................................10

10. Tarsus scutellated behind .................................................................Buteo
    Tarsus with hexagonal scales behind..................................................Haliastur

11. Primaries exceeding secondaries by less than length of tarsus ...................Spizaetus
    Primaries exceeding secondaries by more than length of tarsus ..........Aquila

Genus  *Elanus* Savigny, 1809

32. *Elanus caeruleus vociferus* (Latham)


*Common name*: Blackwinged Kite (English) and Kapassi (Bengali and Hindi).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (East Garo Hills district) : Throughout the Indian mainland, Lakshadweep Islands. Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka, east to S. Yunnan, South to N. Tenasserim and Indochinese countries.

*Remarks*: Observed it near Rongrenggri, the East Garo Hills.

Genus  *Aviceda* Swainson, 1836

33. *Aviceda leuphotes leuphotes* (Dumont)


*Common name*: Indian Blackcrested Baza (English).


*Diagnostic characters*: Size equal to Pigeon. Head, neck, back, rump, tail-coverts and tail black. Head with black long occipital crest, Foreneck and upper breast black; abdomen with black and chestnut bands.

*Measurements*: 1♂: Wing 239, tail 133, bill 28 [from the skull].


*Remarks*: Godwin-Austen (1870, p. 93) obtained it near the head of the Jhiri River in the Khasi Hills and mentioned it as *Baza lophotes* Cuvier.

34. *Aviceda leuphotes syama* (Hodgson)


*Common name*: Burmese Blackcrested Baza (English).


*Diagnostic characters*: Head with a black occipital crest, chin and throat rufous and white. Head rufous and black. Band across chest black.


Genus *Milvus* Lacepede, 1789.

35. *Milvus migrans govinda* Sykes


*Common name*: Pariah Kite (English), Cheel (Hindi) and Doreng (Garo).

*Material examined*: Nil.

*Diagnostic characters*: Head, back and tail dark fulvous brown. Bill black, legs and feet yellow. Claws black. Tail deeply forked.

*Distribution*: India: Meghalaya (West Garo Hills district): Throughout the Indian Union excluding Nicobar Islands. Elsewhere: Bangladesh, Burma (Myanmar), Malaysia (occasional), Nepal, Pakistan and Sri Lanka.

*Remarks*: Observed this bird near Phulbari, the West Garo Hills. Godwin Austen (1870, p.93) remarked. "This bird is not a visitant to Cherra, until rains begin to cease early in September".

36. *Milvus migrans lineatus* (Gray)


*Common name*: Large Indian kite (English) and Cheel (Hindi).

*Material examined*: Nil.


*Remarks*: Hume (1888, p. 15) reported it from Shillong, the East Khasi Hills and listed it as *Milvus melanotis* Temminck and Sehl.

**Genus** *Haliastur* Selby, 1840

37. *Haliastur indus indus* (Boddaert)

1783. *Falco Indus* Boddaert, *Table Pl. enlum* : 25 (Pondicherry, India).


*Common name*: Brahminy Kite (English) and Brahminy Cheel (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Head, neck, upper back and breast white; lower back, wings abdomen and tail rusty red or deep chestnut. Tips of wings black.


*Remarks*: Noticed it near Phulbari, the West Garo Hills. Godwins Austen (1870, p.93) recorded it from the Khasi Hills.

**Genus** *Accipiter* Brisson, 1760

38. *Accipiter gentilis schvedowi* (Menzbier)


*Common name*: Eastern Goshawk (English) and ♂ Farra, ♀ Baaz (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Back and wings dark grey, darker on crown, nape, sides of head and neck. Superillium and edge of forehead white. Underparts white, cross-barred with black narrowly on body, broadly on tail. Female larger in size.

Remarks: Hume (1888, p.7) collected this bird from Shillong, the East Khasi Hills and listed it as Astur palumbarius Linnaeus.

39. Accipiter badius dussumieri (Temminck)

1824. Falco dussumieri Temminck, Pl. Col. Livr.: 52, text to pl. 308 (adult), pl. 336 (immature)
(Bengal = West Bengal, India).


Common name: Indian Shikra (English) and Sikra (Hindi).

Material examined: Nil.

Diagnostic characters: Size smaller than the House crow. Head and back ashy blue grey; breast barred with white and rusty brown, throat with median grey stripe. Long tail with multibanded; female slightly larger and dark smoky brown.


Remarks: Hume (1888, P. 7) reported it from Shillong, the East the Khasi Hills and mentioned it as Astur badius Gmelin, Goodwin-Austen(1874, P. 142) reported it from the "Foot of the Garos"

40. Accipiter trivirgatus indicus (Hodgson)

1836. Astur indicus Hodgson, Bengal sporting Mag., 8: 177 (Nepal).


Common name: North Indian Crested Goshawk (English).

Material examined: Nil.


Distribution: India: Meghalaya (Khasi Hills): Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), China, Indochina, Malay Peninsula, Nepal, Taiwan and Thailand.

Remarks: Godwin Austen (1870, P.92) collected it from Asalu, the North Cachar Hills and listed it as Tinnunculus alaudarius Briss.

41. Accipiter nisus nisosimilis (Tickell)


*Common name*: Asiatic Sparrow-Hawk (English) and Basha ♂, Bashin♀ (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Size slightly smaller than the House Crow. In male, legs slender and longer; a white supercilium. Tail with four or five blackish bands. Female larger than the male, more brown, back less grey and below paler.


*Remarks*: Observed it near Baghmara, the South Garo Hills.

42. *Accipiter nisus melaschistos* Hume


*Common name*: Indian Sparrow-Hawk (English) and Basha ♂, Bashin♀ (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Head, neck and back darker slate. Throat, breast and belly more rufous; tail with four to five blackish bands.


*Remarks*: Hume (1888, p.8) obtained it from Shillong, the East Khasi Hills and listed it as *Accipiter nisus* Linnaeus.

*Genus Buteo* Lacepede, 1799

43. *Buteo buteo japonicus* (Temminck and Schlegel)


*Common name*: Buzzard (English) and chuhamar (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: So many phases occur. In one of these, head creamy brown, eye with a black marking; legs and feet yellow. Cere yellow.

Remarks: Hume (1888, p.12) obtained it from the Khasi Hills and listed it as *Buteo plumipes* Hodgson.

Genus *Spizaetus* Vieillot, 1816

44. *Spizaetus cirrhatus limnaeetus* (Horsfield)


Common name: Indian Crested Hawk-Eagle (English) and Shah baaz (Hindi).

Material examined: Nil.

Diagnostic characters: Crown with crested head. Back and wings brown. Underparts white, with narrow black longitudinal streaks on throat and broad chocolate streaks on breast. Legs long, slender and feathered. Female larger.

Distribution: India: Meghalaya (Khasi Hills district): Throughout northern India from Himachal Pradesh to Arunachal Pradesh, Assam and Manipur. Elsewhere: Burma (Myanmar), Indochinese countries, Nepal, Malaya Peninsula, Philippine Islands and Thailand.

Remarks: Godwin-Austen (1870, p.93) obtained this bird from the Khasi Hills and listed it as *Linnaeus caligatus* Raffles.

Genus *Aquila* Brisson, 1760

45. *Aquila rapax nipalensis* Hodgson


Common name: Eastern Steppe Eagle (English) and Funiz (Hindi).

Material examined: Nil.

Diagnostic characters: Back deep blackish brown, nape with a rufous patch, two pale bars on wing. Bill black, cere deep yellow, legs and feet dull yellow.


Remarks: Hume (1888, p.8) obtained a single specimen from Shillong, the East Khasi Hills and listed it as *Aquila nipalensis* Hodgson.

46. *Aquila pomarina hastata* (Lesson)


Common name: Lesser Spotted Eagle (English) and Pahari teesa (Hindi).

Material examined: Nil.
Diagnostic characters: Back dark blackish brown with purplish reflection on mantle. Tail-coverts white. Underparts slightly paler.

Distribution: India: Meghalaya (Khasi Hills district): Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Sikkim, Tamil Nadu and Uttar Pradesh. Elsewhere: Bangladesh, Burma (Myanmar) and Nepal.

Remarks: Godwin-Austen (1870, p.265) obtained this bird from the plateau near Nongkulang, the Khasi Hills.

Genus Sarcogyps Lesson, 1842

47. Sarcogyps calvus (Scopoli)


Common name: Indian Black Vulture (English) and Bhaonra (Hindi).

Material examined: Nil.

Diagnostic characters: Naked head, neck, thighs and legs deep yellowish red; breast and thigh-patches white.


Remarks: Godwin-Austen (1870, P.265) reported it from Chatak the North Cachar Hills and listed it as Otogyps calvus Scopli.

Genus Circus Lacepede, 1799

48. Circus macrourus (S.G. Gmelin)


Common name: Pale Harrier (English) and Pattai (Hindi).

Material examined: Nil.

Diagnostic characters: In male, back ashy-grey, tip of wings. black; throat, breast and belly pure white; tail long white cross-barred with grey. In female, back umber brown with prominent pale rufous.


Remarks: Observed it near Tura, the West Garo Hills.

49. Circus aeruginosus aeruginosus (Linnaeus)


*Common name:* Marsh Harrier (English) and Safed sira (Hindi).

*Material examined:* Nil.

*Diagnostic characters:* In male, back ashy-grey, tip of wings black; throat, breast and belly pure white. Tail long white cross-barred with grey. In female, back umber brown with prominent pale rufous.

*Distribution:* India: Meghalaya (West Garo Hills district): Throughout the Indian Union except Nicobar Islands. Elsewhere: Africa, Bangladesh, Burma (Myanmar), China, Japan, Maldive Islands, Malay Peninsula, Nepal, Pakistan, Philippines and Sri Lanka. Breeds from S. Sweden and Denmark east to the Yenesei, south to the Mediterranean, Turkestan and Mongolia.

*Remarks:* Seen it near Barangapara, the West Garo Hills.

**Genus** *Spilornis* G.R. Gray, 1840

50. *Spilornis cheela burmanicus* Swann


*Common name:* Burmese Crested Serpent Eagle (English)

*Material examined:* Nil.

*Diagnostic characters:* Size larger than the kite. Body dark brown; head with nuchal crest. Breast and belly paler brown, ocellated and finely barred with white and blackish. White spots on lower plumage larger and more conspicuous. Terminal black band on primaries narrower.

*Distribution:* India: Meghalaya (Khasi Hills district): Assam, Andaman Islands and Tripura. Elsewhere: Burma (Myanmar) and Thailand.

*Remarks:* Hume (1888, p.11) reported this bird from the Khasi Hills and listed it as *Spilornis cheela*. Godwin-Austen (1870, p. 93) recorded it from the Khasi Hills.

**Genus** *Pandion* Savigny, 1809

51. *Pandion haliaetus haliaetus* (Linnaeus)


*Common name:* Osprey (English) and Machhmanga (Hindi).

*Material examined:* Nil.

*Diagnostic characters:* Size smaller than the kite, back dark brown; head with tufted feathers of white streaking. Throat, breast and belly white, a conspicuous broad, brown band across upper breast; behind eye, a blackish band.
Distribution: India: Meghalaya (South Garo Hills district): Throughout the Indian Union except Arunachal Pradesh, Mizoram and Nagaland. Elsewhere: Bangladesh, Burma (Myanmar), Malay Peninsula, Nepal, Pakistan, Philippines, Sri Lanka, S. Africa, Sunda Islands and Thailand. Breeds in Europe and Asia from Scotland (Formerly) and Lapland east to Kamchatka and Japan, South to Spain, N. Africa, Mediterranean islands, Greece, Red Sea coasts, S. Arabia and S. China.

Remarks: Observed it near Siju Cave, the South Garo Hills.

Family FALCONIDAE

Key to the genera of the family Falconidae

Wings long and pointed, tail Slightly rounded ............................................................... *Falco*

Wings long and rounded, tail nearly square ................................................................. *Microhierax*

Genus *Microhierax* sharpe, 1874

52. *Microhierax caerulescens caerulescens* (Linnaeus)


Common name: Himalayan Redbreasted Falconet (English).

Material examined: Nil.

Diagnostic characters: Size equal to Bulbul. Back glossy black; forehead, sides of face and supercilium white. Eye with a black band, a white collar on hind neck. Chin, throat, thighs and undertail-coverts deep ferruginous. Belly and vent rusty white.

Distribution: India: Meghalaya (Garo Hills district): Assam, Bihar, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Nepal and Bhutan.

Remarks: Hume (1888, p.6) obtained it from the Garo Hills and mentioned it as *Hierax eutolmus* Hodgson.

Genus *Falco* Linnaeus, 1758

53. *Falco subbuteo centralasiae* (Buturlin)


Common name: Central Asian Hobby (English).

Material examined: Nil.

Diagnostic characters: Size equal to Dove. Back slaty grey; chin with moustachial streaks; throat, breast and belly rusty white, broadly streaked with black, undertail-coverts rufous.

Remarks: Observed it near Barangapara, the West garo Hills.

54. *Falco tinnunculus tinnunculus* Linnaeus


Common name: European Kestrel (English), Koruttia ♀ Narzi ♂ (Hindi) and Dogamdot (Garo).


Diagnostic characters: In male, crown nape and sides of neck ashy-grey finely streaked with blackish, cheek stripe blackish; rump and tail-coverts grey; tail tipped with white and a black subterminal bar. In female, back pale rufous, cross-barred with black, rump and tail tinged with grey.


Remarks: Noticed it near at Kherapara, the West Garo Hills. Godwin-Austen (1870, P. 92) reported it from the Khasi Hills and listed it as *Tinnunculus alaudarius* Briss.

Order GALLIFORMES

Family PHASIANIDAE

Key to the genera of the Family Phasianidae

1. Wing over 400 mm. Tail-feathers with large metallic ocelli .........................................................*Pavo*
   Wing under 400 mm. No ocellations on tail.........................................................................................2
2. Tail longer than the wing .......................................................................................................................3
   Tail shorter than the wing.........................................................................................................................4
3. A fleshy erect comb on the crown .......................................................................................................*Gallus*
   No fleshy comb on the crown ..................................................................................................................*Lophura*
4. Wing under 120 mm...............................................................................................................................*Coturnix*
   Wing over 120 mm.................................................................................................................................5
5. 1st Primary shorter than the 10th ...........................................................................................................*Bambusicola*
   1st Primary equal or longer than the 10th ...............................................................................................6
6. Tail less than half length of wing; spur absent.................................................................................*Arborophila*
   Tail more than half length of wing; spur present..................................................................................*Francolinus*
Genus *Francolinus* stephens, 1819

55. *Francolinus francolinus melanotus* Hume


*Common name*: Assam Black Partridge (English) and Kala teetar (Hindi).

*Material examined*: Nil.


*Remarks*: Hume (1888, p.304) remarked that "Distributed in all suitable localities throughout the Garo and Khasi Hills" and list it as *Francolinus vulgaris* Steph.

56. *Francolinus gularis* (Temminck)


*Common name*: Swamp Partridge (English).

*Material examined*: Nil.


*Remarks*: Hume (1888, p.305) reported it from the "Garos and Cherapoonjee plateau"

Genus *Coturnix* Bonnaterre, 1791

57 *Coturnix coturnix coturnix* (Linnaeus)


*Common name*: Grey Quail (English) and Ghagus bater (Hindi).
Material examined: Nil.

Diagnostic characters: Upper parts pale brown with conspicuous buff spear-shaped streaks and irregular mottling and barring of reddish brown and black. In male, chin and centre of throat black. Two dark bands curving up from base of throat to ear-coverts. Underparts creamy white. In female, chin and throat creamy buff, breast spotted with blackish.

Distribution: India: Meghalaya (East Khasi Hills district): Throughout the subcontinent.

Remarks: Hume (1888, p.309) reported it from Shillong, the East Khasi Hills and listed it as Coturnix communis Bonn. Godwin-Austen (1872, p.142) reported it from "Cherra Punji"

58 Coturnix coromandelica (Gmelin)

1789. Tetrao coromandelicus Gmelin, Syst. Nat., 1(2):764 (Coromandel Coast, Tamil Nadu, India)

Common name: Rain Quail (English).

Material examined: Nil.

Diagnostic characters: Size smaller than the Grey Quail. In male, back distinctly buff spear-shaped streaks and irregular mottling and barring of reddish brown and black. Chin and a line down centre of throat black; breast rufous buff, flanks brown longitudinally streaked with black. In female, chin and throat creamy buff. Breast spotted with blackish.


Remarks: Observed this bird near Kherapara, the West Garo Hills.

59. Coturnix chinensis chinensis (Linnaeus)


Common name: Bluebreasted Quail (English).

Material examined: Nil.

Diagnostic characters: In male, upperparts brown, streaked, mottled and barred with buff, reddish brown and black. Forehead, supercilium and sides of neck slaty blue. Throat and upperbreast with bold black and white markings. Lower breast and abdomen slaty blue. Undertail-coverts chestnut. In female, breast and flanks barred with blackish.


Remarks: Godwin-Austen recorded it from Cherrapunji, the East Khasi Hills and Hume (1888, p.310) reported it from Shillong, the East Khasi Hills, and mentioned it as Exsulfactoria chinensis Linnaeus. Baker (1907, p.971) recorded it from the Khasi Hills.
Genus **Arborophila** Hodgson, 1837

60. **Arborophila atrogularis** (Blyth)


*Common name*: Whitecheeked Hill Partridge (English).

*Material examined*: Nil.

*Diagnostic characters*: Back light olive-brown stippled and barred with black. Wing barred and mottled with black and rufous. Forehead and supercilium grey, crown olive-brown. Nape rufous, broadly spotted with black. Cheeks white, running behind into rufous buff ear-coverts. Chin and throat black diffusing through black and white into grey of breast and flanks. Abdomen grey, centre whitish.

*Distribution*: India: Meghalaya (Garo Hills district): Assam, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh and Burma (Myanmar).

*Remarks*: Hume (1888, p. 306) reported this bird from "Western slopes of the Garos" as *Arboricola atrogularis* Blyth.

Genus **Bambusicola** Gould, 1863

61. **Bambusicola fytchii hopkinsoni** Godwin-Austen


*Common name*: Assam Bamboo Partridge (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Garo Hills and East Khasi Hills districts): Assam, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh and Burma (Myanmar).

*Remarks*: Hume (1888, p. 308) reported this bird from the Garo Hills and from Shillong, the East Khasi Hills and listed it as *Bambusicola fytchii* Anders.

Genus **Lophurus** Temminck, 1813

62. **Lophura leucomelana lathami** (J.E. Gray)


*Common name*: Blackbreasted Kaleej Pheasant (English) and Domisal (Garo).

*Material examined*: East Garo Hills district: 1 ♂ and 1 ♀, Rangrenggiri, coll. H. Khajuria, 24 and 29.i.1957.
Diagnostic characters: In male, back glossy blue-black with purple sheen. Breast entirely black glossed with steel blue and purple, the feathers rounded. Crown with black crest, tail shorter and straight. In female, crown with upright crest, tail short with central rectrices very finely and conspicuously streaked with black which appears plain chestnut.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
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</thead>
<tbody>
<tr>
<td>1 ♂</td>
<td>216</td>
<td>216</td>
<td>36</td>
</tr>
<tr>
<td>1 ♀</td>
<td>226</td>
<td>153</td>
<td>40</td>
</tr>
</tbody>
</table>


Genus Gallus Brisson, 1760

63. Gallus gallus murghi Robinson & Kloss


Common name: Indian Red Jungle fowl (English), Ban murgha (Hindi) and Dogrik (Garo).


Diagnostic characters: In male, back with orange-red and yellow hackles on neck and rump; underparts uniformly black, wings with bright blue wing-patches. In female, back reddish brown finely vermiculated with buff and black; underparts light rufous-brown.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
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<td>2 M:</td>
<td>215,222</td>
<td>218,322</td>
<td>32,33</td>
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<tr>
<td>1 V:</td>
<td>205</td>
<td>145</td>
<td>29</td>
</tr>
</tbody>
</table>


Genus Polyplectron Temminck, 1813

63a. Polyplectron bicalcaratum bakeri Lowe


Common name: Peacock pheasant (English).

Diagnostic characters: India: Meghalaya (Garo Hills); Arunachal Pradesh; Manipur; Mizoram; Nagaland; Sikkim and West Bengal. Elsewhere: Bangladesh and Bhutan.

Genus **Pavo** Linnaeus, 1758

64. **Pavo cristatus** Linnaeus


Common name: Indian Peafowl (English) and Mayura (Hindi).

Material Examined: Nil.


Distribution: India: Meghalaya (Garo Hills district): Throughout the Indian Mainland.

Remarks: Hume (1888, p.300) reported it from Garo Hills.

Order **GRUIFORMES**

Family **TURNICIDAE**

Genus **Turnix** Bonnaterre, 1791

65. **Turnix sylvatica dussumier** (Temminck)


Common name: Little Bustard-Quail (English) and Dabki (Hindi)

Material examined: Nil.

Diagnostic characters: Upper parts irregularly barred rufous and black. Crown blackish brown with a whitish median line. Hindneck ferruginous scalloped with buff. Underparts white excepting breast which is brownish buff with black and chestnut spots on its sides.

Distribution: India: Meghalaya (Khasi Hills district): Throughout the subcontinent except Himachal Pradesh and Jammu & Kashmir. Elsewhere: Bangladesh, Burma (Myanmar) and Pakistan.

Remarks: Baker (1907, p.972) reported it from the Khasi Hills as *Turnix dussumieri*. 
66. *Turnix suscitator plumbipes* (Hodgson)


*Common name:* Northern Bustard-Quail (English) and Dobekrot (Garo).


*Diagnostic characters:* In male, back rufous-brown and black. Wing-coverts boldly spotted with black and buff. Chin and throat whitish. Upper breast rusty buff banded with black. In female, colouration rich, larger in size.

*Measurements:* 1 ♀: Wing 90, tail 30, bill 16.

*Distribution:* India: Meghalaya (Garo Hills and Khasi Hills districts) : Assam, Bihar, Sikkim, Tripura and West Bengal. Elsewhere: Bangladesh, Nepal and Burma (Myanmar).

*Remarks:* Hume (1888, p. 310) reported this bird from the Garo Hills and the Khasi Hills.

**Family RALLIDAE**

Key to the genera of the Family Rallidae

1. Bill from gape subequal or longer than the tarsus ...................... *Rallus*  
   Bill from gape much shorter than tarsus .................................... 2

2. Frontal shield absent to slightly developed ............................................. 3  
   Frontal shield well developed .................................................. 4

3. Quill second longest; first between fifth and seventh ................ *Porzana*  
   Quill three to six longest; first shorter than eight ................ *Amaurornis*

4. Toes with membranous fringe divided into convex lobes ..................... *Fulica*  
   No lobate fringe on toes ............................................................... 5

5. Toes with a narrow straight-edged lateral fringe. Sexes alike ................ *Gallinula*  
   Toes with fringes. Sexes not alike ................................................ *Gallicrex*

**Genus Rallus Linnaeus, 1758**

67. *Rallus striatus albiventer* Swainson


*Common name:* Indian Bluebreasted Banded Rail (English).

*Material examined:* Nil.

*Diagnostic characters:* In male, back dark brown with irregular wavy white bands and spots. Head and sides of neck rufous chestnut. Chin and throat white; foreneck and breast ashy blue. Abdomen and
flanks blackish barred with white. In female, upperparts duller and underparts whitish.


**Remarks**: Baker (1907, p. 972) collected it from Shillong, the East Khasi Hills and listed it as Hypotaenidia striata Linnaeus.

Genus *Porzana* Vieillot, 1816

68. *Porzana pusilla pusilla* (Pallas)


**Common name**: Eastern Baillon's Crake (English).

**Material examined**: Nil.

**Diagnostic characters**: Size equal to Grey Quail. Back rufescent olive-brown broadly streaked with dark brown. Scapulars, back, rump and uppertail-coverts with narrow white paint-like smears. Sides of head, neck and breast grey. Abdomen, belly, vent and undertail-coverts barred brown and white.

**Distribution**: India: Meghalaya (South Garo Hills district): Throughout the Indian Union except Nicobar Islands. Elsewhere: Bangladesh, Burma (myanmar), China, Malay Archipelago, Nepal, the Philippines and Sri Lanka.

Breeds in C. and E. Asia from the upper to Amurland and Japan, South to Kashmir, Mongolia, N. China and Korea; Lower Himalayas in N. India.

**Remarks**: Observed this bird near Baghmara, the South Garo Hills.

Genus *Amaurornis* Reichenbach, 1853

69. *Amaurornis fuscus bakeri* (Hartert)


**Common name**: Northern Ruddy Crake (English).

**Material examined**: Nil.

**Diagnostic characters**: Back and wings dark olive-brown. Forehead, forecrown, supercilia and sides of face vinous-chestnut. Chin and centre of throat whitish; throat and lower breast vinous-chestnut. Abdomen and flanks olive-brown.

**Distribution**: India: Meghalaya (East Khasi Hills district): Northern India from Jammu & Kashmir to Assam and Madhya Pradesh.

**Remarks**: Baker (1907, p.972) collected it from Shillong, the East Khasi Hills and listed it as Amaurornis fusca Linnaeus.
70. *Amaurornis bicolor* (Walden)


*Common name*: Elwes's Crake (English).

*Material examined*: Nil.


*Remarks*: Baker (1907, p.972) collected this bird from Shillong, the East Khasi Hills and listed it as *Amaurornis bicolor* Wald.

71. *Amaurornis akool akool* (Sykes)


*Common name*: Brown Crake (English).

*Material examined*: Nil.


*Remarks*: Hume (1888, p. 328) reported this bird from the Khasi Hills and mentioned it as *Porzana akool* Sykes.

**Genus* Gallicrex* Blyth, 1852**

72. *Gallicrex cinerea cinerea* (Gmelin)


*Common name*: Watercock (English) and Kangra (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: In non-breeding plumage, both sexes alike. Back dark brown broadly scalloped with fulvous. Underparts pale buffy brown with fine wavy darker bars. Yellowish horny shield on forehead. In breeding male, back, neck, throat, breast and tail black. Wings and abdomen black scalloped with grey. A bright red fleshy horny shield on forehead projecting above the crown. In breeding female, underparts less barred.

*Distribution*: India: Meghalaya (Khasi Hills district): Throughout the Indian main land except
Arunachal Pradesh, Manipur, Mizoram, Nagaland and Tripura.

Remarks: Baker (1907, p.972) recorded it from the Khasi Hills.

Genus *Gallinula* Brisson, 1760

73. *Gallinula chloropus indica* Blyth


Common name: Indian Moorhen (English) and Pani murghi (Hindi).

Material examined: Nil.

Diagnostic characters: Back and wings black, slaty grey and brown. Wings white bordered. Head, neck and breast slaty grey, paler and whitish on centre of abdomen. Undertail-coverts white with a black central patch.

Distribution: India: Meghalaya (Garo Hills district): Throughout the Indian mainland. Elsewhere: Bangladesh, Pakistan, Nepal, Sri Lanka, Burma (Myanmar), Thailand, Malay peninsula, Cambodia, Hainan, Taiwan, Ryukyu Islands, Tibet, China and Japan.

Remarks: Observed it near Baghmara, the South Garo Hills.

Genus *Fulica* Linnaeus, 1758

74. *Fulica atra atra* Linnaeus


Common name: Coot (English) and Dasari (Hindi).

Material examined: Nil.

Diagnostic characters: Entire plumage slaty black, wings with white edges. Ivory-white pointed bill and frontal shield covering forehead.


Breeds in greater part of Europe and Asia South to N. Africa, Asia Minor, and Southern China; Azores and Iceland.

Remarks: Observed it near Siju Cave, the South Garo Hills.

Order CHARADRIIFORMES

Family JACANIDAE

Key to the genera of the Family Jacanidae

Frontal lappet at base of bill resting against forehead, primaries not attenuated............ *Metopidius*

No frontal lappet, 1st and 4th Primaries attenuated ........................................ *Hydrophasianus*
Genus *Hydrophasianus* Wagler, 1832

75. *Hydrophasianus chirurgus* (Scopoli)


*Common name*: Pheasant-tailed Jacana (English) and Piho (Hindi)

*Material examined*: Nil.


*Remarks*: Observed it near Siju cave, the South Garo Hills

Genus *Metopidius* Wagler, 1832

76. *Metopidius indicus* (Latham)


*Common name*: Bronzewinged Jacana (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (West Garo Hills district): Throughout India. Elsewhere: Bangladesh, Burma (Myanmar), Bhutan, Cambodia, Java, Malay Peninsula, Nepal, Pakistan, Sumatra, Thailand and Vietnam.

*Remarks*: Observed it near Kherapara, the West Garo Hills.

Family CHARADRIIDAE

Key to the genera of the subfamily Charadriinae

1. Tail-feathers grey or brown, outer tail-feathers white or white-tipped .................. *Charadrius*

   Tail-feathers white with a broad black band on the distal half or with narrowly barred with dusky spots on margins of outer tail-feathers .................................................. 2

2. Tail with narrowly barred. Black spotted .................................................. *Pluvialis*

   Tail with a broad black band and often with a narrow white terminal band ............... *Vanellus*
Genus *Vanellus* Brisson, 1760

77. *Vanellus indicus indicus* (Boddaert)


*Common name:* Redwattled Lapwing (English), Titori (Hindi) and Tetetot (Garo).

*Material examined:* Nil.


*Distribution:* India: Meghalaya (Ri-Bhoi Hills district): Throughout the Indian mainland. Elsewhere: Arabia, Afghanistan, Bangladesh, Bhatan, eastern Transcaspian regions, Iran, Iraq, Nepal and Pakistan.

*Remarks:* Observed it near Barapani, the Ri-Bhoi Hills.

78. *Vanellus spinosus duvancelii* (Lesson)


*Common name:* Spurwinged Lapwing (English).


*Diagnostic characters:* Back, part of wings, neck and breast vinous-grey and sandy brown. Uppertail-coverts and tail white. Terminal half of tail black. Primaries and primary-coverts black; central secondaries white. Cheeks, chin and throat black bordered with white; centre of abdomen black. Rest of underparts white. Wings with long curved spur on the bend; forehead, crown and occipital crest black.

*Measurement:* 1 ♀: Wing 198, tail 90, bill 32 (from the skull).


Genus *Pluvialis* Brisson, 1760

79. *Pluvialis dominica fulva* (Gmelin)


*Common name:* Eastern Golden Plover (English).

*Material examined:* Nil.

*Diagnostic characters:* In non-breeding (winter) : Head, back and wing mottled brown, white and golden yellow. Underparts whitish, breast mottled with brown, grey and yellow. Axillaries grey.

**Remarks**: Hume (1888, 313) received a specimen from Shillong, the East Khasi Hills.

**Genus** *Charadrius* Linnaeus, 1758

**80. Charadrius dubius curonicus** Gmelin


*Common name*: European Little Ringed Plover (English).

*Material examined*: Nil.

*Diagnostic characters*: Back sandy brown. Forecrown black. A black band from lores through eye to ear-coverts. A double collar on hindneck (a upper white, the lower black); underparts white with a black pectoral band.

**Distribution**: India: Meghalaya (South Garo Hills district): Throughout the Indian Union. Elsewhere: Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, Burma (Myanmar), Thailand, Malay Peninsula, Indo-China, New Guinea, Bismarck Archipelago, apparently also the greater and Lesser Sunda Islands.

**Remarks**: Observed it at Baghmara, the South Garo Hills.

**81. Charadrius dubius jerdoni** (Legge)


*Common name*: Indian Little Ringed Plover (English) and Merwa (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Smaller in size. Back sandy brown. Forecrown black. A black band from lores through eye to ear coverts. A double collar on hindneck (a upper white, the lower black); underparts white with a black pectoral band.

**Distribution**: India: Meghalaya (Ri Bhoi Hills district): Throughout Indian Union except Arunachal Pradesh, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh, Bismarck Archipelago, Burma (Myanmar), Indochina, Malay Peninsula, Nepal, New Guinea, Pakistan and Sunda Islands.

**Remarks**: Observed it at Barapani, the Ri-Bhoi Hills.

**Key to the genera of subfamily Scolopacinae**

1. Tibia feathered ........................................................................................................... 2
   Tibia unfeathered ............................................................................................................. 3

2. Tibia entirely feathered ............................................................................................ *Scolopax*
   Tibia partially feathered ....................................................................................... *Gallinago*
3. Toes partially webbed ................................................................. 4
   Toes divided ........................................................................... Calidris

4. No white on secondary coverts or upper tail-coverts ......................... Philomachus
   White on upper tail-coverts and tip of secondary coverts .................. Tringa

Genus Tringa Linnaeus, 1758

82. Tringa totanus totanus (Linnaeus)


Common name: Common Redshank (English) and chhota batan (Hindi)

Material examined: Nil.

Diagnostic characters: In non-breeding (winter): Upperback greyish brown. Lower back and rump white. Tail white barred with brown. Upperparts white, breast finely streaked with brown. Bill straight slender, orange-red and black. White band on wings.

Distribution: India: Meghalaya (South Garo Hills district): Throughout the Indian Union. Elsewhere: Bangladesh, Malaya States, Nepal, Pakistan, Philippines, Sril Lanka and Sunda Islands. Breeds in central and eastern Asia to Transbaikalia and West Kansu.

Remarks: Observed it near Baghmara, the South Garo Hills.

83. Tringa stagnatilis (Bechstein)

1803. Totanus stagnatilis Bechstein, Orn. Taschenb. Deutschl., 2 :292, pl.29 (Germany).

Common name: Marsh Sandpiper or Little Greenshank (English).

Material examined: Nil.

Diagnostic characters: Upper back and forehead greyish brown, supercilium, sides of head, lower back and rump pure white. Underparts pure white, sides of breast more or less marked with brown. Bill almost straight and black. Legs very slender and greenish. Tail very slender and brownish.


Breeds in S.E. Europe, C. and S. Russia and across middle Asia south of lat. 56° at least as far east as Transbaikalia, South to Turkestan and N. Mongolia.

Remarks: Seen it near Barangapara, the West Garo Hills.

84. Tringa nebularia (Gunnerus)


*Common name*: Greenshank (English) and Timtima (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: In non-breeding (Winter): Upper back greyish brown; forehead, lowerback, rump and tail white. Tail with faint, almost invisible barring. Underparts white, greyish on foreneck and sides of head.

*Distribution*: India: Meghalaya (South Garo Hills district): Throughout the Indian Union. Elsewhere: Bangladesh, eastwards through South East Asia to Australia and New Zealand, Mediterranean countries, Africa, Maldive Islands, Sri Lanka, Pakistan and Nepal.

*Remarks*: Observed it on the bank of the river Phuleswar at Baghmara, the South Garo Hills.

85. *Tringa ochropus* Linnaeus


*Common name*: Green Sandpiper (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (East Garo Hills district): Throughout India except Nicobar Islands, Mizoram, Nagaland, Tripura and West Bengal. Elsewhere: Africa (south to Angola and Kenya), Bangladesh, British Isles, Burma (Myanmar), Indochinese countries, Hainan, Mediterranean Region, Nepal, Pakistan, Philippines, Sri Lanka, Taiwan and Thailand.

*Remarks*: Seen it on the bank of the river Simsang, near Wiliammagar, the East Garo Hills.

86. *Tringa glareola* Linnaeus


*Common name*: Spotted Sandpiper (English) and Chupka (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: In non-breeding (winter): Upperback greyish brown and sepia-brown indistinctly spotted and marked with white. Supercilium whitish. Rump, tail and lower back white. Tail barred with blackish. Underparts whitish, pale dusky breast.


Breeds in North Europe and North Asia east to the Amur River Kamchatka and northern Kurile Islands. Wintering throughout Africa and S.E. Asia, Japan, Philippines, Malaya Archipelago to Australia.
Remarks: Observed it near Siju cave, the South Garo Hills.

87. Tringa hypoleucos hypoleucos Linnaeus


Common name: Common Sandpiper (English).

Material examined: Nil.


Distribution: India: Meghalaya (South Garo Hills district): Throughout the Indian Union. Elsewhere: Africa, Bangladesh, Bhutan, Burma (Myanmar), Malaya Archipelago to Australia, Nepal, Philippines, Sri Lanka, S.E. Asia north to S. China and Taiwan.

Remarks: Observed it near Baghmara, the South Garo Hills.

Genus Gallinago Brisson, 1760

88. Gallinago solitaria solitaria Hodgson


Common name: Eastern Solitary Snipe (English) and Ban Chaha (Hindi).

Material examined: Nil.

Diagnostic characters: Crown with longitudinal stripes and median pale band. Entire plumage variegated brown, black, rufous, fulvous and white. Bill slender and straight.


Breeds in Central Asia at high elevations from Tarbagatai, the Sayan and Khangai Mts. South to the Tian Shans and the Himalayas, east to Koko Nor and Upper Burma.

Remarks: Hume (1888, p. 319) reported it from both the Garo and Khasi Hills.

89. Gallinago nemoricola Hodgson


Common name: Wood snipe (English) and Chaha (Hindi).

Material examined: Nil.

Diagnostic characters: Back dark brown with black rufous and buff streaks. Breast fulvous barred with brown; belly and vent white closely barred with brown.
**Distribution**: India: Meghalaya (Garo Hills and Khasi Hills districts): Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Nepal, Pakistan, Sri Lanka and Tibet.

**Remarks**: Hume (1888, p. 318) remarked "It occurs in both the Garo and Khasi Hills"

90. *Gallinago stenura* (Bonaparte)


**Common name**: Pintail Snipe (English) and Chaha (Hindi).

**Material examined**: Nil.


**Distribution**: India: Meghalaya: (South Garo Hills district): Throughout the Indian Union except Lakshadweep. Elsewhere: Bangladesh, Bhutan, China, Hainan, Indochinese countries, Nepal, Pakistan, Sri Lanka, Sunda Islands, Taiwan and Timor.

Breeds in E. Siberia west to the Yenisey, north to c lat. 67° South to E. Turkestan, N. Tibet, the upper Hoang-Ho, Amurland and Sakhalin.

**Remarks**: Observed it near Siju Cave, the South Garo Hills.

91. *Gallinago gallinago gallinago* (Linnaeus)


**Common name**: Fantail Snipe (English).

**Material examined**: Nil.

**Diagnostic characters**: Back dark brown, heavily streaked with black rufous and buff. Underparts whitish. Three outer pairs of tail-feathers marked with dusky spots and bars. Bill straight, slender, yellowish horny on basal half, dark horny brown on terminal half.

**Distribution**: India: Meghalaya (South Garo hills district): Throughout the Indian union. Elsewhere: Bangladesh, China, Egypt, East Africa south to Kenya, Indochinese countries, Japan, Maldive Islands, Mediterranean region, Nepal, Pakistan, Persia, Sri Lanka and Sunda Islands.

**Remarks**: Seen it on the bank of the river Phuleswar at Baghmara, the South Garo Hills.

92. *Gallinago minima* (Brunnich)


**Common name**: Jack Snipe (English) and Chota chaha (Hindi).
Material examined: Nil.


Distribution: India: Meghalaya (East Garo Hills district): Throughout the Indian Union. Elsewhere: Bangladesh, Burma, Egypt, Iran, Iraq, Nepal, Mediterranean region, Pakistan, Sri Lanka, and West Europe.

Breeds in E. Europe 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; Soutward limit in W. and E. Siberia not known.

Remarks: Seen it on the bank of the river Simsang at Rongrenggiri, the East Goro hills.

Genus *Scolopax* Linnaeus, 1758

93. *Scolopax rusticola rusticola* Linnaeus


Common name: Woodcock (English) and Tuteetor (Hindi).

Material examined: Nil.

Diagnostic characters: Back brownish grey blotched and barred with black, rufous and buff. Hind crownneck and rump cross-barred with black and rufous. Chin white; throat, breast and belly brownish white cross-barred with dark brown. Bill long and slender. Nape with alternate pale bars. Large eyes are situated abnormally high up and far back in the head.


Remarks: Hume (1888, p. 318) reported "It occurs in many parts of the Khasi and Garo Hills, regularly if not abundantly"

Genus *Calidris* Merrem, 1804

94. *Calidris minuta* (Leisler)


Common name: Little Stint (English) and Chhota panlowwa (Hindi).

Material examined: Nil.


Breeds in U.S.S.R.

Remarks: Observed it on the bank of the river Simsang, at Rongrenggiri, the East Garo Hills.

95. *Calidris temminckii* (Leisler)


Common name: Temminck’s Stint (English) and Chhota panlowwa (Hindi).

Material examined: Nil.

Diagnostic characters: Back greyish brown and less mottle. Underparts pearly white. Breast light brownish grey; outer tail-feathers pure white. Legs olive-brown.

Distribution: India: Meghalaya (East Garo Hills district): Throughout the Indian Union. Elsewhere: Bangladesh, Burma (Myanmar), China, Iran, Iraq, Japan, Malay Peninsula, Maldives, NE. Africa, Pakistan, Sri Lanka and Europe in the Mediterranean region.

Breeds from N. Norway east to the Chukchi Peninsula but not north of lat. 72° at the mouth of Yenisey, nor north of 76° on Taimyr Peninsula; Kolguev and Vaigach is.; exact southern limits not determined, but extends into the "Alpine zone" of N. Europe and Asia. Migrates through Europe and Asia and winters in the Mediterranean region, NE. Africa, Iraq, Persia, India, Sri Lanka, Burma (Myanmar), Malay Peninsula, China and Japan' (Peters).

Remarks: Seen it near Barapani, the Ri-Bhoi Hills.

Genus *Philomachus* Merrem, 1804

96. *Philomachus pugnax* (Linnaeus)


Common name: Ruff (English) and Bagbad (Hindi).

Material examined: Nil.

Diagnostic characters: In non-breeding (Winter): Back dumpy greyish brown with bold blackish scaly-patterned. Wings with white wings-bar. Rump dark. Tail with a white patch on either side at its base.

Distribution: India: Meghalaya: (East Garo Hills district): Throughout the Indian Union. Elsewhere: Africa, America (North), Atlantic Islands (eastern), Antilles (Lesser), Bangladesh, Burma (Myanmar), China, Maldives Islands, Nepal, Pakistan and Sri Lanka.

Remarks: Observed it on the bank of the river Simsang, at Rongrenggiri, the East Garo Hills.
Family **ROSTRATULIDAE**

Genus *Rostratula* Vieillot, 1816

97. *Rostratula benghalensis benghalensis* (Linnaeus)


*Common name:* Painted Snipe (English) and Rajchaha (Hindi).

*Material examined:* Nil.

*Diagnostic characters:* Back metallic olive-or bronze-green with buff and blackish streaks and markings. 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. Bill long, slender straight and slightly down-curved at tip.

*Distribution:* India: Meghalaya (Khasi Hills district): Throughout the Indian Union. Elsewhere: Arabia, Africa, Bangladesh, Burma (Myanmar), Cambodia, China, Indonesia, Iran, Japan, Madagascar, Malay Peninsula, Nepal, Pakistan, Philippines and Sri Lanka.

*Remarks:* Baker (1907 p. 973) recorded it from the North Khasi Hills and listed it as *Rostratula capensis* Linnaeus.

Family **RECURVIROSTRIDAE**

Genus *Himantopus* Brisson, 1760

98. *Himantopus himantopus himantopus* (Linnaeus)


*Common name:* Indian Blackwinged Stilt (English) and Gazpaon (Hindi).

*Material examined:* Nil.

*Diagnostic characters:* Back glistening white; mantle and wings glossy metallic black. Underparts glistening white. Head with few black spots. Tail pale grey brown. Undersurface of wings black. Bill straight, slender and black. Legs long, thin and raddish.

*Distribution:* India: Meghalaya, (East Garo Hills district): Throughout the Indian Union except Andaman and Nicobar Islands: Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Nepal and Pakistan.

Breeds locally in the Mediterranean region; about the mouth on the Danube; steppes of S.Russia; S. Asia east to China and S. Arabia, the Malaya States; Egypt, Africa, South of the Sahara and Madagascar.

*Remarks:* Observed it on the bank of the river Simsang near Wiliamnagar, the East Garo Hills.

Family **BURHINIDAE**

Genus *Burhinus* Illiger, 1811

99. *Burhinus oedicnemus indicus* (Salvadori)


*Common name:* Indian Stone Curlew (English) and Barsiri (Hindi).

*Materia| examined:* Nil.

*Diagnostic characters:* Back dark-streaked sandy brown. Head thick. Legs long bare and yellowish "thick-kneed". Eyes huge "Goggle"-like yellow. A broad buffy bar on the closed wings. Two narrow white bars and a conspicuous white patch on wings.


*Remarks:* Observed it at Cherrapunjee, the East Khasi Hills.

**Family** GLAREOLIDAE

**Genus** Glareola Brisson, 1760

100. *Glareola pratincola maldivarum* J.R. Forster


*Common name:* Large Indian Pratincole or Swallow-Plover (English).

*Materia| examined:* Nil.


*Remarks:* Seen it on the bank of the river Phuleswar at Baghmara, the South Garo Hills.

**Family** LARIDAE

Key to the genera of the family Laridae

Bill stout, compressed, upper mandible longer than the lower, the tip of upper mandible curved.

.................................................. .................................................. *Larus*

Bill slender, straight with pointed tip, culmen straight ........................................... *Sterna*

**Genus** Larus Linnaeus, 1758

101. *Larus brunniceps* Jerdon


Common name: Brownheaded Gull (English) and Dhomra (Hindi).

Material examined: Nil.

Diagnostic characters: Size equal to Jungle Crow. Head and Chin dark coffee-brown (in summer); greyish white (in winter). A vertical black crescent mark behind the ear. Back grey; under-parts white. Wings with blackish tip. Bill, legs and feet deep blood red.


Breeds in Ladakh between c 3000 and 4500m. and in Central Asia from Chinese Turkestan to S. Mongolia.

Remarks: Observed it near Burnihat, Ri-Bhoi Hills.

Genus **Sterna** Linnaeus, 1758

102. **Sterna aurantia** J.E. Gray


Common name: Indian River Tern (English) and Ganga Cheel (Hindi).

Material examined: Nil.


Remarks: Seen on the bank of the river Simsong at Rongrenggiri, the East Garo Hills.

103. **Sterna hirundo tibetana** Saunders


Common name: Tibetan Common Tern (English) and Ganga Cheel (Hindi).

Material examined: Nil.


Remarks: Observed it near Baghmara, South Garo Hills.

104. **Sterna acuticauda** J.E. Gray


*Common name*: Blackbellied Tern (English) and Ganga cheel (Hindi).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (East Garo Hills district) : Throughout the Indian Union. Elsewhere: Bangladesh, Burma (Myanmar), Indochinese countries, Pakistan, Sri Lanka and Thailand.

*Remarks*: Seen it at Saringma, the East Garo Hills.

**Order** COLUMBIFORMES

**Family** COLUMBIDAE

Key to the genera of the family columbidae

1. Plumage greenish ..................................................................................................... 2

Plumage not greenish .................................................................................................. 3

2. Plumage with much yellow green above and below .............................................. *Treron*

Plumage valnaceous with metallic green in upper parts ........................................... *Chalcophaps*

3. Tail with 14 feathers, head entirely whitish ....................................................... *Ducula*

Tail with 12 feathers, head not white ............................................................................ 4

4. Plumage distinctly barred with black ....................................................... *Macropygia*

Plumage not barred with black .................................................................................... 5

5. Wing above 200 mm., outer tail-feathers blackish at tips ..................................... *columba*

Wing below 180 mm., outer tail-feathers white or grey at tips ............................... *Streptopelia*

Genus *Treron* Vieillot, 1816

105. *Treron sphenura sphenura* (Vigors)


*Common name*: Wedgetailed Green Pigeon (English) and Kokila (Hindi).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district): Northern India from Jammu & Kashmir to
Arunachal Pradesh, Assam, Manipur, Madhya Pradesh and Nagaland. Elsewhere: Bangladesh and Burma (Myanmar).

Remarks: Hume (1888, p. 292) recorded this bird from Shillong and other places in the Khasi Hills and mentioned it as *Sphenocercus sphenurus* Vig.

106. *Treron curvirostra nipalensis* (Hodgson)


*Common name*: Thickbilled Green Pigeon (English).

*Diagnostic characters*: In male, back, scapulars and lesser Wing-coverts chestnut-maroon. Forehead ashy-grey while forecrown darker grey. Central tail-feathers olive-green; outer tail-feathers grey above with black cross-bar. Underparts yellowish green with pale cinnamon tail-coverts. In female, back dark green, under tail coverts whitish with dark green broken bars.


Remarks: Observed it at Nongpoh, Ri-Bhoi Hills.

107. *Treron pompadora phayrei* (Blyth)


*Common name*: Ashyheaded Green Pigeon (English) and Harial (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: In male, back and scapulars chestnut maroon; crown and nape dark ashy-grey. Sides of head greenish yellow. Hindneck green. Underparts greenish yellow; upper breast orange; lower breast and abdomen olive-green; under tail-coverts cinnamon. In female, similar to male, but lacks chestnut mantle and orange breast.


Remarks: Godwin-Austen (1870 p.111) recorded it from the Khasi Hills.

108. *Treron bicincta bicincta* (Jerdon)


*Common name*: Indian Orangebreasted Green Pigeon (English), Harial (Hindi) and dokru-a-sim (Garo).


**Measurements**: \(1^\sigma\): Wing 158, tail 96, bill 23.


109. *Treron phoenicoptera phoenicoptera* (Latham)


**Common name**: Bengal Green Pigeon (English) and Harial (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: Back greenish grey; red shoulder-patch, neck yellow. Lower breast grey: belly and flank grey.

**Distribution**: India: Meghalaya (Khasi Hills district) Arunachal Pradesh, Assam, Bihar, Haryana, Manipur, Mizoram, Orissa, Punjab, Rajasthan, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh and Nepal.

**Remarks**: Hume (1888, p.290) received a bird from Godwin-Austen who collected it from the Khasi Hills. He listed it as *Crocopus viridifrons* Blyth.

Genus **Ducula** Hodgson, 1836

110. *Ducula aenea sylvatica* (Tickell)


**Common name**: Northern Green Imperial Pigeon (English) and Dopilgim (Garo).

**Material examined**: Nil.

**Diagnostic characters**: Size equal to crow. Head, breast and belly pinkish grey; back, wing and tail bright metallic bronzy green. Undertail-coverts deep dull maroon.

**Distribution**: India: Meghalaya (Garo Hills district): Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma(Myanmar), Indochinese countries and Thailand.

**Remarks**: Hume (1888, p.294) remarked "Godwin-Austen gives it from the Garo Hills and says it was in enormous numbers at the hot saline springs of Namba on the Dunsiri river" and listed it as *Carpophaga aenea* Linnaeus.
111. *Ducula badia insignis* Hodgson


*Common name*: Nepal Maroonbacked Imperial Pigeon (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (East Khasi Hills district); Arunchal Pradesh, Assam and Sikkim. Elsewhere: Bhutan and Nepal.

*Remarks*: Hume (1888, p.295) reported this bird from Shillong, the East Khasi Hills and listed it as *Carpophaga insignis* Hodgson.

Genus *Columba* Linnaeus, 1758

112. *Columba livia intermedia* Strickland


*Common name*: Indian Blue Rock Pigion (English), and Kabutar (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Entire plumage bluish grey; nape and upper breast with glistening metallic green, purple and magenta sheen. Wing with two dark bands. Tail with terminal black bands.


*Remarks*: Sighted this bird during field survey in all the districts of Meghalaya.

Genus *Macropygia* Swainson, 1837

113. *Macropygia unchall tusila* (Blyth)


*Common name*: Bartailed Cuckoo-Dove (English).

*Material examined*: Nil.

*Diagnostic characters*: Size equal to pigeon. In male, back, wings and tail brownish-rufous, barred with black. Tail long, broad and graduated. Forehead buff, crown lilac-purple, hindneck metallic green, chin and throat lilac-buff, breast and abdomen dark lilac. In female, the upperparts duller, head and breast barred with dark brown.

**Remarks** : Hume (1888, p. 297) collected it from the Khasi Hills.

**Genus** *Streptopelia* Bonaparte, 1855


**Common name** : Eastern Turtle-Dove (English) and Dokru (Garo).


**Measurements** :

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>♂</td>
<td>181</td>
<td>126</td>
<td>26</td>
</tr>
<tr>
<td>♀</td>
<td>178</td>
<td>125</td>
<td>22</td>
</tr>
</tbody>
</table>

**Distribution** : India : Meghalaya (East and West Garo Hills districts and Khasi Hills district): Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

**Remarks** : Hume (1888, p. 298) reported it from the Khasi Hills and listed it as *Turtur meena* Sykes. Koelz (1954) described this bird from Mawryngkneng, in Khasi Hills as *Streptopelia orientalis khasiana*.


**Common name** : Indian Ring Dove (English) and Gugi (Hindi).

**Material examined** : Nil.

**Diagnostic characters** : Size smaller than the Pigeon. Entire plumage pale greyish-brown. Hindneck with a narrow black half-collar. Outer rectrices with white edges, central pair blackish.

**Distribution** : India : Meghalaya (Garo Hills district): Throughout the Indian Union except the Andaman and Nicobar Islands. Elsewhere : From Hungary over SE. Europe, Asia Minor and Sri Lanka.

**Remarks** : Godwin-Austen (1872, p.272) recorded it from the Garo Hills and listed it as *Turtur risorius* Linnaeus.
116. *Streptopelia tranquebarica humilis* (Temminck)  
*Common name*: Burmese Red Turtle-Dove (English).  
*Diagnostic characters*: Size equal to Myna. Head grey, back brick-red and underparts pinkish. Hindneck with a narrow black half-collar.  
*Measurements*: 2 ♂: Wing 136, 140; tail 85, 89; Bill (from the skull) 19,20.  
*Distribution*: India: Meghalaya (Garo Hills district): Andaman Islands, Arunachal Pradesh, Assam, Manipur, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar), China (northern part), Indochinese countries, Philippines, Thailand and Tibet.  
*Remarks*: Hume (1888, p. 299) remarked "It is probably this species (though it may have been *tranquebaricus*) that Godwin-Austen records it from the Garo Hills"  

117. *Streptopelia chinensis suratensis* (Gmelin)  
*Common name*: Indian Spotted Dove (English) and Panduk (Hindi)  
*Material examined*: Nil.  
*Diagnostic characters*: Size smaller than the Pigeon. Back pinkish brown, head grey; hindneck and upper back with a conspicuous black-and-white "Chessboard" Chin vinous-grey, paller on throat; belly vent and undertail-coverts white.  
*Distribution*: India: Meghalaya (Khasi Hills district): Throughout the Indian Union except the Andaman and Nicobar Islands, Arunachal Pradesh, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh and Pakistan.  
*Remarks*: Godwin-Austen (1870, P. 112) collected it from the Khasi Hills and listed it as *Turtur suratensis* Gmelin.  

118. *Streptopelia chinensis tigrina* (Temminck)  
1810. *Columba Tigrina* Temminck, in *Krip, Les Pigeons, les Pigeons, les Colombes*: 94, pl. 43 (Tinor and Batavia; type from Java).  
*Common name*: Burmese Spotted Dove (English) and Panduk (Hindi).  

Diagnostic characters: Size smaller than the Pigeon. Back pinkish-brown, head grey; hindneck and upper back with a conspicuous black-and-white "chessboard" Chin vinous-grey, paler on throat. Belly, vent and undertail-coverts white.

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♂</td>
<td>140, 144</td>
<td>135, 140</td>
<td>19, 20</td>
</tr>
<tr>
<td>2 ♀</td>
<td>136(2)</td>
<td>125, 127</td>
<td>20, 21</td>
</tr>
</tbody>
</table>

Distribution: India: Meghalaya (East and West Garo Hills and Ri-Bhoi Hills districts): Arunanchal Pradesh, Assam, Manipur, Mizoram, Elsewhere: Bangladesh, Burma (Myanmar), Malaya Peninsula, Indochinese countries and Indonesia.

Remarks: Observed in all the districts of Meghalaya.

Genus Chalcophaps Gould, 1843


Common name: Indian Emerald Dove (English).


Measurements: 2 ♂: Wing 148, 149; tail 97, 98; bill 24(2).


Order PSITTACIFORMES
Family PSITTACIDAE

Key to the genera of the family Psittacidae

Tail long graduated, wing larger than tail ................................................................. Psittacula
Tail short, rounded, wing smaller than tail ................................................................. Loriculus
Genus *Psittacula* Cuvier, 1800

120. *Psittacula eupatria avensis* (Kloss)


**Common name**: Large Burmese Parakeet (English).

**Material examined**: Nil.

**Diagnostic characters**: Grass-green plumage; long pointed tail. A bright red shoulder-patch on wing base. Bill red, deeply hooked. In male, a prominent rose-pink collar round the back and sides of neck. In female, the rose-pink collar absent.

**Distribution**: India: Meghalaya (Khasi Hills district) : Assam, Manipur and Nagaland. Elsewhere: Burma (Myanmar)

**Remarks**: Hume (1888, p. 54) reported it from the South Khasi Hills near Cherrapunjee.

121. *Psittacula krameri borealis* (Neumann)


**Common name**: Northern Roseringed Parakeet (English), Lybar Tota (Hindi) and Tia, Dosik, Bato (Garo).


**Diagnostic characters**: Size slightly bigger than the Myna. In male, the entire plumage grass-green. Neck with rose-pink and black collar. Wings without red shoulder patch. In female, the neck collar is replaced by an indistinct emerald-green ring.

**Measurements**: 1♂ : Wing 179, tail 248, bill (from the feathers) 26.


122. *Psittacula alexandri fasciata* (P.L.S. Muller)


**Common name**: Indian Redbreasted Parakeet (English) and Madna (Hindi).


**Diagnostic characters**: Size slightly smaller than the Pigeon. In male, head purplish grey; forehead black; back brighter green. Broad black stripe extending from lower mandible to side of head. Wing with yellow shoulder-patch. Throat and breast vinacious-red. Belly bluish green; vent and undertail-coverts yellowish green. In female, head tinged bluish-green; breast reddish dark.
Measurements: 2♂: Wing 173, 177; tail 200, 204; bill 27, 28.


123. *Psittacula cyanocephala bengalensis* (Forster)


Common name: Northern Blossomheaded Parakeet (English) Tuiyatota (Hindi) and Gagra (Garo).


Diagnostic characters: In male, back and underparts grass green. Head bright bluish red, collar black-and-verdigris. Wings with maroon-red wings patch. In female, characters similar to male except head duller and greyer, collar bright yellow. Shoulder-patch absent.

Measurements: 1♀: Wing 140, tail 194, bill 18 (from the cere):


124. *Psittacula himalayana* (Lesson)


Common name: Himalayan Slatyheaded Parakeet (English).

Material examined: Nil.

Diagnostic characters: Grass-green parakeet with the entire head dark bluish slaty. A prominent dark red patch on wing-shoulder in male but absent in female. Tail graduated. The tail-feathers broadly tipped with bright pale yellow.


Remarks: Hume (1888, p.56) reported that Godwin-Austen obtained this bird from the Khasi Hills.

125. *Psittacula finschii* (Hume)


Common name: Eastern Slatyheaded Parakeet (English).
Material examined: Nil.

Diagnostic characters: 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. Wing with a prominent dark red spot on wing-shoulder. In female, the red shoulder-patch absent.


Genus Loriculus Blyth, 1850

126. Loriculus vernalis (Sparrman)


Common name: Indian Lorikeet (English).

Material examined: Nil.

Diagnostic characters: Size equal to Sparrow. Back, wings and tail bright grass-green. Rump with rich crimson. In male, throat with blue patch while absent in female.


Remarks: Godwin-Austen (1870, p.97) recorded it from the Khasi Hills.

Order CUCULIFORMES
Family CUCULIDAE

Key to the genera of the family Cuculidae

1. Tarsus naked, without feathered ................................................................. 2
   Tarsus more or less feathered anteriorly ................................................... 4
2. Plumage of head and shoulders not spiney .............................................. Eudynamys
   Plumage of head and shoulders spiny .................................................... 3
3. Claw of hindtoe much lengthen and nearly straight .................................. Centropus
   Claw of hindtoe not as above ................................................................. Rhopodytes
4. Head creasted, tarsus feathered top only ................................................. Clamator
   Head not crested, tarsus feathered throughout infront ................................ 5
5. Tail square or forks ................................................................................. Surniculus
   Tail rounded or graduated ..................................................................... 6
6. Plumage of upper parts metallic ............................................................. Caleits
Plumage of unperparts no metallic

Genus **Clamator** Kaup, 1829


*Common name*: Redwinged crested cuckoo (English).


*Diagnostic characters*: Back and head with crest glossy black; a white half-collar on hindneck, wings chestnut. Chin, throat and breast rust colour; belly and vent whitish.

*Measurements*: 1 ♂: Wing 163, tail 228, bill 32.

*Distribution*: India: Meghalaya (Garo Hills and Khasi Hills districts) : Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Maharashtra, Manipur, Mizoram, Nagaland, Sikkim, Tamil Nadu, Uttar Pradesh. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Celebes, China, Indochinese countries, Indonesia, Malay Peninsula, Nepal, Philippines and Thailand.

*Remarks*: Baker (1907, p. 968) recorded it from the Garo Hills.

128. **Clamator jacobinus serratus** (Sparrman)


*Common name*: Pied Crested cuckoo (English) and Papiya (Hindi).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district) : Andhra Pradesh, Arunachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Manipur, orissa, Punjab, Sikkim, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Africa (South of Sahara), Bangladesh, Nepal and Pakistan.

*Remarks*: Hume (1888, p. 76) recorded it from Shillong, the East Khasi Hills and listed it as *Coccystes jacobinus* Bodaert.

Genus **Cuculus** Linnaeus, 1758

129. **Cuculus sparverioides sparverioides** Vigors


**Common name**: Large Hawk-Cuckoo (English).

**Material examined**: Nil.

**Diagnostic characters**: 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 and across-banded with brown.

**Distribution**: India: Meghalaya: Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Manipur, Nagaland, Orissa, Sikkim, Tamil Nadu and Uttar Pradesh.


30. *Cuculus varius varius* Vahl


**Common name**: Common Hawk-Cuckoo (English) and Papiya (Hindi).


**Diagnostic characters**: Size equal to Pigeon. Crown and back ashy-grey. Tail long, tipped rufescent with 4 or 5 whitish and black bars. Chin and throat white suffused with rufous and ashy on breast. Abdomen and flanks barred with brownish.

**Measurements**: 1♀: Wing 180, tail........ Juvenile


31. *Cuculus fugax nisicolor* Blyth


**Common name**: Hodgson's Hawk-Cuckoo (English).

**Material examined**: Nil.

**Diagnostic characters**: Head, hindneck slaty grey. Wings brownish. Tail banded grey and black alternately; tipped with rufous. Chin grey, throat and foreneck white streaked with grey. Vent and under tail-coverts white.


**Remarks**: Hume (1888, p. 72) reported this from the Khasi Hills and mentioned it as *Hierococcyx nisicolor* Hodgson.

32. *Cuculus micropterus micropterus* Gould


Common name: Indian Cuckoo (English).

Material examined: Nil.


Breeds also in Burma (Myanmar), Thailand, Malay Peninsula, S. China, Korea and U.S.S.R.

Remarks: Hume (1888, pp. 70 & 71), collected it from Shillong, East Khasi Hills and listed it as Cuculus striatus Drapiez and C. micropterus Gould.

133. Cuculus canorus bakeri Hartert


Common name: Khasi Hills Cuckoo (English).


Diagnostic characters: In male, back blackish slaty. Tail blackish brown, spotted and tipped with white. Chin and breast pale ashy. Abdomen and belly white broadly cross-barred with blackish. In female, upper breast, throat and neck rufous. Chin, throat and breast barred pale chestnut and blackish.

Measurements: 1 ♀: Wing 210, tail 168, bill 27.


Remarks: Godwin Austin (1870, p. 267) reported it from the Khasi Hills and listed it as Cuculus canorus Linnaeus.

134. Cuculus saturatus horsfieldi Moore


Common name: East Himalayan Cuckoo (English).

Material examined: Nil.

Diagnostic characters: Similar to the preceding bird but with the edge of the wing-shoulder pure white, without any brown barring.

Distribution: India: Meghalaya: Bihar, Maharashtra, Rajasthan and Uttar Pradesh.

135. *Cuculus poliocephalus poliocephalus* Latham


*Common name*: Small Cuckoo (English).

*Material examined*: Nil.

*Diagnostic characters*: Head, back and wings slaty grey. Throat and upper breast suffused with buff. Lower breast and belly white with black barred. Edges of wing ashy. Legs and feet wax yellow.


*Remarks*: Hume (1888, p. 71) reported it from Shillong, the East Khasi Hills.

Genus *Chalcites* Lesson, 1830

136. *Chalcites maculatus* (Gmelin)


*Common name*: Emerald Cuckoo (English).

*Material examined*: Nil.


*Remarks*: Gowin-Austen (1872, p. 142) recorded it from the Garo Hills and listed it as *Chrysococcyx maculatus* Gmelin.

Genus *Surniculus* Lesson, 1830

137. *Surniculus lugubris dicruroides* (Hodgson)


*Common name*: Indian Drongo-Cuckoo (English).

*Material examined*: Nil.

*Diagnostic characters*: Entire body glossy metallic black. Tail forked. Outermost tail-feathers near their base barred with white.

*Distribution*: India: Meghalaya (Khasi Hills district): Northern India from Jammu & Kashmir to Arunachal Pradesh, Assam, Manipur and Southern India upto Kerala. Elsewhere: Bangladesh, Burma.
Remarks: Hume (1888, p. 74) reported that Godwin-Austen recorded this bird from the Khasi Hills and listed it as *Surniculus lugubris* Horsfield.

Genus *Eudynamys* Vigors & Horsfield, 1826


*Common name*: Indian Koel (English) and Koel (Hindi).

*Material examined*: Nil.

*Distribution*: Size equal to House Crow. In male, entire plumage glistening metallic black. Bill yellowish green. Eyes crimson. Calls: Kuoo, Kuoo etc. In female, back, wings dark brown with white spotted and barred. Tail and wings barred with white, chin and throat white spotted; breast, belly and vent whitish barred with blackish.


Remarks: Godwin-Austen (1907, p. 968) recorded it from Khasi Hills and listed it as *Eudynamis honorata*.


*Common name*: Malay Koel (English).

*Material examined*: East Garo Hills district: 1♂, Rongrenggiri c. 4 km. East of Williamnagar, coll. N. Majumdar, 30. xi. 1988

*Diagnostic characters*: Size equal to House Crow. In male, entire plumage glistening metallic black. Bill yellowish green. Eyes crimson. In female, back and wings dark brown with white spotted and barred. Tail and wings barred with white, chin and throat white spotted; breast, belly and vent whitish barred with blackish.

*Measurements*: 1♂: Wing 202, tail -, bill from the skull 35.

*Distribution*: India: Meghalaya (East Garo Hills district): Arunachal Pradesh, Assam, Manipur and Nagaland. Elsewhere: Bangladesh, Burma (Myanmar), Indonesia, Malaysia and Thailand.

Genus *Rhopodytes* Cabanis & Heine, 1863

140. *Rhopodytes tristis tristis* (Lesson)


*Common name*: Large Greenbilled Malkoha (English).

Diagnostic characters: Size equal to Pigeon. Back dark ashy-grey with deep green gloss. Forehead grey with shiny bristly black shafts to the feathers. Tail green-glossed black, graduated long and broad; rectrices tipped with white. Chin, throat and sides of head yellowish ashy-grey darkening to blackish on abdomen and vent.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♂</td>
<td>163,171</td>
<td>345,380</td>
<td>37,39</td>
</tr>
<tr>
<td>1 ♀</td>
<td>164</td>
<td>365</td>
<td>38</td>
</tr>
</tbody>
</table>

Distribution: India: Meghalaya (Ri-bhoi Hills district): Arunachal Pradesh, Assam, Bihar, Madhya Pradesh (eastern), Manipur, Nagaland, Orissa, Sikkim, Tripura and West Bengal. Elsewhere: Bangladesh, Bhutan and Nepal.

Genus Centropus Illiger, 1811

141. Centropus sinensis intermedius (Hume)


Common name: East Pakistan Crow-Pheasant (English) and Dobitbit (Garo).

Material examined: Nil.

Diagnostic characters: Size smaller than the Jungle Crow. Back and tail glossy black. Wings chestnut. Tail long, broad and graduated.


Remarks: Observed it near Kherapara, the West Garo Hills.

142. Centropus toulou bengalensis (Gmelin)


Common name: Lesser Coucal (English).


Diagnostic characters: Back and wings with glistening blue-black with chestnut. Tail-feathers slaty with white-tipped.

Measurements: 2 ♂ : Wing 140, 155; tail 174, 182; bill 26,28.

Distribution: India: Meghalaya (Garo Hills Khasi Hills and Ri-Bhoi Hills districts): Assam,
Bihar, Karnataka, Kerala, Manipur, Mizoram, Nagaland, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), China, Indochinese countries, Hainan, Nepal and Thailand.

Remarks: Godwin-Austen reported it from the Khasi Hills and listed it as *Centrocococyx bengaiensis* Gmelin.

<table>
<thead>
<tr>
<th>Order</th>
<th>STRIGIFORMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td>STRIGIDAE</td>
</tr>
</tbody>
</table>

Key to the subfamilies of the family Strigidae

Facial disc and ruff well marked, ear-orifice smaller than eye, middle claw pectinate..........*Tytoninae*

Facial disc and ruff ill marked, ear-orifice larger than eye, middle claw simple ..........*Striginae*

Key to the genera of the family Strigidae

1. Middle claw pectinate.................................................................................................. 2
   Middle claw not pectinate ......................................................................................... 3

2. Ruff around eyes not separated................................................................................ 4
   Ruff around eyes separated ...................................................................................... 5

3. Ear-tufts present ......................................................................................................... 6
   ear-tufts absent ........................................................................................................... 7

4. Wing over 250 mm ...................................................................................................... 8
   Wing below 250 mm..................................................................................................... 9

5. Wing over 350 mm ...................................................................................................... 10
   Wing in between 280 to 330 mm............................................................................... 11

6. Wing above 245 mm .................................................................................................... 12
   Wing below 240 mm..................................................................................................... 13

7. Plumage uniform above ............................................................................................ 14
   Plumage barred or spotted above ............................................................................. 15

8. Plumage barred above .............................................................................................. 16
   Plumage spotted above .............................................................................................. 17

Genus *Tyto* Billberg, 1828

143. *Tyto capensis longimembris* (Jerdon)


*Common name*: Grass Owl (English).
Material examined: Nil.

Diagnostic characters: Upper parts dark brown minutely spotted with white. Underparts white with scattered brown spots. Facial disc white or pinkish rusty white bordered by a dark-brown ruff. A blackish spot in front of eye.


Remarks: Godwin-Austen (1870, p. 93) obtained it near the Kopili river, the Khasi Hills. Hume (1888, p. 18) reported this bird from the Khasi Hills and listed it as Strix candida Tick.

Genus Phodilus G. Saint-Hilaire, 1830

144. Phodilus badius saturatus Robinson


Common name: Sikkim Bay Owl (English).

Material examined: Nil.

Diagnostic characters: Back and wings chestnut, spotted with black and buff. Two short ear-like tufts projecting above sides of head. Outer webs of 1st two premaries barred white and black. Tail chestnut, barred with black. Facial disc vinous-pink surrounded with white ruff tipped black and chestnut. Underparts vinous-pink spotted with black and white.


Genus Otus Pennant, 1769

145. Otus scops sunia (Hodgson)


Common name: North Indian Scops Owl (English) and Dopo (Garo).

Material examined: West Garo Hills district: 2♂ and 1♀, Kherapara, coll. Dr. N. Majumdar, 21 and 22.xi. 1988.


Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill [from the feathers]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2♂</td>
<td>145,151</td>
<td>67,70</td>
<td>17(2)</td>
</tr>
<tr>
<td>1♀</td>
<td>153</td>
<td>71</td>
<td>17</td>
</tr>
</tbody>
</table>

Distribution: India: Meghalaya (West Garo Hills and East Khasi Hills districts): Assam,

Remarks: Hume (1888, p. 21) recorded it from Shillong, East Khasi Hills. He listed this bird as *Scops pennatus* Hodgson. Koelz (1954) recorded it from Mawphlang, the East Khasi Hills and described it as *Otus sunia khasiensis*.

146. *Otus bakkamoena lettia* (Hodgson)


Common name: Burmese Collared Scops Owl (English).

Material examined: Nil.

Diagnostic characters: Size slightly bigger than the preceding bird. Back rufous-brown, mottled and vermiculated with whitish. Tarsus feathered only to base of toes. Presence of a prominent pale collar at base of hindneck. Chin and throat white on buff. Upper abdomen and vent white to rich buff streaked with black and with fine wavy bars of reddish brown.


Remarks: Observed it at Nongpoh, the Ri-Bhoi Hills.

147. *Bubo bubo bengalensis* (Franklin)


Common name: Indian Great Horned Owl (English) and Ghughu (Hindi).

Material examined: Nil.

Diagnostic characters: Size equal to Pariah Kite. Back dark brown streaked and mottled with tawnybuff and black. Head with two prominent blackish horns or ear-tufts. Chin whitish, throat light rufous with dark spots; breast and belly yellowish fufous with longitudinal streaks.


Remarks: Seen it near Mawphlong, the East Khasi Hills.

148. *Bubo coromandus coromandus* (Latham)


Common name: Dusky Horned Owl (English).

Material examined: Nil.
**Diagnostic characters**: Head, back and tail rufous-brown heavily streaked with black. Head with two "horns". Underparts whitish with fine wavy brown cross-band and bold blackish streaks. Large white patch on throat and foreneck. Eyes bright golden yellow.

**Distribution**: India: Meghalaya (Khasi Hills district): Throughout the subcontinent. Elsewhere: Bangladesh, Bhutan, Nepal and Pakistan.

**Remarks**: Hume (1888, p. 20) remarked "I never saw, though this occurs in the North Khasi Hills".

149. *Bubo zeylonensis leschenault* (Temminck)


**Common name**: Brown Fish Owl (English) and Ullu (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: Back rufous-brown heavily streaked with black. Underparts whitish with fine wavy brown-cross bars and bold blackish streaks. A large white patch on throat and foreneck. Head with two long ears. Legs naked.

**Distribution**: India: Meghalaya (Khali Hills district): The entire Indian Union. Elsewhere: Bangladesh, Burma (Myanmar), Indochinese countries and Indonesia.

**Remarks**: Hume (1888, p. 21) reported it from Shillong, the East Khasi Hills and listed it as *Ketupa ceylonensis* Gmelin.

150. *Bubo flavipes* (Hodgson)


**Common name**: Tawny Fish Owl (English).

**Material examined**: Nil.

**Diagnostic characters**: Back rich orange-rufous with broad blackish shaft-stripes. Quills of wings and tails dark brown, with buff bars and tips. A white patch on throat. Underparts rich orange-rufous with dark brown shaft-stripes, broadest on breast.

**Distribution**: India: Meghalaya (Khasi Hills district): Assam, Bihar, Himachal Pradesh, Manipur, Mizoram, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bhutan, Bangladesh, Burma (Myanmar), China, Indochinese countries, Nepal and Pakistan, and Taiwan.

**Remarks**: Hume (1888, p. 21) obtained a specimen of this from the Khasi Hills and reported it as *Ketupa flavipes* Hodgson.

**Genus** *Glaucidium* Boie, 1826

151. *Glaucidium brodiei brodiei* (Burton)


**Common name**: Collared Pigmy Owlet (English).

**Material examined**: Nil.


**Remarks**: Koelz (1952) reported it from Tura, the West Garo Hills and described it as *Glaucidium brodiei garoense*.

152. *Glaucidium cuculoides rufescens* Baker


**Common name**: Burmese Barred Owlet (English).


**Diagnostic characters**: Size smaller than the preceding bird. Colourition much richer rufous-brown. Breast more streaked, less bared.

**Measurements**:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2♂</td>
<td>140,142</td>
<td>83,84</td>
<td>20.21</td>
</tr>
<tr>
<td>1♀</td>
<td>150,156</td>
<td>87,92</td>
<td>21(2)</td>
</tr>
</tbody>
</table>


**Remarks**: Hume (1888, p. 23) remarked "occurs in the Garo Khasi Hills" and listed it as *Glaucidium cuculoides Vigors*.

Genus *Ninox* Hodgson, 1837

153. *Ninox scutulata burmanica* Hume


**Common name**: Burmese Brown Hawk-Owl (English).
Material examined: Nil.

Diagnostic characters: Back dark greyish brown. Lower plumage whitish streaked with brown. Tail barred with black and white-tipped.

Distribution: India: Meghalaya (Khasi Hills district): Assam, Manipur, Mizoram, Nagaland and Tripura. Elsewhere: Bangladesh, Burma, China, Indochinese countries, Malay Peninsula and Thailand.

Remarks: Observed it at Mawphlang, the East Khasi Hills.

Genus *Athene* Boie, 1822

154. *Athene Brama indica* (Franklin)


Common name: Northern Spotted Owlet (English).

Material examined: Nil.

Diagnostic characters: Size equal to Myna. Head, back, wings and tail greyish brown white spotted. Underparts whitish with brown barred.


Remarks: Godwin-Austen (1870, p. 94) obtained it from the Khasi Hills and reported it as *Athene Brama* Temminck.

Genus *Strix* Linnaeus, 1758

155. *Strix leptogrammica newarensis* (Hodgson)


Common name: Himalayan Brown Wood Owl (English).

Material examined: Nil.

Diagnostic characters: Head and back chocolate-brown. Scapulars, wings and upper tail-coverts barred with white. Tail brown, barred with fulvous; tip white. Chin mixed chocolate and white. Throat with a pure white-patch. Breast and abdomen pale fulvous suffused with brownish and closely barred with dark brown.

Remarks: Hume (1888, p. 19) remarked "Received this species from near Shillong and believe that it occurs throughout the Garo, Khasi Hills" and listed it as *Syrnium newarense* Hodgson.

156. *Strix leptogrammica indranee* Sykes


*Common name*: Brown Wood Owl (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya: Andhra Pradesh, Assam, Kerala, Madhya Pradesh, Maharashtra, Manipur, Nagaland and Orissa.


Genus *Asio* Brisson, 1760

157. *Asio flammeus flammeus* (Pontoppidan)


*Common name*: Short-eared Owl (English).

*Material examined*: Nil.

*Diagnostic characters*: Size larger than the Pigeon. Head darker greyish; facial disc white with bristly black feathers intermingled, surrounded by a dark brown ruff. Two blackish brown short ear-tufts. Wings and tail barred rufous and black. Underparts pale buff longitudinally streaked with brown.


Remarks: Observed it near Nongpoh, Ri-Bhoi Hills.

Order CAPRIMULGIFORMES

Family CAPRIMULGIDAE

Genus *Caprimulgus* Linnaeus, 1758

158. *Caprimulgus indicus hazarae* Whistler & Kinnear


*Common name*: Himalayan Jungle Nightjar (English) and Dabchiri (Hindi).

*Material examined*: Nil.
Diagnostic characters: Tarsus feathered; four outer pairs of tail-feathers with subterminal white spots in male, while in female white spots absent. Upper back dark with heavier markings; barring on the tail broader. Bill pinkish brown, paler at base and gape.


Remarks: Recorded the call note at Kherapara, the West Garo Hills.

159. Caprimulgus indicus jotaka Temminck & Schlegel

1847. Caprimulgus jotaka Temminck & Schlegel, in Siebold's Fauna Japonica, Aves, P. 37, pls. 12,13 (Japan).


Common name: Ceylon Jungle Nightjar (English).

Material examined: Nil.

Diagnostic characters: Plumage mottled, vermiculated, barred and streaked with brownish-buff, grey, rufous, black and white. Tarsus almost naked. In male, four outer pairs of tail-feathers with subterminal white spots, but absent in female.


Remarks: Hume (1888, p. 38) reported this bird from the Garo and Khasi Hills.

160. Caprimulgus macrurus albonotatus Tickell

1833. Caprimulgus Albonotatus Tickell, J. Asiat. Soc. Beng., 2: 580 (Dampara, Dholbhum, Bengal) [Now is Chaibasa dist., Bihar].


Common name: Indian Longtailed Nightjar (English).


Diagnostic characters: Tail long and graduated. A white spot on 1st four primaries in male. In female, the outer tail-feathers pale yellowish buff. call-Chaunk-chaunk-chaunk.

Measurements: 1♀, Wing, 200, tail 70, bill 14.


Remarks: Hume (1888, p. 39) remarked "I strongly suspect that the birds entered by G. Austen as albonotatus from the Garo Hill would prove to belong to this form"

161. Caprimulgus affinis monticola Franklin


Common name: Franklin's Nightjar (English), Chhippak (Hindi) and Dowang (Garo).

Material examined: Nil.

Diagnostic characters: Back without distinct black streaks. Outer tail-feathers all white except at tip in male while mottled throughout in female. Tarsus naked.


Remarks: Hume (1988, p. 40) stated that Gowin-Austen recorded it from the Garo Hills and listed it as Caprimulgus monticolus Franklin.

Order APORDIFORMES
Family APODIDAE

Key to the subfamilies of the family Apodidae
Wings extending beyond tail ................................................................. Apodinae
Wings not extending beyond tail ............................................................... Hemiprocninae

Key to the genera of the family Apodidae
1. Sincipital plumes long and erectile forming a frontal crest .................. Hemiprocne
   Sincipital plumes not forming frontal crest ........................................ 2
2. Shafts of tail-feathers spiny ............................................................... Chaetura
   Shafts of the tail-feathers not spiny ...................................................... 3
3. Anterior toes with 3 phalanges each ...................................................... 4
   Second toes with 3, third toes with 4 and fourth toes with 5 phalanges ........ Collocalia
4. All four toes directed forward, though first reversible. Tail not deeply forked .......... Apus
   Toes arranged in pairs, 3rd and 4th outward, 1st and 2nd inward. Tail long and deeply forked..... Cypsiurus

Genus Collocalia G. R. Gray, 1840

162. Collocalia brevirostris brevirostris (Horsfield)


Common name: Himalayan Swiftlet (English).

Material examined: Nil.


Remarks: Observed it at Umsa, near Nongpoh, the Ri-Bhoi Hills.

Genus **Chaetura** Stephens, 1826

163. **Chaetura (caudacuta) cochinchinensis** Oustalet


**Common name**: Cochinchina Spinetail Swift (English).

**Material examined**: Nil.

**Diagnostic characters**: Back and wings blackish brown. Chin and throat smoky grey. Breast and belly dark brown.

**Distribution**: India: Meghalaya: Assam, Manipur, Mizoram and Nagaland. Elsewhere: Burma (Myanmar), Malaysia and Indochinese countries.


164. **Chaetura gigantea indica** Hume


**Common name**: Brownthroated Spinetail Swift (English).

**Material examined**: Nil.

**Diagnostic characters**: Head, wings and lower part of back glossy metallic black. Central part of back pale brown. A black spot infront of each eye and a white spot on either side of forehead. Chin and throat pale brown. Under tail -coverts white. Breast and abdomen dark brown with white-patch on the flanks above the thighs.

**Distribution**: India: Meghalaya (Khasi Hills district): Assam, Goa, Karnataka, Kerala, Manipur, Mizoram, Nagaland and Tamil Nadu. Elsewhere: Bangladesh, Burma (Myanmar), Indochinese countries, Sri Lanka and Thailand.

Remarks: Hume (1888, p.30) reported it from the Khasi Hills.

Genus **Apus** Scopoli, 1777

165. **Apus pacificus leuconyx** (Blyth)


**Common name**: Himalaya whiterumped Swift (English).

**Material examined**: Nil.
Diagnostic characters: Rump white. Tail deeply forked. Bill black. Legs and feet purplish brown or purplish black.


Remarks: Baker (1907) recorded it from Meghalaya.

166. Apus affinis subfurcatus (Blyth)


Common name: Malay House Swift (English).

Material examined: Garo Hills district: 2 unsexed, coll. Dr. Anderson, date unknown; 1 unsexed, coll. Major Godwin-Austen, date not known.


Measurements: 2 unsexed: Wing 138, 140, tail 44, 46; bill 6(2) from feathers.

Distribution: India: Meghalaya (Garo Hills district): Assam, Manipur, Nagaland, Tripura. Elsewhere: Bangladesh, Burma (Myanmar), Malay Peninsula, Thailand, the Indochinese countries, The Indonesian Islands and China.

Remarks: Godwin-Austen (1907, p. 966) observed breeding habits of a few pairs in June near Shillong, the East Khasi Hills recorded it as Cypsellus subfurcatus Blyth.

Genus Cypsiurus Lesson, 1843

167. Cypsiurus parvus infumatus Sclater


Common name: Eastern Plam Swift (English).

Material examined: Garo Hills District: 1 unsexed, Garo Hills, coll. and date not known.

Diagnostic characters: Upper back blackish brown. The wings and tail almost black with a slight gloss. Chin and throat greyish; breast and abdomen dark brown. Tail less forked. Toes arranged in pairs, 3rd and 4th toes upward, the 1st and 2nd inward.

Measurements: 1 unsexed: Wing 116, tail 30 (inner)/55(outer),Bill.7.

Distribution: India: Meghalaya (Garo Hills district): Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland and Tripura. Elsewhere: Bangladesh, Burma (Myanmar), Hainan Island, Indonesia, Malay Peninsula, Tambelan Island and Thailand.

Genus Hemiprocne Nitzsch, 1829

168. Hemiprocne longipennis coronata (Tickell)


*Common name*: Crested Tree Swift (English).

*Material examined*: Nil.

*Diagnostic characters*: A slender blue-grey swallow with a prominent backward curving frontal crest. In male, the chin, throat and sides of face chestnut colour while in female, the colour is lacking. Tail deeply forked. Bill horny black.


*Remarks*: Observed it at Cherrapunji, the East Khasi Hills.

**Order** TROGONIFORMES  
**Family** TROGONIDAE  
**Genus** Harpactes Swainson, 1833

169. *Harpactes erythrocephalus erythrocephalus* (Gould)


*Common name*: East Pakistan Redheaded Trogon (English).


*Diagnostic characters*: Size bigger than the Myna. In male, back and upper parts roughly brown; wings finely vermiculated black and white. Head, neck and breast deep crimson. Tail broad and long with black and white tips. Abdomen lighter crimson.

*Measurements*:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>♂</td>
<td>150</td>
<td>192</td>
<td>22</td>
</tr>
<tr>
<td>♀</td>
<td>150</td>
<td>190</td>
<td>22</td>
</tr>
</tbody>
</table>


**Order** CORACIIFORMES  
**Family** ALCEDINIDAE  

Key to the genera of the family Alcedinidae

1. Plumage black and white .......................................................... *Ceryle*

Plumage not black and white .......................................................... 2
2. Tail longer than bill........................................................................................................3
   Tail shorter than bill.................................................................................................4
3. Toes three..................................................................................................................Ceyx
   Toes four..................................................................................................................Alceda
4. Bill compressed, culmen flattened and grooved on either side.................................Pelargopsis
   Bill not compressed, culmen rounded and not grooved...........................................Halcyon

Genus  Ceryle  Boie, 1828

170.  Ceryle rudis leucomelanura  Reichenbach
Common name: Indian Pied Kingfisher (English) and Kilkila (Hindi).
Material examined: Nil.
Diagnostic characters: Plumage black and white. Bill long and compressed. Wings rather pointed. Tail longer than culmen. Easily identified by its spectacular habit of "standing on its tail", in mid-air, hovering over water.


Remarks: Observed it near Baghmara, the South Garo Hills.

Genus  Alcedo  Linnaeus, 1758

171.  Alcedo hercules  Laubmann
Common name: Blyth's or Great Blue Kingfisher (English).
Material examined: Nil.
Diagnostic characters: Small, blue-and-green Kingfisher with brilliant blue back and rump with white throat and deep rust coloured chest and abdomen.

Distribution: India: Meghalaya (East Garo Hills district) : Arunachal Pradesh, Assam, Manipur, Nagaland, Sikkim, Tripura and West bengal. Elsewhere: Bangladesh and Bhutan.

Remarks: Observed it near Rongrenggiri, the East Garo Hills.

172.  Alcedo atthis bengalensis  Gmelin

*Common name*: Indian Small Blue Kingfisher (English), Chhota Kilkila (Hindi) and Masilengga (Garo).


*Diagnostic characters*: A small blue Kingfisher with a white patch on side of neck. Throat white. Chest and belly light rusty coloured.

<table>
<thead>
<tr>
<th>Measurements:</th>
<th>Wing</th>
<th>Tail</th>
<th>Bill [from the skull]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♂</td>
<td>72(2)</td>
<td>31,34</td>
<td>42,43</td>
</tr>
<tr>
<td>1 ♀</td>
<td>67</td>
<td>29</td>
<td>42</td>
</tr>
</tbody>
</table>


173. *Alcedo meninting coltarti* Baker


*Common name*: Assam Blue-eared Kingfisher (English) and Nita machhranga (Hindi).


*Diagnostic characters*: Back deep purplish blue. Ear-coverts blue in adult. Bars of forehead and crown always tipped greenish blue. Upper mandible blackish or horny brown, lower brownish orange. Legs, feet and claws orange-coral.

*Measurements*: 1 ♀: Wing 64, tail 29, bill 44.

*Distribution*: India: Meghalaya (East Garo Hills district) : Assam, Goa, Karnataka, Manipur, Orissa, Nagaland, Tamil Nadu, Tripura and West Bengal. Elsewhere: Bangladesh, Nepal, Bhutan, Burma (Myanmar) Indochinese countries and Thailand.

**Genus Ceyx** Lacepede, 1799

174. *Ceyx erithacus erithacus* (Linnaeus)


*Common name*: Indian Threetoeed Forest Kingfisher (English).

*Material examined*: Nil.

**Distribution**: India: Meghalaya (Garo Hills and Khasi Hills districts): Arunachal Pradesh, Assam, Goa, Karnataka, Kerala, Manipur, Mizoram, Nagaland, Sikkim and Tamil Nadu. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), China, Hainan, Indochinese countries, Malay Peninsula, Nepal and Thailand.

**Remarks**: Hume (1888, p. 45) remarked "Occurs in the Garo and Khasi Hills" and listed it as *Ceyx tridactylus* Pallas.

**Genus** *Pelargopsis* Gloger, 1842

175. *Pelargopsis capensis capensis* (Linnaeus)


**Common name**: Brownheaded Storkbilled Kingfisher (English). Badami Kourilla (Hindi) and Masilegga (Garo).

**Material examined**: East Garo Hill district: 1 ♀, Sarengma, c. 10 km. N. of Dudnai, coll. Z.S.I. party, 1. vii. 1949.

**Diagnostic characters**: A pigeon-like with enormous blood-red dagger-shaped bill. Head dark greyish brown and the back with brilliant pale greenish blue. A yellowish collar on hindneck.

**Measurements**: 1 ♀: Wing 151, tail 94, bill 91.


**Remarks**: Hume (1888, p. 44) stated that Godwin-Austen recorded this bird from the Khasi Hills and listed as *Ceyx gurial* Pears.

**Genus** *Halcyon* Swainson, 1821

176. *Halcyon smyrnensis perpulchra* Madarasz


**Common name**: Eastern Whitebreasted Kingfisher (English).

**Material examined**: East Garo Hills district: 1 ♀, Rangrenggiri. coll. A. N. Fernandez, 22.i. 1957.

**Diagnostic characters**: Size larger than the Myna. Back turquoise-blue; head, neck and belly pale chocolate-brown. Wing with white wing patch. Chin, throat and centre of breast glistening white. Bill long, heavy any pointed coral-red.

**Measurements**: 1 ♀, Wing 125, tail 82, bill 65.
Distribution: India: Meghalaya (Garo Hills and Khasi Hills districts): Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Nagaland, Orissa, Tripura and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), China, Hainan, Indochinese countries, Malay Peninsula, Taiwan and Thailand.

Remarks: Godwin-Austen (1870, p. 97) recorded it from the Khasi Hills and listed it as Chrysophlegma flavinucha Gould.

Family MEROPIDAE

Key to the genera of the family Meropidae

Breast and throat feathers not elongated ......................................................Merops

Breast and throat feathers elongate, loose and coloured differently from the surrounding plumage..............

Genus Merops Linnaeus, 1758

177. Merops leschenaulti leschenaulti Vieillot


Common name: Chestnut headed Bee-eater (English).


Measurements: 1 ♂: Wing 105, tail 80, bill 39.


178. Merops philippinus philippinus Linnaeus


Material examined: Nil.

Diagnostic characters: Back bright green. Bill slender, curved and black. A black stripe from back of bill through the eyes to the ear-coverts; throat and breast deep chestnut. Rump and tail bright cerulean-blue.

Remarks: Observed it at Kherapara, the West Garo Hills.

179. *Merops orientalis orientalis* Latham


*Common name*: Indian Small Green Bee-eater (English) and Harrial (Hindi).

*Material examined*: Nil.


Remarks: Observed it at Barangapara, the West Garo Hills.

180. *Merops orientalis birmanus* Neumann


*Common name*: Burmese Small Green Bee-eater (English) and Takachora (Garo).


*Diagnostic characters*: A slender grass-green bird. Upper parts of head and neck ferruginous. Bill slender, long slightly curved; black central pairs of tail-feathers projecting as blunt pins beyond.

*Measurements*: 

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2♂</td>
<td>93,97</td>
<td>130,145</td>
<td>73,74</td>
</tr>
<tr>
<td>1♀</td>
<td>96</td>
<td>141</td>
<td>75</td>
</tr>
</tbody>
</table>


Genus *Nyctyornis* Jardine and Selby, 1830

181. *Nyctyornis athertoni athertoni* (Jardine & Selby)

1830. *Merops athertoni* Jardine & Selby, *Ill Orn.*, 2, pl. 58 and text (India = near Bangalore, Karnataka).


*Common name*: Bluebearded Bee-eater (English).

**Diagnostic characters:** Back, wings and tail grass-green. Forehead pale greenish blue. Upper breast light blue. Lower breast, abdomen and belly rusty buff, broadly streaked with green.

**Measurements:** 1 ♀, Wing 132, tail 124, bill 49.

**Distribution:** India: Meghalaya (Garo Hills, Jaintia Hills and Khasi Hills districts) : Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Orissa, Sikkim, Punjab, Tamil Nadu, Tripura Uttar Pradesh and West Bengal.: Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Thailand, Indochinese countries Hainan Island and Nepal

**Remarks:** Baker (1907, p. 965) recorded it from Garo Hills. Hume (1888, p.42) reported it from the Khasi Hills.

**Family CORACIIDAE**

Key to the genera of the family Coraciidae

Bill compressed; breadth at gape about half of the length of culmen. ......................... *Coracias*

Bill short, broad and swollen at base: breadth at gape about equal to culmen. .............. *Eurystomus*

**Genus Coracias Linnaeus, 1758**

*Coracias benghalensis affinis* Horsfield


**Common name:** Burmese Roller (English) and Nilkant (Hindi).


**Measurements:**

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>♂</td>
<td>196,200</td>
<td>127, 130</td>
<td>47,49</td>
</tr>
<tr>
<td>♀</td>
<td>192,206</td>
<td>131(2),</td>
<td>42,44</td>
</tr>
</tbody>
</table>

**Distribution:** India: Meghalaya (Ri-Bhoi Hills and West Garo Hills and Khasi Hills districts) : Assam, Manipur, Nagaland Sikkim and Tripura. Elsewhere : Bangladesh, Bhutan, Burma (Myanmar), China, Indochinese countries. Nepal and Thailand.

**Remarks:** Baker (1907, p.965) obtained it from the Khasi Hills.

**Genus Eurystomus Vieillot, 1816**

*Eurystomus orientalis cyanicollis* Vieillot


*Common name*: Himalayan Broadbilled Roller (English).

*Material examined*: Nil.

*Diagnostic characters*: Back dark greenish brown and purple blue-black. Head blackish. Bill broad, orange-red. A large pale blue roundish patch on wing.


**Family** UPUPIDAE

**Genus** *Upupa* Linnaeus, 1758

184. *Upupa epops longirostris* Jerdon

1862. *Upupa longirostris* Jerdon, Bds. India, 1 : 393 (Burma = Myanmar).


*Common name*: Burmese Hoopoe (English) and Dopilvivi (Garo).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district): Assam, Manipur, Orissa and Tripura. Elsewhere: Bangladesh, Burma (Myanmar), Indochinese countries, Malay Peninsula, Sumatra and Thailand.

*Remarks*: Hume (1888, p. 87) recorded it from the Khasi Hills and listed it as *Upupa epops* Linnaeus.

**Family** BUCEROTIDAE

Key to the genera of the family Bucerotidae

1. Casque large in adults, higher than the upper mandible ....................... *Anthracoceros*
   Casque small or absent, lower than the upper mandible .................................. ... 2

2. Casque absent but a few oblique ridges on sides of base of upper mandible .......... *Aceros*
   Casque small and compressed ................................................................. 3

3. Casque composed of transverse ridges; tail entirely white ........................ *Rhyticeros*
   Upper ridges of casque curving down in front; tail black with white-tipped ........*Ptilolaemus*
Genus *Ptilol aemus* Ogilvie-Grant, 1892

185. *Ptilolaelasmus tickelli austeni* (Jerdon)


*Common name*: Whitethroated Brown Hornbill (English).

*Material examined*: Nil.

*Diagnostic characters*: In male. head and back dark brown. A small sharp-edged yellowish casque on the culmen. Cheeks, throat and sides of neck white; foreneck pale rufous. Tail long, graduated, black and broadly tipped with white excepting the middle pair of rectrices which are brown and lack white tips. In female, sides of neck concolorous with crown. Underparts more grey-brown, less rufous on foreneck.

*Distribution*: India: Meghalaya (Khasi Hills district) : Assam.

*Remarks*: Godwin-Austen (1872, p. 143) shot this bird in the N. Cachar Hills near Asalu. He also mentioned that Jerdon would describe it as a new species under the name of *Anorhinus Austeni*.

Genus *Acreros* J. E. Gray, 1844

186. *Acreros nipalensis* (Hodgson)


*Common name*: Rufousnecked Hornbill (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, back black, glossed with dark green. Head, neck and breast rufous, changing to maroon on abdomen and blackish maroon farther down. Outer primaries tipped-white. Terminal half of long graduated tail white. Chin, cheeks and throat naked, bright scarlet. In female, all black.

*Distribution*: India: Meghalaya (Khasi Hills district) : Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland and Sikkim. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Indochinese countries, Nepal and Thailand.

*Remarks*: Baker (1907, p. 966) obtained it from the Khasi Hills.

Genus *Rhyticeros* Reichenbach, 1849

187. *Rhyticeros undulatus ticelhursti* Deignan


Common name: Assam Wreathed Hornbill (English).

Material examined: Nil.

Diagnostic characters: 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: Meghalaya (Khasi Hills district): Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland and West Bengal. Elsewhere: Bhutan, Burma (Myanmar), Indochinese countries, Malay Peninsula and Thailand.

Remarks: Baker (1907, p. 966) and Hume (1888, p. 52) recorded this bird from the Khasi Hills and listed it as Rhyticeros undulatus Shaw.

Genus Anthracoceros Reichenbach, 1849

188. Anthracoceros malabaricus malabaricus (Gmelin)


Common name: Indian Pied Hornbill (English) and Ringck (Garo).

Material examined: Nil.

Diagnostic characters: Back, head, neck and upper breast black. Underparts white. Ponderous pale-yellow and black bill surmounted by a ridge-like casque. Outer tail-feathers black, only white at the ends.

Distribution: India: Meghalaya (Garo Hills and Khasi Hills districts): Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Haryana, Madhya Pradesh, Manipur, Nagaland, Orissa, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), and Nepal.

Remarks: Hume (1888, p. 52) reported this bird from the Garo Hills and the Khasi Hills and listed it as Hydrocissa affinis.

189. Anthracoceros coronatus coronatus (Boddaert)

1783. Buceros coronatus Boddaert, Table Pl. enlum.: 53 (Malabar, Kerala, India).


Common name: Malabar Pied Hornbill (English) and Dhan chiri (Hindi).

Material examined: Nil.

Diagnostic characters: In male, crown, back, wing and tail bluish black. Neck black. Underparts white. Bill with a high ridge-like casque ending in front in a single point. Tip of the primaries and rectrices white. Female smaller than the male with the bare parts differs in colour.


Remarks: Godwin-Austen (1870, p. 266) reported it from the West Khasi Hills and listed it as Hydrocissa coronata Boddaert.
Order PICIFORMES
Family CAPITONIDAE
Genus *Megalaima* G. R. Gray, 1842

190. *Megalaima virens marshallorum* Swinhoe


*Common name:* Himalayan Great Barbet (English).

*Material examined:* Nil.


*Remarks:* Hume (1888, p. 66) recorded it from the Khasi Hills.

191. *Megalaima virens magnifica* Baker


*Common name:* Assam Great Barbet (English) and Dobutok (Garo).


*Measurements:* 1 ♂ : Wing 45, tail 96, bill 46.


192. *Megalaima lineata hodgsoni* Bonaparte


*Common name:* Eastern Lineated Barbet (English).

*Material examined:* East Garo Hills district : 1 ♂ and 1 unsexed, Rongrenggiri, coll. A.N. Fernandez, 14 and 23.i. 1957; 2 ♀, Rongrenggiri, c 4km. East of Williamnagar, coll. N. Majumdar,

**Diagnostic characters**: Size slightly larger than the preceding bird. Head, neck, throat and upperbreast brown coarsely streaked with whitish. Back, wings and abdomen grass-green; a naked orange coloured patch around eye extending to base of bill.

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♂</td>
<td>129, 131</td>
<td>76, 82</td>
<td>31, 34</td>
</tr>
<tr>
<td>2 ♀</td>
<td>132, 136</td>
<td>85, 87</td>
<td>34, 35</td>
</tr>
</tbody>
</table>

**Distribution**: India: Meghalaya (East and West Garo Hills and East Khasi Hills districts): Assam, Bihar, Manipur, Orissa, Sikkim, Tripura and West Bengal. Elsewhere: Nepal, Bhutan, Bangladesh, Burma (Myanmar), Thailand, Indochinese countries and Malaya Peninsula.

193. *Megalaima franklinii franklinii* (Blyth)


**Common name**: Goldenthroated Barbet (English).

**Material examined**: Nil.

**Diagnostic characters**: Size equal to Myna. Entire plumage grass-green, excepting head; crown bright golden and crimson; ear-coverts grey and a broad black stripe above eye from bill to nape. Chin and throat golden yellow; and orange spot on each side of base of bill near gape.


**Remarks**: Hume (1888, p. 68) collected it from Moufloring and Shillong, the East Khasi Hills.

194. *Megalaima asiatica asiatica* (Latham)


**Common name**: Bluethroated Barbet (English).


**Diagnostic characters**: Size equal to the preceding bird. Entire plumage except head chiefly grass-green; forehead crimson, then yellowish followed by a transverse black band above the eyes; crown
behind this crimson, with black streak on either side. A short supercilium, feathers round eye, ear-coverts, chin and throat verditer-blue. A crimson spot on each side of base of lower mandible. Bill heavy conical and base of bill surrounded by conspicuous black bristles.

**Measurements:**

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2♂️</td>
<td>102, 105</td>
<td>64(2)</td>
<td>25, 27</td>
</tr>
<tr>
<td>2♀️</td>
<td>101, 106</td>
<td>57, 64</td>
<td>27, 29</td>
</tr>
</tbody>
</table>

**Distribution:** India: Meghalaya (East and West Garo Hills and Ri-Bhoi Hills districts) : Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Punjab, Sikkim, Uttar Pradesh, Tripura and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Nepal and Pakistan.

195. *Megalaima australis cyanotis* (Blyth)


**Common name:** Indian Blue-eared Barbet (English).

**Material examined:** Nil.

**Diagnostic characters:** Head verditer-blue; lores, forehead and forecrown black. Hindcrown cobalt blue. Ear-coverts pale verditer-blue. Bill dark horney brown. Leg and feet dull green.

**Distribution:** India: Meghalaya (Khasi Hills district) : Arunachal Pradesh, Assam, Manipur, Nagaland, Sikkim and West Benga. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Indochinese countries, Nepal and Thailand.

**Remarks:** Hume (1888, p.69) recorded it from the Khasi Hill.

196. *Megalaima haemacephala indica* (Latham)


**Common name:** Copper smith (English) and chhota Basanth (Hindi).

**Material examined:** Nil.

**Diagnostic characters:** Size slightly larger than the Sparrow. Back grass-green with throat yellow; breast and forehead crimson. Abdomen and vent green streaked yellowish. Tail short and truncated.

**Distribution:** India: Meghalaya (Ri-Bhoi Hills district) : Throughout the Indian mainland except Kerala. Mr. Elsewhere: Bangladesh, Bhutan, Indochinese countries, Malaya, Nepal, Pakistan, Yunnan and Thailand.

**Remarks:** Seen it at Nongpoh, the Ri-Bhoi Hills.

**Family PICIDAE**

Key to the genera of the family Picidae

1. Shaft of tail-feathers soft and flexible ................................................................. 2
2. Shaft of tail-feathers stout and rigid................................................................. 4
Genus *Jynx* Linnaeus, 1758

197. *Jynx torquilla chinensis* Hesse


*Common name*: Chinese Wryneck (English) and Gardan eyengtha (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Back silvery dark grey-brown, streaked and vermiculated with more blackish and less fulvous; whitish below. Dark markings on nape, back and scapulars. Darker ochre on throat and upper breast, the vermiculation and spots on the upperparts averaging slightly coarser.

*Distribution*: India: Meghalaya (Garo Hills and Khasi Hills districts); Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma, (Myanmar) China, Indochinese countries and Thailand.

Breeds from the Southern end of Lake Baikal, N. Manchuria and the Amur South to N. Szechuan and the Yangtze Valley.

*Remarks*: Hume (1888, p. 65) collected it from the Garo and Khasi Hills and listed it as *Jynx torquilla* Linnaeus.
Genus **Picumnus** Temminck, 1825

198. *Picumnus innominatus innominatus* Burton


*Common name*: Northern speckled Piculet (English).


*Diagnostic characters*: In male, back and mantle bright yellow-olive. Forecrown black and orange. A broad blackish olive band behind eye; a dark moustachial stripe under the lower band. Underparts yellowish white with bold black spots. In female, the whole crown yellow-olive, concolorous with black. Other characters are similar to male.

*Measurements*: 2 ♂: Wing 56, 58; tail 29, 30; bill [from the skull] 12(2).


Genus **Sasia** Hodgson, 1836

199. *Sasia ochracea reichenowi* Hesse


*Common name*: Burmese Rufous Piculet (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, back deep rufous and pale olive overall. Forehead with rufescent golden; a short white supercilium. Tail black and stumpy. Underparts with orange-rufous. In female, similar to male, but lacking the golden forehead which is concolorous with the crown.


Genus **Micropternus** Blyth 1845

200. *Micropternus brachyurus phaioceps* Blyth


*Common name*: Eastern Rufous Woodpecker (English).

Diagnostic characters: Size slightly larger than the Myna. Entire plumage chestnut rufous, narrowly cross-barred with black on back, wings and tail. Feathers of throat pale-edged producing a streak or scaly pattern. Male differed from female by a crescent-shaped crimson patch on feathers under the eye.


Genus Picus Linnaeus, 1758

201. Picus Myrmecophoneus Stresemann


Common name: Little Scalybellied Green Woodpecker (English).

Material examined: Nil.

Diagnostic characters: Size larger than the Myna. In male, back grass-green, rump bright yellow; greenish brown tail, barred with whitish. Crown and crest crimson, nape with orange-and-black patch. Prominent white supercilium from eye backwards, bordered above by a black line. Pale grey-brown ear-coverts, cheeks greyish white streaked with black. In female, similar to male but crown and crest black instead of crimson.


Remarks: Hume (1888, p. 62) recorded it from the Khasi Hills.

202. Picus canus hessei (Gyldenstolpe)


Common name: Blacknaped Green Woodpecker (English).


Measurements:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Wing (mm)</th>
<th>Tail (mm)</th>
<th>Bill (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♂</td>
<td>143, 146</td>
<td>95, 97</td>
<td>41, 43</td>
</tr>
<tr>
<td>1 ♀</td>
<td>144</td>
<td>100</td>
<td>42</td>
</tr>
</tbody>
</table>


203. Picus chlorolophus chlorolophus Vieillot


Common name: East Himalayan Small Yellownaped Woodpecker (English).


Diagnostic characters: Size larger than the Myna. In male, back yellowish green; nuchal crest golden yellow. Wings green and maroon red. Forehead, supercilia and moustachial streak crimson. Tail brownish black. Chin and throat brown barred with whitish; breast olive-brown, belly and vent barred with brown and white. In female, similar to male, no crimson to forehead and malar stripe, but restricted to a short broad line behind eye to nape.

Measurements:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Wing (mm)</th>
<th>Tail (mm)</th>
<th>Bill (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ♂</td>
<td>133</td>
<td>90</td>
<td>28</td>
</tr>
<tr>
<td>1 ♀</td>
<td>132</td>
<td>92</td>
<td>29</td>
</tr>
</tbody>
</table>


Remarks: Hume (1888, p. 62) received it from Godwin-Austen who had collected from the Khasi Hills.

Genus Dinopium Rafinesque, 1814

204. Dinopium benghalense benghalense (Linnaeus)


Common name: Northern Goldenbacked Woodpecker (English), Katphora (Hindi) and Dotileng (Garo).

Material examined: Nil.

Diagnostic characters: In male, back golden yellow and neck black; chin, thorat and sides of neck black, finely streaked and stippled with black, more boldly on breast, crown and occipital crest
crimson. In female, similar to male, but forehead black stipped with white, only the occipital crest crimson.


Remarks: Seen it at Kherapara, the West Garo Hills.

205. Dinopium shorii shorii (Vigors)


Common name: Himalayan Goldenback three-toed Woodpecker (English).

Material examined: Nil.


Distribution: India: Meghalaya: Arunachal Pradesh, Assam, Haryana, Manipur, Nagaland, Tamil Nadu and Uttar Pradesh. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), and Nepal.


Genus Gecinulus Blyth, 1845

206. Gecinulus grantia grantia (Horsfield)


Common name: Paleheaded Woodpecker (English).


Diagnostic characters: In male, back and wings dull crimson. Primary wing-feathers brown barred with buff. Forehead and sides of head pale golden olive-brown; sides of neck and nape golden olive-yellow. Crown with a crimson-pink patch. Tail brown and crimson. Chin and throat dark olive-yellow and rest of underparts brownish-olive. In female, similar to male, only lacking the crimson-pink patch on crown.

Measurements: 1 ♂: Wing 128, tail 76, bill 27.

Distribution: India: Meghalaya (Garo Hills and Khasi Hills districts): Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland and Sikkim. Elsewhere: Bhutan, Burma (Myanmar) and Nepal.

Remarks: Hume (1888, P. 63) reported this bird from the Garo Hills and the Khasi Hills and stated (ibid) that Godwin-Austen recorded it from the Garo Hills.
Genus Mulleripicus Bonaparte, 1854

207. Mulleripicus pulverulentus harterti Hesse

1911. Mulleripicus pulverulentus harterti Hesse, Orn. Monatsb., 19: 182 (Type from Pya, Upper Chindwin River, Burma = Myanmar).


Common name: Assam Great Slaty Woodpecker (English).


Diagnostic characters: Back, wings, tail, head and neck slaty grey. Chin, throat and foreneck buffy yellow. In male, a short, broad crimson moustachial stripe which lacks in female.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill [from the feather]</th>
</tr>
</thead>
<tbody>
<tr>
<td>♂</td>
<td>232, 236</td>
<td>155, 157</td>
<td>63, 64</td>
</tr>
<tr>
<td>♀</td>
<td>232</td>
<td>166</td>
<td>65</td>
</tr>
</tbody>
</table>


Remarks: Hume (1888, p. 61) remarked "Godwin-Austen received this species from the Garo Hills".

Genus Picoides Lacepede, 1799

208. Picoides darjellensis (Blyth)


Common name: Darjeeling Pied Woodpecker (English).

Material examined: Nil.

Diagnostic characters: Size equal to Myna. In male, back and middle tail-feathers black, outer feathers barred with white. Hind-crown and nape crimson. Breast and belly yellowish fulvous streaked with black. Vent crimson. In female, similar to male but hindcrown and nape black.


Remarks: Hume (1888, P.56) reported that Godwin-Austen obtained this bird from the Hengdon peak of the Khasi Hills.

209. Picoides cathpharius pyrrhothorax (Hume)


Common name: Manipur Crimson-breasted Pied Woodpecker (English).

Material examined: Nil.
Diagnostic characters: Back and tail black. Foreneck and occipital crest crimson in male, black in female. Sides of neck crimson in male, whitish in female. Underparts fulvous streaked with black.

Distribution: India: Meghalaya: Assam, Manipur, Mizoram and Nagaland.


210. Picoides atratus (Blyth)


Common name: Stripebreasted Pied Woodpecker (English).

Material examined: Nil.


Distribution: India; Meghalaya: Mizoram and Nagaland. Elsewhere: Bangladesh, Burma (Myanmar), Laos and Thailand.


211. Picoides macei macei (Vieillot)


Common name: Indian Fulvousbreasted Pied Woodpecker (English).


Measurements: 1♀; Wing 102, tail 54, bill 24 from feathers.


Remarks: Hume (1888, P. 57) reported this bird from Shillong, the East Khasi Hills. Godwin-Austen (1870, p.97) also reported it from the Khasi Hills.

212. Picoides mahrattensis mahrattensis (Latham)


Common name: Yellowfronted Pied or Mahratta Woodpecker (English) and Katphora (Hindi).

Material examined: Nil.
Diagnostic characters: Size smaller than the Bulbul. In male, back, wings and tail brownish black, irregularly spotted with white. Forehead and crown brownish yellow. Occipital crest scarlet; chin, throat and foreneck white. Breast fulvous streaked with brown and abdomen with a prominent bright scarlet patch. In female, characters similar to male, extending entire crown golden brown without any scarlet in it.


Remarks: Seen it at Baghmara, the West Garo Hills.

213. *Picoides canicapillus semicoronatus* (Malherbe)


Common name: East Himalayan Greycrowned Pygmy Woodpecker (English).


Diagnostic characters: In male, upper back black; wings, lowerback and rump black broadly barred with white; forehead and crown ashy-grey. Occipital crest scarlet surrounded by black. Supercilium whitish; chin and throat whitish streaked with ashy. In female, hindcrown black.

Measurements: 2 ♀: Wing 82, 92; tail 44, 45; bill [from the skull] 17, 20.


Remarks: Hume (1988, p. 59) remarked "occurs in the Khasi Hills and to be quite common about Shillong, it may occur in the Garo Hills." Koelz (1952) recorded it from Mawryngkneng, the Khasi Hills and described it as *Dendrocopos nanus gigantisculus*.

214. *Picoides nanus nanus* Vigors


Common name: Northern Browncrowned Pygmy Woodpecker (English).

Material examined: Nil.

Diagnostic characters: In male, back barred with dark brown and white; crown umber brown with a narrow scarlet streak on both sides of the occiput. A broad white stripe from the eyes down sides of neck, underparts brownish white streaked with blackish. In female, the scarlet streaks lacking on the sides of hind crown.

Remarks: Godwin-Austen (1870 p.97) recorded it from the Khasi Hills and listed it as Yungipicus pygmoeus Vigors.

Genus Hemicircus Swaison, 1837

215. Hemicircus canente canente (Lesson)

Common name: Heartspotted Woodpecker (English).

Material examined: Nil.

Diagnostic characters: In male, forehead, crown and crest black. Back black with a broad buff band on either sides over the wings marked with heart-shaped black spots. Rump buffy white. Foreneck, sides of neck, chin and throat buffy white. Breast and belly dusky olive and black. In female, only the forehead and crown buffy white.

Distribution: India: Meghalaya: Andhra Pradesh, Assam, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Orissa, Tamil Nadu and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar), Malay Peninsula, Thailand and Indochinese countries.


Genus Blyhipicus Bonaparte, 1854

216. Blyhipicus pyrrhotis pyrrhotis (Hodgson)

Common name: Redeared Baywoodpecker (English).

Material examined: Nil.

Diagnostic characters: In male, head and upper back rufous, lower back, wings and tail rufous barred with black. A prominent scarlet crossband on nape extending to sides of neck behind the earcoverts. Bill greenish yellow. In females, the scarlet nape-band is absent.


Remarks: Koelz (1954) reported it from Nongpoh, the Ri-Bhoi Hills and described it as Blyhipicus pyrrhotis porphyreus.

Genus Chrysocolaptes Blyth, 1843

217. Chrysocolaptes lucidus sultaneus (Hodgson)

Common name: West Himalayan Larger Goldenbacked Woodpecker (English).
Material examined: Nil.

Diagnostic characters: 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 with two black lines on each cheek up to the throat. Breast very dark with scalypattern white spots on a black background. In female, similar to male excepting crown and crest black, stippled with white.


Remarks: Hume (1888, p. 61) recorded it from the Garo and Khasi Hills.

218. *Chrysocolaptes lucidus guttacristatus* (Tickell)


Common name: Eastern Larger Goldenbacked Woodpacker (English).


Diagnostic characters: Size equal to Pigeon. 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 up to the throat, breast very dark with scaly pattern, white spots on a black background. In female, similar characters to male, excepting crown and black and stippled with white.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill[from the skull]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♂</td>
<td>165, 167</td>
<td>88, 91</td>
<td>51 (2)</td>
</tr>
<tr>
<td>2 ♀</td>
<td>169, 170</td>
<td>81, 83</td>
<td>48, 51</td>
</tr>
</tbody>
</table>


Order PASSERIFORMES

Family EURYLAIMIDAE

Key to the genera of the family Eurylaimidae

Tail much graduated; shorter than wing. Rictal bristles present..........................*Serilophus*

Tail steepy graduated; longer than wing. Rictal bristles absent..........................*Psarisomus*

Genus  *Serilophus* Swainson, 1837

219. *Serilophus lunatus rubropygius* (Hodgson)


Common name: Nepal Collared Broadbill (English).

Material examined: Nil.

Diagnostic characters: In male, crown and upper back ashy-grey. A short recumbent crest overhanging the nape. Lower back chestnut. Wings black with contrasting chestnut, blue and white markings. Tail black and graduated. Outer rectrices white-tipped. Eye Surrounded by yellow skin. In female, similar to male but with a demi-gorget of white-tipped feathers on either side of neck.

Distribution: India: Meghalaya (Garo Hills and Khasi Hills districts): Arunachal Pradesh, Assam, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

Remarks: Hume (1888, p. 49) remarked "Not rare in Khasi and Garo Hills."

Genus Psarisomus Swainson, 1837

220. Psarisomus dalhousiae dalhousiae (Jameson)


Common name: Longtailed Broadbill (English).


Measurements: Wing Tail Bill
2 ♂ 109, 112 115, 118 22, 23
2 ♀ 98, 102, 117, 123 22(2)


Family PITIDAE

Genus Pitta Vieillot, 1816

221. Pitta nipalensis nipalensis (Hodgson)


Common name: Bluenaped Pitta (English).

Material examined: Nil.
**Diagnostic characters**: In male, hindneck and nape bright blue. Back and wings greenish brown. Underparts fulvous. Tail brown tinged with green. In female, similar to male but hindcrown rufous-fulvous and hindneck green. Throat whitish.


**Remarks**: Seen it at Rongrenggiri, the East Garo Hills.

222. *Pitta sordida culcullata* Hartlaub


**Common name**: Greenbreasted Pitta (English).

**Material examined**: Nil.


**Distribution**: India: Meghalaya (Khasi Hills district): Arunachal Pradesh, Assam, Bihar, Manipur, Mizoram, Nagaland, Sikkim. Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Indochinese countries and Malay Peninsula.

**Remarks**: Godwin-Austen (1907 p. 963) recorded from the Khasi Hills.

Family **ALAUDIDAE**

Key to the genera of the family Alaudidae

1st primary reaching to the tip of wing; wing of nine primaries;

hind claw straight................................................................................. *Calandrella*

1st primary is very small, not reaching to the tip of wing. Wing of 10 primaries;

hind claw curved................................................................................ ***Eremopterix***

**Genus** *Eremopterix* Kaup, 1836

223. *Eremopterix grisea* (Scopoli)


**Common name**: Ashycrowned Finch-Lark (English) and Dabak chiri (Hindi).

**Material examined**: Nil.
Diagnostic characters: In male, back sandy brown. Crown and forehead ashy-brown. Cheeks whitish and black streak from chin to eye. Underparts brownish black which is ashy-brown in female.


Remarks: Observed this bird near Barangapara, the West Garo Hills.

Genus Calandrella Kaup, 1829

224. Calandrella cinerea dukhunensis (Sykes)


Common name: Rufous Short-toed Lark (English) and Pullak (Hindi).

Material examined: Nil.

Diagnostic characters: Back sandy or greyish brown streaked with blackish. Throat, breast and belly less white more buff. Inner secondaries reaching the tip of wings.


Remarks: Hume (1888, p. 288) reported it from Shillong, the East Khasi Hills.

Family HIRUNDINIDAE

Genus Hirundo Linnaeus, 1758

225. Hirundo rustica rustica Linnaeus


Common name: Western Swallow (English), Ababil (Hindi) and Dopretchi, Dopatchi (Garo).

Material examined: Nil.

Diagnostic characters: Back glossy steel blue; forehead, chin and throat chestnut. Throat with a blue-black pectoral or breast band. Tail deeply forked.


Remarks: Observed this bird near Kherapara, the West Garo Hills.

226. Hirundo rustica tytleri Jerdon

1864. Hirundo Tytleri Jerdon, Bds. India (3) : 870 (Dacca=Dhaka, Bangladesh).

Common name Chestnutbellied Swallow (English) and Ababil (Hindi).
Material examined: Nil.

Diagnostic characters: Size equal to preceding bird. Back glossy blue black; incomplete blue-black pectoral band. Chin, throat and abdomen deep chestnut. Tail long forked and with spot.


Remarks: Seen it near Siju Cave, the South Garo Hills.

Genus Delichon Horsfield & Moore, 1854

227. Delichon nipalensis nipalensis Moore


Common name: Nepal House Martin (English).

Material examined: Nil.


Family Laniidae

Genus Lanius Linnaeus, 1758.

228. Lanius tephronotus tephronotus (Vigors)


Common name: Eastern Tibet Greybacked Shrike (English).

Material examined: Eastern Tibet Greybacked Shrike (English).

Diagnostic characters: Back slaty; a broad blackbased through eyes to ear-coverts. Wings black. Rump and upper tail-coverts rufous; tail chestnut-brown, chin, throat and breast rufous; abdomen paler.
Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2♂</td>
<td>100(2)</td>
<td>107, 108</td>
<td>21, 22</td>
</tr>
<tr>
<td>2♀</td>
<td>95, 100</td>
<td>94, 100</td>
<td>21, 22</td>
</tr>
</tbody>
</table>


Breeds also in eastern Tibet, north to Sikang, south to N. Yunnan east to W. Szechuan.

Remarks: Hume (1888, p. 88) reported it from the Garo and Khasi Hills.

229. *Lanius schach tricolor* (Hodgson)


Common name: Blackheaded Shrike (English).

Material examined: Nil.


Remarks: Godwin-Austen (1872, p. 142) recorded it from the Garo Hills. Hume (1888, p. 89) recorded it from Shillong, the East Khasi Hills.

230. *Lanius cristatus cristatus* Linnaeus


Common name: Brown Shrike (English) and Kerkheta (Hindi).


Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2♂</td>
<td>86, 98</td>
<td>86, 88</td>
<td>19(2)</td>
</tr>
<tr>
<td>1♀</td>
<td>100</td>
<td>98</td>
<td>20</td>
</tr>
</tbody>
</table>

Remarks: Hume (1888, p. 92) recorded it from the Garo and Khasi Hills.

Family ORIOLIDAE

Genus Oriolus Linnaeus, 1766

231. Oriolus xanthornus xanthornus (Linnaeus)


Common name: North Indian Blackheaded Oriole (English), Zardak (Hindi) and Dochirong (Garo).


Diagnostic characters: In male, entire body brilliant golden yellow excepting head, throat and upper breast jet black and some black in wings and tail. In female, only underparts tinged with olive.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>♂</td>
<td>137, 139</td>
<td>89, 90</td>
<td>31 (2)</td>
</tr>
<tr>
<td>♀</td>
<td>131, 135</td>
<td>86, 89</td>
<td>30 (2)</td>
</tr>
</tbody>
</table>

Distribution: India: Maghalaya (East Garo Hills, West Garo Hills, Khasi Hills and Ri-Bhoi Hills districts) : Arunchal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Madhya Pradesh (northern Part), Manipur, Mizoram, Nagaland, Sikkim, Uttar Pradesh, Tripura and West Bengal: Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Nepal and Thailand.

Remarks: Godwin-Austen (1870, p. 106) recorded it from the Khasi Hills and listed it as Oriolus melanocephalus Linnaeus.

232. Oriolus traillii traillii (Vigors)


Common name: Indian Maroon Oriole (English).


Diagnostic characters: In male, entire head and wings black. Back, breast and belly glossy crimson-maroon. Tail chestnut-maroon In female, similar to male, only underparts greyish white streaked with blackish.


Remarks: Godwin-Austen (1870, p. 106) recorded it from the Khasi Hills. Hume (1888, p. 188) reported it from Shillong peak.

Family DICRURIDAE
Genus Dicrurus Vieillot, 1816

233. Dicrurus adsimilis albirictus (Hodgson)

Common name: North Indian Black Drongo (English) and Bujanga (Hindi).


Diagnostic characters: Entire body, the head and tail glossy jet black. Tail long deeply forked. White rictal spot present.

Measurements: Wing Tail Bill

<table>
<thead>
<tr>
<th></th>
<th>Inner</th>
<th>Outer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1♂</td>
<td>159</td>
<td>115</td>
</tr>
</tbody>
</table>

Distribution: India: Meghalaya (East Garo Hills district): Assam, Bihar, Chadigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Punjab, Rajasthan, Sikkim, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Afghanistan, Bangladesh, Bhutan, Burma (Myanmar), Iran (South eastern part), Nepal and Pakistan.

234. Dicrurus leucophaeus longicaudatus Hay

Common name: Indian Grey Drongo (English).

Material examined: Nil.

Diagnostic characters: Size larger than the Bulbul. Head, back, wings and tail glossy slate black; tail long, deeply forked. Eyes conspicuous, crimson. Throat, breast and belly duller unglossed grey.

Remarks: Godwin-Austen (1870, p. 100) recorded it from the Khasi Hills and listed it as Buchanga longicaudata Hay.

235. Dicrurus leucophaeus hopwoodi Baker


Common name: Assam Grey Drongo (English).


Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Outer</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1♂</td>
<td>137</td>
<td>Inner</td>
<td>95</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2♀</td>
<td>139,142</td>
<td>98(2)</td>
<td>145, 150</td>
<td>26, 27</td>
</tr>
</tbody>
</table>

Distribution: India: Meghalaya (East Khasi Hills and Ri-Bhoi Hills districts): Arunchal Pradesh, Assam, Nagaland and West Bangal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), and Indochinese countries.

236. Dicrurus caerulescens caerulescens (Linnaeus)


Common name: Indian Whitebellied Drongo (English) and Dhapri (Hindi).


Diagnostic characters: Size smaller than the preceding bird. Head, back, tail and wings glossy indigo; throat, breast and belly brownish grey. Under tail-coverts white. Tail long and deeply forked.

Measurements: 1♂: Wing 180, tail 150, bill 32.


237. Dicrurus annectans (Hodgson)


Common name: Crowbilled Drongo (English).

Material examined: Nil.
Diagnostic characters: Size larger than the preceding bird. 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 and short; outer rectrices curving outward. Bill black, large and heavy.


Remarks: Observed it near Baghmara, the South Garo Hills.

238. Dicrurus aeneus aeneus Vieillot


Common name: Bronzed Drongo (English).


Diagnostic characters: Size smaller than the preceding bird. Entire plumage highly glossy-black with bronze-green and blue. Bill broad and depressed, width greater than depth at nostrils. Rump and under tail-coverts grey. Tail less deeply forked.

Measurements: 2 ♂: Win

<table>
<thead>
<tr>
<th></th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>142, 147</td>
<td></td>
</tr>
<tr>
<td>Outer</td>
<td>97, 100</td>
<td>154, 156</td>
</tr>
</tbody>
</table>

Distribution: India: Meghalaya (East and South Garo Hills and Khasi Hills districts): Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Daman & Diu, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan Burma (Myanmar), Indochinese countries, Malaysia, Nepal, Thailand and Yunnan.

Remarks: Hume (1888, p. 100) recorded it "from the Garo Hills, the Khasi Hills and Shillong itself" and listed it as Chaptia aenea Vieillot.

239. Dicrurus remifer tectirostris (Hodgson)


Common name: Lesser Racket-tailed Drongo (English).

Diagnostic characters: Size larger than the Myna. Entire plumage glossy metallic black; a velvety tuft of feathers above the base of bill. Two elongated "Wires" like outer tail-feathers ending in spatulae as "rackets" fully webbed on both sides of shaft.

Measurements: 1 ♂: Wing 132; tail (inner) 122, tail (outer) 378; bill 26.


Remarks: Godwin-Austen (1870, p.268) recorded it from the Garo Hills.

240. Dicrurus hottentottus hottentottus (Linnaeus)


Common name: Haircrested Drongo (English), Kesraj (Hindi) and Doba (Garo).


Diagnostic characters: Size equal to Myna. Entire plumage iridescent glossed and spangled blue black. A few fine hair like feathers springing from forehead and extending over hindcrown and upper back. Bill long, pointed and downcurved. Tail long, square, curled up at the outer ends.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail (Central)</th>
<th>Tail (Outer)</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♂</td>
<td>168, 173</td>
<td>128, 129</td>
<td>142, 155</td>
<td>42, 44</td>
</tr>
<tr>
<td>1 ♂</td>
<td>160</td>
<td>135</td>
<td>141</td>
<td>43</td>
</tr>
</tbody>
</table>


Remarks: Hume (1888, p. 102) reported it from the Garo and Khasi Hills and listed it as Chibia hottentotta Linnaeus.

241. Dicrurus paradiseus grandis (Gould)


Common name: Northern Large Racket-tailed Drongo (English) and Bhringraj (Hindi).

Diagnostic characters: Size equal to preceding bird. Entire plumage metallic black; a conspicuous backward curving very large tuft or crest feathers on forehead, curving back over the entire crown. Tail with two long "wires" like spatula tipped streamers.

Measurements: 1 ♂: Wing 169; tail (central) 175, tail (outer) 327; bill 40.


Remarks: Hume (1888, p. 101) reported it from the Khasi Hills.

Family ARTAMIDAE
Genus Artamus Vieillot, 1816

242. Artamus fuscus Vieillot


Common name: Ashy Swallow-shrike (English) and Tadi ababeel (Hindi).


Diagnostic characters: Size equal to Bulbul. Entire head and back dark slaty grey; rump paler than back, slaty grey brown. Underparts paler. Tail short slaty black, tipped with white. Bill bluish and heavy, undertail-coverts white.

Measurements: Wing Tail Bill
2 ♂ 134, 140 58, 60 22(2)
1 ♀ 131 54 22


Remarks: Hume (1888, p. 103) reported it from Shillong, the East Khasi Hills.

Family STURNIDAE

Key to the genera of the family sturnidae

1. Wing with distinct white wing patch.................................................................3
   Wing without wing patch ...................................................................................2

2. Underparts mostly greyish white or rufous .......................................................Sturnus
Underparts in male black with green reflection, in female striped .................................. *Aplonis*

3. White patch near base of remiges ........................................................................... 4
   Patch at about middle of length of wing ............................................................... *Gracula*

4. Throat mostly dark grey ................................................................................... *Acridotheres*
   Throat chestnut ................................................................................................. *Saroglossa*

**Genus Saroglossa Hodgson**

243. *Saroglossa spiloptera* (Vigors)


**Common name** Spottedwinged Stare (English).

**Material examined:** Nil.

**Diagnostic characters:** In male, crown, back and wings brownish grey scalloped with black. Chin and throat deep chestnut-rurous. Breast, belly and vent rusty white. A white wing-patch. In female, back sooty brown. Sides of head dark brown. Underparts pale fulvous ashy-brown scalloped with white.

**Distribution:** India: Meghalaya (Garo Hills district): Assam, Himachal Pradesh, Manipur, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar) and Nepal.

**Remarks:** Hume (1888, p. 268) Stated that Godwin-Austen recorded it from the Garo Hills.

**Genus Aplonis Gould, 1836**

244. *Aplonis panayensis affinis* (Blyth)


**Common name:** Tipperah Glossy Stare (English).

**Material examined:** Nil.

**Diagnostic characters:** Entire head, body and tail brilliantly green-glossed. Eyes conspicuous scarlet-crimson. Lores and feathers at base of upper mandible dull black.

**Distribution:** India: Meghalaya (Khasi hills district): Assam and Tamil Nadu (Straggler). Elsewhere: Bangladesh and Burma (Myanmar).

**Remarks:** Baker (1907, p.794) procured it in the Khasi Hills as *Calornis chalybeius*.

**Genus Sturnus Linnaeus, 1758**

245. *Sturnus malabaricus malabaricus* (Gmelin)


*Common name*: Greyheaded Myna (English) and Pawei (Hindi).


*Diagnostic characters*: Size smaller than the common Myna. Head and back brownish grey; forehead feathers over eyes whitish; cheeks and ear-coverts pale rufous grey. Chin, throat and breast pale rufous; belly and vent bright rufous; wings black and grey. Tail ferruginous.

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ♂</td>
<td>104</td>
<td>66</td>
<td>22</td>
</tr>
<tr>
<td>1 ♀</td>
<td>97</td>
<td>60</td>
<td>21</td>
</tr>
</tbody>
</table>


246. *Sturnus contra contra* Linnaeus


*Common name*: Indian Pied Myna (English) and Ablaki myna (Hindi).


*Diagnostic characters*: Size equal to preceding bird. Entire plumage black and white; orbital skin deep orange-red; bill basal portion bright orange red and terminal pale yellow. Legs and feet yellowish-brown and terminal pale yellow.

*Measurements*: 1 ♀; Wing 118, tail 68, bill 32.


Genus *Acridotheres* Vieillot, 1816

247. *Acridotheres tristis tristis* (Linnaeus)


*Common name*: Indian Myna (English), Desi Myna (Hindi) and Saruk (Garo).

Diagnostic characters: Back and lower breast dark brown; head, neck and upper breast glossy black. Legs bright yellow. Bill and naked patch below and behind eye yellow. Wings with a large white patch. Tail brownish black with broad white-tips to the rectrices.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ♂</td>
<td>133</td>
<td>67</td>
<td>27</td>
</tr>
<tr>
<td>1 ♀</td>
<td>140</td>
<td>81</td>
<td>28</td>
</tr>
</tbody>
</table>


Remarks: Hume (1888, p. 262) recorded this bird from both the Garo and Khasi Hills.

248. Acridotheres fuscus fuscus (Wagler)

1827. Pastor fuscus Wagler, Syst. Av., Pastor sp. 6 (India = East Bengal, Bangladesh, Baker, 1921)


Common name: Northern Jungle Myna (English) and Pahari Myna (Hindi).


Measurements: 1 ♂ : Wing 125, tail 73, bill 28.


Genus Gracula Linnaeus, 1758

249. Gracula religiosa intermedia A. Hay


Common name: Northern Hill Myna (English), Pahari Myna (Hindi) and Myna (Garo).

Diagnostic characters: Size slightly larger than the common Myna. Entire plumage jet black. Bright orange-yellow patches of naked skin and fleshy-wattles on sides of head and neck. Wing with a broad white patch on primaries.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill [from the skull]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1♂</td>
<td>163</td>
<td>74</td>
<td>33</td>
</tr>
<tr>
<td>2♀</td>
<td>168, 171</td>
<td>78, 85</td>
<td>33, 34</td>
</tr>
</tbody>
</table>


Remarks: Hume (1888, p. 268) collected this bird "from Shillong and other places in the Khasi Hills" and listed it as *Eulabes Javanensis* Osb.

Family CORVIDAE

Key to the genera of the family Corvidae

1. Plumage predominantly black or black with ashy nape .................................*Corvus*
   Plumage with brilliant or contrasting colours ..................................................2

2. Two central rectrices elongated ........................................................................3
   Two central rectrices not elongated...................................................................*Garrulus*

3. Plumage with shades of blue ............................................................................*Cissa*
   Plumage with shades of brown .........................................................................*Dendrocitta*

Genus *Garrulus* Brisson, 1760

250. *Garrulus glandarius bispecularis* Vigors


Common name: West Himalayan Redcrowned Jay (English).

Material examined: Nil.


Remarks: Hume (1888, p. 257) collected it from Shillong, the East Khasi Hills and listed it as *Garrulus bispecularis* Vigors. According to Ali and Ripley (1972), *Garrulus glandarius bispecularis* extends from Pakistan to Nepal.
251. **Garrulus glandarius interstinctus** Hartert


*Common name*: East Himalayan Redcrowned Jay (English).

*Material examined*: Nil.

*Diagnostic characters*: Head, upper back, throat, breast and abdomen vinaceous fawn coloured. Wings with closely black barred bright blue. Moustachial band and tail broad and velvety black. Rump and vent white.


**Genus Cissa** Boie, 1826

252. **Cissa chinensis chinensis** Boddaert


*Common name*: Green Magpie (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (East Khasi Hills district): Arunachal Pradesh, Assam, Bihar, Manipur, Mizoram, Nagaland, Sikkim, Uttar Pradesh, Tripura and West Bengal.

*Remarks*: Hume (1888, p. 258) remarked as "Godwin Austen seems to have obtained one at Cherrapunjee"

253. **Cissa erythrorhyncha magnirostris** (Blyth)


*Common name*: Burmese Redbilled Blue Magpie (English).

*Material examined*: Nil.

*Diagnostic characters*: Head, neck and breast velvety black. Nape with a large white patch. Abdomen and vent greyish white. Wings blue. Tail very long with white and black ring like markings.


Genus *Dendrocitta* Gould, 1833

254. *Dendrocitta vagabunda vagabunda* (Latham)


*Common name*: Northeastern Tree Pie (English) and Mahala. (Hindi).


*Diagnostic characters*: Back and scapulars dark brownish fulvous. Rump, belly and under tail-coverts fulvous buff. Head, neck and breast dark sooty-grey. Tail long, graduated, greyish with broad black tips. Wings greyish white and black.

*Measurements*: 1 ♂, Wing 147, tail 225, bill 34.

Distribution: India: Meghalaya (Garo Hills district): Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Manipur, Orissa, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh and Nepal.

255. *Dendrocitta frontalis frontalis* Horsfield


*Common name*: Blackbrowed Tree Pie (English).

*Material examined*: Nil.

*Diagnostic characters*: Back, belly and undertail-coverts grey and chestnut. Nape, sides of head and breast white. Face, throat and foreneck black. Bill heavy, curved and black. Tail entirely black.


256. *Dendrocitta formosae himalayana* Jerdon


*Common name*: East Himalayan Tree Pie (English).

Diagnostic characters: Black forehead; sides of head sooty brown; ashy grey crown, nape and upper mantle; lower mantle and scapulars buffy brown. Rump and upper tail-coverts paler. Black wings with a pure white patch. Chin and throat dark sooty brown, breast and belly rusty brown and whitish.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2♂</td>
<td>137, 139</td>
<td>194, 220</td>
<td>35, 36</td>
</tr>
<tr>
<td>1♀</td>
<td>158</td>
<td>198</td>
<td>35</td>
</tr>
</tbody>
</table>


Remarks: Hume (1888, p. 259) recorded it from the Khasi Hills.

Genus Corvus Linnaeus, 1758

257. Corvus splendens splendens Vieillot


Common name: Indian House Crow (English), Desi Kowwa (Hindi) and Doka (Garo).

Material examined: Nil.


Remarks: Observed it near Kherapara, Tura and Barangapara, the West Garo Hills.

258. Corvus macrorhynchos levaillantii Lesson

1831. Corvus levaillantii Lesson, Traite d'Orn. : 328 (Bengal).


Common name: Eastern Jungle Crow (English), Jangli Kowwa (Hindi) and Dogisik (Garo).


Measurements: 1♂: Wing 308, tail 182, bill 68.

Distribution: India: Meghalaya (East Khasi Hills district): Andaman Islands, Assam, Manipur, Nagaland, Tripura and West Bengal.
Family CAMPEPHAGIDAE

Key to the genera of the family Campephagidae

1. Tail square ................................................................. \textit{Tephrodornis}
   Tail more of less graduated ................................................................. 2

2. Shafts of rump-feathers soft ................................................ \textit{Hemipus}
   Shafts of rump-feathers spiny .......................................................... 3

3. Outer rectrices more than half length of tail ......................... \textit{Pericrocotus}
   Outer rectrices more than three quarters length of tail .................... \textit{Coracina}

Genus \textit{Hemipus} Hodgson, 1844

259. \textit{Hemipus picatus picatus} (Sykes)

\textit{Common name}: Blackbacked Pied Flycatcher-Shrike (English) and Chhota kala latora (Hindi).

\textit{Material examined}: Nil.

\textit{Diagnostic characters}: Size equal to Sparrow. In male, head and back glossy black; chin and throat pure white; breast and belly pinkish white. White collar round the hindneck; rump white. Wings and tail black-and-white. In female, the black colour replaced by sooty brown colour.

\textit{Distribution}: India: Meghalaya (East Khasi Hills district): Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Tripura and West Bengal. Elsewhere: Bangladesh, Indochinese countries, Indonesia and Thailand.

\textit{Remarks}: Hume (1888, p. 93) collected this bird "from Shillong and the Khasi Hills"

Genus \textit{Tephrodornis} Swainson, 1832

260. \textit{Tephrodornis virgatus pelvica} (Hodgson)

\textit{Common name}: Nepal Wood Shrike (English).


\textit{Measurements}: 1 \textit{♀}; Wing 118, tail 92, bill 28.
Distribution: India: Meghalaya (East Garo Hills district Khasi Hills district and Ri-Bhoi Hills districts): Andhra Pradesh, Assam, Bihar, Manipur, Nagaland, Orissa, Sikkim, Tripura and West Bengal. Elsewhere: Bangladesh, Nepal and Bhutan.

Remarks: Hume (1888, p. 93) recorded it from the Khasi hills.

261. Tephrodornis pondicerianus pondicerianus (Gmelin)


Common name: Indian Wood Shrike (English) and Keroula (Hindi).

Material examined: Nil.

Diagnostic characters: Back, wings and tail greyish brown, A dark brown stripe below the eye from lores to ear-coverts. Supercilium whitish. Rump feathers white at base and at tips. Outer rectrices white.


Remarks: Observed it at Kherapara, the West Garo Hills.

Genus Coracina Vieillot, 1816

262. Coracina novaehollandiae macei (Lesson)


Common name: Indian Large Cuckoo-Shrike (English) and Kasya (Hindi).

Material examined: Nil.

Diagnostic characters: Size smaller than the Pigeon. In male, head and back grey. Underparts whitish. A broad dark eye-streak, wings and tail black. In female, eye-streak less prominent. Underparts barred with grey and white.


Remarks: Hume (1888, p. 94) reported this bird "from Shillong and the Khasi Hills" and listed it as Graucalus macei Lesson.

263. Coracina novaehollandiae nipalensis (Hodgson)


Common name: Himalayan Large Cuckoo-Shrike (English).

Diagnostic characters: In male, chin, throat and breast grey; belly without any barring. In female, chin throat and breast grey and belly barred.

Measurements:

- **Wing**
  - 2♂: 184, 186
  - 2♀: 173, 178

- **Tail**
  - 2♂: 130, 138
  - 2♀: 133, 137

- **Bill [from the skull]**
  - 2♂: 31, 33
  - 2♀: 30(2)

Distribution: India: Meghalaya (East Garo Hills and Ri-Bhoi districts): Assam, Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Sikkim, Tripura, Uttar Pradesh and West Bengal.

264. **Coracina melaschistos melaschistos** (Hodgson)


Common name: Smaller Grey Cuckoo-Shrike (English).


Diagnostic characters: Size between Bulbul and Myna. In male, head and back dark bluish grey; eye-stripe dark. Wings and tail black. Central rectrices narrowly tipped white. In female, similar but paler grey and with barred underparts. Terminal margin of the tail is white.

Measurements: 1♀; Wing 115, tail 107, bill 21.

Distribution: India: Meghalaya (Ri-Bhoi Hills district): Andhra Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Nagaland, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Pakistan, Nepal, Bhutan, Bangladesh, China, Taiwan and Indochinese countries.

Genus **Pericrocotus** Boie, 1826

265. **Pericrocotus flammeus fraterculus** Swinhoe

- 1870. *Pericrocotus fraterculus* Swinhoe, Ibis : 224 (Hainan)

Common name: Burmese Scarlet Minivet (English).


Diagnostic characters: In adult male, head and back glistening black. Breast, belly and vent orange red to deep scarlet. The first two primaries lack the red spot and the central rectrices are wholly black. In female, crown and back yellowish grey; chin, throat, breast and belly bright yellow and two yellow bars on black wings. First three primaries lack the yellow spot.
Measurements:

- **Wing**
  - 4♂: 98-101(97)
  - 2♀: 99(2)

- **Tail**
  - 92-97(95)
  - 95, 98

- **Bill**
  - 20-21(20)
  - 21, 22


**Remarks:** Godwin-Austen (1870, p.99) recorded it from the Khasi Hills.

266. *Pericrocotus brevirostris brevirostris* (Vigors)


**Common name:** Shortbilled Minivet (English).

**Material examined:** Ri-Bhoi Hills district: 1♂ Barapani, c. 14 km. N. Of Shillong, coll. R. V. Sherard, 10.vi. 1949.

**Diagnostic characters:** Size smaller than the Bulbul. 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.

**Measurements:** 1♂: Wing 88, tail 90, bill 16.

**Distribution:** India: Meghalaya (East Khasi Hills and Ri-Bhoi Hills districts): Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere: Bhutan, Burma (Myanmar), China, Nepal and Vietnam.

**Remarks:** Hume (1888, p. 96) reported it from Shillong, the East Khasi Hills. Godwin-Austen (1870, p. 99) also reported it from the Khasi Hills.

267. *Pericrocotus ethologus laetus* Mayr


**Common name:** East Himalayan Longtailed Minivet (English).

**Material examined:** Nil.

**Diagnostic characters:** In male, entire head and back glossy black. Breast, abdomen and belly deep scarlet. A large scarlet patch on the black wing. Tail graduated black and scarlet. In female, the throat is yellow and all the parts of male replaced by yellow.

**Distribution:** India: Meghalaya: Arunachal Pradesh, Assam, Orissa, Sikkim and West Bengal. Elsewhere: Bangladesh, Bhutan and Nepal.

**Remarks:** Ripley (1982, p. 303) recorded it from Meghalaya.

268. *Pericrocotus solaris solaris* Blyth


*Common name*: Yellow throated Minivet (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district); Arunachal Pradesh, Assam, Manipur, Sikkim and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

*Remarks*: Godwin-Austen (1870, p.99) reported this bird from the Khasi Hills.

269. *Pericrocotus roseus roseus* (Vieillot)


*Common name*: Rosy Minivet (English).

*Material examined*: Nil.

*Diagnostic characters*: Size slightly bigger than the preceding bird. In male, crown and back ashy-brown; rump and upper tail-coverts rosy pink. Wings and tail deep pink. Underparts rosy pink. In female, like male, but rosy and red portion replaced by pale yellow colour.

*Distribution*: India: Meghalaya (Khasi Hills district); Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Manipur, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bhutan, Burma (Myanmar), China, Nepal Pakistan and Vietnam.

*Remarks*: Godwin-Austen (1870, p.99) recorded it from the Khasi Hills.

Family IRENIDAE

Key to the genera of the family Irenidae

1. Plumage mainly yellow or grass-green .............................................................. 2
   Plumage mainly deep blue ............................................................................... *Irena*

2. Plumage mainly yellow....................................................................................... *Aegithina*
   Plumage mainly grass-green............................................................................... *Chloropsis*

Genus *Aegithina* Vieillot, 1816

270. *Aegithina tiphia tiphia* (Linnaeus)


*Common name*: Common Iora (English) and Shanbeegi (Hindi).


Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill [from the skull]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 σ</td>
<td>67</td>
<td>52</td>
<td>18</td>
</tr>
</tbody>
</table>

Distribution: India: Meghalaya (Garo Hills, Jayantia Hills and Khasi Hills districts): Arunachal Pradesh, Assam, Manipur, Mizoram, Sikkim, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

Remarks: Godwin-Austen (1872), p. 142) recorded it from the Khasi Hills as Iora typhia.

Genus Chloropsis Jardine & Selby, 1827

271. Chloropsis aurifrons aurifrons (Temminck)

1829. Phyllosis aurifrons Temminck, PA, Col. d'Ois. livr. 81, pl.484 fig. 1 (Sumatra, India = Cachar).

Common name: Northern Goldfinch Chloropsis (English) and Harewa (Hindi).


Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 σ</td>
<td>85</td>
<td>65</td>
<td>22</td>
</tr>
<tr>
<td>1 Φ</td>
<td>85</td>
<td>65</td>
<td>21</td>
</tr>
</tbody>
</table>


Remarks: Hume (1888, p. 184) reported this from Shillong and from several places in the Khasi Hills and listed it as Phyllosis aurifrons Temminck.

272. Chloropsis hardwickii hardwickii Jardine & Selby


Common name: Orangebellied Chloropsis (English).

Material examined: Nil.
Diagnostic characters: Size equal to a Bulbul. In male, crown, nape and back leaf-green: shoulder patch blue, wings dark purplish blue and tail blackish. Chin and throat blue-black, belly orange; dark blue moustachial streak on sides of head. In female, head and back green, shoulder patch pale blue. Underparts orange colour; tail green.


Remarks: Godwin-Austen (1870, p. 106) reported this bird from the Khasi Hills as Phyllornis Hardwickii.

273. Chloropsis cochinchinensis cochinchinensis (Gmelin)
1788. Turdus cochinchinensis Gmelin, Syst. Nat., 1(2) : 825 (Cochin China).

Common name: Goldmantled Chloropsis (English).

Material examined: Nil.

Diagnostic characters: Green-leaf bird with greenish forehead. Shoulder patch blue. Outer primaries and outer tail-feathers bluish. Abdomen greenish-yellow. In male, check and throat black and in female, it is bluish-green.


Remarks: Godwin-Austen (1870, p.207) recorded it from Diniapur on the Dunsiri river and from the Kylas peak of chickmung of the West Garo Hills and listed it as Phyllornis chlorocephalus Waldo

Genus Irena Horsfield, 1821

274. Irena puella puella (Latham)
1790. Coracias puella Latham, Index Orn., 1 : 171 (India, restricted to Travancore, S. Kerala).

Common name: Fairy Bluebird (English) and Dao gatang (Cachari).


Diagnostic characters: In male, back, crown and tail brilliant ultramarine blue. Wing, sides of head, chin, throat and breast deep velvety black. Under tail-coverts blue. In female, dull blue-green with blackish lores.

Measurements: 1 ♂: Wing 136, tail 100, bill 30 [from the skull].

Family PYCNONOTIDAE

Key to the genera fo the family Pycnonotidae

1. Bill finch-like........................................................................................................... *Spizixos*
   Bill not finch-like..................................................................................................... 2

2. Crown feathers erect ............................................................................................. *Pycnonotus*
   Crown feathers often pointed and lengthened...................................................... 3

3. Very long hairs springing from the nape and hindneck....................................... *Criniger*
   No long hairs springing from the nape or hindneck.............................................. *Hypsipetes*

Genus *Spizixos* Blyth, 1845

275. *Spizixos canifrons canifrons* Blyth


*Common name*: Finchbilled Bulbul (English).

*Material examined*: Nil.


*Remarks*: Hume (1888, p. 180) reported a large series from the neighbourhood of Shillong and stated “Jerdon gave a specimen shot near Cherrapoonjee”

Genus *Pycnonotus* Boie, 1826

276. *Pycnonotus atriceps atriceps* (Temminck)


*Common name*: Blackheaded Bulbul (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya: Assam, Manipur, Nagaland and Tripura. Elsewhere: Bangladesh, Borneo, Burma (Myanmar), throughout the Indochinese subregion, Malaysia, Palawan and Sunda Islands.

277. Pycnonotus melanicterus flaviventris (Tickell)


Common name: Blackcrested Yellow Bulbul (English) and Zarbulbul (Hindi).


Measurements:

<table>
<thead>
<tr>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ♀</td>
<td>90, 92</td>
<td>85, 89</td>
</tr>
<tr>
<td>2 ♀</td>
<td>84, 91</td>
<td>83, 85</td>
</tr>
</tbody>
</table>


Remarks: Baker (1907, p. 790) recorded it from the Khasi Hills and listed it as Rubigula flaviventris Tickell.

278. Pycnonotus jocosus monticola (McClelland)


Common name: Assam Redwhiskered Bulbul (English).


Diagnostic characters: Back darker brown. Crest pointed and black. Crimson tufts behind the eyes. Underparts with a dark collar and scarlet under tail-coverts. Tail feathers while-tipped.

Measurements:

<table>
<thead>
<tr>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ♂</td>
<td>86</td>
<td>89</td>
</tr>
<tr>
<td>1 ♀</td>
<td>83</td>
<td>88</td>
</tr>
</tbody>
</table>


279. Pycnonotus jocosus emeria (Linnaeus)


Common name: Bengal Redwhiskered Bulbul (English) and Pahari bulbul (Hindi).

Material examined: Nil.

Diagnostic characters: Forehead, crown with pointed black crest; back hair-brown. Crimson tufts behind the eyes. China, throat and belly white with dark collar on breast. Undertail-coverts scarlet.

Distribution: India: Meghalaya (Garo Hills and Khasi Hills districts): Andhra Pradesh, Orissa, Tamil Nadu, Tripura and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar) and Thailand.


280. *Pycnonotus cafer bengalensis* Blyth


Common name: Bengal Redvented bulbul (English) Kala bulbul (Hindi) and Dobret (Garo).


Diagnostic characters: Crested head black. Back earth-brown. Black throat, breast and back with scale like marking with narrow pale edges.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bills</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 ♂</td>
<td>101-108</td>
<td>95-103</td>
<td>22-23</td>
</tr>
<tr>
<td></td>
<td>(106)</td>
<td>(98)</td>
<td>(22)</td>
</tr>
<tr>
<td>4 ♀</td>
<td>97-103</td>
<td>89-98</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>(99)</td>
<td>(93)</td>
<td></td>
</tr>
</tbody>
</table>

Distribution: India: Meghalaya (East and West Garo Hills district, East Khasi Hills district and Ri-Bhoi Hills district): Arunachal Pradesh, Assam, Manipur and Tripura. Elsewhere: Bangladesh, Burma (Myanmar) and Yunnan (S. China).

Remarks: Hume (1888, p. 183) recorded it from the Khasi Hills and listed it as *Molpastes pygaeus*.

281. *Pycnonotus cafer stanfordi* Deignan


Common name: Burmese Redvented Bulbul (English).

Material examined: Nil.


Remarks: Hume (1888, p. 183) reported it "from Cherrapoonjee, Shillong" and listed it as molpastes burmanicus Sharpe.

282. Pycnonotus striatus striatus (Blyth)

1842. Trichophorus striatus Blyth, J. Asiatic Soc. Beng. 11: 184 (Darjeeling = Darjiling, Darjiling dist. West Bengal, India.)
Common name: Striated green Bulbul (English).

Material examined: Nil.


Remarks: Baker (1907, p. 719) obtained it from the Khasi Hills.

283. Pycnonotus flavescens flavescens Blyth

Common name: Blyth's Bulbul (English).


Diagnostic characters: Back and wings olive, head greyish brown. White lores and supercilium, under tail-coverts bright yellow.

Measurements: 1♀: Wing 85, tail 97, bill 16.


Remarks: Hume (1888, p. 179) stated that "this species must be very abundant about Shillong" and listed it as Ixus flavescens Blyth.

Genus Criniger Temminck, 1820

284. Criniger flaveolus flaveolus (Gould)


*Common name*: Whitethroated Bulbul (English).


*Diagnostic characters*: Back olive-green; crown with crest rufous-brown. Wings and tail with rufous-brown; spercilium whitish, sides of head grey; chin and throat white, breast and belly lemon-yellow.

*Measurements*:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2♂</td>
<td>100, 102</td>
<td>85, 90</td>
<td>21 (2)</td>
</tr>
<tr>
<td>2♀</td>
<td>94, 105</td>
<td>85, 90</td>
<td>20, 21</td>
</tr>
</tbody>
</table>


*Remarks*: Hume (1888, p. 178) remarked "Godwin-Austen appears to have got it from the Khasi Hills".

285. *Hypsipetes viridescens cacharensis* (Deignan)


*Common name*: Olive Bulbul (English).

*Material examined*: Nil.


286. *Hypsipetes meclellandi meclellandi* Horsfield


*Common name*: Rufousbellied Bulbul (English).


Remarks: Hume (1888, p. 176) reported this bird "from Shillong and the Khasi Hills"

287. Hypsipetes flavalus flavalus (Blyth)
Common name: Browneared Bulbul (English).
Material examined: Nil.


Distribution: India: Meghalaya (Khasi Hills district): Northern Himalayas from Himachal Pradesh to Arunachal Pradesh, Assam, Manipur and Nagaland. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

Remarks: Hume (1888, p. 176) reported and stated "this species from Shillong and the Khasi Hills" and listed it as Hemixus flavala Horsfield.

288. Hypsipetes madagascariensis nigrescens Baker
Common name: Assam Black Bulbul (English).


Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>♂</td>
<td>117</td>
<td>98</td>
<td>25</td>
</tr>
<tr>
<td>♀</td>
<td>120</td>
<td>102</td>
<td>26</td>
</tr>
</tbody>
</table>


Remarks: Hume (1888, p. 176) reported it "from Shillong and the Khasi Hills" and listed it as Hypsipetes psaroides Vigors.
Family MUSCICAPIDAE

Key to the genera of the family Muscicapidae

1. Bill broad and flat ..................................................................................................... 38
   Bill slender or very variable .................................................................................. 2

2. Bill variable ............................................................................................................. 16
   Bill slender, very long or small .......................................................................... 3

3. Bill very long ............................................................................................................. 4
   Bill small ................................................................................................................. 42

4. Wing usually over 100 mm .................................................................................. 5
   Wing usually below 100 mm ............................................................................... 12

5. Rictal bristles obsolete ......................................................................................... Cochoa
   Rictal bristles short or well developed .................................................................. 6

6. Crown white ............................................................................................................ 7
   Crown other than white ......................................................................................... 8

7. Tail deeply forked; shorter than the wing ............................................................ Ernicurus
   Tail not forked ......................................................................................................... 9

8. Sexes dissimilar ...................................................................................................... 10
   Sexes alike ............................................................................................................... Myiophonus

9. White on bases of primaries and secondaries ..................................................... 11
   No white on the bases of primaries and secondaries .......................................... 12

10. Plumage largely with blue or bluish .................................................................. Monticola
    Plumage largely with brownish and slaty ........................................................... Zoothera

11. Rectrices well-developed or strong ........................................................................ 13
    Rectrices very short .............................................................................................. 14

12. Wing pointed and bill notched ............................................................................. Saxicola
    Wing round ............................................................................................................ 15

13. White rump on female ....................................................................................... Rhyacornis
    No white rump on female .................................................................................. Brachypteryx

14. Throat with a prominent markings-scarlet or blue .............................................. Erithacus
    Throat without markings ...................................................................................... 16

15. Bill stout and straight ......................................................................................... Copsychus
    Bill short and slender .......................................................................................... Phoenicurus
16. Bill long, curved downwards ................................................................. 17
    Bill long not curved downwards........................................................... 18
17. Bill compressed ..................................................................................... Pomatorhinus
    Bill more extremely curved .................................................................. Xyphirynchus
18. Wing usually more than 100 mm .......................................................... 19
    Wing less than 100 mm ........................................................................... 21
19. Head, back and tail-feathers uniform .................................................... Turdoides
    Head, back and tail-feathers mot uniform .............................................. 20.
20. Wing edged with a bright colour .......................................................... Garrulax
    Wing edged without bright colour .......................................................... Heterophasia
21. Head with an erectile crest ..................................................................... Yuhina
    Head without erectile crest ..................................................................... 22
22. Forehead and crown with rigid shafts of the feathers ............................ Timalia
    No rigid shafts of the feathers on forehead and crown ........................... 23
23. Wing feathers narrowly cross-barred ................................................... Actinodura
    Wing feathers not cross-barred ............................................................. 24
24. Short tail of 6 feathers or 10 feathers ................................................... 25
    Tail feathers more than 10 ...................................................................... 26
25. Tail feathers 6 in numbers ..................................................................... Pnoepyga
    Tail feathers 10 in numbers ................................................................... Spelaeornis
26. Nostrils covered by operculum or by feathers ....................................... 28
    Nostrils exposed ..................................................................................... 27
27. Bill slender and straight ......................................................................... Napothera
    Bill slightly curved ............................................................................... Macronous
28. Nostrils covered by operculum ............................................................. Stachyris
    Nostrils covered by feathers .................................................................. 29.
29. Rictal bristles very long and stiff ......................................................... Gampsorhynchus
    Rictal bristles well developed, short or absent ........................................ 30
30. Rictal bristles well developed or short ................................................. 31
    Rictal bristles absent .............................................................................. Sphenocincla
31. Rictal bristles well developed ............................................................... 35
32. Bill very deep and short with sinnurus cutting edges ............................ Parodoxornis
Bill long or stout & strong ................................................................. 33
33. Bill long or straight and notched at the tip................................. 34
34. Bill long...................................................................................... Rimator
   Bill straight and notched at the tip............................................... Pellorneum
35. Rictal bristles many.................................................................... 36
   Rictal bristles 3 ......................................................................... 37
36. Bill laterally compressed............................................................ Trichastoma
   Bill not compressed.................................................................. Alcippe
37. Bill slightly curved..................................................................... Leiothrix
   Bill straight and pointed............................................................... Minla
38. Central pair of rectrices in $\Omega$ greatly elongated....................... Terpsiphone
   Central pair of rectrices not elongated......................................... 39
39. Rictal bristles well developed; bill depressed............................... Muscicapa
   Rictal bristles numerous and long............................................... 40
40. 1st primary short ..................................................................... Culicicapa
   1st primary not short.................................................................. 41
41. Bill densely covered with plumules at base............................... Hypothymes
   Bill not covered with plumules, bill large................................. Rhipidura
42. Body and wing with broad black stripes, tail long and graduated..... Megalurus
   Body not with broad black stripes................................................ 43
43. 2nd or 3rd Primary reaching to the tip of the wing..................... 44
   2nd and 3rd primaries not reaching to the tip of wing................ 45
44. 2nd primary reaching nearly to the tip of wing........................... Locustella
   3rd primary reaching to the tip of the wing................................. Phragmaticola
45. Rictal bristles reaching to the tip of the bill............................... Seicercus
   Rictal bristles not reaching to the tip of the bill.......................... 46
46. Rictal bristles 2 in numbers ..................................................... Cisticola
   Rictal bristles well developed 3, 5, or short................................ 47
47. Rictal bristles 5 in numbers....................................................... 48
   Eictal bristles 3 or inconspicuous................................................ 49
48. Rictal bristles arranged vertically in front of eye......................... Chaetornis
   Rictal bristles arranged horizontally on the base of bill............... Abroscopus
49. Eictal bristles 3 in numbers; bill straight and pointed............................................................Prinia
   Rictal bristles short .................................................................................................................. 50
50. Bill compressed at the tip or broad and flat ............................................................................ 51
   Bill thin, narrow and pointed .................................................................................................. 52
51. Bill compressed at tip.............................................................................................................. 53
   Bill broad and flat .................................................................................................................... Orthotomus
52. Rectrices pointed ...................................................................................................................... Bradypterus
   Rectrices not pointed .............................................................................................................. 53
53. Lateral rectrices shorter than the middle pair............................................................................. Cettia
   Lateral rectries not shorter than the middle pair ...................................................................... Phylloscopus

Genus Pellorneum Swainson, 1932

289. Pellorneum ruficeps mandellii Blanford
   Common name: Mandell's Spotted Babbler (English).
   Material examined: Nil.
   Remarks: Godwin-Austen recorded it from the Garo hills. Hume (1888, p. 144) reported it from the Khasi Hills. Baker (1907, p. 787) also reported it from the Khasi Hills.

290. Pellorneum ruficeps chamelum Deignan
   Common name: Assam Spotted Babbler (English).
   Measurements: 2♂: Wing 65, 70; tail 61, 66; bill [from the skull] 18(2).
291. *Pellorneum pallustre* Gould


*Common name*: Marsh Spotted Babbler (English).

*Material examined*: Nil.

*Diagnostic characters*: Back and tail olive-brown. Lores whitish. Sides of neck, flanks and a band across the breast ochraceous, more or less streaked with brown. Chin white, throat and upper breast white streaked with brown. Centre of belly white.

*Distribution*: India: Meghalaya (Khasi Hills district) : Arunachal Pradesh and Assam, Elsewhere: Bangladesh.

*Remarks*: Hume (1888, p. 146) reported it from the Khasi Hills. Godwin-Austen (1872, p. 142) obtained it from the "beels" between Bolgunj and Chatak.

292. *Pellorneum albiventre albiventre* (Godwin-Austen)


*Common name*: Assam Brown Babbler (English).

*Material examined*: Nil.

*Diagnostic characters*: back, wings and tail brown. Tail very short. Throat white with faintly spotted. Belly whitish; breast and vent whitish with a rustly wash.

*Distribution*: India: Meghalaya (Khasi Hills district) : Arunachal Pradesh, Assam, Manipur and Nagaland. Elsewhere: Bangladesh and Burma (Myanmar).

*Remarks*: Baker (1907, p.787) reported it from the Khasi Hills.

Genus *Trichastoma* Blyth, 1842

293. *Trichastoma tickelli assamensis* (Sharpe)


*Common name*: Tickell's Babbler (English).

*Material examined*: Nil.


294. *Trichastoma abbotti abbotti* (Blyth)


*Common name*: abbott's Babbler (English).

*Material examined*: Nil.

*Diagnostic characters*: Above, head, back and tail olive-brown; chin and throat greyish white; whitish belly. Breast and flanks olive. Undertail-coverts bright ochraceous.


*Remarks*: Godwin-Austen (1872, p. 269) recorded it from the base of the South Garo Hills. Hume (1888, P. 138) reported it from Shillong, the East Khasi Hills.

**Genus Pomatorhinus** Horsfield, 1821

295. *Pomatorhinus schisticeps schisticeps* Hodgson


*Common name*: East Himalayan Slatyheaded Scimitar Babbler (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district) : Northern Himalayas foothills from Uttar Pradesh to Arunachal Pradesh, Assam, Manipur and Nagaland. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

*Remarks*: Hume (1888, p. 148) reported it from the Khasi hills.

296. *Pomatorhinus ruficollis bakeri* Harington


*Common name*: Cachar Rufousnecked scimitar Babbler (English).


*Measurements*: 1 ♂: Wing 82, tail 86, bill 23.

*Distribution*: India : Meghalaya (East Khasi Hills district) : Assam, Manipur and Nagaland. Elsewhere: Bangladesh and Burma (Myanmar)
Remarks: Hume (1888, p. 146) stated "about Shillong this is very common"

297. Pomatorhinus erythrogenys meclellandi Godwin-Austen

Common name: Assam Rustycheeked Scimitar Babbler (English).
Material examined: Nil.

Diagnostic characters: Back, wings and tail olive-brown, sides of head, lores and neck rusty. Chin and throat white; breast streaked with dark ashy-brown.

Remarks: Hume (1888, p. 151) remarked "we have many specimens of this species from Shillong, and other places in the Khasi Hills"

298. Pomatorhinus hypoleucos hypoleucos (Blyth)

Common name: Large Scimitar Babbler (English).
Material examined: Nil.


299. Pomatorhinus ferruginosus formosus Koelz

Common name: Assam Coralbilled Scimitar Babbler (English).
Material examined: Nil.


Distribution: India: Meghalaya: Assam, Manipur, and Nagaland.

300. Pomatorhinus ferruginosus phayrei Blyth


*Common name*: Mizo Coralbilled Scimitar Babbler (English).

*Material examined*: Nil.


*Distribution*: India: (East Khasi Hills district) : Assam, Manipur and Nagaland.

Remarks: Godwin-Austen (1870 p. 103) recorded it from Cherrapunji. Hume (1888, p. 147) reported it from Shillong, the East Khasi hills.

301. *Pomatorhinus ochraceiceps austeni* Hume

1881. *Pomatorhinus austeni* Hume Str. Feath., 10, 152 (E. Manipur)


*Common name*: Manipur Longbilled Scimitar Babbler (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya : Assam, Manipur and Nagaland.


Genus *Xiphirhynchus* Blyth, 1842

302. *Xiphirhynchus superciliaris intextus* Ripley


*Common name*: Assam Slenderbilled Scimitar Babbler (English).

*Material examined*: Nil.


Genus *Rimator* Blyth, 1847

303. *Rimator malacoptilus* Blyth


Common name: Longbilled Wren-Babbler (English).

Material examined: Nil.


Remarks: Koelz (1954, p. 5) recorded it from "Mawphlang, the East Khasia Hills" as Rimator malacoptilus amadoni.

Genus Napothera G. R. Gray, 1842

304. Napothera brevicaudata striata (Blyth)


Common name: Streaked Wren-Babbler (English).

Material examined: Nil.


Remarks: Hume (1888, p. 140) reported "Godwin--Austen procured it along the southern bases of the Garo and Khasi Hills" and listed it as Turdinus brevicaudatus Blyth.

305. Napothera epilepidota roberti (Godwin-Austen & Walden)


Common name: Austen's Small Wren-Babbler (English).

Material examined: Nil.

Diagnostic characters: Back, Wings and tail dark brown. The crown and upper back feathers give a scaly appearance. A light supercilium from lores to nape. Throat white streaked with dark brown.

Distribution: India: Meghalaya: Assam, Manipur and Nagaland.


Genus Phoepyga Hodgson, 1844

306. Pnoepyga albiventer albiventure (Hodgson)

1837. Tesia albiventer Hodgson, J. Asiat. Soc. Beng., 6 : 102 (Nepal, restricted by Ripley (Synopsis: 357) to I lam dist., eastern nepal, re-restricted to Chandragiri above Thankot by Biswas (JBNHS 59, : 204-5)

*Common name:* Eastern Scalybreasted wren-Babbler (English).

*Material examined:* Nil.

*Diagnostic characters:* Colouration in two phases: Colouration in two phases: White phase:-
Back and head olive-brown with a slightly scaly appearance. Throat, breast and belly white, each
feather with dark centre and a dark narrow margin producing a scaly effect. Fulvous phase: Head and
back olive-brown with a fulvous drop on each feather. Throat, breast and belly fulvous.

*Distribution:* India: Meghalaya (East Khasi Hills districts): Arunachal Pradesh, Assam and

*Remarks:* Hume (1888, p. 119) reported it from Shillong, the East Khasi Hills and Godwin-
Austen (1870, p.101) collected from the Hengdon peak of the Khasi Hills and listed it as *Pnoepyga*
squamata Gould.

307. *Pnoepyga pusilla pusilla* Hodgson


*Common name:* Brown Wren-Babbler (English).

*Material examined:* Nil.

*Diagnostic characters:* Similar to the preceding bird, only distinguished it from the former by
smaller size.

*Distribution:* India: Meghalaya (East Khasi Hills district): Arunachal Pradesh, Assam, Nagaland,

*Remarks:* Hume (1888, p. 119) reported it from Shillong, the East Khasi Hills. Godwin-Austen
(1870, p. 101) collected it from several parts of the Khasi Hills.

Genus *Spelaeornis* David and Oustalet, 1877

308. *Spelaeornis longicaudatus* (Moore)

(Afghanistan errore = Khasi Hills, Assam).


*Common name:* Longtailed Wren-Babbler (English).

*Material examined:* Nil.

*Diagnostic characters:* Back brown with a scaly appearance Crown. grey-brown. Chin whitish;
throat and upper breast ochraceous buff. Central of belly white.

*Distribution:* India: Meghalaya (East Khasi Hills district): Assam and Manipur.

*Remarks:* Hume (1888, p.119) recorded it from Cherrapoonjee, the East Khasi Hills. Godwin-
Austen (1870, p.101) recorded it from Cherrapoonjee, the East Khasi Hills and listed it as *Pnoepyga*
longicaudata Moore.
309. *Spelaeornis chocolatinus chocolatinus* (Godwin-Austen & Walden)


**Common name**: Streaked Longtailed Wren-babbler (English).

**Material examined**: Nil.

**Diagnostic characters**: In male, crown and back dark brown with a scaly appearance. Chin and throat white, the later finely speckled. Belly white. In female, colouration more rufescent above and below.

**Distribution**: India: Meghalaya (Khasi Hills district): Assam, Manipur and Nagaland.

**Remarks**: Hume (1888, p. 120) reported it from Shillong, East the Khasi Hills and listed it as *Pnoepyga chocolatina* Godwin-Austen & Walden.

310. *Spelaeornis formosus* (Walden)


**Common name**: Spotted Short-tailed Wren-Babbler (English).

**Material examined**: Nil.

**Diagnostic characters**: Back, head and wing-coverts olive-brown speckled with white. Wings, tail and rump chestnut brown barred with black. Throat and breast cinnamon densely spotted with white. Belly cinnamon speckled with black.


**Remarks**: Ripley (1982, p. 332) recorded it from Meghalaya.

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Genus *Sphenocichla* Godwin-Austen & Walden, 1875

311. *Sphenocichla himei roberti* Godwin-Austen & Walden


**Common name**: Cachar Wedgebilled Wren (English).

**Material examined**: Nil.

**Diagnostic characters**: Lower back, wings and tail very dark brown with barred. Crown and upper back mottled with golden brown with fine white shaft-streaks. Feathers of throat and breast ashy-brown with black margins and white submargins.


**Remarks**: Ripley (1982, p. 333) reported it from Meghalaya.
Genus *Stachyris* Hodgson, 1844

312. *Stachyris rufifrons ambiguus* (Harington)


*Common name*: Assam Redfronted Babbler (English).

*Material examined*: Nil.


313. *Stachyris ruficeps ruficeps* Blyth


*Common name*: Redheaded Babbler (English).

*Material examined*: Nil.


*Remarks*: Godwin-Austen (1870, p. 103) reported it from the Khasi Hills.

314. *Stachyris chrysaea chrysaea* Blyth


*Common name*: Nepal Goldenheaded Babbler (English).

*Material examined*: Nil.


*Remarks*: Hume (1888, p.142) reported form Mouflong, the Khasi Hills.
315. *Stachyris nigriceps spadix* Ripley


*Common name*: Assam Black-throated Babbler (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district): Assam and Mizoram. Elsewhere: Bangladesh, Burma (Myanmar) and Thailand.

*Remarks*: Hume (1888, p. 141) obtained this bird from many localities in the Khasi Hills and listed it as *Stachyris nigriceps* Hodgson.

Genus *Macronous* Jardine and Selby, 1835

316. *Macronous gularis rubricapilla* (Tickell)


*Common name*: Yellowbreasted Babbler (English).


*Measurements*: 

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill [from the skull]</th>
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<tbody>
<tr>
<td>♂</td>
<td>58, 60</td>
<td>48, 52</td>
<td>15(2)</td>
</tr>
<tr>
<td>♀</td>
<td>53, 55</td>
<td>45, 48</td>
<td>14(2)</td>
</tr>
</tbody>
</table>

*Distribution*: India: Meghalaya (East Khasi Hills, South and West Garo Hills and Jaintia Hills districts): Andhra Pradesh, Assam, Bihar, Karnataka, Madhya Pradesh, Manipur, Nagaland, Orissa, Sikkim, Tripura and West Bengal. Elsewhere: Bangladesh and Nepal.

*Remarks*: Hume (1888, p. 142) reported it from Shillong, the East Khasi Hills Koelz (1951) reported it from Tura, the West Garo Hills and described it as *Macronus gularis assamicus*.

Genus *Timalia* Horsfield, 1821

317. *Timalia pileata bengalensis* Godwin-Austen


Common name: Redcapped Babbler (English).

Material examined: Nil.


Distribution: India: Meghalaya (Khasi Hills districts): Assam, Manipur, Nagaland, Sikkim, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

Remarks: Hume (1888, p. 143) remarked "Godwin-Austen seems to have got it in the Khasi Hills" Walden (1872) reported it from the "Khasia Hills" and described it as Timalia jerdoni.

Genus Paradoxornis Gould, 1836

318. Paradoxornis nipalensis poliotis (Blyth)


Common name: Blyth's or Assam Orange Parrotbill (English).

Material examined: Nil.


Remarks: The subspecies described from Cherrapunji, the East Khasi Hills.

319. Paradoxornis atrosuperciliaris atrosuperciliaris (Godwin-Austen)


Common name: Blackbrowed Parrotbill (English).

Material examined: Nil.

Diagnostic characters: Back rufous olive-brown; wings rufous and brown. Tail brown, graduated underparts creamy buff.


320. Paradoxornis ruficeps ruficeps Blyth


Common name: Greater Redheaded Parrotbill (English).

Material examined: Nil


Remarks: Hume (1888, p. 134) collected it from Shillong, and Mouflong, the East Khasi Hills.

321. *Paradoxornis ruficeps bakeri* (Hartert)


Common name: Assam Redheaded Parrotbill (English).

Material examined: Nil.


Remarks: Koelz (1954, p. 2) reported it from "Cherrapunji" the East Khasia Hills and described it as *Psittiparus ruficeps rufinotus*.

322. *Paradoxornis gularis transfluvialis* (Hartert)


Common name: Assam Greyheaded Parrotbill (English).

Material examined: Nil.


Distribution: India: Meghalaya: Assam, Manipur and Nagaland. Elsewhere: Bangladesh, Burma (Myanmar) and Thailand.


323. *Paradoxornis flavirostris flavirostris* Gould


Common name: Blackthroated Parrotbill (English).

Material examined: Nil.


Remarks: Ripley (1982, p. 343) recorded this bird from Meghalaya.

324. Paradoxornis guttaticollis David


Common name: Whitethroated Parrotbill (English).

Material examined: Nil.

Diagnostic characters: Similar to preceding 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.


Remarks: Hume (1888, p. 134) reported this bird from Shillong, the East Khasi Hills and other parts of the Khasi Hills. Gould (1874) also reported it from Shillong, the East Khasi and described it as Paradoxornis austeni.

Genus Turdoides Cretzschmar, 1826

325. Turdoides longirostris (Hodgson)


Common name: Slenderbilled Babbler (English) and Dosru (Garo).

Material examined: Nil.


Distribution: India: Meghalaya (East Garo Hills district): Arunachal Pradesh: Assam, Bihar, Manipur, Sikkim, Tripura and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

Remarks: Seen this bird near Rongronggiri, the East Garo Hills.

326. Turdoides striatus striatus (Dumont)


Common name: Bengal Jungle Babbler (English) and Satbhai (Hindi).


Genus  Garrulax  Lesson, 1831

327. Garrulax monileger monileger (Hodgson)

Common name: Necklaced Laughing Thrush (English).

Material examined: East Garo Hills district: 2♀, Rongrenggiri, coll. H. Khajuria, 21 and 27.i. 1957.

Diagnostic characters: Back olive-brown, underparts fulvous, nuchal collar narrow and light; necklace much narrower on the breast and nearly covered by the rufous of the lower throat. Shoulders olive-brown, concolorous with back. Bill entirely black.


Remarks: Hume (1888, p. 160) recorded it from the Khasi Hills.

328. Garrulax pectoralis melanotis Blyth

Common name: Assam Blackgorgeted Laughing Thrush (English).


Diagnostic characters: Size larger than the Myna. Back olive-brown; underparts fulvous. Nuchal collar rufous; supercilium extends to collar. Throat whitish buff bordered by a black broad necklace.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
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<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1♂</td>
<td>144</td>
<td>128</td>
<td>35</td>
</tr>
<tr>
<td>2♀</td>
<td>144, 149</td>
<td>125, 135</td>
<td>34, 36</td>
</tr>
</tbody>
</table>
**Distribution**: India: Meghalaya (East and West Garo Hills and Khasi Hills districts) : Arunachal Pradesh, Assam, Manipur, Nagaland, Sikkim and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and China.

**Remarks**: Godwin-Austen (1870, p. 104) reported it from the Khasi Hills as *Garrulax pectoralis* Gould.

329. *Garrulax striatus cranbrooki* (Kinnear)


**Common name**: Assam Striated Laughing Thrush (English).

**Material examined**: Nil.


330. *Garrulax leucolophus leucolophus* (Hardwicke)


**Common name**: Himalayan Whitecrested Laughing Thrush (English) and Rawil-Kahy (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: Lower back and belly olive-brown. Head with white crest and black band through eye. Tail blackish. Throat and breast bordered by a rufous band.

**Distribution**: India: Meghalaya (Khasi Hills district) : Arunachal Pradesh, Assam and Sikkim. Elsewhere: Bhutan and Nepal.

**Remarks**: Hume (1888, p. 153) collected this bird from the Khasi Hills.

331. *Garrulax leucolophus patkaicus* Reichenow


**Common name**: Assam Whitecrested Laughing Thrush (English).

Diagnostic characters: Lower back, wing, tail and belly olive-brown. Entire head with crest white and a black band from base of bill through eye to end of head. Lower breast, nuchal collar and pectoral belt chestnut.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
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<tr>
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<td>122, 125</td>
<td>28, 30</td>
</tr>
<tr>
<td>1♀</td>
<td>124</td>
<td>115</td>
<td>28</td>
</tr>
</tbody>
</table>


332. Garrulax chinensis nuchalis Godwin-Austen
Common name: Chestnutbacked Laughing Thrush (English).
Material examined: Nil.


Remarks: One of the type locality of this subspecies from the Khasi Hills, Meghalaya.

333. Garrulax delesserti gularis (McClelland)
Common name: Yellowbreasted Laughing Thrush (English).
Material examined: Nil.


334. Garrulax rufogularis rufitinctus (Koelz)
Common name: Khasi Rufouschinned Laughing Thrush (English).

Material examined: Nil.

Diagnostic characters: Back umber-brown with half moon shaped black spots. Forehead and centre of crown to nape black. Ear-coverts black. Tail graduated, chestnut brown with a broad black subterminal band. Tip rufous. Chn rufous; throat and breast rusty.

Distribution: India: Meghalay (Khasi Hills district).

Remarks: The type was described from the Khasi Hills.

335. Garrulax caerulatus subcaerulatus Hume

1878. Garrulax subcaerulatus Hume, Stray Feathers, 7: 140 (Shillong).


Common name: Khasi Hills Greysided Laughing Thrush (English).

Material examined: Nil.

Diagnostic characters: Head, back and tail rich rufous-brown. Forehead black and black round the eye. Chin, throat and breast white; flanks grey. The three outer rectrices broadly tipped with white.

Distribution: India: Meghalaya (East Khasi Hills district).

Remarks: Hume (1878) described this bird from Shillong, the East Khasi Hills.

336. Garrulax ruficollis (Jardine & Selby)


Common name: Rufousnecked Laughing Thrush (English).

Material examined: Nil.

Diagnostic characters: Back, rump and lower breast dark olive-brown; a bright rufous patch on the sides of neck and vent. Forehead, chin and throat black. Tail black throughout and graduated.


337. Garrulax merulinus merulinus Blyth


Common name: Assam Spottedbreasted Laughing Thrush (English).

Material examined: Nil.


Remarks: Hume (1888, p. 161) reported several specimens from Mawphlog in the Khasi Hills. Type was described originally from a specimen obtained near Cherrapunjee.

338. Garrulax austeni austeni (Godwin-Austen)


Common name: Brown capped Laughing Thrush (English).

Material examined: Nil.

Diagnostic characters: Upper back, wings and tail rufous-brown. Underparts rufous-brown 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 with white tips.

Distribution: India: Meghalaya: Assam, Manipur, Mizoram and Nagaland.


339. Garrulax squamatus (Gould)


Common name: Bluewinged Laughing Thrush (English).

Material examined: Nil.


Remarks: Koelz (1952, p. 38) procured it from Pynursla, the Khasi Hills as Trochalopteron squamatum subsquamatum Koelz.

340. Garrulax erythrocephalus chrysopterus (Gould)


Common name: Khasi Redheaded Laughing Thrush (English).

Material examined: Nil.


Distribution: India: Meghalaya (Garo Hills and Khasi Hills districts).

Remarks: Godwin-Austen obtained it from the Hengdon peak. Hume (1888, p. 163) collected a great a numbers from near Shillong “Where it is very abundant.”
Blyth (1851) reported it from “Cherra Punji” the East Khasia Hills and described it as *Garrulax ruficapillus*.

341. *Garrulax phoeniceus bakeri* (Hartert)


*Common name*: Assam Crimsonwinged Laughing Thrush (English).


*Measurements*: 1 ♀ : Wing 83, tail 93, bill 19.

*Distribution*: India : Meghalaya (East Khasi Hills district) : Assam, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh and Burma (Myanmar).

*Remarks*: Hume (1888, p. 168) obtained it “from Shillong and the Khasi Hills” Koelz (1952) reported it from Laitlyngkot, the Khasi Hills and described it as *Trochalopteron phoeniceum*.

Genus *Leiothrix* Swainson, 1832

342. *Leiothrix argentaureis argentaureis* (Hodgson)


*Common name*: Himalayan Silvereared Mesia (English).


*Diagnostic characters*: In male, back and belly greenish-grey; black crown and moustachial stripe. Ear-coverts silvery. Wings with a crimson patch. Tail-coverts crimson. In female, similar to male; having the under tail coverts ochraceous.


*Remarks*: Godwin-Austen (1870, p. 109) recorded it from the Khasi Hills.

343. *Leiothrix lutea calipyga* (Hodgson)


*Common name*: Eastern Redbilled Leiothrix (English).

Diagnostic characters: In male, head and back greyish olive. Bill coral-red. Eye-patch yellow. Wing black with small orange patch; yellow and crimson edges. Throat and breast bright yellow. In female, the crimson on wing replaced by yellow.

Measurements: 2♂: Wing 68, 70; tail 58, 60; bill 14, 15.


Remarks: Hume (1888, p. 247) reported it from Shillong, the East Khasi Hills and other places of the Khasi Hills as Liothrix lutens Scopoli. Koelz (1952) reported this bird from Mawryngkneng, the Khasi Hills and described it Leothrix lutea luteola.

Genus Pteruthius Swainson, 1832

344. Pteruthius flaviscapis validirostris Koelz


Common name: Redwinged Shrike Babbler (English).

Material examined: Nil.

Diagnostic characters: In male, black ashy-grey; head black with a white post-occular stripe. Wings black tipped with white; the inner secondaries chestnut. Tail black. Chin and throat pale ashy; abdomen and vent vinous-brown. In female, back brownish grey, head grey. Outer edge of folded wing yellowish-green, tipped white. Central rectrices green; outer blackish tipped yellow.

Distribution: India: Meghalaya (Khasi Hills and West Garo Hills districts): Northern India from Arunachal Pradesh to Jammu & Kashmir, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Pakistan.

Remarks: Hume (1888, p. 243) reported it from the Khasi Hills as Pteruthius erythropterus Vigors. Koelz (1952) reported this bird from the Tura Mountain, the West Garo Hills and described it as Pteruthius erythropterus nocrecus.

345. Pteruthius melanotis melanotis Hodgson


Common name: Chestnut-throated Shrike Babbler (English).

Material examined: Nil.


Remarks: Hume (1888, p. 244) reported it from Shillong, the East Khasi Hills and listed it as Allotrius melanotis Hodgson. Baker (1907, p 789) recorded it from the Khasi Hills.

346. Pteruthius aenobarbus aenobarbulus Koelz
(Nokrek, Garo Hills).
Common name: Chestnut fronted Shrike-Babbler (English).
Material examined: Nil.

Distribution: India; Meghalaya (Garo Hills district).
Remarks: Type recorded from the Garo Hills district.

Genus Gampsorhynchus Blyth, 1844

347. Gampsorhynchus rufulus rufulus Blyth
Common name: Whiteheaded Shrike-Babbler (English).
Diagnostic characters: Back and wing olive-brown. Entire head, nape and belly whitish buff. Throat and breast white. Tal graduated and tipped with buff.
Remarks: Godwin-Austen (1872, p. 269) recorded it from the Garo Hills.

Genus Actinodura Gould, 1836

348. Actinodura egertoni Khasiana Godwin-Austen
Common name: Assam Barwing (English).
Material examined: Nil.


Distribution: India: Meghalaya (East Khasi Hills district) : Assam, Manipur and Nagaland.

Remarks: Hume (1888, p. 171) recorded it from “Shillong and the Khasi Hills" and listed it as Actinodura egertoni Gould

Genus Minla Hodgson, 1837

349. Minla strigula strigula (Hodgson)

Common name: Eastern Barthroated Siva (English).

Material examined: Nil.


Remarks: Godwin-Austen (1870, p.109) procured it from the Khasi Hills. Baker (1907, p. 788) reported it from the Khasi Hills.

350. Minla strigula cinereigenae (Ripley)

Common name: Assam Barthroated Sive (English).

Material examined: Nil.


Distribution: India: Meghalaya : Assam, Manipur and Nagaland.


351. Minla cyanouroptera cyanouroptera (Hodgson)

Common name: Bluewinged Siva (English).

Material examined: Nil.

Diagnostic characters: Back fulvous; rump paler. Tufted crown dark blue. Supercilium white. Tail long, dark grey with blue edges, tipped with white.

Remarks: Hume (1888, p. 248) reported it from the Khasi Hills and listed it as *Siva cyanouroptera* Hodgson.

Genus *Yuhina* Hodgson, 1836

352. *Yuhina castaniceps castaniceps* (Moore)


Common name: Chestnut-headed Yuhina (English).

Material examined: Nil.


Remarks: Hume (1888, p. 251) reported this form from both the Garo-Hills and several localities in the Khasi Hills and listed it as *Staphidea castaniceps* Moore. Godwin-Austen (1870, p. 109) also recorded it from the Garo and Khasi Hills. Koelz (1954) reported it from Mawphlang, the East Khasi Hills and described it as *Siva cyanouroptera thalia* and from Nokrek, the West Garo Hills he described it as *Siva cyanouroptera rama*. Baker (1907, p. 788) recorded it from the Khasi Hills.

353. *Yuhina bakeri* Rothschild


Common name: Whitenaped Yuhina (English).

Material examined: Nil.


Distribution: India: Meghalaya (East Khasi Hills district): Arunachal Pradesh, Assam, Manipur and Nagaland, Sikkim and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

Remarks: Hume (1888, p. 249) reported it from Shillong, the East Khasi Hills and other places in the Khasi Hills, and listed it as *Minla castaneiceps* Hodgson.
Yuhina flavicollis flavicollis Hodgson


Common name: Eastern Yellownaped Yuhina (English).

Material examined: Nil.


Remarks: Baker (1907, p. 789) recorded this bird from the Khasi Hills and listed it as Ixulus flavicollis Hodgson.

Yuhina flavicollis rouxi (Oustalet)


Common name: Assam Yellownaped Yuhina (English).

Material examined: Nil.


Yuhina occipitalis occipitalis Hodgson


Common name: Rufousvented Yuhina (English).

Material examined: Nil.

Diagnostic characters: Head grey with a erectile crest infront, bright rufous posteriorly. A black malar stripe. Throat and breast vinaceous; belly and under tail-coverts pale rufous.


Remarks: Hume (1888, p. 251) reported it from Shillong, the East Khasi Hills and listed it as Ixulus occipitalis Blyth.
357. *Yuhina nigrimenta nigrimenta* Hodgson


*C*ommon name: Blackchinned Yuhina (English).

*Material examined*: Nil.

*Diagnostic characters*: Upper back, wings and tail olive-brown. Head with erectile black crest with scale-like grey edgings. Lores black. Nape and sides of head grey. Chin black; throat white; breast and abdomen pale fulvous.


*R*emarks: Ripley (1982, p. 374) reported it from Meghalaya.

358. *Yuhina xantholeuca xantholeuca* (Hodgson)


*C*ommon name: Whitebellied Yuhina (English).

*Material examined*: Nil.


Genus *Alcippe* Blyth, 1844

359. *Alcippe cinerea* (Blyth)


*C*ommon name: Dusky Green Tit-Babbler (English).

*Material examined*: Nil.

*Diagnostic characters*: Back, tail and wings greyish olive. Crown and nape yellowish green, the feathers edged with black. Black stripe on sides of crown. A yellow supercilium from lores to nape and another black stripe from lores through eye.


*R*emarks: Godwin-Austen (1870, p. 109) reported it from the Khasi Hills and listed it as *Minla cinerea* Blyth.
Remarks: Koelz (1954) reported this bird at the edge of the Garo-Khasi foothills.

Genus  **Bradypterus** Swainson, 1837

402.  **Bradypterus luteoventris luteoventris** (Hodgson)


**Common name:** Brown Bush Warbler (English).

**Material examined:** Nil.

**Diagnostic characters:** Back, tail and wings rufous-brown. Short supercilium and eye-ring pale. Chin, throat, breast and belly white tinged with buff on sides. Throat sometimes with the fine dark specks. Under tail-coverts rufous-brown.

**Distribution:** India: Meghalaya (Khasi Hills district): Arunachal Pradesh, Assam, Nagaland and Sikkim. Elsewhere: Bhutan, China, Nepal and Vietnam.

Remarks: Hume (1888, p. 205) reported this bird "from Shillong and Khasi Hills" and listed it as *Tribura luteiventris* Hodgson.

Genus  **Cisticola** Kaup, 1829

403.  **Cisticola juncidis cursitans** (Franklin).


**Common name:** Streaked Fantail Warbler (English) and Ghaski-pitpiti (Hindi).

**Material examined:** Nil.

**Diagnostic characters:** Back rufous-brown boldly streaked with black; a prominent white supercilium. Tail graduated with white-tipped fan-shaped. Chin and throat white; upper breast buff, darker on flanks.

**Distribution:** India: Meghalaya (Khasi Hills district): Throughout the Indian Union except Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh, Pakistan and Sri Lanka.

Remarks: Hume (1888, p. 211) recorded it from the Khasi Hills.

Genus  **Prinia** Horsfield, 1821

404.  **Prinia hodgsonii rufula** Godwin-Austen


**Common name:** Northern Ashy-grey Wren-Warbler (English).

**Material examined:** Nil.

**Diagnostic characters:** Entire plumage on head, back, wings rufous-brown. Tail longish, grey tipped with black-and-white. In summer, a cloudy grey band across the breast.
**Distribution**: India: Meghalaya (East Khasi Hills district); Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar), Nepal, and Pakistan.

**Remarks**: Hume (1888, p. 208) remarked "have lots of hodgsoni from Shillong and the East Khasi Hills" and listed it as Prinia hodgsoni Blyth.

**405. Prinia subflava inornata** Sykes


**Common name**: Central India Plain Wern-Warbler (English).

**Material examined**: Nil.


**Distribution**: India: Meghalaya (Khasi Hills district); Assam, Manipur, Sikkim and West Bengal. Elsewhere: Bangladesh and Bhutan.

**Remarks**: Hume (1888, p. 215) reported that Godwin-Austen obtained this bird from the Khasi Hills and listed it as Drymoeca inornata Sykes.

**406. Prinia socialis inglisi** Whistler & Kinnear


**Common name**: Assam Ashy Wren-Warbler (English).

**Material examined**: Nil.

**Diagnostic characters**: Back, wing and tail rufous brown. Head, sides of neck and upper back ashy-grey. Lores white. Tail graduated with fulvous tips and blackish subterminal spots. Chin and throat whitish buff; breast and belly washed with ochraceous.

**Distribution**: India: Meghalaya (East Khasi Hills district); Arunachal Pradesh, Assam, Manipur, Sikkim, Tripura and West Bengal. Elsewhere: Bangladesh and Bhutan.

**Remarks**: Hume (1888, p. 208) collected this species "only from Shillong" the East Khasi Hills.

**407. Prinia criniger catharia** Reichenow


**Common name**: Assam Brown Hill Warbler (English).

**Material examined**: Nil.

Distribution: India: Meghalaya (East Khasia Hills district): Assam, Manipur and Nagaland. Elsewhere: Bangladesh, Burma (Myanmar) and China.

Remarks: Hume (1888, p. 215) recorded this bird from Shillong, the East Khasi Hills and listed it as Suya crinigera Hodgson. Baker (1924) reported it from Shillong the East Khasi Hills and described it as Suya crinigera assamica. Koelz (1952) also reported it from Cherrapunji, the Khasi Hills and described it as Surya crinigera nebulosa.

408. Prinia atrogularis khasiana (Godwin-Austen)


Common name: Assam Blackthroated Hill Warbler (English).

Material examined: Nil.


Remarks: Godwin-Austen (1876) described this bird from the Khasi Hills. Hume (1888, p. 217) noticed this bird in the Khasi Hills and listed it as Suya khasiana Godwin-Austen.

Genus Orthotomus Horsfield, 1821

409. Orthotomus sutorius patia Hodgson


Common name: Bengal Tailor Bird (English) and D opinchep (Garo).


Measurements: 1 ♂: Wing 47, tail 50, bill 17.

Distribution: India: Meghalaya (East Garo Hills and Khasi Hills districts): Assam, Bihar, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

Remarks: Hume (1888, p. 206) reported it from the Garo and Khasi Hills.

410. Orthotomus atrogularis nitidus Hume


*Common name*: Blacknecked Tailor Bird (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, head chestnut; wings and back olive-green. Cheeks and chin whitish grey; throat black. Sides of breast grey; belly whitish. Abdomen greenish yellow; under-tail-coverts yellow. In female, similar to male excepting the throat lacks black.

*Distribution*: India: Meghalaya (Garo Hills district): Assam, Nagaland, Sikkim, and West Bengal. Elsewhere: Bangladesh.

*Remarks*: Godwin-Austen (1870, p. 107) reported it from Shushang at the base of the Garo Hills as *Orthotomus atrigularis*.

411. *Orthotomus cucullatus coronatus* Blyth


*Common name*: Goldenheaded Tailor Bird (English).


*Remarks*: Godwin-Austen (1870, p. 107) recorded it from Cherrapoonjee, the East Khasi Hills.

Genus *Locustella* Kaup, 1829

412. *Locustella certhiola rubescens* Blyth


*Common name*: Pallas's Siberian Grasshopper Warbler (English).

*Material examined*: Nil.


413. *Locustella naevia straminea* Seebohm


Common name: Eastern Grasshopper Warbler (English).

Material examined: Nil.


Remarks: Godwin-Austen recorded this bird from Cherrapunje, the East Khasi Hills.

414. Chaetornis striatus (Jerdon)


Common name: Bristled Grass Warbler (English).

Material examined: Nil.

Diagnostic characters: Back fulvous-brown boldly streaked with black; wing fulvous-brown; tail graduated, tipped with whitish. Throat, breast and belly cream-buff.


Remarks: Godwin-Austen (1870, p. 270) procured it from the Garo Hills.

Genus Megalurus Horsfield, 1821

415. Megalurus palustris toklao (Blyth)


Common name: Striated Marsh Warbler (English).

Material examined: Nil.

Diagnostic characters: Size larger than the Bulbul. Back and wings fulvous-brown with broad black stripes; underparts whitish, tinged with fulvous and finely brown streaked on breast, flanks and under-tail-coverts. Tail long, pointed and graduated. Supercilium white.

Distribution: India: Meghalaya (South Garo Hills district): Arunachal Pradesh, Assam, Bihar, Haryana, Madhya Pradesh, Manipur, Nagaland, Orissa, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), China, Indochinese countries, Indonesian Islands, Nepal, Pakistan, Philippines and Thailand.

Remarks: Observed it near Baghmara, the West Garo Hills.
Genus **Phragamaticola** Jerdon, 1845

416. **Phragamaticola aedon aedon** (Pallas)


*Common name:* Thickbilled Warbler (English).

*Material examined:* Nil.

*Diagnostic characters:* Head, back and tail fulvous olive brown, underparts fulvous white. First primary being longer than the primary -coverts. Tail feathers narrow and steeply graduated.

*Distribution:* India: Meghalaya (Khasi Hills district): Andhra Pradesh, Assam, Gujarat, Karnataka, Kerala, Maharashtra, Nicobar Islands, Orissa. Elsewhere: Bhutan, Burma (Myanmar), Indochinese countries and Malay peninsula.

*Remarks:* Hume (1888, p. 202) reported this bird from the Khasi Hills and mentioned it as *Arundinax aedon* Pall.

Genus **Phylloscopus** Boie, 1826

417. **Phylloscopus affinis affinis** (Tickell)


*Common name:* Tickell's Leaf Warbler (English).

*Material examined:* Nil.

*Diagnostic characters:* Head, back and tail dark olive-brown; distinct long and yellow supercilium; underparts bright yellow.


*Remarks:* Godwin-Austen (1870, p. 107) noted it from the Khasi Hills. Hume (1888, p. 219) reported it from Shillong, the East Khasi Hills.)

418. **Phylloscopus fuscatus fuscatus** (Blyth)


*Common name:* Siberian Dusky Leaf Warbler (English).

*Material examined:* Nil.

*Diagnostic characters:* Head, back and tail dusky olive-brown; a dark streak through eye. Supercilia fulvous. Chin and throat whitish, with a grey wash on breast. Flanks and undertail-coverts fulvous.
**Distribution**: India: Meghalaya (Khasi Hills district): The Andaman Islands, Assam, Bihar, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), China, Indochinese countries, Nepal and Tibet.

**Remarks**: Hume (1888, p. 217) collected it "from Shillong, and other places in the Khasi Hills"

419. *Phylloscopus pulcher pulcher* Blyth


**Common name**: Eastern Orangebarred Leaf Warbler (English).

**Material examined**: Nil.

**Diagnostic characters**: Back olive; rump pale yellow; crown shotty olive. Supercilium yellow, extending to nape. Inner webs of outer rectrices white. Underparts pale yellow; breast suffused with grey.

**Distribution**: India: Meghalaya (East Khasi Hills district): Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere: Burma (Myanmar), Bhutan, China and Nepal.

**Remarks**: Hume (1888, p. 223) recorded this bird from Shillong, the East Khasi Hills and listed it as *Reguloides erochrous* Hodgson.

420. *Phylloscopus inornatus mandellii* (Brooks)


**Common name**: Mandelli's Yellowbrowed Leaf Warbler (English).

**Material examined**: Nil.

**Diagnostic characters**: The upperparts darker and browner; rump greenish. Supercilium and underparts dirty yellowish white. Centre of belly more yellowish. Upper wing-bars buffish and less distinct.

**Distribution**: India: Meghalaya (East Khasi Hills district): Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar), China and Tibet.

**Remarks**: Hume (1888, p. 205) reported this bird from Shillong, the East Khasi Hills as *Schoenicola mandellii* Brooks.

421. *Phylloscopus inornatus inornatus* (Blyth)


*Common name*: Siberian Yellowbrowed Leaf Warbler (English).

*Material examined*: South Garo Hills district: 2♂ and 1♀, Baghmara, c 100 km. South West of Tura, coll. N. Majumdar, 20 and 23 xi. 1988.

*Diagnostic characters*: Wings and tail brown edged with greenish two white bars on wings; entire lower plumage sullied white.

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
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<tbody>
<tr>
<td>2♂</td>
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<td>40, 41</td>
<td>11(2)</td>
</tr>
<tr>
<td>1♀</td>
<td>56</td>
<td>41</td>
<td>11</td>
</tr>
</tbody>
</table>

*Distribution*: India: Meghalaya (South Garo Hills district): Assam, Manipur, Nagaland, Sikkim and West Bengal. Elsewhere: Bangladesh, China, Indochinese countries and Taiwan.

Breeds in Siberia.

422. *Phylloscopus proregulus newtoni* Gatke


*Common name*: Eastern Pallas's Leaf Warbler (English).

*Material examined*: Nil.


*Remarks*: Hume (1888, p. 222) remarked "in the Khasi Hills, it must be fairly common." He listed this bird as *Reguloides proregulus* Pallas.

423. *Phylloscopus magnirostris* Blyth


*Common name*: Largebilled Leaf Warbler (English).

*Material examined*: Nil.

*Diagnostic characters*: Head and back brownish olive. Supercilium yellowish, dark streak through eye. Underparts yellowish white sullied with grey on breast and throat.

Remarks: Hume (1888, p. 218) obtained it from Shillong, the East Khasi Hills.

424. *Phylloscopus trochiloides viridanus* Blyth


Common name: Western Greenish Leaf Warbler (English).

Material examined: Nil.

Diagnostic characters: Back, wing and tail dull green. Chin, throat, breast and belly yellowish white. Wing with single pale wing-bar. A pale dark streak through eye.


Remarks: Seen it near Baghmara, the South Garo Hills.

425. *Phylloscopus trochiloides trochiloides* (Sundevall)


Common name: Eastern Greenish Leaf Warbler (English).

Material examined: Nil.


Remarks: Godwin-Austen (1872, p. 271) procured it from the Garo Hills. Hume (1888, p. 219) reported it from Shillong, the East Khasi Hills as *Phylloscopus lugubris*. Blyth also (1888, p. 221) reported it from Shillong and Cherrapoonjee, the East Khasi Hills as *Reguloides trochiloides* Sund.

426. *Phylloscopus reguloides assamensis* Hartert


**Common name**: Assan Crowned Leaf Warbler (English).

**Material examined**: Nil.

**Diagnostic characters**: Back light greyish olive; wings yellowish with two wing-bars. Shoulder yellow. Pale yellow supercilium. A dark line through eye. Underparts whitish tinged greyish on breast and abdomen.

**Distribution**: India: Meghalaya (East Khasi Hills district): Arunachal pradesh, Assam, Manipur, Nagaland and Sikkim. Elsewhere: Bangladesh.

**Remarks**: Baker (1913, p. 36) recorded it from Peak near Shillong, the East Khasi Hills.

427. *Phylloscopus reguloides claudiae* (La Touche)


**Common name**: Yunnan Crowned Leaf Warbler (English).

**Material examined**: Nil.

**Diagnostic characters**: Back light greenish olive. A dark streak through eye. Supercilium and shoulder yellow. Underparts yellow on breast and belly.

**Distribution**: India: Meghalaya: Manipur.


Genus *Seicercus* Swainson, 1837

428. *Seicercus affinis* (Hodgson)


**Common name**: Allied Flycatcher-Warbler (English).

**Material examined**: Nil.


**Remarks**: Hume (1888, p. 226) obtained this bird from Shillong, the Khasi Hills and listed it as *Abrornis affinis* Hodgson.

429. *Seicercus burkii burkii* (Burton)


Common name: Eastern Blackbrowed Flycatcher - Warbler (English).

Material examined: Nil.


Remarks: Hume (1888, p. 224) reported it from Shillong, the East Khasi Hills and listed it as Cryptolopha burkii Burt.

430. Seicercus xanthoschistos tephrodiras Sick


Common name: Assam Greyheaded Flycatcher-Warbler (English).

Material examined: Nil.

Diagnostic characters: Back and crown grey; rump and wings greenish yellow. Supercilium white and long. Inner wave of outer rectrices white. Underparts bright yellow.


Remarks: Hume (1888, p. 225) reported this bird from Shillong, the East Khasi Hills and listed it as Abrornis xanthoschistus Hodgson.

431. Seicircus poliogenys (Blyth)


Common name: Greycheeked Flycatcher-Warbler (English).

Material examined: Nil.


Distribution: India: Meghalaya (East Khasi Hills district): Arunachal Pradesh, Assam, Manipur, Sikkim and West Bengal. Elsewhere: Bangladesh, China and Indochinese countries.

Remarks: Godwin-Austen (1870, p. 107) recorded it from Cherrapoonjee, the East Khasi Hills and recorded it as Abrornis poliogenys Godwin-Austen.
432. *Seicercus castaniceps castaniceps* (Hodgson)


*Common name*: Chestnut-headed Flycatcher-Warbler (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya: Arunachal Pradesh, Assam, Manipur, Nagaland, Sikkim and West Bengal. Elsewhere: Burma (Myanmar) and China.


**Genus Abroscopus** Baker, 1930

433. *Abroscopus superciliaris flaviventris* (Jerdon)


*Common name*: Sikkim Yellowbellied Flycatcher-Warbler (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Garo Hills district): Assam, Manipur, Nagaland, Sikkim and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

*Remarks*: Godwin-Austen recorded it from the Garo Hills and listed it as *Abrornis superciliaris* Tickell.

434. *Abroscopus albogularis albogularis* (Horsfield & Moore)


*Common name*: White-throated Flycatcher-Warbler (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Garo Hills district): Arunachal Pradesh, Assam, Manipur, Sikkim and West Bengal. Elsewhere: Bangladesh, Bhutan and Nepal.

*Remarks*: Godwin-Austen (1870, p. 271) obtained this from the forest on the slopes of the Kylas or Chikmang Peak in the Garo Hills and listed it as *Abrornis albogularis* Hodgson.
Genus *Brachypteryx* Horsfield, 1822

435. *Brachypteryx leucophrys nipalensis* Hodgson


*Common name*: Lesser Shortwing (English).

*Material examined*: Nil.


*Remarks*: Hume (1888, p. 121) reported it from the neighbourhood of Shillong, the East Khasi Hills and two or three other places in the Khasi Hills.

436. *Brachypteryx montana cruralis* (Blyth)


*Common name*: Whitebrowed Shortwing (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, back, wings and tail dark slaty blue; belly ashy. Lores velvety black. Supercilium long and white. In female, wings and back olive-brown. Lores and eye-ring rusty. Throat and breast olive-brown; belly fulvous.


437. *Erithacus calliope* (Pallas)


*Common name*: Rubythroat (English).


*Diagnostic characters*: In male, black olive-brown. Supercilium white. Chin and throat scarlet bordered with a black line on sides of chin. Breast and flanks pale buffish brown; belly white. In female, throat colour of male replaced by white and buff.
Measurements: 1 ♂: Wing 76, tail 54, bill 17.

Distribution: India: Meghalaya (East Khasi Hills district and West Garo Hills district): Throughout northern India, South up to Andhra Pradesh through Madhya Pradesh and West Bengal. Elsewhere: Nepal, Bhutan. Bangladesh, Burma (Myanmar), Indochinese countries and southern China to Formosa (=Taiwan) and Philippines. Breeds in Siberia from the Ural Mts. to Anadyr, Kamchatka and Hokkaido.

Remarks: Hume (1888, p. 199) reported it from Shillong, the East Khasi Hills, and listed it as Calliope camchatkensis Gmelin.

438. Erithacus pectoralis confusus (Hartert)

1909. Luscinia pectoralis confusa Hartert, Vog. pal. Fauna, 1; 740 (Sikkim).

Common name: Eastern Rubythroat (English).

Material examined: Nil.


Remarks: Hume (1888, p. 199) recorded it from Shillong, the East Khasi Hills and listed it as Calliope pectoralis Gould.

439. Erithacus brunneus brunneus (Hodgson)


Common name: Indian Blue Chat (English).

Material examined: Nil.


Remarks: Hume (1888, p. 197) collected "Several specimens from Shillong" the East Khasi Hills and listed it as Larvivora superciliaris Jerdon.
440. *Erithacus pectardens* (David)


*Common name*: Firethroat (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (West Garo Hills district); Elsewhere: Breeds from Chumbi valley, southeastern Tribet and north western Yunnan.

*Remarks*: Koelz (1954) reported this bird from Phulbari, the West Garo Hills and described it as *Luscinia daulias*.

441. *Erithacus cyanurus rufilatus* (Hodgson)


*Common name*: Eastern Redflanked Bush Robin (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district); Arunachl Pradesh, Manipur, Assam, Sikkim and West Bengal. Elsewhere: Nepal, Bhutan and Indochinese countries.

*Remarks*: Godwin-Austen recorded it from the Khasi Hills and listed it as *Nemura rufilata* Hodgson. Baker (1907, p. 959) reported it from the Khasi Hills as *lanthia rufilata*.

442. *Erithacus chrysaeus chrysaeus* (Hodgson)


*Common name*: Eastern Golden Bush Robin (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, upper back and crown olive-brown. Rump, scapulars and sides of back orange. A yellow supercilium and a black band from lores through eyes and cheeks. Wings olive-

**Distribution**: India: Meghalaya (Khasi Hills district): Arunachal Pradesh, Assam, Manipur, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bhutan, Burma (Myanmar), China and Nepal.

**Remarks**: Hume (1888, p. 199) reported this bird from the Khasi Hills and listed it as *Tarsiger chryseus* Hodgson.

**443. *Erithacus indicus indicus* (Vieillot)**


**Common name**: Whitebrowed Bush Robin (English).

**Material examined**: Nil.


**Remarks**: Ripley (1982, p. 454) reported it from Meghalaya.

**444. *Erithacus hyperythrus* (Blyth)**


**Common name**: Rufousbellied Bush Robin (English).

**Material examined**: Nil.


**Remarks**: Godwin-Austen recorded it from the Khasi Hills and listed it as *Numura hyperythra* Blyth. Baker (1907, p. 959) reported it from the Khasi Hills as *Ianthis hyperythra*. 
Genus *Copsychus* Wagler, 1827

**445. Copsychus saularis erimelas** (Oberholser)


*Common name*: Assam Magpie Robin (English).


*Diagnostic characters*: In male, head, throat, breast, and tail glossy blue-black. Wings blackish brown with a prominent long white-patch. Tail graduated, black with white outer rectrices; 4th rectrices from outer edge of tail black. In female, back slaty and grey on throat and breast.

*Measurements*:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
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<tr>
<td>♂</td>
<td>99</td>
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<tr>
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<td>72, 85</td>
<td>22(2)</td>
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</tbody>
</table>

*Distribution*: India: Meghalaya (East Garo Hills, Jaintia Hills and Khasi Hills districts) and Arunachal Pradesh, Assam, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh, Burma (Myanmar) and Bhutan.

*Remarks*: Godwin-Austen (1870, p. 106) collected it from the Khasi Hills. Hume (1888, p. 189) reported it from Shillong, the East Khasi Hills and listed it as *Copsychus saularis* Linnaeus.

**446. Copsychus malabaricus indicus** (Baker)


*Common name*: Indian Shama (English) and Shama (Hindi).


*Diagnostic characters*: In male, entire head, upper back, throat, breast and wings glossy black. Rump white. Tail strongly graduated. Outer rectrices white, central rectrices black and elongated. Belly and under tail-coverts rufous. In female, similar to male but black replaces by grey, tail shorter.

*Measurements*:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>♂</td>
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<td>160</td>
<td>21</td>
</tr>
<tr>
<td>♀</td>
<td>98, 99</td>
<td>140, 170</td>
<td>21, 22</td>
</tr>
</tbody>
</table>

*Distribution*: India: Meghalaya (East Garo Hill and West Garo Hills: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Manipur, Nagaland, Orissa, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.
Genu *Phoenicurus* Forster, 1817

447. *Phoenicurus ochruros rufiventris* (Vieillot)


*Common name*: Eastern Black Redstart (English) and Thirthira (Hindi).

*Material examined*: Nil.


*Remarks*: Hume (1888, p. 194) recorded this bird from Shillong, the East Khasi Hills as *Ruticilla rufiventris* Vieillot.

448. *Phoenicurus frontalis* (Vigors)


*Common name*: Bluefronted Redstart (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, crown, back and throat darker blue; forehead and supercilium bright blue. Wings brown. Rump and tail rufous. Rectrices with a broad terminal black band. Belly and vent orange-chestnut.


*Remarks*: Hume (1888, p. 196) recorded this bird from Shillong, the East Khasi Hills and listed it as *Ruticilla frontalis* Vig.

449. *Phoenicurus auroreus leucopterus* (Blyth)


*Common name*: Daurian Redstart (English).

*Material examined*: Nil.

Distribution: India: Meghalaya: (East Khasi Hills district) Arunachal Pradesh, Assam, Manipur, Nagaland, Sikhim and West Bengal. Elsewhere: China, Hainan, Indochinese countries, Japan, Tibet and Taiwan.

Remarks: Hume (1888, p. 195) recorded this bird from Shillong, East Khasi Hills as Ruticilla aurorea Pall as.

Genus Rhyacoris Blanford, 1872

450. Rhyacoris fuliginosus fuliginosus (Vigors)


Common name: Plumbeous Redstart (English).

Material examined: Nil.

Diagnostic characters: In male, entire head, neck, back, throat and breast bluish slaty. Tail chestnut. Lower belly rufous.


Remarks: Hume (1888, p. 196) reported this bird "from Shillong and the Khasi Hills" as Rhyacoris fuliginosus Vig.

Genus Cinclidium Blyth, 1842

451. Cinclidium leucurum (Hodgson)


Common name: Whitetailed Blue Robin (English).

Material examined: Nil.


Genus *Enicurus* Temminck, 1822

452. *Enicurus scouleri scouleri* Vigors,


*Common name*: Little Forktail (English).

*Material examined*: Nil.

*Diagnostic characters*: Forehead white; rest of head, neck and upper back black. Wing with a white triangular bar across. Lower back and base of tail white. A black band across rump. Tail slightly forked, blackish brown; outer rectrices white. Chin and throat black. Breast and abdomen white smeared with black.


453. *Enicurus immaculatus* (Hodgson)


*Common name*: Blackbacked Forktail (English).


*Diagnostic characters*: Head and back black. Rump white continued as a white band across black wings. Forehead and supercilium white. Tail long, graduated and deeply forked; outer rectrices white. Upper throat black and rest of underparts white.

*Measurements*: 1♂: Wing 88, tail 115, bill 20 [from the skull].

*Distribution*: India: Meghalaya (Garo Hills, Khasi Hills and Jaintia Hills districts): Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland, Sikkim and Uttar Pradesh. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Thailand.

*Remarks*: Hume (1888, p. 228) reported it from the Garo Hills and the Khasi Hills and listed it as *Henicurus immaculatus* Hodgson.

454. *Enicurus schistaceus* (Hodgson)


*Common name*: Slatybacked Forktail (English).

*Material examined*: Nil.

*Diagnostic characters*: Back and crown slaty. Wings black with a broad white band across. A small white patch on primaries. Rump white. Tail long, very deeply forked and graduated. 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.

**Distribution**: India: Meghalaya: Arunachal Pradesh, Assam, Manipur, Mizoram, Nagaland, Sikkim, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar), Indochinese countries and China.


455. *Enicurus leschenaulti indicus* Hartert


**Common name**: Leschenault's Forktail (English).

**Material examined**: Nil.

**Diagnostic characters**: Very similar to the preceding bird but largest and blackest of the fork-tails. White of forehead extending to top of crown. Black of underparts extending to breast and flanks.


456. *Enicurus maculatus guttatus* Gould


**Common name**: Eastern Spotted Forktail (English).

**Material examined**: Nil.

**Diagnostic characters**: Back black spotted with white. Sides of head and nape black. Forehead and forecrown white. Rump and wing-bar white. Tail deeply forked and graduated. Throat and breast black; belly white.

**Distribution**: India: Meghalaya (Khasi Hills districts): Arunachal Pradesh, Manipur, Mizoram, Nagaland. Elsewhere: Bangladesh, Burma, China and Nepal.

**Remarks**: Godwin-Austen (1870, p. 107) got a young bird at Cherrapoonjee. Hume (1888, p. 227) reported it from Shillong, the East Khasi Hills and other places in the Khasi Hills and listed it as *Henicurus guttatus* Gould. Baker (1907, p. 958) reported it from the Khasi Hills as *Henicurus guttatus*.

**Genus**: *Cochoa* Hodgson, 1836

457. *Cochoa purpurea* Hodgson


Common name: Purple Cochoa (English).

Material Examined: Nil.


Genus Saxicola Bechstein, 1803

458. Saxicola torquata przewalskii (Pleske)


Common name: Tibetan Collared Bush Chat (English).


Measurements: 1♂: Wing 70, tail 152, bill 15 [from the skull].


459. Saxicola torquata indica (Blyth)


Common name: Indian Collared Bush Chat (English).

Material examined: Nil.

Diagnostic characters: In male, back and throat black. Rump and wing-patch white. A white patch on sides of neck and breast; breast rufous-chestnut; belly and vent paling to buff. In female, back rufous-brown streaked with dark brown. Tail blackish brown. Rump pale rufous; underparts pale fufous, breast rufous.

Remarks: Observed it near Barapani the Ri-Bhoi Hills.

460. *Saxicola caprata burmanica* Baker


*Common name*: Burmese Pied Bush Chat (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, head, back, wing and tail jet-black. Belly white. In female, head, back and wing brown. Tail blackish brown. Breast and belly rusty.

*Distribution*: India: Meghalaya: Adhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Tripura and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar), Indochinese countries and Thailand.


461. *Saxicola jerdoni* (Blyth)


*Common name*: Jerdon's Bush Chat (English).


462. *Saxicola ferrea* Gray


*Common name*: Dark-grey Bush Chat (English).

*Material examined*: Nil.


Remarks: Hume (1888, p. 193) reported this bird from the Khasi Hills as *Pratincola ferreus* Hodgson.

Genus *Chaimarrornis* Hodgson, 1844

463. *Chaimarrornis leucocephalus* (Vigors)


*Common name*: Whitecapped Redstart (English) and Gir-Chaondia (Hindi).

*Material examined*: Nil.


Remarks: Hume (1888, p. 197) reported it "from Shillong and the Khasi Hills"

Genus *Monticola* Boie, 1822

464. *Monticola cinclorhynchus* (Vigors)


*Common name*: Blueheaded Rock Thrush (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district): Himalays from Jammu & Kashmir to Arunachal Pradesh, Assam, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu. Elsewhere: Afghanistan, Bhutan, Burma (Myanmar) and Pakistan.

Remarks: Godwin-Austen reported it from the Khasi Hills as *Cyanocinclus cyanus* Linnaeus.

465. *Monticola rufiventris* (Jardine & Selby)


*Common name*: Chestnutbellied Rock Thrush (English).

**Diag'nostic characters:** Size equal to Myna. In male, crown and mantle bright cobalt-blue with some blackish. Sides of neck and ear-coverts black. Throat blackish blue; breast and belly chestnut. In female, back and rump olive-brown with buff patch. Dark grey-brown ear-coverts. Centre of throat whitish; sides of head dark grey mottled with buff. Breast and belly squamat examined dark brown and buff.

**Measurements:** 1♂: Wing 121, tail 97, bill 27.

**Distribution:** India: Meghalaya (East Khasi Hills district) : Arunachal Pradesh, Assam, Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, China, Nepal and Pakistan.

**Remarks:** Hume (1888, p. 126) collected this bird from Shillong, the East Khasi Hills listed it as *Petrophila erythrogena* Vigors.

466. *Monticola solitarius pandoo* (Sykes)


**Common name:** Indian Blue Rock Thrush (English).


**Diag'nostic characters:** Size equal to Bulbul. 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.

**Measurements:**

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
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<tbody>
<tr>
<td>1♂</td>
<td>120</td>
<td>83</td>
<td>27</td>
</tr>
<tr>
<td>2♀</td>
<td>117, 120</td>
<td>82, 83</td>
<td>25, 27</td>
</tr>
</tbody>
</table>

**Distribution:** India: Meghalaya (East Khasi Hills, Jaintia Hills and South Garo Hills districts) : Andaman Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bhutan, Burma(Myanmar), Nepal, Pakistan, Sri Lanka, Tibet and Turkestan.

Genus *Myiophonus* Temminck, 1822

467. *Myiophonus caeruleus temminckii* Vigors


**Common name:** Himalayan Whistling Thrush (English).

**Material examined:** Nil.
**Diagnostic characters:** Equal to Pigeon. Upper and below plumages entirely dark purple-blue spotted with glistening blue. Forehead, shoulders, edges of wings and tail brighter blue. White spots on median wing-coverts (half-dozen). Yellow bill.

**Distribution:** India: Meghalaya (Khasi Hills district): Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Punjab, Tripura, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Afghanistan, Bhutan, China, Indochinese countries, Indonesian Islands, Japan, Nepal, Pakistan and Turkestan.

**Remarks:** Hume (1888, p. 122) remarked "It must be common in the Khasi Hills and occurs close to Shillong itself"

**Genus** *Zoothera* Vigors, 1832

**468. Zoothera citrina citrina** (Latham)


**Common name:** Orange headed Ground Thrush (English).

**Diagnostic characters:** In male, back, tail and wings bluish grey. Entire head, nape, throat and breast orange-chestnut. Vent and undertail-coverts white. Wing with a white wing-bar. Outer rectrices lightly tipped white. In female, similar to male excepting the mantle strongly tinged with olive-brown.

**Distribution:** India: Meghalaya (Garo Hills district): Throughout the Indian Union except Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra and Nagaland. Elsewhere: Bangladesh, Pakistan and Nepal.

**Remarks:** Godwin-Austen (1870, p. 268) recorded it from the Garo Hills and listed it as *Geocichla citrina* Latham.

**469. Zoothera mollissima mollissima** (Blyth)


**Common name:** Eastern Plainbacked Mountain Thrush (English).

**Material examined:** Nil.


**Distribution:** India: Meghalaya (Khasi Hills district): Arunachal Pradesh, Assam, Manipur, Sikkim and West Bengal. Elsewhere: Bhutan, China and Nepal.

**Remarks:** Godwin-Austen (1870, p. 103) obtained this bird from the Khasi Hills and listed it as *Oreocincla mollissima* Blyth.
470. **Zoothera dauma dauma** (Latham)


*Common name*: Smallbilled Mountain Thrush (English).

*Material examined*: Nil.

*Diagnostic characters*: Size equal to the preceding bird. Entire body olive-brown with buff and black crescent-shaped markings. Wings with buff and dark brown-bars. Throat and belly whitish, breast and flanks buff.


471. **Zoothera monticola monticola** Vigors


*Common name*: Large Brown Thrush (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Khasi Hills district) : Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Manipur, Mizoram, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bhutan, Burma (Myanmar) and Nepal.

*Remarks*: Godwin-Austen (1872. p.142) reported it from the Khasi Hills.

472. **Zoothera marginata** Blyth


*Common name*: Lesser Brown Thrush (English).

*Material examined*: Nil.


Remarks: Godwin-Austen (1872, p.288) recorded it from the West Khasi Hills.

Genus Turdus Linnaeus, 1758

473. Turdus dissimilis dissimilis Blyth


Common name: Blackbreasted Thrush (English).

Material examined: Nil.


Remarks: Godwin-Austen (1872, p. 142) recorded it from the Garo Hills and listed it as Turdus dissimilis Blyth.

474. Turdus unicolor Tickell


Common name: Tickell’s Thrush (English).

Material examined: Nil.


Remarks: Koelz (1954) reported it from Mawphlang, the Khasi Hills and described it as Turdus unicolor subbicolor.

475. Turdus albocinctus Royle

1840. T. (urdus) albocinctus Royle, Ill. Bot. Himalayan Mountains (1839); Ixxvii, Ixxviii, applied to plate of T. albicollis (Hills = Himalays, restricted to Dehra Dun).


Common name: Whitecollared Blackbird (English) and Kundoo Kastura (Hindi).

Material examined: Nil.
Diagnostic characters: In male, entire body is black or blackish. A broad white collar around the neck and upper back. Throat white. Undertail-coverts black with white shaft-streaks. Bill, legs and feet yellow. In female, colouration rufous-brown and the collar is dull ashy.


Remarks: Godwin-Austen reported it from the Tura range of the West Garo Hills.

476. Turdus boulboul (Latham)

1790. Lanius boulboul Latham. Index Orn., 1: 80 (India = Darjeeling = Darjiling, Darjiling dist., West Bengal).


Common name: Greywinged Blackbird (English) and Kasturi (Hindi).

Material examined: Nil.


Remarks: Hume (1888, p. 128) reported it from Shillong, the East Khasi Hills and listed it as Merula boulboul Latham.

477. Turdus rubrocanus rubrocanus G. R. Gray


Common name: Western Greyheaded Thrush (English) and Lal Kastura (Hindi).

Material examined: Nil.


Remarks: Godwin-Austen (1872, p.268) reported it from the Tura Range of the Garo Hills and listed it as Merula castanea Gould.

478. Turdus rubrocanus gouldii (Verreaux)


*Common name*: Eastern Greyheaded Thrush (English).

*Material examined*: Nil.


*Remarks*: Baker (1907) recorded it from the Khasi Hills.

479. *Turdus feai* (Salvadori)


*Common name*: Fea's Thrush (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, crown, back, wings and tail russet-brown. A narrow white supercilium. Lores black. A white spot under the eye. Throat, sides of head and upper breast grey more or less suffused with a 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.


*Remarks*: Baker (1907, p. 959) recorded it from Shillong and Cherrapunjee, the East Khasi Hills.

480. *Turdus obscurus* Gmelin


*Common name*: Dark Thrush (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (East Khasi Hills district): Andaman Islands, Arunachal Pradesh, Assam, Karnataka, Manipur, Mizoram, Nagaland and Sikkim.

*Remarks*: Hume (18881, p. 130) recorded this bird from Shillong, the East Khasi Hills. Godwin-Austen (1872, p. 143) reported it from "Cherrapunji" and listed it as "*Turdus Pallens*" Pallas.
481. *Turdus ruficollis atrogularis* Jarocki


*Common name*: Blackthroated thrush (English).


*Diagnostic characters*: Size equal to Myna. In male, crown, back and tail grey-brown; lores and supercillum black. Sides of neck black. Ear-coverts grey-brown. Throat and breast black; vent and belly white. In female, throat whitish and streaked dark brown. Breast-band blackish with whitish fringes. Vent and belly white and sides with a few pale brown streaks.

*Measurements*: 1 ♂: Wing 132, tail 90, bill [from the skull] 24


Breeds in eastern Russia and eastward through the Siberian taiga to the Yenisey.

*Remarks*: Hume (1888, p. 129) reported this bird from Shillong, the East Khasi Hills.

482. *Turdus ruficollis ruficollis* Pallas


*Common name*: Redthroated Thrush (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, back and wings grey-brown. Supercilium chestnut. Tail rufous except central rectrices. Throat chestnut. In female, throat pale chestnut and mush mottled with white and heavily spotted with black.


*Remarks*: Godwin-Austen reported it from the Khasi Hills. Baker (1907. p. 959) collected it from the Khasi Hills as *Merula ruficollis*.

483. *Turdus naumanni eunomus* Temminck

1831. *Turdus eunomus Temminck, Pl. Col 5, livr. 87, Pl. 514* (Japan).


*Common name*: Dusky Thrush (English).

*Material examined*: Nil.

**Distribution:** India: Meghalaya (Khasi Hills district) : Arunachal Pradesh, Assam, and West Bengal. Elsewhere: Burma (Myanmar), China, Nepal, Pakistan, Southeastern Asia from Japan and Hopeh south to Taiwan. Breeds in Siberia from the Yenisey river to Kamchatka.

**Remarks:** Hume (1888, p. 130) recorded it from the Khasi Hills.

**Family** CINCLIDAE

**Genus** Cinclus Borkhausen, 1797

484. *Cinclus pallasii dorjei* Kinnear


**Common name:** East Himalayan Brown Dipper (English).

**Material examined:** Nil.

**Diagnostic characters:** Entire plumage chocolate-brown. Outer edges of secondaries white. Eye with white eye-ring.

**Distribution:** India: Meghalaya (East Khasi Hills and Ri-Bhoi Hills districts) : Arunachal Pradesh, Assam, Manipur and Sikkim. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Nepal and Tibet.

**Remarks:** Hume (1888, p. 124) collected several specimens from Shillong, the East Khasi Hills. Koelz (1954) recorded it from Barapani, the Ri-Bhoi Hills and described it as *Cinclus pallasii undina*.

**Family** PARIDAE

**Genus** Melanochlora Lesson, 1839

485. *Melanochlora sultanea sultanea* (Hodgson)


**Common name:** Sultan Tit (English).

**Material examined:** West Garo hills district : 1 ♀ Tura, coll. N. A. Belletty, date not known.


Remarks: Hume (1888, p. 256) reported this bird from the Khasi Hills.

Genus Parus Linnaeus, 1758

486. Parus major nipalensis Hodgson


Common name: Nepal Grey Tit (English).

Material examined: Nil.

Diagnostic characters: Back grey, crown black; cheeks white. A whitish patch on nape. Wings dark brown, tertials broadly 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: Meghalaya (Garo Hills district): Assam, Bihar, Manipur, Nagaland, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar), Nepal and Pakistan.

Remarks: Godwin-Austen collected it from the bases of the Garo Hills and listed it as Hydrornis nipalensis Hodgson.

487. Parus monticolus monticolus Vigors


Common name: Greenbacked Tit (English).

Material examined: Nil.

Diagnostic characters: Back yellowish olive. Crown and sides of neck black; cheeks and nuchal-patch white; rump grey, wings bluish with two white wing bars; tail bluish with white tips on outer rectrices. Throat black and broad black band running down the middle of yellow belly.


Remarks: Baker (1907, p. 784) recorded it from the Khasi Hills.
488. *Parus* spilonotus *subviridis* Blyth


*Common name*: Assam Blackspotted Yellow Tit (English).

*Material examined*: Nil.

*Diagnostic characters*: Back streaked with black; crown and a band behind eye black. Feathers of pointed erect crest are tipped with yellow. Forehead and lore yellow; supercilium long and yellow. Nape-patch yellow. A white longitudinal wing-patch is found on yellow and black spotted wings white-tipped and outer edged blackish slate tail. A broad black median band from chin to vent on bright yellow underparts.


*Remarks*: Hume (1888, p. 255) collected this bird "from several parts of the Khasi Hills" and listed it as *Machlolophus spilonotus* Blyth.

Genus *Aegithalos* Hermann, 1804

489. *Aegithalos concinnus manipurensis* (Hume)


*Common name*: Manipur Redheaded Tit (English).

*Material examined*: Nil.


Family SITTIDAE

Genus *Sitta* Linnaeus, 1758

490. *Sitta europaea nagaensis* Godwin-Austen


*Common name*: Naga Nuthatch (English).

*Material examined*: Nil.
Diagnostic characters: In male, crown, back and wings bluish slaty. A black band from lores through eye to nape. Tail blackish with white subterminal spots. Chin, throat breast and sides of head pure ashy. In female, similar to male but paler below.


491. *Sitta castanea cinnamoventris* Blyth


Common name: Eastern chestnutbellied Nuthatch (English).


Diagnostic characters: In male, back bluish slaty. Malar patch white. A black band from lores to upper back. Under tail-coverts with broad white subterminal band. Underparts chestnut-brown. In female, similar to male, but underparts cinnamon.

Measurements: 1 ♂: Wing 84 ; tail 44 ; bill 22.

Distribution: India: Meghalaya (East Khasi Hills district and Ri-Bhoi Hills district) : Arunachal Pradesh, Assam, Manipur, Mizoram, Sikkim and West Bengal. Elsewhere: Bangladesh, Bhutan and Nepal.

Remarks: Godwin-Austen (1870, p. 99) got it from the Khasi Hills. Hume (1888, p. 86) collected this bird from Shillong, the East Khasi Hills.

492. *Sitta formosa* Blyth


Common name: Beautiful Nuthatch (English).

Material examined: Nil.

Diagnostic characters: Size equal to sparrow. Upper back and crown black with brilliant blue and lilac streaks; black wing with white bars and blue outer edge and shoulder. Rump pale blue, blue black tail with white subterminal spots. Chin and upper throat creamy white, rest of lower parts rufous.


Remarks: Ripley (1982, p. 508) reported this bird from Meghalaya.
493. *Sitta frontalis frontalis* Swainson


*Common name*: Velvetfronted Nuthatch (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, back purplish blue, forehead velvety black. Orbital skin orang yellow. Eye yellow. Bill red. Supercilium black. In female, similar to male but without black supercilium.


*Remarks*: Hume (1888, p. 87) recorded this bird from Shillong, the East Khasi Hills as *Dendrophila frontalis* Horsfield.

Family Certhiidae

Genus *Certhia* Linnaeus, 1758

494. *Certhia familiaris* mandellii Brooks


*Common name*: Mandelli’s Tree Creeper (English).

*Material examined*: Nil.


*Remarks*: Ali and Ripley (1973, p. 233) reported that Hume obtained it from Shillong, the East Khasi hills.

495. *Certhia discolor* manipurensis Hume


*Common name*: Manipur Tree Creeper (English).

*Material examined*: Nil.

**Distribution**: India: Meghalaya (Khasi Hills district): Assam, Manipur and Nagaland. Elsewhere: Burma (Myanmar).

**Remarks**: Baker (1907, p. 791) reported it from the Khasi Hills.

**Family**: MOTACILLIDAE

**Key to the genera of the family Motacillidae**

- Tail shorter, upper plumage streaked .................................................... *Anthus*
- Tail longer, upper plumage unstreaked .................................................... *Motacilla*

**Genus**: *Anthus* Bechstein, 1805

496. *Anthus hodgsoni hodgsoni* Richmond


**Common name**: Indian Tree Pipit (English) and Musarichi (Hindi).

**Material examined**: East Garo Hills district: 1 ♀, Rogrenggiri, c. 4 km East of Williamnagar, coll. N. Majumdar, 28.xi. 1988.

**Diagnostic characters**: Crown and back greenish brown with dark brown streaks, Supercilium whitish. Wing-bars (two) and outer rectrices white. Throat, breast and belly whitish with broad and dark brown streaks.

**Measurements**: 1 ♀: Wing 82, tail 62, bill 15.

**Distribution**: India: Meghalaya (East Garo Hills district): Throughout India except Kashmir. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), China, Indochinese countries, Japan, Korea, Malaysia and Philippines.

**Remarks**: Hume (1888, p. 233) collected this bird from various localities in the Khasi Hills and recorded it as *Anthus maculatus* Hodgson.

497. *Anthus novaeseelandiae richardi* Vieillot


**Common name**: Richard’s Pipit (English).

**Material examined**: Nil.

**Diagnostic characters**: Size slightly larger than Sparrow. Back and head dark brown marked with fulvous. Tail dark brown with white outer rectrices. Breast buff with brown streaks. Tarsus very long.

**Distribution**: India: Meghalaya (Khasi Hills district): Andaman Islands, Andhra Pradesh, Assam, Bihar, Karnataka, Madhya Pradesh, Manipur, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Nepal and Sri Lanka. Breads from Western Siberia east to Korea and the sea of Okhotsk.
Remarks: Hume (1888, p.234) remarked as "habit from many places in the Khasi Hills" He listed it under Corydalla richardi Vieillot.

498. Anthus novaeseelandiae rufulus Vieillot
Common name: Indian Paddyfield Pipit (English) and Char-chari (Hindi).
Material examined: Nil.
Diagnostic characters: Size slightly larger than Sparrow. Back and head pale brown marked with fulvous. Tail pale brown with white outer rectrices. Breast buff with smaller brown streaks.
Remarks: Hume (1888, p. 235) reported it from the Khasi Hills.

499. Anthus godlewskii (Taczanowski)
Common name: Blyth's Pipit (English) and Chilu (Hindi).
Material examined: Nil.
Remarks: Hume (1888, p. 236) reported it from Shillong, the East Khasi Hills and listed it as Corydalla striolata Blyth.

500. Anthus cervinus (Pallas)
Common name: Redthroated Pipit (English) and Lal gala Chilu (Hindi).
Material examined: Nil.
Remarks: Godwin-Austen (1870, p. 108) recorded it from the Khasi Hills.

501 Anthus roseatus Blyth


Common name: Vinaceous-breasted Pipit (English).

Material examined: Nil.

Diagnostic characters: In summer, the crown and back grey with dark brown streak. Supercilium buff. Brown wings with green edges and two pale wing-bars. Tail brown with whitish outer edges. Throat and breast pink or vinaceous buff, belly buffish. In autumn, crown and back olive-brown. Supercilium tinted yellow. Vinaceous on throat and breast, breast with heavy streaks.


Remarks: Hume (1888, p. 236) recorded it from Shillong, the East Khasi Hills.

Genus Motacilla Linnaeus, 1758

502 Motacilla indica Gmelin


Common name: Forest Wagtail (English).

Material examined: Nil.

Diagnostic characters: Size equal to Sparrow. Back olive-brown. Tail brown, the outer rectrices white. Supercilium and eye-ring pale. Blackish brown wing with two yellow bands. Chin white; a blackish brown collar across throat and another interrupted band on breast.


Remarks: Hume (1888, p. 233) reported it from Shillong, the East Khasi Hills as *Limonidromus indicus* Gmelin.

503. Motacilla citreola calcarata Hodgson


Common name: Black-backed yellowheaded Wagtail (English), Pilkya (Hindi) and Dopasi (Garo).

Material examined: Nil.

Diagnostic characters: Size equal to Sparrow. Back and rump jet-black. Head and underparts lemon-yellow, sides of breast black. In winter, the back is dark grey.

Remarks: Hume (1888, p. 232) reported that Godwin-Austen recorded it from the Khasi Hills as Budytes calcaratus Hodgson.

504. *Motacilla cinerea cinerea* Tunstall


Common name: Grey Wagtail (English) and Dokongsi (Garo).

Material examined: Nil.

Diagnostic characters: In male, back and head grey. Upper tail-coverts greenish yellow. Blackish brown tail with white outer edges. Dark brown wings with whitish margins to tertials showing as a prominent 'V' on back (in summer), 'V' is indistinct (in winter). Chin and throat black, breast and belly bright yellow (in summer), throat buffish, belly pale yellow (in winter). In female, similar to male, excepting throat mottled with black (in summer) buff (in winter) and paler underparts.


Remarks: Baker (1907, p. 962) procured it at Cherrapoonjee, the East Khasi Hills. Hume (1888, p. 231) collected it from Shillong, the East Khasi Hills and listed it as Calobates melanope Pall as.

505. *Motacilla alba dukhunensis* Sykes


Common name: Indian White Wagtail (English) and Dhaban (Hindi).

Material examined: Nil.


Distribution: India: Meghalaya (East Khasi Hills district); Andhra Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashatra, Manipur, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, and West Bengal. Elsewhere: Arabia, Bangladesh, Burma (Myanmar), Congo, Indochinese countries, Kenya, Nepal, Pakistan, Philippines and Thailand.

Remarks: Hume (1888, p. 223) received it from Shillong, the East Khasi Hills.
506. \textit{Motacilla alba personata} Gould

1861. \textit{Motacilla personata} Gould, \textit{Bds. Asia}, 4, pl. 63 (Bengal, India).


\textbf{Common name}: Masked Wagtail (English).


\textbf{Diagnostic characters}: Size equal to the preceding bird. Back grey; neck, ear-coverts, chin and throat black. Forehead, round eyes, breast and belly white. White on wings more extensive.


\begin{center}
\textbf{Famly DICAEIDAE}
\end{center}

\textbf{Genus Dicaeum} Cuvier, 1817

507. \textit{Dicaeum agile} \textit{agile} (Tickell)


\textbf{Common name}: Indian Thickbilled Flowerpecker (English).

\textbf{Material examined}: Nil.

\textbf{Diagnostic characters}: Small olive green bird with a tail having a terminal white band. Bill very short, thick and horny grey coloured. Breast with greenish white faintly brown streaked.


\textbf{Remarks}: Observed it at Kherapara, the West Garo Hills.

508. \textit{Dicaeum chrysorrheum} \textit{chrysochlore} Blyth


\textbf{Common name}: Yellowvented Flowerpecker (English).

\textbf{Material examined}: Nil


\textbf{Remarks}: Ripley (1982, p. 524) reported it from Meghalaya.
509. *Dicaeum erythrorhynchos erythrorhynchos* (Latham)


*Common name*: Tickell's Flowerpecker (English) and Phoolchuki (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Back, head, wing and tail brownish tinge with olive, Chin, throat and breast greyish white. Bill flesh coloured and shorter.

*Distribution*: India: Meghalaya: (Garo Hills district): Throughout the Indian mainland except Arunachal Pradesh, Haryana, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim and Tripura. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar) and Nepal.

*Remarks*: Hume (1888, p. 84) reported that Godwin-Austen procured it from the Garo Hills.

510. *Dicaeum concolor olivaceum* Walden


*Common name*: Plain-coloured Flowerpecker (English).

*Material examined*: Nil.


*Remarks*: Hume (1888, p. 84) reported this bird from Shillong, the East Khasi Hills.

511. *Dicaeum cruentatum cruentatum* (Linnaeus)


*Common name*: Scarlet-backed Flowerpecker (English).


512. *Dicaeum ignipectus ignipectus* (Blyth)


Common name: Firebreasted Flowerpecker (English).

Material examined: Nil.


Remarks: Baker (1907, p. 963) noted it from the Khasi Hills. Hume (1888, p. 85) reported it from Shillong, the East Khasi Hills, and listed it as *Myzallthe ignipectus* Hodgson.

Family NECTARINIIDAE

Key to the genera of the family Nectariniidae

1. Central rectrices elongated .......................................................... *Aethopyga*

Central rectrices not elongated .............................................................. 2

2. Plumage non-metallic ........................................................................*Arachnothera*

Plumage of male metallic ........................................................................ 3

3. Lower mandible curved downward ...................................................... *Nectarinia*

Lower mandible straight or nearly so .................................................. *Anthreptes*

Genus *Anthreptes* Swainson, 1837

513. *Anthreptes singalensis rubinigentis* (Baker)


Common name: Rubycheek (English).

Material examined: Nil.

**Distribution**: India: Meghalaya (Garo Hills and Khasi Hills districts): Arunachal Pradesh, Assam, Manipur, Nagaland, Sikkim, and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Nepal and Thailand.

**Remarks**: Hume (1888, p. 83) reported that Godwin-Austen collected this bird from the Garo Hills and Hume (Ibid) recorded from the Khasi Hills.

**Genus** *Nectarinia* Illiger, 1811

*514. Nectarinia zeylonica sola* (Vieillot)


**Common name**: Indian Purplerumped Sunbird (English), and Shakar Khora (Hindi).

**Material examined**: Nil.

**Diagnostic characters**: Male with yellow abdomen; throat metallic purple red and upper tail coverts metallic purple. Back deep chestnut. Female with brown back, more rufous on wing. Throat and flanks greyish white; breast and centre of belly lemon yellow.


**Remarks**: Seen it at Rongrenggiri, the East Garo Hills.

**Genus** *Aethopyga* Cabanis, 1851

*515. Aethopyga gouldiae isolata* Baker


**Common name**: Manipur Yellowbacked Sunbird (English).

**Material examined**: Nil.


**Distribution**: India: Meghalaya (Khasi Hills district): Assam, Manipur, Mizoram and Nagaland, Elsewhere: Bangladesh.

**Remarks**: Hume (1888, p. 81) reported this bird from the Khasi Hills and recorded it as *Aethopyga gouldiae* Vigors.

*516. Aethopyga nipalensis nipalensis* (Hodgson)


*Common name*: Nepal Yellowbacked Sunbird (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, crown and nape metallic blue-green. A maroon band on upper back and sides of neck. Rump bright yellow; cheeks black, throat and tail metallic blue-green. Breast and abdomen bright yellow streaked with scarlet. In female, olive green on back and light green below. Outer rectrices tipped with white.


*Remarks*: Hume (1888, p. 82) reported this bird from the Khasi Hills. Koelz (1952) recorded from Mawryngkneng, the Khasi Hills and described it as *Aethopyga nipalensis ripleyi*.

517. *Aethopyga saturata assamensis* (McClelland)


*Common name*: Assam Blackbreasted Sunbird (English).

*Material examined*: Nil.


*Distribution*: India: Meghalaya (Garo Hills and Khasi Hills districts): Arunachal Pradesh, Assam, Manipur and Nagaland. Elsewhere: Bangladesh, Burma (Myanmar) and China.

*Remarks*: Hume (1888, p. 82) reported this bird from the Khasi Hills. Koelz (1953) recorded this bird from near Nokrek, Garo Hills and described it as *Aethopyga saturata ariel*.

518. *Aethopyga siparaja seheriae* (Tickell)


*Common name*: Indian yellowbacked Sunbird (English).


*Diagnostic characters*: Male with metallic green on crown, dark crimson on back and sides of neck; rump bright yellow. Tail metallic green, the two central rectrices elongated. Chin, throat and breast scarlet; belly yellowish olive. Female entirely olive, more yellowish below.

*Measurements*: 2 ♂: Wing 56, 58; tail 64, 68; bill 21, 22.

Remarks: Hume (1888, p. 80) reported it from near Shillong. Baker (1907, p. 962) recorded it from the Khasi Hills.

519. Aethopyga siparaja labecula (Horefield)


Common name: Assam Yellowbacked Sunbird (English).

Material examined: Nil.


Distribution: India: Meghalaya (Khasi Hills district): Arunachal Pradesh, Assam, Manipur and Nagaland. Elsewhere: Bangladesh and Bhutan.

Remarks: Hume (1880, p. 80) reported it from near Shillong, the East Khasi Hills as Aethopyga scheriae Hume.

520. Aethopyga ignicauda ignicauda (Hodgson)


Common name: Firetailed Yellowbacked Sunbird (English).

Material examined: Nil.

Diagnostic characters: In male, crown metallic purple, sides of crown from eye and back as well as tail-coverts and tail scarlet. Rump yellow. Wings olive in colour. Throat metallic purple, breast and abdomen yellow washed with orange. Elongated central pair of rectrices bright crimson. Female olive, more yellow on rump and belly.


Remarks: Hume (1888, p. 81) obtained this bird from Shillong, the East Khasi Hills.

Genus Arachnothera Temminck, 1826

521. Arachnothera longirostris longirostris (Latham)

Common name: Little Spiderhunter (English).


Diagnostic characters: Back and wings olive. Tail dark brown tipped with white. Chin, throat and upper breast greyish white. Lower belly and vent yellow with orange tufts.

Measurements: 1 ♂ : Wing 66 ; tail 46 ; bill 37.

Distribution: India: Meghalaya (Jaintia Hills and Ri-Bhoi Hills districts) : Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Karnataka, Kerala, Manipur, Orissa, Tamil Nadu, Tripura and West Bengal. Elsewhere: Bangladesh, Burma (Myanmar) and Thailand.


Common name: Streaked Spiderhunter (English).

Material examined: Nil.

Diagnostic characters: A small bird with streaked yellowish olive in colour. Bill very long, stout and curved; black. Legs yellow; tail tipped with a blackish subterminbal band. Throat, breast and abdomen very pale yellow with bold black shaft-streaks.


Remarks: Godwin-Austen (1870, p. 98) reported it from the Khasi Hills.

Family ZOSTEROPIDAE
Genus Zosterops Vigors and Horsfield, 1827

523. Zosterops palpebrosa palpebrosa (Temminck)

1824. Sylvia palpebrosa Temminck, Pl. Col. d'Ois 49, pl. 293, fig. 3 (Bengale=Bengal, India).


Common name: India White eye (English).


Diagnostic characters: A yellow-olive bird with a very district white eye-ring. Throat and undertail-coverts bright yellow; breast greyish white and belly whitish.

Measurements:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ♂</td>
<td>53</td>
<td>36</td>
<td>12</td>
</tr>
<tr>
<td>2 ♂</td>
<td>50(2)</td>
<td>35, 36</td>
<td>12(2)</td>
</tr>
</tbody>
</table>
**Distribution**: India: Meghalaya (East Garo Hills, Khasi Hills and Ri-Bhoi Hills districts): Throughout the Indian mainland excepting Andhra Pradesh, Kerala and Tamil Nadu. Elsewhere: Bangladesh, Burma (Myanmar), China, Indochinese countries, Nepal, Pakistan and Tibet.

**Remarks**: Godwin-Austen (1870, p. 109) recorded it from the Khasi Hills.

**Family** PLOCEIDAE

Key to the genera of the family Ploceidae

1. Bill broad at base and stout; culmen not curved .................................................. *Lonchura*
   Bill short and stout; culmen slightly curved .......................................................... 2

2. Both sexes exhibit a double half hour-glass shaped rufous patch on the base of primaries *Passer*
   No double half hour-glass shaped patch ..................................................................... 3

3. 1st primary minute; 3rd and 4th longest ............................................................... *Estrilda*
   1st primary minute; 2nd, 3rd, 4th and 5th longest ................................................ *Ploceus*

**Genus** *Passer* Brisson, 1760

524. *Passer domesticus indicus* Jardine & Selby


**Common name**: Indian House Sparrow (English); Churi (Hindi) and Dochok (Garo).


**Distribution**: Male with crown grey; sides of crown behind eye, sides of neck and upper back chestnut. Rufous-chestnut with black streaks on back. Shoulder patch white; wing rufous. Rump grey-brown; tail dark-brown. Sides of throat white; centre of throat and breast black. Abdomen greyish white. Female with greyish brown streaked with fulvous and dark brown on back, throat, breast and abdomen brownish white.

**Measurements**:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1♂</td>
<td>72</td>
<td>54</td>
<td>14</td>
</tr>
<tr>
<td>1♀</td>
<td>73</td>
<td>54</td>
<td>13</td>
</tr>
</tbody>
</table>


**Remarks**: Baker (1907, p.961) reported it from the Garo Hills and recorded as *Passer domesticus* Linnaeus.
525. *Passer montanus malaccensis* Dubois


*Common name*: Malay Tree Sparrow (English) and Chhotigouriya (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: Back brown streaked with black; crown and nape chocolate-brown. Ear-coverts with black patch. Sides of head white. Chin and centre of throat black. Sides of throat, breast and belly greyish white.

*Distribution*: India: Meghalaya (East Khasi Hills district) : Assam, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (Myanmar), Indochinese countries, Indonesia and Nepal.

*Remarks*: Baker (1907, p. 961) reported it from the Garo and Khasi Hills. Hume (1888, p. 275) recorded it from Shillong the East Khasi Hills as *Passer montanus* Linnaeus.

526. *Passer rutilans cinnamomeus* (Gould)


*Common name*: Himalayan Cinnamon Tree Sparrow (English) and Lalgouriya (Hindi).


*Measurements*:

<table>
<thead>
<tr>
<th></th>
<th>Wing</th>
<th>Tail</th>
<th>Bill</th>
</tr>
</thead>
<tbody>
<tr>
<td>2♂</td>
<td>70, 74</td>
<td>50 (2)</td>
<td>13 (2)</td>
</tr>
<tr>
<td>1♀</td>
<td>71</td>
<td>48</td>
<td>13</td>
</tr>
</tbody>
</table>


*Remarks*: Hume (1888, p. 275) reported this bird from Shillong, the Khasi Hills.

527. *Passer rutilans intensior* Rothschild


*Common name*: Yunnan Cinnamon Tree Sparrow (English).

*Material examined*: Nil.


Genus *Ploceus* Cuvier, 1816

528. *Ploceus philippinus burmanicus* Ticehurst


Common name: Indian Baya (English) and Baya (Hindi).

Material examined: Nil.


Distribution: India: Meghalaya (Khasi Hills district): Assam, Bihar, Tripura and West Bengal: Elsewhere: Bangladesh, Burma (Myanmar) and Nepal.

Remarks: Godwin-Austen (1870, p. 110) recorded it from the Khasi Hills and listed it as *Ploceus baya* Blyth.

Genus *Estrilda* Swainson, 1827

529. *Estrilda amandava amandava* (Linnaeus)


Common name: Red Munia (English) and Lal Munia (Bengali).

Material examined: Nil.

Diagnostic characters: Male brownish crimson. Wings dark brown with a few small white spots. Tail dark brown with whitish tip. Throat and upper breast crimson, spotted with white. Female brown with white spots on wings, upper tail-coverts crimson spotted with white. Throat and breast greyish buff.

Distribution: India: Meghalaya (Khasi and Garo Hills districts): Throughout the Indian mainland except Kerala, Manipur, Mizoram and Nagaland. Elsewhere: Bangladesh, Pakistan, Nepal, China, Indochinese countries and Sunda Islands.

Remarks: Godwin-Austen (1872, p. 142) recorded this bird from the Garo and Khasi Hills.
Genus *Lonchura* Sykes, 1832

530. *Lonchura striata acuticauda* (Hodgson)
*Common name*: Whitebacked Munia (English) and Shakari Munia (Hindi).
*Material examined*: Nil.
*Diagnostic characters*: Back brown with very fine pale shaft-streaks. Rump white. Fore head, wings and tail blackish brown. Throat and breast blackish brown; belly creamy white.

*Distribution*: India: Meghalaya (Khasi Hills district): Arunachal Pradesh, Assam, Manipur, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan and Burma (Myanmar), Nepal and Thailand.

*Remarks*: Godwin-Austen (1870, p. 27) recorded it from Khasi Hills and listed it as *Amadina acuticauda* Hodgson.

531. *Lonchura punctulata subundulata* (Godwin-Austen)
*Common name*: Burmese Spotted Munia (English).
*Material examined*: Nil.
*Diagnostic characters*: Head black. Back, wings and chest rufous-chestnut. Rump darker chestnut Centre of belly and under tail-coverts black.


*Remarks*: Hume (1888, p. 272) reported this bird from Shillong and Mawphlang, the East Khasi Hills and other places in the Khasi Hills and listed it as *Amadina subundulata* Godwin-Austen. Koelz (1954) also reported this birds from Mawphlong, the East Khasi Hills and described it as *Lonchura punctulata catervaria*.

532. *Lonchura malacca rubroniger* (Hodgson)
*Common name*: Nepal Blackheaded Munia (English).
*Material examined*: Nil.

Remarks: Hume (1888, p. 272) recorded it from Shillong, the East Khasi Hills and other places in the Khasi Hills and reported as *Amadina rubronigra* Hodgson.

533. *Lonchura malacca atricapilla* (Vieillot)


*Common name*: Eastern Blackheaded Munia (English).

*Material examined*: Nil.

*Diagnostic characters*: Crown black and rest of upper parts rufous-chestnut; rump darker chestnut. Throat and breast black; upper and sides of belly chestnut white. Centre and undertail-coverts black. Upper tail-coverts golden yellow. Tail deep reddish brown and back slightly paler.

*Distribution*: India: Meghalaya (South Garo Hills districts): Assam, Bihar, Manipur, Orissa and West Bengal. Elsewhere: Bangladesh, China and Nepal.

*Remarks*: Observed it near at Baghmara, the South Garo Hills.

Family FRINGILIDAE

Key to the genera of the family Fringilidae

1. In male, plumage mainly blackish ................................. *Mycerobas*

   In male, plumage mainly reddish ............................................ 2

2. Plumage of male predominantly crimson ..................................... *Haematospiza*

   Plumage of male entirely brilliant scarlet ............................ 3

3. In female, rump yellow ................................................. *Propyrrhula*

   In female, rump olive-brown .............................................. *Carpodacus*

Genus *Mycerobas* Cabanis, 1847

534. *Mycerobas melanozanthos* (Hodgson)


*Common name*: Spottedwinged Grosbeak (English).

*Material examined*: Nil.

*Diagnostic characters*: In male, entire head, upper back, wings and tail blackish. Whitish spots on secondaries and a white wing patch. Breast, abdomen and vent deep yellow. In female, like male, but crown, nape and back streaked with yellow. Under-parts yellow boldly streaked with blackish.

Genus **Carpodacus** Kaup, 1829

535. *Carpodacus erythrinus roseatus* (Blyth)


*Common name*: Indian Rosefinch (English) and Lal Tuti (Hindi).

*Material examined*: Nil.

*Diagnostic characters*: In male, crown crimson; back and wings crimson and brown. Rump dark crimson; checks pink; chin, throat and breast crimson becoming paler on flanks and belly. In female, olive brown back with two pale wing bars. Throat whitish with brown streaks. Breast streaked with brown; belly whitish.

*Distribution*: India: Meghalaya (Khasi Hills district) : Throughout the Indian mainland except Himachal Pradesh and Jammu & Kashmir. Elsewhere: Nepal, Bangladesh, Burma (Myanmar), Indochinese countries, China and Tibet.

*Remarks*: Hume (1888, p. 286) reported this bird from several places in the Khasi Hills and listed as *Carpodacus erythrinus* Pallas.

Genus **Propyrrhula** Hodgson, 1844

536. *Propyrrhula subhimachala* (Hodgson)


*Common name*: Redheaded Rosefinch (English).

*Material examined*: Nil.


Genus **Haematospiza** Blyth, 1845

537 *Haematospiza sipahi* (Hodgson)


Common name: Scarlet Finch (English).

Material examined: Nil.


Remarks: Godwin-Austen (1870, p. 110) recorded this bird from the Khasi Hills.

Family EMBERIZIDAE

Key to the genera of the family Emberizidae

Crown with a well developed crest..............................................................Melophus

Crown without crest .......................................................................................Emberiza

Genus Emberiza Linnaeus, 1758

538. Emberiza fucata arcuata Sharpe


Common name: Indian Greyheaded Bunting (English) and Patther-Chiria (Hindi).

Material examined: Nil.


Remarks: Baker (1907, p.961) reported it from Khasi hills.

539. Emberiza pusilla Pallas

1776. Emberiza pusilla Pallas, Reise Russ Reichs, 3 : 697 (Transbaikalian Alps).


Common name: Little Bunting (English).


Diagnostic characters: Size slightly smaller than the House Sparrow. In male, two broad black stripes on either side of crown, a rufous median coronal stripe in between; outer rectrices white. Back
rufous brown, streaked with blackish. Chin rufous; throat and belly-white streaked with black. Female similar to male but dull in colour.

**Measurements** : I ♀ : Wing 72, tail 57, bill 12.


**Remarks** : Godwin-Austen (1872, p. 272) recorded it from the base of the Garo Hills. Hume (1888, p. 280) also recorded it from Shillong, the East Khasi Hills.

Genus *Melophus* Swainson, 1837

**540. Melophus lathami** (Gray)


**Common name** : Crested Bunting (English) and Patthar-Chiria (Hindi).

**Material examined** : Nil.


**Remarks** : Ali and Ripley (1974, p. 233) reported it from Meghalaya.

**SUMMARY**

(1) A list of 541 species and subspecies based on the collection present in the Zoological Survey of India, Calcutta and Eastern Regional Station, Z. S. I., Shillong as well as from literature is given from Meghalaya. It belongs to 233 genera, 57 families and 18 orders.

(2) The family Muscicapidae with 194 species and subspecies forms the largest group in the bird fauna of Meghalaya State.

**ACKNOWLEDGEMENTS**

The authors are grateful to the Director, Zoological Survey of India for allowing to conduct survey, research and study facilities and the Forest Department, Govt. of Meghalaya State for cooperation during the Survey work.

**REFERENCES**


Reptiles are lung breathing vertebrates originally with two pairs of limbs each with five clawed fingers and digits. The skull joint to the vertebral column is effected by a single condyle and the pelvic girdle is connected to two or more vertebrae. The lower jaw on either side consists of more than one bone element. Body is covered with horny scales and plates and are devoid of feathers and hair. They are "Poikilothermic" oviparous or ovoviviparous. Reptiles are the first true-land animals and reached the peak of their evolutionary development during the Mesozoic era - a period rightly called the "Golden Age of Reptiles". All that reminds us today of the gigantic dinosaurs that once ruled the earth, are the few crocodiles, turtles, and monitor lizards. Reptiles being true land animals are basically independent of water as an environment. Some of them are secondarily amphibious but almost all of them return to the land to lay their eggs or to bear their young.

The present day reptiles are grouped under four orders containing about 3000 species of Lizards, about 2800 species of snakes, 220 species of turtles, 21 species of crocodilians and a single species of Rhynchocephalian, the 'tuatara'. The 'poikilothermic' nature of reptiles is a vital factor that affects their distribution and they tend to concentrate on the tropics. Of the 6000 or so reptiles distributed over the world, about 430 are found in India.

Reptiles are found on land and water, in and around human habitations, inside houses and outhouses; under stones and in between crevices of rocks, under piles of logs, on bark, branches of trees and on bushes; in cultivated and non-cultivated land; in fields, thin and thick forests; deserts; ponds; lakes, streams; rivers; sea and almost anywhere.

**COLLECTION, PRESERVATION AND IDENTIFICATION**

Since the study of many characters lead to the identification of specimens, care should be taken not to damage or mutilate them while collecting. Preserving the material in 90% alcohol will be ideal. Varying strengths of 5% to 10% formalin is also used as a preservative. Larger specimens could be suitably stuffed and maintained.

Identification of Testudines is greatly dependent on the nature and pattern of head and shell and the characters of the limbs. Lizards are identified with reference to their scale characters, body shape and measurements, colour and presence or absence of spines and tubercles (Plate II). Scale characters especially that of the head count a great deal in the identification of snakes (Plate III & IV). The structure of hemipenis also helps as a specific character in certain cases.
Meghalaya state with an area of 22,429 Km2 interspersed with high and low hills, mountains, meadows and valleys; rivers, streams, lakes and ponds, lies in between 25° 26' N.latitude and 90° 92° 45' E longitude. It is presently divided into seven districts for administrative purposes, namely:

1. East Khasi Hills,
2. West Khasi Hills,
3. Ri Bhoi
4. East Garo Hills,
5. West Garo Hills,
6. South Garo Hills,

The fauna of Meghalaya is greatly influenced by Indo-Chinese elements. The reptile fauna comprises of 12 species of turtles and tortoises, 26 species of lizards and 56 species of snakes.

Smith (1931, 1935 and 1943) reported many species from the then Assam, which included the whole of North-East India.

Shillong, Cherrapunjee and Khasi Hills were mentioned for type localities. However, certain species reported to have been originally described from Meghalaya are no more traceable.

The present study material is made available by various surveys conducted at random within the state by the Eastern Regional Station of the Zoological Survey of India over a span of 33 years. Other than the above, reptile specimens studied from various institutions in Meghalaya also formed valuable reference.

Order Testudines
Turtles and Tortoises

The earliest record of Testudines is from the Triassic. Of about 22 families then, 12 survive today. India has six of the ten families of the sub-order Cryptodira distributed both over the land and the ocean. In general case, a turtle has a shell with two halves, the dorsal carapace and the ventral plastron which are covered by horny shields (Plate I). There are, in typical cases, 13 shields on the carapace and 12 on the plastron. On the carapace they are called the vertabrals, costals and marginals and on the plastron there are the paired gulars, humerals, pectorals, abdominals, femorals and anals. The marginals border the shell dorsally. Most turtles are able to withdraw head and limbs into the shell for protection. All turtles are oviparous and many face a threat to their survival due to the unscrupulous killing for their flesh and consumption of their eggs by man and other animals. Of the 220 species of Testudines found in the world, 32 are distributed in India (Animal Resources of India, 1991). Meghalaya has 12 species.
Order Squamata

Lizards and Snakes

The order Squamata contains two sub-orders: Sauria, comprising the Lizards and Serpentes comprising the snakes. In general case, a lizard has a slender body with two pairs of well developed limbs and tail. The body is covered with scales and unlike snakes they have an external ear opening. Most lizards are insectivorous and oviparous. Barring the large sized monitor lizards and the spiny tailed lizards which are killed for flesh and skin, the rest of the group is comparatively safe with man in India. About 3000 species of lizards occur in the world. India has about 156 species and 26 species are represented in Meghalaya.

Snakes are the most popular of the present day reptiles. The lack of limbs, movable eyelids and external ears is characteristic of them. Their ability to adapt themselves to diverse ecological niches available on earth is remarkable. They vary greatly in size from a few millimeters to nearly 10 meters in length. There are about 2800 species of snakes in the world. India has 237 species (Animal Resources of India, 1991) and 56 species are represented in Meghalaya.

SYSTEMATIC LIST OF REPTILES REPORTED FROM MEGHALAYA

Order - 1  TESTUDINES

Family 1  EMYDIDAE

1. *Hardella thurgi* (Gray)  
2. *Kachuga dhongoka* (Gray)  
3. *K. sylhetensis* (Jerdon)  
4. *K. tecta* (Gray)  
5. *Geochelone hamiltoni* (Gray)  
6. *Cyclonys dentata* (Gray)  
7. *C. mouhoti* (Gray)  
8. *Melanochelys tricarinata* (Blyth)

Family 2  TESTUDINIDAE

9. *Geochelone elongata* (Blyth)  
10. *G. emys.* (Schlegel & Muller)

Family 3  TRIONYCHIDAE

11. *Lissemys punctata punctata* (Lacepede)  
12. *Trionyx hurum* (Gray)
Order - 11 SQUAMATA
Sub-order - (i) SAURIA

Family 4 GEKKONIDAE
13. Cyrstodactylus khasiensis (Jerdon)
14. Cnemaspis jerdoni (Theobald)
15. Teratolepis fasciata (Blyth)
16. Cosymbotus platyurus (Schneider)
17. Hemidactylus brooki Gray
18. H. frenatus Schelegl
19. Gekko gecko (Linnaeus)

Family 5 AGAMIDAE
20. Ptyctolaemus gularis Peters
21. Calotes emma Gray
22. C. jerdoni Gunther
23. C. maria Gray
24. C. versicolor (Daudin)
25. Oriocalotes paulus Smith
26. Japalura planidorsata Jerdon

Family 6 SCINCIDAE
27. Sphenomorphus courcyanum Annandale
28. S. indicum indicum (Gray)
29. S. maculatum (Blyth)
30. Mabuya carinata (Schneider)
31. M. macularia (Blyth)
32. M. multifasciata multifasciata (Kuhl)

Family 7 LACERTIDAE
33. Takydromus sexlineatus khasiensis Boulenger
34. T. sexlineatus sexlineatus Daudin

Family 8 ANGUIDAE
35. Ophisaurus gracilis (Gray)
36. Varanus bengalensis (Daudin)
37. V. salvator (Laurenti)
38. Varanus flavescens (Gray)
   Sub-order SERPENTES

Family 10 TYPHLOPIDAE
39. Ramphotyphlops braminus (Daudin)
40. Typhlops diardi Schlegel
41. T. jerdoni (Boulenger)
42. T. tenuicollis (Peters)

Family 11 BOIDAE
43. Python molurus (Linnaeus)

Family 12 COLUBRIDAE
44. Ahaetulla prasina (Boie)
45. Amphiesma khasiensis (Boulenger)
46. A. modesta (Gunther)
47. A. parallela (Boulenger)
48. A. platyceps (Blyth)
49. A. stolata (Blyth)
50. A. xenura (Wall)
51. Blythia reticulata (Blyth)
52. Boiga cyanea (Dumeril & Bibron)
53. B. trigonata (Schneider)
54. Calamaria pavimentata (Dumeril & Bibron)
55. Chrysopelea ornata (Shaw)
56. Elaphe cantoris (Boulenger)
57. E. frenata (Gray)
58. E. hodgsoni (Boulenger)
59. E. porphyracea (Cantor)
60. E. prasina (Blyth)
61. E. radiata (Schlegel)
62. Liopeltis frenatus Gunther
63. Lycodon aulicus (Linnaeus)
64. L. jara (Shaw)
65. Oligodon albocinctus (Cantor)
66. *O. cinereus* (Gunther)
67. *O. cyclurus* (Cantor)
68. *O. dorsalis* Gray & Hardwicke
69. *O. theobaldi* (Gunther)
70. *Pareas monticola* (Cantor)
71. *Psammodynastes pulverulentus* (Boie)
72. *Pseudoxenodon macrops* (Blyth)
73. *Ptyas korros* (Schlegel)
74. *Rhabdops bicolor* (Blyth)
75. *Rhabdophis himalayana* (Gunther)
76. *R. subminiata* (Schlegel)
77. *Sibynophis chinensis* (Gunther)
78. *S. collaris* (Gray)
79. *Stoliczkaia khasiensis* (Jerdon)
80. *Trachischium monticola* (Cantor)
81. *Xenochrophis cerasogaster* Cantor
82. *X. piscator* (Schneider)

**Family 13 ELAPIDAE**

83. *Bungarus bungaroides* (Cantor)
84. *B. fasciatus* (Schneider)
85. *B. niger* Wall
86. *Callophis macelellandi* (Reinhardt)
87. *Naja naja* (Linnaeus)
88. *Ophiophagus hannah* (Cantor)

**Family 14 VIPERIDAE**

89. *Trimeresurus albolabris* Gray
90. *T. erythrurus* (Cantor)
91. *T. jerdoni* Gunther
92. *T. monticola* Gunther
93. *T. popeorum* Smith
94. *T. stejnegeri* Schmidt
Order - 1  TESTUDINES
Key to the families of the order Testudines.

1. Fore-limbs semi paddle shaped with 3 claws, carapace covered with smooth skin; edge of carapace flexible ................................................................. *Trionychidae*

   Forelimbs paddle shaped, with more than 3 claws, carapace covered with horny shields .......... 2

2. Digits webbed, hind limbs paddle shaped ................................................................. *Emydidae*

   Digits not webbed, hind limbs club shaped ................................................................. *Testudinidae*

Family 1  EMYDIDAE
Key to the genera of family Emydidae.

1. Vertebral shields short sided anteriorly ............................................................................ 2

   Vertebral shields short sided posteriorly ........................................................................ 3

2. Axillary and inguinal buttresses well developed and extend almost up to the vertebral shields; alveolar surface of jaws broad with one or two median ridges ................................................... *Geoclemys*

   Axillary and inguinal buttresses short, do not extend even half way along the costal plates; alveolar surface of jaws broad or narrow, without a median ridge .................................................................

4. Fourth vertebral shield moderate, not longer than 3rd vertebral shield .................. *Hardella*

   Fourth vertebral shield elongate, longer than the 3rd vertebral shield .................. *Kachuga*

3. Plastron united to carapace by a ligamentous tissue; shell does not close completely ................................................................... *Cyclemys*

   Plastron united to carapace by a suture ........................................................................... *Melanochelys*

Genus  *Cyclemys* Bell 1834


Diagnostic Characters: Neural plates hexagonal, posteriorly short- sided; plastron not completely closing the shell, united to the carapace by ligaments; digits half to fully webbed.

Key to the species of *Cyclemys* Bell

1. Snout as long as the orbit and slightly projecting beyond the lower jaw; vertebral shields narrower than the costals; posterior margin of carapace strongly serrated in the young, comparatively less so in the adult; limbs with fully webbed digits .............................................. *dentata*

   Snout shorter than the orbit and truncate; carapace strongly tricarinate; greatly flattened on vertebral region; anterior and posterior margin serrated; vertebral shields as broad as the costals; limbs with half webbed digits ................................................................. *mouhoti*
1. **Cyclemys dentata** (Gray 1831)
   
   Garo and Khasi Hills Tortoise. (Col. Photo 3)

   *Emys dentata* Gray, *Syn. Rept.* i 1831, p.20

   *Cyclemys dentata* (Gray 1831), Tikader & Sharma, 1985 *Handbook : Indian Testudines*; pp.156

   **Diagnostic Characters**: Head moderately large; snout shorter than the orbit, slightly projecting beyond the lower jaw; head posteriorly with large shields; carapace depressed and considerably flat; vertebrae narrower than costals; plastron with paired gular, humeral, axillary, pectoral, abdominal, femoral and anal shields; a small inguinal may be present; the median suture between the pectorals the largest, limbs with fully webbed digits and transversely enlarged scales.

   Olive, brown or black above, head generally with black spots.

   **Total length**: 240 mm.

   **Distribution**: Khasi and Garo Hills, Meghalaya; Assam. Indonesia; Malaysia; Myanmar; Philippine Islands; Thailand and Vietnam.

2. **Cyclemys mouhoti** (Gray 1862)

   Assam Fresh Water Tortoise


   **Diagnostic Characters**: Head moderately small; snout shorter than the orbit and truncate; posterior portion of the head with large shields; carapace strongly tricarinate, greatly flattened on the vertebral region; anterior and posterior margins serrated; plastron with or without the axillary shields; limbs with half webbed digits; hind limbs club shaped; forearm and sole covered with imbricate, pointed, horny shields.

   Light brown above, beneath yellowish brown, with a dark spot on each plastral shield; head brown with dark edged light spots.

   **Total length**: 170 mm.

   **Distribution**: Garo Hills, Meghalaya, Assam; Arunachal Pradesh. Hainan, Laos; Vietnam.

**Genus Geoclemys** Gray 1855

*Geoclemys* Gray, *Cat Sh. Rept.* i. 1855, p. 17.

*Geoclemys* Gray, Smith, 1933, *Fauna of British India*. Vol. I., pp. 156

**Diagnostic Characters**: Neural plates hexagonal, short-sided anteriorly; plastron extensively united to carapace by suture with strong axillary and inguinal buttresses which extend to the outer ends of the costal plates; posterior portion of head with shields; digits fully webbed.

A single Species
3 Geoclemys hamiltoni (Gray 1831)
Black-spotted Pond Turtle.

Emys hamiltoni gray, Illus. Ind. Zool. pt. vi, pi, xi, 1831,

Geoclemys hamiltoni (Gray 1831), Tikader & Sharma, 1985, Handbook: Indian Testudines: pp. 156

Diagnostic Characters: Head broad and large; snout rounded, as long as the orbit and slightly projecting beyond the lower jaw; posterior portion of the head with shields; carapace tricarinate, strongly convex, vertebrae narrower than costals; plastron with paired gular, humeral, axillary pectoral, abdominal, inguinal, femoral and anal shields; limbs with fully webbed digits and transversely enlarged scales.

Dark brown to black, heavily spotted and streaked with deep yellow; head and neck with round yellow spots.

Total length: 310 mm.

Distribution: Garo Hills, Meghalaya; Assam; West Bengal; the river systems of Ganga and Sind. Pakistan.

Genus Hardella Gray 1870

Hardella gray, Cat. Sh. Rept., Suppl. i., 1870. p. 58.


Diagnostic Characters: Neural plates elongate, hexagonal, short-sided in front, plastron extensively united to carapace by suture; posterior portion of the head with transverse scales; tail very short.

A Single Species

4. Hardella thurgi (Gray 1831)
Brahminy River Turtle.


Hardella thurgi (Gray), Tikader & Sharma, 1985 Handbook: Indian Testudines, pp.156

Diagnostic Characters: Head moderately large with a pointed and extremely projecting snout; posterior portion with transverse rows of scales; vertebrae elongate, posteriorly with a knob like structure; broader than costals in adults, nuchal short-sided anteriorly; plastron with paired gular, humeral, axillary, pectoral, abdominal, inguinal, femoral and anal shields; the median suture between the abdominal shields the longest; that between the gular the shortest; limbs with fully and broadly webbed digits and with narrow transversely enlarged scales; forelimbs with five claws.

Dark brownish-black above with a yellow margin; the keel and the inner margins of the first three costals black; yellow beneath with two large black spots on each side of the plastral bridge. Plastron with a blackish tinge on the anterior mid portion. Head dark brown or black; top of snout with curved orange yellow bands; limbs brownish, margined with yellow.
Total length: 200–650 mm.

Distribution: Khasi and Garo Hills, Meghalaya; Assam, the river systems of Ganga, Brahmaputra and Sind, ranging from Sind in Pakistan to Sylhet in Bangladesh.

Remark: Males are small, reaching a maximum length of 200 mm whereas females may attain a length of 650 mm.

Genus **Kachuga** Gray 1869


Diagnostic Characters: Neural plates hexagonal, short-sided in front; fourth vertebral shield longer than broad, overlapping 4-5 naural bones; posterior portion of head with shields, limbs with fully webbed digits.

Key to the species of *Kachuga* Gray.

1. Fourth vertebral shield overlaps four neural bones; 2nd vertebral shield pointed and overlaps the 3rd vertebral .................................................................*dhongoka*.

   Fourth vertebral shield overlaps five neural bones.........................................................2

2. 24 marginal shields; 2nd vertebral shield longer than third...........................................*tecta*

   26 marginal shields; posterior margin of carapace strongly serrated.............................*sylhetensis*

5. **Kachuga dhongoka** (Gray 1834)

Dhongoka Turtle


Diagnostic Characters: Head moderately long with a pointed snout which projects beyond the lower jaw; posterior portion of the head with shields; carapace smooth, depressed, uncarinate, the keel most prominent up on the 2nd and 3rd vertebral shields; nuchal shield short sided in front; first vertebral longer than broad, more or less constricted in the middle, neural plates much longer than broad; plastron with paired gular, humeral, axillary, pectoral, abdominal, inguinal, femoral and anal shields is narrower than the opening of the shell; limbs with fully and broadly webbed digits and transversely enlarged scales; forelimbs with five claws.

Olive brown above with a black vertebral stripe; young with two black lateral stripes; yellowish beneath; juveniles with a large reddish brown patch on the shields of plastron; head with a yellow stripe, starting from the nostrils to above the eye and tympanum.

Total length: 200–480 mm.

Distribution: Khasi, Garo and Jaintia Hills, Meghalaya; Assam; Arunachal Pradesh; Bihar; Manipur; Mizoram; Nagaland; Sikkim; Tripura; Uttar Pradesh; West Bengal. Nepal.
Remarks: Males are small and grow to a maximum of 200 mm where as females may grow to 400 mm in length. These are entirely aquatic in nature and feed on vegetable matter.

6. Kachuga sylhetensis (Jerdon 1870)
Assam Sawback Turtle (Col. Photo.1)


Diagnostic Characters: Head moderately small, snout pointed, shorter than the orbit and projecting much beyond the lower jaw; 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 including the paired supracaudals; plastron with paired gular, humeral, axillary, pectoral, abdominal, inguinal, femoral and anal shields; limbs with fully and broadly webbed digits and with transversely enlarged scales.

Olive brown above; yellow beneath, each plastral shield with a large dark brown spot; head and neck with yellow streaks.

Total length: 180 mm

Distribution: Khasi and Garo Hills, Meghalaya; Assam; Nagaland.

7. Kachuga tecta (Gray 1831)
North Indian Roofed Turtle.


Diagnostic Characters: Head moderately small, snout pointed, shorter than the orbit; posterior portion of the head with large shields; carapace elevated and rounded; vertebrales with a strong keel which transforms into a spinous process at the posterior margin of the third shield; fifth vertebral broader than the rest; nuchal Shield short-sided in front; plastron with a pair of gular, humeral, axillary, pectoral, abdominal, inguinal, femoral and anal shields; limbs with fully webbed digits and with transversely enlarged scales.

Olive above, with minute black spots and orange or reddish vertebral stripe in the young; markings fade out in the adult; reddish, yellowish or reddish yellow beneath with large black spots; head and neck black with thin yellow longitudinal lines on the neck; limbs with yellow spots.

Total length: 230 mm.

Distribution: Khasi and Garo Hills, Meghalaya; Assam; the river systems of Ganga, Brahmaputra and Sind of India and Pakistan.

Remark: The females reach a maximum of 230 mm., males are much smaller than females.

Genus Melanochelys Gray 1869


**Diagnostic Characters:** Second neural plate octagonal, the succeeding ones broader anteriorly; plastron extensively united to the carapace by suture, with short axillary and inguinal buttresses which reach to the outer margin of the costals.

8. *Melanochelys tricarinata* (Blyth 1856)

Three-keeled Tortoise


**Diagnostic Characters:** Head moderately small, snout shorter than the orbit, truncate; carapace elongated, with three obtuse keels; vertebrals narrower than costals; plastron generally without the inguinal shields, limbs with half webbed fingers and toes with rudimentary webs.

Dark brown above with light brown keels; yellowish brown beneath, a broad red stripe on either side of the head and another one below the angle of the mouth; limbs with or without yellow spots.

**Total length:** 170 mm.

**Distribution:** Garo Hills, Meghalaya; Arunachal Pradesh; Assam; Bihar; West Bengal.

**Family 2 TESTUDINIDAE**

**Genus Geochelone Fitzinger**

*Testudo* Linnaeus, *Syst. Nat.ed.10.* 1758, p. 197

*Geochelone* Fitzinger, Tikader and Sharma, 1985 *Handbook: Indian Testudines*, pp. 156

**Diagnostic Characters:** Neural plates hexagonal, shortsided behind; plastron extensively united with the carapace by sutures; hind limbs club shaped, covered with enlarged bony scales; digits not webbed.

**Key to the Species of Geochelone Fitzinger**

1. Carapace convex, dome shaped; supra oculars paired; 25 marginals including the nuchal and supra caudals. ............................................................................................................\emys

Carapace flattened on the vertebral region; supra caudal single; 23 marginals including the nuchal and supra caudal. ............................................................................................................\elongata

9. *Geochelone elongata* (Blyth 1853)

Yellow-headed Tortoise


*Geochelone elongata* (Blyth), Tikader and Sharma, 1985, *Handbook Indian Testudines*, pp. 156

**Diagnostic Characters:** Head moderate; dorsally with shields; carapace elongate, narrow, flattened on the vertebral portion; vertebrals five, as broad as the costals. costals four, supracaudal single, forelimbs with large pointed scales; heels with large flat scales.
Yellow or greenish yellow above, with black markings.

Total length: 270 mm.

Distribution: Khasi, Garo and Jaintia Hills. Meghalaya; Assam; Arunachal Pradesh; Bihar; Manipur; Mizoram; Nagaland; Tripura, West Bengal. Kampuchia, Laos; Malaysia, Myanmar; Thailand and Vietnam.

10. *Geochelone emys* (Schlegel & Muller, 1844)

Yellow and Black Giant Tortoise

*Testudo emys* Schlegel and Muller, in *Temminck, Verh. Nat, Ned. Ind. Rept.* 1844, p. 34


Material examined: 1 ex, India, Meghalaya, West Khasi Hills, Ranikor 10.ii.87, Coll. V. T. Darlong.

Diagnostic Characters: Head massive, covered with large symmetrical shields; carapace convex and dome shaped, depressed on the vertebral region in juveniles but elevated in adults; five vertebrals, as broad or slightly broader than the costals; costals four; plastron sometimes longer than carapace owing to the extended gular shields; pectoral shields usually wide apart; inguinals large, often divided into two; forelimbs with five and hind limbs-with four claws; adults with a greatly enlarged conical scute on the back of the thigh.

Dark brown or black above, head and limbs black.

Total length: 470 mm

Distribution: West Khasi Hills, Meghalaya; Assam; Manipur; Mizoram; Nagaland; Tripura. Bangladesh; Borneo; Malaysia; Myanmar; Sumatra and Thailand.

Remarks: It is the largest of the Asiatic land tortoises.

Family 3 TRIONYCHIDAE

Key to the genera of the family Trionychidae.

1. Plastron with soft, semicircular flaps to conceal the retracted hindlimbs................. *Lissemys*

P lastron without skin flaps ............................................................................................................... *Trionyx*

Genus *Lissemys* Smith 1933


Diagnostic Characters: Nuchal bone boat shaped; eight pairs of costals, plastron with a cutaneous femoral valve which conceals the hind limbs.
A single species reported in Meghalaya.

11. *Lissemys punctata punctata* (Lacepede 1788)
   North Indian Flap shelled turtle. (Col. Photo.2)


*Material examined*: lex, India, Meghalaya, West Khasi Hills, Ranikor, 9.ii.87. Coll. V.T. Darlong.

*Diagnostic Characters*: Head moderate; snout short and broad, carapace and plastron covered by a continuous sheet of soft skin; plastron with soft semicircular flaps, which conceals completely the retracted hind feet, limbs fully webbed and with three claws.

Olive brown above with irregularly arranged black-edged yellow spots.

*Total length*: 240 mm.

*Distribution*: West Khasi Hills, Meghalaya; Assam; Andaman Islands; the Ganga and Sind river systems; Sikkim; West Bengal. Bangladesh; Myanmar; Nepal; Pakistan; Sri Lanka.

**Genus *Trionyx* Geoffroy 1809**


*Diagnostic Characters*: Normally eight pairs of costals, eight neurals and dorsals; limbs with three claws; proboscis as long as the diameter of the eye.

12. *Trionyx hurum* Gray 1831
   Peacock-marked soft shelled turtle.

*Trionyx hurum* Gray *Syn. Rept.* 1831, p. 47.


*Diagnostic Characters*: Head large, snout longer than the orbit; carapace pitted and vermiculated; nuchal shield absent.

Olive-Green above with four striking ocelli and black reticulations; head dark green with yellow spots; a pale yellow spot across the snout; plastron ivory white.

*Total length*: 600 mm

*Distribution*: Garo Hills, Meghalaya; Assam; Lower reaches of Ganga and Brahmaputra.
DISTRIBUTION OF TESTUDINES IN MEGHALAYA

1. *Hardella thurgi* (Gray) + + –
2. *Kachuga dhongoka* (Gray) + + +
3. *K. sylhetensis* (Jerdon) + + –
4. *K. tecta* (Gray) + + –
5. *Geoclemys hamiltoni* (Gray) – + –
6. *Cyclenl)'s dentata* (Gray) + + –
7. *C. mouhoti* Gray – + –
8. *Melanochelys tricarinata* (Blyth) – + –
9. *Geochelone elongata* (Blyth) + + +
10. *G. emys* (Schlegel and Muller) + – –
11. *Lissem)'s punctata punctata* (Lacepede) + – –
12. *Trionyx hurum* Gray – + –

N.B.
+ = Occurrence
Non occurrence

Order - II SQUAMATA
Sub-Order - (i) SAURIA

Key to the families of Sauria
1. Limbs present
Limbs absent Anguidae

2. Head shields symmetrical
Head shields asymmetrical 4

3. Femoral pores present Lacertidae
Femoral pores absent Scincidae

4. With femoral or preanal pores Agamidae
Without femoral or preanal pores

5. Dorsally with granules or imbricate scales Gekkonidae
Dorsally with roundish or oval scales surrounded by rights of granules Varanidae
Family 4 Gekkonidae  

Key to the genera of Gekkonidae

1. Digits dilated.................................................................................................................. 2
   Digits not dilated, angularly bent forming an apical and basal portion...................... 3

2. Dorsal scales granular or tubercular................................................................................ 4
   Dorsal scales imbricate................................................................................................... 4

3. Pupil vertical.................................................................................................................... 3
   Pupil round................................................................................................................... 3

4. A cutaneous expansion along the side of the body.......................................................... Cosymbotus
   No cutaneous expansion............................................................................................... 5

5. Sub digital lamellae divided.......................................................................................... Hemidactylus
   Sub-digital lamellae undivided..................................................................................... Gekko

Genus Cyrtodactylus Gray.

Cyrtodactylus Gray, Phil. Mag. (2) ii. 1827, p. 55
Gymnodaetys Spix, Smith, 1935, Fauna of British India, II Sauria, pp 1 440

Diagnostic Characters: Digits clawed, beneath with a row of distinct transverse plates; eye with vertical pupil; two or 3 pairs of postmentals.

13. Cyrtodactylus khasiensis (Jerdon)


Diagnostic Characters: Snout longer than the distance between the eye and the ear opening; 10 to 12 upper and as many lower labials; body and limbs above with small granular scales, intermixed with larger tubercles; a lateral fold of enlarged scales, belly with rounded imbricate scales, 30 to 40 across the middle; tail covered with small flat scales, those on the median line below larger than the others, a dorsal series of enlarged tubercles on the basal part; Male with an angular series of 8 to 14 preanal pores.

Light brown or greyish brown above with dark spots or markings more or less regularly arranged; head with brown spots; tail with brown bands; belly whitish.
Length: Snout to vent 59 mm, tail 67 mm.

Distribution: Khasi and Garo Hills, Meghalaya; Assam; West Bengal. Myanmar.

Genus Cnemaspis Strauch

Cnemaspis Strauch, Smith, 1935, Fauna of British India II. pp. 1440.

Diagnostic Characters: Digits clawed; pupil round; body depressed, tail cylindrical.


Diagnostic Characters: Snout obtusely pointed; 8 to 10 upper and 7 or 8 lower labials; mental broader than the rostral; back with small uniform scales, intermixed on the flanks with a few spine-like white tubercles, ventral scales smooth, imbricate and rather large; digits moderately elongate, subdigital lamellae large and few in number; tail covered above with small imbricate scales and a regular series of slightly larger pointed tubercles; below with a median series of larger scales; males with 5 to 15 femoral pores on each side.

Greyish-brown above, clouded with darker; the small lateral spines white; a black spot on the nape may or may not be present; dirty white below.

Length: Snout to vent 28 mm, tail 30 mm.

Distribution: Garo Hills, Meghalaya; Western Ghats. Sri Lanka.

Remarks: Smith (1935) recorded it from South India and Sri Lanka. Since the genus as a whole has a South Indian distribution, the occurrence of C. jerdoni in Meghalaya is interesting. The only specimen studied from Meghalaya has 11 pairs of femoral pores on each side and 6 preanal pores.

Genus Teratolepis Gunther


Teratolepis Gunther, Smith, 1935, Fauna of British India-II pp. 1440

Diagnostic Characters: Digits moderately dilated; free, with transverse lamellae beneath, the anterior ones mesially notched; dorsal scales imbricate, pointed, much larger than the ventral scales; tail covered with extremely large imbricate scales; pupil vertical.

15. Teratolepis fasciata (Blyth)

Homonota fasciata Blyth, J. Asiat. Soc. Beng. XXII 1853, P. 468

**Diagnostic Characters**: Snout obtusely pointed; 8-10 upper and 7-8 lower labials; 3 pairs of postmentals, the inner pair largest; gular scales small, flat, granular; head covered above with large polygonal scales; neck and back with imbricate pointed, keeled scales; twice as large as the ventral scales; tail depressed, constricted at base, and suddenly swollen, tapering to a point, covered with large, leaf-like scales; digits with undivided lamellae, 8-9 under the 4th toe. Male with 6 pre anal pores.

Light greyish-brown above, with five longitudinal dark brown dorsal stripes, crossed at regular intervals by six rows of large whitish spots; a whitish transverse band on the occiput and another curved, infront of it; tail brown with whitish cross-bands; below speckled with brown.

**Length**: Snout to vent 40 mm; tail 27 mm.

**Distribution**: Khasi Hills, Meghalaya.

**Remarks**: This species is represented by few examples with doubtful locality records. Smith (1935) records it from Shillong in the Khasi Hills, which is also doubtful.

I have not seen this species.

**Genus Cosymbolus** Fitzinger 1843

*Platyurus* Oken, Allgem. Naturgesch vi. 1836, p. 641


**Diagnostic Characters**: Digits webbed, with divided lamellae beneath, a cutaneous expansion along the side of the body, pupil vertical, males with preanal and femoral pores.

16. **Cosymbolus platyurus** (Schneider)


**Cosymbolus platyurus** (Schneider). Ahmed and Dasgupta, 1991 *Fauna of West Bengal 2*, pp. 1-65. (in press)


**Diagnostic Characters.**

: lit? 13 upper labials, 8 to 10 lower labials; 2 pairs of postmentals, the inner pair largest; a pair of internasal, usually with a scale between them; head covered above with minute granular scales, largest upon the snout, back with uniform small granular scales; belly with smooth, imbricate, rounded scales; a cutaneous expansion along the sides of the body and hind limb; digits partly webbed; 5 to 8 pairs of lamellae under the 4th toe; Tail strongly depressed with sharply denticulated margin; covered above with small scales and below with larger ones and a series of transversely enlarged plates; Males with a continuous series of about 13 to 20 preanal and femoral pores. Gray above, marbled and spotted with darker, a vertebral series of paired spots often present; tail with dark cross bands.

**Length:** Snout to vent 64 mm, tail 67 mm.

**Distribution:** Khasi, Garo and Jaintia Hills, Meghalaya; Arunchal Pradesh; Sikkim; West Bengal. Formosa; Hong-Kong; Indo.China; Nepal; Sri Lanka.

**Remarks.:** In one of the specimens dark spots were arranged in 5 longitudinal series along the back. A maximum number of 43 preanal-femoral pores were also observed in another specimen.

**Genus** *Hemidactylus* Oken

*Hemidactylus* Oken, *Isis*, 1817, p. 1183


**Diagnostic Characters.** : Digits strongly dilated with transversely divided lamellae beneath, terminal phalanges compressed, free or united with the expanded portion; inner digit well developed with free clawed, terminal phalanges; pupil vertical, males with preanal and or femoral pores.
Key to the species of Hemidactylus Oken

1. Enlarged dorsal tubercles numerous, arranged in regular longitudinal series ............... brooki

   Enlarged dorsal tubercles, if present, smooth, rounded and not regularly arranged........ frenatus

17. Hemidactylus frenatus Schlegel


   Material Examined: 4 ex : lex, India, Meghalaya, Jaintia Hills, around Sonapur IB, 27.viii.74, Coll. A. R. Lahiri, 2 ex, East Garo Hills, Damra Rest House, 23.xi.73, Coll. S. Biswas; lex. East Garo Hills, Songsak Reserve forest, 16.iv.73, Coll. S. Biswas.

   Diagnostic Characters: Snout obtusely pointed; 10-12 upper and 8 to 10 lower labials; 2 pairs of well developed postmentals of nearly equal size; gular region with small granular scales; hinder part of the head covered with small granules, snout with larger ones, back with small granules intermixed with rounded or conical tubercles; these enlarged tubercles vary considerably in number and may be absent altogether; belly with smooth, rounded, imbricate scales; 9 to 10 lamellae under the 4th toe; tail covered above with small scales and a series of six enlarged pointed tubercles arranged in regular rows; below with a median series of transversely enlarged scales. Males with a continuous series of about 26-36 preano-femoral pores.

   Greyish or pinkish brown above, sometimes quite darker, with indistinct darker markings sometimes arranged as longitudinal stripes; a dark line along the side of the head and a light one above it usually present; whitish below; tail sometimes coral red.

   Length: Snout to vent 60 mm, tail 65mm.

   Distribution: Garo and Jaintia Hills, Meghalaya; Assam; Manipur; Southern India; Tripura; West Bengal; Hajnai; Hong-Kong; Indo China; Malay Peninsula; Sri Lanka; Australia; Africa; St. Helena; Yunnan.

   Remarks: As observed by Smith (1935) there are variations in number and position of the tubercles in this species.

18. Hemidactylus brooki Gray

   House - Gecko


   Material examined: 13 ex : lex, India, Meghalaya, West Garo Hills, Anogre IB, 8.xi.73, Coll. S. Biswas; lex, West Garo Hills, Tebangiri, 11.xi.73, Coll. s. Biswas; 5 ex, West Garo Hills, Anogre, 8.xi.73, Coll. S. Biswas; lex, East Garo Hills, Songsak IB, 17.xi.73, Coll. S. Biswas; lex, East Garo Hills, Darugiri Rest House compound, 10.iv.73, Coll. R .S. Pillai; 2aex, West Garo Hills, Anogre forest, 21.Φ 75, Coll. S. Biswas; lex, East Garo Hills, Selbalgiri, 25.ii. 75, Coll. S. Biswas; lex, East Garo Hills Songsak reserve forest, 14.iv.73, Coll. S. Biswas.
Diagnostic Characters: Snout obtusely pointed; 8-10 upper and 7–10 lower labials; 2 pairs of postmentals, the inner pair elongate and larger than the outer; Snout covered with small scales, hinder part of head with small granules and larger rounded tubercles; back with small granular scales and conical tubercles arranged in from 16 to 20 more or less regular longitudinal rows; belly with smooth scales; 7-10 lamellae under the 4th toe; tail depressed, covered above with small scales and a series of 6-8 long pointed tubercles, below with imbricate scales and a median series of transversely enlarged plates; Males with 7–16 preanal femoral pores on each side, usually interrupted mesially.

Light brown or greyish above, with dark brown spots; a dark streak along the side of the head.

Length: Snout to vent 58 mm, tail 76 mm.

Distribution: Garo Hills, Meghalaya; Assam; Arunachal Pradesh; West Bengal; the whole of India. Sri Lanka.

Genus Gekko Laurenti

Gekko Laurenti, Syn. Rept. 1768 p.43


Diagnostic Characters: Digits free or partly webbed with undivided transverse lamellae beneath; terminal phalanges of outer four digits slender, compressed, clawed, attached to the dilated portion; inner digit well developed, clawless; dorsal scales small, uniform or inter mixed with larger tubercles; Males with pre-anal and femoral pores.

19. Gekko gecko (Linnaeus)

Tokay

(Col. Photo 5)

Lacerta gecko Linnaeus, Syst. Nat. ed. 10, 1758, p.205


Material examined: 3 ex: lex, India, Meghalaya, East Garo Hills, Darugiri IB, 10. iv. 71, Coll. S. Biswas; lex, East Garo Hills, Selbalgiri, 23.i.87, Coll. J. P. Sati.

Diagnostic Characters: 12-14 upper and 10-12 lower labials; 4-5 pairs of postmentals; gular region with small flat granules; head covered above with small polygonal scales, back with small scales intermixed with larger tubercles arranged in about 12 longitudinal series; 20-23 lamella under the 4th toe; tail covered above with subquadrangular smooth scales and regular rows of large conical, tubercles; below with large, flat smooth scales, the medin ones of which are larger than the others; Males with 10-24 preanal pores. Violet grey above, spotted all over with brick red and whitish grey (in the young, these whitish spots form transverse bands); tail with alternating bands of olive-brown and staty-grey; below whitish with small pinkish spots.

Length: Snout to vent: 125 mm, tail 90 mm.

Distribution: Garo Hills, Meghalaya; Andamans; Bihar; Mizoram; Tripura; West Bengal. China; Indo-China; East India Archipelago; Malay Peninsula.
Family 5 AGAMIDAE

Key to the genera of Agamidae

1. Three parallel longitudinal folds on each side of the throat. ...................... *Ptyctolaemus*
   No folds on the throat ....................................................................................... 2.

2. Dorsal scales equal-sized, regularly arranged ................................................. *Calotes*
   Dorsal scales unequal ...................................................................................... 3

3. A postorbital spine present .............................................................................. *Oriocalotes*
   Postorbital spine absent ................................................................................ *Japalura*

Genus *Ptyctolaemus* Peters


Diagnostic Characters: Dorsal scales unequal, keeled; tympanum hidden.

20. *Ptyctolaemus gularis* Peters

(Col. Photo 8)


**Diagnostic Characters.** Canthus rostralis and supraciliary edge sharp; dorsal scales unequal, the smaller feebly and the larger strongly keeled; ventrals as large as the dorsals, strongly keeled and mucronate.

Olive brown or light yellowish-brown above, with darker transverse bars or spots; two curved dark brown cross bars, separated by a light one between the eyes; a dark stripe from below the eye to the angle of the mouth; a light yellow stripe starting from behind the head, continues along the flank to half its length; Limbs and tail above with dark cross bars; flanks with pointed, yellowish, tubercles; yellowish white below, the folds on the throat dark blue.

**Length** : Snout to vent 90 mm, tail 185 mm.

**Distribution** : East Khasi Hills and Jaintia Hills, Meghalaya.

**Remarks** : This is the most common agamid found in Shillong especially during the warmer months Mathew (1982) observed that "the males of this species are capable of remarkable colour display. During breeding season, sexual dimorphism is clearly shown by males by the fully extended
throat with its conspicuous blue colour. A pale yellow (with a greenish tinge) longitudinal stripe, along the lateral sides commencing from a little behind the tympanum and extending to one third of the body is very distinct during this time"

Genus **Calotes** Rafinesque

*Calotes* Rafinesque. Anal. Nat. 1815. p.75


**Diagnostic Characters.** Dorsal scales uniform; a dorsal crest more or less developed; tympanum exposed; tail long and slender.

Key to the species of *Calotes* Rafinesque

1. An oblique fold or triangular pit covered with small granular scales present in front of the shoulder ................................................................. 2
   Fold or pit absent in front of the shoulder .......................................................... 3
2. Two parallel rows of compressed scales above the rympanum; colour green .................. *jerdoni*
   No parallel rows of scales; a postorbital spine present, colour brown .................. *emma*
3. Two separate spines above the tympanum, colour brown ........................................ *versicolor*
   Two parallel rows of compressed scales above the tympanum; colour green .................. *maria*

21. **Calotes jerdoni** Gunther,


**Diagnostic Characters.** 45 to 55 scales round the body; gular scales larger than the ventral.

Green above, with light yellow, orange or brown markings. A light dorso-lateral stripe and another from elbow to the hand usually present; body with light vertical bars; limbs and tail with light spots; dark streaks radiating from the eye; the fold in front of the shoulder black.

**Length**: Snout to vent 105 mm; tail 290 mm.

**Distribution**: Khasi Hills, Meghalaya. Myanmar; Yunnan.

### 22. *Calotes emma* Gray

*Calotes emma* Gray, *Cat. Liz. Brit, Mus.* 1845, p. 244


**Material examined**: 1 ex, India, Meghalaya, Garo Hills, Dainadubi forest, 14.iv.71, Coll. R. S. Pillai.

**Diagnostic Characters.** A spine at the end of the superciliary edge and two more on the occiput, between the tympanum and the nuchal crest.

Olive brown above; a white dorso-lateral broad line starting from the upper labials to above the forelimb; throat brilliant deep peacock blue; light brown below; limbs and tail with brown/black transverse bands or stripes.

**Length**: Snout to vent 115 mm, tail, 290 mm.

**Distribution**: Garo Hills, Meghalaya; Assam; Manipur. French Indo-China; Malay Peninsula; Myanmar; Pulo Condore; Siam; Yunnan.
23. *Calotes versicolor* (Daudin)


*Diagnostic Characters* : Two well separated spines on each side of the back of the head above the ear; dorsal scales larger than the ventrals; pointing backwards and upwards; 35-58 round the body.

Light brown or greyish above, uniform or with more or less distinct dark brown transverse spots or bars upon the back and sides; dark streaks radiating from the eye; young and females often with two light dorsolateral stripes; tail with light and dark annuli.

*Length* : Snout to vent 105 mm; tail 275 mm.

*Distribution* : The whole of India; Andamans. Indo-Chinese sburegions; Afghanistan; China, Hainan; Hong-Kong; Malay Peninsula; Sri Lanka; Sumatra.

24. *Calotes maria* Gray

*Calotes maria* Gray, *Cat. Liz. Mus.* 1845, p. 243


*Diagnostic Characters* : Dorsal scales larger than the ventrals; pointing backwards and upwards; 53 to 63 round the body; two parallel ridges of compressed, more or less spinous scales above the tympanum, the upper ridge continuous with the supraciliary edge, the lower ridge separated from the tympanum by 4 or 5 small scales.
Green above with pale streaks and spots; usually several oblique stripes upon the flank and elongated or rounded spots upon the limbs and tail.

*Length*: Snout to vent 120 mm; tail 370 mm.

*Distribution*: Khasi Hills, Meghalaya.

*Remarks*: Not collected or observed by me.

**Genus Oriocalotes** Gunther

*Oriocalotes* Gunther, *Rept. British India*, 1864, p. 146


**Diagnostic Characters**: A dwarfed Calotes; differing from *Calotes* in having unequal dorsal scales; dorsal crest not well developed; no gular sac.

A single species.

25. *Oriocalotes paulus* Smith


*Oriocalotes paulus* nom. nov. Smith, *Fauna British India. II. Sauria*; 13 : 1935, p. 106

**Diagnostic Characters**: A post orbital spine and two more above the ear, the upper and anterior one midway between the nuchal crest and the tympanum; tympanum exposed or concealed by scales; 7 to 9 upper and as many lower labials; dorsal scales strongly keeled, unequal, the larger ones mostly confined to the sides, not markedly differentiated from the smaller ones; the upper scales point backwards and upwards, the lower straight backwards; ventrals smaller than dorsals, strongly keeled and mucronate; a more or less distinct fold in front of the shoulder covered with small granular scales; nuchal crest composed of 8 or 10 short separated spines, dorsal crest a mere denticulation.

Pale brownish-olive, with dark brown spots or marblings, often forming irregular cross-bars; usually dark bars on the forehead, and one from the eye to the angle of the mouth; light brown below; the throat with dark transverse streaks.

*Length*: Snout to vent 70 mm; tail 130 mm.

*Distribution*: Khasi Hills, Meghalaya; Sikkim.

*Remarks*: Not observed by me.

**Genus Japalura** Gray


**Diagnostic Characters**: An oblique fold in front of the shoulder covered with small seals, sometimes extending across the throat; tympanum concealed or exposed; dorsal scales unequal.

26. *Japalura planidorsata* Jerdon


**Diagnostic Characters**: Tympanum concealed; Occiput with numerous spinose tubercles; body subquadrangular, the back bordered on each side by a ridge of scales and crossed at intervals by 6 or 7 V-shaped series of similar scales or subtrihedral tubercles; flanks with numerous enlarged, scattered, strongly keeled scales; Ventralis strongly keeled; a short fold in front of the shoulder; tail compressed.

Yellowish-brown or brown above, lighter below; a more or less distinct series of dark streaks across the back, corresponding in position to the angular series of scales, upper lip light yellow.

**Length**: Snout to vent 50 mm; tail 90 mm.

**Distribution**: Khasi and Garo Hills, Meghalaya; Assam.

**Remarks**: Not studied by me.

**Family 6 SCINCIDAE**

**Key to the genera of Scincidae**

1. Supra nasals absent................................................................. *Sphenomorphus*
   Supranasals present, limbs well developed........................................... *Mabuya*

**Genus Sphenomorphus Fitzinger**


**Diagnostic Characters**: Head shields distinct, no supranasal; ear opening distinct.

**Key to the Species of Sphenomorphus Fitzinger**

1. The adpressed limbs overlap ...........................................................................2
   The adpressed limbs do not overlap.............................................................. *courcyanum*

2. Rostral convex......................................................................................... *indicum indicum*
   Rostral concave........................................................................................... *maculatum*

27. *Sphenomorphus courcyanum* Annandale


**Diagnostic Characters**: Rostral in contact with the fronto-nasal, prefrontals in good contact with one another, frontal shorter than the fronto-parietals and inter-parietals together; parietals in contact with one another behind the inter-parietal; no nuchals; two loreals, the posterior triangular in shape, its apex downwards; 7 upper labials; ear opening with smooth border all around; body scales smooth, 26 scales round the middle of the body; a pair of enlarged preanals; tail thick at the base.
Brown above, with darker spots; a dark brown dorsolateral stripe edged above by a light one present; flanks speckled with brown; whitish below.

**Length**: Snout to vent 54 mm; tail 36 mm.

**Distribution**: Khasi Hills, Meghalaya; Assam.

**Remarks**: Mathew (1982) recorded this species for the first time from North East India and observed the following: "Distance between the end of the snout and forelimb contained 2 times in the distance between axilla and groin. Prefrontal not in contact with one another. 70 scales down the middle of the back. Limbs short, far apart when adpressed. Total length from snout to vent 54 mm, tail 36 mm. This specimen has an abnormal foot with only a single free digit. The other digits are not differentiated and the sole ends in a conical mass"

28. *Sphenomorphus indicum indicum* (Gray)


Diagnostic Characters: Rostral in broad contact with the frontonasal; prefrontals separated from one another; frontal as long or longer than the fronto-partietal and interparietal together, the latter not separating the parietals posteriorly; four large supra oculars followed by two very small ones; ear opening may or may not with few granules on the anterior border; tympanum deeply sunk; seven supralabials; 30 to 39 scales round the middle of the body; a pair of enlarged preanalts; 16-22 keeled lamellae beneath the 4th toe; palm and sole covered with conical tubercles.

Brown above, uniform or with small brown or black spots usually arranged in longitudinal lines; a dark brown or black stripe along the sides of the head, body and tail, clearly defined above, where it is edged with whitish; the lower edge may be broken into spots.

Length: Snout to vent 92 mm; tail 107 mm.

Distribution: Khasi and Garo Hills, Meghalaya; Andaman & Nicobar Islands; Sikkim; West Bengal. China; Hainan; Indo-China; Malay Peninsula; Tibet.

29. Sphenomorphus maculatum (Blyth)


Mawpathar, 35 Km after Nongstoin towards Sonapahar 30.x.86, Coll. C. Radhakrishnan; 3 ex, West Khasi Hills, 10 Km. South West of Nongstoin on Syrkon Road, 29.i.87, Coll. K.P. Singh.

**Diagnostic Characters**: Rostral flat or concave, in contact with the fronto-nasal; prefrontals separated from one another; frontal as long or longer than the fronto-parietals and interparietals together, the latter not separating the parietals behind; 7 upper labials; 38 to 42 scales round the middle of the body; a pair of large preanals; tail almost twice the length of the body; 16-22 keeled lamellae under 4th toe; palms covered with conical tubercles, on the soles of the feet they are confined to the inner and posterior part.

Brown above with small light spots and two median series of small black spots; a dark brown or black lateral band more or less spotted with white and usually edged below with white extends the length of the body; lower parts of the flanks more or less thickly speckled with black and white; tail a lighter shade; whitish below.

**Length**: Snout to vent 65 mm; tail 107 mm.

**Distribution**: Khasi, Garo and Jaintia Hills, Meghalaya; Assam; Mizoram; Nagaland; West Bengal; Andaman and Nicobar Islands. Annam; Cambodia; Myanmar; Siam; Yunnan.

**Genus** *Mabuya* Fitzinger.


**Diagnostic Characters**: Eyelids movable, the lower with or without a more or less transparent disc. tympanum more or less deeply sunk.

**Key to the species of Mabuya Fitzinger**

1. A post nasal present........................................................................................................2
   Post nasal absent...........................................................................................................carinata

2. 28 to 30 scales round the body; dorsals with 5, 7 or 9 strong keels; 12 to 17 lamellae under the 4th toe ............................................................macularia
   30 to 34 scales round the body, dorsals with 3 or 5 keels; 17 to 23 lamellae under the 4th toe.......
   ...........................................................................................................multifasciata

30. *Mabuya carinata* (Schneider)

*Scincus carinatus* Schneider, *Hist. Amphib. ii*. 1801, p. 183,


**Diagnostic Characters**: Supranasals separated from or just touching one another; prefrontals usually in contact with one another; a pair of nuchals; ear opening subcircular, with short pointed lobules anteriorly; 14 to 18 lamellae under the 4th toe.
Brown or bronzy above, uniform or with dark brown or black spots or longitudinal streaks along the lateral margins of the scales; sides darker with or without light spots; a light dorso-lateral line starting from above the eye and continued to the base of the tail usually distinct; a second white line starting from the upper lip and passing along the side of the flank to the groin present or absent.

Length: Snout to vent 125 mm; tail 165 mm.

Distribution: Khasi Hills, Meghalaya; Mizoram; West Bengal; Indian Peninsula. Sri Lanka.

Remarks: No material studied from Meghalaya.

31. Mabuya macularia (Blyth)


Diagnostic Characters: Supranasals separated from one another; pre-frontals separated from one another or just touching one another; a pair of nuchals and a post nasal may or may not be present; 28 to 30 scales round the body; dorsals with 7 or 9 distinct keels.

Brown above. with a broad, dark brown vertebral stripe, edged on either side with black, or the stripe may be broken up into a series of elongate spots; flanks dark brown, usually spotted with white.

Length: Snout to vent 75 mm; tail 82 mm.

Distribution: Khasi and Garo Hills, Meghalaya; Assam; Bihar, Orissa, Uttar Pradesh; West Bengal. Annam; Cambodia; Malay Peninsula; Myanmar; Siam.

32. Mabuya multifasciata multifasciata (Kuhl)


Diagnostic Characters: Supranasals separated from or just touching one another; prefrontals usually in contact with one another; a pair of nuchal, a post nasal; ear opening subcircular with small, pointed lobules anteriorly; 30-34 scales round the middle of the body; dorsals with 3 or 5 keels.
Brown or olive brown above, uniform or with dark brown or black longitudinal spots or streaks along the lateral margins of the scales; flanks dark-brown or black, with or without white black edged spots; a pale dorsolateral line often present; upper head scales often margined with black; whitish below.

Length: Snout to vent 116 mm; tail 220 mm.

Distribution: Jaintia and Garo Hills, Meghalaya; Assam; Manipur; Nagaland; Nicobar Island; West Bengal. East Indies; Hainan; Malay Peninsula; New Guinea; Pulo Condore; Tongking; Yunnan.

Family 7 LACERTIDAE
Genus Takydromus Daudin

Takydromus Daudin, Hist. Nat. Rept. iii. 1802, p. 251


Diagnostic Characters: Body dorsally with large, strongly keeled plates which form continuous lines; ventral plates large, imbricate, the outer always keeled; 3 pairs of submaxillary shields, the first 2 pair in contact with their fellows.

Key to the species of Takydromus Daudin
Scales on the flanks granular; 7 to 10 in a vertical series................................. sexlineatus sexlineatus
Scales on the flanks pointed, 3 to 5 in a vertical series................................. sexlineatus khasiensis

33. Takydromus sexlineatus khasiensis Boulenger


Diagnostic Characters: Fronto-nasal broader than long; scales on the flanks large, pointed, keeled, bordered above and below by larger strongly keeled scales, 3 to 5 small scales in a vertical series between the larger ones; 2 or 3 femoral pores on each side.

Green or greenish-brown above with metallic glow; a light dorso-lateral stripe, bordered above and below with black spots, from the eye to the base of the tail; a black streak along the side of the head through the ear, and along the flank to the hind-limb. Lower parts greenish-white.

Length: Snout to vent: 53 mm, tail 160 mm.

Distribution: Khasi Hills, Meghalaya; Assam. Myanmar.

34. Takydromus sexlineatus sexlineatus Daudin

Takydromus sexlineatus Daudin, Hist. Nat. Rept. iii. 1802, p. 256.

*Material examined*: 1 ex, India, Meghalaya, Jaintia Hills, Myntru, 11.xii.63, Coll. A. S. Rajagopal.

*Diagnostic Characters*: Nasals in contact with each other behind the rostral, rarely separated by the fronto-nasal. Prefrontals in contact with each other; an indistinct collar; 17 to 24 gular scales on a line between submaxillary shields and collar; dorsal plates in 4 rows across the back; ventrals strongly keeled, in 10 longitudinal rows; 21 to 28 scales between collar and groin; a large preanal plate.

Males brown or greenish-brown above, with a metallic gloss; a light dorso-lateral stripe, usually bordered with black, starting from above the eye and extending on to the base of the tail; flanks with or without a series of white, black edged ocelli; upper head shields and upper parts of tail with small black spots; lower parts and upper lip greenish-white; females are a shade lighter with much indistinct dorso-lateral stripes and the ocelli on the flanks are absent.

*Length*: Snout to vent 54 mm; tail 145 mm.

*Distribution*: Jaintia Hills, Meghalaya, Myanmar; Sumatra; Java; Borneo

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Family 8 ANGUIDAE

Genus *Ophisaurus* Daudin


*Diagnostic Characters*: Without limbs; a lateral fold present; scales squarish-rhomboidal, forming straight longitudinal and transverse series.

35. *Ophisaurus gracilis* (Gray)

Burmese Glass Snake (Col. Photo 9)


**Diagnostic Characters:** Three shields in a line between nasal and prefrontal; five supraoculars; dorsal scales keeled, in 14 to 16 longitudinal and 88 to 94 transverse series; ventrals smooth in 10 longitudinal series; tail twice the length of head and body.

Light brown above with a darker lateral band and irregular transverse series of blue, black edged spots, imparting to it a bright blue-green metallic sheen in life; sometimes a series of vertebral spots; below pale brownish or yellowish.

**Length:** Snout to vent: 180 mm; tail 280 mm.

**Distribution:** Khasi and Jaintia Hills, Meghalaya; Assam; Eastern Himalayas, West Bengal; Myanmar.

**Family 9 Varanidae**

**Genus Varanus Merrem**


**Diagnostic Characters:** Head covered with small juxtaposed scales; back with roundish or oval scales, surrounded by rings of granules; ventral scales arranged in transverse series; a pair of preanal pores.

**Key to the species of Varanus Merrem**

1. Nostril nearer to the orbit than to the end of the snout.......................... *bengalensis*
   Nostril nearer to the end of the snout than to the orbit................................. 2

2. Nuchal scales larger than those on the crown of head, snout convex ............... *flavescens*
   Nuchal scales smaller than those on the crown of head, snout depressed............... *salvator*

36. *Varanus bengalensis* (Daudin)

Indian Monitor

(Col. Photo 10)


**Material examined:** 4 ex : 1 ex, India, Meghalaya, East Khasi Hills, Shillong, Laban, 21.xi.61, purchased; 1 ex, East Khasi Hills, Shillong, Umrisa near Crinoline view, 9.ii.70, Coll. Amster Lyngdoh; 1 ex, East Khasi Hills, Mylliem, 24.iv.72, Coll. A. Thalibah; 1 ex, East Garo Hills, Selbalgiri, 2.v.84, Coll. J. P. Sati.

**Diagnostic Characters:** Scales on the crown of the head larger than the nuchal scales; supra ocular scales small, subequal; abdominal scales smooth, in 90 to 110 transverse rows. Tail strongly compressed with a low double-toothed crest above; lateral caudal scales keeled.
Young dark olive, with numerous light spots or ocelli more or less transversely arranged and often alternating with dark spots or bar; top of head with light spots; lower parts whitish with narrow dark transverse bars which may be broken up into spots;

Adults brownish or olive above, usually with blackish dots; lower parts yellowish, uniform or mottled with black.

**Length**: Snout to vent 750 mm; tail 1000 mm.

**Distribution**: Khasi and Garo Hills, Meghalaya; the whole of India. Myanmar; Nepal; Pakistan; Persia; Sri Lanka.

37. *Varanus salvator* (Laurenti)

*Water Monitor*

*Stellio salvator* Laurenti, Sys. Rept. 1768 (based on Seba's Illustr. ii, pl. 88, fig. 2)


**Diagnostic Characters**: Snout depressed at the end; median supraoculars transversely enlarged; dorsal scales keeled; tail strongly compressed with a low double-toothed crest above.

Adults dark olive above with indistinct yellow spots; young with bright yellow rings on a dark skin.

**Total length**: Snout to vent 1000 mm; tail 1500 mm.

**Distribution**: Khasi and Garo Hills, Meghalaya; Andaman and Nicobar Islands; Assam; Orissa; Nagaland; West Bengal; Bangladesh. and Sri Lanka.

38. *Varanus flavescens* (Gray)

*Yellow Monitor*


**Diagnostic Characters**: Snout short, convex; nostril an oblique slit, a little nearer to the tip of the snout than to the orbit; abdominal scales smooth, in 65 to 75 transverse rows; tail strongly compressed with a low double-toothed crest above.

Young are dark brown above with yellow spots or bars. Colour fade as age advances and adults are banded with alternating transverse bars of reddish-brown and dirty yellow.

**Total length**: Snout to vent 365 mm; tail 465 mm.

**Distribution**: East Khasi Hills, Meghalaya; Andaman and Nicobar Islands; West Bengal. Australia; Bangladesh; China; East Indian Archipelago; Indo-China; Sri Lanka.
DISTRIBUTION OF SAURIA IN MEGHALAYA

<table>
<thead>
<tr>
<th>No.</th>
<th>Species</th>
<th>Khasi Hills</th>
<th>Garo Hills</th>
<th>Jaintia Hills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Cyrtoactylus khasiensis</em> (Jerdon)</td>
<td>+</td>
<td>+</td>
<td>-</td>
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<tr>
<td>2.</td>
<td><em>Cnemaspis jerdoni</em> (Theobald)</td>
<td>-</td>
<td>+</td>
<td>-</td>
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<tr>
<td>3.</td>
<td><em>Taratolepis fasciata</em> (Blyth)</td>
<td>+</td>
<td>-</td>
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<tr>
<td>4.</td>
<td><em>Cosmabotus platyrurus</em> (Schneider)</td>
<td>+</td>
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<td>+</td>
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<td>5.</td>
<td><em>Hemidactylus brooki</em> Gray</td>
<td>-</td>
<td>+</td>
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<tr>
<td>6.</td>
<td><em>H. frenatus</em> Schlegel</td>
<td>-</td>
<td>+</td>
<td>+</td>
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<tr>
<td>7.</td>
<td><em>Gekko gecko</em> (Linnaeus)</td>
<td>-</td>
<td>+</td>
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<tr>
<td>8.</td>
<td><em>Ptycholaemus gularis</em> Peters</td>
<td>+</td>
<td>-</td>
<td>+</td>
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<tr>
<td>9.</td>
<td><em>Calotes emma</em> Gray</td>
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<td>+</td>
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<tr>
<td>10.</td>
<td><em>C. jerdoni</em> Gunther</td>
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<tr>
<td>11.</td>
<td><em>C. maria</em> Gray</td>
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<td>+</td>
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<tr>
<td>12.</td>
<td><em>C. versicolor</em> (Daudin)</td>
<td>+</td>
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<tr>
<td>13.</td>
<td><em>Oriocalotes paulus</em> Smith</td>
<td>+</td>
<td>-</td>
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<tr>
<td>14.</td>
<td><em>Japalura planidorsata</em> Jerdon</td>
<td>+</td>
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<tr>
<td>15.</td>
<td><em>Sphenomorphus coureyanum</em> Annandale</td>
<td>+</td>
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<tr>
<td>16.</td>
<td><em>S. indicum indicum</em> (Gray)</td>
<td>+</td>
<td>+</td>
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<tr>
<td>17.</td>
<td><em>S. maculatum</em> (Blyth)</td>
<td>+</td>
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<td>+</td>
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<td>18.</td>
<td><em>Mabuya carinata</em> (Schneider)</td>
<td>+</td>
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<td>-</td>
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<tr>
<td>19.</td>
<td><em>M. macularia</em> (Blyth)</td>
<td>+</td>
<td>+</td>
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<tr>
<td>20.</td>
<td><em>M. multifasciata multifasciata</em> (Kuhl)</td>
<td>-</td>
<td>+</td>
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<tr>
<td>21.</td>
<td><em>Takydromus sexlineatus khasiensis</em> Boulenger</td>
<td>+</td>
<td>-</td>
<td>-</td>
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<tr>
<td>22.</td>
<td><em>T. sexlineatus sexlineatus</em> Daudin</td>
<td>-</td>
<td>0</td>
<td>+</td>
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<tr>
<td>23.</td>
<td><em>Ophisaurus gracilis</em> (Gray)</td>
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<td>+</td>
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<tr>
<td>24.</td>
<td><em>Varanus bengalensis</em> (Daudin)</td>
<td>+</td>
<td>+</td>
<td>-</td>
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<tr>
<td>25.</td>
<td><em>V. flavescens</em> (Gray)</td>
<td>+</td>
<td>-</td>
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<tr>
<td>26.</td>
<td><em>V. salvator</em> (Laurenti)</td>
<td>+</td>
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<td>-</td>
</tr>
</tbody>
</table>

NB.

+ = occurrence
- = non occurrence
Sub-Order (ii) SERPENTES

Key to the families of Serpentes

1. Eyes vestigial, covered by scales; body worm like .......................................................... Typhlopidae
   Eyes developed, exposed; body not worm like ................................................................. 2

2. Vestiges of hind limbs present ....................................................................................... Boidae
   Vestiges of hind limbs absent ....................................................................................... 3

3. Poison fangs absent in the front of the mouth .............................................................. Colubridae
   Poison fangs present in the front of the mouth ............................................................... 4

4. Head shields symmetrical ............................................................................................. Elapidae
   Head shields asymmetrical ............................................................................................ Viperidae

Family -10 TYPHLOPIDAE

Key to the genera of the family Typhlopidae

1. Suture of the nasal shield touching the preocular instead of the 2nd labial....Ramphotyphlops
   Suture of the nasal shield touching the 2nd labial ........................................................ Typhlops

Genus Ramphotyphlops Fitzinger 1843


39. Ramphotyphlops braminus (Daudin)
   Brahminy Blind Snake
   (Col. Photos 11 and 12)

Eryx braminus Daudin, 1803, Hist. Nat. Rept. vii, p. 27.


Diagnostic Characters : Snout rounded and strongly projecting; rostral 1/3 to 1/4 the breadth of the head; 20 rows of scales round the body; 290-320 transverse rows of scales.

Brown or blackish above, lighter below; snout, anal region and end of tail whitish.

Total length : 146 mm.
Distribution: Khasi and Garo Hills, Meghalaya; throughout India. Arabia; China; Hainan; Indo-China; Malay Peninsula; Persia; Sri Lanka.

Remarks: Common blind snake of the Oriental region, maximum length recorded is 170 mm.

Genus *Typhlops* Oppel

Blind Snakes


Diagnostic Characters: Head not distinct from neck; eyes vestigial; mouth inferior; tail short; worm like in appearance.

Key to the species of *Typhlops* Oppel

1. 22 Scales round the body ................................................................. 2
   24 or 26 scales round the body .......................................................... *diardi*
2. Breadth of rostral 1/4 to 2/5 that of the head; nasal completely divided .................. *jerdoni*
   Breadth of rostral 1/2 that of the head; nasal incompletely divided ..................... *tenuicollis*

40. *Typhlops diardi* Schlegel

Diard's Blind Snake

(Col. Photo, 13)


Diagnostic Characters: Snout rounded, strongly projecting; rostral 1/3 to 3/5 the breadth of the head; prefrontals in contact with the rostral; 24-26 or 28 scales round the body; 260-300 transverse rows of scales

Total length: 500 mm.
Distribution: Khasi and Garo Hills, Meghalaya; Assam; Nagaland; West Bengal. French Indo-China; Malay Peninsula and Archipelago; Myanmar; Siam.

41. *Typhlops jerdoni* Boulenger


Diagnostic Characters: Nostril lateral; snout strongly projecting; rostral narrow, its breadth 1/4 to 2/5 that of the head; nasal completely divided; eye very distinct; tail ending in spicule; 22 rows of scales round the body; 260-280 transverse rows of scales.

Dark brown or blackish above, light brown below; snout and anal region whitish.

Total length: 280 mm.

Distribution: Khasi Hills, Meghalaya; Assam; Sikkim; West Bengal.

42. *Typhlops tenuicollis* (Peters)


Material examined: 1 ex, India, Meghalaya, East-Garo Hills, Selbalgiri, 28.iv.88, Coll. V. T. Darlong and J. P. Sati.

Diagnostic Characters: Snout rounded, strongly projecting; rostral half as broad as the head, extending to the level of the occular shields; eye just distinguishable; supraocular twice as long; nasal incompletely divided, 22 scales round the body; 480-520 transverse rows of scales.

Total length: 320 mm.

Distribution: Garo Hills, Meghalaya; Nagaland.

Family 11 BOIDAE

Genus *Python* Daudin


Diagnostic Characters: Head distinct from neck; rostral, anterior upper labials and lower labials pitted; pupil vertical; scales in 60-75 rows; ventrals narrow; caudals paired.

43. *Python molurus* (Linnaeus)

(Col. Photo 14)


**Diagnostic Characters**: Rostral with a deep pit on either side; 2 pairs of prefrontals, the posterior pair smaller and often broken up; 2 pre and 3-4 post oculars; 11-13 upper labials, the first 2 deeply pitted; scales in 60-75 rows; ventrals 245-270; caudals 58-73, paired; Anal 1.

**Total length**: 1.2 meters

**Distribution**: Khari hills, Meghalaya; Arunachal Pradesh; Assam; Manipur; Mizoram; Nagaland; Tripura; West Bengal. Peninsular India; China; Hainan; Hong-Kong; Sri Lanka.

**Family - 12 COLUBRIDAE**

Key to the subfamilies of Colubridae

1. Mental groove present ........................................................................................................ 2
   Mental groove absent ........................................................................................................ Dipsadinae
2. Scales imbricate .............................................................................................................. Colubrinae
   Scales completely or almost completely attached to the cutis .................................. Xenoderminae

**Sub family** DIPSADINAE

**Genus** Pareas Wagler

Snail eating Snakes


**Diagnostic Characters**: Eye large with vertical pupil; scales in 15 rows; usually the first pair of genials largest, longer than broad, in contact with the mental or separated from it by the first pair of lower labials. A single species *monticola*, is represented in Meghalaya.

44. **Pareas monticola** (Cantor)

Assam Snail-Eater

(Col. Photo 27)

*Dipsas monticola* Cantor, 1839, *P.Z.S*. p. 53


**Material examined**: 3 ex : 1 ex, Meghalaya, East Khasi Hills, Malki forest, 4.xii.73, Coll. T. Deb & D. Endow; 1 ex, East Khasi Hills, Shillong, Nongthymmai, 3.iii.76, Coll. M.S. Jyrwa; 1 ex, East Khasi Hills, Upper Shillong, from an orchid plant, 7.v.87, Coll. Sandeep and Sanju.

**Diagnostic Characters**: Diameter of the eye greater than its distance from the mouth; prefrontals in contact with the eye; a subocular in contact with the loreal separate the anterior labials from the eye; 2 post oculars, the lower elongated and extending below the eye; 2 or 3 temporals; 6 or 7 upper labials. Ventrals 177-196; caudals 69-87, paired. Anal 1.
Brown above with transverse blackish bars on the sides; a black bar from above the eye to the nape, and another from behind the eye to the angle of the mouth; top of head more or less thickly spotted with black; yellowish below, dotted with brown.

*Total length*: 820 mm; tail 160 mm.

*Distribution*: Khasi Hills, Meghalaya; Assam; Sikkim; West Bengal.

*Remarks*: Common in the pine forests of Shillong.

**Key to the genera of Colubrinae**

1. Teeth solid, not grooved ....................................................................................................................... 2
   - Last two or three maxillary teeth grooved.......................................................................................... 3
2. Hypapophyses absent on the posterior dorsal vertebrae......................................................................... 4
   - Hypapophyses present throughout the vertebral column...................................................................... 5
3. Pupil round.................................................................................................................................................. *Chrysopelea*
   - Pupil not round..................................................................................................................................... 16
4. Maxillary teeth subequal............................................................................................................................ 6
   - Maxillary teeth unequal.......................................................................................................................... 7
5. Dentary bone attached loosely to the apex of the articular and freely movable on it..............
   ............................................................................................................................................................... *Sibynophis*
   - Dentary bone not or but slightly movable on the articular I................................................................. 10
6. Scales with apical pits................................................................................................................................. 8
   - Scales without apical pits......................................................................................................................... *Liopettis*
7. Posterior maxillary teeth longest............................................................................................................. 9
   - Some of the anterior maxillary teeth enlarged and fang like............................................................... *Lycodon*
8. Scales in 13 rows......................................................................................................................................... *Calamaria*
   - Scales in 19 to 27 rows.......................................................................................................................... *Elaphe*
9. 2 or 3 loreals............................................................................................................................................... *Ptyas*
   - A single loreal.......................................................................................................................................... *Oligodon*
10. Maxillary teeth equal or subequal............................................................................................................ 11
    - Maxillary teeth unequal........................................................................................................................... 12
11. Maxillary teeth equal ............................................................................................................................... *Xenochrophis*
    - Maxillary teeth subequal.......................................................................................................................... 13
12. Maxillary teeth gradually increasing posteriorly.................................................................................... *Pseudoxenodon*
    - Posterior two maxillary teeth abruptly and strongly enlarged, usually preceded by a diastema .. 15
13. A single internasal and prefrontal. ................................................................. \textit{Rhabdops}
Two internasals and 2 prefrontals. ..................................................................... 14

14. No loreal or preocular. .................................................................................. \textit{Blythia}
A loreal and a preocular present. ..................................................................... \textit{Trachischium}

15. Sulcus spermaticus forked ........................................................................ \textit{Rhabdophis}
Sulcus spermaticus simple ............................................................................ \textit{Amphiesma}.

16. Pupil horizontal. ......................................................................................... \textit{Ahaetulla}
Pupil vertical. .................................................................................................... 17

17. Vertebral row of dorsal scales enlarged .................................................. \textit{Boiga}
Vertebral row of scales not enlarged ............................................................... \textit{Psammodynastes}

Genus \textit{Liopeltis} Fitzinger


\textit{Diagnostic Characters}: Eye large with round pupil; scales smooth in 15 rows.
A single species, \textit{frenatus}, is represented in Meghalaya.

45. \textit{Liopeltis frenatus} (Gunther)

"Striped-neck" Snake

\textit{Cyclophis frenatus} Gunther, 1858, \textit{Cat. Col. Sn. Brit. Mus.} p. 120.


\textit{Diagnostic Characters}: Nostril lateral, in a long undivided nasal; loreal squarish or a little longer than high; 7 upper labials; 1 preocular; 2 post oculars; 1 loreal; ventrals 140-172; caudals 70-105, paired; Anal 2.

Olive above with longitudinal black or white lines on the the anterior half of the body; a black bar from the post oculars to neck covering temporal scales; labials white.

\textit{Total length}: 760 mm; tail 235 mm.

\textit{Distribution}: Khasi Hills, Meghalaya, Assam; Annam; Laos and Myanmar.

\textit{Remark}: An uncommon snake. I could study only a single specimen from the collections of St.Edmund's College, Shillong, which had 150 ventrals and 93 caudals. Unfortunately, the specimen did not have a collection data.
Genus *Elaphe* Fitzinger

Trinket Snakes


**Diagnostic Characters:** Scales in 19 to 27 rows, with paired apical pits.

**Key to the species of *Elaphe* Fitzinger**

1. Colour green .................................................. 2
   Colour not green .................................................. 3

2. A loreal present .................................................. *prasina*
   Loreal absent .................................................. *frenata*

3. Last labial in contact with the temporal ............................................. *radiata*
   Last labial not in contact with the temporal ............................................ 4

4. Scales in 19 rows .................................................. *porphyracea*
   Scales in more than 19 rows .................................................. 5

5. Scales in 21 rows .................................................. *cantoris*
   Scales in 23 rows .................................................. *hodgsoni*

**46. Elaphe prasina** (Blyth)

Green Tree Racer


**Material examined:** 6 ex; 1 ex, India, Meghalaya, East Khasi Hills, Shillong, Kenche's Trace, 3.vi.67, Coll. S. Biswas; 1 ex, East Khasi Hills, Shillong, Kenche's Trace, 15.v.67, Coll. S. Biswas; 1 ex, East Khasi Hills, Shillong, Maidan Laban, 17.iv.65, Coll. K. Khettri; 2 ex, East Khasi hills, Shillong, Laban, 11.ii.80, coll. R. Mathew; 1 ex, West Garo Hills, Selbalgiri, 8.x.88, Coll. J.P. Sati.

**Diagnostic Characters:** Scales in 19 rows; ventrals 191-209; caudals 91-111, paired; Anal 1; 9 upper labials; preocular 1; post ocular 2; temporals 2 + 2 or 2 + 3. Uniform green, the interstitial skin with black and white reticulations.

**Total length:** 960 mm; tail 350 mm.

**Distribution:** Khasi & Garo Hills, Meghalaya; Arunachal Pradesh; Assam; West Bengal. Malay Peninsula; Myanmar; Teng-King; Yunnan.

**47. Elaphe frenata** (Gray)

Assam Trinket Snake

MATHEW : *Reptilia* 423


**Diagnostic Characters**: Scales in 19 rows; ventrals 201–235; caudals 120-145, paired; Anal 2; 8 or 9 upper labials; loreal united with the prefrontal.

Uniform green above with a black streak along the side of the head above the labials (young not green)

*Total length*: 1500 mm; tail 465 mm.

**Distribution**: Khasi Hills, Meghalaya; Tong-King; China.

**Remark**: A rare snake. Though originally described from Khasi Hills, there had been no collection of this species ever since from Meghalaya.

48. *Elaphe radiata* (Schlegel)

Copperhead

(Col. Photo 22)

*Coluber radiatus* Schlegel, 1837, Phys. Serp. ii, p. 135, pl. v. figs. 5 and 6.


**Material examined**: 4 ex; 1 ex, India, Meghalaya, East Khasi Hills, Umroi, 17.viii.73, Coll. A.K. Ghosh; 1 ex, East Khasi Hills, Barapani, 27.viii.68, Coll. E.D. Nongkhlaw; 1 ex, Jaintia Hills, 3 km. from Sonapurdi on Khliehriat Road, 27.viii.74, Coll. A.R. Lahiri; 1 ex, East Khasi Hills, Barapani, 27.vii.65, Coll. E.D. Nongkhlaw.

**Diagnostic Characters**: Scales in 21 rows; ventrals 222-250; Caudals 82-108, paired; Anal 1; Preocular 1; Post oculars 2; temporals 2 + 3.

Reddish brown above with four black stripes in the anterior half or two thirds of the body, commencing a short distance behind the neck; the upper pair on either side of the vertebral line broader; the outer pair narrower, usually broken into a series of elongated spots on the anterior part of the body; a black bar across the occiput and three black streaks radiating from below the eye; the young are brighty patterned.

*Total length*: 1870 mm; tail 400 mm.

**Distribution**: Khasi, Garo & Jaintia Hills, Meghalaya; Manipur; Eastern Himalayas; Indo-Chinese sub region; Malay; Archipelago.

49. *Elaphe cantoris* (Boulenger)

Darjeeling Trinket Snake

(Col. Photo 20)


**Material examined**: 1 ex, India, Meghalaya, East Khasi Hills, Weiloi, 26.x.78, Coll. S. Biswas.
**Dianostic characters**: Scales in 19 rows; ventrals 213-236; caudals 65-88 paired, Anal 1; a presubocular usually present; preocular 1; post oculars 2; temporals 2 + 2 or 2 + 3.

Grey, the interstitial skin and margins of the scales white, and with large squarish black spots, the vertebral series usually united to form broad transverse bars, which are distinct posteriorly, lower parts yellowish, pink on the tail, spotted with grey.

*Total length*: 1590 mm; tail 330 mm.

*Distribution*: Khasi Hills, Meghalaya; Arunchal Pradesh; Assam; Sikkim; West Bengal. Myanmar.

**50. Elaphe porphyracea** (Cantor)
Black-Striped Trinket Snake
(Col. Photo 21)

*Coluber porphyraceus* Cantor, 1839, *P. Z. S.* p. 51.


*Diagnostic Characters*: Scales in 19 rows; ventrals 190-218, caudals 52-76 paired, Anal 2; Preocular 1; post ocular 2; temporals 1 + 2.

Reddish brown with broad dark brown, black edged cross bars. In the young they are entirely black; 2 black dorsolateral lines on the posterior part of the body and tail; a black stripe down the middle of the head and another on each side usually connecting with the first transverse mark on the neck; lower parts uniform yellow.

*Total length*: 870 mm; tail 148 mm.

*Distribution*: Khasi Hills, Meghalaya; Assam; Sikkim; West Bengal; China; Malay Peninsula. Myanmar; Siam; Sumatra, Yunnan.

**51. Elaphe hodgsoni** (Boulenger)
Himalayan Trinket Snake

*Spilotes hodgsonii* Gunther, 1860, *P.Z.S.* p. 156.

Diagnostic Characters: Scales in 23 rows; ventrals 229-247, caudals 79-92, paired; Anal 2; 8 upper labials; a pre subocular often united with the 3rd labial.

Olive-brown above, many scales edged with black; yellowish below, outer margins of ventrals edged with black.

Total length: 1500 mm; tail 310 mm.

Distribution: Garo Hills, Meghalaya, the Himalayas.

Remark: Not studied by me.

Genus Calamaria Boie

Calamaria Boie, 1826, Isis, p. 981.


Diagnostic Characters: Head shields reduced, loreals, internasals and temporals absent; parietals in contact with the labials; scales in 13 rows.

A single species, pavimentata occur in Meghalaya.

52. Calamaria pavimentata Dumeril & Bibron

False Wolf Snake


Diagnostic Characters: Rostral visible from above; 4 upper labials; 1 preocular and 1 post ocular: ventrals 152-196; caudals 10-25, paired; Anal 1.

Total length: 320 mm; tail 15 mm.

Distribution: Garo Hills, Meghalaya. Indo-Chinese region; Southern China; Java; The Malay Peninsula.

Remark: Not studied by me.

Genus Lycodon Boie

Wolf Snake


Diagnostic Characters: Scales in 17 rows, 2 post oculars.

Key to the species of Lycodon Boie.

Purplish above, each scale with two white spots......................................................... jawa

Fawnish brown above with 12-19 white cross bars which expand laterally....................... aulicus
53. *Lycodon jara* (Shaw)

Yellow striped Wolf Snake

*(Col. Photo 23)*

*Coluber jara* Shaw, 1802, *Gen Zool.* iii, p. 525.


**Material examined:** 4 ex; 2 ex, India, Meghalaya, West Garo Hills, Selbalgiri, 15.iv.85, Coll. J.P. Sati; 1 ex, West Garo Hills, Tura Govt. College, Tura; 1 ex, East Khasi Hills, Shillong, 28.viii.68, Coll. S.K. Sobhani.

**Diagnostic Characters:** Loreal in contact with the internasal, not touching the eye; a preocular; temporals 1 + 2 or 2 + 3; ventrals 167 188; caudals 52-74, paired; Anal 2.

**Total length:** 385 mm; tail 106 mm.

**Distribution:** Khasi and Garo Hills, Meghalaya; Assam; Orissa; Tamil Nadu and West Bengal.

54. *Lycodon aulicus* (Linnaeus)

Common Wolf Snake


**Material examined:** 2 ex; India Meghalaya, West Garo Hills, Tura Govt. College, Tura.

**Diagnostic Characters:** Ventrals 172-214; caudals 57-80, paired; Anal 2; preocular 1; Postoculars 2; temporals 2 + 3.

Brown or greyish brown above with from 12 19 white cross-bars enclosing triangular patches: the bars may or may not be speckled with brown.

**Total length:** 570 mm; tail 90 mm.

**Distribution:** Garo Hills, Meghalaya; Assam; the whole of India. Celebes; China; Indo-China; Hongkong; Maldives; Malay Peninsula & Archipelago; Myanmar; Nepal; Sri Lanka.

**Remark:** It is often mistaken for a krait.

**Genus Ptyas Fitzinger**

Rat Snakes


**Diagnostic Characters:** Scales in 15 rows; 2 or 3 loreals; a pre sub ocular.

55. *Ptyas korros* (Schlegel)

Indo-Chinese Rat Snake


**Material examined:** 4 ex; 1 ex, India, Meghalaya, West Garo Hills, Selbalgiri, 2.v.84, Coll. J.P. Sati, 1 ex, West Garo Hills, Mankachar, 21.iii.92, Coll. J.R.B. Alfred; 1 ex, West Garo Hills, around Siju Cave, 23.x.91, Coll. Y.P. Sinha; 1 ex, West Garo Hills, Tura Govt. College, Tura, August, 92.
Diagnostic Characters: Ventrals 160-187; caudal 120-147, paired; Anal 2.

Greyish-brown above, yellowish below; the scales on the posterior part of the body edged with black. The young ones are olive green with narrow white cross bars.

Total length: 1360 mm; tail 180 mm.

Distribution: Garo Hills, Meghalaya; Assam; China; Hainan; Malaysia; Myanmar.

Genus Oligodon Boie

Kukri Snakes

Oligodon Boie, 1827, Isis, p. 519.


Diagnostic Characters: Head not distinct from neck; eye with round pupil; rostral large, partly separating the internasals, visible from above; 1 pre and 2 post oculars; 3 or 4 lower labials in contact with the anterior genials. A typical pattern on the head with slight modification is observed throughout the genus.

Key to the species of Oligodon Boie

1. Scales in 15 rows.................................................................dorsalis
   Scales in more than 15 rows....................................................2

2. Scales in 17 rows.................................................................3
   Scales in 19 or 21 rows............................................................4

3. Anal shield single.........................................................cinereus
   Anal shield divided...............................................................theobaldi

4. Upper labials 7.............................................................albocinctus
   Upper labials 8.................................................................cyclurus

56. Oligodon albocinctus (Cantor)

White-striped Kukri Snake

(Col. Photo 24)

Coronella albocincta Cantor, 1839, P.Z.S. p. 50.


Material examined: 1 ex, India, Meghalaya, East Khasi Hills, Kyrdem Kulai, 1.xi.83, Coll. R. Zoramthanga.

Diagnostic Characters: Scales in 19 rows; ventrals 177-208; caudals 40-69, paired Anal 1; Upper labials 7; preocular 1; postoculars 2; temporals 1 + 2.

Brown above (reddish or pinkish in life) with white, yellow or fawn coloured black-edged cross-bars (19 to 28 on the body and 4 to 8 on the tail); belly whitish with large black squarish spots at the outer margins of the ventrals; head with typical Oligodon pattern.
Total length: 710 mm; tail 170 mm.

Distribution: Khasi Hills, Meghalaya; Assam; Sikkim; West Bengal; Bangladesh; Myanmar.

57. Oligodon cyclurus (Cantor)

Cantor's Kukri Snake

Coronella cyclura Cantor, 1839, P.Z.S. p. 50.


Material examined: 2 ex, India, Meghalaya, West Garo Hills, Tura Govt. College, Tura, August 92.

Diagnostic Characters: Scales in 19 or 21 rows; ventrals 161-195; caudals 36-58 paired; Anal 1; 8 upper labials; a small subocular; 1 preocular; 2 post oculars; temporals 1 + 2.

Fawn or buff coloured above (reddish or pinkish in life) with four longitudinal stripes (2 dorsally and 2 laterally); belly uniform or with a black spot on the outer margins of the ventrals; a vertebral row of small black dots on the anterior region.

Total length: 940 mm; tail 140 mm.

Distribution: West Garo Hills, Meghalaya; Assam; West Bengal. Bangladesh; Cochin China; Indochina; Myanmar; Pulo Condore; Siam; Tenasserim.

58. Oligodon dorsalis Gray & Hardwicke

Spot tailed Kukri Snake

Elaps dorsalis Gray & Hardwicke, 1834, Ill Ind. Zool. ii.


Material examined: 3 ex; 1 ex, India, Meghalaya, Garo Hills, from a stream near Chinabat, 23.viii.83, Coll. A. Hussain; 2 ex, West Garo Hills, Tura Govt. College. Tura, August '92.

Diagnostic Characters: Scales in 15 rows; ventrals 162-188; caudals 27-51 paired; Anal 2; 7 upper labials; 1 anterior temporal.

Brown above with a light vertebral stripe edged with black, another black stripe occupies scale rows 2 and 3; lower parts yellowish heavily speckled with black; tail with 2 black spots above, the first on the base, the other near the tip; below brick red or orange.

Total length: 270 mm; tail 50 mm.

Distribution: Garo Hills, Meghalaya; Nagaland; West Bengal. Myanmar.

59. Oligodon theobaldi (Gunther)

Burmese Kukri Snake


Diagnostic Characters: Scales in 17 rows; ventrals 164-180; caudals 30-42, paired; Anal 2; upper labials 8.

Light brown above with narrow closely set tranverse or angular cross bars and with 4 more or less distinct dark brown longitudinal stripes (2 broad vertebral stripes and 2 narrow lateral stripes); yellowish below with or without squarish black spots at the outer margins of the ventrals.

Total length: 390 mm; tail 47 mm.

Distribution: Garo Hills, Meghalaya. Myanmar.

60. Oligodon cinereus (Gunther)

Black-striped kukri Snake


Material examined: 2 ex; 1 ex. India. Meghalaya, West Garo Hills, Tura Govt. College, Tura, August '92; 1 ex, East Khasi Hills, Shillong, St. Anthony's College, July '90.

Diagnostic Characters: 8 upper labials; scales in 17 rows; ventrals 157-185; caudals 29-42, paired; Anal 1.

Reddish brown above with very distinct black cross-bars alternating with one or two indistinct ones in between. Lower portion heavily marked with squarish spots at the outer margins of the ventrals; head with a chevron mark and two other dark transverse bars anterior to it, a black bar across the snout.

Total length: 500 mm; tail 70 mm.

Distribution: Garo Hills, Meghalaya; Assam; West Bengal. Cambodia; Cochin China; French Indo-China; Hainan; Hongkong; Myanmar; Siam; Tenasserim; Thua Lun; Tong-King.

Genus Sibynophis Fitzinger

Black - headed Snakes


Diagnostic Characters: Scales in 17 rows; caudals paried; 1 pre and 2 post oculars; anterior genials larger, in contact with 4 lower labials; 1 pre and 2 post oculars; anal divided.

Key to the species of Sibynophis Fitzinger

1. 1 anterior temporal ................................................................. collaris

2. 2 anterior temporals .............................................................. chinensis
61. *Sioynophis collaris* (Gray)

Collared Black-headed Snake

(Col. Photo 30)


*Diagnostic Characters*: Ventrals 155-190; caudals 100-125; Anal 2.

Light brown above with a vertebral series of black spots; head with small black spots or vermiculations and 2 black transverse bars, one behind the eyes, the other across the occiput; nape black, bordered with yellow behind; upper lip white or yellow, spotted and bordered above with black. Ventrals with a black spot and an additional median pair of black dots anteriorly. These vary greatly.

*Total length*: 550 mm; tail 250 mm.

*Distribution*: Khasi Hills, Meghalaya. The Himalayas; Annam; Laos; Malay Peninsula; Myanmar; Siam; Yunnan.

*Remark*: Mathew (1983) reports an entire anal shield for one of the specimens studied. Also the median rows of black spots may be seen on a few ventrals or nearly on two thirds of the ventrals. A common species in Shillong and its neighbourhood.

62. *Sibynophis chinensis* (Gunther)


*Sibynophis chinensis* (Gunther), Smith, 1943, *Fauna of British India*, vol. III, pp. 583.

*Material examined*: 1 ex, India, Meghalaya, West Garo Hills, Tura, Govt. College, Tura.

*Diagnostic Characters*: 2 anterior temporals; 9 upper labials; scales in 17 rows; ventrals 168-184; caudals 98-122; Anal 1.

Light brown above, with black spots, anterior ventrals with a black spot.

*Distribution*: Garo Hills, Meghalaya. Hainnan; South China; Tong-King;
**Remark**: The only specimen studied is a juvenile. It has 184 ventrals and 99 caudals. The head is completely black with a white collar.

**Genus** *Xenochrophis* Gunther


**Diagnostic Characters**: Scales in 19 rows, strongly keeled; subcaudals paired.

**Key to the species of *Xenochrophis* Gunther**

Head with 2 oblique black streaks, one below and the other behind the eye............................... *piscator*

Head without the black streaks ............................................................................. *cerasogaster*

63. *Xenochrophis cerasogaster* Cantor

Dark-bellied Marsh Snake

*Psammophis cerasogaster* Cantor, 1839, *P.Z.S.* p. 52.


**Diagnostic Characters**: Scales in 19 rows, the tips distinctly bidentate; ventrals 140-154; caudals 63-76, paired, anal 2; 1 pre and 2 or 3 post oculars; temporals 2 + 2 or 2 + 3; upper labials 9.

Olive brown to green above, with or without more or less distinct darker spots; lower parts reddish, dappled with brown or purplish black, with small whitish spots, particularly on the fore-part of the body; a bright yellow line along the outer margins of the ventrals, bordered above with chocolate, and below, in life, with red; lips yellow, edged with chocolate above, these two colours continuous with those upon the flanks.

**Total length**: 620 mm; tail 140 mm.

**Distribution**: Khasi Hills, Meghalaya; Assam; Uttar Pradesh; West Bengal.

**Remark**: Though Smith (1943) records it from Khasi Hills, no collection of this species could be made by the Eastern Regional Station of Zoological Survey of India, at Shillong ever since its inception in 1959.

64. *Xenochrophis piscator* (Schneider)

Checkered Keelback

(Col. Photo 32)


**Material examined**: 8 ex, 1 ex, India, Meghalaya, East Khasi Hills, Barapani, 28.viii.61, Coll. C.B. Srivastava; 1 ex, East Khasi Hills, Barapani, 25.i.72, Coll. G.M. Yazdani; 1 ex, West Garo Hills, Rongjeng, 10.iv.73, Coll. S. Biswas; 1 ex, West Garo Hills, Rongdang, 46 km. off Baghmara,

**Diagnostic Characters:** Scales in 19 rows; ventrals 122-158; caudals 70-97, paired; Anal 2; 1 preocular; 2 or 3 post oculars; temporals 2 + 2 or 2 + 3; 9 upper labials; frontal much constricted in the middle.

Olive gray above with black spots quincuncially arranged; belly whitish, the ventrals edged with black.

**Total length:** 1200 mm; tail 340 mm.

**Distribution:** Garo Hills and Khasi Hills, Meghalaya; the whole of India. China; Hainan; Hong-Kong; Laos; Myanmar; Pakistan; Sri Lanka.

**Genus** **Rhabdops** (Theobald)


**Diagnostic Characters:** Head not distinct from neck; eye small or moderate, pupil round or vertically subelliptical; nostril crescentic; scales in 17 rows; caudals paired.

65. **Rhabdops bicolor** (Blyth)

Black & Yellow Forest Snake

(Col. Photo 28)

*Calamaria bicolor* Blyth, 1854, *J.A.S. Bengal* xxiii, p. 289.


**Material examined:** 3 ex: 1 ex, India, Meghalaya, East Khasi Hills, Shillong, Fruit Garden, 27.x.70, Coll. G.M. Yazdani; 1 ex, East Khasi Hills, Shillong, Risa Colony, 6.v.80, Coll. Edilbert; 1 ex, East Khasi Hills, Shillong, Tripura Castle Road, 14.viii.76, Coll. P.B. Thapa.

**Diagnostic Character:** Scales in 17 rows; ventrals 187-226; caudals 63-77, paired; Anal 2; 1 internasal; 1 prefrontal; 1 or 2 pre oculars; 2 or 3 post oculars; temporals 1 + 1; 5 uppr labials.

Light brown above, Yellowish-white below, the two colours strongly contrasted.

**Total length:** 675 mm; tail 145 mm.

**Distribution:** Khasi Hills, Meghalaya. Myanmar. Yunnan.

**Genus** **Blythia** Theobald.

MATHEW: Reptilia


Diagnostic Characters: Scales in 13 rows; sub caudals paired; no loreal or pre ocular.

66. Blythia reticulata (Blyth)
   Irridescent Snake
   (Col. Photo 16)

Calamaria reticulata Blyth, 1854, J.A.S. Bengal, xxiii, p. 287.


Diagnostic Characters: Rostral visible dorsally; 1 anterior temporal; 1 post ocular; 6 upper labials; anterior genials twice as long as the posterior; ventrals 127-155; caudals 26-32, paired; Anal 2.

Olive to darker brown above, highly irridescent; young with a white collar.

Total length: 410 mm; tail 45 mm.

Distribution: Khasi Hills, Meghalaya; Assam; Manipur. Myanmar.

Genus Trachischium Gunther

Oriental Worm Snakes


Diagnostic Characters: Scales in 15 rows; 6 upper labials; 1 pre ocular; 1 anterior temporal; caudals paired.

67. Trachischium monticola (Cantor)
   Assam Oriental Worm Snake
   (Col. Photo 31)

Calamaria monticola Cantor, 1839, P.Z.S. p. 50.


**Diagnostic Characters:** 2 Prefrontals; 2 post oculars; temporals 1 + 1; ventrals 113-130; caudals 26-40; Anal 1.

Light brown with blackish longitudinal lines and two more or less distinct dorso lateral stripes; yellowish below; with or without a yellow spot on either side of the neck.

**Total length:** 225 mm; tail 30 mm.

**Distribution:** Khasi Hills, Meghalaya.

**Remarks:** Very common in and around Shillong and I have seen my hens feeding on this.

**Genus** *Pseudoxenodon* Boulenger

*Pseudoxenodon* Boulenger, 1890, *F.B.I.* p. 340


**Diagnostic Characters:** Scales in 19 or 17 rows; caudals paired.

68. *Pseudoxenodon macrops* (Blyth)

*Tropidonotus macrops* Blyth, 1854, *J.A.S. Bengal*, xxiii, p. 296,


**Material examined:** 2 ex: 1 ex, India, Meghalaya, East Khasi Hills, Shillong, Risa Colony, (no other data); 1 ex, East Khasi Hills, Upper Shillong, April 77, Donated by Potato Research Institute, Upper Shillong.

**Diagnostic Characters:** Ventrals 151-180; caudals 55-80; Anal 2; 1 preocular, 3 post oculars; temporals 2 + 2; 8 upper labials.

Olivaceous, brownish or greyish above, with or without a vertebral series of yellowish, reddish-brown or orange dark-edged spots or short cross-bars and a dorsolateral series of black-spots; a chevron shaped mark on the nape may be present; belly anteriorly with large quadrangular black or dark brown spots.

**Total length:** 1160 mm; tail 230 mm.

**Distribution:** Khasi Hills, Meghalaya; Assam; West Bengal. Annam; Malay Peninsula; Myanmar; Nepal; Siam.
Genus *Rhabdophis* Fitzinger


**Diagnostic Characters:** Internasals broad anteriorly; nostrils lateral; scales in 19 rows; caudals paired.

Key to the species of *Rhabdophis* Fitzinger

1. A dorso-lateral series of yellow spots on the body; a white or yellow collar ............ *himalayana*

   Dorso-lateral series of yellow spots absent on the body; neck red; collar absent ........ *subminiata*

69. *Rhabdophis himalayana* (Gunther)

Himalayan Keelback

(Col. Photo 29)


**Diagnostic Characters:** Scales in 19 rows; ventrals 151-176; caudals 79-95; upper labials 8 or 9, 4th and 5th or 5th and 6th in contact with the eye; 1 preocular; 3 postoculars; temporals 2 + 2 or 2 + 3.

Olive above with small black spots and two dorso-lateral series of small yellow spots; lower parts yellowish, uniform or speckled with brown; a yellow or orange collar; labials bordered with black; 2 black cross bars, one below and the other behind the eye.

**Total length:** 850 mm; tail 200 mm.
Distribution : Khasi Hills and Jaintia Hills, Meghalaya; Manipur; Nagaland. Eastern Himalayas; Myanmar.

Remark: Two forms of this species are seen. In the most common form found in Shillong, the collar is broad and is followed by two or three angular white or yellow bars. In the second from the collar is narrow and is not followed by any bars. Two labials bordering the eye is often observed. However, this can not be taken as a dependable key character.

The shape of the head also vary. Some have an oval sleek head and the other a broader and shorter one. Common in Meghalaya.

70. *Rhabdophis subminiata* (Schlegal)

Red-necked Keelback


Material examined: 8 ex: 1 ex, India, Meghalaya, West Garo Hills, 13 km from Tura on Tura - Phulbari Road, 25.ii.65, Coll. A.S. Rajagopal; 1 ex, East Khasi hills, Shillong, Laitumkhrah, Banasree, 16.ix.70, Coll. S.K. Talukdar; 1 ex, East Khasi Hills, Shillong, Risa Colony, 20.vii.73, Coll. R.P. Lushai; 1 ex, Jaintia Hills, Lundong Dam site, Jowai-Garampani Road, 10.ix.83, Coll. A. Hussain; 1 ex, West Garo Hills, Selbalgiri, 20.x.85, Coll. J.R.B. Alfred; 3 ex, West Garo Hills, Tura Govt. College, Tura, August '92.

Diagnostic Characters: Scales in 19 rows; ventrals 163-190; caudals 88-100, paired; Anal 2; 8 upper labials, usually 3rd to 5th border the eye; 1 pre ocular; 3 post oculars; temporals 2 + 3.

Total length: 870 mm; tail 240 mm.

Distribution: Khasi, Garo and Jaintia Hills, Meghalaya; Assam; Manipur; Mizoram; Nagaland; Sikkim; Tripura. Eastern Himalayas; Indo-Chinese region; China; Hainan; Hong-Kong; Malay Peninsula and Archipelago.

Remark: This species has a wider distribution compared to the preceeding species. Both species have strongly keeled scales.

Genus *Amphiesma* Dumeril and Bibron, 1854.

Keelbacks


Diagnostic Characters: Internasals broad anteriorly; nostril lateral; scales in 19 rows.

Key to the species of *Amphiesma* Dumeril & Bibron.

1. Posterior maxillary teeth gradually enlarged .......................................................... 2
2. Subcaudals single ........................................................................................................ xenura

Posterior maxillary teeth abruptly enlarged ................................................................. 3
Subcaudals paired or some of them single ......................................................... 4

3. Internasals much narrowed anteriorly; 2 light stripes down the back .................. stolata
   Internasals not markedly narrowed anteriorly; no dorsal stripes .......................... platyceps

4. 8 upper labials.................................................................................................. parallela
   9 upper labials.................................................................................................. 5

5. Labials black with light centres.......................................................................... khasiensis
   Labials whitish, the margin edged with black or entirely black or brown.................. modesta.

71. Amphiesma parallela (Boulenger)

Boulenger's Keelback


*Diagnostic Characters*: Internasals truncate; nostrial lateral; temporals 1 + 1 or 1 + 2; scales in 19 rows; ventrals 163-172; caudals 73-108, paired; Anal 2.

Greyish brown above, the scales black edged and with 2 dorso lateral black edged stripes; a black streak from the eye to the angle of the mouth; labials yellow, uniform or black edged; ventrals and caudals yellow with or without a black dot on each side.

*Total length*: 635 mm; tail 144 mm.

*Distribution* Khasi and Garo Hills, Meghalaya; Nagaland; Sikkim; West Bengal. Myanmar; Tong-King; Yunnan.

72. Amphiesma khasiensis (Boulenger)

Khasi Keelback

*Tropidonotus khasiensis* (Boulenger), 1890, *F.B.I.* p. 344.


*Material examined*: 1 ex, India, Meghalaya, East Khasi Hills, Botanical garden, Barapani, 4.v.67, Coll. S.K. Katakai.
Diagnostic Characters: Internasals truncate anteriorly; 1 or 2 post oculars; temporals 1 + 1 or 1 + 2; 9 upper labials; scales in 19 rows; ventrals 145-155; caudals 94-110, paired Anal 2.

Greyish above with a series of dorso-lateral spots; ventrals and caudals yellowish, the outer margins with a spot; parietales usually with 2 small white spots; labials whitish, bordered with black.

Total length: 600 mm; tail 195 mm.

Distribution: Khasi and Garo Hills, Meghalaya; Assam; Mizoram; West Bengal. Myanmar; Tong-King.

Remark: Smith (1943) reports that this species is common in the Khasi and Kachin Hills. Considering the fact that there exists a single specimen at Eastern Regional Station, Zoological Survey of India, Shillong as a result of the many intensive surveys conducted especially in Khasi Hills of Meghalaya by the station, it is assumed that this species though once plenty, is rare in Meghalaya.

73. Amphiesma modesta (Gunther)

Gunther’s Keelback

Tropidonotus modestus Gunther, 1875, P.Z.S. p. 232.


Diagnostic Characters: Internasals truncate anteriorly; 2 pre oculars; temporals 1 + 1 or 1 + 2; 9 upper labials; scales in 19 rows; ventrals 148-168; caudals 83-132; Anal 2.

Brown above with small black spots regularly arranged and a dorsolateral series of small yellow spots, lower parts yellowish, powdered with black; a yellow stripe on each side of the head starting from behind the eye and converging towards its fellow on the neck, labials edged with black.

Total length: 600 mm; tail 185 mm.

Distribution: Khasi Hills, Meghalaya. Myanmar; North Siam; Cambodia; Laos.

Remark: A rare species, not observed by me.

74. Amphiesma stolata (Linnaeus)

Striped Keelback

(Col. Photo 15)


**Diagnosis Characters**: Nostril placed dorso-laterally; internasals much narrowed anteriorly; frontal constricted in the middle; 1 pre oculars; temporals $1 + 1$ or $1 + 2$; 8 upper labials; scales in 19 rows; ventrals 118-158; caudals 50-89, paired; Anal 2.

Brownish above with black spots and 2 dorso-lateral buff stripes, the stripes best marked on the posterior part of the body where the black spots are least evident; lower parts with or without a spot on the ventral shield; labials yellowish, may or may not be black edged.

**Total length**: 505 mm; 145 mm.

**Distribution**: Khasi Hills, Meghalaya; the whole of India. China; Hainan; Indo-China; Pakistan; Sri Lanka.

**75. Amphiesma platyceps** (Blyth)

Mountain Keelback


**Diagnosis Characters**: Nostril lateral; 1 pre ocular; temporals $1 + 1$ or $2 + 2$; 8 upper labials; scales in 19 rows; ventrals 174-217; caudals 86-107, paired; Anal 1.

Olive-brown above, with small black spots, rarely a dorso-lateral series of white spots; frequently two white black-edged parallel lines or an elliptic mark, on the nape, or a white black-edged streak on each side of the head, a black line from eye to gape; lips white or yellow, belly yellowish, with or without black dots, bordered outside with bright red in life; frequently a black line or series of elongate blackish spots along each side of the belly; lower surface of tail frequently mottled with blackish; throat sometimes black.

**Total length**: 880 mm; tail 225 mm.

**Distribution**: Khasi Hills, Meghalaya; Assam; West Bengal; the Himalayas.

**Remark**: A rare snake, not seen or studied by me.

**76. Amphiesma xenura** (Wall)

Cherrapunji Keelback


**Material examined**: 2 ex, India; Meghalaya, West Garo Hills, Tura Govt. College, Tura, August '92.

**Diagnosis Characters**: 1 pre ocular; 2 post oculars; 9 upper labials; $2 + 3$ temporals; 1 loreal; 2 nasals; scales in 19 rows; ventrals 158-165; caudals 82-105, single; Anal 2.

Dark olive-brown above with indistinct narrow black cross-bars or series of spots; whitish below with dark brown squarish spots at the outer margins of the ventrals; tail more thickly spotted; labials black edged; a white streak from behind the angles of the mouth on to the neck.
Total length: 660 mm; tail 190 mm.

Distribution: Khasi and Grao Hills, Meghalaya.

Remarks: A rare species. The only material studied by me are two juveniles in the collection of Tura Govt. College Tura. It is a smooth brownish black snake with white patch on the parietals. Ventrals each with a black spot.

Genus **Chrysopelea** Boie


Diagnostic Characters: Scales in 17 rows, with apical pits; ventrals with a suture like lateral keel and a notch on each side corresponding to the keel; caudals paired.

77. **Chrysopelea ornata** (Shaw)

Golden Tree Snake

(Col. Photo 19)


Material examined: 3 ex: 1 ex, India, Meghalaya, Jaintia Hills, Dawki, 10.vi.81, Coll. C. Radhakrishnan; 2 ex, West Garo Hills, Tura, Tura Govt. College, August '92.

Diagnostic Characters: Frontal bell shaped; loreal elongate; 1 large pre ocular; 2 post oculars; temporals 2 + 2; upper labials 9; ventrals 213-234 (216); caudal 110-138 (124), paired; Anal 2.

Greenish yellow above, each scale edged and mesially streaked with black, with more or less distinct black cross bars and a series of large coral red spots on every alternate yellow bands; ventrals yellow with a small black spot on either side.

Total length: 104 1100 mm; tail 275 300 mm.

Distribution: Khasi, Garo and Jaintia Hills, Meghalaya; Bihar; Orissa; West Bengal; Western Ghats. Southern China; The whole of Indo-Chinese region; Myanmar; Sri Lanka; Tong-King.

Remarks: Smith (1943) reports the occurrence of two distinct varieties of this species; the first variety with the flower-shaped vertebral spots distributed within Sri Lanka and Western Ghats and a second variety without the vertebral spots distributed over the whole of Indo-Chinese region; Bihar; Orissa; West Bengal. Southern China and Myanmar. In the present study, the material from Dawki was collected while at rest on a rock which supports the observations made by the earlier workers that this species "frequents the ground" The collector's note says that it was visibly arrogant and tried to strike at the camera. A Gekkonid lizard was found inside the stomach.

Genus **Ahaetulla** Meise & Henning

Vine Snakes

MATHEW: Reptilia


Diagnostic characters: Head elongate; eye large, transversely oval with horizontal pupil; nostril in the posterior part of an elongated nasal; frontal narrow, elongate, bell-shaped; scales in 15 rows, the vertebral row slightly enlarged.

78. Ahaetulla prasina (Boie)

Dryophis prasinus Boie, 1827, Isis, p. 545.

Dryophis prasinus (Boie), Smith, 1943, Fauna of British India, pp. 583.

Material examined: 2 ex : 1 ex, India, Meghalaya, West Kashi Hills, 23 km away from Nongstoin on Syrkon Road, 8.iv.87, Coll. J. R. B. Alfred; 1 ex, West Garo Hills, Tura Govt. college, Tura.

Diagnostic Characters: Snout without a dermal appendage; nasals in contact with the labials; prefrontals separated from them by 2 or 3 loreals; 1 preocular in contact with the frontal; 2 post oculars; temporal, 2 + 2 or 2 + 3; 9 upper labials; anterior genials much shorter than the posterior; the scales of the sacral region strongly keeled in males often froming tubercles, ventral 194-235; caudals 151-187, paired; Anal 2.

Green above, the interstitial kin black and white forming oblique lines; a white or yellow line along the outer margin of the ventrals.

Total length: 1970 mm; tail 670 mm.

Distribution: Khasi Hills, Meghalaya; West Bengal; the Eastern Himalayas, the whole of Indo-Chinese region; Indo-Australian Archipelago.

Remarks: The material from Syrkon was collected while in the process of swallowwing a Calotes sp.

Genus Boiga Fitzinger

Cat Snakes

Boiga Fitzinger, 1826, Neue Class. Rept. p. 29.


Diagnostic Characters: Head very distinct from neck; eye large with vertical pupil; scales in 19 to 29 rows, the vertebral row enlarged.

Key to the species of Boiga Fitzinger

1. Pre ocular reaching the upper surface of the head ............................................................ cyanea

Pre ocular not reaching the upper surface of the head ........................................................... trigonata

79. Boiga cyanea Dumeril & Bibron

Green Cat Snake

(Col. Photo 17.)


**Material examined**: 1 ex, India, Meghalaya, East Khasi Hills, Kyrdem Kulai, 23.vi.84, Donated by St. Peter's school, Shillong.

**Diagnostic Characters**: 1 pre ocular reaching the upper surface of the head; temporals 2 + 3; scales in 21 rows, vertebral row enlarged; ventrals 237-257; caudals 124-138.

Green above, belly uniform or spotted with dark green; interstitial skin black; chin and throat blue in life; very young ones are light brown or reddish or pinkish with or without markings.

**Total length**: 1860 mm; tail 440.

**Distribution**: Khasi hills, Meghalaya; Assam Tripura. Cambodia; Coachin-China; Myanmar; Pulo Condore; Siam.

80. *Boiga trigonota* (Schneider)

Indian Gamma

*(Col. Photo 18)*

*Coluber trigonatus* (Schneider), 1802, *in Bechst. transl. Lacep, iv, p.256,*


**Material examined**: 4 ex: 1 ex, India, Meghalaya, West Garo Hills, Anogiri, 8.iii.75, Coll. S. Biswas; 3 ex, West Garo Hills, Tura Govt. College, Tura.

**Diagnostic Characters**: 1 pre ocular not reaching the upper surface of the head; temporals 2 + 3; posterior genials separated from one another by small scales, scales in 21, vertebrals feebly enlarged; ventrals 206-256; caudals 75-105, paired. Anal: 1.

Light yellowish-brown above, with a vertebral series of large, light, black edged, angular or y shaped spots; belly uniform or with small black spots on the outer margins of the ventrals; head with light symmetrical markings; a light stripe from above the eye to the angle of the jaw.

**Total length**: 990 mm; tail 180 mm.

**Distribution**: Garo Hills, Meghalaya. Throughout India; Pakistan; Sri Lanka.

**Diagnostic Characters**: 2 anterior maxillary teeth enlarged and two posterior most maxillary teeth enlarged and grooved; eye with vertically elliptic pupil; Scales in 17 rows; caudals paired.

Genus *Psammodynastes* Gunther


**Diagnostic Characters**: 2 anterior maxillary teeth enlarged and two posterior most maxillary teeth enlarged and grooved; eye with vertically elliptic pupil; Scales in 17 rows; caudals paired.
81. *Psammodynastes pulverulentus* (Boie)

Mock Viper


**Diagnostic Characters:** Snout truncate and slightly turned up; frontal narrow and elongated, more or less bell-shaped; loreal may or may not be transversely divided; 1 or 2 pre oculars; 2 or 4 post oculars; temporal 2 + 3; 8 upper labials; 3 pairs of genials, the anterior most pair broadest; ventrals 146-175; caudals 44-71, paired; Anal 1.

Light brown above with small black streaks; a series of yellow spots on either side of the vertebral line; lower parts mottled with brown; head with symmetrical markings.

**Total length:** 435-510mm; tail 90-170 mm.

**Distribution:** Khasi Hills, Meghalaya; Arunachal Pradesh; West Bengal. The whole of Indo-Chinese region; China; Hainan; Malay Archipelago; Nepal.

**Remarks:** Common in Shillong and its neighbourhood especially in the forests of Malki and Motinagar. A pair was caught and released from my house compound at Risa Colony on 6.x.92 which made no attempt to strike or show any viciousness.

Sub family  
Xenoderminae

Genus  
*Stoliczkaia* Jerdon


**Diagnostic Characters:** Head with large shields; posterior one-third of head and temporal region covered by small scales; dorsals in 29-31 rows, small, juxtaposed or separated from one another by naked skin; caudals single.

A single species

82. *Stoliczkaia khasiensis* Jerdon

*Stoliczkaia khasiensis* Jerdon, 1890, *P. A. S. Bengal*, p. 81.


**Diagnostic Characters:** Frontal broader than long, partially or completely divided by a longitudinal suture; 1 large preocular and 2 post oculars; 8 upper labials; ventrals 208-210; caudals 115-116: Anal 1.

Purplish brown above; ventrals and three outer scale rows white with brown bases.
Total length: 670 mm; tail 190 mm.

Distribution: Khasi Hills, Meghalaya; Assam.

Remarks: I have not seen any material of this species. According to Murthy et al (in press) who consider this a rare species, there is a single specimen in the holdings of Zoological Survey of India, Calcutta.

Family 13 ELAPIDAE

Key to the genera of Elapidae

1. Vertebral series of dorsals enlarged.......................................................... Bungarus
   Vertebral series of dorsals not enlarged..................................................2

2. Scales in 13 rows.................................................................................. Callophis
   Scales in more than 13 rows..................................................................3

3. Scales in 15 rows; a pair of large occipital shields................................. Ophiophagus
   Scales in 19-25 rows; no occipital shields.............................................. Naja

Genus Bungarus Daudin

Kraits


Diagnostic Characters: No loreal; eye with round pupil, vertebral row of dorsals enlarged; caudals single or some of them paired.

Key to the species of Bungarus Daudin

1. Terminal caudal scutes in pairs......................................................... bungaroides
   Caudals single throughout.................................................................2

2. Tail ending in a point.......................................................................... niger
   Tail ending bluntly........................................................................... fasciatus

83. Bungarus bungaroides (Cantor)

Himalayan Krait

(Col. Photo 33)

Elaps bungaroides Cantor, 1839, P.Z.S. p. 33


Material examined: 3 ex.; 1 ex, India, Meghalaya, West Garo Hills, Selbalgiri, 29.x.86, Coll. J. P. Sati; 2 ex, Garo Hills, Forest Department Balphakram, 16.v.88.
MATHEW: Reptilia

**Diagnostic Characters**: 1 preocular in contact with the posterior nasal; 2 post oculars; temporals $1 + 2$ or $2 + 2$; upper labials 7; scales in 15 rows; ventrals 220-252; caudals 44-86, paired; few of the anterior caudals single; Anal 1.

Black with yellowish transverse bars, forming broad bands across the belly; a white line across the snout, and a curved one on each side from the frontal shield to behind the angle of the mouth and a third from the post oculars to the lip.

*Total length*: 1400 mm; tail 160 mm.

*Distribution*: Garo and Khasi Hills, Meghalaya; Assam. Eastern Himalayas; Myanmar.

*Remarks*: One of the specimens had 48 transverse bars in all.

84. **Bungarus niger** Wall

Black Krait


*Material examined*: 2 ex; India, Meghalaya, West Garo Hills, Balphakram; Forest department, 16.v.88.

*Diagnostic Characters*: Scales in 15 rows; ventrals 216-235; caudals 49-56, single; anal 1; 1 preocular; 2 post oculars; temporals $1 + 2$;

Uniform bluish-black or black above, white below, with a more or less distinct dark mottling at the base of the ventrals and subcaudal shields.

*Total length*: 1200 mm; tail 135 mm.

*Distribution*: Garo Hills, Meghalaya; Assam. Eastern Himalayas.

85. **Bungarus fasciatus** (Schneider)

Banded Krait

*(Col. Photo 34)*

*Pseudoboa fasciata* Schneider, 1801, *Hist. amph. ii*, p. 234.


*Material examined*: 1 ex, India, Meghalaya, West Garo Hills, around Sijucave, 23.xi.90, Coll. Y. P. Sinha.

*Diagnostic Characters*: Scales in 15 rows; ventrals 200-234; caudals 23-39; Anal 1.

Alternately banded with black and buff bands; a prominent ridge down. The back; a large black mark on the nape.

*Total length*: 1800 mm; tail 150 mm.

*Distribution*: Garo Hills, Meghalaya; Andhra Pradesh; Assam; Bihar; Orissa; Uttar Pradesh; West Bengal; the whole of Indo-Chinese region; China; Malay Peninsula and Archipelago; Myanmar.
Genus *Callophis* Gray

Coral snakes


*Diagnostic Characters*: No loreal; scales in 13 or 15 rows; caudals paired or single.

86. *Callophis macclellandi* (Reinhardt)

Macclelland's Coral Snake

(Col. Photo 35)


*Diagnostic Characters*: Scales in 13 rows, smooth; ventrals 182-244; caudals 25-36, paired; Anal 2; 1 pre ocular in contact with the posterior nasal; 2 post oculars; temporals 1 + 1; 7 upper labials.

Reddish above with regular narrow, black transverse bars which may or may not reach the ventrals; head black except for the broad, white, transverse bar; yellow beneath with large black spots or cross bars.

*Total length*: 780 mm; tail 70 mm.

*Distribution*: Khasi and Garo Hills, Meghalaya; Assam; West Bengal; Eastern Himalayas; Annam; China; Formosa; Hainan; Tong-King; Myanmar.

*Remarks*: Fairly common in and around Shillong.

Genus *Ophiophagus* Gunther


*Diagnostic Characters*: A pair of large oceipital shields; scales in 15 rows at mid body; ventrals 240-254; caudals 84-104, anterior ones single; Anal 1; 1 pre ocular; 3 post oculars; temporals 2 + 2.
87. *Ophiophagus hannah* (Cantor)

King cobra


**Material examined**: 2 ex; 1 ex, India, Meghalaya, East Khasi Hills, Umtham, 29.x.64, Coll. A. K. Mondal; 1 ex, East Khasi Hills, Shillong, Woodland compound, 15.vii.60, donated by Botanical Survey of India, Shillong.

**Diagnostic Characters**: Brown above with narrow, white, buff or yellow angularly transverse bars; in the young, these bars including the 4 bars on the head are very distinct.

**Total length**: 2400 mm; tail 495 mm.

**Distribution**: Khasi Hills, Meghalaya; Andaman Islands; Assam; Bihar; Orissa; West Bengal; the Himalayas; Western Ghats. The whole of Indo-Chinese region; China; Malay Peninsula and Archipelago; Myanmar; Philippine Islands; Siam and French Indo-China.

**Remarks**: King cobras, the largest venomous snakes in the world, may attain 5 meters in length in India

Genus *Naja* Laurenti

Cobras


**Diagnostic characters**: Dilatable neck; eye moderate with round pupil; no loreal; scales in 13–25 rows; caudals paired.

88. *Naja naja* (Linnaeus)

Indian Cobra

(Col. Photo 36)


**Material examined**: 5 ex; 1 ex, India, Meghalaya, East Khasi Hills, Diengpasohu, 26.iv.68, Coll. V. D. Srivastava; 1 ex, East Khasi Hills, Diengpasohu, 27.iv.63, Coll. M. R. Lyngdoh; 1 ex, East Khasi Hills, Umroi, 30.iv.68 Coll. R. K. Varshney; 1 ex, West Garo Hills, Tura Govt. College, Tura; 1 ex, East Khasi Hills, Shillong, St. Edmund's College.

**Diagnostic Characters**: 1 pre ocular; 3 post oculars; 7 upper labials; temporals 2 + 3; a cuneate scale in between the 4th lower labials; scales in 21 rows; neck dilatable, hood monocellate; ventrals 164-196; caudals 43-5f8; Anal 1.

Olivaceous or brownish to black above, with a yellow or orange-coloured, O-shaped or monocellate mark on the hood; a black spot on the lower surface of the hood on either side, and one or two broad black cross-bars on the belly behind it.

**Total length**: 1500mm; tail 230mm.
Distribution: Khasi and Garo Hills, Meghalaya; Andamans; Assam; Orissa; West Bengal.

Remarks: Variations in scale characters in this species were observed by Mathew (1991).

Family 14 VIPERIDAE
Genus Trimeresurus Lacepede
Pit Vipers


Diagnostic Characters: Head covered above with small scales; a loreal pit between the pre ocular and loreal; scales in 17-23 rows; caudals paired or some of them single.

Key to the species of Trimeresurus Lacepede

1. First labial completely separated from the nasal.................................................................2
   First labial partly or completely united with the nasal .......................................................3

2. Colour uniform green.............................................................................................................4
   Colour brown or greenish yellow ...........................................................................................5

3. Scales in 21 rows.................................................................Trimeresurus albolabris
   Scales in 23 rows..................................................................................................................erythrurus

4. Scales in 21 rows..................................................................................................................stejnegeri
   Scales in 23 rows..................................................................................................................popeorum

5. Light or dark brown above, with large, squarish, irregularly placed dark brown spots or markings upon the back and smaller ones upon the sides .................................................Trimeresurus monticola
   Greenish-yellow or olive above, with a dorsal series of transverse rhomboidal or irregularly shaped reddish-brown spots edged with black or almost entirely black and a series of more or less vertical spots along the sides .................................................Trimeresurus jerdoni.

89. Trimeresurus albolabris Gray
Green Pit Viper

Trimeresurus albolabris Gray, 1842, Zool. Misc. p. 48


Diagnostic Characters: 8-12 scales between the supra oculars; 1-2 rows of scales between the labials and the elongate sub ocular; scales in 21 rows; ventrals 152-176; Caudals 36-72; Anal 1.
MAP, PLATES & COLOUR FIGURES
MAP OF MEGHALAYA SHOWING DIFFERENT DISTRICTS AND IMPORTANT LOCALITIES
A. Carapace. NU. Nuchal; VE. Vertebrals; MA. Marginals; CO. Costals; SU. Supracaudal

B. Plastron. GU. Gular; HU. Humeral; AX. Axillary; PE. Pectral; AB. Abdominal; IN. Inguinal; FE. Femoral; AN. Anal.
A. Dorsal view of a Scincid head. R. Rostral; SN. Supranasal; N. Nasal; PN. Postnasal; L 1 and 2 Loreals. SO & SCS. Supra oculars; FN. Fronto-nasal; PF. Prefrontal; F. Frontal; FP. Fronto-parietal; IP. Interparietal; P. Parietal; N. Nuchal.

B. Lateral view of a Scincid head; SC. Supra ciliaries; M. Mental; LA. Upper labials.
A, B and C. Dorsal, lateral and ventral views of a colubrid head. r. rostral; n. nasal; l. loreal; pro. preocular; pto. post ocular; in. internasal; pf. prefrontal; f. frontal; so. supra ocular; p. parietal; pso. pre sub ocular; t. temporal; m. mental; 1a. labial; v. ventral; ag. anterior genials; pg. posterior genials.
A. Counting scale rows; V. Ventral.

B. Keeled dorsal scales.
1. *Kachuga Syllictenys* (Lindom)

2. *Lissomys purpurea pustulata* (Lacepede)

3. *Cyclomys dentata* (Gray)
4. *Trionyx indica* (Gray)

5. *Gekko gecko* (Linnaeus)

6. *Cyrtodactylus khasiensis* (Jerdon)
7. *Gekko gecko* (L.maenas) [ventral view]

8. *Phrynoözma galane* Peters

9. *Ophisaurus gralli* (Gray)

10. *Varanus bengalensis* (Daichii)
11. *Ramphotyphlops braminus* (Daudin)

12. *Ramphotyphlops braminus* (Daudin) [magnified]

13. *Typhlops diardi* Schlegel

14. *Python molarus* (Linnaeus)
15. *Amphiesma stoluta* (Linnaeus)

16. *Blythia reticulata* (Blyth) [with eggs]

17. *Boiga cyanea* (Dumeril & Bibron)
18. *Boga trigonata* (Schneider)

19. *Chrysopela ornata* (Shaw)

20. *Elaphe cantorii* (Boulenger)
21. *Elaphe porphyraea* (Cantor)

22. *Elaphe radiata* (Schlegel)

23. *Lyodon jara* (Shaw)

24. *Oligodon albocinctus* (Cantor)
25. *Oligodon dorsalis* Gray & Hardwicke

26. *Oligodon dorsalis* Gray & Hardwicke [ventral side]

27. *Pareus monticola* (Cantor)

28. *Rhabdops bicolor* (Blyth)
29. *Rhabdophis himalayana* (Günther)

30. *Sibynophis collaris* (Gray)

31. *Trachischium monticola* (Cantor)
32. *Xenochrophis piscator* (Schneider)

33. *Bungarus bungaroides* (Cantor)

34. *Bungarus fasciatus* (Schneider)

35. *Cakophis macclellandi* (Reinhardt)
36. *Naja naja* (Linnaeus)

37. *Trimeresurus jerdoni* Günther

38. *Trimeresurus monticola* Günther
Green above, yellowish or whitish below. A light stripe on scale row 1 starting from neck and extending to the base of the tail distinct in males. Tail prehensile.

*Total length*: 750 mm; tail 90 mm.

*Distribution*: Khasi Hills, Meghalaya; Andaman and Nicobar Islands. Eastern Himalayas; the whole of Indo-chinese sub region; Formosa; Hainan; Hong-Kong; Java; Malay Peninsula; Myanmar; Siam; Sumatra.

*Remarks*: Mathew (83) observed the variations in scale characters.

90. *Trimeresurus erythrurus* (Cantor)

Spot-tailed Pit Viper

*Trigonoccephalus erythrurus* Cantor, 1839, *P. Z. S.* p.31.


*Diagnostic Characters*: 11-14 scales between the supra oculars; 9-13 upper labials; 1-2 rows of scales between the labials and the elongate sub ocular; ventrals 151-180; caudals 49-79; Anal 1.

Green above, yellowish below, a light stripe on scale row 1 distinct in males; tail usually mottled with brown, prehensile.

*Total length*: 1045 mm; tail 165 mm.

*Distribution*: Khasi and Garo Hills, Meghalaya; Assam; Nagaland; West Bengal. Eastern Himalayas.

91. *Trimeresurus jerdoni* Gunther

Jerdon's Pit Viper

(Col. Photo 37)


*Material examined* : 1 ex; India, Meghalaya, East Khasi Hills, Shillong, Tripura Castle Road, 20.vii.86, Coll. S. C. Roy.

*Diagnostic Characters*: 6-9 scales between supra oculars; internasals separated from one another by 1-2 scales; 1-3 enlarged scales on a line between the internasals and the supra oculars; 7-8 upper labials; ventrals 167; caudals 61, paired; Anal 2.

Greenish yellow above with a dorsal series of transverse, rhomboidal, reddish-brown spots edged with black or almost entirely black, and a series of more or less vertical spots along the sides, head with symmetrical yellow markings.
Total length: 990 mm; tail 160 mm.

Distribution: Khasi Hills, Meghalaya; Assam; China; Myanmar; Tibet; Tong-King; Yunnan.

Remarks: Smith (1943) observed that Khasi Hills formed the Western most limit of its distribution.

92. *Trimeresurus monticola* Gunther

Blotched Pit Viper

(Col. Photo 38)


Diagnostic Characters: 5-9 scales between supraoculars; internasals usually separated by 1 or 2 scales; 7-10 upper labials; 2-4 series of small scales between the eye and the labials; ventrals 137-176; caudals 36-62, paired; Anal 1.

Total length: 1100 mm; tail 150 mm.

Distribution: Khasi Hills, Meghalaya; Arunachal Pradesh; Assam; West Bengal. Eastern Himalayas; the whole of Indo-Chinese region; Annam; China; Formosa; Malay Peninsula; Nepal; Siam; Tibet; Tong-King; Yunnan.
Remarks: Common in Shillong. A lethargic and sluggish snake, it makes no attempt at escape. As a rodent eater its presence near human habitations is justifiable.

93. Trimeresurus popeorum Smith

Pope's Green Pit Viper


Diagnostic Characters: 10-13 scales between supra oculars; internasals separated by 1-2 scales; 9-11 upper labials; a single series of scales between the labials and the elongate subocular. Ventrals 164-170; caudals 60-76, paired; tail prehensile.

Green above, pale green or whitish below; a light stripe, bordered below with orange or chocolate, along the flank and base of the tail; a post ocular stripe may or may not be present.

Total length: 770 mm; tail 170 mm.

Distribution: Khasi Hills, Meghalaya; West Bengal. Borneo; Malay Peninsula; Myanmar; Siam; Sumatra.

Remarks: Not studied by me.

94. Trimeresurus stejnegeri Schmidt

Horse-Shoe Pit Viper

Trimeresurus stejnegeri Schmidt, 1925, Amer. Mus. Nov. no. 157, p.4.


Material examined: 1 ex; India, Meghalaya, East Khasi Hills, Shillong, Arbuthnot Road, 2.ix.71, Coll. R. S. Pillai.

Diagnostic Characters: 9-12 scales between the supra oculars; a single row of small scales between the sub ocular and the labials; ventrals 155-169; caudals 61-68 paired, Anal 1.

Green above, pale green or whitish below. A light stripe bordered below with orange or chocolate along the flank and base of the tail mainly on scale row 1, a light post ocular stripe, bordered above with orange or chocolate present or absent; tail prehensile, usually pinkish.

Total length: 750 mm; tail 145 mm.

Distribution: Khasi Hills, Meghalaya; Arunachal Pradesh. Eastern Himalayas; Indo-Chinese Region; China; Formosa; Hainan; Myanmar; Yunnan.
DISTRIBUTION OF SERPENTES IN MEGHALAYA

<table>
<thead>
<tr>
<th>Species</th>
<th>Khasi Hills</th>
<th>Garo Hills</th>
<th>Jaintia Hills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ramphotyphlops braminus (Daudin)</td>
<td>+</td>
<td>+</td>
<td>-</td>
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<tr>
<td>2. Typhlops diardi Schlegel</td>
<td>+</td>
<td>+</td>
<td>-</td>
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<tr>
<td>3. T. jerdoni Boulenger</td>
<td>+</td>
<td>-</td>
<td>-</td>
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<tr>
<td>4. T. tenuicollis (Peters)</td>
<td>-</td>
<td>+</td>
<td>-</td>
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<tr>
<td>5. Python molurus (Linnaeus)</td>
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<tr>
<td>6. Ahaetulla prasina (Boie)</td>
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<tr>
<td>7. Amphiesma khasiensis (Boulenger)</td>
<td>+</td>
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<tr>
<td>8. A. modesta (Gunther)</td>
<td>+</td>
<td>-</td>
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<tr>
<td>9. A. parallela (Boulenger)</td>
<td>+</td>
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<tr>
<td>10. A. platyceps (Blyth)</td>
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<tr>
<td>11. A. stolata (Linnaeus)</td>
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<tr>
<td>12. A. xenura (Wall)</td>
<td>+</td>
<td>+</td>
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<tr>
<td>13. Blythia reticulata (Blyth)</td>
<td>+</td>
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<tr>
<td>14. Boiga cyanea (Dumeril &amp; Bibron)</td>
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<tr>
<td>15. B. trigonata (Schneider)</td>
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<tr>
<td>16. Calamaria pavimentata Dumeril &amp; Bibron</td>
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<td>+</td>
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<tr>
<td>17. Chrysopelea ornata (Shaw)</td>
<td>+</td>
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<tr>
<td>18. Elaphe cantoris (Boulenger)</td>
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<tr>
<td>19. E. frenata (Gray)</td>
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<tr>
<td>20. E. hodgsoni (Boulenger)</td>
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<tr>
<td>21. E. porphyracea (Cantor)</td>
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<tr>
<td>22. E. prasina (Blyth)</td>
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<tr>
<td>23. E. radiata (Schlegel)</td>
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<tr>
<td>24. Liopeltis frenatus Gunther</td>
<td>+</td>
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<tr>
<td>25. Lycodon aulicus (Linnaeus)</td>
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<tr>
<td>26. L. jara (Shaw)</td>
<td>+</td>
<td>+</td>
<td>-</td>
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<tr>
<td>27. Oligodon albocinctus (Cantor)</td>
<td>+</td>
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<tr>
<td>28. O. cinereus (Gunther)</td>
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<tr>
<td>29. O. cyclururs (Cantor)</td>
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<tr>
<td>30. O. dorsalis Gray &amp; Hardwicke</td>
<td>-</td>
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<tr>
<td>31.</td>
<td><em>O. theobaldi</em> (Gunther)</td>
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<td>+</td>
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<tr>
<td>32.</td>
<td><em>Pareas monticola</em> (Cantor)</td>
<td>+</td>
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<tr>
<td>33.</td>
<td><em>Psammodynastes pulverulentus</em> (Boie)</td>
<td>+</td>
<td>–</td>
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<tr>
<td>34.</td>
<td><em>Pseudoxenodon macrops</em> (Blyth)</td>
<td>+</td>
<td>–</td>
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<tr>
<td>35.</td>
<td><em>Ptyas korros</em> Schlegel</td>
<td>–</td>
<td>+</td>
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<tr>
<td>36.</td>
<td><em>Rhabdops bicolor</em> (Blyth)</td>
<td>+</td>
<td>–</td>
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<tr>
<td>37.</td>
<td><em>Rhabdophis himalayana</em> (Gunther)</td>
<td>+</td>
<td>–</td>
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<tr>
<td>38.</td>
<td><em>R. subminiata</em> (Schlegel)</td>
<td>+</td>
<td>+</td>
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<tr>
<td>39.</td>
<td><em>Sibynophis chinensis</em> (Gunther)</td>
<td>–</td>
<td>+</td>
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<tr>
<td>40.</td>
<td><em>S. collaris</em> (Gray)</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>41.</td>
<td><em>Stoliczkaia khasiensis</em> Jerdon</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>42.</td>
<td><em>Trachischium monticola</em> (Cantor)</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>43.</td>
<td><em>Xenochrophis cerasogastor</em> Cantor</td>
<td>+</td>
<td>–</td>
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<td>44.</td>
<td><em>X. piscator</em> (Schneider)</td>
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<td>+</td>
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<tr>
<td>45.</td>
<td><em>Bungarus bungaroides</em> (Cantor)</td>
<td>+</td>
<td>+</td>
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<tr>
<td>46.</td>
<td><em>B. fasciatus</em> (Schneider)</td>
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<tr>
<td>47.</td>
<td><em>B. niger</em> Wall</td>
<td>–</td>
<td>+</td>
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<td>48.</td>
<td><em>Callophis maclellandi</em> (Reinhardt)</td>
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<tr>
<td>49.</td>
<td><em>Naja naja</em> (Linnaeus)</td>
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<tr>
<td>50.</td>
<td><em>Ophiophagus hannah</em> (Cantor)</td>
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<tr>
<td>51.</td>
<td><em>Trimeresurus albolabris</em> Gray</td>
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<td>–</td>
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<tr>
<td>52.</td>
<td><em>T. erythrurus</em> (Cantor)</td>
<td>+</td>
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<tr>
<td>53.</td>
<td><em>T. jerdoni</em> Gunther</td>
<td>+</td>
<td>–</td>
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<tr>
<td>54.</td>
<td><em>T. monticola</em> Gunther</td>
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<td>–</td>
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<tr>
<td>55.</td>
<td><em>T. popeorum</em> Smith</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>56.</td>
<td><em>T. stejnegeri</em> Schmidt</td>
<td>+</td>
<td>–</td>
</tr>
</tbody>
</table>

NB.

+ = Occurrence.

– = non occurrence.

REFERENCES


Murthy, T.S.N. et. al. Rare snakes of India (in press)


INTRODUCTION


Meghalaya lies between 23°47' and 26°10' north latitude and 89°0' and 92°47' east longitude. The state is bounded by Bangladesh on the south and west and by Assam on the north and east. It comprises an area of 22,549 sq. km. The state consists of five districts, viz. East Garo hills, West Garo hills, East Khasi hills, West Khasi hills and Jaintia hills.

The present study initiated with the sorting out and identification of diversified amphibian (Anura) collections accumulated at the Eastern Regional Station of the Zoological Survey of India, Shillong through surveys conducted by different survey parties over a period of 1978-1990. All the collection data are not furnished here but this has resulted in reporting of a total of 1605 examples belonging to 33 species of amphibia (Anura) under six families and eleven genera. This account will provide a ready reference for those interested in the amphibian fauna from Meghalaya. Six species marked by (*) have been reviewed from literature due to lack of relevant material for study from the state.

Classified list of amphibian (Anura) species known from Meghalaya

Class  AMPHIBIA
Order  ANURA
Family  PELOBATIDAE
Genus  Megophrys Kuhl & V. Hass
1.  Megophrys parva (Boulenger, 1893)
   Genus  Scutiger Theobald
2.  Scutiger sikkimensis (Blyth, 1854)
   Family  BUFONIDAE
   Genus  Bufo Laurenti
3. *Bufo himalayanus* Gunther, 1894

4. *Bufo melanostictus* Schneider, 1799
   Genus *Bufoide* Pillai & Yazdani

5. *Bufoide meghalayana* (Yazdani & Chanda, 1971)
   Family HYLIDAE
   Genus *Hyla* Laurenti

6. *Hyla nexens* (Jerdon, 1854)
   Family MICROHYLIDAE
   Genus *Microhyla* Tschudi

7. *Microhyla berdmorei* (Blyth, 1856)

8. *Microhyla ornata* (Dum. & Bibron, 1841)
   Family RANIDAE
   Genus *Amolops* Cope

9. *Amolops afghanus* (Gunther, 1858)

10. *Amolops formosus* (Gunther, 1875)
    Genus *Rana* Linnaeus

11. *Rana alticola* Boulenger, 1882

12. *Rana assamensis* Sclater, 1892


14. *Rana cyanophlyctis* Schneider, 1799


16. *Rana gerbillus* Annandale, 1912

17. *Rana garoensis* Boulenger, 1920

18. *Rana khasiana* (Anderson, 1871)

19. *Rana laticeps* Boulenger, 1882

20. *Rana limnocharis* Boiesduval, 1835


22. *Rana malabarica* Tschudi, 1838


25. *Rana leptoglossa* (Cope, 1868)
Family RHACOPHORIDAE

Genus Philautus Gistel

26. Philautus andersonii (Ahl, 1927)
27. Philautus cherrapunjiae Roonwal & Kripalani, 1961
28. Philautus garo (Boulenger, 1919)
29. Philautus kempiae (Boulenger, 1919)
30. Philautus shillongensis Pillai & Chanda, 1973

Genus Polypedates Tschudi

31. Polypedates leucomystax (Gravenhorst, 1829)

Genus Rhacophorus Kuhl

32. Rhacophorus bipunctatus Ahl., 1927
33. Rhacophorus maximus Gunther, 1858

MATERIAL AND METHODS

To achieve the purpose of the present work several visits were made to different localities of Meghalaya viz. Garo hills, Khasi hills and Jaintia hills. All the collections were made from different habitats such as marshes, streams, river banks, sandy soil, under big boulders and stones, under decaying logs, inside the caked earth on the rock, inside certain hole, on the tree, vicinity of shaded mountain streams, from open fields with vegetation, cultivated fields, from permanent quiet water of plains, grasslands, from mountains of moderate altitude, open level and hilly regions of low to medium altitude.

After making the collection, the materials were killed by anesthetizing them with chloroform and then put into 8% solution of formaldehyde for fixation. Before putting in the formaldehyde solution a small incision (for bigger material) was given on the belly to penetrate the solution inside the viscera for their proper preservation. After proper fixation for two to three days the material was taken out from the solution and washed properly in water and then put them in 90% alcohol for permanent preservation for study.

Key to the families of amphibia (Anura)

1. Upper jaw toothed .................................................................................... 2
   Jaws toothless ......................................................................................... 5

2. Digits with an intercalary cartilage between penultimate and terminal phalanges; toes two-third to fully webbed, fingers minutely to fully webbed .......................................................... Rhacophoridae
   Fingers free .............................................................................................. 3

3. Terminal phalanges of fingers and toes free, pointed; omosternum present, small and cartilaginous; sternum with or without a bony style................................................. Pelobatidae
   Terminal phalanges of fingers and toes not pointed .................................. 4
4. Terminal phalanges of fingers and toes claw shaped, swollen at the base; omosternum and sternum cartilaginous (rarely ossified)......................................................................................Hylidae

Terminal phalanges of fingers and toes of various shapes but never claw-shaped; omosternum and sternum with or without bony style................................................................. Ranidae

5. Pupil vertical or circular; tongue oval; skin smooth; omosternum rudimentary or absent; sternum cartilaginous................................................................................................. Microhylidae

Pupil horizontal; tongue oval; skin rough and tuberculated; omosternum usually absent, if present it is reduced to a narrow cartilage; mouth narrow, pointed ....................... Bufonidae

Family PELOBATIDAE


Distribution: Asia, Europe, Africa, North America, Central America and South America.

Key to the genera of PELOBATIDAE

Paratoid gland present; tongue rounded in shape............................................................... Scutiger
Paratoid gland absent; tongue subrounded in shape............................................................. Megophrys

Genus Scutiger Theobald, 1868


Distribution: India; Nepal; Indo China.

1. Scutiger sikkimensis (Blyth, 1854)


Diagnosis: Colour dorsally varying from yellowish to brown. Entire posterior part of body including belly and throat yellowish with conspicuous black spots. Dorsal skin with large porous warts forming irregular longitudinal series on the back. Limbs with dark brown patches. Ventral surface smooth. Head broader than long; nostrils much nearer to tip of snout than eyes; tympanum hidden. Paratoid glands small and indistinct. Fingers free with dilated tips. First finger slightly longer than second. Subarticular tubercles small, distinct and of various sizes. Tibiotarsal articulation reaching shoulder. Tips of toes minutely swollen; toes half-webbed. An oval shaped inner metatarsal tubercle present.
Material examined: 3 adults are available from Mawpat and Barapani, Khasi hills, Meghalaya.

Remarks: Out of 18 valid species of the genus Scutiger (Frost, 1985) only one species Scutiger sikkimensis has been found to occur in Indian region which is restricted to northeast India. Pillai & Chanda (1979) recorded the species for the first time in Meghalaya. Chanda (1986) recorded the species for the second time in Meghalaya. During the present study it has been recorded for the third time in Meghalaya. In India this species is strictly restricted to Meghalaya. It is a rare and purely nocturnal in habit.

Genus Megophrys Kuhl & V. Hass, 1822


Diagnosis: Skin tuberculated. Tongue subround, entire and free behind. Vomerine teeth present, sometimes absent. Pupil vertical. Tympanum indistinct or hidden.


Distribution: India; Nepal; China; Indo-China, Malaysia; Indonesia; Philippines; Sumatra; Java; Borneo.

2. Megophrys parva (Boulenger, 1893)


Diagnosis: Dorsally more or less brown with dark markings. An indistinct triangular spot present between the eyes. Limbs with more or less distinct cross-bars. A small white tubercle present on each side of the breast. Skin smooth with a number of scattered minute conical tubercles. A strong supratympanic fold connects the eyes and terminate at the shoulder in a glandule. Upper eyelids with sharp raised edge. Head broader than long; nostrils equidistant from eyes and tip of snout; tympanum feebly distinct. Fingers with feebly swollen tips. Subarticular tubercles indistinct. Hindlimbs long; tibiotarsal articulation reaching beyond mouth. Toes blunt, minutely webbed. Subarticular tubercles indistinct. An indistinct inner metatarsal tubercle present, outer metatarsal tubercle absent.

Material examined: 11 adult frogs were collected from Cherrapunjiae, Shillong of Khasi hills, and Rongrengiri of Garo hills, Meghalaya.

Remarks: This is a rare species of frog and generally found in the hilly regions. Pillai & Chanda (1979) recorded the species for the first time in Meghalaya.

Family BUFONIDAE

**Distribution**: Throughout the world, except Australia, Madagascar, New Guinea and Pacific Islands.

**Remarks**: A total of 18 genera have so far been recorded from the world of which only two genera have been recorded from Meghalaya.

**Key to the genera of BUFONIDAE**

Paratoid gland present; tympanum present ............................................................ *Bufo* Laurenti
Paratoid gland absent; tympanum hidden ........................................................... *Bufo*ides Pillai & Yazdani

**Genus Bufo Laurenti, 1768**


**Diagnosis**: Skin rough and tuberculated. Tongue elliptic, entire. Vomerine teeth absent. Pupil horizontal. Tympanum distinct. Paratoid glands large and prominent. Head generally without bony ridges. Fingers free, toes more or less webbed. Outer metatarsals united. Diapophyses of sacral vertebrae more or less dilated.

**Distribution**: Throughout the world, except Australia, Madagascar, New Guinea and Islands of the Pacific.

**Remarks**: A total of 205 species have so far been recorded from the world of which only two species have been recorded from Meghalaya.

**Key to the species of Bufo**

Tympanum large and very distinct, more than two-third diameter of eyes; tibiotarsal articulation reaching eyes. ................................................................. *melanostictus* Schneider
Tympanum very small and indistinct, less than half the diameter of eyes. Tibiotarsal articulation reaching nearly tip of snout ............................................................. *himalayanus* Gunther

3. *Bufo himalayanus* Gunther, 1864


**Diagnosis**: Dorsally uniform brown to yellowish with dark-brown to black dots. Ventrally yellowish, spotted with brown. Dorsal skin rough with large warts and tubercles, ventral surface almost smooth. Head broader than long. Tympanum very small and indistinct, less than half of eyes. Paratoid glands large and prominent. Fingers free, toes two-third webbed. Tibiotarsal articulation reaching nearly tip of snout. A moderately prominent inner and a smaller rounded outer metatarsal tubercle present.

**Material examined**: 5 adults are available from Shillong, Mawpat, Barapani and Umtynger, Khasi hills, Meghalaya.
Remarks: This species is not widely distributed like Bufo melanostictus and generally found to occur in high altitudes. In this species tympanum is much smaller than Bufo melanostictus and in some examples these are totally lacking. Moreover, the parietal ridges are also noted to be absent in some specimens. Chanda (1976) recorded the species for the first time in Meghalaya. It is the second record of the species from the above area after Chanda (1976).

4. Bufo melanostictus Schneider, 1799


Diagnosis: Dorsally brown to yellowish brown, sometimes with black spots. Ventrally yellowish. Skin dorsally rough with more or less prominent spiny warts and tubercles of various sizes. Ventral surface smooth. Head slightly broader than long. Snout very short, blunt. Tympanum large and very distinct, more than two-third diameter of eyes. Paratoid glands very large and prominent. Fingers free; tips of fingers blunt. First finger slightly shorter than second. Subarticular tubercles very small. Hindlimbs short. Tibiotarsal articulation reaching eyes. Toes blunt, half-webbed. Subarticular tubercles very small and indistinct. A moderately large inner and a smaller outer metatarsal tubercle present.

Material examined: 25 adults and 32 juveniles are available from Shillong, Bishnupur, Mawblong, Mawphlong, Mawpat, Barapani, Umtham, Umran, Shillong Peak of Khasi hills and Tura, Darugiri of Garo hills, Meghalaya.

Distribution: Throughout Indian region; Burma; Sri Lanka; China; Sumatra; Java; Borneo; Malaysia; Indonesia; Philippines.

Remarks: This is the commonest species among the Indian toads and is found to occur in almost all biotopes. In the Himalayas it has been recorded up to an altitude of 3048 m. This species usually remains hiding in holes during the day and come out in the evening hunting for insects in and around human dwellings. During breeding season the females develop excrescences on the two inner fingers (Van Kampen, 1928). According to Pope (1931) females are more variable in size.

Genus Bufoides Pillai & Yazdani, 1973


Distribution: India: Meghalaya, Khasi hills.

Remarks: This is the monotypic genus and is endemic to Indian region.
5. *Bufoides meghalayana* (Yazdani & Chanda, 1971)


**Diagnosis:** Dorsally uniform dark brown to black. Ventrally greyish, spotted with brown. Dorsal skin rough with warts and tubercles of different sizes. Head broader than long, depressed. Nostrils much nearer to tip of snout than eyes. Eyes prominent, directed downwards. Tympanum hidden. Fingers free, dorsally flattened with slightly dilated tips. Subarticular tubercles not prominent. Hindlims moderately long; tibiotarsal articulation reaching posterior corner of eyes. Toes with dilated tips, almost fully webbed. Subarticular tubercles indistinct. A large, prominent inner and in a very small outer metatarsal tubercle present.

**Material examined:** 23 adults are available from Mawblong and Cherrapunjiæ, Khasi hills, Meghalaya.

**Distribution:** India: Khasi hills, Meghalaya.

**Remarks:** This species was originally recorded as *Ansonia meghalayana* by Yazdani & Chanda, (1971) from Mawblong, Khasi hills, Meghalaya. Subsequently, Pillai & Yazdani (1973) erected a new genus *Bufoides* to accommodate the species. It is an endemic species to Indian subcontinent and is restricted to Meghalaya.

### Family HYLIDAE

**Diagnosis:** Upper jaw toothed, lower jaw usually toothless. Diapophyses of the sacral vertebra dilated. Terminal phalanges of fingers and toes claw-shaped, swollen at the base. Omosternum cartilaginous (rarely calcified); sternum cartilaginous; vertebrae procoelous.

**Distribution:** Asia; Eurasia; Africa; North and South America; Australia; New Guinea.

**Remarks:** A total of 30 genera have so far been recorded from the world of which only one genus *Hyla* has been found to occur in Indian subcontinent and is restricted to Meghalaya and Assam.

### Genus *Hyla* Laurenti, 1768


**Diagnosis:** Skin almost smooth, sometimes tuberculated. Tongue entire or 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 metatarsal united or slightly separated. Omosternum and sternum cartilaginous.

**Distribution:** India: Meghalaya, Assam. Burma; China; Indo-China; Malaysia.

**Remarks:** Only one species viz. *Hyla annectens* (Jerdon), is known from Indian region and is strictly restricted to Meghalaya and Assam of northeast India.
6. *Hyla annectens* (Jerdon, 1870)


*Material examined*: 14 adult examples collected from Mawphlong, Cherrapunjiae, Umran, Shillong, Khasi hills, Meghalaya.

*Distribution*: India: Meghalaya, Assam; Burma; Thailand; Vietnam; China.

*Remarks*: *Hyla annectens* the only species of the above genus is known from Indian region and is restricted to Assam and Meghalaya of northeast India. Pillai & Chanda (1970) recorded the species from Meghalaya for the second time.

**Family MICROHYLIDAE**


*Distribution*: Asia; Africa; Madagascar; South America; Central America; New Guinea.

*Remarks*: A total of four genera of the family Microhylidae have so far been recorded from the Indian subcontinent of which, only one genus *Microhyla* has been found to occur in Meghalaya.

**Genus Microhyla** Tschudi, 1838


*Distribution*: India; Burma; Sri Lanka; China; Malaysia; Indonesia.

*Remarks*: A total of four species of this genus are known from Indian region and of these two species are known from Meghalaya.
Key to the species of *Microhyla*

Tibiotarsal articulation reaching beyond tip of snout; toes fully webbed .................. *berdmorei* (Blyth)

Tibiotarsal articulation reaching a little in front of shoulder; toes with only rudiments of web..........

........................................................................................................... *ornata* (Dum & Bibron)

7. *Microhyla berdmorei* (Blyth, 1856)


*Diagnosis*: Dorsally varying from pink to dark brown, sometime with brownish spots or marbling scattered on the dorsal surface of the body. Limbs with faint cross-bands. Dorsal skin smooth, occasionally with a few indistinct tubercles on the back and on the sides of the body. Ventral surface almost smooth. Head much broader than long, pointed. Nostrils slightly nearer to tip of snout than eyes. Tympanum hidden. Fingers free with rounded tips. Subarticular tubercles large and prominent. Tibiotarsal articulation reaching beyond tip of snout. Tips of toes swollen into rounded tips, fully webbed. An oval shaped inner and a rounded outer metatarsal tubercles present.

*Material examined*: 8 exs. adults are available from the Umsing and Shillong of Khasi hills, Meghalaya.

*Distribution*: India: Meghalaya, Assam, Arunachal Pradesh, Mizoram. Burma; Indo-China; Malaysia.

*Remarks*: This species was originally recorded from Burma (Blyth, 1956). Pillai & Chand (1981) recorded the species for the first time in Indian subcontinent. In India this species seems to be restricted to northeast India.

8. *Microhyla ornata* (Dum & Bibron, 1841)


*Material examined*: 12 adults are available from Shillong. Khasi hills, Meghalaya.

*Distribution*: India: West Bengal, Assam, Meghalaya, Mizoram. Nagaland, Manipur, Tripura, Kerala, Sri Lanka; China; Malaysia.
Remarks: This is the commonest species of the family Microhylidae. This species has been found to occur in different biotopes such as from desert to an altitude of 1524 m. Generally June-July is the breeding season of this frog. Pillai & Chanda (1981) recorded the species for the first time in Garo hills Meghalaya. It is burrowing in habit.

Family RANIDAE

Diagnosis: Upper jaw toothed, lower one nearly always toothless. In most species of this family, the fingers perfectly free, but the toes more or less completely webbed. Terminal phalanges of fingers and toes of various shapes and sizes. Omosternum and sternum with or without bony style. Vertebrae procoelous.

Distribution: Eurasia; Africa; North and South America; Australia.

Key to the genera of the family RANIDAE
Tips of fingers and toes with circummarginal groove ........................................... Amolops Cope
Tips of fingers and toes simple without any groove .............................................. Rana Linnaeus

Genus Amolops Cope, 1865


Diagnosis: Skin smooth, sometimes tuberculated. Pupil horizontal. Tympanum distinct. Parotoid glands absent. Fingers free; toes more or less webbed. Tips of fingers and toes dilated into distinct discs with crescentic or horse-shoe shaped groove, separating upper from the lower surface. Omosternal style forked at the base.

Distribution: India: (Eastern Himalayas between 350 m to 1400 m), Meghalaya, Assam, Mizoram, Tripura; Burma; China.

Key to the species of Amolops
Tibiotarsal articulation reaching beyond tip of snout; interorbital space less than upper eyelid; subarticular tubercles large and prominent .......................................................... afghanus (Gunther)
Tibiotarsal articulation reaching nostril or tip of snout; interorbital space equals to upper eyelid; subarticular tubercles moderate ................................................................. formosus (Gunther)

9. Amolops afghanus (Gunther, 1858)


Diagnosis: Dorsally dark-olive to brown, slightly yellowish on the ventral side. Limbs with dark cross-bands. Skin smooth, very often with large warts on sides. Head slightly broader than long; snout pointed, slightly projecting beyond lower jaw. Nostrils equidistant from eyes and tip of snout.
Interorbital width less than upper eyelid. Tympanum small, distinct and nearly one-third of eyes. Fingers free with prominent dermal broader and large discs with well developed grooves separating upper from the lower surface. Subarticular tubercles large and prominent. Tibiotarsal articulation reaching beyond tip of snout. Toes with prominent well developed grooves separating upper from the lower surface; fully webbed. Subarticular tubercles large and prominent. A narrow, elliptical, flat inner metatarsal tubercle present. Outer metatarsal tubercle absent.

**Material examined**: 15 adults were collected from Cherrapunji, Shillong of Khiai hills, and Siju cave, Garo hills, Meghalaya.

**Distribution**: India: West Bengal, Meghalaya, Assam, Arunachal Pradesh, Mizoram, Tripura. Nepal; Burma; China.

**Remarks**: This species was originally recorded as *Polypedates afghanus* (Gunther, 1865). It was subsequently recorded from West Bengal, Meghalaya, Assam and Arunachal Pradesh (Daniel 1962, Pillai & Chanda 1979, Boulenger, 1920). This is a rare species and generally found to occur near the stream. It is mainly nocturnal species.

10. *Amolops formosus* (Gunther, 1875)


**Diagnosis**: Dorsally bright green with blackish spots on the head and body. Dorsal skin smooth. Belly granulated. A glandular fold present above the tympanum. Head slightly broader than long. Snout rounded, slightly projecting beyond mouth. Nostrils equidistant from eyes and tip of snout.

Tympanum very distinct, one-third diameter of eyes. Forelimbs very long, discs very large with prominent grooves separating upper from the lower surface. Subarticular tubercles moderate. Tibiotarsal articulation reaching beyond nostril. Toes entirely webbed. Subarticular tubercles moderate. An oval shaped inner metatarsal tubercle present. Outer metatarsal tubercle absent.


**Remarks**: Although this species was recorded for the first time from Meghalaya, several surveys were made in and around Meghalaya did not yield any result. Description based on (Boulenger, 1920).

**Genus** *Rana* Linnaeus, 1758


**Distribution**: Cosmopolitan, except in Southern parts of South America, Australia and New Zealand.
Key to the species of *Rana*

1. Head broader than long ........................................................................................................ 2
   Head as long as broad or longer than broad ........................................................................ 8

2. Tibiotarsal articulation reaching tip of snout or beyond ......................................................... 3
   Tibiotarsal articulation not reaching tip of snout ................................................................. 6

3. Toes fully webbed; fingers obtusely pointed, free with rudiment of web ................... *assamensis*
   Toes not fully webbed ........................................................................................................ 4

4. Toes half-webbed ................................................................................................................. 5
   Toes three-fourth webbed; fingers free with swollen tips .................................................... *laticeps*

5. Tympanum small, faintly visible, covered by the skin; inner metatarsal tubercle present, outer metatarsal tubercle absent ................................................................. *khasiana*
   Tympanum distinct; both inner and outer metatarsal tubercle present ............................. *limnocharis*

6. Toes fully webbed; tympanum distinct, more than half the diameter of eye ................ *cyanophlyctis*
   Toes half to three-fourth webbed ..................................................................................... 7

7. Toes half webbed; tympanum distinct, more than two-third the diameter of eye .......... *malabarica*
   Toes two-third webbed; tympanum distinct, less than half the diameter of eye ............... *mawlyndipi*

8. Tibiotarsal articulation reaching tip of snout or beyond tip of snout ........................................ 9
   Tibiotarsal articulation not reaching tip of snout ................................................................ 14

9. Toes not fully webbed but three-fourth webbed; tibiotarsal articulation reaching tip of snout; inner metatarsal tubercle present, outer metatarsal tubercle absent ............... *mawphlangensis*

10. Tympanum more than half the diameter of eye .................................................................. 11
   Tympanum half or less than half the diameter of eye .......................................................... 13

11. Tips of fingers and toes with horse-shoe shaped discs separating upper from the lower surface; tympanum very distinct, two-third diameter of eye ................................................. *alticola*
   Tips of fingers and toes without horse-shoe shaped discs .................................................. 12

12. Tympanum very distinct, nearly two-third diameter of eye; inner metatarsal tubercle present, outer metatarsal tubercle absent ................................................................. *livida*
   Tympanum distinct, half the diameter of eye; both inner and outer metatarsal tubercles present .......................... *danieli*

13. Tympanum distinct, about one-third the diameter of eye; inner metatarsal tubercle present, outer metatarsal tubercle absent ................................................................. *gerbillus*
   Tympanum very distinct, half the diameter of eye; both inner and outer metatarsal tubercle present ................................................................. *garoensis*
14. Toes fully webbed, except two terminal phalanges of fourth toe free; tips of fingers with small
discs .................................... *bilineata*

Toes half to two-third webbed; tips of fingers with minute transverse grooves......... *leptoglossa*

11. **Rana alticola** Boulenger, 1882


*Diagnosis*: Dorsally yellowish to light brown. Ventrally almost white. Skin almost smooth. Head longer than broad. Snout obtusely pointed, projecting slightly beyond mouth. Tympanum very distinct, two-third diameter of eyes. Fingers long, free with horse-shoe shaped discs separating upper from the lower surface. Tibiotarsal articulation reaching beyond tip of snout. Tips of toes with horse-shoe shaped discs separating upper from the lower surface; entirely webbed. Two phalanges of fourth toe free. Subarticular tubercles moderate and prominent. Both inner and outer metatarsal tubercles present.

*Material Examined*: 24 adults are available from Mylliem, Cherrapunjiae, Khasi hills and from Tura, Garo hills, Meghalaya.

*Distribution*: India: Meghalaya, Assam, Tripura, West Bengal, Orissa, Andamans. Sri Lanka; Nepal; China; Japan; Indonesia; Malaysia.

*Remarks*: This species was originally recorded from Khasi hills, Meghalaya (Boulenger, 1882). Pillai & Chanda (1979) recorded the species for the second time from Meghalaya. This, is a rare species of frog and generally found to occur near the stream. Tadpoles of this frogs are more abundantly available in comparison to their adults.

12. **Rana assamensis** Sclater, 1892


*Diagnosis*: Dorsally yellowish to brown. Ventral surface almost white. Skin smooth. Head broader than long. Snout pointed, projecting beyond lower jaw. Tympanum fairly distinct, half or slightly less than the diameter of eyes. Forelimbs moderately long; fingers obtusely pointed, free with rudiment of web. Hindlimbs very long. Tibiotarsal articulation reaching far beyond tip of snout. Toes with dilated tips, entirely webbed. Inner metatarsal tubercle present, outer metatarsal tubercle absent.

*Material examined*: No material was available during the present study, description based on literature.

*Distribution*: India: West Bengal (Darjeeling), Meghalaya. Nepal.

*Remarks*: Although this species was recorded from Khasi hills, Meghalaya, no material was available in the collection during the present study.


**Diagnosis**: Dorsally brownish without any spot. Ventral surface almost white. Dorsal skin smooth, faintly tuberculated posteriorly. Belly, breast and throat with white subcutaneous dots. Head longer than broad. Snout rounded, projecting beyond mouth. Tympanum very distinct, more than half the diameter of eyes. Fingers fairly long, free; tips of fingers dilated into small discs. Subarticular tubercles prominent. Hindlimbs long. Tibiotarsal articulation reaching eyes. Toes entirely webbed except two terminal phalanges of fourth toe free. Tips of toes dilated into small discs. Both inner and outer metatarsal tubercles present.

**Material examined**: One adult frog collected from Garo hills, Meghalaya.

**Distribution**: India: Meghalaya.

**Remarks**: This species is known only from the type material collected from Garo hills, Meghalaya. During the present study several surveys were undertaken in and around Meghalaya however did not yield any result. Description based on Pillai & Chanda (1981).

14. **Rana cyanophlyctis** Schneider, 1799


**Diagnosis**: Dorsally greyish to brown, spotted or marbled with black or dark markings. Ventral surface white or pale yellowish. Dorsal skin with small tubercles and warts. Ventral surface almost smooth. Head slightly broader than long, depressed. Snout pointed, slightly projecting beyond mouth. Tympanum distinct, more than half the diameter of eyes. Nostrils equidistant from eyes and tip of snout. Fingers free, pointed. Subarticular tubercles small and prominent. Tibiotarsal articulation reaching between eyes and nostril. Toes with swollen tips, fully webbed. A small, pointed, digitiform inner metatarsal tubercle present. Outer metatarsal tubercle absent.

**Material examined**: 215 exs. were collected from different areas of Meghalaya during the period.

**Distribution**: All over India; Pakistan; Afghanistan; South Arabia and Sri Lanka.

**Remarks**: It is the commonest and most easily available species of the Indian frogs, inhabiting all biotopes of the country. It is almost entirely aquatic. It may be frequently found on the banks of streams or ponds throughout the year and prefers still water. It has the peculiar habit of skipping over the surface of water, this accounts for its peculiar name “Skipper frog”

15. **Rana danieli** Pillai & Chanda, 1977


**Diagnosis**: Dorsally brown to dark-brown, occasionally with dark irregularly patches on the
dorsum. Limbs with dark cross-bars. Ventral surface almost white. Skin smooth. Head as long broad. Snout projecting beyond mouth. Nostrils slightly nearer to tip of snout than eyes. Tympanum distinct, half the diameter of eyes. Fingers free. Tips of fingers swollen into small discs. Tibiotarsal articulation reaching tip of snout or slightly beyond the snout. Toes fully webbed. Tips of toes swollen into small discs. Both inner and outer metatarsal tubercles present.

**Material examined**: 3 exs. collected from Mawphlong and Nongkreng, Khasi hills, Meghalaya.

**Distribution**: India: Meghalaya.

**Remarks**: This species was originally recorded from Mawphlong, Khasi hills, Meghalaya (Pillai & Chanda, 1977). It has been subsequently recorded from Assam and Manipur (Chanda, 1986). It is a rare species and generally found to occur near small stream.

16. *Rana gerbillus* Annandale, 1912


**Diagnosis**: Dorsally grey, marbles with black. Limbs with dark brown cross-bands of irregular pattern. Skin smooth, occasionally finely granulated. Ventral surface smooth. Head as long as broad; snout rounded, projecting slightly beyond lower jaw. Nostrils equidistant from eye and tip of snout. Tympanum distinct about one-third diameter of eyes. Fingers free with prominent horizontally grooved discs. Subarticular tubercles small but prominent. Tibiotarsal articulation reaching beyond tip of snout. Tips of toes with horizontally grooved discs which are slightly smaller than finger discs; toes fully webbed. Inner metatarsal tubercles present, outer metatarsal tubercle absent.

**Material examined**: 3 exs. collected from Mawphlong and Umtham, Khasi hills, Meghalaya.

**Distribution**: India: West Bengal (Darjeeling), Meghalaya, Assam, Arunachal Pradesh.

**Remarks**: This species was originally recorded from Arunachal Pradesh (Annandale, 1912). Pillai & Chanda (1979) recorded the species for the first time in Meghalaya. Chanda (1986) recorded the species for the first time in Darjeeling, West Bengal. This is a rare species and generally found to occur near the streams of the hilly regions.

17. *Rana garoensis* Boulenger, 1920


**Diagnosis**: Dorsally greyish brown, ventral surface white. Skin dorsally granulated. Ventral skin smooth. Head longer than broad. Snout pointed, projecting beyond mouth. Nostrils equidistant from eyes and tip of snout. Tympanum very distinct, half the diameter of eyes. Fingers free. Tips of fingers dilated into small discs, with a groove separating upper from the lower surface. First and second fingers equal in size. Subarticular tubercles moderately large, prominent. Tibiotarsal articulation reaching slightly beyond tip of snout. Toes entirely webbed. An oval shaped inner and a round outer metatarsal tubercle present.
Material examined: 2 exs. (Type) collected from Garo hills, Meghalaya.

Remarks: This species was originally described from Garo hills, Meghalaya (Boulenger, 1920). However several surveys carried subsequently in and around Meghalaya did not yield any more specimen of this species.

18. **Rana khasiana** (Anderson, 1871)


Distribution: India: Meghalaya.

Material examined: Material not available. Description based on literature.

19. **Rana laticeps** Boulenger, 1882


Material examined: 15 adults are available from Mawblong, Cherrapunjiae, Barapani, Khasi hills and Tura. Garo hills, Meghalaya.


Remarks: This species was originally recorded from Khasi hills, Meghalaya by Boulenger (1882). Pillai & Chanda (1979) recorded the species from Khasi hills, Meghalaya after a span of more than 70 years. This is a rare species.

20. **Rana limnocharis** Weighmann, 1835


Diagnosis: Dorsally light brown to black with distinct or variable markings on the dorsal side. Ventral surface almost white. In most cases a mid-dorsal vertical band present from snout to vent.

**Material examined**: 794 exs. collected from Shillong, Barapani, Cherrapunjiae, Mawphlong, Shillong peak, Old Barapani Road, Nongkrem, Umtyngar, Nongpoh, Umsning, Umshing, Nayabunglow, Khasi hills, and Tura, Baghmara, Cherikutty, Dainadubi, Damra, Darugiri, Phulbari, Rongtham, Songsak, Siju Cave, Garo hills, Meghalaya.

**Distribution**: All over India; Sri Lanka; China; Malaysia; Indonesia; Philippines.

**Remarks**: This is the commonest and most widely distributed of the Indian frogs and has been recorded from 2133 m. in Sikkim (Boulenger, 1920). In northeast Indian forms this species exhibits certain intraspecific variations specially in colour pattern with reference to the dorsal vertebral line which may be totally non-existent or sometimes very broad and prominent.

### 21. *Rana livida* (Blyth, 1855)


**Material examined**: 19 exs. are available from Shillong, Cherrapunjiae, Barapani, Umsning and Umtyngar, Khasi hills, Meghalaya.

**Distribution**: India: West Bengal, Meghalaya, Assam, Manipur.

**Remarks**: This species was originally recorded from Burma (Byth, 1955). It has been recorded for the first time in Meghalaya (Pillai & Chanda, 1978).

### 22. *Rana malabarica* Tschudi, 1838


**Diagnosis**: Yellowish to crimson with or without small black markings on the dorsum. Limbs pale brown, sometimes with dark-brown. Ventrally white to yellowish or marbled with brown. Skin
with minute granules on the dorsum. Lateral sides with small warts. Head broader than long. Snout obtusely pointed, projecting slightly beyond lower jaw. Nostril closer to tip of snout than to the eyes. Tympanum very distinct, more than two-third diameter of eye. Fingers long with prominent tips. First finger longer than second. Subarticular tubercles prominent. Hindlimbs long. Tibiotarsal articulation reaching eye. Toes half-webbed with prominent tips. Subarticular tubercles large and prominent. An oval shaped inner metatarsal tubercle and a prominent outer metatarsal tubercle present.

*Material examined*: 5 exs. are available from Umling, Pynursla, Barapani, Khasi hills and Dainadubi, Garo hills, Meghalaya.

*Distribution*: India: Assam, Meghalaya, Madhya Pradesh, Maharashtra, Kerala.

*Remarks*: This species was originally recorded from Kerala (Tschudi, 1938). Pillai & Chanda (1978) recorded the species for the first time from Meghalaya. The finding of this species from northeast India indicates the discontinuous distribution pattern in the subcontinent.


*Material examined*: 1 ex. collected from Mawphlong, Khasi hills, Meghalaya.

*Distribution*: India: Meghalaya, Manipur.

*Remarks*: This species was originally recorded from Mawphlong, Khasi hills, Meghalaya (Pillai & Chanda, 1977). It is a nocturnal species and found near the hill stream. It is a rare species.


*Diagnosis*: Dorsally deep-brown to blackish, with black canthal and temporal bands. Throat and ventral surface of limbs spotted or marbled with black or brown. Skin smooth. Head broader than long, slightly depressed. Snout slightly pointed, projecting beyond lower jaw. Nostrils equidistant from eyes and tip of snout. Tympanum distinct, less than half the diameter of eye. Fingers long, free. Tips of fingers dilated into small discs. First finger slightly shorter than second. Subarticular tubercles well developed. Hindlimbs long. Tibiotarsal articulation reaching nostril. Toes more than two-third webbed. Tips of toes dilated into prominent discs. Subarticular tubercles prominent and well developed. An oval shaped inner metatarsal tubercle present. Outer metatarsal tubercle absent.
Material examined: 1 ex. collected from Mawlyndeep, Khasi hills, Meghalaya.

Remarks: It is a rare species of frog and found to occur near the hill stream under the overhanging vegetation of the stream. Normally this species do not float on the surface of water like *Rana limnocharis*.

25. *Rana leptoglossa* (Cope, 1868)


Diagnosis: Dorsally brown with small or large black spots or markings. Ventrally white, spotted or marbled with brown. Skin strongly granulated on the head and back often with larger warts on the sides. Ventral surface smooth. Head as long as broad. Nostrils slightly nearer to snout than eyes. Tympanum very distinct, three-fourth diameter of eye. Fingers long, free with small discs and minute transverse groove. First finger longer than second. Subarticular tubercles large and prominent. Hindlimbs long. Tibiotarsal articulation reaching eyes or between eyes and nostril. Toes half to two-third webbed with small discs and with grooves separating upper from the lower surface. Subarticular tubercles prominent. An oval shaped inner metatarsal tubercle and a round outer metatarsal tubercle present.

Material examined: Material not available for study. Description based on type.

Distribution: India: Meghalaya, Assam; Burma.

Family RHACOPHORIDAE

Diagnosis: Upper jaw toothed. Lower jaw usually toothless. Vomerine teeth present or absent. Tongue free and deeply bifurcated behind. Tympanum distinct. Intercalary cartilage present between the penultimate and terminal phalanges. Fingers minutely to fully webbed. Toes two-third to fully webbed. Tips of fingers and toes dilated into prominent discs or rounded tips. Omosternum and sternum with bony style.

Distribution: India; Sri Lanka; Burma; China; Indo-China; Malaysia; Indonesia; Philippines; Africa; Madagascar.

Remarks: A total of 10 genera have so far been recorded from the world of which, only three genera have been found to occur in Meghalaya.

Key to the genera of RHACOPHORIDAE

1. Vomerine teeth absent ..
2. Vomerine teeth present
3. Tympanum distinct or hidden; fingers free or minutely webbed at the base; toes webbed .....
4. 

Philautus

3. Vomerine teeth usually present (exceptionally absent); tips of fingers and toes dilated into regular discs; an intercalary ossicle present between penultimate and ultimate phalanges ..... *Rhacophorus*  
Vomerine teeth usually present; tips of fingers and toes with circum-marginal grooves; no intercalary ossicle present between the penultimate and ultimate phalanges ..... *Polypedates*
Genus *Philautus* Gistel, 1848


*Diagnosis*: Skin smooth, occasionally granulated. Vomerine teeth absent. Pupil horizontal. Tympanum distinct or hidden. Fingers free or minutely webbed at the base; toes webbed. Tips of fingers and toes dilated into swollen discs or rounded tips. Omasternum or sternum with a bony style.

*Distribution*: India; Sri Lanka; Burma; Indo-China; Malaysia; Indonesia; Philippines.

*Remarks*: A total of 85 species of this genus have so far been recorded from the world of which only five species have been recorded from Meghalaya.

**Key to the species of *Philautus***

1. Tympanum fairly distinct or distinct ................................................................. 2
   Tympanum indistinct or hidden.............................................................................. 4
2. Tympanum, distinct one-third the diameter of eye ............................................ *garo*
   Tympanum fairly distinct .................................................................................... 3
3. Tibiotarsal articulation reaching tip of snout .................................................... *cherrapunjiae*
   Tibiotarsal articulation reaching posterior corner of eye .................................... *shillongensis*
4. Tympanum hidden; tibiotarsal articulation reaching tip of snout ....................... *kempii*
   Tympanum indistinct; tibiotarsal articulation reaching anterior corner of eye .......... *andersoni*

**26. Philautus andersoni** (Ahl., 1927)


*Diagnosis*: Dorsally brown to olive, ventrally white to yellowish in colour. Skin smooth. Lateral parts of body and thigh with small tubercles. Head broader than long. Snout moderately long. Nostrils closer to tip of snout than eyes. Tympanum indistinct, more than one-third the diameter of eye. Fingers free with swollen tips. First finger shorter than second. Subarticular tubercles small, indistinct. Tibiotarsal articulation reaching anterior corner of eyes. Toes with swollen tips, webbed at the base. Subarticular tubercles small, indistinct. Indistinct inner and outer metatarsal tubercles present.

*Material examined*: 26 exs. are available from Shillong, Barapani, Umtham, Khasi hills and Garampani, Jaintia hills, Meghalaya.


*Remarks*: Since the description of this species by Ahl (1927) it remained rare as no further record could be noted till Pillai & Chanda (1979) reported this species from a series of collection from Meghalaya and Arunachal Pradesh, northeast India.
27. *Philautus cherrapunjiae* Roonwal & Kripalani, 1961


*Material examined*: 59 exs are available from Cherrapunjiae, Mawblong, Pynursla, Khasi hills, Meghalaya.

*Distribution*: India: Meghalaya.

*Remarks*: This species was not reported since Roonwal & Kripalani (1961) described it from Cherrapunjiae, Khasi hills, Meghalaya. This species is purely endemic to Meghalaya in the Indian subcontinent.

28. *Philautus garo* (Boulenger, 1919)


*Diagnosis*: Dorsally dark brown to black, ventrally greyish to white. Limbs with irregular dark-brown patches. Skin smooth. Head broader than long, nostrils equidistant from eyes and tip of snout; tympanum distinct, one-third diameter of eyes. Fingers free; first finger shorter than second; tips of fingers dilated into prominent discs which are as large as tympanum; subarticular tubercles moderately developed. Tibiotarsal articulation reaching eyes. Toes webbed at the base; tips of toes dilated into rounded discs as large as finger tips. Both inner and outer metatarsal tubercles absent.

*Material examined*: One adult material is available from Tura, Garo hills, Meghalaya.

*Distribution*: India: Garo hills, Meghalaya.

*Remarks*: This species was originally recorded from Tura, Garo hills, Meghalaya (Boulenger, 1919) and is known only from the type. During the present study intensive collection in and the type locality did not yield any further material. It is endemic to Meghalaya in the Indian subcontinent.

29. *Philautus kempii* (Boulenger, 1919)


*Diagnosis*: Dorsally grey to brown. Limbs with irregular dark cross-bars; throat and belly almost white, spotted or marbled with brown. Dorsal skin tuberculated, ventrally smooth. Head broader than long; nostrils equidistant from eyes and tip of snout. Tympanum hidden. Fingers free; first finger
shorter than second; tips of fingers dilated into prominent discs; subarticular tubercles indistinct. Tibiotarsal articulation reaching tip of snout; toes with prominent discs, webbed at the base. Both inner and outer metatarsal tubercles absent.

**Material examined**: One adult material is available from Tura, Garo hills, Meghalaya.

**Distribution**: India: Meghalaya.

**Remarks**: This species was originally recorded from Garo hills, Meghalaya (Boulenger 1919) and is known only from the type.

### 30. *Philautus shillongensis* Pillai & Chanda, 1973


**Diagnosis**: Dorsal surface grey to black, ventrally almost white. Skin almost smooth; belly with scattered warts and tubercles. Head slightly broader than long; nostrils much closer to tip of snout than eyes; Tympanum fairly distinct, less than half the diameter of eyes. Fingers free with intercalary ossicles; first finger shorter than second; subarticular tubercles indistinct. Tibiotarsal articulation reaching posterior corner of eyes. Toes free with small rounded discs; subarticular tubercles moderately prominent. An indistinct inner metatarsal tubercle present, outer metatarsal tubercle absent.

**Material examined**: 285 exs. are available from various localities in and around Shillong, Khasi hills, Meghalaya.

**Distribution**: India: Meghalaya.

**Remarks**: This species was originally recorded from Shillong, Khasi hills, Meghalaya (Pillai & Chanda, 1973). During the present study a number of examples were collected throughout the year from the different localities of Shillong. It is an endemic species to Meghalaya of the Indian subcontinent.

### Genus *Rhacophorus* Kuhl & V. Hass, 1827


**Distribution**: India; Burma; China; Japan; Indo-China; Malaysia; Indonesia; Philippines; Madagascar.

**Remarks**: A total of 95 species have been included in this genus from the world, of which two species have been found to occur in Meghalaya.

**Key to the species of *Rhacophorus***

Tibiotarsal articulation reaching anterior corner of eyes; nostrils nearer to tip of snout than eyes;
tympanum half the diameter of eyes .......................................................... *maximus* Gunther
Tibiotarsal articulation reaching posterior corner of eyes; nostrils equidistant from eyes and tip of
snout; tympanum two-third the diameters of eyes........................................... *bipunctatus* Ahl.

31. *Rhacophorus bipunctatus* Ahl., 1927


*Diagnosis*: Dorsally green to olive, ventrally whitish. Dorsum slate coloured. Prominent black
spots present on the flank which are variable in nature. Sometimes two large spots occur on the right
side followed by three smaller spots on the left. Sometimes two prominent spots present on both
sides. Dorsal skin smooth. Belly, lateral sides of the body and thighs finely granulated. Head broader
than long. Snout pointed, projecting beyond lower jaw; nostrils equidistant from eyes and tip of
snout. Tympanum distinct, two-third the diameter of eyes. Fingers with prominent discs and webbed
to discs with distinct circum-marginal grooves. Tibiotarsal articulation reaching posterior corner of
eyes; toes fully and broadly webbed. Tips of toes with large discs with circum-marginal grooves. A
cartilagenous phalange present between penultimate phalange of their toes. Subarticular tubercles
prominent. A small inner metatarsal tubercle present, outer metatarsal tubercle absent. A cutaneous
flap present above the vent and along the hindlimbs.

*Material examined*: 13 exs. are available from Shillong, Pynursla, Umroi, Thadlaskein, Khasi
hills, Meghalaya.


*Remarks*: This species was known from Arunachal Pradesh and Meghalaya (Annandale, 1912,
Pillai & Chanda 1979). Chanda (1986) recorded the species for the second time in Meghalaya. During
the present study it has been recorded for the third time in Meghalaya.

32. *Rhacophorus maximus* Gunther, 1858


*Diagnosis*: Dorsally dark to pale green. Ventral surface including limbs and belly yellowish. Skin
smooth. Ventral and lateral sides of the body minutely granulated. Head broader than long. Snout
slightly projecting beyond lower jaw. Tympanum distinct, half the diameter of eyes. Nostrils nearer to
tip of snout than eyes. Fingers fully webbed with prominent well developed discs; first finger shorter
than second; subarticular tubercles prominent. Toes fully and broadly webbed with prominent well
developed discs and with distinct circum-marginal grooves; subarticular tubercles prominent. Inner
metatarsal tubercle present, outer metatarsal tubercle absent.

*Material examined*: 2 exs. are available from Shillong, Barapani, Kasi hills and Tura, Garo hills,
Meghalaya.

*Distribution*: India: Meghalaya, Assam, Arunachal Pradesh, Nagaland, Manipur, Mizoram, West
Bengal; Malaysia; Indonesia.

Remarks: This species was originally recorded from Borneo. Pillai & Chanda (1979) recorded the species for the first time in Meghalaya. In India this species appears to be restricted to northeast India and West Bengal.

Genus Polypedates Tschudi, 1838

1838. Polypedates Tschudi, Classif. Batr. : 34.


Distribution: Throughout tropical Asia; Japan; China; Philippines; Java; Borneo.

33. Polypedates leucomystax Gravenhorst, 1829


Diagnosis: Head broader than long. Tympanum very distinct. Fingers with rudiment of web and well developed discs with circum-marginal grooves. Tibiotarsal articulation reaching anterior corner of eyes. Tips of toes dilated into well developed disc with circum-marginal grooves. Toes two-third webbed. A small inner metatarsal tubercle present. Outer metatarsal tubercle absent.

Distribution: India: Arunachal Pradesh, Assam, Sikkim, West Bengal; Southern China to Philippines.

Remarks: It is a nocturnal species and occasionally found inside the room at night specially during the monsoon. It prefers dark and moist atmosphere of lavatory and also found under the leaves of certain plants and roofs of thatched village huts.

DISCUSSION

The present study has been undertaken to furnish an up to date account of the known species of amphibians from Meghalaya. During the course of present study collections were made from all the five districts of Meghalaya.

A total of 54 species under 6 families and 14 genera have been found to occur in different states of northeast India (Chanda, in press) of which 33 species have been found to occur in Meghalaya. This study clearly indicates that amphibian fauna of Meghalaya can be considered as rich when compared with the amphibian fauna of northeast India.

It is observed that representatives from all six families of India amphibians are also available in the present study. A total of 14 genera occurring in northeast India of which only one genus Bufoides Pillai & Yazdani is restricted to Meghalaya. Among the various localities of Meghalaya, at least two,
Mawphlang (alt. 1050 m) and Cherrapunjiae (alt. 1500 m) of Khasi hills can be specially mentioned, as they represent type locality for a number of new species and this may probably be due to most congenial habitat condition and less interference from human agencies in these locations. Both these localities surely yield more species.

The commonest species in this state appear to be *Rana cyanophlyctis* and *Rana limnocharis*. Both of these are widely distributed throughout the Indian region. Besides, both intraspecific as well as interspecific variations have been observed in a number of material of these species. The colour pattern of *R. limnocharis* shows considerable variations specially with regard to the dorsal vertebral line which is sometime very prominent and broad and in some cases it may be totally absent. Intraspecific variations have been observed in *R. cyanophlyctis* from Khasi hills, and a few of them appear “Toad like” (Pillai & Chanda, 1979).

ACKNOWLEDGEMENT

I am grateful to Dr. A. K. Ghosh, Director, Zoological Survey of India, for providing me facilities to carry out the work and to Dr. J.R.B. Alfred, Scientist—’SG’ (Addl. Director) for giving me opportunity to study the amphibian collections present in the Eastern Regional Station, Zoological Survey of India and also for his encouragement.

REFERENCES


Explanation to map on page 482

Scutiger sikkimensis 1; Megophrys parva 2; Bufo himalayarus 3; Bufo melanestictus 4; Bufoides meghalayana 5; Hyla annectens 6; Microhyla berdmorei 7; Microhyla ornata 8; Amolops afghanus 9; Amolops formosus 10; Rana alticola 11; Rana assamensis 12; Rana bilineata 13; Rana cyanophlyctis 14; Rana danieli 15; Rana gerbillus 16; Rana gareensis 17; Rana khasiana 18; Rana laticeps 19; Rana limnocharis 20; Rana livida 21; Rana malabarica 22; Rana mawphlangensis 23; Rana mawlyndipi 24; Rana leptoglossa 25; Philautus andersonii 26; Philautus cherrapunjiae 27; Philautus garo 28; Philautus kempiae 29; Philautus shillongensis 30; Rhacophorus bipunctatus 31; Rhacophorus maximus 32; Polypedates leucemystax 33.
Meghalaya, one of the autonomous hill state of North Eastern India lies in between 25° - 26° N. Latitude and 90° - 92° 45' E. Longitude. The state is physiographically divisible into Eastern Meghalaya (Jaintia hills) Central Meghalaya (Khasi hills) and Western Meghalaya (Garo hills). There are seven districts: (1) East Khasi hills, (2) West Khasi hills, (3) Ri Bhoi, (4) East Garo hills, (5) West Garo hills, (6) South Garo hills and (7) Jaintia hills.

Unlike most of the hill states of North East India, Meghalaya exhibits twin drainage system namely the Brahmaputra in the north and Barak in the south. The topography of the region and its watershed pattern afford a lucrative field for the ichthyological investigations of the state which interestingly has been left unattended so far in real perspectives. The detailed observations meticulously analysed in the present chapter, portray a coherent picture of the ichthyofauna of the state and their distributional trend in the region.

Although the state, with large number of tributaries and other water-bodies is of immense ichthyological importance, it is surprising to note that no elaborate attempts have so far been made to venture into this important field of study; though Hora (1922, '24), Yazdani (1972, '77) Yazdani and Talukdar (1975), Pillai and Yazdani (1974, '77) and Dey (1973, '77) had made some casual studies on the Fishes of Meghalaya.

With significant development in the science of fisheries throughout the World, the importance of fisheries education in India has been of late realised, while the state of Meghalaya is still far behind in the present field, in comparison to the rest of the country.

Approximately 235 freshwater species (Jayaram, 1981) of fishes have so far been reported from N.E. India. This is almost 29.16% of the total freshwater species reported so far from India (Approx. 806 spp., Talwar and Jhingran, '91) and only 3.43% of the total freshwater species reported from the World (approx. 6850 spp. Nelson, 1984).

A total of 152 species of fishes recorded and reported so far from Meghalaya have been included in this chapter.

GENERAL MORPHOLOGY WITH COLLECTION AND PRESERVATION ACCOUNT

Fishes are finned, red-blooded, back-boned animals that live in water and breathe by means of gills. Its body is generally covered with scales and it propels itself by the flexible movements of its body, aided by fins, which are the balancing organs.
Fish have two sets of paired fins, the pectoral and the pelvic or ventral and three unpaired fins, the dorsal, the caudal and the anal. Paired fins are supported by girdles or arches whereas median fins are supported by a series of simple skeletal rays. The dorsal fin which was originally a continuous one, has broken up into an anterior half and a posterior half. In most of the Cyprinids only anterior half persist. In Siluroid fishes posterior half persist as adipose tissues only, whereas in Perciform fishes both the halves are present.

There are scaleless fishes also. Scalelessness is the secondary degenerate character which has come across through evolutionary process for coping with the unfavourable environmental condition.

Swimming is characteristic of all fishes. Fishes do not see very well, partly because of their eye structure and partly because of lack of visibility. However, they have a well developed sense of balance and taste. Fishes can hear, they are sensitive to vibration, currents and change in temperature and pressure. There are some sensory organs called barbels which are present in snout region.

COLLECTION:

Different fishing gears are used in Meghalaya for different types of water-bodies. In deep waters, Angling and Castnet are the major fishing gears operated. Angling is operated by two processes; single rod and line (in Khasi it is known as Khwai pyndem) and by ropeway method. In ropeway method two persons are required for angling, it can be operated only where breadth of the river is less. Two persons usually stand on opposite banks of the river and angling is done by two rods but with single line and bait.

For shallow water fishing, different types of scoop nets are used. These are usually made up of bamboos, canes, strings and nylon nets and are of different shape and sizes. Accordingly they are called as Tynsong, Kriah, Bneid and Shrip in Khasi (Fig. 1).

PRESERVATION:

Fishes are generally preserved best in formalin solution (10%) though it can also be preserved in rectified spirit (90% alcohol). Large fishes should be preserved in the solution after making a narrow cut in the abdominal wall while the small fishes should be immersed completely in the solution.

HOW TO IDENTIFY A FISH:

Fish are perhaps more difficult to identify than other backboned animals. Accurate identification depends on a careful study of the fishes, with attention to the structure of fins, number of finrays or spines, number of rows of scales etc. For such identification a fresh or preserved specimen is essential. With the help of key characters used in the chapter, fishes can be identified. Detailed identification of fishes depends on characteristics which may look minor and unimportant to the uninitiated.

Fish are measured with fine pointed dividers. For accurate readings, a stainless steel ruler with measurements to millimeter is recommended. The diagrammatic representation of the various body measurements of a fish is shown in Figure 2. All the paired and median fins in teleosts have long, mobile filament like prolongations called rays. Fins generally contains unbranched and branched rays.
Unbranched ray may be simple, hard or spinous (Fig. 3). In meristic data of a fish, number of rays in paired and median fins, lateral line scales, predorsal scales etc. used to be described. It includes number of rays in Dorsal (D), Pectoral (P), Pelvic (V), Anal (A) and Caudal (C) fins; lateral line scales (L.1.) counted as number of scales along lateral line (Perforated or non-perforated). Lateral transverse scales (L.t.r.) counted as number of scales from back to lateral line and from lateral line to Pelvic fin base and Predorsal scales counted as number of scales from origin of dorsal fin to the occiput. In scaleless fishes only fin formula used to be described. The presence or absence of barbels and their length is also important for identifying a fish.

SYSTEMATIC ACCOUNT OF FISHES

152 species of fishes described in this chapter belongs to 74 genera under 29 families and 8 orders. The Phylogenetic Classification is followed after Nelson (1984). The generic and specific names have been spelled after Talwar and Jhingran (1991). Key characters for identification of Order, Family, Genus and Species have only been described. Characters for Sub-Class, Sub-Orders, or Sub-Family are not included in the key (except Order Perciformes which is a diversified group). However, in Systematic list these are mentioned. Where only one family, one genus or one species is represented, the diagnostic characters only are mentioned.

The local name in Khasi is given with each species wherever available.

Under each genus and species, reference have been cited for original description and most recent ones. Only general meristic data is given for each species; where variations are remarkable for Meghalayan population, it is mentioned in remark column.

Roman figure and number in fin formula indicates unbranched (spinous or weak) and branched rays respectively. Locality of distribution within Meghalaya and elsewhere and general remarks have been given under each species. Minimum and Maximum length recorded and reported so far for each species have been given.

Geographical distribution of different genera within Meghalaya covered in this chapter have been shown with the help of Meghalaya maps.

SYSTEMATIC LIST IS AS FOLLOWS:

Grade PISCES
Class OSTEICHTHYES
Sub-class ACTINOPTERYGII
Order OSTEOGLOSSIFORMES
Sub-order NOTOPTEROIDEI
Family NOTOPTERIDAE

1. Notopterus chitala (Hamilton-Buchanan)
2. Notopterus notopterus (Pallas)
<table>
<thead>
<tr>
<th>Order</th>
<th>CLUPEIFORMES</th>
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<tr>
<td>Family</td>
<td>CLUPEIDAE</td>
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<tr>
<td>Sub-Family</td>
<td>ALOSINAE</td>
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<td>3.</td>
<td><em>Gudusia chapra</em> (Hamilton-Buchanan)</td>
</tr>
<tr>
<td>Family</td>
<td>ENGRAULIDAE</td>
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<td>4.</td>
<td><em>Setipinna phasa</em> (Hamilton-Buchanan)</td>
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<td>Family</td>
<td>CYPRINIDAE</td>
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<tr>
<td>Sub-Family</td>
<td>CYPRININAE</td>
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<td>5.</td>
<td><em>Catla catla</em> (Hamilton-Buchanan)</td>
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<td>6.</td>
<td><em>Chagunius chagunio</em> (Hamilton-Buchanan)</td>
</tr>
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<td>7.</td>
<td><em>Cirrhinus mrigala</em> (Hamilton-Buchanan)</td>
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<td>8.</td>
<td><em>Cirrhinus reba</em> (Hamilton-Buchanan)</td>
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<td>9.</td>
<td><em>Cyprinus carpio</em> Linnaeus&lt;br&gt;var. <em>communis</em> (Linnaeus)&lt;br&gt;var. <em>specularis</em> (Lacepede)</td>
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<td>10.</td>
<td><em>Labeo bata</em> (Hamilton-Buchanan)</td>
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<td>11.</td>
<td><em>Labeo boga</em> (Hamilton-Buchanan)</td>
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<td>12.</td>
<td><em>Labeo calbasu</em> (Hamilton-Buchanan)</td>
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<td>13.</td>
<td><em>Labeo dero</em> (Hamilton-Buchanan)</td>
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<td>14.</td>
<td><em>Labeo gonius</em> (Hamilton-Buchanan)</td>
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<td>15.</td>
<td><em>Labeo nandina</em> (Hamilton-Buchanan)</td>
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<td>16.</td>
<td><em>Labeo pangusia</em> (Hamilton-Buchanan)</td>
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<td>17.</td>
<td><em>Labeo rohita</em> (Hamilton-Buchanan)</td>
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<td>18.</td>
<td><em>Neolissocheilus hexagonolepsis</em> (McClelland)</td>
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<td>19.</td>
<td><em>Neolissocheilus hexastichus</em> (McClelland)</td>
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<td>20.</td>
<td><em>Osteobrama cotio cotio</em> (Hamilton-Buchanan)</td>
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<td>21.</td>
<td><em>Puntius chola</em> (Hamilton-Buchanan)</td>
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<td>22.</td>
<td><em>Puntius clavatus</em> (McClelland)</td>
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<td>23.</td>
<td><em>Puntius conchonius</em> (Hamilton-Buchanan)</td>
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<td>24.</td>
<td><em>Puntius gelius</em> (Hamilton-Buchanan)</td>
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<td>25.</td>
<td><em>Puntius phutundo</em> (Hamilton-Buchanan)</td>
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</tbody>
</table>
26. *Puntius sarana sarana* (Hamilton-Buchanan)  
27. *Puntius shylynius* Yazdani and Talukdar  
28. *Puntius sophore* (Hamilton-Buchanan)  
29. *Puntius terio* (Hamilton-Buchanan)  
30. *Puntius ticto* (Hamilton-Buchanan)  
31. *Tor chelynoides* (McClelland)  
32. *Tor putitora* (Hamilton-Buchanan)  
33. *Tor tor* (Hamilton-Buchanan)  

Sub-Family CULTRINAE  
34. *Chela cachius* (Hamilton-Buchanan)  
35. *Chela laubuca* (Hamilton-Buchanan)  
36. *Salmostoma bacaia* (Hamilton-Buchanan)  
37. *Salmostoma phulo* (Hamilton-Buchanan)  
38. *Securicula gora* (Hamilton-Buchanan)  

Sub-Family RASBORINAE  
39. *Amblypharyngodon mola* (Hamilton-Buchanan)  
40. *Barilius barila* (Hamilton-Buchanan)  
41. *Barilius barna* (Hamilton-Buchanan)  
42. *Barilius bendelisis* (Hamilton-Buchanan)  
43. *Barilius shacra* (Hamilton-Buchanan)  
44. *Barilius tileo* (Hamilton-Buchanan)  
45. *Barilius vagra* (Hamilton-Buchanan)  
46. *Bengala elanga* (Hamilton-Buchanan)  
47. *Brachydanio rerio* (Hamilton-Buchanan)  
48. *Danio aequipinnatus* (McClelland)  
49. *Danio dangila* (Hamilton-Buchanan)  
50. *Danio devario* (Hamilton-Buchanan)  
51. *Esomus danricus* (Hamilton-Buchanan)  
52. *Parluciosoma daniconius* (Hamilton-Buchanan)  
53. *Raiamas bola* (Hamilton-Buchanan)  
54. *Rasbora rasbora* (Hamilton-Buchanan)
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<th>Sub-Family</th>
<th>GARRINAE</th>
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<td>55.</td>
<td><em>Crossocheilus latius latius</em> (Hamilton-Buchanan)</td>
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<td>56.</td>
<td><em>Garra annandalei</em> Hora</td>
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<td>57.</td>
<td><em>Garra gotyla gotyla</em> (Gray)</td>
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<td>58.</td>
<td><em>Garra kempi</em> Hora</td>
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<td><em>Garra lamta</em> (Hamilton-Buchanan)</td>
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<td><em>Garra lissorhynchus</em> (McClelland)</td>
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<td><em>Garra mccleandi</em> (Jerdon)</td>
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<td>62.</td>
<td><em>Garra naganensis</em> Hora</td>
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<td>63.</td>
<td><em>Garra nasuta</em> (McClelland)</td>
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<td>64.</td>
<td><em>Garra rupecula</em> (McClelland)</td>
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<td>PSILORHYNCHIDAE</td>
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<td><em>Psilorhynchus balitora</em> (Hamilton-Buchanan)</td>
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<td><em>Psilorhynchus homaloptera</em> Hora and Mukherji</td>
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<td><em>Psilorhynchus sucatio</em> (Hamilton-Buchanan)</td>
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<td>BALITORIDAE</td>
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<td><em>Balitora brucei</em> (Gray)</td>
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<td>NEMACHEILINAE</td>
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<td><em>Aborichthys elongatus</em> Hora</td>
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<td><em>Aborichthys kempi</em> Chaudhuri</td>
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<td><em>Nemachilus botia</em> (Hamilton-Buchanan)</td>
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<td><em>Nemacheilus devdevi</em> Hora</td>
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<td><em>Nemacheilus multifasciatus</em> Day</td>
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<tr>
<td>81.</td>
<td><em>Nemacheilus sijuensis</em> (Menon)</td>
</tr>
<tr>
<td>82.</td>
<td><em>Nemacheilus sikmaiensis</em> Hora</td>
</tr>
</tbody>
</table>
Family COBITIDAE

Sub-Family COBITINAE

83. Lepidocephalus annandalei (Chaudhuri)
84. Lepidocephalus berdmorei (Blyth)
85. Lepidocephalus caudofurcatus Tilak and Hussain
86. Lepidocephalus guntea (Hamilton-Buchanan)
87. Lepidocephalus irrorata Hora
88. Pangio pangia (Hamilton-Buchanan)
89. Somileptes gongota (Hamilton-Buchanan)

Sub-Family BOTIINAE

90. Botia dario (Hamilton-Buchanan)
91. Botia histrionica Blyth
92. Botia lohachata Chaudhuri
93. Botia rostrata Gunther

Order SILURIFORMES

Family BAGRIDAE

94. Aorichthys seenghala (Sykes)
95. Batasio batasio (Hamilton-Buchanan)
96. Batasio tengana (Hamilton-Buchanan)
97. Mystus bleekeri (Day)
98. Mystus cavasius (Hamilton-Buchanan)
99. Mystus montanus (Jerdon)
100. Mystus vittatus (Block)
101. Rama chandramara (Hamilton-Buchanan)

Family SILURIDAE

102. Ompok bimaculatus (Bloch)
103. Ompok pabda (Hamilton-Buchanan)
104. Ompok pabo (Hamilton-Buchanan)
105. Wallago attu (Schneider)

Family SCHILBEIDAE

Sub-Family AILIINAE

106. Ailia coila (Hamilton-Buchanan)
107. *Clupisoma garua* (Hamilton-Buchanan)
108. *Eutropiichthys murius* (Hamilton-Buchanan)
109. *Eutropiichthys vacha* (Hamilton-Buchanan)
110. *Pseudeutropius atherinoides* (Bloch)

**Family AMBLYCYPIITIDAE**

111. *Amblyceps mangois* (Hamilton-Buchanan)
112. *Bagarius bagarius* (Hamilton-Buchanan)
113. *Conta conta* (Hamilton-Buchanan)
114. *Gagata cenia* (Hamilton-Buchanan)
115. *Glyptothorax cavia* (Hamilton-Buchanan)
116. *Glyptothorax striatus* (McClelland)
117. *Glyptothorax telchitta* (Hamilton-Buchanan)
118. *Hara hara* (Hamilton-Buchanan)
119. *Laguvia shawi* Hora
120. *Nangra viridescens* (Hamilton-Buchanan)
121. *Pseudecheneis sulcatus* (McClelland)

**Family CLARIIDAE**

122. *Clarias batrachus* (Linnaeus)

**Family HETEROPNEUSTIDAE**

123. *Heteropneustes fossilis* (Bloch)

**Family CHACIDAE**

124. *Chaca chaca* (Hamilton-Buchanan)

**Family OLYRIDAE**

125. *Olyra horai* (Prashad and Mukherji)
126. *Olyra longicaudata* McClelland

**Order CYPRINODONTIFORMES**

**Sub-order EXOCOETOIDEI**

**Family BELONIDAE**

127. *Xenentodon cancila* (Hamilton-Buchanan)

**Sub-order CYPRINODONTIOIDEI**

**Family APLOCHEILIDAE**

128. *Aplocheilus panchax* (Hamilton-Buchanan)
Order SYNBRANCHIFORMES

Family SYNBRANCHIDAE

129. Monopterus (Amphipnous) cuchia (Hamilton-Buchanan)

Order PERCIFORMES

Sub-Order PERCOIDEI

Family AMBASSIDAE

130. Chanda namae Hamilton-Buchanan

131. Pseudambassis baculis (Hamilton-Buchanan)

132. Pseudambassis ranga (Hamilton-Buchanan)

Family NANDIDAE

Sub-Family NANDINAE

133. Nandus nandus (Hamilton-Buchanan)

Sub-Family BADINAE

134. Badis badis (Hamilton-Buchanan)

Sub-Order MUGILOIDEI

Family MUGILIDAE

135. Rhinomugil corsula (Hamilton-Buchanan)

136. Sicamugil cascasia (Hamilton-Buchanan)

Sub-Order GOBIOIDEI

Family GOBIIDAE

Sub-Family GOBIINAE

137. Glossogobius giuris (Hamilton-Buchanan)

Sub-Order ANABANTOIDEI

Family ANABANTIDAE

138. Anabas testudineus (Bloch)

Family BELONTIIDAE

Sub-Family TRICHOGASTERINAE

139. Colisa fasciatus (Schneider)

140. Colisa sota (Hamilton-Buchanan)

Sub-Order CHANNOIDEI

Family CHANNIDAE

141. Channa barca (Hamilton-Buchanan)
142. Channa marulius (Hamilton-Buchanan)
143. Channa orientalis Bloch and Schneider
144. Channa punctatus (Bloch)
145. Channa stewartii (Playfair)
146. Channa striatus (Bloch)

Sub-Order MASTACEMBELIOIDEI

Family MASTACEMBELIDAE
147. Macrognathus aral (Bloch and Schneider)
148. Macrognathus pancerus Hamilton-Buchanan
149. Mastacembelus armatus (Lacepede)

Family CHAUDHURIIDAE
150. Chaudhuria indica (Yazdani)
151. Chaudhuria khajuriai (Talwar, Yazdani and Kundu)

Order TETRAODONTIFORMES

Family TETRAODONTIDAE
152. Tetraodon cutcutia Hamilton-Buchanan

Key to the Orders
1. Body elongated, more or less cylindrical, eel-like........................................................................ 2
   Body not elongated, fusiform, compressed.................................................................................... 3
2. Single gill opening on ventral surface as a transverse or round or moderately wide silt. Pectoral
   fin absent......................................................................................................................................... Synbranchiformes
   Two gill openings, latero-ventral slits with membranes, Pectoral fins present............................. Perciformes (Sub ord. Mastacembeloidei)
3. Body short, rounded. Bones of upper and lower jaw in the form of a beak having a cutting edge
   and covered with a layer of ivory-like substance........................................................................ Tetraodontiformes
   Body fusiform. Bones of upper and lower jaw normal without any modification ....................... 4
4. Body without scales, either smooth or covered with osseous plates or with scattered tubercles.
   Pectoral fin with outermost ray modified into osseous spine or thick ray............................... Siluriformes
   Body generally with scales, rarely scaleless but never with bony plates. Pectoral fins without any
   osseous spine..................................................................................................................................... 5
5. Abdominal edge keeled with double or single serratious................................................................ 6
   Abdominal edge smooth, round..................................................................................................... 7
6. Abdomen with double serrations; Lateral line present. Anal fin very long, confluent with reduced Caudal fin; pelvic fin rudimentary.........................................................Osteoglossiformes

Abdomen with single serrations; Lateral line absent. Anal fin moderate, not confluent with caudal. Pelvic fin not rudimentary.................................................................Clupeiformes

7. Pelvic fins inserted in the abdominal region. Supra branchial organ absent. Mostly a single dorsal fin...........................................................8

Pelvic fins inserted in the thoracic region. Supra branchial organ generally present. Dorsal fin single or double.................................................................9

8. Paried and median fins are devoid of strong spines. Scales on head and body. Jaws with teeth...........................................................Cyprinodontiformes

Paired and median fins are devoid of strong spines. Head scaleless, no teeth on jaws.................................................................Cypriniformes

9. Single dorsal and anal fin long, without spines. Supra-branchial organ present. Scales generally cycloid............................................................Perciformes (Sub order : Channoidei)

Mostly dorsal fin in two parts, continuous or separate; one spiny another with rays. Scales ctenoid.................................................................Perciformes

Diagnostic characters of Family of Order Osteoglossiformes

Body broad, laterally compressed. Abdomen serrated before pelvic fins; dorsal profile slightly or highly convex. Eyes large, superior. Maxilla extends to below middle of orbit. Single dorsal fin small belonging to the caudal portion of vertebral column........................................Notopteridae

Key to the Families of Order Clupeiformes

1. Usually minute teeth in jaws or absent; dorsal fin origin usually well in front of anal fin........2

2. Snout projecting in front of lower jaw; maxilla reaching well behind eye........Engraulidae

Snout not projecting in front of lower jaw; maxilla not reaching behind eye........Clupeidae

Key to the Families of Order Cypriniformes

1. Paired fins generally inserted horizontally; sometimes laterally; pectoral fin with atleast two undivided ray.................................................................2

Paired fins inserted laterally; outermost anterior pectoral finray unbranched or all rays may be branched.................................................................3

2. Barbels absent, air bladder greatly reduced, free in the abdominal cavity; body greatly arched dorsally and flattened ventrally........................................Psilorhynchidae

Barbels present, 3 or more pairs; air bladder large, partly enclosed in a bony capsule........Balitoridae
3. Barbels 3 or 4 pairs, erectile spine near eye; body wormlike to fusiform.....................\textit{Cobitidae}

Barbels 1 or 2 pairs or absent; no suborbital or preorbital spine. Body usually laterally compressed.............................................................\textit{Cyprinidae}

Key to the Families of Order Siluriformes

1. Adipose dorsal fin absent ............................................................................................................... 2

Adipose dorsal fin generally present (except in \textit{Clupeisoma garua} (Ham. Buch.) Schilbeidae where it may be absent in adult) ....................................................................................................................... 5

2. Head depressed, squarish in outline; head and body with many dermal papillae. Anal fin short...
........................................................................................................................................... \textit{Chacidae}

Head obtuse, compressed. Head and body without any dermal papillae. Anal fin long............ 3

3. Nasal barbels absent, Accessory respiratory organ absent; barbels 2-3 pairs....................\textit{Siluridae}

Nasal barbels present. Accessory respiratory organ present; barbels 4 pairs ..................... 4

4. Dorsal fin long, accessory respiratory organs in gill chamber present ..................... \textit{Clariidae}

Dorsal fin short, accessory respiratory organs in body cavity as tubular air sac present ............................................................................................................................. \textit{Heteropneustidae}

5. Nostrils close together with very little interspace; distinct nasal barbel present............... 6

Nostrils wide apart; separated by some interspace; nasal barbel usually present............... 7

6. Lateral line absent, gill membranes free from isthmus...................................................... \textit{Amblycipitidae}

Lateral line always present, gill membranes united with isthmus (except \textit{Bagarius})...... \textit{Sisoridae}

7. Dorsal spine absent, eyes small, subcutaneous................................................................. \textit{Olyridae}

Dorsal spine present, eyes large, not subcutaneous................................................................. 8

8. Anal fin short........................................................................................................................ \textit{Bagridae}

Anal fin long ........................................................................................................................ \textit{Schilbeidae}

Key to the Families of Order Cyprinodontiformes

1. Jaws extended to form a beaklike structure; lateral line running along ventral margin of body... 2

Jaws not extended to form a beak like structure; lateral line chiefly on head, not on body ....... 3

2. Body elongate, subcylindrical or laterally compressed; small detachable cycloid scales. Pectoral fin short inserted high on sides ................................................................. \textit{Belonidae}

3. Body fusiform compressed. Scales large, Pectoral fin low set................................. \textit{Aplocheiliidae}
Diagnostic characters of Family of Order Synbranchiformes

Body elongate, without paired fins. Dorsal and anal fin absent or reduced to median folds. Scales when present small, oval and confind to caudal region mainly and arranged in longitudinal rows. Eyes small well forward in skull and covered by dense skin. Anterior and posterior nasal aperture present, caudal fin reduced or absent. 

*Synbranchidae*

Key to the Families of Order Perciformes

1. Body eel-like, pelvic absent ........................................................................................................... 2
   Body not eel-like, pelvic present ....................................................................................................... 3

2. Dorsal fin preceded by a series of isolated stout spines; body with small scales; fleshy rostral appendages present .............................................................. *Mastacembelidae*
   No dorsal spines; body naked; rostral appendages absent or reduced ..................... *Chaudhuriidae*

3. Body compressed, short, oblong or elongated. Pelvic thoracic or jugular, typically with a spine and 4 or 5 soft rays .......................................................... 4
   Body elongated, sybcylindrical or cylindrical. Pelvic subabdominal, may be with a spine or soft rays only ......................................................................................................................................... 8

4. Pelvic fins united with a membrane across their bases, forming a sucking disc ............ *Gobiidae*
   Pelvic fins may be close but not united as above, may be apart .............................................. 5

5. An accessory respiratory organ in the form of a cavity above the 3rd or upper portion of the first branchial arch ................................................................................................................................. 6
   No such accessory respiratory organ .............................................................................................. 7

6. First ray of pelvic fin produced into a long filament. Pelvic fins inserted behind or posterior to pectoral fin ................................................................. *Belontiidae*
   First ray of pelvic fin not produced into a long filament. Pelvic fins inserted below base of pectoral fin ......................................................................................... *Anabantidae*

7. Lateral line incomplete or absent; dorsal fin continuous, caudal rounded ..................... *Nandidae*
   Lateral line complete, double dorsal fin; their bases well separated, caudal forked ..... *Ambassidae*

8. Supra branchial organ present in the form of a simple vascular chamber. Dorsal and anal fins long, continuous, without spines. Pelvic with 6 soft rays; lateral line present .......... *Channidae*
   Supra branchial organ absent. Two widely separated dorsal fins, first with 4 spines. Pelvic fin with a spine and 5 soft rays; lateral line absent ............................................................................. *Mugilidae*

Diagnostic characters of Family of order Tetraodontiformes

Body more or less short, skin covering modified into small or large spines or laminae. A median
suture present, gill openings narrow immediately in front of pectoral fin. Single dorsal and anal fin without spines. Pelvic fin absent; lateral line absent.......................................................... Tetraodontidae

Diagnostic characters of Genus of Family Notopteridae

Body deep and strongly compressed, abdomen serrated with approximately 28 scutes. Head compressed, snout obtuse, convex. Mouth wide, cleft of mouth extending beyond posterior border of eye. Eyes in anterior part of head. Lips thin, jaws equal. Preopercle serrated, gill membranes partly united. Dorsal fin small with 7-8 rays and inserted almost in the middle of the body. Anal fin very long with 100 to 135 rays and confluent with the caudal. Scales small, lateral line more or less arched with about 180 scales.............................................................................................................. Notopterus

1. Genus Notopterus Lacepede


Key to the Species

1. Maxilla extends considerably beyond posterior margin of eye; preorbital smooth, a row of about 15 transverse silvery bars on back which is deeply convex.............................................................................. N. chitala

Maxilla extends to middle of eye; preorbital serrated, no transverse bars on back which is not deeply convex .............................................................................................................. N. notopterus

Notopterus chitala (Hamilton-Buchanan)

(Plate I, Figure 1)

Mystus chitala Hamilton-Buchanan, 1822, Fishes of Ganges; 236, 382 (Type locality: Rivers of Bengal and Bihar)


Local name: "Kha Chitol" (Khasi)

Materials examined: 1 ex. (Garo hills)

Maeristic data

D. ii. 7-8, P.i.11, V.i. 4-5, A + C 110-135, L.1. 180, L. tr. 19/27, Predorsal scales 76, Scales around caudal peduncle 34.

Distribution in Meghalaya: Khasi hills, Jaintia hills, Garo hills (Baghmara)

Elsewhere: India: Assam, Bihar, Lower Bengal, Orissa, North India; Bangladesh; Burma; China; Indonesia; Malaya; Pakistan and Thailand.

Minimum Maximum length reported so far; 225 mm 1220 mm TL.

Remarks: The species is available only below 500 M alt. very commonly available. It is interesting to note that the ventral fins are joined at the base.
Inhabits freshwater, particularly larger rivers.

*Notopterus notopterus* (Pallas)

(Plate I. Figure 2)

*Gymnotus notopterus* Pallas, 1769. *Spicil. Zool.*, 7 : 40, pl. 6, fig. 2. (Type locality : ? Indian Ocean)


*Materials examined* : 1 ex. (Garo hills)

*Meristic data*:

D. ii 5-6, 10-11, P. i. V. i. 4-5, A + C. 119-129, L. l. 180

*Distribution in Meghalaya* : Garo hills (Siju)

*Elsewhere* : India; Bangladesh; Burma; Indonesia; Malaya; Nepal; Pakistan; Thailand.

*Minimum Maximum length reported so far* : 128 mm – 606 mm TL. (or more)

*Remarks* : Commonly available fish occurring in lower altitude. Inhabits fresh and brackish waters.

Diagnostic characters of Genus of Family Clupeidae

Body well compressed. Abdomen serrated with 18-19 prepelvic and 8-10 post pelvic scutes. Head compressed, short, snout rounded. Mouth terminal, upper jaw with a distinct median notch at centre. Scales small. 77-110 in lateral series. Dorsal fin inserted about middle point of body; pelvic fin placed below dorsal fin; anal fin short and well behind dorsal fin.

2. **Genus *Gudusia*** Fowler


Diagnostic characters of Species

Body fairly deep, its depth 2.6-3.2 in SL. Dorsal fin inserted more or less equidistant between tip of snout and base of caudal fin. Depressed tip of dorsal fin extends to behind vertical from anal fin origin. Hind margin of scales smooth.

**Gudusia chapra** (Hamilton-Buchanan)

(Plate I, Figure 3)


*Local name* : “Kha Chapila” (Khasi)

*Material examined* : 52 exs. (41 from Khasi hills, 11 from Garo hills)
Meristic data:

Distribution in Meghalaya: Khasi hills (Shells, Cherrapunjee), Garo hills (Phulbari, Baghmara, Tura).

Elsewhere: India: Throughout India; Bangladesh; Burma; Malaya; Nepal; Pakistan; Penang; Phillipines.

Minimum-Maximum length reported so far: 60mm - 204 mm TL.

Remarks: The species is not very common in Meghalaya. This could be collected only from below 200 M alt. Caudal fin rays are more (18-19) than what is report so far (17, Day 1889). A black blotch is sometimes present near opercular region. Insome specimens 4-6 light blotches are present above lateral line and in others a light band is present along the lateral line.

Inhabits rivers.

Diagnostic characters of Genus of Family Engrauliidae
Body oblong to elongate, compressed or strongly compressed but not greatly tapering. Caudal large, forked; upper pectoral finrays not detached from each other; anal fin long with 48-81 rays, not joined with caudal fin. Uppermost pectoral finray is filamentous. Belly sharply keeled with 21-40 scutes. Scales moderate, 40-57 in lateral series- .................................................................Setipinna

3. Genus Setipinna Swainson


Diagnostic characters of Species
Body fusiform and strongly compressed. Belly strongly keeled with 21 or 22 scutes. Head length 5.5-6.4 in SL. Mouth slightly oblique; maxilla short. Pectoral filament long; caudal fin forked, its upper lobe slightly truncate and shorter than lower ..........................................................S. phase

Setipinna phasae (Hamilton-Buchanan)
(Plate I, Figure 4)

Clupea phasa Hamilton-Buchanan, 1822. Fishes of Ganges : 240, 382 (Type locality: brackish rivers of Bengal).


Material examined: 9 exs. (Garo hills)

Meristic data:
D.i.12-15, P.i.13-14, V.i.6, A.ii-iii, 66-78, C. 19.L.1.52-56, L.tr.7/7, Predorsal scales 12-13, Scales around caudal peduncles 11-12.
**Distribution in Meghalaya**: Garo hills (Dalu, Tura)

**Elsewhere**: India: Throughout India; Bangladesh; Burma: Mandalaya; Pakistan.

Minimum-Maximum length reported so far: 87 mm  408 mm TL.

**Remarks**: The species is available only in lower altitude; not very common in Meghalaya. The length of the filamentous pectoral finray varies in different specimens.

Inhabits rivers and estuaries.

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**Key to the Genera of Family Cyprinidae**

1. Abdomen or part of abdomen compressed into a sharp keel like edge, barbels absent......... 2

   Abdomen not compressed and no keel is formed (except Genus *Osteobrama*); barbels may or may not be present ................................................................. 4

2. Body generally deep; interorbital region naked; no symphysial process on lower jaw. Lateral line when present curved abruptly downwards above pectoral fin.................... *Chela*

   Body elongate; interorbital region scaly; a symphysial knob on lower jaw usually well developed. Lateral line curved gently downwards above pectoral fin................................. 3

3. Abdominal keel hardened; pectoral axial scale thickened along its lower border. Lateral line with 120-160 scales. .............................................................................. *Securicula*

   Abdominal keel not hardened; pectoral axial scale not thickened along its lower border. Lateral line with 42-112 scales. ............................................................................. *Salmoostoma*

4. Upper lip continuous with skin of snout, crenulated; mouth conspicuously inferior, lower lip may or may not be modified into an adhesive suctorial disc........................................ 5

   Upper lip separated from skin of snout by a groove; mouth terminal, subinferior of distinctly inferior; lower lip without a suctorial disc ........................................................................ 6

5. Lower lip modified into a suctorial disc; upper and lower lip continuous................... *Garra*

   Lower lip not modified into a suctorial disc; upper and lower lip not continuous .... *Crossocheilus*

6. Lower jaw without any symphysial knob; dorsal fin inserted before or opposite or slightly behind to origin of pelvic fin; generally with a spine. Lateral line running along median line of caudal peduncle................................................................. 7

   Lower jaw generally with a symphysial knob fitting in a notch of upper jaw; dorsal fin inserted behind base of pelvic fin devoid of a spine. Lateral line if present abruptly bent downward and if complete, running along lower half of caudal peduncle................................................................. 16

7. Last unbranched ray of anal fin osseous, serrated on its posterior edge; upper jaw more or less projecting but not protractile................................................................. *Cyprinus*

   Last unbranched ray of anal fin generally not osseous but if osseous than non-serrated. Snout
plain, not divided............................................................................................................................ 8

8. Dorsal fin inserted posterior to pelvic fin; generally extending to over anal fin. Abdominal edge sharp.......................................................................................................................... 8

Dorsal fin inserted above pelvic fin or slightly anterior to it........................................................ 9

9. A knob or a horny tubercle present at the symphysis of lower jaw........................................ 10

No such symphysial knob present............................................................................................ 11

10. A groove posterior to lower lip present. Dorsal with 8-16 branched rays; upper lip fringed or entire, not continuous with lower. Barbels 1 or 2 pairs or entirely absent...................... 10

11. Upper lip absent; no barbels. Eyes visible from underside of head. Head enormously large, scales big.......................................................................................................................... 11

Upper lip present, head moderate. Barbels may or may not be present............................... 12

12. Lower lip with an uninterrupted posterior groove, continuous around corner of mouth. Lateral line complete. Barbels present........................................................... 12

Lower lip with posterior groove interrupted in the middle when a groove is present or without any groove.......................................................................................................................... 13

13. Lower lip conspicuously separated from lower jaw which has a horny covering. Snout entire without any lobes. Barbels present. Dorsal spine smooth................................. 13

Lower lip closely attached to lower jaw or very thinly separated. Dorsal spine may be present or absent; if present may be serrated or smooth. Barbels may be present or absent.................... 14

14. Snout with median and lateral lobes; snout and cheeks with horny tubercles. Anal fin ray may or may not be elongated. Barbels present. Dorsal spine serrated....................... 14

Snout entire without any lobes. Cheeks free from tubercles. Snout rarely tuberculated. Anal fin ray not elongated. Barbels may be present or absent. Dorsal spine present or absent........ 15

15. Distinct lips, no horny covering on inner side of lips. Scales with few and strongly radiating striae. Dorsal fin with or without spine......................................................... 15

A horny covering on inner side of one or both lips present; lower jaw covered by lip; lower lip attached to lower jaw along entire mouth. Dorsal fin without spine......................... 16

16. Elongated maxillary barbel extending upto anal fin. No symphysial knob on lower jaw... 16

Maxillary barbel short or absent; a symphysial knob usually present on lower jaw.............. 17

17. Mouth large, maxilla extending beyond anterior margin of eye........................................... 17

Mouth small to moderate; maxilla not extending beyond anterior margin of eye.................. 18

18. Lower jaw longer than combined length of snout and eye; pectoral axillary scale elongate without a fleshy border ............................................................... 18

19. Lower jaw longer than combined length of snout and eye; pectoral axillary scale elongate without a fleshy border ............................................................... 19
Lower jaw shorter or equal to combined length of snout and eye; pectoral axillary scale with a fleshy border .................. Barilius  

19. Upper lip absent, lateral line incomplete; barbels absent .................. Amblypharyngodon  
Upper lip present; lateral line complete, incomplete or absent; barbels may be present or absent. .................................................. 20  

20. Anal fin with 13-20 rays; dorsal fin inserted anterior to origin of anal fin. Barbels present...... 21  
Anal fin with 7-8 rays; dorsal fin inserted behind origin of anal fin. barbels may be present or absent .................................................. 22  

21. Dorsal fin with 6-7 branched rays; lateral line incomplete or absent .................. Brachydanio  
Dorsal fin with 8-18 branched rays; lateral line complete .................................. Danio  

22. Barbels present (rostral only); lateral line with 40-44 scales; body and fin marking absent........ 23  
Barbels absent; lateral line with less than 36 scales ........................................... 23  

23. Distinct colour pattern comprising a black lateral band and dark edges to caudal .......... Parleuciosoma  
No distinct colour pattern ........................................................................ Rasbora  

4. Genus Catla Valenciennes  

Diagnostic characters of Species  
Body short and deep, somewhat laterally compressed. its depth 2.5-3.0 in SL. Head enormously large exceeds almost half of body length. Snout bluntly rounded. mouth wide and terminal: lower lip very thick. Eyes large. ventro-lateral in position. Pectoral fin long extends to pelvic fin .......... C. catla  

Catla catla (Hamilton-Buchanan)  
(Plate II, Figure 1)  
Cyprinus catla Hamilton-Buchanan, 1822. Fishes of Ganges : 287, 318, pl. 13, fig. 81 (Type locality: rivers & tanks of Bengal)  

Material examined : Not collected by the author but reported from Meghalaya.  

Meristic data :  

Distribution in Meghalaya : Khasi hills
Elsewhere: India: Throughout India up to Krishna river but introduced into Cauvery river system: Bangladesh; Nepal; Pakistan; Sri Lanka; Thailand.

Maximum length reported so far: 1830 mm TL.

Remarks: Not very common in Meghalaya. Reported so far from lower altitude only.
Inhabits rivers, tanks, reservoirs.

5. Genus Chagunius Smith


Diagnostic characters of species

Body elongated; its depth slightly more than head length. Mouth narrow, subterminal. Barbels 2 pairs longer than orbit; Eye diameter 5-6.5 in HL. Dorsal fin strong and serrated; scales small .....................

............................................................................................................................................... C. chagunio

Chagunius chagunio (Hamilton-Buchanan) (Plate II, Figure 2)

*Cyrinus chagunio* Hamilton-Buchanan. 1822, *Fishes of Ganges* : 295, 387 (Type locality: Yamuna river and northern rivers of Bihar and Bengal)


Material examined: 17 exs. (2 from Khasi hills, 15 from Garo hills)

Meristic data:
D.iii-v. 8-9, P.i.14-15, V.i.8, A.iii.5-7, C. 19, L.l. 44-47, L.tr. 11-12/9, Predorsal scales 15-20, Scales around caudal peduncle 20-25.

Distribution in Meghalaya: Khasi hills (Hat maw'don), Garo hills (Baghmara, Bozengdoba, Rongsangiri).

Elsewhere: India: Assam, West Bengal, Bihar, Uttar Pradesh, Punjab, Darjeeling, Eastern Himalayas, Western Himalayas, Orissa; Bangladesh; Burma; Nepal; Pakistan.

Minimum Maximum length reported so far: 94 mm 458 mm TL.

Remarks: Not very common in Meghalaya; recorded so far from lower altitude of Khasi and Garo hills only.

Inhabits larger rivers characterised by rocky bottom clear and fast flowing water and little or no vegetation.

6. Genus Cirrhinus Cuvier

Key to the species

1. Dorsal fin with 8-9 branched rays ........................................................................................................ 2
   Dorsal fin with 12-13 branched rays ...................................................................................................... 3

2. Lateral line scales 34-42; dorsal fin height less than body depth; one short rostral pair of barbels. .......................................................... \( C. \) \( reba \)

3. Lateral line scales 40-46; length of head equal to body depth; one short rostral pair of barbels...... ........................................................ \( C. \) \( mrigala \) \( mrigala \)

**Cirrhinus mrigala mrigala** (Hamilton-Buchanan)

(Plate II, Figure 3)

*Cyprinus mrigala* Hamilton-Buchanan, 1822. *Fishes of Ganges* : 279, 386, pl. 6, fig. 79 (Type locality: ponds and freshwater rivers of gangetic provinces)


**Local name**: “Kha mirka” (Khasi)

**Material examined**: 3 exs. (1 from Khasi hills, 2 from Garo hills)

**Meristic data**:

D.iii-iv. 12-13, P.i.15-17, V.i.8, A.iii.5, C.19, L.1. 40-46, L.tr. 7/8, Predorsal scales 17. Scales around caudal peduncle 16.

**Distribution in Meghalaya**: Khasi hills (Mawpun), Garo hills (Baghmara, Rongsangiri)

**Elsewhere**: India: Assam, West Bengal, Darjeeling, Eastern and Western Himalayas, Eastern Punjab, Uttar Pradesh, Ahmedabad, Cutch, Bombay, Madras (Introduced); Bangladesh; Burma, Nepal; Pakistan.

Minimum-Maximum length reported so far: 166 mm 915 mm T.I.

**Remarks**: Not very commonly occurring in Meghalaya. Inhabits rivers and tanks.

**Cirrhinus reba** (Hamilton-Buchanan)

(Plate III, Figure 1)

*Cyprinus reba* Hamilton-Buchanan, 1822, *Fishes of Ganges* : 280, 386 (Type Locality: rivers and ponds of Bengal & Bihar)


**Material examined**: 45 exs. (8 from Khasi hills, 37 from Garo hills)

**Meristic data**:


**Distribution in Meghalaya**: Jaintia hills, Khasi hills. Garo hills (Baghmara, Siju)
Elsewhere: India: Throughout India, Bangladesh; Burma; Nepal; Pakistan; Thailand.

Minimum-Maximum length reported so far: 135 mm – 305 mm TL.

Remarks: The species is recorded so far from lower altitude only (below 200 M alt.). Lateral line scales in Meghalayan population are more (42 var. 34-38, Talwar & Jhinglan, 1991)

Inhabits clear rivers and tanks.

7. Genus *Cyprinus* Linnaeus


Diagnostic characters of the varieties

1. Body fully covered by regularly arranged rows of scales; lateral line conspicuous, with 33-35 scales.................................................................*C. carpio* var *communis* (Scale carp)

   Body covered unevenly with a few large and bright scales. A large area of the body, however, is without scales .................................................................*C. carpio* var *specularis* (Mirror carp)

*Cyprinus carpio* Var. *Communis* (Linnaeus)

(Plate III, Figure 2)

*Cyprinus carpio* Linnaeus, 1758, Systema Naturae, ed. 10, 1: 320 (Type locality: Europe)


Local name: “Kha dkhar” (Khasi)

Material examined: 12 exs. (11 from Khasi hills, 1 from Garo hills)

Meristic data:

D. iii-iv. 17-20, P.i.14-15, V.i.8, A. iii.5, C. 19, L.i. 33-35, L. tr. 5.5/4.5-5.5. Predorsal scales 13, Scales around caudal peduncle 14.

Distribution in Meghalaya: Khasi hills (Barapani), Garo hills (Amphangiri, Williamnagar)

Elsewhere: India: Introduced in India. Naturally found all through China; Korea; Japan; Taiwan; Europe; America.

Minimum-Maximum length reported so far: 60 mm – 700 mm TL (May attain bigger size)

Remarks: Common culturable fishes of Meghalaya. Introduced for fish culture in almost all the culturable ponds by the Fishery Department. This is not indigenous to Meghalaya. From commercial view point these are most economically important species.

Inhabits rivers, tanks, ponds.

*Cyprinus carpio* var. *specularis* Lacepede

(Plate III, Figure 3)

*Cyprinus carpio* Linnaeus, 1758, Systema Naturae, ed. 10, 1: 320 (Type locality: Europe)

Local name: "Kha dkhari" (Khasi)

Material examined: 1 ex. (Khasi hills)

Mericstic data:
D. iii.17, P.i.15, V.i.7-8, A.iii.5, C.18, L.1. 20, (irregular scale counting). Predorsal scales 9. Scales around caudal peduncle 12.

Distribution in Meghalaya: Khasi hills (Sumer, Barapani) Jaintia hills, Garo hills.

Elsewhere: India: Introduced in India. Naturally found all through China; Korea; Japan; Taiwan; Europe America.

Minimum-Maximum length reported so far: 42 mm 700 mm TL (May attain bigger size)

Remarks: Commonly known as mirror carp; not very common in occurrence like scale carp.

Inhabits rivers, tanks, reservoirs and ponds

8. Genus Labeo Cuvier


Key to the Species

1. Dorsal fin rays not more than 15, only one pair of barbels............................................................ 2
   Dorsal fin rays more than 15, mostly two pairs of barbels ............................................................ 7

2. Lateral line scales not more than 45, scales between pelvic fin base and lateral line not more than 7...................................................................................................................................................... 3
   Lateral line scales not more than 45, scales between pelvic fin base and lateral line less than 6.. 4

3. Snout with a distinct deep groove across; dorsal fin inserted above last quarter of pectoral fin.
   Scales between lateral line and pelvic fin base may be occasionally 6................................. L. dero

4. Pectoral fin reaching pelvic fin; eyes 4-4.3 in head length......................................................... L. bata
   Pectoral fin not reaching pelvic fin............................................................................................... 5

5. Snout with a distinct lateral lobe: eye diameter 4.5-5.5 in head length. Lips with a distinct inner
   fold which is interrupted........................................................................................................... L. pangusia
   Snout without any lobe .................................................................................................................. 6

6. Dorsal fin inserted above tip or slightly anterior to pectoral fin. Head length 5-5.25 in TL.
   Lateral line scales 37-39 ...................................................................................................... L. boga

7. Dorsal fin rays 20-27...................................................................................................................... 8
   Dorsal fin rays 13-19.................................................................................................................... 9
8. Dorsal finrays 24-26; scales between lateral line and pelvic fin base 5........................... L. nandina
9. Lateral line scales more than 50 (50-85).............................................................................. 10
   Lateral line scales less than 50 (38-47)............................................................................. 11
10. Lateral line scales 71-84; scales between lateral line and pelvic fin base 9-13......... L. gonius
11. Scales between lateral line and pelvic fin base 5-7 lateral line scales 38-44; snout not truncate, without any lateral lobe. Simple unbranched rays in dorsal fin 3 or 4........................................... 12
12. Scales between lateral line and pelvic fin base 6-6.5; a pair of small maxillary barbels concealed in lateral groove; fins greyish or dark.............................................................................. L. rohita
   Scales between lateral line and pelvic fin base 5.5 or 6. One pair each of rostral and maxillary barbels present; fins black........................................................................................................... L. calbasu

**Labeo bata** (Hamilton-Buchanan)

(Plate IV, Figure 1)

*Cyprinus bata* Hamilton-Buchanan. 1822. *Fishes of Ganges* : 283, 386 (Type locality : rivers and ponds of Bengal)


*Material examined* : 1 ex. (Jaintia hills)

*Meristic data* :
   D.ii-iv. 9-10, P.i. 14-17, V.i. 8-9, A.ii-iii.5, C. 19, L.1. 37-40, L.tr. 6-7/5-5.5, Predorsal scales 10-13, Scales around caudal peduncle 24-26.

*Distribution in Meghalaya* : Jaintia hills.

*Elsewhere* : India : Throughout India; Bangladesh; Nepal.

Minimum-Maximum length reported so far : 100 mm 610 mm TL.

*Remarks* : Not commonly available in Meghalaya.

Inhabits rivers; widely cultured in bherics, estuaries, tanks and ponds.

**Labeo boga** (Hamilton-Buchanan)

(Plate IV, Figure 2)

*Cyprinus boga* Hamilton-Buchanan. 1822, *Fishes of Ganges* : 286, 386, Pl. 28, fig. 80 (Type locality : River Brahmaputra)


*Local name* : “Kha bah” (Khasi)

*Material examined* : 9 exs. (Garo hills)

*Meristic data* :
Distribution in Meghalaya: Khasi hills (R. Umsot), Garo hills (Baghmara, Songkama, Wageasi).

Elsewhere: India: Assam, West Bengal, North Bengal, Bihar, Uttar Pradesh, Orissa, Punjab, Deccan; Bangladesh; Burma; Nepal; Pakistan.

Minimum-Maximum length reported so far: 120 mm – 305 mm TL.

Remarks: Rarely occurring in Meghalaya and from lower altitude only. Inhabits rivers.

**Labeo calbasu** (Hamilton-Buchanan)

(Plate IV Figure 3)

*Cyprinus calbasu* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 297, 387, pl. 2, fig. 33 (Type locality: rivers and ponds of Bengal and in the Western Provinces).


Local name: “Kha Jong” (Khasi)

Material examined: 3 exs. (Garo hills)

Meristic data:

D.iii-iv. 13-16, P.i.16-18, V.i.8, A.ii-iii 5, C. 19, L.1. 40-44, L.tr. 7/5.6, Predorsal scales 15-20, Scales around caudal peduncle 18-20.

Distribution in Meghalaya: Khasi hills, Jaintia hills (Dawki) Garo hills (Baghmara, Rongsangiri)

Elsewhere: India: Throughout India; Bangladesh; Burma; Nepal; Pakistan; South China; Thailand.

Minimum-Maximum length reported so far: 170 mm – 915 mm TL.

Remarks: Recorded only from lower altitude. Though common in plain region, it is rare in Meghalaya.

Inhabits rivers and ponds.

**Labeo dero** (Hamilton-Buchanan)

(Plate V, Figure 1)

*Cyprinus dero* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 277, 385, pl. 22, fig. 78 (Type locality: Brahmaputra river)


Local name: “Kha bah” (Khasi)

Material examined: 8 exs. (Garo hills)

Meristic data:

D.ii-iii. 9-12, P.i.15-17, V.i.7-8, A.ii-iii. 5, C. 19, L.1. 40-44, L. Tr. 11/6-7, Predorsal Scales 9-10, Scales around caudal peduncle 12.
**Distribution in Meghalaya:** Jaintia hills, Garo hills. (Songkham, Siju)

**Elsewhere:** India: Assam, Punjab, Uttar Pradesh. All along Himalayas including Kashmir and Arunachal Pradesh: Bangladesh; Burma; China; Nepal; Pakistan; Sri Lanka.

Minimum-Maximum length reported so far: 90 mm - 268 mm TL.

**Remarks:** Not very common in this region.

Inhabits sides of torrential hill streams in shallow waters.

**Labeo gonius** (Hamilton-Buchanan)

(Plate V, Figure 2)

*Cyprinus gonius* Hamilton-Buchanan, 1822. *Fishes of Ganges*: 292, 387, pl. 4, fig. 82 (Type locality: freshwater rivers and ponds of Bengal).


**Local name:** “Kha ski” (Khasi)

**Material examined:** 2 exs. (1 from Khasi hills, 1 from Garo hills)

**Meristic data:**

D.ii-iii, 13-16, P.i.16, V.i.8, A.ii.5-6, C.19, L.1. 71-84, L.tr. 16/9-13, Predorsal scales 26, Scales around caudal peduncle 34.

**Distribution in Meghalaya:** Khasi hills, Jaintia hills, Garo hills (Bagmara)

**Elsewhere:** India: Throughout India; Bangladesh; Burma; Nepal; Pakistan.

Minimum-Maximum length reported so far: 170 mm - 1525 mm TL.

**Remarks:** Collected so far from lower altitude only (below 200 M alt.)

Inhabits rivers and ponds.

**Labeo nandina** (Hamilton-Buchanan)

(Plate V, Figure 3)

*Cyprinus nandina* (Hamilton-Buchanan, 1822. *Fishes of Ganges*: 300, 388, pl. 8, fig. 84 (Type locality: Mahananda R.)


**Material examined:** Not collected by the author; but reported from Meghalaya.

**Meristic data:**

D.ii-iii, 22-24, P.i.14-15, V.i.8, A.ii.5, C.19, L.1. 42-44, L.tr. 6-7/5, Predorsal scales 11-12, scales around caudal peduncle 14-15.

**Distribution in Meghalaya:** Khasi hills

**Elsewhere:** India: Assam, West Bengal; Bangladesh; Burma.

Maximum length reported so far: 918 mm TL.
Remarks: Rarely occurring in Meghalaya. Inhabits rivers and reservoirs.

*Labeo pangusia* (Hamilton-Buchanan)
(Plate V, Figure 4)

*Cyprinus pangusia* Hamilton-Buchanan, 1822. *Fishes of Ganges*: 285, 386 (Type locality: Kosi river, Uttar Pradesh)


Local name: "Kha bah" (Khasi)

Material examined: 5 exs. (2 from Khasi hills, 3 from Garo hills)

Meristic data:

Distribution in Meghalaya: Khasi hills (Shilla), Jaintia hills (Dawki), Garo hills (Baghmara, Wagcasi)

Elsewhere: India: Ganges and Brahmaputra river system. Deccan: Bangladesh; Pakistan.

Minimum-Maximum length reported so far: 120 mm - 650 mm TL.

Remarks: Not very common in Meghalaya; collected so far from below 300 M alt. Inhabits rivers, lakes and ponds.

*Labeo rohita* (Hamilton-Buchanan)
(Plate VI, Figure 1)

*Cyprinus rohita* Hamilton-Buchanan, 1822. *Fishes of Ganges*: 301, 388, pl. 36, fig. 85 (Type locality: Freshwater rivers of Gangetic Provinces)


Local name: "Kha bah" (Khasi)

Material examined: 1 ex. (Garo hills)

Meristic data:
D.iii-iv. 12-14, P.i.16-18, V.i.8, A.ii-iii. 5, C. 19, L.1. 40-44, L.tr. 6/6-6.5, Predorsal scales 12-16, scales around caudal peduncle 23.

Distribution in Meghalaya: Khasi hills, Garo hills (Banhmar)

Elsewhere: India: Throughout India except where it is introduced: Bangladesh; Burma; Terai Region of Nepal; Pakistan.

Minimum-Maximum length reported so far: 290 mm - 915 mm TL (may attain bigger size)

Remarks: Not very common in Meghalaya; recorded from lower altitude only. Inhabits rivers.
9. **Genus *Neolissochilus* Rainboth**


Key to the species

1. Mouth nearly truncate, lower jaw edge sharp; lower labial fold widely interrupted in middle. Lateral line scales 28-32. Sides of snout and cheeks studded with large tubercles. ..............................................

                      ................................................................. *N. hexagonolepis*

Mouth smoothly rounded; lower jaw edge blunt; lower labial fold continuous. Lateral line scale 25 or 26. No tubercles on snout and cheek ................................................................. *N. hexastichus*

**Neolissochilus hexagonolepis** (McClelland)

(Plate VI, Figure 2)

*Barbus hexagonolepis* McClelland, 1839, *Asiat. Res.* : 19(2) : 270, 340, pl. 41, fig. 3 (Type locality: Upper Assam)


*Local name* : ‘Kha dkhah’ (Khasi)

*Material examined* : 613 exs. (468 from Khasi hills, 52 from Jaintia hills, 93 from Garo hills)

*Mericstic data* :

- D.iii-iv, 9-10, P.i.14-16, V.i.8, A.ii-iii 5-6, C.19, L.1. 28-32, L.tr. 4.5/2.5-3.5, predorsal scales 8-10, scales around caudal peduncle 8-11.


*Elsewhere* : India : Assam, Arunachal Pradesh, Darjeeling, Eastern Himalayas; Bangladesh; Burma; China; Malaysia; Nepal; Sumatra; Thailand.

Minimum-Maximum length reported so far : 25 mm – 2745 mm TL.

*Remarks* : Common hill stream fishes of Meghalaya. Occurring abundantly in Khasi hills. Small, medium and big sizes are available throughout the year in Khasi hills. The species is important from economic point of view. Artificial culture is being done by the Fishery department of Meghalaya in various culturable waters.

Inhabits streams, rivers, cultured in tanks and reservoirs.

**Neolissochilus hexastichus** (McClelland)

(Plate VI, Figure 3)

*Barbus hexastichus* McClelland, 1839, *Asiat. Res.*, 19(2) : 269, 333, pl. 39, fig. 2 (Type locality: Great rivers in the plains of India)

**Material examined**: 6 exs. (2 from Khasi hills, 4 from Garo hills)

**Meristic data**:

D.iii-iv.9, P.i.16, V.i.8, A.ii-iii.5, 19, L1. 25-26, L.tr. 4/5, Predorsal scales 10, scales around caudal peduncle 8-9.

**Distribution in Meghalaya**: Khasi hills (Barapani), Garo hills (Siju)

**Elsewhere**: India: Rivers from Kashmir to Sikkim and Assam along the Himalayan foot hills; Burma.

Minimum-Maximum length reported so far: 30 mm - 909 mm TL.

**Remarks**: Not commonly occurring like *hexagonolepis*, rarely available. Inhabits streams and rivers.

10. **Genus Osteobrama** Heckel


**Diagnostic characters of Species**

Body considerably compressed, its depth 2.1-2.6 in SL. Barbels absent, anal fin with 33-38 branched rays. Abdominal edge keeled between pelvic fin and anal fin; dorsal spine weak and serrated... 

*Osteobrama coticus coticus* (Hamilton-Buchanan)

(plate VI, Figure 4)

*Cyprinus coticus* Hamilton-Buchanan, 1822, *Fishes of Ganges* : 339, 393, pl. 39, fig. 93 (Type locality: ponds and ditches of Bengal)


**Material examined**: 13 exs. (6 from Khasi hills, 7 from Garo hills)

**Meristic data**:

D.ii-iv.8-9, P.i.12-14, V.i.8, A.iii. 32-38, C.19, L.1. 60-69, L.tr. 12-15/10-11, Predorsal scales 24, scales around caudal peduncle 24.

**Distribution in Meghalaya**: Khasi hills (Barapani, Cherrapunjee, Nongpoh, Shella), Garo hills (Baghmara, Dalu, Darugiri, Phulbari, Tura).

**Elsewhere**: India: Assam, West Bengal, Bihar, Central Province, Punjab, Uttar Pradesh; Bangladesh; Burma; China; N’epal; Pakistan.

Minimum-Maximum length reported so far: 37 mm - 153 mm TL.
Remarks: Though common in plains, it is rarely occurring in Meghalaya. Inhabits freshwater rivers, ponds and lakes.

11. Genus *Puntius* (Hamilton-Buchanan)


Key to the Species

1. Barbels present .................................................................................................................. 2

Barbels absent ................................................................................................................... 7

2. Two pairs of barbels present ............................................................................................ 3

One pair of barbels present .................................................................................................. 6

3. Dorsal spine strong, osseous, serrated ............................................................................... 4

4. Dorsal spine as long as body depth, lateral line scales 35-42................................. *P. clavatus*

Dorsal spine equal to or shorter than body depth, lateral line scale 26-34 ....................... 5

5. Dorsal fin inserted nearer tip of snout than to caudal fin base. Predorsal scales 10-11; no lateral colour bands on body or fin ....................................................................................... *P. sarana sarana*

6. Dorsal spine strong, osseous, smooth, scales between middle of back and lateral line 5-5.5.

Predorsal scales 10-12. A dark blotch from 23rd to 25th scale of lateral line. A dark spot along base of 1st-4th anterior dorsal finray and occasionally a dark mark behind gill openings.

Lateral line scales 26-28 ........................................................................................................ *P. chola*

7. Dorsal spine strong, osseous, serrated ........................................................................... 8

Dorsal spine strong, osseous, smooth .............................................................................. 12

8. Body without any vertical black coloured band, lateral line incomplete ......................... 9

Body with vertical black coloured band; lateral line complete or incomplete .....................

9. Branched rays in dorsal fin 7; only 6-7 rows of transverse scales. A horizontal blue line on body and two spots on sides of caudal peduncle ............................................................................ *P. shalynius*

Branched rays in dorsal fin 8; about 12 rows of transverse scales; no band on body ....... 10

10 Body depth 2.4 in TL. Predorsal scales 9; Black spot over posterior portion of anal fin; no spot on opercle ........................................................................................................... *P. conchonius*

Body depth 3.3.5 in TL. Predorsal scales 11; two black blotches on body, first on anterior part of body either above pectoral fin or adjacent to dorsal fin; another on posterior part of anal fin ....

................................................................................................................................. *P. ticto*

11. Lateral transverse rows of scales 8/10; body with 4 vertical black bands; first from back to opposite middle of pectoral fin, second from back to posterior end of anal fin base, third from
centre of dorsal fin and fourth at caudal fin base. Lateral line complete with 19-23 scales, predorsal scales 8-10, dorsal fin spine shorter than body depth ......................... **P. phutunio**

Lateral transverse rows of scales less than 8/10; body with 3 vertical bands; lateral line incomplete; 23 or 24 scales in longitudinal series. Dorsal fin spine longer than body depth ...........

............................................................................................................................................ **P. gelius**

12. Lateral line incomplete................................................................................................................. 13

Lateral line complete .................................................................................................................... 14

13. Dorsal fin nearly as high as body depth. Each scale with a number of fine black spots, most numerous at the anterior margin. A black blotch over posterior extremity of anal fin; sometimes extended in median line as far as tail .......................................................... **P. terio**

14. Lateral line scales 23-27; 3-3.5 rows of scales between lateral line and pelvic fin base. Body depth 3.5-3.7 in TL. Body not very deep. A round black blotch more or less distinct at root of caudal fin present ............................................................................................................ **P. sophore**

**Puntius chola** (Hamilton-Buchanan)

(Plate VII, Figure 1)

*Cyprinus chola* Hamilton-Buchanan, 1822. *Fishes of Ganges* ; 312, 389 (Type locality : Northeastern part of Bengal)


Local name : 'Shalynnai' (Khasi)

Material examined : 48 exs. (12 from Khasi hills, 2 from Jaintia hills, 34 from Garo hills)

Meristic data :

D.iii.8-9, P.i.14-15, V.i.8, A.ii-iii.5, C.19, L.1. 26-28, L.tr.5/5, Predorsal scales 10-12. scales around caudal peduncle 14-16.

Distribution in Meghalaya : Khasi hills (Cherrapunji, Shella, Umran, Nongpoh), Jaintia hills (Dawki), Garo hills (Baghmara, Dalu, Damalgiri, Garobadha, Phulbari).

Elsewhere : India : Throughour India; Bangladesh; Burma; Nepal; Pakistan; Sri Lanka.

Minimum-Maximum length reported so far : 21 mm 128 mm TL.

Remarks : Not very common in hill streams, collected both from higher altitude of Khasi hills and lower altitude of Garo and Jaintia hills. Common in plain region.

Inhabits streams and rivers

**Puntius clavatus** (McClelland)

(Plate VII, Figure 2)

*Barbus clavatus* McClelland, 1845, *Calcuttal J. nat. Hist.*, 5 : 280, pl. 21, fig. 2 (Type locality : Sikkim mountains on northern frontier of Bengal).

Material examined: 32 exs. (1 from Khasi hills, 31 from Garo hills)

Meristic data:
D.iii-iv, 8-9, P.i.14-16, V.i.8, A. iii.5-6, C. 19, L.l. 35-42, L.tr. 6/4, Predorsal scales 13, scales around caudal peduncle 23.

Distribution in Meghalaya: Khasi hills (Barapani), Jaintia hills, Garo hills (Rongrengiri)

Elsewhere: India: Assam, West Bengal, North Bengal below the Himalayan foot hills, Sikkim; Bangladesh; Burma; Nepal.

Minimum-Maximum length reported so far: 86 mm 240 mm TL.

Remarks: Not very common in Meghalaya.
Inhabits streams and rivers.

Puntius conchonius (Hamilton-Buchanan)
(Plate VII, Figure 3)

Cyprinus conchonius Hamilton-Buchanan, 1822, Fishes of Ganges: 317, 389 (Type locality: Ponds of northeast Bengal; Kosi river and Ami river)


Material examined: 10 exs. (9 from Jaintia hills, 1 from Garo hills)

Meristic data:
D.iii.7-8, P.i.10, V.i.8, A.ii-iii.5, C.19, L.l. 24-26, L.tr. 5.5/6.5, Predorsal scales 11, scales around caudal peduncle 11-12.

Distribution in Meghalaya: Khasi hills, Jaintia hills (Dawki, Umkiang), Garo hills (Garobadha)

Elsewhere: India: Assam, West Bengal, Bihar, Uttar Pradesh, Punjab, Orissa, Eastern and Western Himalayas, Darjeeling, Deccan; Afghanistan; Bangladesh; Nepal; Pakistan.

Minimum-Maximum length reported so far: 25 mm 140 mm TL.

Remarks: Commonly occurring in plain region.
Generally inhabits streams and lakes.

Puntius gelius (Hamilton-Buchanan)
(Plate VII, Figure 4)

Cyprinus gelius Hamilton-Buchanan, 1822, Fishes of Ganges: 320, 390, pl.145. fig. 3 (Type locality: ponds and ditches of north-east Bengal)


Material examined: 18 exs. (7 from Khasi hills, 11 from Jaintia hills)

Meristic data:
D.ii-iii.8, P.i.14, V.i.8, A.iii.5, C.19, L.l. 23-24, L.tr. 4/5, Predorsal scale 8.
SEN: Pisces

*Distribution in Meghalaya*: Khasi hills (Nongstoin, Manai) Jaintia hills (Dawki, Muktapur).

*Elsewhere*: India: Assam, Bihar, Orissa, West Bengal; Bangladesh; Pakistan.

Minimum-Maximum length reported so far: 25 mm - 50 mm TL.

*Remarks*: Not very common in Meghalaya.

Inhabits stagnant waters.

**Puntius phutunio** (Hamilton-Buchanan)

(Plate VIII, Figure 1)

*Cyprinus phutunio* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 319, 390 (Type locality: ponds of north east Bengal)


*Material examined*: Not collected by the author, but reported from Meghalaya.

*Meristic data*:

- D.ii-iii, S, P.i.14, V.i.8, A.iii.5, C.19, L.l. 20-23, L.tr. 5/5, Predorsal scales 8-9, scales around caudal peduncle 9-11.

*Distribution in Meghalaya*: Khasi hills, Garo hills.

*Elsewhere*: India: Assam, West Bengal, Orissa, Goa; Bangladesh; Burma; Pakistan.

Maximum length reported so far: 77 mm TL.

*Remarks*: Rarely occurring in Meghalaya.

Inhabits clear stream and rivers and also muddy waters.

**Puntius sarana sarana** (Hamilton-Buchanan)

(Plate VIII, Figure 2)

*Cyprinus sarana* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 307, 388 (Type locality: ponds and rivers of Bengal)


*Local name*: "Kha putia" (Khasi)

*Material examined*: 35 exs. (2 from Khasi hills, 33 from Garo hills)

*Meristic data*:

- D.iii-iv,8, P.i.14-16, V.i.8, A.iii.5, C.19, L.l. 30-33, L.Tr. 5.5-6/3.5-4, Predorsal scales 11-12, scales around caudal peduncle 14-18.

*Distribution in Meghalaya*: Khasi hills (Balat, Hatmawdon) Jaintia hills, Garo hills (Baghmara, Phulbari, Siju).

*Elsewhere*: India: Throughout India except penninsular India, south of Krishna; Afghanistan; Bangladesh; Bhutan; Burma; Nepal; Pakistan; Sikkim.
Minimum-Maximum length reported so far: 15 mm - 310 mm TL.

Remarks: Common in plain region; recorded so far from lower altitude only. Scales around caudal peduncle in Meghalaya population is less (14 var. 18, Murty 1977).

Inhabits rivers and ponds.

**Puntius shalynius** Yazdani and Talukdar

(Plate VIII, Figure 3)


Local name: ‘Shalynnai’ (Khasi)

Material examined: 2780 exs. (2429 from Khasi hills 351 Jaintia hills)

Meristic data:

D. iii-iv. 7-8, P. i.12-14, v.i. 7, A. ii.5-6, C. 19, L. i.20-23, L. tr. 3-4/2.5-3.5, Predorsal scales 9-10, scales around caudal peduncle 10.

Distribution in Meghalaya: Khasi hills (Barapani, Cherrapunjee, Decame, Jakrem, Kyrdemkulai, Langiong, Mairang, Mawkdok, Mawsmai, Mawryngkhneng, Mawpat, Mawphlang, Mawkynrew, Mylliem, Kyllang, Nayabunglow, Nongstoin, Nongkhlaw, Sumer, Syrkon, Shillong, Sonapahar, Sohiong, Upper Shillong, Umshing, Umtham, Ummir, Ummulong, Umran, Umshing, Umroi, Umtyngar, Weiloi), Jaintia hills (Garrampani road, Jarain, Jowai, Khanduli, Nartiang, Shillong, Sonapahar, Umshing, Umroi, Umtyngar, Weiloi), Inhabits mainly hill streams.

Elsewhere: India: Assam.

Minimum-Maximum length reported so far: 7 mm - 63 mm TL.

Remarks: Common hill stream fishes of Meghalaya occurring in almost all the streams and rivers of Khasi and Jaintia hills, could not be recorded so far from Garo hills. Restricted so far within Meghalaya and border areas of Assam.

Inhabits mainly hill streams.

**Puntius sophore** (Hamilton-Buchanan)

(Plate VIII, Figure 4)

*Cyprinus sophore* Hamilton-Buchanan, 1822 *Fishes of Ganges*: 310, 389, pl. 19, fig. 86 (Type locality: ponds and rivers in the Gangetic provinces).


Local name: ‘Shalynnai’ (Khasi)

Material examined: 101 exs. (4 from Khasi hills, 6 from Jaintia hills, 91 from Garo hills)

Meristic data:

D. iii-iv. 8-9, P. i.14-16, v.i. 8, A. iii.5-6, C. 19, L. i. 22-27, L. tr. 4-5/3-4, Predorsal scales 8-10, scales
around caudal peduncle 14.

_Distribution in Meghalaya_ : Khasi hills (Barapani, Cherrapunjee, Shella), Jaintia hills (Dawki), Garo hills (Bozengdoba, Damra, Damalgiri, Garobadha, Phulbari, Tura).

_Elsewhere_ : India : Throughout India; Bangladesh; Burma; Nepal; Pakistan; Yunan.

Minimum-Maximum length reported so far : 55 mm 130 mm TL.

_Remarks_ : Recorded mainly from lower altitude of Meghalaya; not very common in occurrence.

**Puntius terio** (Hamilton-Buchanan)

(Plate IX, Figure 1)

_Cyprinus terio_ Hamilton-Buchanan, 1822, _Fishes of Ganges_ : 313, 389 (Type locality : north east Bengal)


_Local name_ : “Shalynnai” (Khasi)

_Material examined_ : 4 exs. (1 from Khasi hills, 2 from Jaintia hills 1 from Garo hills)

_Meristic data_ :

D.iii.8, P.i.14, V.i.8, A.ii.5, C.19, L.1. 22-23, L.tr. 5/5, Predorsal scales 9, scales around caudal peduncle 10.

_Distribution in Meghalaya_ : Khasi hills (Balat), Jaintia hills (Dawki) Garo hills (Dalu).

_Elsewhere_ : India : Assam, West Bengal to Punjab, Orissal; Bangladesh; Pakistan.

Minimum-Maximum length reported so far : 30 mm 102 mm TL.

_Remarks_ : Not very common in Meghalaya; recorded so far from lower altitude only.

Inhabits rivers and streams.

**Puntius ticto** (Hamilton-Buchanan)

(Plate IX, Figure 2)

_Cyprinus ticto_ Hamilton-Buchanan, 1822, _Fishes of Ganges_ : 314, 398, pl. 8, fig. 87 (Type locality : south eastern parts of Bengal)


_Local name_ : ‘Kha shalynnai” (Khasi)

_Material examined_ : 51 exs. (22 from Khasi hills, 5 from Jaintia hills, 24 from Garo hills)

_Meristic data_ :

D.iii-iv.8, P.i.12-14, V.i.8, A.ii-iii, 5-6, C.19, L.1. 23-25, L.tr. 4-6/4-5, Predorsal scales 8-11, scales around caudal peduncle 12.

_Distribution in Meghalaya_ : Khasi hills (Barapani, Cherrapunjee, Shella, Mylliem), Jaintia hills (Dawki, Muktapur), Garo hills (Damalgiri, Damra, Garobadha, Mahadev, Remgiri, Songsak, Tura, Phulbari).
Elsewhere: India: Throughout India; Bangladesh; Burma; Nepal; Pakistan; Sri Lanka; Thailand.

Minimum-Maximum length reported so far: 35 mm - 102 mm TL.

Remarks: Rarely occurring in Meghalaya; recorded mainly from lower altitude only.
Inhabits streams, rivers and ponds.

12. Genus *Tor* Gray


Key to the Species

1. Lateral line scales 32-37; width of head greater than its height; maxillary barbel about twice in eye-diameter .................................................................................................................. *T. chelynoides*

   Lateral line scales 22-28; width of head less than its height; maxillary barbel equal to diameter of eye ........................................................................................................................................ 2

2. Length of head considerably greater than body depth; lower fin yellowish. Dorsal and ventral profiles greatly arched .......................................................................................................................... *T. putitora*

   Length of head equal to or shorter than body depth; lower fins usually orange to red, snout smooth, ventral profile more arched than dorsal; 2.5 rows of scales between lateral line and pelvic fin base .......................................................................................................................... *T. tor*

*Tor chelynoides* (McClelland)

(Plate IX, Figure 3)


Material examined: 1 ex. (Khasi hills)

Meristic data:
D.iii.7-8, P.i. 14-16, V.i. 8-9, A. ii.5, C.19, L.1. 32-37, L.tr. 4.5/5.5, Predorsal scales 11, scales around caudal peduncle 12.

Distribution in Meghalaya: Khasi hills (Nongkhlaw).

Elsewhere: India: Ganga river system, Himalayas as far east as Assam; Pakistan.

Minimum-Maximum length reported so far: 10 mm - 763 mm TL.

Remarks: Small, single specimen recorded for the first time from Meghalaya. Rarely occurring species.

Inhabits mainly rivers and streams also.
**Tor putitora** (Hamilton-Buchanan)

(Plate IX, Figure 4)

*Cyprinus putitora* Hamilton-Buchanan, 1822, *Fishes of Ganges* : 303, 388 (Type locality : eastern parts of Bengal)


*Local name* : “Kha Mahasur” (Khasi)

*Material examined* : 42 exs. (38 from Khasi hills, 4 from Garo hills)

*Meristic data* :
- D. iii-iv.8-10, P.i. 16-17, V.i.8-9, A.ii-iii. 5-6, C.19, L.1. 25-29, L.tr. 3.5-4.5/2.5, Predorsal scales 13, scales around caudal peduncle 14.

*Distribution in Meghalaya* : Khasi hills (Barapani, Lailad, Pynursla), Jaintia hills (Dawki), Garo hills (Rongram)

*Elsewhere* : India : All along the Himalayas including Kashmir; Afghanistan; Bangladesh; Nepal; Pakistan.

Minimum-Maximum length reported so far : 42 mm 2743 mm TL.

*Remarks* : Not very common in Meghalaya. Lateral line scales are generally more in Meghalayan population (27-29 var 25-28, Talwar & Jhingran, 1991)

Inhabits running streams and rivers.

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**Tor tor** (Hamilton-Buchanan)

(Plate X, Figure 1)

*Cyprinus tor* Hamilton-Buchanan, 1822, *Fishes of Ganges* : 305, 388 (Type locality : Mahananda river, West Bengal)


*Local name* : “Kha Mahasur” (Khasi)

*Material examined* : 5 exs. (3 from Khasi hills, 2 from Garo hills)

*Meristic data* :
- D. iii-iv.8-9, P.i.14-17, V.i.8-10, A.ii-iii. 5-6, C. 19, L.1. 22-29, L.tr.3.5/2.5, Predorsal scales 12, scales around caudal peduncle 12.

*Distribution in Meghalaya* : Khasi hills (Barapani), Jaintia hills, Garo hills (Rongram, Baghmara).

*Elsewhere* : India : Assam, North Bengal, Bihar, Uttar Pradesh, West Bengal, Madhya Pradesh, all along with Himalayas, Narbada river system; Bangladesh; Burma; China; Pakistan.

Minimum-Maximum length reported so far : 65 mm 1524 mm TL.

*Remarks* : Not very common in occurrence. Lateral line scales in Meghalayan population are more (27-29 var. 22-27, Talwar & Jhingran, 1991)

Inhabits running streams, rivers with rocky bottoms and reservoirs.
13. **Genus Chela** Hamilton-Buchanan


**Key to the Species**

1. Lateral line complete, anal fin with 17-23 branched rays.................... 2

2. Scales in lateral line 51-58; small, much more numerous on body; predorsal scales 23-29. Outer ray of pelvic fin strongly produced, filamentous, usually extends as far back as posterior third of anal fin. Body silvery with brownish lateral band.............................................. *C. cachius*

   Scales in lateral line 31-37; large, not many on body; predorsal scales 15-20. Outer fin ray of pelvic strongly produced. Body silvery with some golden vertical stripes during life. A black mark above base of pectoral fin and another at the base of the caudal......................... *C. laubuca*

**Chela cachius** (Hamilton-Buchanan)

(Plate X, Figure 2)

*Cyprinus (chela) cachius* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 259, 384 (Type locality: Ganges river about commencement of delta)


*Material examined*: 6 exs. (Garo hills)

*Meristic data*:

D. ii.7-8, P.i.8-11, V.i.5-6, A.ii-iii. 18-23, C.19, L.1. 51-58, L.tr. 9-12/3-5, Predorsal scales 23-29, scales around caudal peduncle 14.

*Distribution in Meghalaya*: Khasi hills, Garo hills (Garobadha, Tura)

*Elsewhere*: India: Throughout India; Bangladesh: Burma; Nepal; Pakistan.

Minimum-Maximum length reported so far: 38 mm 102 mm TL.

*Remarks*: Occurring mainly in lower altitude; not very common.

Inhabits flowing water.

**Chela laubuca** (Hamilton-Buchanan)

(Plate X, Figure 3)

*Cyprinus (Chela) laubuca* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 260, 384 (Type locality: ponds in northern parts of Bengal).


*Material examined*: 1 ex. (Garo hills)

*Meristic data*:

D.ii.8-10, P.i.8-12, V.i.6, A.ii-iii. 17-21, C.19, L.1. 31-37 L.tr. 6-7/4-5, Predorsal scales 15-20, scales around caudal peduncle 14.
Distribution in Meghalaya: Khasi hills, Jaintia hills, Garo hills (Damalgiri).

Elsewhere: India: Assam, West Bengal, Orissa, Madhya Pradesh, Andhra Pradesh; Bangladesh; Burma; Malaya Peninsula; Nepal; Pakistan; Sri Lanka; Sumatra.

Minimum-Maximum length reported so far: 48 mm to 90 mm TL.

Remarks: Not very common in Meghalaya.
Inhabits streams, ponds and tank.

14. Genus Salmostoma Swainson


Key to the Species

1. Lateral line scales above 70, body without vertical dark stripes on sides.............................................. 2

2. Anal fin with 10-13 branched rays; L.tr. scales 17-19/4-6. Dorsal fin inserted well in advance of anal fin............................................................................................................................... S. bacaila

Anal fin with 17-19 branched rays; L.tr. scales 12-15/6. Dorsal fin inserted opposite to origin of anal fin...................................................................................................................... S. phulo

Salmostoma bacaila (Hamilton-Buchanan)

(Plate X, Figure 4)

Cyprinus bacaila Hamilton-Buchanan, 1822, Fishes of Ganges: 265, 384; pl. 8, fig. 76 (type locality: freshwater rivers of gangetic provinces).


Material examined: 66 exs. (4 from Khasi hills, 2 from Jaintia hills, 60 from Garo hills)

Meristic data:
D.ii-iii. 7-8, p.i. 11-12, V.i.8, A.ii-iii. 10-13, C.19, L.1. 86-110, L.tr. 17-19/4-6, Predorsal scales 67, scales around caudal peduncle 24.

Distribution in Meghalaya: Khasi hills (Sheila), Jaintia hills (Dawki, Muktapur), Garo hills (Baghmara, Bozengdoba. Dalu. Damalgiri. Damra, Garobadha)

Elsewhere: India: throughout India except Kerala, Karnataka and Tamilnadu; Bangladesh; Burma; Nepal; Pakistan.

Minimum-Maximum length reported so far: 71 mm to 180 mm TL.

Remarks: The species has so far been recorded from lower altitude only. Inhabits slow running streams.
Salmostoma phulo (Hamilton-Buchanan)
(Plate XI, Figure 1)

Cyprinus phulo Hamilton-Buchanan, 1822, *Fishes of Ganges* : 262, 384 (Type locality: north eastern parts of Bengal)


*Material examined*: 2 exs. (Garo hills)

*Meristic data*:
D.ii-iii.7, P.i.12-20, V.i.7-8, A.ii-iii. 17-19, C.19, L.1. 99-112, L.tr. 12-15/6, Predorsal scales 62, scales around caudal peduncle 22-23.

*Distribution in Meghalaya*: Garo hills (Tura)

*Elsewhere India*: Ganga and Brahmaputra river system; Bangladesh.

Minimum-Maximum length reported so far: 54 mm – 130 mm TL.

*Remark*: Rarely occurring in Meghalaya.

Inhabits streams, ponds, beels and inundated fields.

15. Genus *Securicula* Gunther

Securicula Gunther, 1868, *Cat. fishes Br. Mus.* 7 : 332 (Type species: *Cyprillus gora* Hamilton-Buchanan);


*Diagnostic Characters of Species*

A strong symphysial knob on lower jaw with a corresponding notch on upper. Abdomen strongly and sharply keeled, scales very small; lateral line complete................................................................. S. gora

Securicula gora (Hamilton-Buchanan)
(Plate XI, Figure 2)

Cyprinus gora Hamilton-Buchanan, 1822, *Fishes of Ganges* : 263, 384 (Type locality: Ganga river and its tributaries).


*Local name*: "Kha ilong" (Khasi)

*Material examined*: 2 exs. (1 from Khasi hills, 1 from Garo hills)

*Meristic data*:
D.ii-iii.7, P.i.12-13, V.i.7-8, A.ii-iii. 13-15, C.19, L.1. 120-160, L.tr. 18-19/18, Predorsal scales 95, scales around caudal peduncle 30.

*Distribution in Meghalaya*: Khasi hills (Cherrapunjee, Shella) Jaintia hills, Garo hills (Baghmara)

*Elsewhere*: India: Assam, West Bengal, Bihar, Orissa, North India; Bangladesh; Nepal; Pakistan.

Minimum-Maximum length reported so far: 135 mm – 230 mm TL.
Remarks: Very rare in Meghalaya, occurring only in lower altitude (below 200 M alt.)
Inhabits tanks, beels, canals and rivers.

16. Genus Amblypharyngodon Bleeker


Diagnostic characters of Species
Lateral line scales 65-91, a silvery lateral band with dark markings on dorsal, anal and caudal fin. Body depth 3.5-3.8 in SL. Branched pectoral fin rays 13-15; 8-10 rows of scales between lateral line and pelvic fin base .......................................................... A. mola

Amblypharyngodon mola (Hamilton-Buchanan)
(Plate XI, Figure 3)

Cyprinus mola Hamilton-Buchanan, 1822, Fishes of Ganges: 334, 392, pl. 38, fig. 92 (Type locality: ponds and rivers of Gangetic Provinces).

Local name: "Kha muka" (Khasi)
Material examined: 218 exs. (11 from Khasi hills, 2 from Jaintia hills 205 from Garo hills)

Meristic data:
D.ii-iii.7, P.i.13-15, V.i.6-8, A.ii-iii, 5-6, C.19, L.1. 65-91, L.tr. 12/8-10, Predorsal scales 33-34, scales around caudal peduncle 28-30.

Distribution in Meghalaya: Khasi hills (Barapani, Nongpoh, Shella), Jaintia hills (Dawki), Garo hills (Damalgiri, Darugiri, Garobadha, Phulbari, Tura).

Elsewhere: India: Throughout India except Malabar; Bangladesh; Burma; Nepal; Pakistan.
Minimum-Maximum length reported so far: 28 mm 85 mm TL.

Remarks: Commonly occurring mainly from lower altitude.
Inhabits streams, ponds, reservoirs and rivers.

17. Genus Barilius Hamilton-Buchanan


Key to the Species

1. Barbels present.............................................................................................................................. 2
Barbels absent ................................................................................................................................. 7
2. Four barbels................................................................. 3
   Two barbels........................................................................ 6
3. Lateral line scales 56-7 .................................................. 4
   Lateral line scales 38-47.................................................. 5
4. Lateral line scales 59-70, 12 vertical bands...................... B. shacra
5. Anal fin short with 9-11 rays, each scale with a black spot in adult and 8-12 dark bands in young........... B. bendelisis
   Anal fin long with 13-17 rays; 10-14 vertical bars smaller and placed much above lateral line;
   pectoral fin slightly shorter than head........................................ B. vagra
6. Lateral line scales 42-46, 8-15 vertical bars long, extends from back to lateral line; pectoral fin
   as long as head. Usually two barbels, sometimes very short rostral pairs may be present..........
......................................................................................... B. barila
7. Body without vertical bars; but with rows of spots; lateral line scales 65-75; maxilla extends to
   middle of orbit....................................................................... B. tileo
   Body with 7-11 vertical bars; rarely rudimentary barbels may be present; lateral line scales 39-42;
   maxilla extends to anterior third of orbit........................................ B. barna

**Barilius barila** (Hamilton-Buchanan)

(Plate XI, Figure 4)

_Cyprinus (Barilius) barila_ Hamiton-Buchanan, 1822. *Fishes of Ganges*: 267-384 (Type locality: rivers of
northern Bengal)


_Local name_: "Kha ilong" (Khasi)

_Materials examined_: 5 exs. (Garo hills)

_Meristic data_

D.ii. 7-8, P.ii. 12-14, V.i.8, A.ii-iii, 8-11, C.19, L.1. 43-46, L.tr. 7/4.5, Predorsal 19-22, scales
around caudal peduncle 14-16.

_Distribution in Meghalaya_: Khasi hills, Jaintia hills, Garo hills (Damra, Tura, Wageasi, Williamnagar, Phulbari).

_Elsewhere_: India: Assam, Manipur, West Bengal, Bihar, Delhi, Jammu & Kashmir, Uttar
Pradesh, Rajasthan, Orissa, Madhya Pradesh, Mysore; Bangladesh; Burma; Nepal.

_Minimum-Maximum Length reported so far: 17 mm 115 mm TL.

_Remarks_: Not very common in Meghalaya like plains. Anal fin rays are less (2/8) than those
occurring in plain region (3/10-11); 8-13 vertical bands are present in the middle third of the side of
fish instead of 14-15 occurring in the fishes of plain region.

Inhabits mainly hills streams and rivers.
Barilius barna (Hamilton-Buchanan)

(Plate XII, Figure 1)

Cyprinus (Barilius) barna Hamilton. Buchanan 1822, Fishes of Ganges : 268. 384 (Type locality : Yamuna river and Brahmaputra river).


Local name : "Kha ilong" (Khasi)

Material examined : 60 exs. (13 from Khasi hills, 47 from Garo hills)

Meristic data :
D.ii. 7-8, P.i.13-14, V.i.8. ii-iii, 10-11, C.18-19, L.1. 39-42, L.tr. 8.5-9.5 4-5, Predorsal scales 15-16, scales around caudal peduncle 14.

Distribution in Meghalaya : Khasi hills (Cherrapunjee, Shella), Jaintia hills, Garo hills (Amphangiri, Bahgmar, Phulbari, Rongrengiri, Songsak, Damra, Tura).

Elsewhere : India : Assam, Manipur, West Bengal, Bihar, Orissa, Delhi Uttar Pradesh, Rajasthan, Madhya Pradesh, Karnataka; Bangladesh; Burma; Nepal.

Minimum-Maximum length reported so far : 12 mm 128 mm TL.

Remark : commonly occurring in lower altitude (below 500 M alt.)

Inhabits hill streams and rivers.

Barilius bendelisis (Hamilton-Buchanan)

(Plate XII, Figure 2)

Cyprinus bendelisis Hamilton, 1807, Journey in Mysore, 3 : 345, Pl. 32 (Type locality : Vedawati stream. headwaters of Krishna river near Heriuru. Mysore).


Local name : "Kha ilong" (Khasi)

Material examined : 66 exs. (25 from Khasi hills, 41 from Garo hills)

Meristic data :
D.ii.7, P.i.13-14, v.i.8, A.ii-iii, 7-9, C.18-19, L.1. 40-47, L.tr. 7-8/3.5-5, Predorsal scales 18-21, scales around caudal peduncle 18.

Distribution in Meghalaya : Khasi hills (Balat, Shella), Jaintia hills, Garo hills (Bahgma, Nangalbibra, Rongrengiri, Siju, Songsak, Tura, Phulbari).

Elsewhere : India : Assam, Bihar, West Bengal, Uttar Pradesh, Rajasthan, Himachal Pradesh, Punjab, Orissa, Coimbatore, Palghat, Nilgiri, Tamil Nadu, Karnataka, Mettrupalayam; Bangladesh; Nepal: Pakistan; Sri Lanka.

Minimum-Maximum length reported so far : 23 mm 155 mm TL.

Remarks : The species has been recorded so far from below 500 M alt. Meghalayan population
shows some variation in counting of anal fin (2/9 var. 2-3/7-8), caudal fin (19 var. 18), lateral line scales (47 var. 40 43) and lateral transverse scales (7.5/3.5 var. 7-8/5).

Inhabits hill streams and rivers.

**Barilius shacra** (Hamilton-Buchanan)

(Plate XII, Figure 3)

*Cyprinus* (*Barilius*) *shacra* Hamiton, 1822, *Fishes of Ganges*: 271, 385 (Type locality: Kosi river, Uttar Pradesh).


Local name: "Kha ilong" (Khasi)

Material examined: Not collected by the author but reported from Meghalaya.

Meristic data:
- D. ii. 7-8, P. i. 14, V. i. 7-8, A. ii-iii. 8, C. 19, L. 1. 59-70, L. tr. 10-11/9, Predorsal scales 22-25, scales around peduncle 20.
- Distribution in Meghalaya: Khasi hills
- Elsewhere: India: Ganga, Yamuna and Brahmaputra river system; Bangladesh; Nepal.
- Maximum length reported so far: 128 mm TL.
- Remarks: Rarely occurring in Meghalaya.

Inhabits rivers and streams.

**Barilius tileo** (Hamilton-Buchanan)

(Plate XII, Figure 4)

*Cyprinus tileo* Hamilton Buchanan, 1822, *Fishes of Ganges*: 276, 385 (Type locality: Kosi river, Uttar Pradesh).


Local name: "Kha ilong" (Khasi)

Material examined: 2 exs. (Garo hills)

Meristic data:
- D. ii. 7-8, P. i. 13, V. i. 8, A. ii-iii. 10-C. 19, L. 1. 65-75, L. tr. 14/7, Predorsal scales 25-30, scales around caudal peduncle 18.
- Distribution of Meghalaya: Garo hills (Dalu, Dāmra).
- Elsewhere: India: Assam, Eastern Himalayas, West Bengal; Bangladesh; Nepal; Pakistan.
- Minimum-Maximum length reported so far: 113 mm 153 mm TL.
- Remarks: Recorded so far from lower altitude of Garo hills only (below 500 M alt.); rarely occurring in Meghalaya.

Inhabits hill streams and rivers.
**Barilius vagra** (Hamilton-Buchanan)

(Plate XIII, Figure 1)

*Cyprinus (Barilius) vagra* Hamilton-Buchanan, 1822. *Fishes of Ganges*: 269, 385 (Type locality: Ganges river at Patna).


**Material examined**: Not collected by the author but reported from Meghalaya.

**Meristic data**:
- scales around caudal peduncle 11-12.

**Distribution in Meghalaya**: Khasi hills, Jaintia hills, Garo hills.

**Elsewhere**: India: Ganga, Yamuna and Brahmaputra river system; Afghanistan; Bangladesh; Nepal; Pakistan; Sri Lanka.

- Maximum length reported so far: 128 mm TL.

**Remarks**: Rarely occurring in Meghalaya; though reported from Meghalaya, the author could not collect the species so far.

Inhabits hill streams and rivers.

18. **Genus Bengala Gray**


**Diagnostic Characters of Species**

Body elongate, mouth very small; lower jaw with a prominent symphysial process; a short rostral pair of barbel present; caudal fin forked ................................................................. *B. elanga*

**Bengala elanga** (Hamilton-Buchanan)

(Plate XIII, Figure 2)

*Cyprinus elanga* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 281, 386 (Type locality: rivers & ponds of Bengal)


**Local name**: "Kha ilong" (Khasi)

**Material examined**: 1 ex. (Garo hills)

**Meristic data**:
- D. ii-iii, 7-8, P. i.13-14, V. i.7-8, A. ii. 5-6, C.19, L.1. 40-44, L.tr. 8/6, Predorsal scales 16, scales around caudal peduncle 14.

**Distribution in Meghalaya**: Garo hills (Baghmara)
Elsewhere: India: Assam, West Bengal, Bihar, Uttar Pradesh; Bangladesh: Burma.

Minimum-Maximum length reported so far: 135 mm – 204 mm TL.

Remarks: Rarely occurring in Meghalaya; so far recorded from below 200 M alt. of Garo hills only.

Inhabits rivers of plains.

19. Genus Brachydanio Weber & de Beaufort


Diagnostic character of species

Lateral line incomplete or absent. Two well developed rostral and maxillary pairs of barbels present; body with 4 well marked shining gold longitudinal bands from head to caudal fin................. *B. rerio*

*Brachydanio rerio* (Hamilton-Buchanan)

(Plate XIII Figure 3)

*Cyprinus rerio* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 323. 390 (Type locality: Kosi river, Utter Pradesh)


Local name: "Shalynnai" (Khasi)

Material examined: 4230 exs. (3220 from Khasi hills, 906 from Jaintia hills, 104 from Garo hills)

Meristic data:

D.ii.6-8, P.i.9-12, V.i.6, A.ii-iii. 12-13, c.19. L. 1. 28-30, L.tr. 6/4. Predorsal scales 14-16, scales around caudal peduncle 10.


Elsewhere: India: throughout India; Bangladesh; Burma; Nepal; Pakistan.

Minimum-Maximum length reported so far 10 mm – 51 mm TL.

Remarks: Common hill stream fishes of Meghalaya, occurring between the range 100 M – 1900 M alt.

Inhabits streams and slow moving or stagnant water bodies particularly paddy fields.

20. Genus Danio Hamilton Buchanan

Key to the Species

1. Barbels absent ........................................................................................................................................ 2
   Barbels present ........................................................................................................................................ 3

2. Dorsal fin with 13-17 branched rays; lateral line scales 33-38 .................................................. D. devario

3. Lateral coloured bands breaking up anteriorly to form a net work ............................................. 4
   Lateral coloured bands not breaking up anteriorly to form a net work ............................................ 5

4. Two pairs of barbels well developed, much longer than eye-diameter. Lateral line scales 36-42 .. ................................................................................................................................. D. lohaljila

5. Two pairs of barbels shorter than eye diameter. Several well marked and uniform lateral bands. Lateral line scales 34-37 ........................................................................................................ D. aequipinnatus

_Danio aequipinnatus_ (McClelland)

(Plate XIII Figure 4)

_Perilampus aequipinnatus_ McClelland, 1839. _Asiat Res., 19(2)_ : 393, pl. 60, fig. 1 (Type locality: Assam)


_Local name_ : "Shalynnai" (Khasi)

_Material examined_ : 992 exs. (830 from Khasi hills, 4 from Jaintia hills, 158 from Garo hills)

_Meristic data_

D.ii-iii. 9-12, P.i.10-12, V.i.6-7, A.ii-iii. 12-16, C.19, L.1. 34-37, L.tr. 7.5/2, 5-3, Predorsal scales 15, scales around caudal peduncle 14.


_Elsewhere_ : India : Throughout Bangladesh; Burma; Nepal; Sri Lanka; Thailand.

_Minimum-Maximum length reported so far : 20 mm 152 mm TL.

_Remarks_ : Common hill stream fishes occurring abundantly in Khasi hills than Jaintia and Garo hills. Generally finrays are less in numbers in relation to those from plain region.

_Inhabits hill streams mainly._

_Danio dangila_ (Hamilton-Buchanan)

(Plate XIV Figure 1)

_Cyprinus dangila_ Hamilton-Buchanan, 1822, _Fishes of Ganges_ : 321, 390 (Type locality: mountain streams of Mongher, Bihar)

Local name: "Shalynnai" (Khasi)

Material examined: 1430 exs. (1148 from Khasi hills, 197 from Jaintia hills, 85 from Garo hills)

Meristic data:
D.ii-iii. 8-10, P.i. 10-12, V.i.6-7. A.ii-iii. 11-15, C.19. L.1. 36-42, L.tr. 7/4.5, Predorsal scales 12-14, scales around caudal peduncle 14.

Distribution in Meghalaya: Khasi hills (Barapani, Cherrapunjee, Jakrem, Kyrdemkuli, Mawkynrew, Mawphlang, Mawlyndep, Mawsmai, Mairang, Mylliem, Sumer, Shillong, Shillong Peak, Umsning, Umroi, Umtyngar, Umran, Umshing, Weilor, Nongstoin). Jaintia hills (Dawki, Jarain, Jowai, Garrampani road, Muktapur, Nartiang, Thadlaskein). Garo hills (Darugiri, Garobadhah, Rongram, Rongrengi, Songsak, Songkhama)

Elsewhere: India: Assam, Arunachal Pradesh, Eastern Himalayas, Manipur, Madhya Pradesh, Nagaland, West Bengal, Bihar, Uttar Pradesh; Bangladesh; Burma; Nepal.

Minimum-Maximum length reported so far: 20 mm-153 mm TL.

Remarks: Common hill stream fishes occurring throughout Meghalaya between 100-1900 M alt. Paired and median finrays are usually less in number in relation to those occurring in plains.

Inhabits mountain streams.

Danio devario (Hamilton-Buchanan)

(Cyprinus devario) Hamilton-Buchanan, 1822, Fishes of Ganges: 341, 393, pl. 6, fig. 94 (Type locality: rivers and ponds of Bengal)


Local name: "Shalynnai" (Khasi)

Material examined: 13 exs. (5 from Khasi hills, 8 from Garo hills)

Meristic data:
D.ii-iii. 13-17, P.i. 11-13, V.i.7. A.ii-iii. 14-17, C.19. L.1. 33-38, L.tr. 9-10/3-4, Predorsal scales 13-17, scales around caudal peduncle 14-16.

Distribution in Meghalaya: Khasi hills, Jaintia hills, Garo hills (Baghmara, Phulbari, Garobadha, Tura)

Elsewhere: India: Assam, West Bengal, Eastern Himalayas, Western Himalayas, Eastern Punjab, Uttar Pradesh, Bihar, Orissa, Madhya Pradesh, Ahmedabad, Krishna-Godavari river system, Deccan; Bangladesh; Burma; Nepal; Pakistan.

Minimum-Maximum length reported so far: 42 mm-102 mm TL.

Remarks: The only Danio species occurring below 200 m alt. only. The other species of the genus are very common in higher as well as lower altitude.

Inhabits mainly streams and rivers of plains.
21. Genus *Esomus* Swainson


Diagnostic characters of Species

Lateral line incomplete or absent; piercing only 4-6 scales anteriorly. Sides with a broad lateral dark band. 14 scales around caudal peduncle. No precaudal spot.......................................................... *E. danicus*

*Esomus danicus* (Hamilton-Buchanan)

(Plate XIV Figure 3)

*Cyprinus danica* Hamilton-Buchanan, 1822. *Fishes of Ganges* : 325, 390, p. 16, fig. 88 (Type locality : ponds and ditches of Bengal)


Local name : "Shalynnai" (Khasi)

Material examined : 163 exs. (24 from Khasi hills, 5 from Jaintia hills, 134 from Garo hills)

Meristic data :

- D..ii.6-7, P.i.12-15, V.i.6-7, A.iii. 5-6, C.19, L.1. 27-30, L.tr. 5-6/3. Predorsal scales 16-18. scales around caudal peduncle 14.
- Distribution in Meghalaya : Khasi hills (Barapani, Balat, umtham), Jaintia hills (Dawki, Muktapur), Garo hills (Baghmara, Rewak, Garobadha, Dalu, Damalgiri, Phulbari, Rongram).
- Elsewhere : India : Throughout India; Bangladesh; Burma; Malaya; Nepal; Pakistan; Sri Lanka; Thailand; South Vietnam (Mekong Basin)

Minimum-Maximum length reported so far : 32 mm  128 mm TL.

Remarks : Not very common in Meghalaya. Paired and median finrays are usually less in fishes from higher altitude than those occurring in plain region.

Inhabits ponds and weedy ditches, slowmoving rivers and streams.

22. Genus *Parluciosoma* Howes


Diagnostic Characters Of Species

Body oblong, compressed. Barbels absent;mouth small, lips simple. Pectoral fin shorter than head; lateral line nearly complete with 31-34 scales................................................................. *P. daniconius*
Parluciosoma daniconius  (Hamilton-Buchanan)

(Plate XIV  Figure 4)

Cyprinus daniconius  Hamilton-Buchanan, 1822, *Fishes of Ganges* : 327, 391, pl. 15, fig. 89 (Type locality: rivers of southern Bengal)


Local name : "Khailong"  (Khasi)

Material examined  : 13 exs. (4 from Khasi hills, 1 from Jaintia hills, 8 from Garo hills)

Meristic data:

D. iii. 7, P.i. 12-14, V.i. 8, Aii-iii, 5, C. 19, L.l. 31-34, L.tr. 4.5/2.5, Predoral scales 14, scales around caudal peduncle 12-14.

Distribution in Meghalaya : Khasi hills (Barapani, Umtham, R. Umsot), Jaintia hills (Dawki, Muktapur), Garo hills (Damalgiri, Phulbari, Tura).

Elsewhere: India : Throughout India; Bangladesh; Burma; Malaya; Malaya Archipelago; Nepal; Pakistan; Srilanka; Thailand; Zangiber.

Minimum-Maximum length reported so far : 39 mm 204 mm TL.

Remark : Not very common in Meghalaya; recorded from both higher and lower altitude.

Inhabits pools, ditches and streams.

23. Genus *Raiamas* Jordan


Diagnostic Characters Of Species

Body slender, greatly compressed. Barbels absent in adults; a rudimentary maxillary pair in juveniles. Lateral line complete with 85 95 small scales ............................................................................. *R. bola*

*Raiamas bola*  (Hamilton-Buchanan)

(Plate XV, Figure 1)

Cyprinus bola  Hamilton-Buchanan, 1822, *Fishes of Ganges* : 274, 385 (Type locality: Brahmaputra river).


Local name : "Kha ilong"  (Khasi)

Material examined  : 2 exs. (Garo hills)

Meristic data:

D. iii. 7-8, P.i. 12, V.i. 8, A.iii. 10, C.19, L.l. 85-95, L. tr. 12-15/5.6, Predorsal scales 40, scales around caudal peduncle 28.
Distribution in Meghalaya: Khasi hills, Jaintia hills, Garo hills (Baghmara).

Elsewhere: India: Assam, Bihar, West Bengal, Uttar Pradesh, Punjab, Rajasthan, Orissa; Bangladesh; Burma; Nepal; Pakistan.

Minimum-Maximum length reported so far: 240 mm – 305 mm TL.

Remarks: The species is rarely occurring in Meghalaya below 200 M alt. only. Though reported from Khasi and Jaintia hills the author could collect the same from Garo hills so far.

Inhabits streams and rivers.

24. Genus *Rasbora* Bleeker


Diagnostic characters of species

Anal fin with 5 branched rays, lateral line complete with 26-29 scales; caudal fin with a well-defined black hind margin. Barbels absent. Dorsal fin inserted behind origin of pelvic fin. Deeply emarginate caudal fin.................................................................

*Rasbora rasbora* (Hamilton-Buchanan)

(Plate XV, figure 2)

*Cyprinus rasbora* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 329, 391, pl. 2, fig. 90 (Type locality: ponds of Bengal)


Local name: "Kha ilong" (Khasi)

Material examined: 1 ex. (Garo hills)

Meristic data:

D.ii.7, P.i.14, V.i.8, A.ii-iii.5, C.19, L.1. 26-29, L.tr. 4.5/2-3, Predorsal scales 13, scales around caudal peduncle 8-9.

Distribution in Meghalaya: Garo hills (Damalgiri)

Elsewhere: India: Gangetic provinces and Coromandal coast, Freshwaters of all the Indian States; Bangladesh; Burma; Pakistan; Thailand.

Minimum-Maximum length reported so far: 40 mm – 130 mm TL.

Remarks: Rarely occurring in Meghalaya; so far recorded from Garo hills only.

Inhabits streams and rivers.

25. Genus *Crossocheilus* Kuhl et van Hasselt

*Crossocheilus* Kuhl et van Hasselt, 1823, *Algemeine Konst. en Letter-Bode*, 2(35): 132 (Type species:

Diagnostic Characters Of Species

Body elongated. Dorsal fin with 8 branched ray; Maxillary and rostral pair of barbels present; rostral barbels short, often rudimentary. Lateral line with 37-43 scales; eye-diameter 3.2-4.7 in head length...

.............................................................................................................................................................................. C. latius latius

Crossocheilus latius latius (Hamilton-Buchanan)

(Plate XV Figure 3)

Cyprinus latius Hamilton-Buchanan, 1822, Fishes of Ganges : 345, 393 (Type locality : Tista river at base of Darjeeling Himalayas).


Material examined : 8 exs. (Garo hills)

Meristic data:
D.ii-iv.8, P.i.13-14, V.i.8, A.ii.5, C.19, L.1. 37-43, L. tr. 6.5/4.5, Predorsal scales 11, scales around caudal peduncle 16.

Distribution in Meghalaya : Khasi hills, Jaintia hills. Garo hills (Baghmara, Phulbari)

Elsewhere : India : Assam, Manipur, West Bengal, Bihar, Uttar Pradesh, Gangetic Watershed of Himalayas, Orissa, Karnataka, Bombay, Western Ghat, Kaimur hills; Bangladesh; Burma; Nepal; Pakistan.

Minimum-Maximum length reported so far : 35 mm  204 mm TL.

Remark : Not very common in Meghalaya; recorded both from higher and lower altitude.
Inhabits streams and rivers.

26. Genus Garra Hamilton-Buchanan


Key to the Species

1. Proboscis present...................................................................................................................................................... 2
   Proboscis absent..................................................................................................................................................... 3

2. Proboscis trilobed, 2 pairs of barbels present................................................................. G. nasuta
   Proboscis a single projection without lateral lobes but with well defined lateral tubercular area.
   Body depth less than 5 times in standard length ................................................................................. G. gotyla gotyla

3. Lateral line scales 34 or fewer............................................................................................................................ 4
   Lateral line scales 35-40 ................................................................................................................................... 9
4. Tip of snout marked off by a transverse groove. A dark lateral band bordered above and below by light pale stripes especially in the posterior region present .......................................................... 5

Tip of snout not marked off by a transverse groove. A pale lateral band without any lateral stripes present .......................................................... 6

5. Distance of vent from base of anal fin more than 4 times but less than 5 times in that between anterior origin of pelvic and anal fins .......................................................... G. lamta

6. Dorsal fin with a light black bar across and caudal fin with broad W shaped band .................... 7

Dorsal and caudal fins without such marking .................................................................................. 8

7. Back and posterior pelvic region scaled; pectoral fin equals or slightly longer than head ...........

.................................................................................................................................................. G. lissorhynchus

Back and posterior pelvic region naked, pectoral fin shorter than head ........................................ G. rupecula

8. Distance between vent to anal fin 2.62-3.21 in that between origin of pelvic and anal fins. Caudal peduncle length 1.0-1.4 in HL ......................................................................... G. annandalei

9. Dorsal fin inserted distinctly nearer tip of snout than base of caudal fin; lateral line scales 35-38

.................................................................................................................................................. G. mcclellandi

Dorsal fin inserted almost midway between tip of snout and base of caudal fin. Back scaled, lateral line scales 38-40 ........................................................................................................ 10

10. Vent situated almost midway between anterior origin of anal fin and pelvic fin ............ G. kemp

Vent not situated midway between anterior origin of anal fin and pelvic fin ........... G. naganensis

Garra annandalei Hora

(Plate XV, Figure 4)

Garra annandalei Hora, 1921, Rec. Indian Mus., 22 (5) : 657 (Type locality: Mahananda river below Darjeeling)

Garra annandalei: Talwar and Jhingran, 1991 Inland Fishes, Vol. 1 : 419

Local name: “Doh jei” (khasi)

Material examined: 5 exs. (3 from Khasi hills, 2 from Jaintia hills)

Meristic data:

D.iii.7-8, P.ii-ii. 12-14, V.i.7-8, A.ii-ii. 19, L.1. 33-34, L.tr. 4-4.5/4.0-4.5, Predorsal scales 9-12, scales around caudal peduncle 14.

Distribution in Meghalaya: Khasi hills (Kyrdemkula, Sumer), Jaintia hills (Umkiang)

Elsewhere: India: Assam, Bihar, Darjeeling himalayas, North Bengal; Bangladesh; Eastern Nepal.

Minimum - Maximum length reported so far: 82 mm - 230 mm TL.
Remarks: Hill stream fish occurring above 1000 M alt. only; not recorded from lower altitude so far. Not commonly available like lissorhynchos or naganensis.

Inhabits streams.

Garra gotyla gotyla (Gray)
(Plate XVI Figure 1)
Cyprinus gotyla Gray, 1832, Illustr, Indian Zool., 1 : pl. 88, fig. 3.3a (Type locality: Northern India)

Local name: “Kha kulai” (Khasi)
Material examined: 10 exs. (5 from Khasi hills, 5 from Garo hills)

Meristic data:
D.iii.7-9, p.i-ii, 14-15, V.i.8, A.ii5-6, C.19, L.1. 32-35, L.tr. 4.5/ 3.5-4.5. Predorsal scales 9-11,
scales around caudal peduncle 14.

Distribution in Meghalaya: Khasi hills (Barapani), Jaintia hills, Garo hills (Ganol riv., Wegeasi)
Elsewhere: India: Assam, Darjeeling All along the Himalayas, Simla, UttarPradesh, Punjab,
Chota Nagpur, Vindhya, Satpura mountains of the Indian peninsula; Bangladesh; Burma; Nepal;
Pakistan.

Minimum-Maximum length reported so far: 90 mm -204 mm TL.

Remarks: Hill stream fishes occurring both in higher (above 1000 M.) and lower (below 600 M)
altitude. Of course in lower altitude their occurrence is rare. Not commonly occurring in Meghalaya.
Maximum length reported earlier was 152 mm, but present collection include fish of 204 mm TL.

Inhabits mainly hill streams.

Garra kempi Hora
(Plate XVI Figure 2)
Garra kempi Hora 1921, Rec. Indian Mus., 22(5) : 665, pl. 26, fig. 3 3a (Type locality: Siyom river below
Demda, Abor hills, Arunachal Pradesh).
Material examined: 96 exs. (Khasi hills)

Meristic data:
D.ii.8, P.i.12, V.i.7, A.ii.5, C.19, L.1.38-40, L.tr. 4.5/3.5, Predorsal scales 12-14, scales around
caudal peduncle 14.

Distribution: in Meghalaya: Khasi hills (Nongstoin, Syrkon)

Minimum-Maximum length reported so far: 30 mm 110 mm TL.
Remarks: Occurring commonly in higher altitude. So far recorded from Khasi hills only.
Inhabits hill streams.

Garra lama (Hamilton-Buchanan)
(Plate XVI Figure 3)

Cyprinus (Garra) lama Hamilton-Buchanan, (Partim), 1822. Fishes of Ganges: 343, 393 (Type locality: Rapti river, Gorakhpur, Uttar Pradesh)


Local name: "Doh jei" (Khasi)

Material examined: 12 exs. (2 from Khasi hills, 10 from Garo hills)

Meristic data:
D.iii.7-8, P. i-ii. 12-13, V.i. 7-8, A. ii.5, C.19, L.1.31-34, L.tr. 4.5/4.5, Predorsal scales 8-12, scales around caudal peduncle 14.

Distribution in Meghalaya: Khasi hills (Barapani, Lailad), Garo hills (Rongram, Selbalgiri)

Elsewhere: India: Assam, Darjeeling, Kumaon Himalayas, Sikkim; Abyssinia; Aden; Nepal; Pakistan; Sri Lanka; Syria; Tenasserim Province.

Minimum Maximum length reported so far: 27 mm 204 mm TL.

Remarks: Not very common in Meghalaya; recorded from higher and lower altitude.
Inhabits hill streams.

Garra lissorhynchus (McClelland)
(Plate XVI, Figure 4)

Platycara lissorhynchus McClelland, 1843. Calcutta J. nat. Hist., 2: 587, pl. 68 (Type locality: Khasi hills, Meghalaya)


Local name: "Kha Kulai" (Khasi)

Material examined: 226 exs. (Khasi hills)

Meristic data:
D. ii. 6-7, P. i-ii. 12-15, V.i. 7-8, A. i-ii.5, C.19, L.1. 32-34, L.tr. 3-5. 4.5/2.5-3.5, predorsal scales 11-15, scales around caudal peduncle 12.

Distribution in Meghalaya: Khasi hills (Barapani, Shillong, Mawkodok), Jaintia hills.

Elsewhere: India: Assam, Himalayas, Brahmaputra river system.

Minimum- Maximum length reported so far: 35 mm- 75 mm TL.

Remarks: Most commonly available hill stream fishes of Khasi hills. Mostly occurring in higher altitude only. Its occurrence throughout the year in the market is noteworthy. Not recorded so far from
Garo hills.

Inhabits hill streams.

**Garra mcclellandi** (Jerdon)

(Plate XVII Figure 1)


Local name : “Doh jei” (Khasi)

Material examined : 13 exs. (Khasi hills)

Meristic data:

- D.ii-iii. 8, P.i-iv. 12-15, V.i. 8, A. i-ii. 5, C. 19, L.1. 35-38, L.tr. 4.5/3.5, Predorsal scales 8-13, scales around caudal peduncle 14.

Distribution in Meghalaya : Khasi hills (Barapani)


Minimum Maximum length reported so far : 62 mm 175 mm TL.

Remarks : Rare in occurrence. Recorded for the first time from Khasi hills (above 1000 M. alt.). Pectoral and pelvic fins are more well spread than other species. Length of pectoral fin is larger than head length. Though it is south Indian species, it is interesting to note that it has been reported earlier from Arunachal Pradesh and at present from Khasi hills.

Inhabits hill streams.

**Garra naganensis** Hora

(Plate XVII Figure 2)

*Garra naganensis* Hora, 1921, *Rec. Indian Mus.*, 22(5) : 667, pl. 25, figs. 2.2a (Type locality: near Kairong, Nagahills, Nagaland)


Local name : “Doh jei” (Khasi)

Material examined : 82 exs. (75 from Khasi hills, 3 from Jaintia hills, 4 from Garo hills)

Meristic data:

- D.ii-iii. 7-8, P.i-iv. 11-12, V. i. 7-8, A. i-ii. 5-6, C. 19, L.1. 38-40, L.tr. 4.5/4.5, predorsal scales 12-14, scales around peduncle 14.

Distribution in Meghalaya : Khasi hills (Barapani, Umran, Mairang), Jaintia hills (Garrampani road, Jowai), Garo hills (Rongrengiri  Rongsangiri)

Elsewhere : India : Assam, Nagaland.
Minimum Maximum length reported so far: 30 mm 192 mm TL.

Remarks: Commonly available but not so common like lissorhynchus. Maximum length reported so far was 104.5 mm TL but the present collection include specimen of 192 mm TL.

Inhabits hill streams.

Garra nasuta (McClelland)
(Plate XVII Figure 3)

Platycara nasuta McClelland. 1839, J. Asiat. Soc. Bengal, 7(2) : 947, pl. 55, figs. 2.2a, 2b (Type locality: Khasi hills Meghalaya)


Local name: “Doh jei” (Khasi)

Material examined: 9 exs. (5 from Khasi hills 4 from Garo hills)

Meristic data:
D.ii.8-9, P.i-ii. 13-14, V.1. 7-8, A. i-ii. 5, C. 19, L.1. 33-34, L.tr. 4.5/3.5, Predorsal scales 9-11.

Distribution in Meghalaya: Khasi hills (Barapani), Jaintia hills, Garo hills (Ganol river, Rongrengiri, Siju).

Elsewhere: India: Assam, Arunachal Pradesh; Burma; Indo-China; South China; Vietnam.

Minimum Maximum length reported so far: 125 mm 146 mm TL.

Remarks: Not very common in Meghalaya.

Inhabits mainly hill streams.

Garra rupecula (McClelland)
(Plate XVII Figure 4)

Gonorhynchus rupeculus McClelland. 1839, Asiat. Res., 19 : 281, 343, pl. 43, fig. 4, 5 (Type locality: Mishmi hills, Arunachal Pradesh)


Local name: “Kha kulai” (Khasi)

Material examined: 5 exs. (Khasi hills)

Meristic data:
D.ii.6-7, P.i-ii, 12-15, V.i.7-8, A.ii.4-5, C.19, L.1. 32-34, L.tr. 3.5-5.5/3.5-4.5, Predorsal scales 14,

Distribution in Meghalaya: Khasi hills (Upper Shillong, Mawsmai)

Elsewhere: India: Assam, Manipur. Mishmi hills (Arunachal Pradesh)

Minimum-Maximum length reported so far: 25 mm 65 mm TL.
Remarks: Not very common. Occurring together with *lissorhynchus*. Recorded so far from Khasi hills only.

Inhabits hills streams.

Diagnostic characters of Genus of Family Psilorhynchidae

Body greatly arched dorsally and flattened ventrally. Ventral surface of head markedly flattened. Mouth small and inferior with a projecting snout, lips fleshy. Barbels absent, eyes large. Dorsal fin inserted slightly in advance of pelvic fin with 10-12 rays; anal fin short with 5 branched rays. Pectoral fin with 4-9 unbranched rays. Pelvic fin with 9 rays. Lateral line complete with 31-50 scales.

27. Genus *Psilorhynchus* McClelland


Key to the Species

1. Branched dorsal fin rays 7.............................................................................................................. 2

Branched dorsal fin rays 8 (rarely 9)................................................................................................ 4

2. Abdomen fully scaled; unbranched pectoral fin rays 4. Body spindle shaped, eyes large, lateral in position............................................................................................................................ *P. sucatio*

Abdomen naked; unbranched pectoral fin rays 6-10. Body not spindle shaped, eyes small, dorso lateral in position...................................................................................................................... 3

3. Unbranched pectoral fin ray 7 or 8. Total lateral line scales 42-44, abdomen smooth............

.................................................................................................................................. *P. homaloptera*

4. Unbranched pectoral fin rays 6 or 7 (rarely 5) or more; ventral surface behind pectoral fin with irregular distribution of scales. Lateral line with less than 40 scales....................... *P. balitora*

*Psilorhynchus balitora* (Hamilton-Buchanan)

(Plate XVIII, Figure 1)

*Cyprinus balitora* Hamilton-Buchanan, 1822. *Fishes of Ganges* : 348, 394 (Type locality: rivers of N. E. Bengal)


*Local name*: “Doh thang” (Khasi)

*Material examined*: 47 exs. (11 from Khasi hills, 36 from Garo hills)

*Meristic data*:

- D.ii-iii.8, P.v-vii, 7-9, V.i-ii. 7-8, A.ii.5, C.19, L.1. 30-34, L. tr. 3.5-4, 5/2. 5-3.5, Predorsal scales 9-10. scales around caudal peduncle 8.
Distribution in Meghalaya: Khasi hills (Barapani), Garo hills (Baghmara, Goka, Rewak river, Rongram, Rongrengiri, Songsak).

Elsewhere: India: Assam, West Bengal, North Bengal, Delhi, Uttar Pradesh; Bangladesh; Burma; Nepal.

Minimum-Maximum length reported so far: 31 mm 75 TL.

Remarks: Not very common in Meghalaya. Mainly occurring in lower altitude of Garo hills. The maximum length reported so far was 64 mm TL. The present collection contains specimens of 75 mm TL.

Inhabits hill streams and shallow rivers with rocky bottom.

Psilorhynchus homaloptera Hora and Mukherji

(Plate XVIII, Figure 2)

Psilorhynchus homaloptera Hora and Mukherji (partim), 1935, Rec. Indian Mus. 37(3): 391, pl.7, figs. 1-6
(Type locality: Emilomi, Naga hills, Nagaland.


Local name: "Doh thang" (Khasi)

Material examined: 73 exs. (68 from Khasi hills, 5 from Garo hills)

Meristic data:
D.ii.7, P. vii-viii, 8-9, V. i-ii. 7, A. i-ii. 5, C.19, L.1. 42-44, L. tr. 3.5/3.5, Predorsal scales 14-15, scales around caudal peduncle 10.

Distribution in Meghalaya: Khasi hills (Barapani), Garo hills (Tura, Williamnagar).

Elsewhere: India: Assam, North East Bengal, Nagaland; Burma; Nepal.

Minimum-Maximum length reported so far: 20 mm 120 mm TL.

Remarks: Commonly occurring in higher altitude of Khasi hills, less common in Garo hills.

Inhabits hill streams.

Psilorhynchus sucatio (Hamilton-Buchanan)

(Plate XVIII, Figure 3)

Cyprinus sucatio Hamilton-Buchanan, 1822, Fishes of Ganges: 347, 393 (Type locality: rivers of North Bengal)


Local name: "Doh thang" (Khasi)

Material examined: 1 ex. (Garo hills)

Meristic data:
D.ii.7, P. iv.8-9, V. i-ii, 7-8, A. ii. 5, C.18, L.1. 34-37, L. tr. 3.5/3, Predorsal scales 10, scales around caudal peduncle 10.
Distribution in Meghalaya: Garo hills (Baghmara)

Elsewhere: India: Eastern Himalayas, Ganga river system in Uttar Pradesh, Bihar, Darjeeling; Bangladesh.

Minimum-Maximum length reported so far: 52 mm - 83 mm TL.

Remarks: Rarely occurring in Meghalaya. Recorded so far from lower altitude of Garo hills only.

Inhabits primarily the edges of sandy stream with emergent or overhanging vegetation.

Key to the Genera of Family Balitoridae

1. Pectoral and pelvic fins inserted horizontally; atleast 2 rays of pectoral fin simple ...................... 2
   Pectoral and pelvic fins not inserted horizontally; outermost ray of pectoral fin simple .................. 3
2. Rostral barbels 4, arranged in one row; 8-10 outer pectoral rays simple................................. Balitora
3. Vent placed far forward; pelvic fins extends considerably beyond anal opening. Scales small and elliptical; lateral line incomplete and indistinct............................................................... Aborichthys
   Vent placed much nearer to anal fin; pelvic fin do not extend to anal opening. Scales minute (rarely absent), lateral line complete or incomplete............................................... Nemacheilus

28. Genus Balitora Gray

Balitora Gray, 1830, Illustrations of Indian Zoology, 1: pl. 88, fig. 1. (Type species: Balitora brucei (Gray));

Diagnostic characters of Species

Body depressed. Head length 4.8-5.4 times in standard length; caudal peduncle 3-4.2 times longer than deep; Pectoral fin do not extend or just reach pelvic fin; caudal fil lobes unequal, lower lobe the longer. Lateral line scales more than 60................................. B. brucei

Balitora brucei Gray

(Plate XVIII, Figure 4)

Balitora brucei Gray, 1830, Illustrations of Indian Zoology, 1: pl. 88, fig. 1 (Type locality: Priang river near Cherrapunjee, Meghalaya)


Material examined: 1 ex. (Garo hills)

Meristic data:
   D.iii.8, P.ix-x, 10-12, V.ii.9-10, A.ii-iii.5. C.17. L.1. 61-70. L. tr. 10/7.

Distribution in Meghalaya: Khasi hills. Garo hills (Someshwari river)

Elsewhere: India: Assam, Darjeeling, Madras; Bangladesh; Bhutan; Pegu; Tenasserim.

Minimum-Maximum length reported so far: 82 mm - 105 mm TL.
Remarks: Though the type locality is Khasi hills, the species could not be collected from this locality inspite of great effort. Single specimen could be collected from Garo hills only.

Inhabits torrential hill stream and rivers with rocey bed.

29. Genus *Aborichthys* Choudhuri


Key to the Species

1. Vent situated equidistant between tip of snout and base of caudal fin or slightly nearer to snout tip.................................................................................................................................................... 2

Vent situated distinctly nearer to base of caudal fin than tip of snout........................................... 3

2. Body depth 6.4-7.1 times in standard length, eye-diameter 6-7.2 in head length; body with 30-35 black forked shaped bands. Caudal fin dull grey with dark black margin posteriorly................. .................................................................................................................................................. *A. garoensis*

3. Body marked with several broad black rings alternating with narrow yellowish bands especially in posterior part. Barbels about as long as eye diameter; caudal fin dusky with whitish margin and tow short whitish band in the middle........................................................................................................... *A. elongatus*

Body marked with oblique black stripes; indistinct in posterior third of body; barbels much longer than eye diameter; caudal fin banded with two broad black concentric curves....... *A. kempi*

*Aborichthys elongatus* Hora

(Plate XIX, Figure 1)


Material examined : 1 ex. (Garo hills)

Meristic data:
D.ii-iii.7, P.i.9-10, V.i.7, A.i-ii.5. C.18.

Distribution: Garo hills (Damalgiri)

Elsewhere: India: Darjeeling Himalayas.

Minimum-Maximum length reported so far: 50 mm 96 mm TL.

Remark: Rarely occurring in Meghalaya.

Inhabits streams.
Aborichthys garoensis Hora

(Plate XIX, Figure 2)

Aborichthys garoensis Hora. 1925. Rec. Indian Mus. 27(3) : 233, figs. 1a, 1b (Type locality: Tura, Garo hills, Meghalaya)


Material examined: Not collected by the author but reported from Meghalaya.

Meristic data:
D.iii.7, P.i.10, V.i.6, A.ii.5, C.18.

Distribution: Garo Hills.

Elsewhere: So far not reported from other places.

Minimum-Maximum length reported so far: 25 mm – 105.5 mm TL.

Remark: Rarely occurring species; so far reported from Garo hills only. Most probably this is a restricted species.

Inhabits streams.

Aborichthys kempi Choudhuri

(Plate XIX, Figure 3)


Material examined: 14 exs. (Garo hills)

Meristic data:
D.ii-iii.7, P.i.10, V.i.6-7, A. ii. 5. C.16-18.

Distribution: Garo hills (Rongram, Thabrongiri, Chinabot)

Elsewhere: India: Arunanchal Pradesh, Assam; Upper Burma.

Minimum-Maximum length reported so far: 40 mm TL.

Remark: Not very commonly occurring in Meghalaya; recorded so far from Garo hills only.

It is interesting to note that in Meghalaya all the three species of Aborichthys have so far been recorded and reported from Garo hills only. Since these are not recorded so far from Khasi and Jaintia hills, it can be concluded that the genus in Meghalaya is restricted to the particular region only.

Inhabits streams.

30. Genus Nemacheilus Bleeker

**Key to the Species**

1. Caudal fin truncate or slightly emerginate; a black ocellus at upper margin of base of caudal fin base.................................................. 2
   Caudal truncate, emarginate or forked; no ocellus at upper margin of caudal fin base................ 3

2. Lateral line complete; dorsal fin with 9-11 branched rays; body slender, its depth about 5 times in standard length. Nasal barbel not well developed; caudal fin with 7 irregular bars bent an angle.......................................................... N. botia

3. Body marked with a series of vertical bands........................................................................ 4
   Body not marked with a series a series of vertical bands ......................................................... 17

4. Dorsal fin with 9 or 10 branched rays.................................................................................... 5
   Dorsal fin with less than 9 branched rays .................................................................................. 6

5. Dorsal fin with 9 branched rays; caudal fin deeply emerginate. Complete lateral line; body marked with 9 or 10 narrow yellowish bands. A vertical black band at caudal fin base. Dorsal and Anal fin marked with black dots in middle. Caudal fin often with 1 or 2 V shaped bands...... ........................................................................................................ N. savona

6. Dorsal fin with 8 branched rays............................................................................................. 7
   Dorsal fin with 7 branched rays............................................................................................... 16

7. Caudal fin truncate, body marked with 14-16 vertical black bands broader than interspaces. Dorsal and caudal fin with rows of spots................................................................. N. multifasciatatus
   Caudal fin not truncate................................................................................................................. 8

8. Caudal fin emarginate.............................................................................................................. 9
   Caudal fin forked......................................................................................................................... 10

9. Caudal fin slightly emarginate. Dorsal fin inserted nearer base f caudal than snout tip; lateral line incomplete. Body marked with 6 saddle shaped bands extending only to middle of side of body. Lateral line ending abovepelvic fin........................................................................................................ N. devdevi

10. Body spotted; a ray of pectoral fin greatly elongated................................................ N. corica
    Body banded .......................................................................................................................... 11

11. Lateral line complete............................................................................................................... 12
    Lateral line incomplete............................................................................................................... 13

12. Body with bands; bands anterior to dorsal fin not coalesced; 6-9 broad black bands broader than interspace; dorsal fin with one and caudal fin with two bands ............................................. N. beavani

13. Lateral line extending only up to middle of body.................................................................. 14
Lateral line extending beyond middle of body terminating above middle of anal fin............. 15
14. Lateral line terminating below dorsal fin; 9-14 black bands broader than interspace, extending from back to ventral surface................................................................. N. elongatus
15. Body banded with 12-13 regular bands, separated by equal numbers of slightly narrower white ones ................................................................................................. N. sikimaiensis
16. Caudal fin forked. Lateral line complete, body marked with 11 bands across lateral line interspaced with narrow short bands from above. Dorsal and caudal fin spotted.... N. scaturigina
17. Body marked with irregular net of dark brownish and whitish yellow bars and stripes; a median small dark bar at base of caudal fin. Anal opening placed at a distance about 2 times in interdistance between pelvic and anal fin. Dorsal fin with less than 10 branched rays......... 18
18. Lateral line complete; body marked with 8-10 bands across back broken up into secondary bands below lateral line..................................................................................................................................... N. sijuensis

Lateral line incomplete, ending below dorsal fin or slightly in front of it; several irregular V or Y shaped cross bars on body................................................................................................. N. reticulofasciatus

Nemacheilus beavani Gunther
(Plate XIX, Figure 4)

Nemacheilus beavani Gunther. 1868, Cat. Fishes Br. Mus., 7 : 350 (Type locality : Kossye river, Uttar Pradesh)


Material examined : 1 ex. (Jaintia hills)

Meristic data :
D.iii. 8, P.i.10, V.i.7, A.ii.5, C.19.

Distribution : Garo hills, Jaintia hills.

Elsewhere : India : Himalayas, North Bengal, Uttar Pradesh; Nepal.

Minimum-Maximum length reported so far : 21 mm 42 mm TL.

Remark : Rarely occurring species in Meghalaya.

Inhabits torrential stream.

Nemacheilus botia (Hamilton-Buchanan)
(Plate XX, Figure 1)

Cobitis botia Hamilton-Buchanan, 1822, Fishes of Ganges : 350, 394 (Type locality : rivers of north eastern parts of Bengal).


Local name : “Doh Sher” (Khasi)
**Material examined**: 17 exs. (7 from Khasi hills, 4 from Jaintia hills, 6 from Garo hills)

**Meristic data**:
- D.ii-iii. 9-11, P.i.9-11, V.i.7, A.ii-iii.5, C.17-18, L.1. 107-110, L. tr. 16/12, Predorsal scales 55-60, scales around caudal peduncle 50-52.

**Distribution**: Khasi hills (Cherrapunjee, Shella), Jaintia hills (Dawki, Muktapur, Umkiang), Garo hills (Baghmara, Phulbari).

**Elsewhere**: India: Throughout India except Malbar coast and south of river Krishna; Bangladesh; Burma; Nepal; Pakistan; Srilanka.

Minimum-Maximum length reported so far: 40 mm - 91 mm TL.

**Remark**: Commonly occurring in lower altitude of Meghalaya.

Inhabits slow-moving streams and rivers.

**Nemacheilus corica** (Hamilton-Buchanan)

(Plate XX, Figure 2)

Cobitis corica Hamilton-Buchanan, 1822, *Fishes of Ganges*: 359, 395 (Type locality: Kosi river)


**Material examined**: Not collected by the author but reported from Meghalaya.

**Meristic data**:
- D.ii-iii.8, P.i.10-12, V.i.7, A.ii.5, C.17.

**Distribution**: Khasi hills, Garo hills.

**Elsewhere**: India: Assam, all along the Himalayas, Punjab; Bangladesh; Nepal; Pakistan.

Minimum-Maximum length reported so far: 29 mm - 42 mm TL.

**Remark**: Though reported from Meghalaya, the species is most probably rare in occurrence in this region.

Inhabits streams and canals.

**Nemacheilus devdevi** Hora

(Plate XX, Figure 3)

Nemacheilus montanus (nec McClelland) Day (partim), 1878, *Fishes of India*: 616 (Teesta river, North Bengal).


**Material examined**: 41 exs. (Garo hills)

**Meristic data**:
- D.ii-iii.8, P.i.18, V.i.6-7, A.ii.5, C.16-17.
State Fauna Series 4 : Fauna of Meghalaya

Distribution: Garo hills (Anogiri)


Minimum-Maximum length reported so far: 18 mm - 45 mm TL.

Remark: Not very common in occurrence; recorded so far from Garo hills only.

Inhabits streams.

Nemacheilus elongatus (Sen and Nalbant)
(Plate XX, Figure 4)


Local name: "Doh Sher" (Khasi)

Meristic data:
D.iii.8, P.i.9-10, V.i.6, A.ii.5, C.18-19.

Distribution: Khasi hills (Barapani).

Elsewhere: Restricted so far within Meghalaya only.

Minimum-Maximum length reported so far: 21 mm - 58 mm TL.

Remarks: The species is recorded so far from Khasi hills only. Maximum length reported so far was 32.5 mm. But the present collection include specimen with 58 mm TL.

Inhabits streams with rocky bottom.

Nemacheilus multifasciatus Day
(Plate XXI, Figure 1)

Nemacheilus rupicola (nec McClelland) Day (partim), 1878, Fishes of India: 616 (nec pl. 153, fig. 9)

Nemacheilus multifasciatus Day (partim), 1878, Fishes of India: 617, pl. 153, fig. 7 (Type locality: Darjeeling and Assam).


Local name: "Doh Sher" (Khasi)

Material examined: 175 exs. (156 from Khasi hills, 19 from Garo hills)

Meristic data:
D.ii.8, P.i.10-11, V.i.7-8, A.i-ii.5, C.16.

Distribution in Meghalaya: Khasi hills (Barapani, Cherrapunjee, Lailad, Mawkod, Pynursla, Shillong, Sumer, Umran, Umtyngar), Jaintia hills (Garrampani road), Garo hills (Rongram, Songsak, Rewak).

Elsewhere: India: Eastern Himalayas from Tista through the base of Nepal Himalayas, as far as
the Ghaghra and Kali drainages, Nagaland; Nepal.

Minimum-Maximum length reported so far: 41 mm 98 mm TL.

Remarks: The species identified so long as rupicola from N. E. India has been synonymised with multifasciatus by Menon (1987). According to him rupicola is a Western Himalayas species and multifasciatus which is very close to rupicola is Eastern Himalayan species.

Commonly available in Meghalaya, recorded both from lower and higher altitude.

Inhabits slow moving streams and rivers.

*Nemacheilus reticulofasciatus* (Singh & Banarescu)

(Plate XXI, Figure 2)


*Local name*: “Doh Sher” (Khasi)

*Material examined*: 23 exs. (20 from Khasi hills, 3 from Garo hills).

*Meristic data*:
D.iii.7, P.i.9, V.i.6-7, A.ii-iii.5, C.17-19.

*Distribution in Meghalaya*: Khasi hills (Barapani, Lailad, Umran), Jaintia hills, Garo hills (Anogiri, Rongram, Songsak, Tura).

*Elsewhere*: Restricted so far within Meghalaya only.

Minimum-Maximum length reported so far: 25 mm 50 mm TL.

*Remarks*: Commonly occurring in Meghalaya. Maximum length reported earlier was 38 mm TL. The present collection contains specimen with 50 mm TL.

Inhabits hill streams.

*Nemacheilus savona* (Hamilton Buchanan)

(Plate XXI, Figure 3)

*Cobitis savona* Hamilton-Buchanan, 1822, *Fishes of Ganges* : 357, 394 (Type locality: Kosi river at Nathpur, Uttar Pradesh).


*Material examined*: 79 examples (55 from Khasi hills, 24 from Jaintia hills).

*Meristic data*:
D.ii-iii.9, P.i.8-9, V.i.6, A.ii.5, C.199-20.

*Distribution in Meghalaya*: Khasi hills (Nongkhlaw, Nongkyllem Shella), Jaintia hills (Dawki, Jowai, Muktapur, Umkiang).
Elsewhere: India: Widely distributed in Eastern sub-Himalayan region, North Bengal; Bangladesh; Nepal.

Minimum-Maximum length reported so far: 20 mm 32 mm TL.

Remarks: Occurring generally in lower altitude only.

Inhabits slow moving stream and river.

Nemacheilus scaturigina (McClelland)
(Plate XXI, Figure 4)

Cobitis schistura scaturigina McClelland, 1839, Asiat. Res. 19: 308, 443, pl. 53, fig. 6, Type locality: Assam.


Material examined: 4 examples (Garo hills)

Meristic data:
C.ii-iii. 7, P. i.9, V.i.7, A.i-ii. 5, C.19.

Distribution in Meghalaya: Garo hills (Rongram, Siju, Thabrongiri).

Elsewhere: India: Assam, Eastern Himalayas, Darjeeling, Uttar Pradesh; Nepal.

Minimum Maximum length reported so far: 21 mm 51 mm TL.

Remarks: Not very commonly occurring in Meghalaya.

Inhabits streams.

Nemacheilus sijuensis (Menon)
(Plate XXII, Figure 1)

Noemacheilus sijuensis Menon, 1987, Fauna of India, Pisces, 4: 175, pl. 6, fig. 2 (Type locality: Siju cave, Garo hills, Meghalaya).


Material examined: Not collected by the author but reported from Meghalaya.

Meristic data:
D.ii.7, P.i.10, V.i.7, A. ii. 5, C.18.

Distribution in Meghalaya: Garo hills.

Elsewhere: Restricted so far within Meghalaya only.

Remarks: So far recorded from Garo hills only; not commonly occurring.

Nemacheilus sikmaiensis Hora
(Plate XXII, Figure 2)

Nemacheilus cheilus sikmaiensis Hora, 1921, Rec. Indian Mus. 22 (3): 201, pl.9, fig. 4 and pl. 10, figs. 1 1a
SEN: \textit{Pisces}

(Type locality: Sikmai stream, near Patel, Manipur)


\textit{Material examined}: 25 examples (18 from Khasi hills, 6 from Jaintia hills, 1 from Garo hills).

\textit{Meristic data}:

\textit{Distribution in Meghalaya}: Khasi hill (Barapani, Kyrdemkulai), Jaintia hills (Dawki, Garrampani toad, Jowai, Nartiang), Garo hills (Baghmara).

\textit{Elsewhere}: India: Manipur; Burma.

Minimum - Maximum length reported so far: 24 mm - 75 mm TL.

\textit{Remarks}: Not very common in Meghalaya.

Inhabits streams.

Key to the Genera of Family Cobitidae

1. Two pairs of rostral barbels; caudal fin deeply forked .................................................................2.

   One pair of rostral barbel (rarely absent); caudal fin usually rounded or slightly emarginate ......3.

2. Body oblong, short, moderately deep; abdomen rounded. Eyes moderately large without any skin cover; a bifid erectile sub orbital spine below or in front of eye..............................................\textit{Botia}

3. Dorsal fin inserted in posterior half of body; well behind pelvic fin base. Head scaleless, lateral line absent ..............................................................................................................................\textit{Pangio}

   Dorsal fin inserted in middle of body, in advance over or slightly behind pelvic fin base; lateral line present or absent. Head may or may not be with scales..........................................................4.

4. Scales on sides of head present; lateral line absent. Eyes small not bulging Ventral surface of body not flattened ..............................................................................................................\textit{Lepidocephalus}

   Scales on sides of head absent; lateral line present. Eyes large, bulging Ventral surface of body flattened Dorsal fin inserted behind origin of pelvic fin ..............................................\textit{Somileptes}

31. \textbf{Genus \textit{Lepidocephalus} Bleeker}


Key to the Species

1. Scales present on vertex or top of head. Dorsal and pelvic fins inserted in second half of body.
.........................................................................................................................................................\textit{L. irrorata}

   Scales absent on dorsal side of head. Dorsal and pelvic fins inserted in first half of body .......... 2.

2. Caudal fin forked or deeply emarginate; lateral and ventral side of head scaled; dorsal fin equidistant between tip of snout and caudal fin base. Rectangular blotches along lateral side of
Caudal fin convex, truncate or slightly emarginate; lateral and ventral side of head naked........3.

3. 40 scales between back of body and anal fin base; mandibular flap produced posteriorly into 3 or more distinct, short barbel like extensions pectoral fin with 8-10 rays.................................

25 -37 scales between back of body and anal fin base; mandibular flap usually not produced posteriorly into barbel like extensions; pectoral fin with 7 or 8 rays................................. 4.

4. Caudal fin notched or concavely lunate. with 3 oblique faint bands on each side of midline; two very dark spots (encircled in white ring) on caudal fin, one above midline of base of caudal fin and second at notch ...........................................................................................................

L. caudofurcatus

Caudal fin convex, truncate or slightly emarginate; bands on caudal fin if present not oblique and in form of rows of dark spots. One dark spot only on caudal fin placed slightly above middle of base of caudal fin. Body depth 5.8-6.8 in TL. Dorsal fin inserted slightly behind pelvic fin origin........................................................................................................... L. guntea

**Lepidocephalus annandalei** (Chaudhuri)

(Plate XXII figure 3)

*Lepidocephalichthys annandalei* Chaudhuri, 1912. *Rec. Indian Mus.* 7: 422, pl. 40, figs. 3,3a,3b, (Type locality : Tista river near Jalpaiguri and Mahananda river at Siliguri).


**Local name:** “Sher Syngkai” (Khasi)

**Material examined:** 12 examples (Garo hills)

**Meristic data:**

D. i-ii. 6-7, P. i.6-7, V. i.6, A. ii.5-6, C.16.

**Distribution in Meghalaya** : Khasi hills, Garo hills (Baghmar, Damra, Phulbari).

**Elsewhere** : India: Teesta river system, North Bengal.

Minimum Maximum length reported so far: 26mm 42mm TL.

**Remarks** : Not very common; recorded so far from lower altitude only (Below 300 M.)

Inhabits slow moving streams and rivers.

**Lepidocephalus bermorei** (Blyth)

(Plate XXII Figure 4)


Local name: “Sher Syngkai” (Khasi)

Material examined: 7 examples (Khasi)

Meristic data:
D.ii-iii. 6-7, p.i.7-9, v. i-ii, 5-6. A.ii 5-6., C.16.

Distribution in Meghalaya: Khasi hills (Barapani, Mawpat), Garo hills.

Elsewhere: India: Manipur: Burn1a.

Minimum Maximum length reported so far: 34 mm 59 mm TL.

Remarks: Not very common Meghalaya.
Inhabits slowmoving streams, rivers and ditches.

**Lepidocephalus caudofurcatus** Tilak & Hussain.

(Plate XXIII Figure 1)

*Lepidocephalus caudofurcatus* Tilam & Hussain, 1978, *Matsya* (3) : 60, figs. 1-3 (Type locality: Kalapani nala, Rishikesh, District Dehradun, Silani river near Beharigarh District Saharanpur and Ganga river near Moradabad District Moradabad, Uttar Pradesh)


Material examined: 12 examples (Jaintia hills).

Meristic data:
D.ii. 6. P. i.7, V. i.6, A. iii.5, C. 16.

Distribution in Meghalaya: Jaintia hills (Dawki. Muktapur)


Minimum Maximum length reported so far: 35 mm  40 mm TL.

Remarks: Not very common in Meghalaya, recorded so far from Jaintia hills only.
Inhabits streams.

**Lepidocephalus guntea** (Hamilton Buchanan)

(Plate XXIII Figure 2)

*Cobitis guntea* Hamilton Buchanan, 1822, *Fishes of Ganges* : 353, 394 (Type locality: ponds and freshwaters of Bengal).


Local name: “Sher Syngkai” (Khasi)

Material examined: 625 examples (404 from Khasi Hills 135 from Jaintia hills  86 from Garo hills).

Meristic data:
D. ii-iii. 6-7, P.i. 6-7, V.i.6-7, A.ii-iii. 5-6, C. 15-17, L.1.122-126, L.tr.16/12.
**Distribution in Meghalaya**: Khasi hills (Barapani, Balat, Cherrapunjee, Kyrdemkulai, Jakrem, Langiong, Mairang, Mawphlang, Mawpat, Myliem, Mawkynrew, Nongpoh, Nongstoin, Nongkhlaw, Ramrai SheIla, Shillong, Sumer, Sohiong, Umsning, Umaran, Weiloi), Jaintia hills (Dawki Jowai, Garampani road, Muktapur, Umkiang) Garo hills (Dalu, Damalgiri, Damra, Darugiri, Garobadha, Phulbari, Rongram, Rongjeng, Songsak, Williamnagar).

*Elsewhere*: India: Throughout India except Karnataka, Kerala and south of Krishna; Bangladesh; Nepal; Pakistan; Thailand.

Minimum Maximum length reported so far: 25 mm 150 mm. TL.

**Remarks**: Common in occurrence: recorded both from higher and lower a altitude.

Inhabits flowing or even clear standing water.

**Lepidocephalus irrorata** Hora

(Plate XIII, Figure 3)

*Lepidocephalichthys irrorata* Hora *Rec. Indian Mus.* 22: 196, pl. 9. figs. 5, 5a, 5b, (Type locality: Loktak lake, Manipur).


**Material examined**: Not collected by the author from Meghalaya but reported earlier from this region.

**Meristic data**:  
D. ii-iii, 6-7, P.i. 6-7, V.i.6. A.ii-iii, 5 C. 15-16.

**Distribution in Meghalaya**:

*Elsewhere*: India: Manipur, Assam.

Maximum length reported so far: 34 mm. TL.

**Remarks**: Though the species could be collected from other places of N.E. India, it could not be collected from Meghalaya so far by the author. Not very common in occurrence.

Inhabits streams.

32. **Genus Pangion** Blyth


**Diagnostic Characthers Of Species**

Body very elongated, strongly compressed. Pelvic fins with 6 or 7 rays; head length 7-8 times in standard length; lips thick lower lips with 2 contiguous prolongations but no leaflike lobes; lateral line absent .......................................................... *P. pangia.*
**Pangio pangia** (Hamilton Buchanan)  
(Plate XXIII Figure 4)

*Cobitis pangia* Hamilton - Buchanan. 1822, *Fishes of Ganges* : 355, 394 (Type locality : N.E. Bengal).


**Material examined** : 5 examples (Khasi hills)

**Meristic data**:
D.ii.6, P.i, 9-10, V.i.5-6, A. ii, 5-6, C. 17.

**Distribution in Meghalaya** : Khasi hills (Shella)

**Elsewhere** : India : Manipur, North East Bengal ; Bangladesh ; Burma ; Indonesia.

Minimum Maximum length reported so far : 30 mm 65 mm TL.

Inhabits slowmoving streams and rivers , prefers muddy bottom.

33. Genus *Somileptes* Swainson


**Diagnostic Characters Of Species**

Body elongated, cylindrical. Head swollen, wider than deep; snout rather long, Eyes large, bulging. Mouth narrow and inferior. Upper lip thickly papilated. Dorsal inserted nearer to caudal fin base than to snout tip.......................................................... S. gongota.

**Somileptes gongota** (Hamilton Buchanan)  
(Plate XXIV Figure 1)

*Cobitis gongota* Hamilton Buchanan, 1822, *Fishes Of Ganges* : 351, 394 (Type locality : rivers of N. Bengal towards Himalaya).

*Somileptes gongota* : Talwar and Jhingran, 1991, *Inland Fishes* vol. 1

**Local name** : “ Doh Sher “ (Khasi)

**Material examined** : 25 examples (17 from Khasi hills, 2 from Jaintia hills, 6 from Garo hills).

**Meristic data** :
D. ii-iii. 7-8, p. i. 9-10, V.i.6, A.ai5, C.16. L.i.145, L.tr. 20/16, Predorsal scales 16. Scales around caudal peduncle 40.

**Distribution in Meghalaya** : Khasi hills (Balat. Shella), Jaintia hills (Dawki ), Garo hills (Garobadha Phulbari, Tura, (Wageasi).

**Elsewhere** : India : Assam, Uttar Pradesh, North Bengal ; Bangladesh.

Minimum Maximum length reported so far : 990 mm 132 mm TL.

**Remarks** : So far the species is recorded from altitude of Maghalaya, not very common in
occurrence. Maximum length reported so far was 100 mm; but the present collection include specimen with 132 mm TL.

Inhabits hill streams with muddy bottom.

34. Genus *Betia* Gray


Key to the species

1. a pairs of barbles (Four rostrals united at their bases, 2 maxillary and 2 mental lobes)............. 2

2. Snout considerably longer than remaining part of head; pectoral fin, pelvic fin and anal fin conspicuously striped with brownish cross bars.......................................................... *B. rostrata*

   Snout about equal to or generally shorter than remaining part of head. ........................................ 3.

3. Eyes placed almost in posterior half of head.......................................................... 4
   Eyes not situated in posterior half of head ............................................................................. 6.

4. Head and body marked with broad vertical bands or reticulations; caudal peduncle tapers posteriorly........................................................................................................................................ 5.

5. Dorsal fin origin nearer base of caudal fin than tip of snout.................................................. *B. histrionica*

   Dorsal fin origin almost equal from snout tip and caudal fin base eyes moderately large. its diameter about 3 times in snout length................................................................................ 6. *B. dario*

6. Suborbital spine shorter, not extending to below posterior edge of orbit; body with a series of Y-shaped markings.................................................................................................................. *B. lohachata*

    *Botia dario* (Hamilton Buchanan)
    (Plate XXIV, figure 2)

*Cobitis dario* Hamilton Buchanan, 1822, *Fishes of Ganges* : 354, 394, pl. 29, fig. 95 (Type locality : northern rivers of Bengal)

*Botia dario* : Talwar and Jhingran, 1991. *Inland Fishes* vol. 1

Local name : "Kha Syiem" (Khasi)

Material examined : 13 examples (4 from Khasi hills, 1 from Jaintia hills, 8 from Garo hills)

Meristic data :

D.iii. 9-11, P.i.13-14, V.i.7, A.ii, 5-6, C.19.

Distribution in Meghalaya : Khasi hills (Shillong), Jaintia hills (Dawki), Garo hills (Dalu, Phulbari, Rongrengiri, Siju)

Elsewhere : Assam, N. Bengal, Bihar, W. Bengal, Uttar Pradesh, Punjab, Rajmahal hills; Bangladesh : Pakistan.
Minimum Maximum length reported so far: 58mm 90mm TL.

Remarks: Not commonly occurring species; recorded mainly from lower altitude.

Inhabits slow moving streams.

**Botia histrionica** Blyth

(Plate XXIV, Figure 3)


*Material examined*: Not collected by the author but reported from Meghalaya.

*Meristic data*:

D.ii.8, P.i.14, V.i.7, A.ii.5, C.19.

*Distribution in Meghalaya*: Garo hills.

*Elsewhere*: India: Assam, Manipur, Uttar Pradesh, Burma.

Maximum length reported so far: 120 mm. TL.

Remarks: Rarely occurring in Meghalaya.

Inhabits hill streams.

**Botia lohachata** Choudhuri

(Plate XXIV, Figure 4)

*Botia lohachata* Choudhuri, 1912, *Rec. Indian Mus.,* 7(5) : 441, pl. 40, figs. 2, 2a, 2b (Type locality: Sandak river at Saran, Bihar)


*Material examined*: 5 examples (Khasi hills)

*Meristic data*:

D.i. 9-10, P.i. 13, v.i.13, V.i.8, A.i. 5-6, C.19.

*Distribution in Meghalaya*: Khasi hills.

*Elsewhere*: India: Ganga river system: Bangladesh; Nepal; Pakistan.

Minimum Maximum length reported so far: 50 mm. 100 mm. TL.

Remarks: Rarely occurring in Meghalaya.

Inhabits streams and rivers.

**Botia rostrata** Gunther

(Plate XXV, Figure 1)

*Botia rostrata* Gunther, 1868, *Cat. Fishes Br. Mus.,* 7 : 367 (Type locality: Ganges river in Bengal).

Local name: “Kha Syiem” (Khasi)

Material examined: 2 examples (Garo hills)

Meristic data:
D.iii.9, P.i-ii, 12-13, V.i.7, A.ii.5-6, C.19.

Distribution in Meghalaya: Khasi hills, Garo hills (Rongrengiri)

Elsewhere: India: Assam, West Bengal, Darjeeling, Punjab, Himalayas, Ganges, Yamuna and Sone river system; Bangladesh: Pakistan.

Minimum Maximum length reported so far: 123mm. 130mm. TL.

Remarks: Rarely occurring species, recorded so far from lower altitude only.

Inhabits hill streams.

Key to the Genera of family bagridae

1. Pores on ventral surface and sides of head; maxillary barbels extending not beyond potoral fin base.................................................................2.

   No pores on ventral surface and sides of head; maxillary barbels extending beyond dorsal fin base.................................................................3.

2. Eyes large, subcutaneous, visible from below. Long pectoral fins reaching base of pelvic fins....

   .................................................................................................................Rama

   Eyes moderate, with free orbital rim; not visible from below. Pectoral fins short not extending to base of pelvic fins........................................................................Batasio

3. Interneural shield between basal bone of dorsal fin and occipital process present.............Aorichthys

   Interneural shield absent............................................................................Mystus

35. Genus Aorichthys Wu


Aorichthys Wu, 1939, Sinensia 10: 131 (substituted name for Aoria Jordan and therefore with same type species); Talwar and Jhingran, 1991, Inland Fishes vol. 2: 546.

Diagnostic characters of Species

Snout spatulate; maxillary barbels much shorter, extend no further than pelvic fins; width of mouth 1/3 rd. of head length; caudal fin 19 21 rays.................................A. seenghala

Aorichthys seenghala (Sykes)

(Plate XXV, Figure 2)

Platystoma seenghala Sykes, 1831, Trans. Zoo. Soc. Lond., 2: 371, pl. 65, fig. C (Type locality: Mulla Motha

*Local name*: “Kha ari” (Khasi)

*Material examined*: 1 example (Garo hills)

*Meristic data*:
D.i.7/0, P.i.9, V.i.5, A.iii.8-9, C.19-21.

*Distribution in Meghalaya*: Khasi hills, Garo hills (Baghmara).

*Elsewhere*: India: Assam, Darjeeling, West Bengal, Madhya Pradesh, Ahmedabad, North Bengal, Deccan; Bangladesh; Yunnan; Pakistan.

Minimum - Maximum length reported so far: 237 mm - 1500 mm TL.

*Remarks*: Not very common in Meghalaya; recorded from lower altitude only (below 200 M alt.).

36. *Genus Batasio* Blyth


**Key to Species**

1. Body marked with either longitudinal bands or with oblique bands / spots; occipital process extends to basal bone of dorsal fin, no pores on dorsal surface of head.................................................................2.

2. Body marked with longitudinal bands; a conspicuous black spot present above pectoral fin; no dusky blotch on nape; base of adipose dorsal fin much longer than anal fin base.............. *B. batasio*

   Body marked with oblique vertical bands or spots; no black spot above pectoral fin; a dusky blotch present on nape; base of adipose dorsal fin equals to or slightly shorter than anal fin base.........................................................................................*B. tengana*

*Batasio batasio* (Hamilton Buchanan)

(Plate XXV, Figure 3)

*Pimelodus batasio* Hamilton Buchanan, 1822, *Fishes of Ganges*: 179, 377 (*nec.* pl. 23, fig. 10) (Type locality: Tista river, North Bengal).


*Material examined*: 8 examples (2 from Khasi hills, 4 from Jaintia hills, 2 from Garo hills).

*Meristic data*:
D.i.7/10, P.i.5-8, V.i.5, A.ii-iv. 9-11, C.20.

*Distribution in Meghalaya*: Khasi hills (Shella), Jaintia hills (Dawki), Garo hills (Mahadev).

*Elsewhere*: India: Teesta river system, Eastern Himalayas, North Bengal, Assam, Tripura:
Bangladesh ; Nepal.

Minimum    Maximum length reported so far : 71 mm  102 mm TL.

Remarks : Not very common in Meghalaya ; recorded so far from lower altitude only.
Inhabits streams and rivers.

_Batasio tengana_ (Hamilton Buchanan)
(Plate XXV. Figure 4)


Material examined : 2 examples (Khasi hills).

Meristic data:
D.i.7/0, P.i.7-9, V.i.5, A.iii-iv. 8-11, C.15.

Distribution in Meghalaya : Khasi hills (Shella).

Elsewhere : India : Assam, North Bengal, Punjab, Eastern Himalayas; Bangladesh; Burma : Malaya ; Thailand.

Minimum    Maximum length reported so far : 90 mm  114 mm TL.

Remarks : Rarely occurring in Meghalaya, recorded so far from lower altitude of Khasi hills only.
Inhabits torrential streams.

37.    Genus _Mystus_ Scopoli

_Mystus_ Scopoli 1777, _Introductio ad historiam naturalem_ : 541 (Type species : _Bagrus haplepensis_ valenciennes = _Silurus pelusius_ Solander) : Talwar and Jhingran. 1991, _Inland Fishes_ vol. 2 : 554.

Key to the species

1. Occipital process reaching basal bone of dorsal fin.............................................................2.

2. Adipose dorsal fin usually long, commencing almost after rayed dorsal fin..........................3.
    Adipose dorsal fin usually short, commencing after an interspace from rayed dorsal fin.........5.

3. Caudal peduncle not constricted. Maxillary barbels reach anal fin or beyond. Head length more than 5 times in TL........................................................................................................4.

4. Maxillary barbels reach anal fin, sometimes beyond. Inter-orbital width less than 3.0 (2.0 - 3.0) times in head length. No dark spot at abse of dorsal fin. Branchio stegal rays 10 ; body with two light longitudinal bands one above and the other below lateral lone................................. _M. bleekeri_

    Maxillary barbels reach caudal fin base or beyond. Inter-orbital width more than 3.0 (3.0-4.0) times in head length. A dark spot at dorsal fin base. Median longitudinal groove on head extends
to base of occipital process; a dark spot on base of caudal fin often present. Branchiostegal rays
6. Median longitudinal groove on head short or long, as one or two fontanelles, not reaching base
of occipital process. Adipose dorsal fin base shorter than anal fin base. Body with 1 or 2
longitudinal coloured bands on either side of lateral line. ....................................................... 6. M. cavasius

6. Eye - diameter 3.5-4.0 times in head length. Pectoral fin with 6 soft rays. Body with a bluish
shoulder spot and silvery line along the side ending in a dark spot at caudal base. One or two
light bands along sides above lateral line. ............................................................................. 6. M. montanus

Eye diameter 4.5-6.0 times in head length. Pectoral fin with 9 soft rays. Body with 3 or 4
longitudinal coloured bands above and below lateral line. A dark shoulder spot. No spot at base of
caudal fin. ................................................................................................................................. 6. M. vittatus

**Mystus bleekeri** (Day)

(Plate XXVI, Figure 1)

locality: Bengal) (name occupied by Valenciennes, 1839).

*Macrones bleekeri* Day, 1877, *Fishes of India* : 451, pl. 101, fig.1 (Replacement name for *Bagrus keletius*
Bleeker, 1846)


*Local name* : “Kha tynkra” (Khasi)

*Material examined* : 18 examples (12 from Khasi hills, 6 from Garo hills).

*Meristic data* :

- D.i. 7-8/0, P.i. 9-10, V.i.5, A.ii-iv. 7-9, C.17.

*Distribution in Meghalaya* : Khasi hills (Cherrapunjee, Shella), Garo hills (Bozengdoba, Damalgiri, Tura, Phulbari)

*Elsewhere* : India : Assam, Darjeeling, Baroda, West Bengal, North India, Mahanandi headwaters ;
Bangladesh ; Burma ; Malaya : Nepal : Pakistan ; Sumatra.

*Minimum Maximum length reported so far* : 86 mm 135 mm TL.

*Remarks* : Recorded so far from lower altitude of Meghalaya, not very common in Meghalaya.
Inhabits lakes, tanks and river.

**Mystus cavasius** (Hamilton Buchanan)

(Plate XXVI, Figure 2)

*Pimelodus cavasius* Hamilton Buchanan, 1822, *Fishes of Ganges* : 203, 379, pl. 11. fig. 67 (Type locality :
Gangetic provinces).

Local name: "Kha tynkra" (Khasi)

Material examined: 10 examples (2 from Khasi hills 8 from Garo hills).

Meristic data:
D.i.7/0, P.i.8, V.i.5, A.ii-iv. 7-9, C.17.

Distribution in Meghalaya: Khasi hills, Jaintia hills, Garo hills (Baghmara, Phulbari).

Elsewhere: India: Throughout India; Bangladesh; Borneo; Burma; China; Java; Malaya; Nepal; Pakistan; Sumatra; Sri Lanka; Thailand.

Minimum Maximum length reported so far: 85 mm 459 mm TL.

Remarks: Not very common in Meghalaya like other plain region. In Meghalayan population anal finrays are less (2/7 8 var. 4/7 9, Talwar and Jhingran, 1991) and caudal fin rays more 17 (var. 16, Day, 1889).

Inhabits freshwater and tidal rivers and lakes, also beds, ponds, ditches and inundated fields.

*Mystus montanus* (Jerdon)

(Plate XXVI, Figure 3)


Material examined: 1 example (Khasi hills)

Meristic data:
D.i.7/0, P.i.6, V.i.5, A.iii.9, C.19.

Distribution in Meghalaya: Khasi hills (Shella)

Elsewhere: India: Assam, Kerala, Madhya Pradesh, Karnataka, Maharashtra.

Minimum Maximum length reported so far: 150 mm 204 mm TL.

Remarks: Single specimen could be collected so far from lower altitude of Khasi hills only. Rarely occurring in Meghalaya.

Inhabits freshwaters and also estuaries.

*Mystus Vittatus* (Block)

(Plate XXVI, Figure 4)


Local name: "Kha tynkriong" (Khasi).

Material examined: 21 examples (4 from Khasi hills, 17 from Garo hills).
Meristic data:
D.i.7/0, P.i.9, V.i.5, A.ii iii. 7-9, C.17.

Distribution in Meghalaya: Khasi hills (Barapani), Garo hills (Baghmara, Dalu, Damalgiri, Garobadha, Phulbari, Damra, Tura).

Elsewhere: India: Throughout India; Bangladesh; Burma; Malaya; Nepal; Pakistan; Srilanka; Thailand.

Minimum Maximum length reported so far: 34 mm 215 mm TL.

Remarks: Not very common in Meghalaya, recorded both from higher and lower altitude.
Inhabits standing and flowing waters: occurring within the tidal influence also.

38. Genus Rama Bleeker


Diagnostic characters of Species
Eyes conspicuously large, its diameter 3.0 3.2 in head length. Maxillary barbels small and about equal to eye diameter; outer and inner mandibular barbels shorter. Dorsal fin spine weak, lateral line complete, a conspicuous black spot on shoulder and another on nape.......................... R. chandraenara.

Rama chandramara (Hamilton Buchanan)

(Plate XXVII, Figure 1)

Pimeleodus chandramara Hamilton Buchanan, 1822 Fishes of Ganges :152, 365 (Type locality: Atrai river, North Bengal).


Material examined: 3 examples (Jaintia hills).

Meristic data:
D.i.7/0, P.i.5 6. V.i.5, A.iii iv. 12 14, C. 16.

Distribution in Meghalaya: Jaintia hills (Dawki. Muktapur).

Elsewhere: India: Assam, North Bengal, Uttar Pradesh; Bangladesh.

Minimum Maximum length reported so far: 49 mm 52 mm TL.

Remarks: Not very common in Meghalaya, recorded so far from Jaintia hills only.
Inhabits streams and rivers.

Key to the genera of family siluridae

1. Eyes with free orbital rim, entirely above level of corner of mouth. gape of mouth wide and very long reaching beyond anterior margin of eye...................................................... Wallago
Eyes subcutaneous, gape of mouth short, not reaching beyond anterior margin of eye......**Ompok**

39. Genus **Ompok** Lacepede


**Key to the species**

1. Maxillary barbels longer, extending up to or beyond anal fin. Anal fin with 57 to 60 branched rays. .................................................................

**Ompok bimaculatus**

Maxillary barbels short not extending up to anal fin. ........................ 2.

2. Maxillary barbels short, extend posteriorly no further than head; pelvic fins with 9 to 10 rays; anal fin with 63 to 68 branched rays. .........................................................

**Ompok pabda**

Maxillary barbels short, extending only up to middle or tip of pectoral fin. Anal fin with 48 to 58 branched rays. Pelvic fins with 7 to 9 rays. .........................................................

**Ompok bimaculatus** (Bloch)

*(Plate XXVII, Figure 2)*


*Local name*: “Kha Babia” (Khasi)

*Material examined*: 5 examples (2 from Khasi hills, 3 from Garo hills).

*Meristic data*:

D.3 4, P.i.12 14, V.i.7 8, A. ii-iii. 57 60, C.17

*Distribution in Meghalaya*: Khasi hills (Pynursla, Byrnihat), Garo hills (Dalu, Garobadha, Phulbari).

*Elsewhere*: India: Throughout India; Afghanistan; Bangladesh; Borneo; Burma; China; Java; East Indies; Indonesia; Malaya; Nepal; Pakistan; Srilanka; Sumatra; Thailand; Vietnam; Yunnan.

Minimum Maximum length reported so far: 126 mm 455 mm TL.

*Remarks*: Rare in occurrence in this region, collected so far from lower altitude only.

Inhabits rivers, streams, tanks and ponds.

**Ompok pabda** (Hamilton Buchanan)

*(Plate XXVII, Figure 3)*

*Silurus pabda* Hamilton Buchanan, 1822, *Fishes of Ganges* : 150, 374, pl. 25, fig. 47 (Type locality: Ponds and rivers of Bengal).

**Local name**: "Kha Babia" (Khasi)

**Material examined**: 1 example (Garo hills)

**Meristic data**:

D.4 5, P.i.11 13, V.i.6 7, A.i.52 58, C.18.

**Distribution in Meghalaya**: Khasi hills, Jaintia hills, Garo hills (Dalu).

**Elsewhere**: India: Orissa, Ganga and Brahmaputra river system, Darjeeling; Afghanistan; Bangladesh; Burma; Pakistan.

Minimum Maximum length reported so far: 97 mm 170 mm TL.

**Remarks**: Rarely occurring species in Meghalaya.

Inhabits rivers, tanks and ponds.

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Ompok pabo (Hamilton Buchanan)

(Plate XXVII, Figure 4)

Silurus pabo Hamilton Buchanan, 1822, *Fishes of Ganges* : 153, 375, pl. 22, fig. 48 (Type locality: Brahmaputra river).


**Material examined**: 1 example (Khasi hills)

**Meristic data**:

D.5, P.i.14, V.i.8 9, A.iii.63 68, C.17.

**Distribution in Meghalaya**: Khasi hills (Barapani), Garo hills.

**Elsewhere**: India: Ganga, Yumuna and Brahmaputra river system; Bangladesh; Burma; Pakistan.

Minimum Maximum length reported so far: 127 mm 241 mm TL.

**Remarks**: Rarely occurring in Meghalaya.

Inhabits rivers, tanks and ponds.

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40. **Genus Wallago** Bleeker


**Diagnostic characters of Species**

Barbels two pairs, maxillary pairs of barbels long, extend posteriorly to well beyond origin of anal fin; the mandibular pair of barbels much shorter about as long as snout. Dorsal fin short inserted slightly in advance of pelvic fin. Weak pectoral fin spine often poorly serrated on its inner edge. Upper lobe of caudal fin longer. ................................................................. *W. attu*
**Wallago attu** (Schneider)

(Plate XXVII, Figure 1)

*Silurus attu* Scheneider, 1801, *Syst. Ichthyol.* 378, pl. 75 (Type locality: Malabar).


*Local name*: “Kha Buwa” (Khasi)

*Material examined*: 1 example (Garo hills).

*Meristic data*:

D.5, P.i.13-15, V.i.7, A.ii-iii.74-93, C.17.

*Distribution in Meghalaya*: Garo hills (Baghmara).

*Elsewhere*: India: Throughout India; Bangladesh; Borneo; Burma; Indonesia; Indo China; Malaya Archipelago; Nepal; Java; Pakistan; Srilanka; Sumatra; Siam; Thailand; West Yunan; Vietnam; Kampuchia.

Minimum Maximum length reported so far: 205 mm 2000 mm TL.

*Remarks*: Though abundantly occurring in plains, its occurrence in Meghalaya is not very common.

Inhabits freshwaters and tidal waters, in rivers, tanks, channels, reservoirs etc.

**Key to the Genera of Family Schilbeidae**

1. Adipose dorsal fin vestigeal, small or may be absent. 4 pairs of barbels present.........................2.

2. Rayed dorsal fin absent. anal fin very long with 58 90 rays; adipose dorsal fin very small, short, posteriorly free. ....................................................................................................................... *Ailia*

   Rayed dorsal fin present; anal fin with 24 54 rays; adipose dorsal fin vestigeal, small or may be absent........................................................................................................................................3.

3. Mouth wide, its cleft extending to front edge of eye or beyond to its posterior border. Adipose dorsal fin short, posteriorly free......................................................................................................................... *Eutropiichthys*

   Mouth small to moderate, its cleft not extending to front of eye.........................................................4.

4. Teeth on palate in two distinct patches, widely separated, often connected by a linear series posterior nostril narrow. Adipose dorsal fin short, posteriorly free......................... *Pseudeutropius*

   Teeth on palate in bands, not separated in middle. Posterior nostril wide. A small adipose dorsal fin may be present in young but absent in adult......................................................... *Clupisoma*

41. **Genus Ailia Gray**

Diagnosis characters of Species

Pelvic fin present; anal fin with 58–75 rays; ventral profile not pronouncedly arched. Body colour silvery to dull brown without any black band on caudal fin base or along side of the body. \( \ldots \) \( A. \) coila

\( Ailia \) coila (Hamilton Buchanan)

\( (\text{Plate XXVIII. Figure 2}) \)

\( Malapterurus \) coila Hamilton Buchanan, 1822. Fishes of Ganges: 158, 375 (Type locality: freshwater rivers of Bengal).

\( Ailia \) coila: Talwar and Jhingran, 1991, Inland Fishes vol. 2

Local name: “Kha tungkra” (Khasi)

Material examined: 7 examples (6 from Khasi hills, 1 from Garo hills)

Meristic data:
P.i.12, V.i.5, A.ii.58, 75, C.19.

Distribution in Meghalaya: Khasi hills (Shella), Garo hills (Dalu).

Elsewhere: India: Assam, North India extending on far south as river Krishna; Bangladesh; Nepal; Pakistan.

Minimum Maximum length reported so far: 76 mm 180 mm TL.

Remarks: Rarely occurring in Meghalaya, recorded so far from lower altitude of Khasi and Garo hills.

Inhabits freshwater rivers and canals.

42. Genus \( Culpisoma \) Swainson

\( Culpisoma \) Swainson, 1839, Natural History Animal, Fishes 2: 306 (Type species: \( Pimelodus \) argentata Swainson); Talwar and Jhingran, 1991, Inland Fishes 2: 595.

Diagnostic characters of Species

Abdominal edge keeled partly between pelvic fin and vent. Pectoral fin not reaching pelvic fin. Maxillary barbels reaching pelvic fin. Anal fin with 29–36 rays. \( \ldots \) \( C. \) garua

\( Culpisoma \) garua (Hamilton Buchanan)

\( (\text{Plate XXVIII. Figure 3}) \)

\( Silurus \) garua Hamilton Buchanan, 1822, Fishes of Ganges: 156, 375, pl. 21, fig. 50 (Type locality: freshwater rivers of Gangetic provinces).


Material examined: 1 example (Garo hills).

Meristic data:
D.i.7, P.i.11, V.i.5, A.iii.26, 33, C.17.
**Distribution in Meghalaya**: Khasi hills, Jaintia hills, Garo hills (Garobadha).

**Elsewhere**: India: Assam, Darjeeling, Bihar, West Bengal, Orissa, Madhya Pradesh, Throughout northern India, not recorded from south of Mahanadi; Bangladesh; Burma; Nepal; Pakistan.

Minimum Maximum length reported so far: 163 mm  612 mm TL.

**Remarks**: Occurrence of the species in Meghalaya is not very common.

Inhabits freshwater streams and rivers.

43. **Genus Eutropiichthys Bleeker**


**Key to the Species**

1. Branchiostegal rays 5 or 11; vomeropalatine band of teeth uninterrupted in middle; nasal barbel shorter, rarely extend up to or beyond posterior border of head......................................................2.

2. Branchiostegal rays 11, cleft of mouth extends nearly to posterior edge of orbit; nasal barbels rarely extend up to posterior border of head......................................................*E. vacha*

Branchiostegal rays 5, cleft of mouth extends to anterior edge of orbit; nasal barbels extend slightly beyond posterior edge of orbit.................................................................*E. murius*

*Eutropiichthys murius* (Hamilton Buchanan)

(Plate XXVIII, Figure 4)

*Pimelodus murius* Hamilton - Buchanan, 1822, *Fishes of Ganges*: 195, 378 (Type locality: Mahananda river, North Bengal).


**Material examined**: 1 example (Khasi hills)

**Meristic data**:

D.i.7, P.i.10  11, V.i.5, A.iii.35  40, C.17.

**Distribution in Meghalaya**: Khasi hills (Pynursla)

**Elsewhere**: India: Assam, West Bengal, Northern India, Bihar, Orissa; Bangladesh; Nepal; Pakistan.

Minimum Maximum length reported so far: 148 mm  280 mm TL.

**Remarks**: Rarely occurring in Meghalaya; recorded so far from Khasi hills only.

Inhabits fresh and tidal waters.

*Eutropiichthys vacha* (Hamilton Buchanan)

(Plate XXIX, Figure 1)

*Pimelodus vacha* Hamilton Buchanan, 1822, *Fishes of Ganges*: 196, 378, pl. 19, fig. 64 (Type locality: Bangladeshi waters.)
larger freshwater rivers of Gangetic provinces).


**Materials examined**: 1 example (Garo hills)

**Meristic data**:
D.i.7/0, P.i.13 16, V.i.5, A.iii iv. 41 52, C.17.

**Distribution in Meghalaya**: Khasi hills, Garo hills (Dalu).

**Elsewhere**: India: Bengal, Bihar, Darjeeling, Orissa, Northern India upto Mahananda; Bangladesh; Burma; Nepal; Pakistan; Thailand.

Minimum Maximum length reported so far: 57 mm  350 mm TL.

**Remarks**: Not commonly occurring in Meghalaya.

Inhabits fresh and tidal waters.

44. **Genus *Pseudeutropius* Bleeker**


Diagnostic characters of species
Head 4.1  4.8 in standard length; nape well elevated; maxillary barbels extends upto anal fin which in inserted slightly behind dorsal fin; eye diameter 2.5  3.0 in head length.................... *P. atherinoides*

**Pseudeutropius atherinoides** (Block)

(Plate XXIX, Figure 2)


**Local name**: “Kha tyngkra” (Khasi)

**Material examined**: 9 examples (3 from Khasi hills, 6 from Garo hills).

**Meristic data**:
D.i.5 6/0, P.i.7, V.i.5, A. ii iii. 30  43, C.17.

**Distribution in Meghalaya**: Khasi hills (Nongpoh, Shella). Garo hills (Damalgiri, Garobadha, Phulbari, Tura).

**Elsewhere**: India: Throughout India except Kerala; Bangladesh; Burma; Nepal; Pakistan.

Minimum Maximum length reported sofar: 60 mm  128 mm TL.

**Remarks**: Not very common in Meghalaya, recorded so far from lower altitude only.

Inhabits freshwaters and tidal waters.
Diagnostic characters of Genus of Family Amblycipitidae

Body long, slender and compressed. Head broad and depressed; a prominent fold of skin in front of the pectoral fin. Mouth terminal. Barbels 4 pairs. Dorsal fin covered by a thick skin with one weak concealed spine and 5 and 6 soft rays; adipose dorsal fin been short enveloped in skin Pectoral fin well developed; anal fin base short; enveloped in skin. Pectoral fin with one weak spine and 7 soft rays. Lateral line absent; skin smooth; eyes small, dorsolaterally placed. .............................................. *Amblyceps*

45. Genus *Amblyceps* Blyth


Diagnostic characters in Species

Prominent fold of skin in front of pectoral fin. Nostrils close together and separated by a nasal barbel. Pectoral and Dorsal fin spine concealed; caudal fin spine concealed; caudal fin truncate or emerginate. ........................................................................................................................................ *A. mangois*

*Amblyceps mangois* (Hamilton Buchanan)

(Plate XXIX, Figure 3)

*Pimelodus mangois* Hamilton Buchanan, 1822, *Fishes of Ganges*: 199, 379 (Type locality: Northern Bihar).


*Material examined*: 16 examples (7 from Jaintia hills, 9 from Garo hills).

*Meristic data*:

D.i.5  6/0, P.i.6  7, A.ii  iii.6  8, C.19.

*Distribution in Meghalaya*: Khasi hills, Jaintia hills (Dawki, Muktapur). Garo hills (Baghmara, Damra, Rongram, Tura).

*Elsewhere*: India All along the base of the Himalayas from Punjab to Assam and Krishna river system; Bangladesh; Burma; Laos; Nepal; Pakistan; Thailand.

*Minimum* Maximum length reported so far: 38 mm  128 mm TL.

*Remarks*: Recorded from lower altitude of Meghalaya; not very common in occurrence. Inhabits pebbly beds in swift currents at the base of hills.

Key to the Genera of Family sisoridar

1. Adhesive thoracic apparatus distinct and well developed.................................2.

   Adhesive thoracic apparatus absent or indistinct or faintly developed................5.

2. Adhesive thoracic apparatus in form of a series of prominent and well developed transverse muscular folds of skin................................................................. *Pseudecheneis*
Adhesive thoracic apparatus in form of longitudinal muscular folds of skin.................................3.
3. Gill membrane separated by broad isthmus, caudal fin ray prolonged, head oval shaped, compressed........................................................................................................................................Conta
Gill membrane united with isthmus, caudal fin ray not prolonged, head flat depressed ..............4.
4. Cubito humeral process inconspicuous, hidden by skin..................................................Glypto thorax
5. Dorsal spine present, well-developed......................................................................................6.
Dorsal spine absent, anterior ray thick but not bony.................................................................10.
6. Caudal fin ray not prolonged; body smooth without bony plates........................................7.
Caudal fin ray prolonged; body rough with bony plates............................................................9.
7. Maxillary barbels with stiff base lying in a groove anteriorly..............................................8.
Maxillary barbels without stiff base and groove anteriorly........................................................10.
8. Mandibular barbels inserted on a transverse line at different levels. Gill membrane free from isthmus or only slightly attached. Ventral surface of head flat and broad..............Nangra
Mandibular barbels inserted on a transverse line at same level. Gill membrane broadly united with isthmus. Ventral surface of head compressed and narrow.................................Gagata
9. Gill openings wide, adipose dorsal smooth. Both lobes of caudal fin may be prolonged ..........Bagarius
9. Gill openings wide, adipose dorsal smooth. Both lobes of caudal fin may be prolonged ..........Bagarius
10. Barbels annulated, body plain....................................................................................................Hara
Barbels not annulated, body with tubercles along sides of body ........................................Laguvia

46. Genus **Bagarius** Bleeker


Diagnostic characters of Species
Pelvic fin inserted anterior to last dorsal fin ray; adipose dorsal fin originates slightly to markedly posterior to anal fin origin; pectoral fin rays 9 12.................................................................*B. bagarius*

**Bagarius bagarius** (Hamilton Buchanan)
(Plate XXIX, Figure 4)

*Pimelodus bagarius* Hamilton Buchanan, 1822, *Fishes of Ganges* : 186, 378, pl. 7, fig. 62 (Type locality : Ganga river and its tributaries).


Local name : “Kha khla” (Khasi)

Material examined : 1 example (Garo hills).
Meristic data:
D.i.6 7/0, P.i.9 12, V.i.5, A.iii.9 12, C.17.

Distribution in Meghalaya: Garo hills (Baghmara)

Elsewhere: India: Throughout India; Bangladesh; Burma; East Indies; Indo China; Malaya Archipelago; Nepal; Pakistan; Thailand; Tonkin.

Minimum Maximum length reported so far: 298 mm 2135 mm TL.
Remarks: Very rare in occurrence, recorded so far from lower altitude of Garo hills only.

47. Genus Conta Hora


Diagnostic characters of Species
Head length 4.5 – 5.5 in standard length; mouth small; lips thick, fleshy and papil-lated; maxillary barbels much shorter than head; dorsal fin inserted in advance of pelvic fins.................. C. conta

Conta conta (Hamilton Buchanan)

(Plate XXX, Figure 1)
Pimelodus conta Hamilton Buchanan, 1822, Fishes of Ganges: 191, 378 (Type locality: Mahananda river, Northeast Bengal).


Material examined: 1 example (Garo hills)

Meristic data:
D.i.5 6/0, P.i.6, V.i.5, A.ii iii.7, C.17.

Distribution in Meghalaya: Garo hills (Rongram).

Elsewhere: India: Assam, Darjeeling Himalayas, North Bengal; Bangladesh; Burma.

Minimum Maximum length reported so far: 49 mm 85 mm TL.
Remarks: Rarely occurring species in this region; so far recorded from Garo hills only.

Inhabits rocky streams at the base of hills.

48. Genus Gagata Bleeker


Diagnostic characters of Species
Median longitudinal groove on head extends only to base of occipital process; macillary barbels
shorter than head; pectoral fin without any filamentous prolongation. Head 3.6–4.0 in standard length. Anal fin with 10–14 rays. ................................................................. *G. cenia*

**Gagata cenia** (Hamilton Buchanan)

(Plate XXX. Figure 2)

*Pimelodus cenia* Hamilton Buchanan, 1822, *Fishes of Ganges* : 174, 376, pl. 31, fig. 57 (Type locality: rivers of north Bengal).


**Material examined** : 9 examples (4 from Jaintia hills, 5 from Garo hills)

**Meristic data** :
D.i.6/0, P.i.7-9, V.i.5, A.ii-iii. 10-14, C.18.

**Distribution in Meghalaya** : Jaintia hills (Dakoi, Garo hills (Phulbari, Tura).

**Elsewhere** : India : Assam including Chindwin drainage system. West Bengal, Orissa, Bihar, Uttar-Pradesh, Delhi, Punjab; Bangladesh; Burma; Nepal; Pakistan.

Minimum Maximum length reported so far : 74 mm 305 mm TL.

**Remarks** : Not very common, recorded so far from lower altitude only.

Inhabits rivers, also tidal rivers.

49. **Genus Glyptothorax** Blyth


**Key to the species** :

1. Adhesive apparatus on thorax as long as broad or broader than long..................................................2.

2. Adhesive apparatus on thorax longer than broad.................................................................................3.

2. Occipital process not reaching basal bone of dorsal fin; ventral surface of paired fins plaited......

3. Adhesive apparatus with a distinct central pit, skin smooth, adhesive apparatus conical in shape and complete posteriorly. Least height of caudal peduncle 2.7 in its length. Body depth 5.9–6.6 in standard length. Maxillary barbel shorter, extend only slightly beyond base of pectoral fin......

3. Adhesive apparatus without a central pit. Occipital process not reaching basal bone of dorsal fin.

Origin of rayed dorsal fin midway or nearer to origin of adipose dorsal than tip of snout. Body rough with granulations of tubercles. Nostrils separated from snout by a distance equals to eye diameter. Caudal peduncle height 3.0–3.8 in its length. Anal fin inserted opposite or anterior to origin of adipose fin.................................................................................*G. telchitta*
**Glyptothorax cavia** (Hamilton Buchanan)
(Plate XXX, Figure 3)

*Pimelodus cavia* Hamilton Buchanan, 1822. *Fishes of Ganges*: 188, 378 (Type locality: rivers of north Bengal).


**Material examined**: 2 examples (Garo hills)

**Meristic data**:
D.i.6/0, P.i.10, V.i.5, A.ii.9, C.17.

**Distribution in Meghalaya**: Khasi hills (Ranikor), Garo hills (Bozengdoba, Remgiri, Siju).

**Elsewhere**: India: Assam, Eastern Himalayas, North Bengal; Bangladesh; Burma; Nepal; Pakistan.

Minimum Maximum length reported so far: 54 mm 165 mm TL.

**Remarks**: Rarely occurring in Meghalaya; recorded so far from lower altitude only.

**Glyptothorax striatus** (Mc Clelland)
(Plate XXX, Figure 4)


**Local name**: “Doh than” (Khasi)

**Material examined**: 22 examples (Khasi hills).

**Meristic data**:
D.i.6/0, P.i.10, V.i.5, A.ii.9, C.17.

**Distribution in Meghalaya**: Khasi hills (Barapani, Sumer), Garo hills (Bozengdoba, Remgiri).

**Elsewhere**: India: Easter Himalayas, Sikim.

Minimum Maximum length reported so far: 65 mm 217 mm TL.

**Remarks**: Common hill stream fishes occurring both in higher and lower altitude.

**Glyptothorax telchitta** (Hamilton Buchanan)
(Plate XXXI, Figure 1)

*Pimelodus telchitta* Hamilton Buchanan, 1822, *Fishes of Ganges*: 185, 378 (Type locality: Freshwater rivers of Bengal and Bihar).


**Material examined**: 2 examples (1 from Khasi hills, 1 from Garo hills).
50. Genus **Hara** Blyth


Diagnostic characters of Species

Pectora fin spine short, does not extend to pelvic fin which inserted below anterior to last ray of dorsal fin. Upper lobe of caudal fin simple. Occipital process not reaching basal bone of dorsal fin; adipose dorsal fin extends about one eye diameter behind vertical from end of anal fin....................... *H. harei*

**Hara harei** (Hamilton Buchanan)

(Plate XXI, Figure 2)

*Pimelodus harei* Hamilton - Buchanan, 1822, *Fishes of Ganges* : 190, 378 (Type locality: Kosi river).

*Hara harei* : Talwar and Jhingran, 1991, *Inland Fishes* vol. 2:

**Material examined** : 25 examples (7 from Khasi hills, 18 from Garo hills).

**Meristic data** :

D.i.6 7. P.i.6-7, V.i.5, A.ii 7-8, C.15.

**Distribution in Meghalaya** : Khasi hills (Barapani), Garo hills (Baghmar, Phulbari).

**Elsewhere** : India : Assam, Nagaland, North Bengal, Terai, Duars, Uttar Pradesh, Orissa; Bangladesh; Burma; Nepal.

Minimum Maximum length reported so far: 44 mm 153 mm TL.

**Remark** : Not very common in this region; occurring both in higher and lower altitude.

Inhabits slow moving freshwater rivers and streams.

51. Genus **Laguvia** Hora

Diagnostic characters of Species

Origin of pelvic fin distinctly nearer base of caudal fin than tip of snout. Dorsal fin spine smooth. Body depth 4.5 – 5.0 in standard length. Inter orbital width 3.2 – 3.5, snout length 2.0 – 2.2 in head length; body with two bands; posterior band below entire width of adipose dorsal..........................

....................................................................................................................................................

L. Shawi; Laguvia shawi

Hora. 1921, Rec. Indian Mus. 22 (5) : 740, pl. 29 fig. 2 (Type locality: Mahananda and Sivoke rivers, Darjeeling Himalayas).


Materials examined: 3 examples (Garo hills)

Meristic data:
D.i ii. 5 6/0, P.i.7, V.i.5, A.i.8, C.17.

Distribution in Meghalaya: Garo hills (R. Ronga).

Elsewhere: India: Northern India, Darjeeling Himalayas; Bangladesh.

Minimum Maximum length reported so far: 21 mm 140 mm TL.

Remark: The present species recorded from Meghalaya resembles to Hora’s description except in colouration. The present specimens does not possess any bands on the body as mentioned in the description, instead there are black spots throughout the body. But this is a very minor difference as the colouration may differ an different environmental condition and for this it si not necessary to put them in separate superspecies.

52. Genus Nangra Day

Nangra Day, 1877, Fishes of India a. 493 (Type species: Pimelodus nangra Hamilton Buchanan); Talwar and Jhingran, 1991, Inland Fishes vol. 2 : 674.

Diagnostic characters of Species

Dorsal fin with 6 or 7 soft rays; outer mandibular barbels do not extend beyond pectoral fin; nasal barbels small or rudimentary, being almost as long or considerably shorter than eye diameter. A pair of finger like process present between bases of inner mandibular barbels; head greatly depressed..........

............................................................................................................................................

Nangra viridescens

Nangra viridescens (Hamilton Buchanan)

(Plate XXXI, Figure 4)

Pimelodus viridescens Hamilton Buchanan 1822, Fishes of Ganges : 173, 376, pl 10, fig. 56 (Type locality: rivers of North Bengal).

Material examined: 13 examples (1 from Khasi hills, 12 from Garo hills).

Distribution in Meghalaya: India: Assam, West Bengal, North Bengal, Bihar, Delhi, Poona, Punjab, Uttar Pradesh; Bangladesh; Nepal.

Minimum Maximum length reported so far: 49 mm 300 mm TL.

Remark: Not very common in Meghalaya, recorded so far from lower altitude only.
Inhabits freshwater, streams and rivers.

53. Genus Pseudecheneis Blyth


Diagnostic characters of Species
Head short, with a broad and oval thoracic apparatus; mouth small, inferior. Maxillary barbels broad based. Dorsal fin spine weak and roughened on its posterior edge. Paired fins large and expanded; outer pelvic fin rays with striated skin ventrally, caudal fins emarginate. its lobes pointed, lower lobe longer................................................................. P. sulcatus

Pseudecheneis sulcatus (McClelland)
(Plate XXXII, Figure 1)

Glyptosternon sulcatus McClelland, 1842, Calcutta J. nat. Hist. 2: 587, pl. 6 (Type locality: Khasi hills).

Pseudecheneis sulcatus: Talwar and Jhingran, 1911, Inland Fishes vol. 2: 679.

Material examined: 3 examples (Khasi hills).

Meristic data:
D.i.6, P.i.13, V.i.5, A.ii iv.7 9, C17.

Distribution in Meghalaya: Khasi hills (Barapani, Jakrem, Mairang, Nongkhlaw).

Distribution in Meghalaya: India: Assam, Darjeeling, North Bengal; Bangladesh; Nepal Himalayas.

Minimum - Maximum length reported so far: 98 mm 204 mm TL.

Remark: Not very common in Meghalaya; recorded so far from Khasi hills only.
Inhabits fast flowing hills streams.

Diagnostic characters of Genus of Family Clariidae
Body elongate and compressed; head moderately depressed. Eyes small, gill membranes free from isthmus. Dorsal fin and anal fin long. Well developed pectoral fin and pelvic fin. Pectoral fin with strong pungent spine. Lateral line distinct................................................................. Clarias
54. Genus **Clarias** Scopoli


Diagnostic characters of Species

Dorsal fin inserted at considerable distance from end of head; occipital process angular and narrow, its distance from dorsal fin base 4.5 to 6 times in length of head. Pectoral spine strong, finely serrated on both edges, often rough externally.......................................................... *C. batrachus*

**Clarias batrachus** (Linnaeus)

(Plate XXXII, Figure 2)

*Silurus batrachus* Linnaeus, 1758, *Systema Naturae*; 1 ed. 10: 305 (Type locality: Asia and Africa).


Local name: “Kha Magur” (Khasi)

Material examined: 8 examples (5 from Khasi hills, 3 from Garo hills).

Meristic data:

D.63 76, P.i.8 11, V.i.5, A.45 58, C.17.

Distribution in Meghalaya: Khasi hills (Shillong, Umsning), Jaintia hills (Dawki, Khanduli, Ratachara), Garo hills (Darugiri, Phulbari).

Elsewhere: India: Throughout India; Bangladesh; Bali; Borneo; Burma; Hongkong; Indo China; South China; Java; Lombok; Malaya Archipelag; Nepal; Pakistan; Philippines; Singapore; Sri Lanka; Sumatra; Thailand.

Minimum Maximum length reported so far: 32 mm 460 mm TL.

Remark: Not very commonly occurring in Meghalaya like other plain region. Recorded both from higher and lower altitude.

Inhabits fresh and brackish waters of plains.

Diagnostic characters of Genus of Family Heteropneustidae

Body elongated, compressed; mouth small, lips fleshy and papillated. Dorsal fin short, without spine, inserted above tip of pectoral fin.......................................................... **Heteropneustes**

55. Genus **Heteropneustes** Muller


Diagnostic characters of Species

Anal fin separated from caudal fin by a deep notch; occipital process not extending to base of dorsal
fin. Pectoral fin with a strong spine, serrated along its inner edge and with a few serrations at its anterior end externally. \( H. \) fossilis

**Heteropneustes fossilis** (Bloch)

(Plate XXXII, Figure 3)

*Silurus fossilis* Bloch, 1794. *Naturgesch. ausl. Fische, 8 : 46, pl. 370. fig.2* (Type locality: Tranquebar, Tamil Nadu).


**Local name** : “Kha Singi” (Khasi)

**Material examined** : 86 examples (78 from Khasi hills, 2 from Jaintia hills, 6 from Garo hills).

**Meristic data** :

D.6 7, P.i.7 8, V.i.5, A 60 - 70, C.19.

**Distribution in Meghalaya** : Khasi hills (Barapani, Cherrapunjee, Mawpat, Shella, Shillong, Umran, Umsning), Jaintia hills (Dawki, Jowai, Garrampani road), Garo hills (Damra, Darugiri, Phulbari, Songsak, Tura).

**Elsewhere** : India : Throughout India; Bangladesh; Burma; Indo China; Laos; Nepal; Pakistan; Sri Lanka; Thailand.

**Minimum Maximum length reported so far** : 35 mm. 305 mm TL.

**Remark** : Commonly occurring in Meghalaya; recorded both from higher and lower altitude.

Inhabits freshwater, brackish waters.

Diagnostic characters of Genus of Family Chacidae

Body flat and stumpy, head broad and depressed. Mouth terminal and very wide. Dorsal fin small with 2 spines and 4 soft rays; anal fin long with 8 - 10 branched rays. \( Chaca \)

56. Genus **Chaca** Gray


Diagnostic characters of Species

Body flat and stumpy; head broad and depressed. Mouth terminal and very wide; fleshy papillae along lateral surface of body above the lateral line. Flattened flaps of skin present along dorsal surface of head and immediately posterior to eyes; pectoral spine with 8 - 10 serrae. \( C. \) chaca

**Chaca chaca** (Hamilton Buchanan)

(Plate XXXII, Figure 4)

*Platystacus chaca* hamilton Buchanan, 1822, *Fishes of Ganges* : 140, 374, pl. 28, fig. 43 (Type locality :
rivers and ponds of north eastern parts of Bengal).


**Material examined**: 1 example (Jaintia hills)

**Meristic data**: D.ii.4, P.i.5, V.i.5, A.i.10.

**Distribution in Meghalaya**: Khasi hills (Shella), Jaintia hills (Dawki).

**Elsewhere**: India: Ganga, Brahmaputra, Irrawady river system, some freshwater of Bombay; Bangladesh; Banka; Burma; Borneo; Malaya; Nepal; Sumatra.

Minimum Maximum length reported so far: 175 mm 208 mm TL.

**Remark**: Rarely occurring in Meghalaya: recorded and reported so far from lower altitude only.

Inhabits rivers.

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**Diagnostic characters of Genus of Family Olyridae**

Body long and slender, loachlike, flattened in front of pelvic fin but compressed behind. Head small and depressed, snout obtusely rounded; mouth narrow and crescentic. Gill membranes extensive, confluent with each other across isthmus. Adipose dorsal fin often confluent with caudal fin. Pectoral spine serrated on both edges.

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57. **Genus Olyra McClelland**


**Key to the species**

1. Caudal fin forked. ................................................................. 2

2. Pectoral fin with 4-6 soft ray; upper lobe of caudal fin about twice as long as lower lobe. ................................................................. *O. longicaudata*

Pectoral fin with 7 soft ray; upper lobe of caudal fin only slightly longer than lower lobe. ................................................................. *O. horai*

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**Olyra horai** (Prashad and Mukherjee)

(Plate XXXII, Figure 1)

*Amblyceps horae* Prashad & Mukherji, 1929, *Rec. Indian Mus.* 31: 173, fig. 1 and pl. 7, fig. 1 (Type locality: Indawgyi lake, Upper Burma)


**Material examined**: 4 examples (1 from Khasi hills, 3 from Garo hills).

**Meristic data**: D.1.7, P.i.7, V.i.5, A.iii.18, C.15.
**Dibution in Meghalaya**: Khasi hills (Shella), Garo hills (Damra, Darugiri).

*Elsewhere*: India: recorded so far from Meghalaya only; Burma.

Minimum Maximum length reported so far: 50 mm 70 mm TL

**Remarks**: Rarely occurring species. Inhabits slow moving streams, lakes, reservoirs.

*Olyra longicaudata* McClelland

(Plate XXXIII, Figure 2)

*Olyra longicaudata* McClelland, 1842. *Calcutta Jour. nat. Hist.*, 2: 588, pl. 21, fig. 1 (Type locality: Khasi hills, Meghalaya).


**Material examined**: 5 examples (Jaintia hills).

**Meristic data**:

D.i.6 7, P.i.4 6, V.i.5, A.ii iii.15 20, C.15.

**Distribution in Meghalaya**: Khasi hills (Shella), Jaintia hills (Dawki), Garo hills (Damra, Darugiri).

*Elsewhere*: India: Assam, Darjeeling Himalayas; Burma.

Minimum Maximum length reported so far: 53 mm 115 mm TL.

**Remark**: Not very common in Meghalaya. Though type locality is Khasi hills, the species could be recorded so far from Jaintia hills only.

Inhabits small rocky streams at the base of hills.

**Diagnostic characters of Genus of Family Belonidae**

Body elongated, cylindrical; caudal peduncle not strongly depressed. Dorsal fin and anal fin nearly opposite to each other. Caudal fin truncate or rounded. Scales minute; lateral line placed very low on body....................................................................................................................................

**Xenentodon**

58. **Genus Xenentodon** Regan


**Diagnostic characters of Species**

Dorsal fin rays 15 18; anal finrays 16 18; scales minute; predorsal scales more than 200..................

.........................................................................................................................................................

*X. cancila*

**Xenentodon cancila** (Hamilton Buchanan)

(Plate XXXIII, Figure 3)

*Esox cancila* Hamilton Buchanan, 1822, *Fishes of Ganges*: 213, 380, pl. 27, fig. 70 (Type locality: Gangetic provinces).

*Local name* : “Kha tynriew” (Khasi)

*Material examined* : 8 examples (Garo hills)

*Meristic data* :
D.15 18, P.9 11, V.6, A.16 18, C.15.

*Distribution in Meghalaya* : Khasi hills, Jaintia hills, Garo hills (Damalgiri, Garobandha, Phulbari, Rongram, Tura).

*Elsewhere* : India : Throughout India; Bangladesh; Borneo; Burma; Malaya; Nepal; Pakistan; Srilanka; Sumatra; Thailand.

Minimum Maximum length reported so far : 115 mm 400 mm TL.

*Remark* : Not very common in Meghalaya ; recorded so far from lower altitude only.

Inhabits freshwaters, primarily rivers.

Diagnostic characters of Genus of Family Aplocheilidae

Head and nape broad and flattened above. Mouth terminal, directed slightly upward. Dorsal fin inserted on posterior third of the body with 2/6 rays. Anal fin base wider than dorsal fin base, opercles not covered with scaled. Head scales not arranged in circular pattern..............................**Aplocheilus**

59. **Genus Aplocheilus** McClelland


Diagnostic characters of Species

Body elongated and compressed posteriorly. Eyes large, its diameter equals to interorbital width; Anal fin almost squarshaped. Pelvic fins small, without any elongated ray. Caudal fin rounded 30-34 scales in longitudinal series.................................................................**A. panchax**

**Aplocheilus panchax** (Hamilton Buchanan)  
(Plate XXXIII, Figure 4)

*Esox panchx* Hamilton Buchanan, 1822, *Fishes of Ganges* : 211, 380, pl. 3, fig. 69 (Type locality: Bengal)


*Material examined* : 12 examples (2 from Khasi hills, 10 from Jaintia hills).

*Meristic data* :
D.i-ii. 6-7, P.12-14, V.6-7, A.iii.12-14, C.13-14.L.1.30-34, L. tr. 5/5. Predorsal scales 20-21, Scales around caudal peduncle 10.

*Distribution in Meghalaya* : Khasi hills (Balat). Jaintia hills (Dawki, Muktapur).
Elsewhere: India: Assam, Bihar, West Bengal, Uttar Pradesh, Orissa, East Punjab, Madhya Pradesh, Andaman; Bangladesh; Burma; Thailand to Malaya Archipelago; Pakistan; Siam; Sri Lanka.

Minimum Maximum length reported so far: 20 mm 90 mm TL.

Remark: Not very common in Meghalaya.

Inhabits clear, shallow and brackish waters at lower altitude.

Diagnostic characters of Genus of Family Synbranchidae

Body eel-like, head short. Gill opening triangular or crescentic; without lateral folds, internally attached to isthmus; gill-opening placed ventrally. Caudal fin absent. Branchio stegal ray 5 or 6. Scales, when present, confined largely to caudal region.............................. Monopterus

60. Genus Monopterus Lacepede


Diagnostic characters of Species:

Body with scales present posteriorly. Skin of branchial region of ventral side of head drawn into deep longitudinal folds; dorsal and anal ‘fin fold’ or ridges rudimentary. Palatine teeth uniserial........

.............................................................................................................................................. M(A) cuchia

Monopterus (Amphipnous) Cuchia (Hamilton Buchanan)

(Plate XXXIV, Figure 1)

Unibranchapertura cuchia Hamilton Buchanan, 1822, Fishes of Ganges; 16, 363, pl. 6, Fig. 4 (Type locality: Rivers and ponds of south-east parts of Bengal).


Material examined: 2 examples (1 from Khasi hills (Shella), 1 from Jaintia hills).

Distinguishing characters

Length of head (from gill opening) 6-8 times in distance between the snout and the anus; eyes situated midway between end of snout and posterior extremity of the jaws. A rudimentary dorsal ‘fin fold’ commences slightly before a vertical line drawn through the anus.

Distribution in Meghalaya: Khasi hills (Shella), Jaintia hills (Dawki).

Elsewhere: India: North and North East part of India, Orissa; Bangladesh; Burma; Chusan; Nepal; Pakistan.

Minimum Maximum length reported so far: 260 mm 610 mm TL.

Remark: In Meghalaya, its occurrence is not very common, recorded so far from lower altitude
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only.

Inhabits fresh and brackish waters.

Key to the Genera of Family Ambassidae

1. Canine teeth on lower jaw; minute scales; 100-107 in longitudinal series. Mouth particularly large with very prominent lower jaw. Supra orbital ridge smooth, ending in an indistinct spine...

................................................................................................................................. Chanda

Canine teeth absent; scales in longitudinal series. Mouth moderate, lower jaw more or less equal to upper jaw. Supra orbital ridge dentate; interopercular generally entire, often poorly serrated...

................................................................................................................................. Pseudambassis

61. Genus Chanda Hamilton Buchanan


Diagnostic characters of Species

Body stroughly compressed, mouth large, scales minute, partly deciduous; often irregularly arranged. Body with scattered minute black dots which on the shoulder collect into oblong patch; eyes black; upper part of first dorsal fin deep black; caudal fin dusky.......................................................... \textit{C. nama}

\textbf{Chanda nama} (Hamilton Buchanan)

(Plate XXXIV, Figure 2)

\textit{Chanda nama} Hamilton - Buchanan, 1822, Fishes of Ganges : 109, 371 ; pl. 39. fig. 37 (Type locality : ponds throughout Bengal).


Local name : "Kha Snad" (Khasi)

Material examined : 54 examples (17 from Khasi hills, 1 from Jaintia hills, 36 from Garo hills).

Meristic data :

D.vii + i.13 17, P.i-ii. 11-12, V.i.5 6, A.iii.15 - 16, C.17.

\textit{Distribution in Meghalaya} : Khasi hills (Cherrapunjee, Mylliem, Nongpoh, Ranikor, Shella, Shillong), Jaintia hills (Dawki), Garo hills (Baghmara, Dalu, Garobahda, Phulbari, Rongra stream).

Elsewhere : India : throughout India; Bangladesh; Burma; Nepal; Pakistan.

Minimum Maximum length reported so far : 37 mm 110 mm TL.

Remark : Commonly occurring species recorded mainly from lower altitude.

Inhabits fresh and brackish waters, both in standing and running waters.
62. Genus *Pseudambassia* Bleeker


Key to the species

1. Lateral line scales about 90

2. Lateral line scales less than 70

3. Finshyaline; body yellowish green on back silvery on flanks and belly, with a silvery lateral band on flank; lower gill rakers about 11

4. Preopercular hind edge smooth, often with few serrations; lower gill rakers 15 or 16

*Pseudambassia baculis* (Hamilton Buchanan)

(Plate XXXIV, Figure 3)

*Chanda baculis* Hamilton Buchanan, 1822, *Fishes of Ganges*: 112, 371, pl. 22, fig. 7 (Type locality: north eastern parts of Bengal).


*Local name*: "Kha snad" (Khasi)

*Material examined*: 2 examples (Garo hills)

*Meristic data*:

- D.vi vii + i. 12 15, P.i.10 12, V.i.5 6, A.iii.12 14, C.17, L.1.90.

*Distribution in Meghalaya*: Garo hills (Baghmara, Mahadev).

*Elsewhere*: India: West Bengal, Orissa, North India, Kalimpong, Duars, Siliguri, Madhya Pradesh, Bombay, Bihar, Punjab; Bangladesh; Burma; Pakistan; Thailand.

*Minimum Maximum length reported so far*: 45 mm 63 mm TL.

*Remark*: Not very common in Meghalaya; recorded so far from lower altitude of Garo hills only.

Inhabits freshwater ponds, ditches, pools and rivers.

*Pseudambassia ranga* (Hamilton Buchanan)

(Plate XXXIV, Figure 4)

*Chanda ranga* Hamilton - Buchanan, 1822, *Fishes of Ganges*: 113, 371, pl. 6, fig. 38 (Type locality: freshwaters of all parts of Gangetic provinces).


*Local name*: "Kha snad" (Khasi)

*Material examined*: 53 examples (13 from Khasi hills, 4 from Jaintia hills, 36 from Garo hills)

*Meristic data*:

- D.vii + i.11-14, P. i.10-12, V. i. 5-6, A.iii.13-16, C. 17, L.1. 47-63.

*Distribution in Meghalaya*: Khasi hills (Barapani, Byrnihat, Cherrapunjee, Shella, Shillong,
Myllem, Nongpoh), Jaintia hills (Dawki, Muktapur, Umkiang stream), Garo hills (Baghmara, Dalu, Damra, Garobadha, Phulbari, Siju, Tura).

Elsewhere: India; Throughout India; Bangladesh; Burma; Malaya; Nepal; Pakistan; Siam; Thailand.

Minimum Maximum length reported so far: 39 mm 102 mm TL.

Remark: Commonly occurring in lower altitude of Meghalaya.
Inhabits fresh and brackish waters.

Key to the Genera of Family Nandidae

1. Mouth very large, strong, protrusible. Posterior arm of preoperculum very short. Dorsal fin with more than 10 soft rays................................................................. Nandus

Mouth relatively small, slightly protrusibly. Horizontal and vertical limbs of preoperculum of equal length. Dorsal fin with less than 10 soft rays......................................................... Badis

63. Genus Nandus Valenciennes


Diagnostic characters of Species

Body fairly deep, compressed; head large and compressed. Dorsal spine rather strong; anal spine moderately strong, second spine longest. Operculum triangular with a single prominent spine; preopercle serrated in a continuous band near its angles. Lateral line interrupted. 3 broad vertical patchy blotches on body; a dusky blot at caudal fin base; narrow bands of spot across soft portions of dorsal, anal and caudal fin................................................................. N. nandus

Nandus nandus (Hamilton Buchanan)

(Plate XXXV. Figure 1)

Coius nandus Hamilton-Buchanan, 1822, Fishes of Ganges : 96, 370, pl. 30, fig. 32 (Type locality: ponds of Gangetic provinces)


Local name: “Kha sniang” (Khasi)

Material examined: 12 examples (3 from Khasi hills, 2 from Jainti hills, 7 from Garo hills).

Meristic data:

Distribution in Meghalaya: Khasi hills 9Cherrapujee, Shella). Jaintia hills (Dawki, Muktapur), Garo hills (Damra, Garobadha, Phulbari, Tura).

Elsewhere: India; Throughout India; Bangladesh; Burma; Malaya; Nepal; Pakistan; Thailand.

Minimum Maximum length reported so far: 100 mm 200 mm TL.
Remark: Recorded so far from lower altitude only. In Meghalayan population soft dorsal is having more fin rays (19 var. 11-13, Talwar and Jhingran, 1991). Pectoral fin rays (15 var. 16, Misra, 1959) and caudal fin rays (14 var. 15, Misra, 1959) are less.

Inhabits fresh and brackish waters.

64. Genus Badis Bleeker


Diagnostic characters of Species

Body moderately elongate, highly compressed. eyes large, mouth small. Dorsal spine somewhat slender; anal spine short; caudal fin rounded. Lateral line interrupted, often absent. Operculum distinctly triangular, its postero-dorsal corner with prominent spine, projecting posteriorly......B. badis

Badis badis (Hamilton Buchanan)

(Plate XXXV, Figure 2)

Labrus badis Hamilton Buchanan, 1822, Fioshjes of Ganges : 70, 368. pl. 25. fig. 23 (Type locality : Gangtic provinces)


Local name : “Kha snoing” (Khasi).

Material examined : 273 examples (61 from Khasi hills, 101 from Jaintia hills, 111 from Garo hills).

Meristic data :

D.xvi-xviii. 7-10, P.i.11-12, V.i.5-6, A.iii.6-8, C.14. L.1.26-33. L. tr. 3/7, Predorsal scales 8-9, Scales around caudal peduncle 16-18.

Distribution in Meghalaya : Khasi hills (Barapani, Byrnihat, Lailad, Mylliem, Nongpoh, Nongkyllem, Pynursla, Shella, Sonapahar, Umtham), Jaintia hills (Badarpur road, Dawki, Muktapur, Umkiang stream, Shangpung), Garo hills (Baghmara, Damra, Darugiri, Rongrengiri, Siju, Songsak, Williamnagar, Phulbari).

Elsewhere : India : Throughout India ; Bangladesh : Burma ; Nepal ; Pakistan.

Minimum Maximum length reported so far : 17 mm 90 TL.

Remark : Commonly occurring in Meghalaya, recorded from both higher and lower altitude.

Inhabits freshwaters, rivers, ponds and ditches.

Key to the Genera of Family Mugilidae

1. Spine on operculum above pectoral fin base; head wide, dorsally flattened; caudal fin forked; first dorsal inserted nearer to tip of snout than to caudal fin base............................................. Sicamugi
No spine on operculum; head concave between eyes, eyes projecting above this level; anterior nostrils at level of eye centre, or lower; mouth conspicuously ventral. Caudal fin slightly emarginate; first dorsal inserted nearer to base of caudal fin than to tip of snout.…..Rhinomugil

65. Genus Rhinomugil Gill


Diagnostic characters of Species
Body rather stout; head moderate, concave between eyes, latter projecting above this level. Mouth ventral, protrusible. Scales in lateral series 48-52……………………………………………………………R. corsula

Rhinomugil corsula (Hamilton Buchanan)
(Plate XXXV, Figure 3)

Mugil corsula Hamilton-Buchanan, 1822, Fishes of Ganges: 21, 381, pl. 9, fig. 97 (Type locality: Ganges river).


Material examined: 2 examples (Garo hills).

Meristic data:
D.iv. i.8, P.i.10-15, V.i.5-6, A.iii.9, C.15, L.1. 48-52, L. tr. 7/8, Predorsal sacles 17, Scales around caudal peduncle 18.

Distribution in Meghalaya: Garo hills (Baghmara).

Elsewhere: India: Introduced into Cauveri river system, throughout Gangetic provinces to N. E. India; Bangladesh; Burma; Nepal; Pakistan.

Minimum Maximum length reported so far: 126 mm 459 mm TL.

Remark: Rarely occurring in Meghalaya, recorded so far from lower altitude of Garo hills only (below 200 M).

Inhabits fresh and brackish waters.

66. Genus Sicomugil Fowler


Diagnostic characters of Species
Body moderately robust. Dorsal fin inserted conspicuously nearer tip of snout than to caudal fin base; anal fin origin opposite to second dorsal fin origin; caudal fin forked……………………………S. cascasia

Sicomugil cascasia (Hamilton Buchanan)
(Plate XXXV, Figure 4)

Mugil cascasia Hamilton Buchanan, 1822, Fishes of Ganges : 217.380 (Type locality: Northern rivers of Bengal).

Material examined: 15 examples (Garo hills).

Meristic data:

Distribution in Meghalaya: Garo hills (Dalu, Siju)

Elsewhere: India; Introduced in Cauveri river systems, upper reaches of Ganges, Yamuna and Brahmaputra river systems; Bangladesh; Pakistan; Sri Lanka.

Minimum Maximum length reported so far: 55 mm 102 mm TL.

Remark: Not very commonly occurring in Meghalaya; recorded so far from lower altitude of Garo hills only. In present specimens caudal fin rays are more (16 var. 14, Misra, 1959).

Inhabits freshwaters only.

Diagnostic characters of Genus of Family Gobiidae

Body elongate, anteriorly cylindrical, posteriorly compressed. Head depressed, snout elongate, head scaled above behind eyes. Mouth slightly oblique, lower jaw prominent. Maxilla reaching to below front half of eye. Dorsal fins separate, pelvic fins form disc, scales stenoid. ................. Glossogobius

67. Genus Glossogobius Gill


Diagnostic characters of Species

Branchiostegal membrane attached to sides of isthmus; body pale without longitudinal lines; sometimes with saddles; 9-14 scales with one black spot or without it. Iris without a lappet. .. G. giuris

Glossogobius giuris (Hamilton Buchanan) (Plate XXXVI, Figure 1)

Gobius giuris Hamilton Buchanan, 1822, Fishes of Ganges: 51, pl. 33, fig. 15 (Type locality: Gangetic provinces).


Local name: “Khathli” (Khasi)

Material examined: 19 examples (5 from Khasi hills, 1 from Jaintia hills, 13 from Garo hills).

Meristic data:
D.vi./i.8-9, P.i.16-21, V.i.4, A.i.7-9, C.15-17, L.1.40, L. tr.4/5, Predorsal scales 6-7, Scales around caudal peduncle 12.

Distribution in Meghalaya: Khasi hills (Barapani, Shella), Jaintia hills (Dawki, Muktapur), Garo hills (Mahadev, Phulbari, Tura).
Elsewhere: India: Throughout India including Andamans; Bangladesh; Burma; China; Malaya Peninsula; Nepal; Pakistan; Philippines; Sri Lanka; Thailand; East coast of Africa to Japan; Australia; Indo-Australian archipelago and the South Pacific Islands.

Minimum-Maximum length reported so far: 33 mm 457 mm TL

Remark: Not very common in Meghalaya. Number of caudal fin rays (15) are usually less than those of plain region (17, Day 1889, Misrs 1959).

Inhabits primarily freshwaters and estuaries; also the seas.

Diagnostic characters of Genus of Family Anabantidae

Body oblong and compressed; head and anterior part of body rather broad; posterior parts compressed. Mouth small and terminal upper jaw only slightly protrusible. Scales of moderate size, ctenoid, 2 lateral lines .......................................................

Anabas

68. Genus Anabas Cuvier and Cloquet

Anabas Cuvier and Cloquet, 1816, Dictionnaire des sciences naturelles (ed.2), 2 suppl : 35 (Type species: Perca scanens Daldoff = Anthias testudineus (Bloch); Talwar and Jhingran, 1991, Inland Fishes vol. 2 : 995.

Diagnostic characters of Species

Body depth 3.0-3.5 in standard length; snout length 13.0-17.5 in standard length. Pectoral fin long with 13-15 rays; dorsal fin with 8-10 soft rays ..................................................... A. testudineus

Anabas Testudineus (Bloch)

(Plate XXXVI, Figure 2)

Anthias testudineus Bloch. 1795, Naturges. Ausland. Fische (6) : 121. pl. 322 (Type locality: ? Java)


Local name: “Kha Koi” (Khasi)

Material examined: 12 examples (2 from Khasi hills, 10 from Garo hills).

Meristic data:

D.xvi xviii/8 10, P.i.13-14, V.i.5, A. viii-ix/9-11, C.16.L.1.29-34, L. tr. 3/10, Predorsal scales 5, Scales around caudal peduncle 24.

Distribution in Meghalaya: Khasi hills (Schella), Garo hills (Amphangiri, Damalgiri, Darugiri, Garobadha).

Elsewhere: India: Throughout India; Bangladesh; Burma; Cambodia; Indo-China; China; Malaya; Malaya Archipelago; Nepal; Pakistan; Philippines; Polynesia; Singapore; Sri Lanka; Thailand.

Minimum-Maximum length reported so far: 94 mm 250 mm TL or more.
Remark: In Meghalaya its occurrence is not common like other plain region; recorded so far from lower altitude only.

Inhabits fresh and brackish water; mostly in canals, lakes, ponds and swamps.

Diagnostic characters of Genus of Family Belontiidae

Body oblong, compressed, mouth small, highly protrusible. Opercle entire; ventral border of preopercle serrated. Dorsal fin long with 15–18 spines and 6–14 rays; anal fin with 15–22 spines and 11–20 rays. Pelvic fin with a single long filamentous ray and rudimentary adnate spine. Scales large and ctenoid. Lateral line often absent or vestigial.

69. Genus Colisa Cuvier


Key to the Species

1. Body with a blackish longitudinal band from eye to caudal fin................................. C. sota

Body with 14 or more oblique bands. Soft part of dorsal and anal fin produced to a varying degree; anal fin scaly at base only; caudal slightly notches or cut square.......................... C. fasciatus

Colisa Fasciatus (Schneider)

(Plate XXXVI, Figure 3)

Trichogaster fasciatus Schneider, 1801. Syst. Ichthy., 164, pl. 36 (Type locality: Tranquebar)


Local name: “Kha snoing” (Khasi hills)

Material examined: 65 examples (35 from Khasi hills, 5 from Jaintia hills, 25 from Garo hills)

Meristic data:

D.xv-xvii/8-14, P.i.8-9, V.1, A.xv-xviii/14-19, C.16, L.1.29-31, L. tr. 5.5/12, Predorsal scales 7, scales around caudal peduncle 18.

Distribution in Meghalaya: Khasi hills (Barapani, Balat, Cherrapunjee, Shella, Umtham), Jaintia hills (Dawki, Muktapur), Garo hills (Damra, Garobadha, Phulbari, Tura).

Elsewhere: India: Assam, North India, Esturies of Ganga, Coromandal coast, River Krishna; Bangladesh; Burma; Nepal; Pakistan.

Minimum Maximum length reported so far: 28 mm 128 mm TL.

Remark: Commonly occurring in Meghalaya, recorded so far from both lower and higher altitude.

Inhabits large rivers and estuaries; also tanks, ditches and ponds.
Colisa sola (Hamilton Buchanan)
(Plate XXXVI, Figure 4)

Trichopodus sota Hamilton Buchanan, 1822. Fishes of ganges: 120, 373 (Type locality: Ganges river).


Local name: “Kha snoing” (Khasi).

Material examined: 17 examples (8 from Khasi hills, 5 from Jaintia hills, 4 from Garo hills).

Meristic data:
D.xvii xviii/6/6-9, P.i 7-8, V.1, A.xviii xxii/11-13, C.15. L.1.27-29. L. t. 5/10, Predorsal scales 7, scales around caudal peduncle 14.

Distribution in Meghalaya: Khasi hills (Barapani, Lailad, Umtham), Jaintia hills (Dawki), Garo hills (Damalgiri, Damra, Garobadha).

Elsewhere: India: Assam, Gangetic province; Bangladesh.

Minimum Maximum length reported so far: 30 mm. 46 mm TL.

Remarks: Not commonly occuring like fasciatus; so far recorded mainly from lower altitude only.

Diagnostic characters of Genus of Family Channidae
Body elongate, almost cylindrical anteriorly and somewhat compressed posteriorily. Head large, mouth fairly large. Anterior nostril tubular. dorsal and anal fin long based; pelvic fin subabdominal...

70. Genus Channa Scopoli


Key to the Species

1. Predorsal scales 12 or 13, 4 or 5 scales between preopercular angle and posterior border of orbit. ..............................................................................................................................................2.
   Predorsal scales 15 22; 9 or 10 scales between preopercular angle and posterior border of orbit. ........................................................................................................................................................................4.

2. Anal finrays 27, dorsal fin rays 39-40; black spot on many scales of body. ..............C stewartii
   Anal finrays 20-23, dorsal fin rays 28-37 ..............................................................................3.

3. Pectoral fin with bluish vertical bands; dorsal finrays 32-37; pelvic fin length (When present) less than half of pectoral fin. .........................................................C. orientalis
   Pectoral fin plain, no vertical band; dorsal finrays 28-32 (rarely 33) pelvic fin long,more than half of pectoral fin ................................................................. C. punctatus

4. Predorsal scales 18-20, several dark vertical bands below lateral line. Alan fin with 23-29 rays...
   ..............................................................................................................................................C. striatus
Figs. Plates & Maps
Fig. 1. Diagrams showing different types of scoop nets
A. Tynsong, B. Kriah, C. Bneid, D. Shrip.

AB - Snout length, BC - Eye diameter, AD - Head length, AE - Predorsal length, FG - Distance between Rayed dorsal and 2nd dorsal or adipose dorsal, HI - Caudal peduncle length, IJ - Length of Caudal fin, AJ - Total length, AI - Standard length.

Fig. 3: Diagramme showing different types of unbranched rays.
A. Simple ray, B. Spinous ray, C. Hard ray.
Fig. 1 *Notopterus chitala* (Hamilton–Buchanan) 2. *Notopterus notopterus* (Pallas) *chapra* (Hamilton–Buchanan) 4. *Setipinna phasa* (Hamilton–Buchanan)
Fig. 1 *Catla catla* (Hamilton–Buchanan) 2. *Chagunius chagunio* (Hamilton–Buchanan)
3. *Cirrhus mrigala mrigala* (Hamilton–Buchanan)
Fig. 1 Cirrhinus reba (Hamilton–Buchanan) 2. Cyprinus Carpio var. Communis (Linnaeus) 3. Cyprinus carpio Var. specularis Leopede
Fig. 1 Labeo bata (Hamilton–Buchanan) 2. Labeo boga (Hamilton–Buchanan) 3. Labeo calbasu (Hamilton–Buchanan)
Fig. 1 *Labeo dero* (Hamilton–Buchanan) 2. *Labeo gonius* (Hamilton–Buchanan) 3. *Labeo nandina* (Hamilton–Buchanan)
Fig. 1 Labeo rohita (Hamilton-Buchanan) 2. Neolissochilus hexagonolepis (Mc Clelland) 3. N. hexastichus (Mc Clelland) 4. Osteobroma cotio cotio (Hamilton-Buchanan)
Fig. 1 *Puntius chola* (Hamilton–Buchanan) 2. *P. clavatus* (Mc Clelland) 3. *P. conchonius* (Hamilton–Buchanan) 4. *P. gelius* (Hamilton–Buchanan)
Fig. 1 Puntius phutunio (Hamilton–Buchanan) 2. P. sarana sarana (Hamilton–Buchanan) 3. P. shalynius Yazdani & Talukdar 4. P. sophore (Hamilton–Buchanan)
Fig. 1 *Puntius terio* (Hamilton–Buchanan) 2. *P. ticto* (Hamilton–Buchanan) 3. *Tor chelynoides* (Mc Clelland) 4. *T. putitora* (Hamilton–Buchanan)
Fig. 1 Tor tor (Hamilton–Buchanan) 2. Chela cachius (Hamilton–Buchanan) 3. C. laubuca (Hamilton–Buchanan) 4. Salmostoma bacaila (Hamilton–Buchanan)
Fig. 1 Salmostoma phulo (Hamilton-Buchanan) 2. Securicula gora (Hamilton-Buchanan) 3. Amblypharyngodon mola (Hamilton-Buchanan) 4. Barilius barila (Hamilton-Buchanan)
Fig. 1 *Barilius barna* (Hamilton-Buchanan) 2. *B. bendelisis* (Hamilton-Buchanan) 3. *B. shacra* (Hamilton-Buchanan) 4. *B. tileo* (Hamilton-Buchanan)
Fig. 1 *Barilius vagra* (Hamilton–Buchanan) 2. *Bengala elanga* (Hamilton–Buchanan) 3. *Brachydanio rerio* (Hamilton–Buchanan) 4. *Danio aequipinnatus* (Mc Clelland).
Fig. 1 *Danio dangila* (Hamilton–Buchanan) 2. *D. devario* (Hamilton–Buchanan) 3. *Esomus danricus* (Hamilton–Buchanan) 4. *Parluciosoma daniconius* (Hamilton–Buchanan)
Fig. 1 *Raiamas bola* (Hamilton–Buchanan) 2. *Rasbora rasbora* (Hamilton–Buchanan 3. *Crossocheilus latius latius* (Hamilton–Buchanan) 4. *Garra annandalei* Hora
Fig. 1 *Garra gotyla gotyla* (Gray) 2. *G. kempi* Hora 3. *G. lamta* (Hamilton-Buchanan) 4. *G. lissorhynchus* (Mc Clelland)
Fig. 1 *Garra mc Clellandi* (Jerdon) 2. *G. naganensis* Hora 3. *G. nasuta* (Mc Clelland) 4. *G. rupecula* (Mc Clelland)
Fig. 1 *Psilorhynchus balitora* (Hamilton–Buchanan) 2. *P. homaloptera* Hora & Mukherji 3. *P. sucalio* (Hamilton–Buchanan) 4. *Balitora brucei* Gray
Fig. 1 Aborichthys elongatus Hora 2. A. garoensis Hora 3. A. kempi Chandhuri 4. Nemacheilus beavani Gunther
Fig. 1 Nemacheilus botia (Hamilton-Buchanan) 2. Nemacheilus corica (Hamilton-Buchanan) 3. Nemacheilus devdevi (Hora) 4. Nemacheilus elongatus (Sen and Nalbant)
Fig. 1 Nemacheilus multifasciatus (Day) 2. Nemacheilus reticulofasciatus (Singh & Banarescu) 3. Nemacheilus savona (Hamilton–Buchanan) 4. Nemacheilus scaturigina (Mc Clelland)
Fig. 1  *Nemacheilus sijuensis* (Memon) 2. *Nemacheilus sikmaiensis* (Hora) 3. *Lepidocephalus annandalei* (Chandhri) 4. *L. bermorei* (Blyth)
Fig. 1 Lepidocephalus caudofurcatus (Tilak & Hussain) 2. Lepidocephalus guntea (Hamilton-Buchanan) 3. Lepidocephalus irrorata (Hora) 4. Pangio pangia (Hamilton-Buchanan)
Fig. 1 Somileptes gongota (Hamilton–Buchanan) 2. Botia dario (Hamilton–Buchanan) 3 Botia histrionica (Blyth) 4 Botia lohachata (Choudhuri)
Fig. 1 *Botia rostrata* (Gunther) 2. *Aorichthys seenghala* (Sykes) 3. *Batasio batasio* (Hamilton Buchanan) 4. *Batasio tengana* (Hamilton–Buchanan)
Fig. 1 *Mystus bleekeri* (Day) 2. *Mystus cavasius* (Hamilton-Buchanan) 3. *Mystus montanus* (Jerdon) 4. *Mystus vittatus* (Bloch)
Fig. 1 *Rama chandramara* (Hamilton–Buchanan) 2. *Ompok bimaculatus* (Bloch) 3. *Ompok pabda* (Hamilton–Buchanan) 4. *Ompok pabo* (Hamilton–Buchanan)
Fig. 1 *Wallago attu* (Schneider) 2. *Ailia coila* (Hamilton-Buchanan) 3. *Clupisoma garua* (Hamilton-Buchanan) 4. *Eutropuchthys murius* (Hamilton-Buchanan)
Fig. 1 Eutropuchthys vacha (Hamilton–Buchanan) 2. Pseudeutropius atherinoides (Bloch) 3. Amblyceps mangois (Hamilton–Buchanan) 4. Bagarius bagarius (Hamilton–Buchanan)
Fig. 1 Conta conta (Hamilton–Buchanan) 2. Gagata cenia (Hamilton–Buchanan) 3. Glyptothorax cavia (Hamilton–Buchanan) 4. Glyptothorax striatus (Mc Clelland)
Fig. 1 Glyptothorax telchitta (Hamilton-Buchanan) 2. Hara hara (Hamilton-Bucharian) 3. Laguvia shawi Hora 4. Nangra viridescens (Hamilton-Buchanan)
Fig. 1 Pseudoecheneis sulcatus (Mc Clelland) 2. Clarias batrachus (Linnaeus) 3. Heteropneustes fossilis (Bloch) 4. Chaca chaca (Hamilton–Buchanan)
Fig. 1 Olyra horai (Prashad & Mukerji) 2. O. longicaudata Mc Clelland 3. Xenentodon cancila (Hamilton–Buchanan) 4. Aplocheilus panchax (Hamilton–Buchanan)
Fig. 1 Monopterus (Amphipnous) cuchia (Hamilton–Buchanan) 2. Chanda nama (Hamilton–Buchanan) 3. Pseudambassis baculis (Hamilton–Buchanan) 4. P. ranga (Hamilton–Buchanan)
Fig. 1 *Nandus nandus* (Hamilton–Buchanan) 2. *Badis badis* (Hamilton–Buchanan) 3. *Rhinomugil corsula* (Hamilton–Buchanan) 4. *Sicamugil cascasia* (Hamilton–Buchanan)
Fig. 1 *Glossogobius giuris* (Hamilton–Buchanan) 2. *Anabas testudineus* (Bloch) 3. *Colisa fasciatus* (Schneider) 4. *C.sota* (Hamilton–Buchanan)
Fig. 1 Channa barca (Hamilton–Buchanan) 2. C. marulius (Hamilton–Buchanan) 3. C. orientalis (Bloch & Schneider) 4. C. punctatus (Bloch)
Fig. 1 Channa stewartii (Payfair) 2. C. striatus (Bloch) 3. Macrognathus aral (Bloch & Schneider) 4. M. panceus (Hamilton–Buchanan)
Fig. 1 Mastacembelus armatus (Lacepede) 2. Chaudhuria indica (Yazdani) 3. C. khajuria (Talwar, Yazdani & Kundu) 4. Tetraodon cutcutia (Hamilton-Buchanan)
1. MAP OF MEGHALAYA SHOWING DIFFERENT DISTRICTS AND IMPORTANT LOCALITIES
2. MAP OF MEGHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
3. MAP OF MEGHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
4. MAP OF MEGHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
5. MAP OF MEGHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
6. MAP OF MEGHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
7. MAP OF MEGLALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
8. MAP OF MEGHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
9. MAP OF MEGHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
10. MAP OF MEGLHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
11. MAP OF MEGLALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
12. MAP OF MEGHALAYA SHOWING DISTRIBUTION OF DIFFERENT GENERA
Predorsal scales 15 or 16...............................................................5.

5. A large black ocellus on caudal fin base; numerous white spots on body and fins. .....C. marulius
No dark ocellus on caudal fin base lateral line 60-65.................................C. barca

**Channa barca** (Hamilton Buchanan)
(Plate XXXVII, Figure 1)

*Ophiocephalus barca* Hamilton Buchanan, 1822, *Fishes of Ganges*: 67, 367, pl. 35, fig. 20 (Type locality: Brahmaputra river near Goalpara, Assam).


*Material examined*: 2 examples (Khasi hills)

*Meristic data*:

*Distribution in Meghalaya*: Khasi hills (nongstoin, Nongkhlaw).

*Elsewhere*: India: Assam, West Bengal, Noth-West provinces; Bangladesh; Pakistan.

Minimum Maximum length reported so far: 97 mm 915 mm TL.

*Remark*: Not very common in Meghalaya.

Inhabits rivers.

**Channa marulius** (Hamilton Buchanan)
(Plate XXXVII, Figure 2)

*Ophiocephalus marulius* Hamilton Buchanan, 1822, *Fishes of Ganges*: 65, 367, pl.17, fig. 19 (Type locality: Gangetic provinces).


*Material examined*: 1 example (Garo hills)

*Meristic data*:

*Distribution in Meghalaya*: Garo hills (Garobadha)

*Elsewhere*: India: Throughout India; Bangladesh; Burma; Chin; Pakistan; Thailand; Srilanka.

Minimum Maximum length reported so far: 156 mm- 122mm TL.

*Remark*: Rarely occurring in Meghalaya.

Inhabits large lakes and rivers; prefers deep, clear stretches of water with sandy or rocky bottom.
**Channa Orientalis** Bloch and Schneider  
(Plate XXXVII, Figure 3)

*Channa orientalis* Bloch and Schneider, 1801, *Syst. Ichth.*, 496, pl. 90, fig.2 (Type locality: India).


*Local name*: “Dohthli” (Khasi).

*Material examined*: 655 examples (529 from Khasi hills, 61 from Jaintia hills, 65 from Garo hills)

*Meristic data*:

*Distribution in Meghalaya*: Khasi hills (Barapani, Byrnihat, Cherrapunjee, Jakrem, Kyrdemkulai, Kyllang, Mawphlang, Mylliem, Mawryngkhneng, Mawkyrnong, Mawbling, Mairang, Nongstoin, Nongkhlaw, Nongkluyllem, Shillong, sumer. Shillon Peak, Sohiong, Sohryngkham, Syrkon, Upper Shillong, Umroi, Umtham, Umran, Umyntar, Umsamlem, Weliol), Jaintia hills (Dawki, Garrampani road, Jowai, Khanduli, Khleriat, Muktapur, Mynsaw, Nartiang, Passi, Shangpung, Thadleskein, Ummulong, Umlyngdoh), Garo hills (Anogiri, Baghmara, Dalu, Dalrigiri, Damra, Garobadhla, Rongram, Songsak, Selbalgiri).

*Elsewhere*: India: Throughout India; Bangladesh; Afghanistan; Burma; Hainan; Indo-China; Iran; Malaya; Malaya Archipelago; Nepal; Pakistan; Siam; Sri Lanka; Taiwan; Thailand; Yunnan.

*Minimum Maximum length reported so far*: 21 mm 332 mm TL.

*Remark*: Commonly occurring species collected throughout the states from different altitudes. It is to be noted that population occurring in Meghalaya is having less Dorsal, Pectoral, Anal and Caudal finrays and lateral line scales than described by Day (1889). Generally Meghalayan population is having Dorsal finrays 29-33 (var. 32-37), Pectoral fin rays 13 (var. 14-15), Anal fin rays 17-22 (var. 20-23), Caudal fin rays 10 (var. 14) and lateral line scales 37-40 (var 40-50).

Inhabits mountain streams and low land waters, especially paddy fields.

**Channa punctatus** (Bloch)  
(Plate XXXVII Figure 4)

*Ophiocephalus punctatus* Bloch, 1793, *Naturges ausland. Fische*, (7): 139, pl. 358 (Type locality: rivers and lakes of Coromondal Coast).


*Local name*: “Dohthli” (Khasi).

*Material examined*: 40 examples (18 from Khasi hills, 22 from Garo hills).

*Meristic data*:
**Distribution in Meghalaya**: Khasi hills (Barapani, Kyrdemkulai, Sumer, Umran, Umsning), Jaintia hills (Dawki), Garo hills (Baghmara, Bozengdoba, Dalu, Darugiri, Garobadha, Phulbari, Ronsangiri, Rongrengiri, Songsak).

**Elsewhere**: India: Throughout India; Afghanistan; Bangladesh; Burma; China; Malaya; Nepal; Pakistan; Polynesia; Sri Lanka; Tahiti.

Minimum Maximum length reported so far: 80 mm - 310 mm TL.

**Remark**: Commonly occurring species, recorded both from lower and higher altitude.

Inhabits freshwater ponds, tanks, streams and rivers.

**Channa stewartii** (Payfair)

(Plate XXXVIII, Figure 1)

*Ophiocephalus stewartii* Playfair, 1867, *Proc. zool. Soc. Lond.*, 14, pl. 77, fig. 3 (Type locality: Cacher, Assam).

**Channa stewartii**: Talwar and Jhingran, *Inland Fishes* vol. 2: 1021.

Local name: “Dohthli” (Khasi)

**Material examined**: 476 examples (373 from Khasi hills, 62 from Jaintia hills, 41 from Garo hills).

**Meristic data**:


**Distribution in Meghalaya**: Khasi hills (Barapani, Cherrapunjee; Jakrem, Kyrdemkulai, Lailad, Mawpat, Mawsmai, Mawblang, Mawphlang, Mairang, Mylliem, Mawkyndreng, Mawsynram, Nongpoh, Nongkhlaw, Nongkhyllem, Nongstoin, Pynursla, Rambrai, Shillong, Sumer, Sonapahar, Syrkon, Sohiong, Ummir, Umtyangar, Umsning, Umran, Upper Shillong, weiloi). Jaintia hills (Dawki, Garrampani road, Jowai, Khanduli, Muktapur, Thadleskein, Ummulong), Garo hills (Baghmara, Anogiri, Darugiri, Damalrigi, Dewagiri, Nagalribra, Rongram, Selbalgiri, Damra, Wageasi).

**Elsewhere**: India: Eastern Himalayas, Arunachal Pradesh, Bihar, West Bengal; Nepal.

Minimum Maximum length reported so far: 15 mm - 459 mm TL.

**Remark**: Commonly occurring species. Meghalayan population is generally having less than described by Day (1889), Talwar and Jhingran (1991). In the present population Dorsal finrays 3434-36 (var. 39-40, Pectoral finrays 13-14(var. 17), Anal fin rays 21-23(var. 27) and lateral line scales 40-47) var. 47-50.

Inhabits both running and stagnant waters.

**Channa striatus** (Bloach)

(Plate XXXVIII, Figure 2)


Local name: “Dohthli” (Khasi)

Material examined: Not collected by the author but reported from Meghalaya.

Meristic data:

Distribution in Meghalaya: Jaintia hills, Garo hills.

Elsewhere: India: Throughout India; Bangladesh; Burma; Honolulu (Introduced); Malaya; Malaya Archipelago; Nepal; Pakistan; Philippines; Srilanka; South China; Thailand.

Minimum Maximum length reported so far: 300 mm 915 mm TL. Remark Not very common in Meghalaya.

Inhabits freshwater ponds, streams and tanks; prefers stagnant muddy water and grassy tanks.

Key to the Genera of Family Mastacemmelidae

1. Dorsal fin spines 32 or less; rostrum relatively large; in some species concave ventral surface lined with toothplates; rim of tubular anterior nostril with 6 finger like projections. Preorbital and Preopercular spines absent................................................................. Macrognathus

Dorsal fin spines 33 or more; rostrum relatively small, never concave ventrally or with rostrum toothplates; rim of anterior tubular nostril with 2 fingerlike projections and 2 broad based flap. Preopercular spine usually present, preorbital spine invariably present............... Mastacembelus

71. Genus Macrognathus Lacepede


Key to the species

1. Rostrum with concave ventral surface lined with paired toothplates............................ M. Aral

Rostrum rounded in cross section, without tooth plates. Caudal finrays 11-13, Dorsal fin with 24-26 spines and 30-42 soft rays................................................................. M. pancalus

Macrognathus aral (Bloch and Schneider)

(Plate XXXVIII, Figure 3)

Rhynchobdella aral Bloch and Schneider, 1801, Syst. Ichth., 479, pl. 89 (Type locality: Tranquebar).


Local name: “Kha Bain” (Khasi)

Material examined: 5 examples (1 from Jaintia hills, 4 from Garo hills).
Meristic data:

Distribution in Meghalaya: Jaintia hills (Dawki, Muktapur), Garo hills (Dalu, Garobadha, Phulbaari, Tura).

Elsewhere: India: Throughout India; Bangladesh; Borneo; Burma; Indo-China; China; Java; Malaya Peninsula; Moluccas; Nepal; Pakistan; Siam; Sri Lanka; Sumatra; Thailand; Vietnam.

Minimum Maximum length reported so far: 141 mm  383 mm TL.

Remark: Very rarely occurring in Meghalaya.
Inhabits fresh and brackish water both running and stagnant.

*Macrognathus pannculus* Hamilton Buchanan

(Plate XXXVIII, Figure 4)

*Macrognathus pannculus* Hamilton Buchanan, 1822, *Fishes of Ganges* : 30. 364, pl. 22 fig. 7. (Type locality: tanks of Gangetic provinces).


Local name: “Kha tynriew” (Khasi)

Material examined: 12 examples (3 from Khasi hills, 3 from Jaintia hills, 6 from Grao hills)

Meristic data:
D.xxvii 30-42, P. 17-19, A. iii. 31-46, C. 12.

Distribution in Meghalaya: Khasi hills (Barapani, Balat), Jaintia hills (Dawki, Muktapur), Garo hills (Dalu, Garobadha, Phulbaari, Tura, Damra).

Elsewhere: India: Throughout India; Bangladesh; Pakistan.

Minimum Maximum length reported so far: 58 mm  180 mm TL.

Remark: Not very common in occurrence, recorded mainly from lower altitude.
Inhabits rivers of plains and estuaries.

72. *Mastacembelus* Scopoli


Diagnostic characters of Species
Dorsal and anal fin broadly joined to caudal; caudal fin outline merged with that of dorsal and anal fin; caudal fin with 14-17 rays. Gape of mouth extending to below posterior bonstril or beyond..........

*Macrognathus armatus* (Lacepede)

(Plate XXXIX, Figure 1)


*Local name*: "Kha - Bancin" (Khasi)

*Material examined*: 10 examples (1 from Khasi hills, 9 from Garo hills).

*Meristic data*:

<table>
<thead>
<tr>
<th>Character</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>34-36</td>
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<tr>
<td>P</td>
<td>7-9</td>
</tr>
<tr>
<td>A</td>
<td>34-36</td>
</tr>
<tr>
<td>C</td>
<td>8-10</td>
</tr>
</tbody>
</table>

*Distribution in Meghalaya*: Khasi hills (Balat), Jaintia hills, Garo hills (Baghmara, Bozengdoba, Damra, Phulbari, Rongrengiri).

*Elsewhere*: India: Throughout India; Bangladesh; Baluchistan; Burma; Cambodia; South China; Hainan Island; Java; Malaya; Nepal; Pakistan; Srilanka; Sumatra; Thailand; Tonkin.

*Minimum Maximum length reported so far*: 85 mm - 610 mm TL.

*Remark*: Not very common in Meghalaya; recorded so far from lower altitude only.

Inhabits fresh and brackish waters in plains and hills.

Diagnostic characters of Genus of Family Chaudhuriidae

Body considerably elongated and naked. Snout conical with rostral appendage indistinct or absent. Mouth wide, its gape extending as far as anterior edge of eye. Eyes small and prominent, dorso-lateral in position. Dorsal fin with 34 - 44 rays; anal fin with 34-43 rays; no fin spine. ......... *Chaudhuria*

73. *Genus Chaudhuria Annandale*


Key to the Species

1. Caudal fin confluent with dorsal and anal fin; branchiostegal rays 6..............................2.
2. Pectoral fin with 19 or 20 rays; caudal fin with 12 rays, head conical ......................... *C. khajurai*

Pectoral fin with 7 - 9 rays; caudal fin with 8 or 10 rays, head rather depressed............ *C. indica*

*Chaudhuria indica* (Yazdani)

(Plate XXXIX, Figure 2)


*Local name*: "Khabsein" (Khasi)

*Material examined*: 59 examples (51 from Khasi hills, 8 from Garo hills).

*Meristic data*:

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>D</td>
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<td>P</td>
<td>7-9</td>
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<tr>
<td>A</td>
<td>34-36</td>
</tr>
<tr>
<td>C</td>
<td>8-10</td>
</tr>
</tbody>
</table>
**Distribution in Meghalaya**: Khasi hills (Lailad, Kyrdemkulai, Nongpoh, Nongkhyllum, Patharkhama, Umsning, Sumer), Garo hills (Darugiri).

**Elsewhere**: India: Restricted so far within Meghalaya only.

Minimum Maximum length reported so far: 33 mm 92 mm TL.

**Remark**: Not very common in occurrence; recorded mainly from muddy bottom of streams and rivers of Khasi hills only.

Inhabits muddy bottom or submerged vegetation along the edges of streams and rivers of Khasi hills only.

Inhabits muddy bottom or submerged vegetation along the edges of streams which have overhanging vegetation.

**Chaudhuria khajuriai** (Talwar, Yazdani and Kundi)

(Plate XXXIX, Figure 3)


**Local name**: ""Khabseine" (Khasi)

**Material examined**: Not collected by the author but reported from Meghalaya.

**Meristic data**:


**Distribution in Meghalaya**: Garo hills

**Elsewhere**: India: Assam.

Maximum length reported so far: 90 mm TL.

**Remark**: Rarely occurring in Meghalaya; so far reported from Garo hills only.

Inhabits muddy bottom of streams and rivers.

**Diagnostic characters of Genus of Family Tetraodontidae**

Nasal organ an elevated, short, rounded tube with a terminal opening. Dorsal fin with 7–13 rays. anal fin with 8-12 rays, pectoral fin with 14-21 rays.................................................................

74. **Genus Tetraodon** Linnaeus


**Diagnostic characters of Species**

Body compressed laterally, dorsal profile rising nearly rectilinear to midst of back, than sloping gradually to caudal fin. Interorbital space flat. Dorsal fin with 10-13 rays. anal fin with 10-12 rays.
lower border of eye above level of mouth corner. A simple circular nasal cavity present; body without spines....................................................................................................................... *T. cutcutia*

*Tetraodon cutcutia* Hamilton-Buchanan

(Plate XXXIX, Figure 4)

*Tetraodon cutcutia* Hamilton Buchanan, 1822, *Fishes of Ganges* : 8 : 362, pl. 18, fig. 3 (Type locality: Ganges river).


**Material examined**: 9 examples (1 from Khasi hills, 2 from Jaintia hills, 6 from Garo hills).

**Meristic data**:
- D.10-13, P.18-21, A.10-12, C. 7.

**Distribution in Meghalaya**: Khasi hills (Shella), Jaintia hills (Dawki, Muktapur), Garo hills (Baghmara, Phulbari, Mahadev, Tura).

**Elsewhere**: India: Assam, West Bengal, Bihar, Orissa; Bangladesh.

**Minimum Maximum length reported so far**: 30 mm 90 mm TL.

**Remark**: Not very common in Meghalaya; recorded so far from lower altitude only.

Inhabits fresh and brackish waters.

**Distribution of different species within Meghalaya**

<table>
<thead>
<tr>
<th>Species</th>
<th>Khasi Hills</th>
<th>Jaintia Hills</th>
<th>Garo Hills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Notopterus chitala</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>2. <em>Notopterus notopterus</em> (Pallas)</td>
<td>–</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>3. <em>Gudusia chapra</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>4. <em>Setipinna phasa</em> (Hamilton-Buchanan)</td>
<td>–</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>5. <em>Catla catla</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>6. <em>Chagunius chagunio</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>7. <em>Cirrhinus mrigala mrigala</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td>8. <em>Cirrhinus reba</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>9. <em>Cyprinus carpio var. communis</em> (Linnaeus)</td>
<td>+</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td><em>Cyprinus carpio var. specularis</em> Lacepede</td>
<td>+</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>10. <em>Labeo bata</em> (Hamilton-Buchanan)</td>
<td>–</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>11. <em>Labeo bata</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Common Name</td>
<td>Scientific Name</td>
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<tr>
<td>12.</td>
<td><em>Labeo calbasu</em> (Hamilton-Buchanan)</td>
<td>+ + +</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td><em>Labeo dero</em> (Hamilton-Buchanan)</td>
<td>- + -</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td><em>Labeo gonius</em> (Hamilton-Buchanan)</td>
<td>+ + +</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td><em>Labeo nandina</em> (Hamilton-Buchanan)</td>
<td>+ - -</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td><em>Labeo pangusia</em> (Hamilton-Buchanan)</td>
<td>+ - +</td>
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<tr>
<td>17.</td>
<td><em>Labeo rohita</em> (Hamilton-Buchanan)</td>
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<tr>
<td>18.</td>
<td><em>Neolissochius hexagonolepis</em> (McClelland)</td>
<td>+ + +</td>
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<tr>
<td>19.</td>
<td><em>Neolissocheilus hexastichus</em> (McClelland)</td>
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<tr>
<td>20.</td>
<td><em>Osteobrama coto coto</em> (Hamilton-Buchanan)</td>
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<tr>
<td>21.</td>
<td><em>Puntius chola</em> (Hamilton-Buchanan)</td>
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<td>22.</td>
<td><em>Puntius clavatus</em> (McClelland)</td>
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<td><em>Puntius conchonius</em> (Hamilton-Buchanan)</td>
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<td>24.</td>
<td><em>Puntius gelius</em> (Hamilton-Buchanan)</td>
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<td></td>
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<tr>
<td>25.</td>
<td><em>Puntius phutunio</em> (Hamilton-Buchanan)</td>
<td>+ - +</td>
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<tr>
<td>26.</td>
<td><em>Puntius sarana sarana</em> (Hamilton-Buchanan)</td>
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<tr>
<td>27.</td>
<td><em>Puntius shalynius</em> Yazdani and Talukdar</td>
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<td>28.</td>
<td><em>Puntius sophore</em> (Hamilton-Buchanan)</td>
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<td>29.</td>
<td><em>Puntius terio</em> (Hamilton-Buchanan)</td>
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<tr>
<td>30.</td>
<td><em>Puntius ticto</em> (Hamilton-Buchanan)</td>
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<tr>
<td>31.</td>
<td><em>Tor chelynoides</em> (McClelland)</td>
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<td><em>Tor putitora</em> (Hamilton-Buchanan)</td>
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<td>33.</td>
<td><em>Tor Tor</em> (Hamilton-Buchanan)</td>
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<td><em>Chela cachius</em> (Hamilton-Buchanan)</td>
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<td><em>Chela laubuca</em> (Hamilton-Buchanan)</td>
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<td><em>Salmostoma bacaila</em> (Hamilton-Buchanan)</td>
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<td>37.</td>
<td><em>Salmostoma phulo</em> (Hamilton-Buchanan)</td>
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<td><em>Securicula gora</em> (Hamilton-Buchanan)</td>
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<td><em>Ambylypharyngodon mola</em> (Hamilton-Buchanan)</td>
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<td>44</td>
<td>Barilius tileo</td>
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<td>Psilorhynchus sucatio</td>
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<td>Balitora brucei</td>
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<td>Aborichthys garoensis</td>
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<td>Nemacheilus beavani</td>
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<td>73</td>
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<td>Nemacheilus corica</td>
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<td>75</td>
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<td>Status 2</td>
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<td><em>Nemacheilus elongatus</em> (Sen and Nalbant)</td>
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<td>77.</td>
<td><em>Nemacheilus multifasciatus</em> Day</td>
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<td>+</td>
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<td>78.</td>
<td><em>Nemacheilus reticulofasciatus</em> (Singh and Banasescu)</td>
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<td><em>Nemacheilus savona</em> (Hamilton-Buchanan)</td>
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<td>+</td>
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<td><em>Nemacheilus scaturigina</em> (McClelland)</td>
<td>-</td>
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<td>81.</td>
<td><em>Nemacheilus sijuensis</em> (Menon)</td>
<td>-</td>
<td>-</td>
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<td>82.</td>
<td><em>Nemacheilus sikmaiensis</em> Hora</td>
<td>+</td>
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<tr>
<td>83.</td>
<td><em>Lepidocephalus annandalei</em> (Chaudhuri)</td>
<td>+</td>
<td>-</td>
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<tr>
<td>84.</td>
<td><em>Lepidocephalus bermorei</em> (Blyth)</td>
<td>+</td>
<td>-</td>
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<tr>
<td>85.</td>
<td><em>Lepidocephalus caudofurcatus</em> Tilak and Hussain</td>
<td>-</td>
<td>+</td>
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<tr>
<td>86.</td>
<td><em>Lepidocephalus guntea</em> (Hamilton-Buchanan)</td>
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<td>+</td>
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<tr>
<td>87.</td>
<td><em>Lepidocephalus irrorata</em> Hora</td>
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<td>88.</td>
<td><em>Pangio pangia</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>-</td>
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<tr>
<td>89.</td>
<td><em>Sonileptes gongota</em> (Hamilton-Buchanan)</td>
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<td>+</td>
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<td>90.</td>
<td><em>Botia dario</em> (Hamilton-Buchanan)</td>
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<td>+</td>
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<tr>
<td>91.</td>
<td><em>Botia histrionica</em> Blyth</td>
<td>-</td>
<td>-</td>
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<tr>
<td>92.</td>
<td><em>Botia lohachata</em> Chaudhuri</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>93.</td>
<td><em>Botia rostrata</em> Gunther</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>94.</td>
<td><em>Aorichthys seenghala</em> (Sykes)</td>
<td>+</td>
<td>-</td>
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<tr>
<td>95.</td>
<td><em>Batasio batasio</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>96.</td>
<td><em>Batasio tengana</em> (Hamilton-Buchanan)</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>97.</td>
<td><em>Mystus bleekeri</em> (Day)</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>98.</td>
<td><em>Mystus cavasius</em> (Hamilton-Buchanan)</td>
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Pillai, R. S. and Yazdani, G. M. 1974, Two new species and two records of *Lepidocephalichthys* Bleeker (Pisces : Cobitidae) from Assam and Meghalaya, India, with a key to the known species; *J. zool. Soc. India*, **26** (1 and 2) : 11-18.

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ECOLOGY AND GENERAL FAUNAL RESOURCES OF SOME WETLANDS IN GARO HILLS

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INTRODUCTION

During recent years particularly after Ramsar Convention on Wetlands of International Importance and as Waterfowl habitat (1971), considerable attention has been paid to the study of ecology and bioresources of wetlands throughout the world, not only because of their socio-economic values in providing food and fodder and sustaining sizable human population settled around these but also due to their role in harbouring and conserving a diverse variety of fauna and flora. The true wetlands, which represent highly dynamic systems, where temporal changes in biotic community structure occur during their transition from aquatic to mesophytic system, include all areas of "Marsh, fen, peatland or water, whether natural or artificial, permanent or temporary with water that is static or flowing, fresh, brackish or salt including marine water, the depth of which at low tides does not exceed six meters (Ramsar Convention). Because of certain lacunae in the definition, slightly modified versions have been given alongwith the attributes of wetlands by several workers. Cowarlt et. al. (1979) definition, as modified by U.S. Department of Interior, Fish and Wildlife Authority, states that wetlands are transition areas between aquatic and terrestrial system where the water table is usually at or near the surface of land and is covered by shallow waters. The Ministry of Environment and Forest, Govt. of India (Anon, 1990) included in the Directory of Wetlands all waterbodies-lakes, natural or artificial, reservoirs and tanks etc.

Although the importance of wetlands has long been recognised in the country, most of the earlier works were confined to basic limnological studies including physico-chemical nature of water and plankton, either from academic or from fishery viewpoints in few selected lakes, ponds or reservoirs (Ganapati, 1940, 1943 and 1959, Ganapati et. al, 1953; Chacko and Krishnamurthy 1954; Srinivasan, 1966, 1970 and 1976; Zafar, 1967 and Haniffa 1978 from South India, Das and Srivastav, 1956a, 1956b and 1959; Chakraborty et. al, 1959, Singh, 1960. Sahai and Sinha, 1964, Ray et. al, and Verma, 1969 from North India; Michael, 1964; Mitra and Mazumdar, 1972, Jana, 1979, Khan. 1979, 1981, Ramkrishna and Sarkar, 1982 Datta et. al 1984. 1986 Verma and Datta Munshi, 1987, Saha et. al, 1986 and Das and Verma, 1993 from Eastern India; Yadav et. al, 1987 from North-East (except Meghalaya) and Kant and Kachroo. 1977, Khan and Zutshi. 1980 and Yousuf 1991 from Kashmir lake. It is only during last few years that the wetlands have been taken in totality from biodiversity and management viewpoints. However, barring few (De et. al, 1989; Ghosh, 1990 and Ghosh and Chattopadhyaya, 1990), other reports are general overview of the wetlands and their importance (Biswas, 1974, Gopal, 1982; Anon 1985; Ghosh, 1987, 1990; Ghosh and Sen. 1987; Balakrishnan Nair, 1989 etc.). Concentrated efforts have not been made to present an overall picture of the physico-
chemical and biological properties including important groups of fauna and flora of freshwater bodies of a particular region as a whole. It is with this viewpoint the present work was undertaken to assess the general physico-chemical and biological properties and fauna of a particular region of the country viz Meghalaya State, under State Fauna programme of Z.S.I. The earlier works on Meghalaya were generally confined to waterbodies, both lotic and lentic, situated in or around Shillong Town (Alfred and Chellappa, 1978, Alfred et. al. 1978, Thapa, 1981 and Gupta et. al 1992 on some ponds and lakes, Gupta and Michael, 1983, 1992, Meran Ao et. al, 1984 and Gupta, 1994 on several streams around Shillong etc.). The other waterbodies of the State, which were the subject of detailed limnological studies are Tasak and Chitmereng lakes in East Garo Hills (Das, 1981). Fish Fauna of the region have been worked by several workers (Hora, 1923. Pillai and Yazdani, 1977 and Pardhasardhi and Alfred, 1984 etc.) The shrimps have been studied by Tiwari (1955). Amphibian fauna were studied by Pillai and Chanda (1981) and Chanda (1993).

The present report is based on a survey of few waterbodies of Meghalaya, particularly of Garo Hills during, 1992 and also on the available literature on Fishes, Amphibians and Birds. Since it is basically a hill state, most of the aquatic resources are confined to the running waters and wetlands are scanty, which includes few lakes, ponds and marshes. Besides, there were a large number of small pools along the course of streams, where water stays for quite sometime during dry seasons. Since these pools exhibited somewhat better conditions than running streams in respect of plankton etc., they have been mainly taken into consideration. In many cases these pools were attached by small channels to main stream but the impact of fast current of the streams was not felt in the pools where the water was almost stagnant.

DESCRIPTION OF THE STUDY AREA AND SAMPLING STATIONS

Meghalaya State lies in the north-eastern region of the country between latitude 25° 47'N and 26° 10'N and latitude 69° 47' E and 92° 47' E with an area of 22,500 sq km. It is essentially a hilly region with high and low hills with altitude varying between 600 and 1950 m. The hills are distinctly divisible into Khasi, Garo and Jaintia hills. The water resources of the state, like any other hill state, mainly comprise of streams, big and small, brooks, streamside pools, few lakes, reservoirs and ponds, and also few shallow marshy wetlands in the plains region bordering other states. Garo Hills, which comprise three districts, viz. East Garo Hills, West Garo Hills and South Garo Hills, covers a small tract in the west of the state with an approximate area of 8,160 sq km.

The climate of the state is typical tropical monsoon type with heavy rainfall (annual mean 7200 mm). The temperature varies greatly between Khasi and Garo Hills. Garo hills are comparatively warmer than Khasi hills where maximum temperature goes upto 35° C as compared to 25° C in the latter during peak summer period.

Studies were conducted and samples collected from the following sampling stations/locations.

SOUTH GARO HILLS

Station-1 : River Simsang and associated pools near Baghmara town : The river at this point was broad, shallow and slow flowing. The depth varied between 2-3.5 ft. A number of pools were formed on both sides of the river. Samples were collected mainly from these pools.
Station-2: Small stream and stagnant pool in Balphakram National park, 9 km from the gate:
This was a small very slow flowing stream with several small pools. Dense growth of
macrophytes was observed in the pools and in the marginal areas of the stream.

Station-3: Mahadeo river and pools near Mahadeo:
The river Mahadeo originates from Balphakram and flows towards Bangla Desh, near Mahadeo village. A big deep pool and several small pools were formed beside the river. The big pool was connected from both ends to the river. With the result water was slowly agitated. No major macrophytes were observed.

Station-4: Kanai River and pool near Kanai village:
Twenty km from Mahadeo towards Baghmara. This was a typical small hill stream with almost separated pool. Water seeped through boulders to meet the main river.

Station-5: Deep pool connected with river Simsang near Siju village:
The river at this point formed a big, almost circular, very deep pool. Several fishermen were operating their nets. The pool was inhabited by a large number of fish species which constituted good fishery.

Station-6: Small pond situated inside Siju Wild Life Sanctuary:
This was a small pond situated inside the sanctuary with extremely soft muddy bottom. Water was completely stagnant with depth varying around 0.75m.

Station-7: Stream at Siju Cave:
The swiftly flowing stream coming from Siju cave meets a small stream near its mouth which in turn meets Simsang river. Sampling was done about 10 meters inside the cave where sufficient light was available to carry out the sampling work.

EAST GARO HILLS

Station-8: Ninget Stream and small pools:
Situated about 3 km from Rongrangiri towards Songsek. Several small pools were formed near the moderately flowing stream.

Station-9: Tasck Lake:
It was an important natural tectonic lake, situated about 7.5 km from Songsek and covered an area of approximately 72 ha. It was surrounded by forest from all sides. The lake had an outlet and an inlet.

Station-10: Chitmerang Lake:
This small lake was situated close to Tasak lake and covered an area of 7.94 ha. The lake contained plenty of macrophytes including water hyacinth at one side.

Station-11: Rongthang river and associated pools:
This was a small moderately flowing stream with an isolated pool, situated on Nangal Babra road, about 1 km from William Nagar Town.

Station-12: Simsang river and associated pools near Rongrongiri:
The fast flowing stream formed a small but connected pool.
WEST GARO HILLS DISTRICT

Station-13: Thebrangiri soil conservation pond: This was situated about 7 km from Rongram on Phulbani road. The pond was almost of a triangular shape with depth varying between 0.75 to 2.75 m. Macrophytes were in abundance.

Station-14: Rongmachak stream and associated pool: This was situated near Rongadat, 40 km from Rongram on Phulbani Road near I.B. It was a very slow flowing stream with several stagnant pools with turbid water.

Station-15: Massapani beel: This beel was basically formed by river Gungerami. It was a shallow large beel situated 7 km before Phulbani Town. It was a typical marshy beel with muddy bottom. The depth varied between 1.0 - 1.75 m. The beel was used for fishing and brick making.

Station-16: Manda river and pool near Nagra para village: It was situated nearly 5 km from Dainadubi town. It was a shallow broad and fast flowing river originating from Arbella hills. Small pools were formed along the river.

Station-17: Manikgunj beel on Damra Mednipathar Road: It was situated in the plains and was surrounded by forest and beetle nut plantation. The beels were full of macrophytes.

Station-18: Moamari marsh near Bajangdoba: It was formed by a shallow depression with depth varying between 0.3 and 1 m. Paddy was cultivated on one side of the marsh.

Station-19: Small roadside pond near Assimgiri village: It was situated on N.H. 51 between Mandal and Bajangdoba. It was a small marshy pond with shallow stagnant water.

Station-20: Anugiri Soil conservation pond: It was situated near Anugiri on N.H. 51 between Rongram and Bajangdoba. Several small pools were located on both sides of the road. These were recently constructed ponds with depth varying between 2 and 3 m. The ponds had steep littoral gradients.

Station-21: Dalu Roadside marsh: It was situated at Dalu point near International border. A marsh with stagnant water connected with paddy fields.

Station-22: Small pond at Silbalgiri village. It was situated about 7 km from Rongram. It was a small pond surrounded by forests from all sides with depth varying between 0.6 and 1.2 m. It was full of macrophytes and floating leaf litter.

Station-23: Damlagiri wetland: It was situated on Tura Garobadh Road. A large marshy wetland with full of reeds, used both for paddy cultivation and fisheries. The depth varied approximately between 0.4 to 2.0 m.

MATERIALS AND METHODS

Water samples were collected from at least two different sites of each waterbody and analysed for temperature, pH, transparency, dissolved oxygen, free carbon dioxide, alkalinity, hardness and chlorides in the field itself. Nutrients were analysed in laboratory from the samples preserved with 40 mg/l mercuric chloride. The analysis were done following Standard Methods (APHA 1972).
Macrophytes were collected from the marginal area only qualitatively. Qualitative and quantitative phytoplankton collection was done by filtering 2 litres of water through Whatman filter paper No. 4 and preserved in lugols solution. Zooplankton samples were collected with the help of plankton net made of No. 25 mesh bolting nylon. While qualitative samples for relative density studies were collected by hauling the net thrown randomly from the shore, quantitative samples were collected by filtering 50 litres of water through net. The samples were preserved in 4% formalin. The benthos of soft soil and sand were collected from marginal areas by placing an enamel tray of 30x25x5 cm approx. upside down and then inserting a thin but strong iron plate so that the surface of the tray was fully covered. The closed tray was taken out immediately and contents put in a bowl with water and shaken vigorously and sieved through a sieve of 0.5 mm mesh size. Macrobenthos were hand picked with the help of a fine sable hair brush, blunt head forceps and magnifying glass. Insects, shrimps and other nekton were collected by dragging a 25x25 cm frame net of 200 mesh through a 2m long section of the weedbed or by putting a metal/wooden quadrat in case of streams and washing the stone boulders and disturbing the substratum upstream with net held downstream.

Fishes and amphibian samples were collected randomly as and when available. Informations regarding their availability in the region were also collected from local people as well as earlier reports. Similarly lists of common marsh and aquatic birds and amphibians were compiled based on both, the observations made during the present study as well as observations of earlier workers.

RESULTS

1. PHYSICO-CHEMICAL CHARACTERISTICS OF WATER:

The physicochemical parameters of water quality analysed at all 23 stations are shown in Table 1.

a) Depth: Most of waterbodies studied were shallow pools or marshes and excepting few lakes/ponds, the mean depth was below 1 meter. The waterbodies above 1 meter deep were Station 3 (Mahadeo river pool, with a mean depth of 2.2m), Station 5 (Simang river pool, near Siju, with a mean depth of 3.0 m.), Station 9 (Tasek Lake, 1.55m), Station 10 (Chitmereng lake, 1.75m) and Station 16 (Manikgunj beel, 1.7m)(Table 1).

b) Temperature: The air and water temperature of different stations at the time of sampling are given in Table-1. During this period of the year (March), air temperature at different stations varied between 22.0°C and 28.0°C in South Garo Hill district (Stations 1-11), between 22°C and 28°C, in East Garo Hills (Stations 8-12) and between 24.0°C and 31.0°C, in West Garo Hills (Stations 13-23). The corresponding range of water temperature (surface) was 19.2-23.1°C, 18.5-22.0°C and 20.0-27.2°C respectively. During this period of the time, water temperature was always lower than air temperature. However, the differences in air and water temperature were not very wide and ranged between 2.0 and 5.0°C at different stations. Maximum difference of 5°C was recorded from comparatively deeper waterbodies like Mahadeo river pool (Station 3), Simang River pool near Siju (Station 5), Chitmereng lake (Station 10) and Manikgunj beel (Station 17), where mean depths were above 1.6 m.
c) **Transparency** :- Light penetration by Secchi disc was only determined in deeper waterbodies having depth of more than 1.5 m or above, which included Stations 3, 5, 9, 10, 13, 15, 17 and 20. When Secchi disc transparency as percent of total depth was calculated, the maximum value (38.6%) was found at Station 3, followed by Station 13 (36.3%) and Station 5 (30.0%). The lowest values were observed at station 15 (20.0%), which was a beel situated in plains.

d) **pH** :- The pH of almost all waterbodies studied, except Station 15 (Massapani) were slightly acidic and varied between 6.0 and 6.8. The pH in Massapani was slightly alkaline (7.5). This particular waterbody was situated in the plains of the State bordering Assam and had muddy bottom. The beel was subjected to increased human interferences for various purposes.

e) **Dissolved Oxygen** :- Dissolved oxygen content of all the waterbodies were quite high excepting Station 7 (Siju cave mouth), where due to insufficient light penetration, the reduction in D.O. values was observed. Higher values were recorded from the pools and ponds where macrophytes were in abundance (Stations 8, 9, 10, 12, 19 and 21) and in fast flowing streams (Station 16).

f) **Free carbon-di-oxide** :- The free carbon-di-oxide contents of most of water bodies were of little significance. The values ranged between 0 to 8.5 mg/l. Higher values were recorded from marshy wetlands of lower altitudes (Stations 15, 18 and 21).

h) **Chlorides** :- Chloride contents of wetlands studied were again very low. The values were below 8.0 mg/l except station 15 (16.2 mg/l) and Station 21 (12.0 mg/l).

2. **MACROPHYTES**

   The macrophyte flora of the wetlands studied comprised of a number of species which included both, free floating as well as fixed rooted forms. The free floating forms included the species belonging to genera *Pistia*, *Lemma*, *Utricularia*, *Salviana*, *Azola* and *Ceratopteris*. Among rooted forms, the important species belonged to the genera *Phragmites*, *Typha*, *Vallisneria*, *Hydrilla*, *Najas*, *Nymphaea*, *Nymphoides* and *Nelumbium*. Besides these aquatic forms the banks of several wetlands contained *Ipomoea*, *Jussiaea*, *Enhydris* and *Marsilla* etc.

3. **PHYTOPLANKTON**

   Phytoplankton flora of the wetlands composed of six major groups viz Myxophyceae, Chlorophyceae, Bacillariophyceae Chrysophyceae, Dinophyceae and Euglenophyceae. The blue green algae (Myxophyceae) were represented by six genera viz *Oscillatoria*, *Microcystis*, *Spirulina*, *Anabaena*, *Merismopedia* and *Nostoc*. The green algae (Chlorophyceae) comprised of 12 genera, which were *Pandorina*, *Eudorina*, *Cosmarium*, *Desmidium*, *Closterium*, *Saustrum*, *Spirogyra*, *Selanastrum*, *Scenedesmus*, *Ankistrodesmus*, *Pediasastrum* and *Rhizoslonium*. Diatoms (Bacillariophyceae) were represented by 9 genera, namely *Navicula*, *Fragillaria*, *Syendra*, *Melosira*, *Nitzchia*, *Tabillaria*, *Surerella*, *Cymbella* and *Diatom*. The golden brown algae (Chrysophyceae) were represented by only two genera, *Dinobryon* and *Synura*. Similarly Dinophyceae and Euglenophyceae were represented by two common genera each, the former by *Ceratium* and *Peridinium* and latter by *Euglena* and *Phacus*. (Table 2).
Different waterbodies were found to contain different set of species as their phytoplankton constituents. The highest number of genera were recorded from Station 23 (Damlagiri) followed by Station 3 (Mahadeo river pool) which harboured 19 genera. The lowest number of genera were recorded from Stations 7(8 genera), followed by stations 11 (10 genera) and 16 (11 genera).

The blue green algae were available at all Stations excepting Stations 12, 16 and 25. The green algae and diatoms were important contributors to total phytoplankton assemblage at all stations. Chrysophyceae were recorded from 16 Stations. The phytoflagellates belonging to Euglenophyceae were not available at Stations 2, 5, 13, and 16. At all other stations several species of *Euglena* and *Phacus* were seen in the sample.

While green algae were generally the dominant components of perennial ponds/lakes/marshes, the diatoms dominated the phytoplankton composition of streams and their pools. These two groups together contributed more than 60% of the total phytoplankton of most of the waterbodies studied except Station 6, where blue green algae dominated and at Station 7 where euglenoids were the chief constituents. The Stations where green algae dominated were Stations 4 (Kanai River pool, 38.6%), 9 (Task lake, 38.3%), 10 (Chitmereng lake, 25.4%), 13 (Thebrangiri S.C. pond, 30.2%), 15 (Masapani beel, 40.5%), 17 (Manikgunj beel, 39.4%), 18 (Moamari marsh, 35.0%), 18 (Assimgiri pond, 39.5%), 20 (Anugiri S.C. pond, 29.2%), 21 (Dalu, 34.6%), 22 (Silbalgiri pond, 34.8%), and 23 (Damlagiri, 41.8%). The diatoms dominated stations were 1 (Simsang R. pool, 53.8%), 2 (Balphakrum N.P. stream pool, 32.6%), 3 (Mahadeo R. pool, 40.2%), 5 (Simsang R. pool at Siju, 45.5%), 8 (Ninget stream, 38.2%), 11 (Rongthang R. pool, 44.2%), 12 (Simsang R. pool at Rongrongiri, 48.5%), 14 (Rongmachak stream pool, 44.0%) and 16 (Manda R. pool, 64.8%). Euglenoids were stabilised in almost all waterbodies and excepting Station 7, which represented a specialized condition, their occurrence varied between 10.0 and 20.3 irrespective of whether the waterbody was river pool or lake or beel. Golden brown algae (Chrysophyceae) also contributed between 5.2 and 24.3% at Stations where they were available. Their highest contribution was at Station 20 (Anugiri, 25.2%). The contribution of Dinophyceae varied between 5.0 and 10.5%, (Table 3).

The genera which contributed significantly to total phytoplankton density at most of the Stations, were *Cosmarium*, *Closterium*, *Straunatum*, *Spirogyra*, *Eudorina*, *Pandorina*, *Scenedesmus* and *Pediastrum* among green algae and *Synedra*, *Melosira*, *Nitzchia* and *Diatoma*, among diatoms, *Dinobryon* among Chrysophyceae and *Peridinium*, among Dinophyceae.

The numerical density of total phytoplankton varied considerably from one waterbody to another and generally ranged between 450/1 and 3930/1 except Station 7 where density was low (45/1) because of atypical condition. Higher densities were noticed in perennial part and beels like station 10 (Chitmereng lake, 3930/1), Station 15 (Massapani beel, 3520/1), Station 23 (Damlagiri, 3250/1), Station 9 (Tasek lake, 2872/1) and Station 19 (Assimgiri, 2125/1) etc. The lowest density was recorded from the pools of fast flowing streams or in the streams itself like Station 12 (Simsang R. pool at Ronrangiri, 450/1), Station 16 (Manda R. pool, 650/1) and Station 1 (Simsang R. pool at Baghmara, 972/1) (Table 3).
4. ZOOPLANKTON

Zooplankton fauna recorded during present investigations mainly belonged to Rotifera, Cladocera and Copepoda. Besides these three major groups, Protozoan, Ostracods and eggs and larvae of both benthos and fishes (all placed under the category 'Others') also contributed uniformly, though in small quantities and their contribution was not very significant from density as well as biomass viewpoints.

The total number of Zooplankton species recorded from various stations during present investigations was 29 (Table 4). Rotifers were represented by largest number of species (11) belonging to five families namely Brachionidae, Lecanidae, Trichoceridae, Filinidae and Synchaetidae. Family Brachionidae comprised of three species of Brachionus (B. calciferous Pallase, B. fulcatus Zachariah and B. quadridentatus Hermen) and two species of Keratella (K. tropica (Apstein) and K. quadrata (Muller)). Family Lecanidae subscribed only two species, i.e. Lecane (L) curvicornis (Muller) and Lecane (Monostyla) sp. Only one genus, Trichocera represented the family Trichocereeridae Family Asplanchnidae was represented by Asplanchina brightwelli Gosse, Family Synchaetidae by Polyartha vulgaris Carmlin and Family Filinidae by Filinia longiseeita Ehrenberg (Table 4).

Among Cladocera, eleven species belonging to ten genera and five families were recorded from various waterbodies. Except Family Sididae, which comprised of four species, (Pseudosida bidentata Herrick, Sida crystallina (O. F. Muller), Diaphanosoma sarsi Richards and D. excisum Sars), all other families were represented by one or two species only. Among Daphnids (Family Daphnidae), Ceriodaphnia cornuta Sar and Daphnia carinata King were the chief contributors. Family Moinidae was represented by only one species, Moina micrura Kurz. Similarly Bosmina longirostris (O. F. Muller) was the only representative of the family Bosminidae. Family Chydoridae comprised of three species but except Chydorus sphaericus (O. F. Muller), the other two species, Dunhevedia crassa King and Alona rectangula Sars were not recorded in much abundance.

The copepods were represented by lowest number of species i.e. seven. Among Calanoidea, Arctodiaptomus keifferi Reddiah, Neodiaptomus satanus Brehm, Heliodiaptonus vidvus Gurney, Philodiaptomus annae Apslein and Diaptomus sp. constituted the faunal composition. Among Cyclopoida only two species, Mesocyclops leuckarti (Claus) and Mesocyclops hyalinus Rehberg were recorded (Table 4).

The number of zooplankton species, like phytoplankton, differed from one water body to an other. Barring Station 7, the number of species in all other waterbodies generally varied between six and sixteen. The lowest number of species recorded was from station 16 (Manda R. pool) followed by Station 14 (Rongmachak, 8 species). Highest number of species (16) recorded from Station 23 (Damlagiri) followed by 14 species from Station 17 (Massapani) and Station 21 (Dalu) each. Station 13 harboured 13 species and Stations 1, 3, 9, 10, 15 and 18 contained 12 species each. The perennial lakes and large wetlands contained larger number of species than streams or small pools (Table 4).

The number of Rotifer species in different waterbodies varied between 3 and 7. Similarly, the number of Cladoceran species was also few and varied between 2 and 7. Copepods were represented by still fewer species which varied between 2 and 4.
The numerical density of total zooplankton also differed widely between different waterbodies and ranged between 55/1 and 535/1 (Table 5). Higher density was noticed in beels and lakes. Maximum numerical density was recorded from Station 23 (535/1). It was followed by station 15 (505/1), Station 18 (460/1), Station 9 (345/1) Station 21 (335/1) and Station 10 (310/1). Lowest density was recorded from Station 16 (55/1) followed by Station 12 (75/1) and Station 1 (90/1). No zooplankton were recorded from Siju cave mouth (Station 7).

The relative composition analysis revealed the dominance of rotifers in almost all wetlands except at Stations 1, 4 and 5, where copepods dominated. The contribution of rotifers varied between 37.8 and 66.2% with a mean of 47.0%. The mean contribution of copepods was 24.6% (range 10.5-40.0%). In river pools, copepods contributed significantly. The mean contribution of cladocera was 22.2% within the range of 10.0-31.4%. Their contribution was higher in beels and ponds. The protozoans, ostracods and eggs and larvae etc. together constituted only 6.2% of total zooplankton.

The contribution of rotifers was highest at Station 14 (66.2%) followed by Station 2 (64.0%). Lowest contribution was recorded from Station 5 (33.0%), followed by station 21 (34.5%). Copepods, which were next to Rotifers in the order of abundance, contributed dominantly at Stations 4 (41.5%), 1 and 16 (40.0% each), 5 (36.4%) and 3 and 20 (35.0% each). The lowest share of copepods was at Stations 6 and 17 (10.0% approx each), followed by Station 14 (15.0%) and 19 (18.0%). Cladoceran contributed their maximum at Station 21 (31.4%) followed by Station 23 (30.5%). Their lowest contribution was at Stations 14 and 16 (10% each). (Table 5)

5. BENTHOS

The macrobenthic fauna of the wetlands studied were mainly composed of Annelida (Hirudinea and Oligochaeta), Crustacea (Macrura), immature insects (Ephemeroptera, Plecoptera, Trichoptera, Odonata, Coleoptera and Diptera) and Mollusca (Gastropoda and Bivalvia).

The leeches (Hirudenia) were mainly represented by three species viz. Glassophonia weberi (Blanchard), Hemielepsis marginata Muller and Helobdella nociva Hardering. Among oligochaetes, the terrestrial earthworms were recorded from the wet soil on the banks of several wetlands. These were represented mainly by the species of the genera Drawidia, Pronyx and Melophurax. The aquatic species which were very common at several Stations, belonged to the genus Tubifex. The immature insects formed the major component of macrobenthic community, both in pools and ponds/lakes. However, their relative composition varied greatly between the two categories. By far ephemeropterans were most common amongst stone and gravel of pools and streams. Individuals mainly belonged to Baetis and Ephemera. Plecoptera were also present in river pools in sufficient numbers but they were totally absent from the marshy beels. Contrary to this Odonates were much more abundant in lakes and beels as compared to stream pools. The Dipterans were recorded from both, pools and lakes/beels but Chironomids were integral constituents of the latter. Simulids were recorded in small numbers from pools. Coleopteran larvae were always represented by four species of shrimps belonging to genus Machrobrachium (M. assamensis Tiwari, M. cavernicola Kemp, M. hendersoni deMan and M. hendersodynum Tiwari). Among Mollusca, Gastropods were represented by nine species, which were Bellamya bengalensis (Lamarck), Pila globosa (Swainson), Thiara granifera (Lamarck), Thiara tuberculata (Muller), Paladonius blanfordian Nevill, Brota costula Rafinesque, Lymnaea acuminata
Lamarck and *Gyraulus convexiusculus* (Hutton). Among bivalves, *Lamellidens corrianus* (Lea), *Parreysia sp.* and *Corbicula sp.* were common in most of the waterbodies. Besides the above group, one species of freshwater crab, *Paratelphusa spinigera* Wood-Mason were also recorded from few stations (Table 6).

Since the separation of species in all cases were not done, the benthos were broadly divided into various groups for the purpose of comparision of different stations. These groups may be constituted by individuals of a species or genera or an order as a whole, specially in case of immature insects (Table 6).

The number of groups of benthos, like phytoplankton and zooplankton, varied considerably between the stations. Larger number of groups were recorded from beels/lakes and fewer numbers from pools and streams. Highest number of groups were recorded from Station 15, Massapani beel (18 groups) followed by Station 23, Damlagiri (17 groups) and Stations 9, Tasek and 10, Chitmereng (15 groups each). The lowest number of benthic group was recorded from Station 7 (3 groups), followed by Stations 20 and 16 (4 groups each).

The total number of benthos/m² was highest at station 15 (2050/m²) followed by Stations 18 (1760/m²), 19 (1520/m²) and 23 (1336/m²), all lakes/beels. If Station 7 (Siju cave mouth) is excluded, the lowest density of macrobenthos was recorded from Station 13 (225/m²), followed by Station 16 (291/m²) and Station 20 (370/m²) (Table 7).

Ephemeropterans were by far the largest group in stream pools but their share in the macrobenthos of lakes/beels was very low. While their mean contribution at all stations taken together was nearly 23.0%, they contributed more than 34.7% of stream pool macrobenthos and only 11.4% of lake/ponds benthos. Contrary to this Oligochaetaes (aquatic), dipteran larvae and odonata larvae were the chief constituents of lakes/beels macrobenthos and contributed marginally in stream pools. Their mean contribution at all stations combined was 11.26% for Oligochaetes, 14.24% for Dipteran larvae and 13.0% for Odonata. When lakes/beels were taken separately, their contribution was considerably high (17.2%, 18.93% and 15.0% for Oligochaetes, Dipteran larvae and immature odonates respectively). Coleoptera larvae almost contributed uniformly in all waterbodies, although their share was only 4.0%. Among molluscs, both gastropods and bivalves contributed significantly, former by 8.0% and latter by 5.8% of total macrobenthos. Their contribution was higher in lakes/beels as compared to pools. Leeches contributed only 3%. Among Crustacea, the Shrimps were recorded almost equally from lakes/beel and stream pools. Their mean contribution was approximately 14.8% of the total macrobenthos. The crabs, which were represented by single species, were recorded from only 4 stations and their mean contribution to the waterbodies studied was 0.53% (Table 7) only.

6. **NECTON**

Necton fauna of these wetlands comprised of adult floating insects and fishes.

*Insects:* Swimming and floating insect community of these waterbodies chiefly comprised of several species of Coleopteran and Hemipteran bugs. Hemiptera was mainly represented by pond skates (Family Gerridae), waterboatman (Family Corixidae), water scorpion (Family Napidae) and water back swimmer (Family Notonectidae). *Gerris sp.*, *Corixa sp.*, *Anisops sp.* and *Ranatra sp.* were
most common hemipteran bugs. The Coleopteran fauna were mainly composed of individuals of the families Dystiscidae and Hydrophilidae. Table 8 gives the occurrence of different groups of nектon insects at different stations.

**Fishes** :- A list of the important fishes of the region, observed during present investigations and also reported by earlier workers has been given in Table 9. The list shows 49 species of fishes which are frequently encountered in the region. These belonged to 14 families and 30 genera. Family Clupeidae was represented by only one species, *Gadusia chapra* Fowler. Cyprinids (Family Cyprinidae) were by far the largest group comprising of 26 species. This mainly included several species of *Barilius, Schizothorax, Danio, Labeo, Garra, Puntius* and *Tor* etc. Family Cobitidae was represented by 7 species of loaches belonging to genera *Botia, Lepidocephalichthys* and *Noemacheilus*. Among cat fishes of Family Siluridae, only one species, *Ompok bimaculatus* (Bloch) has been reported. Family Bagaridae was represented by two common species of *Mystus*. Family *Clariidae* included only *Clarias batrachus* (Linnaeus). Similarly family Heteropneustidae was also represented by one species, *Heteropneustus fossilis* (Bloch). The latter two species were mainly recorded from lower regions of the state specially from Garo hill districts.

Family Belonidae has one common representative in the state. *Xenentodon cancilla* (Ham). Family Channidae, comprised by the common species of murrels, *Channa punctatus* (Bloch). Two species, *Chanda nama* (Ham) and *Chanda ranga* (Ham) belonging to Family Centropomidae, were very common. *Nandus nandus* (Ham) of the family Nandidae has also been reported to occur. Among the species of climbing perch (Family Anabantidae), *Anabas testudineus* (Bloch) occurred frequently. Another species *Colisa fasciata* (Bloch & Schn.) have also been reported. Among gobiids (Family Gobiidae) *Glossogobius giuris* (Ham) was recorded. Lastly, Family Mastacembelidae comprised of two common species, *Mastacembelus armatus* (Lecep) and *M. pancalus* (Ham).

7. **AMPHIBIOUS/WETLAND DEPENDENT FAUNA**

i. **Amphibia** :-

Amphibians were mainly represented by two common species of family Ranidae *viz Rana cyanophlyctis* Schn and *Rana limnocharis* Boiesduval. Toads (Family Bufonidae) also occurred frequently very close to wetlands and were mainly represented by *Bufo melanostictus* Schneider. One species each of family Hylidae (*Hyla annectenes* (Jerden)), Microhylidae (*Microhyla ornata* (Dum & Bibron) and Rachophoridae (*Rhacophorus maximum* (Gunther) have been commonly reported from the surroundings of the waterbodies. A list of important amphibians occurring commonly in or near wetlands of Meghalaya is shown in Table 10. Quantitatively, the members of family Ranidae were most abundant in and around the waterbodies studied. *Rana cyanophlyctis* was by far the commonest species occurring abundantly in most of the water bodies. Huge shoals of tadpoles of this species were also recorded mainly from stagnant stream pools.

ii. **Marsh and aquatic birds** :-

a) **Marsh** :- A list of important marsh and aquatic birds as observed or reported by earlier workers
from the region are shown in Table 11. Marsh birds were mainly represented by families Ardeidae, Rallidae, Charadridae and Ciconiidae. Family Ardeidae comprised of largest number of species which includes Eastern purple heron, \textit{Ardea purpurea manilensis} Meyen, Eastern large egret, \textit{Egretta alba modesta} J.E.Gray, Indian pond heron \textit{Ardeola grayii grayii} (Sykes), Cattle egret, \textit{Bubalus ibis coromandus} (Boddart), little egret, \textit{Egretta garzetta garzetta} (Linnaeus), night heron, \textit{Nycticorax nycticorax nycticorax} (Linnaeus), Chestnut bitten \textit{Ixobrychus cinnamomeus} (Gmelin), Black bittern, \textit{Ixobrychus flavicollis} (Latham), and \textit{Ixobrychus sinensis} (Gmelin). Family Ciconiidae was represented by single species, open bill stork, \textit{Anastololus oscitallus} (Boddaert). Family Rallidae included five species of waterhen and watercock. These were \textit{Rallus striatus albiventer} Swainson, \textit{Amaurornis fuscus bakeri} Hartel, \textit{Gallirallus cinerea cinerea} (Gmelin), \textit{Gallinula chloropus indica} Blyth, and \textit{Fulica atra atra} Linnaeus. Family Charadridae was represented by largest number of species. It included, plovers, sandpipers, snipes, woodcocks and stint. Important species were \textit{Vanellus spinosus} (Lessen), \textit{Pluvialis dominica fulva} (Gmelin), \textit{Charadrius dubius curonicus} Gmelin, several species of the genus \textit{Tringa} (\textit{T. totanus totanus} (Linnaeus), \textit{T. stagnatilis} (Bechstein), \textit{T. nebularia} (Gunnerus), \textit{T. ochropus} Linnaeus, \textit{T. glareola} Linnaeus, \textit{T. hupoleucus} Linnaeus, \textit{Gallinago solitaria solitaria} Hodgson, \textit{G. stenura} (Bonaparte), \textit{G. minima} (Brunich), \textit{G. garrinago} (Linnaeus), \textit{Scolopax rusticola} Linnaeus, and \textit{Calidris minuta} Leister.

b) \textit{Aquatic} :- The water birds like swimmers and divers were represented by four families viz. Podicipedidae, Phalacrocoracidae, Anatidae and Laridae. Family Podicipedidae was represented by only one species, the little grebe, \textit{Podiceps ruficollis capensis} Salvadore. Family Phalacrocoracidae, which includes cormorants, shags and snake birds, was represented by little cormorant, \textit{Phalacrocorax niger} (Vieillot) and snake bird, \textit{Aninga rufa melanogaster} Pennant. Family Anatidae, the teal and duck family comprised of a large number of migratory species. The important ones were \textit{Anser anser} Swinhoe, \textit{Anas acuta} (Linnaeus), \textit{Anas crecca} Linnaeus, \textit{Anas strepera} Linnaeus, \textit{Aythya ferina} (Linnaeus) \textit{Nettapus coromandelianus} (Gmelin) and \textit{Mergus merganser} Linnaeus. Family Laridae, representing gulls and terns, comprised of four common species, viz. brownheaded gull, \textit{Larus brunnicephalus} Jerdon, Indian river tern. \textit{Sterna aurantia} J.E. Gray, \textit{Sterna hirundo tibetana} Saunders and \textit{Sterna acuticauda} J.E. Gray.

Besides these, a number of species of Kingfishers have also been associated with wetlands. The family Alcedinidae was represented by common kingfishers \textit{Alcedo atthis bengalensis} Gmelin, and lesser pied kingfisher, \textit{Ceryle rudus leucomelanura} (Reichenbach) etc. (Table 11)

\textbf{DISCUSSION}

Inspite of the fact that practically all wetlands discussed here, rather most of the waterbodies of Meghalaya have in one way or other, felt the influence of man’s activities; like timber cutting and floating, quarrying, induced agricultural operations (particularly Jhum cultivations on the slopes) and waste discharge near major human settlements; general quality of water is still very good excepting few isolated pockets of streams and lakes. Physico-chemical conditions which were characterized by slightly acidic pH, characteristics of non eutrophic waterbodies of higher altitudes, high dissolved oxygen, very low carbon-di-oxide, lower alkalinity and chloride contents; generally reveal undisturbed
conditions (Hynes, 1970). Except Massapani wetland, in the plains of the state bordering Assam, where increased human activities for brick making and fishing were noticed, the waterbodies studied faced little unjustified human interferences. Earlier reports on Meghalaya waterbodies also revealed in general the good physico-chemical conditions (Alfred et al., 1978, Meran Ao et al. 1984, Gupta, 1984, Gupta and Michael, 1983 and Gupta et al., 1992).

On the basis of physico-chemical and biological characteristics, the different waterbodies could be grouped into following two major categories:

1. Streams and pools in higher altitudes and
2. Lakes/ponds and beels etc.

The category -I included stations 1, 2, 3, 4, 7, 8, 11, 12, 14, 19 and 16. Category-II included rest of the stations.

The phytoplankton component reflected clearly the above two patterns. In Category-I waterbodies, diatoms (Bacillariophyceae) dominated the composition and density, followed by green algae (Chlorophyceae). In category-II, green algae were the major component followed by diatoms. The lower region's beels and ponds were also characterised by the increased abundance of blue green algae (Myxophyceae), which are well known indicators of eutrophy. However, Dinophyceae, which have also been reported (Alfred et. al, 1978) as indicators of pollution or eutrophication, did not reveal any significant pattern and were available in small to moderate numbers in most of the wetlands. Further euglenoids also did not differentiate the waterbodies on the basis of their status as these occurred almost similarly at all stations.

The zooplankton composition of these waterbodies mainly comprised of rotifers, cladocerans and copepods. Rotifers dominated in almost all waterbodies and contributed nearly 47% of the total zooplankton. The cladocerans and copepods were numerically of almost equal importance, contributing nearly 22.2% and 24.6% respectively. Like phytoplankton, zooplankton also exhibited a demarcating pattern between the two categories of waterbodies. While the contribution of rotifers decreased from Category-I to Category-II, the share of cladocera and copepoda increased. The dominance of rotifers in the zooplankton composition has also been reported by other workers from waterbodies of Meghalaya, particularly Ward's lake (Thapa, 1981) and Tasek and Chitmereng lakes (Das, 1981). However, the numerical density of zooplankton recorded from Tasek and Chitmereng during present investigations were considerably lower than as reported by Das (1981). It is quite possible that overall picture may be different if long term studies are conducted taking into consideration the fluctuations within and between years.

The macrobenthos of these waterbodies were quite rich. However, the differences in numerical density and community structure of benthos in two categories of waterbodies were abundantly clear. While the ephemeropteran, plecopteran and trichopteran fauna were the dominant components of category-I waterbodies, these were almost inconspicuous in category-II waterbodies, specially in marshy wetlands of lower region. In category-II waterbodies oligochaetes, chironomids and dipteran larvae formed the bulk of macrobenthic fauna. Similar results have been obtained by other workers of Meghalaya waterbodies. Meran Ao et. al., (1984) and Gupta (1994) found ephemeropteran, plecopteran
and simulid fauna contributing more than 80% of benthic fauna of few streams in and around Shillong town. In Tasek and Chitmereng lakes, Das (1981) reported the dominance of chironomids followed by chaoborids and few oligochaetes. As per the availability of benthic macroinvertebrates in his study, the lakes fall under category-II of the present and exhibit a characteristic of eutrophy. However, the results obtained during present study in the two lakes are somewhat different from the findings of Das (1981) as composition of benthos was considerably different. Not only different relative composition but numerical density was also found to be considerably lower as compared to his observations. It is quite possible that the lakes have undergone some changes during past 15 years which require further detailed study.

Among vertebrates. Pillai and Yazdani (1977) have reported 59 important species of fishes from Garo hills, most of which also occur in other regions of the State. Pardhasardhi and Alfred (1984) while comparing the longitudinal distribution of fishes in two important streams of Garo Hills region, Simsang and Damrang, recorded that 39 species occurred in significant numbers. The most abundant species in Damrang were Danio aequipinnatus (10% approx), followed by Lepidocephalichthys guntea (9.0% approx), and Garra gotyla (6.7%). In Simsang, the dominant species were Barilius bendelisis (9.7% approx) followed by Acrossocheilus hexagonolepis (9.2% approx), Garra gotyola (8.0% approx), Lepidocephalichthys guntea (6.0% approx) and Danio aequipinnatus (5.9% approx). They also observed that the number of fishes increased as the streams flew downwards.

The amphibian and bird fauna of the state are also considerably rich. Chanda (1993) reported nearly 34 species belonging to six families of amphibians from the State, out of which only seven abundant ones are reported here. Two species, Rana cyanophlyctis and Rana limnocharis occurred in huge numbers and dominated all other amphibian species at almost all stations. Similarly marsh and aquatic birds were both rich and diverse. A total of 67 species of marsh and aquatic birds have been reported by ornithologists, out of which 44 species belonging to eight families reported here are of general occurrence.

Because of the paucity of wetlands in the state, the culture fishery is also not very well developed. The fishery of the region comprised of scattered operations carried out by fishermen in the streams, specially in lower reaches during certain seasons of the year.

**SUMMARY**

1. All together 23 waterbodies of Garo Hills in Meghalaya state, were surveyed for their physico-chemical and biological properties including phytoplankton, zooplankton, macrobenthos, necton and major vertebrate fauna associated with these wetlands.

2. Being a hilly state, there was a general dirth of defined wetlands in the region. The available waterbodies included a large number of stream pools formed by streams during dry season along their course, few reservoirs, lakes and ponds. There were few marshy beels in the lower plain regions of the state.

The studies were carried out in some selected waterbodies covering almost all types.

3. With high dissolved oxygen, slightly acidic pH, low carbon-di-oxide, alkalinity and chloride
contents, the physicochemical nature of water depicted a fairly good condition of almost all waterbodies studied.

4. On the basis of physico-chemical conditions, plankton and benthos, these waterbodies were classified into two categories. Category-I included all streams and pools and category-II comprised of lakes/beels/ponds.

5. The phytoplankton flora comprised of Chlorophyceae, Myxophyceae, Bacillariophyceae, Chrysophyceae, Dinophyceae and Euglenophyceae. While diatoms (Bacillariophyceae) dominated in category-I waterbodies followed by green algae (Chlorophyceae), in Category-II waterbodies, it was reverse, where green algae dominated over diatoms. Blue green algae (Myxophyceae) and phytoflagellates (Euglenophyceae) occurred constantly in almost all waterbodies. The Chrysophyceae and Dinophyceae too, occurred in most of the waterbodies but their variations were not much significant except in Tasek and Chitmereng lakes.

6. The zooplankton fauna were mainly represented by Rotifers, cladoceran and copepods. Rotifers dominated numerically in almost all waterbodies barring few, and constituted at an average 47.3% of the total zooplankton density. This was followed by copepods (24.6%) and Cladocerans (22.1%). The protozoans, ostracods and eggs and larvae contributed about 6.0%. The contribution of cladocera in category-II waterbodies were higher than in category-I waterbodies.

7. The macrobenthic fauna were composed of Annelida (Hirudinea, Oligochaeta), Crustacea (Macrura), immature insects (Ephemeroptera, Plecoptera, Trichoptera, Odonata, Diptera and Coleoptera) and Mollusca (Gastropoda and Bivalvia). Ephemeroptera constituted by far the largest group in stream pools but their share in macrobenthos of lakes/beels were considerably less. Contrary to this, Oligochaetes (aquatic), Odonata and Dipteran larvae were important constituents of lakes/beels.

8. Among nektan insects, the swimming and floating hemiptera and coleoptera occurred in most of the waterbodies. The fish fauna of these waters comprised of a large number of species of which 49 species were found to be of general occurrence.

9. The amphibian fauna, which occurred around these waterbodies, belonged mainly to Anura and were represented mainly by two species of Rana. Among marsh and aquatic birds, the common species reported from or near the waterbodies of the state comprised of 44 species belonging to 8 families.

10. Because of the paucity of defined wetlands in the state, the culture fishery is not well developed. Capture fishery of the streams are carried out locally on a small scale.

ACKNOWLEDGEMENTS

The authors are thankful to the Director, Zoological Survey of India for kindly providing necessary laboratory and field facilities. Thanks are also due to Officer-In-Charge and Staff of Eastern Regional Station, Zoological Survey of India for extending all possible help and facilities.
Table 6. Occurrence of different groups of macrobenthos at different stations.

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<thead>
<tr>
<th>STATION</th>
<th>ANNELIDA : HIRUDINEA</th>
<th>MACROBENTHOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Simsang R. pool near Baghmara</td>
<td>+</td>
<td>+ Absent</td>
</tr>
<tr>
<td>2. Streams &amp; pools in Balphakram</td>
<td>+</td>
<td>+ Present</td>
</tr>
<tr>
<td>3. Mahadeo R. &amp; pool</td>
<td>+ + +</td>
<td>+ Present</td>
</tr>
<tr>
<td>4. Kanai R. &amp; pool</td>
<td>+ +</td>
<td>Present</td>
</tr>
<tr>
<td>5. Simsang R. pool near Siju</td>
<td>+ +</td>
<td>Present</td>
</tr>
<tr>
<td>6. Pond in Siju Sanctuary</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>7. Stream at Siju cave mouth</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>8. Ninget Stream &amp; pool</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>9. Tasek Lake</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>10. Chitmerang lake</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>11. Rongthang R. &amp; pool</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>12. Simsang R. pool near Rongrangiri</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>13. Thebrangiri S. C. pond</td>
<td>+</td>
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</tr>
<tr>
<td>14. Rongmachak Stream &amp; pool</td>
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<tr>
<td>15. Massapani beel</td>
<td>+</td>
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<tr>
<td>16. Manda R. &amp; pool</td>
<td>+</td>
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</tr>
<tr>
<td>17. Manikgunj beel</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>18. Moamari Marsh</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>19. Assimgiri pond</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>20. Anugiri S. C. pond</td>
<td>+</td>
<td>Present</td>
</tr>
<tr>
<td>21. Dalu Marsh</td>
<td>+</td>
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</tr>
<tr>
<td>22. Pond at Silvelgiri</td>
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</tr>
<tr>
<td>23. Damlagiri wetland</td>
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<td>Streams &amp; pools in Bhalakram</td>
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</tr>
<tr>
<td>Mahadeo R. &amp; pool</td>
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</tr>
<tr>
<td>Simlaung R. pool near Siju</td>
<td></td>
</tr>
<tr>
<td>Pond in Siju Sanctuary</td>
<td></td>
</tr>
<tr>
<td>Stream at Siju cave mouth</td>
<td></td>
</tr>
<tr>
<td>Nigret Stream &amp; pool</td>
<td></td>
</tr>
<tr>
<td>Tasek Lake</td>
<td></td>
</tr>
<tr>
<td>Chimeter c lake</td>
<td></td>
</tr>
<tr>
<td>Rogatung R. &amp; pool</td>
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</tr>
<tr>
<td>Simlaung R. pool near Rogangiri</td>
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<tr>
<td>Thangrigri S. C. pond</td>
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<tr>
<td>Rongmichak Stream &amp; pool</td>
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</tr>
<tr>
<td>Massapani beel</td>
<td></td>
</tr>
<tr>
<td>Manda R. &amp; pool</td>
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<tr>
<td>Manikganj beel</td>
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<tr>
<td>Moamari Marsh</td>
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<td>Assingiri pond</td>
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<td>Aunigriri S. C. pond</td>
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<tr>
<td>Dalu Marsh</td>
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<tr>
<td>Pond at Silvagarri</td>
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</table>

**ARTHROPODA : CRUSTACEA :**

**MACRURA (shrimps)**

- *Macrophrachium assamensis* Tiwari
- *Macrophrachium cavernicola* Kemp
- *Macrophrachium hendersoni* deMan
- *Macrophrachium hendersodymum* Tewari
- *Paratelphusa spinigera* Wood Mason

**ARTHROPODA : INSECTA**

- Ephemeroptera-immature
- Plecoptera/Trichoptera-immature
- Odonata (immature)
- Chironomidae
- Tanypodidae
- Simuliidae
- Others

**MOLLUSCA-GASTROPODA**

- *Bellamya bengalensis* Lamarck
- *Pila globosa* (Swainson)
- *Thiara granifera* Lamarck
- *Thiara (M) tuberculata* (Muller)
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<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
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<tbody>
<tr>
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<td>+</td>
<td>+</td>
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<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Parotylium sp.</td>
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<td>+</td>
<td>+</td>
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<td>+</td>
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<td>+</td>
<td>+</td>
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<tr>
<td>Phallusia phenolithina Muller</td>
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<td>+</td>
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<td>+</td>
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</tbody>
</table>

**Station**

| Pond at Silvelgiri | Pond at Dalu Marsh | Pond at Manikgunj beel | Pond at Assingiri | Pond at Thebrangiri | Pond at Kanglu beel | Pond at Massapani beel | Pond at Manamari beel | Pond at Manda R. & pool | Pond at Roongmachak Stream & pool | Pond at Roongtang R. & pool | Pond at Sungsang R. & pool near Siju | Pond at Sungsang R. & pool near Siju | Pond at Rongcho R. & pool | Pond at Rongmachak Stream & pool |
|-------------------|---------------------|------------------------|-------------------|---------------------|----------------------|------------------------|------------------------|------------------------|------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|

**Macrobenthos**

<table>
<thead>
<tr>
<th>Present</th>
<th>Absent</th>
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*State Fauna Series 4: Fauna of Meghalaya*
Table 7. Total Macrobenthos density and relative composition of different groups.

<table>
<thead>
<tr>
<th>STATIONS</th>
<th>DENSITY (No/m²)</th>
<th>RELATIVE COMPOSITION(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
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<tr>
<td>Simsang R. pool near Baghmara</td>
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<td>855</td>
</tr>
<tr>
<td>Streams &amp; pools in Baphakram</td>
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<td></td>
</tr>
<tr>
<td>Mahadeo R. &amp; pool</td>
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<td></td>
</tr>
<tr>
<td>Kanal R. &amp; pool</td>
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<tr>
<td>Pond in Siju Sanctuary.</td>
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<tr>
<td>Stream at Siju cave mouth.</td>
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<tr>
<td>Ninget Stream &amp; pool</td>
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<tr>
<td>Tasek Lake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chitiranglake</td>
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<td></td>
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<tr>
<td>Ronglhang R. &amp; pool</td>
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<tr>
<td>Simsang R. pool near Rongangiri</td>
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</tbody>
</table>

**DENSITY (No/m²)**

<table>
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<tr>
<th></th>
<th>510</th>
<th>855</th>
<th>1199</th>
<th>1120</th>
<th>730</th>
<th>605</th>
<th>45</th>
<th>1080</th>
<th>505</th>
<th>760</th>
<th>620</th>
<th>701</th>
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</table>

**RELATIVE COMPOSITION(%)**

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<th>9</th>
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<th>12</th>
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<tr>
<td>Hirudenia</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.3</td>
</tr>
<tr>
<td>Oligochaeta</td>
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<td>7.2</td>
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<td></td>
<td>18.2</td>
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Table 7. Total Macrobenthos density and relative composition of different groups.

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<tr>
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<td>Hirudenia</td>
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<td>Crustacea (Macrobrachium)</td>
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DENSITY (No/m²) 225 495 2050 291 780 1760 1520 370 1295 545 1336
Table 8. Occurrence of different groups of necton insects at different stations.

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<tr>
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NATION; INSECTA
Hemiptera
Gerridae | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  |
Corixidae | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  |
Notonectidae | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  |
Nepidae | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  |
Belostomidae | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  |
Coleoptera
Dystiscidae | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  |
Hydrophilidae | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  |
Others | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  | +  |

Contd. on next page.
Table 8. Occurrence of different groups of necton insects at different stations.

<table>
<thead>
<tr>
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<th>Thebrangiri S. C. pond</th>
<th>Rongmachi Stream &amp; pool</th>
<th>Massapani beel</th>
<th>Manda R. &amp; pool</th>
<th>Manikunj beel</th>
<th>Moamari Marsh</th>
<th>Assingiri pond</th>
<th>Anugiri S. C. pond</th>
<th>Dalu Marsh</th>
<th>Pond at Silalgiri</th>
<th>Damlagiri wetland</th>
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NECTON; INSECTA

*Hemiptera*

Gerridae  
Corixidae  
Notonectidae  
Nepidae  
Belostomidae  

*Coleoptera*

Dytiscidae  
Hydrophillidae  
Others
Table 1. Physiochemical nature of water at different stations

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<tr>
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<td>27.5</td>
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<td>23.0</td>
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<td>6.5</td>
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<td>Dissolved oxygen (mg/l)</td>
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Table 1. Physiochemical nature of water at different stations

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Table 2. Occurrence of various phytoplankton genera at different stations

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<tr>
<td>Streams &amp; pools in Balphakram</td>
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<td>Mahadeo R. &amp; pool</td>
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<td>Kanai R. &amp; pool</td>
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<td>Simonsag R. pool near Siju</td>
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<tr>
<td>Pond in Siju Sanctuary</td>
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<td>Stream at Siju cave mouth</td>
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<tr>
<td>Ninget Stream &amp; pool</td>
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<td>Take Lake</td>
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<tr>
<td>Chitmitang lake</td>
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<tr>
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**MYXOPHYCEAE**

1. Oscillatoria
2. Microcystis
3. Spirulina
4. Anabaena
5. Merismopeda
6. Nostoc

**CHLOROPHYCEAE**

7. Pandorina
8. Eudorina
9. Cosmarium
10. Desmidium
11. Closterium
12. Strauss
13. Spirogyra
14. Selanastrum
15. Scenedesmus
16. Ankistrodesm
17. Pediastrum
18. Rhizoslonium

**BACILLARIONYCEAE**

19. Navicula
20. Fragillaria
21. Synedra
22. Melosia
23. Nitzchia
24. Tabillaria
25. Surirella
26. Cymbella
27. Diatoma

**CHRYSOPHYCEAE**

28. Dinobryan
29. Synura

**DINOPHYCEAE**

30. Ceratium
31. Peridinium

**EUGLENOPHYCEAE**

32. Euglana
33. Phacus

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Table 2. Occurrence of various phytoplankton genera at different stations

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Table 3. Total phytoplankton density and relative composition of different groups.

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| PHYTOPLANKTON             | DENSITY (No/l)            | RELATIVE                  | COMPOSITION(%)            | Myxophyceae               | 4.5                       | 2.4                       | 4.5                       | 10.4                      | 6.5                       | 30.0                      | 5.2                       | 8.4                       | 8.0                       | 5.2                       | 5.5                       | 20.2                       | 29.4                       | 29.5                       | 38.6                       | 28.8                       | 24.6                       | 10.5                       | 24.6                       | 30.3                       | 25.4                       | 30.0                       | 20.5                       | 48.5                       | 48.5                       | 10.4                       | 10.2                       | 20.3                       | 20.4                       | Contd. on next page
Table 3. Total phytoplankton density and relative composition of different groups.

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### ROTIFERA

1. *Brachionus calciferus* Pallas + + + + + +
2. *Brachionus fulcatus* Zacharias + + + + +
3. *Brachionus quadridentatus* Herman + + + + +
4. *Keratella tropica* (Apstein) + + + + +
5. *Keratella quadrata* (Muller) + + + + + +
6. *Lecane (L) curvicornis* (Muller) + + + + +
7. *Tricocerca sp.* + + + + +
8. *Asplanchna brightwelli* Gosse + + + + +
9. *Polyarthra vulgaris* Carli + + + + +
10. *Filinia longiseita* (Ehrenberg) + + + + +

### CLADOCERA

12. *Pseudosida bidentata* Aerrick +
13. *Sida crystallina* (Muller) + + + + + + + +
14. *Diaphanosoma sarsi* Richards + + + + + +
15. *Daphnia sarsia* Sars + + + + + + +
16. *Ceriodaphnia cornuta* Sars + + + + + + + +
17. *Daphnia carinata* King + + + + + + + + + + +
18. *Moina micrura* Kurz + + + + + + + + + + + +
19. *Bosmina longirostris* O.F. Muller + + + + + + + + + + + +
20. *Chydorus sphaericus* O.F. Muller + + + + + + + + + + + +
21. *Danhevedia crassa* (King) + + + + + + + + + + + +
22. *Alona rectangula, Sars* + + + + + + + + + + + +

### COPEPODA

23. *Arctodiaptomus keifari* Rediah + + + + + + + + + + + +
24. *Heliodiaptomus Uidivu. Gurney + + + + + + + + + + + +
25. *Neoarctodiaptomus satans* Brehm + + + + + + + + + + + +
26. *Diaptomus sp.* Apstein + + + + + + + + + + + +
27. *Phyllodiaptomus annae* Rehberg + + + + + + + + + + + +
28. *Mesocyclops hyalinus* (Claus) + + + + + + + + + + + +
29. *Mesocyclops leuckarti* + + + + + + + + + + + +

**OTHERS:**

| NO. OF SPECIES | 13 | 8 | 12 | 6 | 14 | 12 | 10 | 14 | 14 | 9 | 18 |
Table 4. Occurrence of different species of zooplankton at different stations

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Table 5. Total zooplankton density and relative composition of different groups.

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<tr>
<td>ZOOPLANKTON DENSITY (No/l)</td>
<td>90</td>
<td>103</td>
<td>182</td>
<td>105</td>
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<td>235</td>
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<td>345</td>
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<td>RELATIVE COMPOSITION(%)</td>
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<td>15.5</td>
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<tr>
<td>Eggs, Larvae, others</td>
<td>7.3</td>
<td>5.4</td>
<td>7.5</td>
<td>4.3</td>
<td>5.2</td>
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Contd. on next page
Table 5. Total zooplankton density and relative composition of different groups.

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<td>Thebargiri S. C. pond</td>
<td>275</td>
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<td>Rongmachak Stream &amp; pool</td>
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TABLE 9
SOME IMPORTANT FISHES OF MEGHALAYA

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<td>1.</td>
<td>Gadusia chapra Fowler</td>
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<td>FAMILY: CYPRINIDAE</td>
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<tr>
<td>2.</td>
<td>Oxygaster bacalia (Ham)</td>
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<tr>
<td>3.</td>
<td>Barilius barila (Ham)</td>
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<tr>
<td>4.</td>
<td>Barilius barana (Ham)</td>
</tr>
<tr>
<td>5.</td>
<td>Barilius bola (Ham)</td>
</tr>
<tr>
<td>6.</td>
<td>Barilius bendelisis (Ham)</td>
</tr>
<tr>
<td>7.</td>
<td>Schizothorax sp</td>
</tr>
<tr>
<td>8.</td>
<td>Danio aequipinnatus (McClelland)</td>
</tr>
<tr>
<td>9.</td>
<td>Danio danga (Ham)</td>
</tr>
<tr>
<td>10.</td>
<td>Danio devario (Ham)</td>
</tr>
<tr>
<td>11.</td>
<td>Danio (Brachydanio) rerio (Ham)</td>
</tr>
<tr>
<td>12.</td>
<td>Eosomus danricus (Ham)</td>
</tr>
<tr>
<td>13.</td>
<td>Rasbora daniconius (Ham)</td>
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<tr>
<td>14.</td>
<td>Accrossocheilus hexagonolepis (McClelland)</td>
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<td>15.</td>
<td>Amblyparyngodon mola (Ham)</td>
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<tr>
<td>16.</td>
<td>Crossocheilus latius latius</td>
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<td>17.</td>
<td>Puntius sarana (Ham)</td>
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<td>18.</td>
<td>Puntius titco (Ham)</td>
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<td>19.</td>
<td>Puntius sophore (Ham)</td>
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<td>Tor tor (Ham)</td>
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<td>21.</td>
<td>Cirrhinus reba (Ham)</td>
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<td>22.</td>
<td>Garra lamta (Ham)</td>
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<td>Garra gotyla (Gray)</td>
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<td>24.</td>
<td>Labio boga (Ham)</td>
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<td>25.</td>
<td>Labeo calbasu (Ham)</td>
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<td>26.</td>
<td>Labeo gonius (Ham)</td>
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<td>Labeo dero (Ham)</td>
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<td>FAMILY: COBITIDAE</td>
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<td>28.</td>
<td>Botia dario (Ham)</td>
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<td>29.</td>
<td>Lepidocephalichthys annandalei Choudhury</td>
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<td>Lepidocephalichthys guntea (Ham)</td>
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<td>31.</td>
<td>Lepidocephalichthys menoni Pilai &amp; Yazdani</td>
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<td>Noemacheilus multifasciatus Day</td>
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<td>Noemacheilus scatrigina McClelland</td>
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<td>34.</td>
<td>Noemacheilus sikmaiensis Hora</td>
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<td>FAMILY: SILURIDAE</td>
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<td>Ompok bimaculatus (Bloch)</td>
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<td>FAMILY: BAGRIDAIE</td>
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<td>36.</td>
<td>Mystus cavasilus (Ham)</td>
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<td>37.</td>
<td>Mystus vittatus (Ham)</td>
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<td>FAMILY: HETROPOUSTIDAE</td>
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<td>38.</td>
<td>Hetropneustes fossilis (Bloch)</td>
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<td>Clarias batrachus (Linnaeus)</td>
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<td>FAMILY: BELONIDAE</td>
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<td>Xenentodon cancilla (Ham)</td>
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<td>Chanda nama (Ham)</td>
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<td>Chanda rangga (Ham)</td>
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<td>46.</td>
<td>Colisa fasciata (Bloch &amp; Schn.)</td>
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<td>FAMILY: MASTACEMBELIDAE</td>
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<td>48.</td>
<td>Mastacembelus armatus (Lacep)</td>
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<td>49.</td>
<td>Mastacembelus pancalus (Ham)</td>
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TABLE 10
SOME COMMON ANURAN (AMPHIBIA) FAUNA OF MEGHALAYA

FAMILY : BUFONIDAE
1. *Bufo melanostictus* Schneider

FAMILY : HYLIDAE
2. *Hyla annectens* (Jerdon)

FAMILY : MICROHYLIDAE
3. *Microhyla ornata* (Dum & Bibron)

FAMILY : RANIDAE
4. *Amolops afghanus* (Gunther)
5. *Rana cyanophlyctis* Schneider

FAMILY : RHACOPHORIDAE

TABLE 11
SOME IMPORTANT MARSH AND AQUATIC BIRDS OF MEGHALAYA

FAMILY : PODICIPEDIDAE
1. *Podiceps ruficollis capensis* Salvodori – Little grebe

FAMILY : PHALACROCORACIDAE
2. *Phalacrocorax niger* Vieillot – Little cormorant
3. *Ahiinga rufa melanogaster* Pennant – Snake bird

FAMILY : ARDEIDAE
4. *Ardea purpurea manilensis* Meyen – Eastern purple heron
5. *Ardea alba modesta* J. E. Gray – Eastern large egret
6. *Ardeola grayii grayii* (Sykes) – pond heron
7. *Bubulcus ibis coromandus* (BODDAERT) – Cattle egret
8. *Egretta garzetta garzetta* (Linnaeus) – Little egret
9. *Nycticorax nycticorax nycticorax* (Linnaeus) – Night heron
10. *Ixobrychus cinnamomeus* (Gmelin) – Chestnut bittern
11. *Ixobrychus sinensis* (Gmelin)
12. *Ixobrychus flavicollis* (Latham) – Black Bittern

FAMILY : CICONIIDAE
13. *Anastomus oscitans* (Boddaert) – Openbill stork

FAMILY : ANATIDAE
14. *Anser anser rubiro* Swinhoe
15. *Anus acuta* Linnaeus Pintail
16. *Anus crecca* Linnaeus – Common teal
17. *Anus strepera strepera* Linnaeus
18. *Aythya ferina* (Linnaeus) – Common pochard
19. *Nettapus coromandelianus coromandelianus* (Gmelin) – Cotton teal
20. *Mergus merganser merganser* Linnaeus
FAMILY: RALLIDAE
22. Amaurornis fuscteus bakeri Hertert
23. Gallicrex cinerea (Gmelin)
24. Gallinula chloropus indica Blyth – Indian moorhen
25. Fulica atra atra Linnaeus – Coot

FAMILY: CHARADRIDAE
26. Vaenllus spinosus duvaucelii (Lesson)
27. Pluvialis dominica fulva (Gmelin) – Easter golden plover
28. Charadrius dubius curonicus Gmelin – Little plover
29. Tringa totanus totanus (Linnaeus) – Red shank
30. Tringa nebularia (Gunnerus) – Greenshank
31. Tringa stagnatilis (Bechstein) – Marsh sand piper
32. Tringa ochropus Linnaeus – Green sand piper
33. Tringa glareola Linnaeus – Wood sand piper
34. Tringa hypoleucos Linnaeus – Common sand piper
35. Gallinago solitaria solitaria Hodgson
36. Gullinago stenura (Bonaparte) – Pintail snipe
37. Gallinago minima (Brunnich)
38. Gallinago gallinago (Linnaeus) – Fantail snipes.
39. Scolopax rusticola rusticola Linnaeus – Wood cock
40. Calidris minuta Leister

FAMILY: LARIDAE
41. Larus brunicephalus Jerdon – Brownheaded gull.
42. Sterna auranta J.E. Gray – India river tern
43. Sterna hirundo tibetana Saunders
44. Sterna acuticauda J.E. Gray

WETLAND DEPENDENT SPECIES — KING FISHERS

FAMILY: ALCIDINIDAE
1. Ceryle rudis leucomelanura Reichenbach – Lesser pied kingfisher
2. Alcedo atthis bengalensis Gmelin
3. Ceyx eirrhaeus erithacus (Linnaeus)
4. Pelargopsis capensis capensis (Linnaeus) – Storkbilled kingfisher
REFERENCES


ON THE SURVEY OF SELECTED WATERBODIES OF RIBHOI, KHASI AND JAINTIA HILLS

M.P. THAPA
Sikkim Govt. College, Gangtok-737 102
AND
J.R.B. ALFRED
Zoological Survey of India, Calcutta.

INTRODUCTION

In the preceding paper (Khan and Alfred, 1995), descriptions of water quality, flora and fauna of some wetlands of Garo hills region of Meghalaya State have been given. The present communication deals with physicochemical and biological conditions of some selected lentic waterbodies of other regions of the state, viz. Ri Bhoi, Khasi and Jaintia Hills.

A general survey of some twenty waterbodies of these regions were carried out for one annual cycle covering all four major seasons, spring, summer, autumn and winter. In order to have a broad idea, these waterbodies were so selected as to represent different types such as waterbodies of natural occurrence, depressions filled with rainwater, fish ponds and man-made ponds. Further in order to ascertain variations due to changes in altitude, the selection of ponds was also based on altitudinal gradation, which varied from 100m above sea level (Valley of Gauhati) to 1900 m above sea level (Shillong peak)

WATERBODIES SURVEYED

I VALLEY OF GAUHATI :-
A. Deghali Tank, Gauhati
B. Ulubari Fish pond, Gauhati

II RIBHOI :-
C. Fish pond, Byrnihat
D. Domestic pond Byrnihat
E. Fish pond-I, Kyrdem Kulai.
F. Fish pond-II, Kyrdem Kulai.

III KHASI HILLS:-
G. Fish pond-I, Mawpun.
H. Fish pond-II, Mawpun.
I. Domestic pond, Mawprem.
J. Lady Hyderi Park, pond-I, Shillong.
K. Lady Hyderi Park, pond-II, Shillong.
L. Golflink pond, Shillong.
M. Pologround pond, Shillong.
N. Fish Dale pond-I, Shillong.
O. Fish Dale pond-II, Shillong
P. Fish Dale pond-III, Shillong.
Q. Pond-I, Upper Shillong.
R. Pond-II, Upper Shillong.

IV Jaintia Hills.

S. Fish pond, Ladthalaboh.
T. Thadlaskein lake, Jowai.

Except Dighali Tank measuring 100x50 m with a mean depth of 6.0 m and Thadlaskein lake measuring 70x100 m with a mean depth of 5.0 m, all other ponds were of considerably smaller sizes with areas varying between 5 and 60 sq m, and depths between 0.5 and 1.5 m.

MATERIAL AND METHODS

The general methodology followed for the analysis of water, phytoplankton and zooplankton was as per the methods described in Khan and Alfred, (1995) and Thapa and Alfred (1995).

RESULTS AND DISCUSSION

1. Physicochemical nature of water:

Altogether thirteen parameters were studied and results are expressed in Tables 1 and 2. A perusal of results reveals that as one goes from the hills down to lower altitudes, temperature, both air and water, pH, conductivity, total alkalinity, all increased in their values. Carbon dioxide was seen not to follow the same phenomenon but had a tendency of disappearance in ponds situated at the lower altitudes. Oxygen was definitely in reverse in that the higher altitude ponds possessed greater concentrations. Among the nutrients the values were quite less to be indicative of any relation to altitude except with phosphate where a slight increase was observed at low altitude while silicate and nitrate did not follow any regular pattern. Calcium and Magnesium though did not show any significant relation with altitude did have higher values in managed systems like the fish ponds in contrast to natural water bodies.

From the above it was very clear that the higher altitude ponds had a relationship existing with the Ward's Lake (Thapa and Alfred, 1995) and in particular possessing lower pH values, all of them being acidic. In contrast, the ponds at the lower altitude revealed definite alkaline ranges. It was, therefore, understandable that temperature and pH play a great buffering action in the calcium carbonate system with the probability of precipitating the nutrients helping thereby in higher production at lower altitudes. Most of the values of these physico-chemical parameters for the ponds at lower altitudes are
comparable with the tropical ponds. The ones situated higher in the hills have a sub-tropical nature with akinness more to temperate situations and would probably be attributed to their responses to both the situations and therefore could be placed in an ecotone between these two major divisions. The above criteria was true irrespective of the seasons and though the values did show a rhythmicity of fluctuations during the different seasons it was the magnitude at which they oscillated, that depended on their location at different altitudes.

2. Phytoplankton and Zooplankton

In addition to physico-chemical parameters, both phytoplankton and zooplankton were studied. A list of important genera recorded is given in Table 3. The analyses revealed that managed waterbodies contained less varieties of phytoplankton but those present were higher in density. A perusal of the Tables 4, 5, 6 and 7 shows that there was a preponderence of green algae and diatoms in the hills replaced by blue-green and desmids in the plains. Moreover, the managed systems irrespective of the altitudes at which they were situated revealed the composition of algae similar to tropical situations of the plains. *Scenedesmus* was one genus which was abundant in most of the systems in addition to those mentioned earlier. There was a clear succession of algae in the different seasons which in the higher altitude ponds had desmids in spring which gave way to *Microcystis* in winter while it was blue-greens and dinoflagellates in spring at lower altitudes with green algae in winter.

Among the zooplankton a similar relationship as seen in phytoplankton existed. The quality increased with altitude but the quantity decreased. The group Rotifera particularly dominated by *Keratella* genus was seen to occur more at the higher altitude ponds while the crustacean zooplankton of Copepods and Cladocerans revealed abundances in plains. Further, though *Keratella* was present in plains it revealed a winter maxima in contrast to the summer abundances at higher altitudes. This was also true for Copepods and Cladocerans except that it was in the reverse seasons. Like phytoplankton, zooplankton revealed a composition similar to those in the water bodies of lower altitudes and in the managed fish ponds, with lower quality but increased abundance (Tables 8, 9, 10 and 11).

The biota as represented above were also indicative, like the physico-chemical parameters of tropical ponds and sub-tropical ones. Whatever the altitude, it was seen that situations of highly tropicalised nature could be manipulated as seen in the fish ponds. This may primarily be attributed to the fact that with lower pH and temperatures, systems at higher altitudes possessing an oligotrophic nature could be triggered by manipulation, and perturbation to create an eutrophic situation. The ponds are so situated that the watershed being common for all, but due to their locations are directly related to the impact of human population which increases as one goes down to the plains. It was, therefore, felt that ponds at higher altitudes are comparable with the Ward's Lake which, when induced by allochthonous factors, helps in the growth of biota whose intrinsic growth rates are directly related to the nutrient load. The study of the twenty ponds had paved the way for a greater understanding of the lentic systems in the region. In fact one would tend to believe that all these must have possessed at one time or other a common factor responsible for their successional phenomena as seen today. Such a study is ideal, since, one is able to predict the changes and the consequences of a system which is under very heavy stress and pressure. It would be promising to see specially at the managed systems at higher altitudes if left to nature whether they would come back to their matured oligotrophic nature of oscillations and rhythms with magnitudes around threshold levels and not a rise and crash of the biota indicative of immaturity.
### Table 1: Physico-chemical data of the twenty lentic systems.

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- D-Domestic Pond, Byrnihat
- E-Fish Pond I, Kyrdem Kulai
- F-Fish Pond II, Kyrdem Kulai
- G-Fish Pond I, Mawpum
- H-Fish Pond II, Mawpum
- I-Domestic Pond, Mawprem
- J-Lady Hyderi Park Pond I Shillong
- K-Lady Hyderi Park Pond II, Shillong
- L-GolfLink Pond, Shillong
- M-Polonground Pond, Shillong
- N-Fish Dale Pond I, Shillong
- O-Fish Dale Pond II, Shillong
- P-Fish Dale Pond III, Shillong
- Q-Pond I, Upper Shillong
- R-Pond II, Upper Shillong
- S-Fish Pond, Ladthalaboh

1. Air temperature  
2. Water temperature  
3. Secchi disc  
4. pH  
5. Conductivity  
6. Total alkalinity  
7. Oxygen  
8. Carbon dioxide  
9. Phosphate  
10. Silicate  
11. Nitrate  
12. Calcium  
13. Magnesium  

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H-Fish Pond II, Mawpun
I-Domestic Pond, Mawprem
J-Lady Hyderi Park Pond I Shillong
K-Lady Hyderi Park Pond II, Shillong
L-Golflink Pond, Shillong
M-Pologround Pond, Shillong
N-Fish Dale Pond I, Shillong
O-Fish Dale Pond II, Shillong
P-Fish Dale Pond III, Shillong
Q-Pond I, Upper Shillong
R-Pond II, Upper Shillong
S-Fish Pond, Ladthalaboh
T-Thadlaskein Lake Jowai

1. Air temperature
2. Water temperature
3. Secchi disc
4. pH
5. Conductivity
6. Total alkalinity
7. Oxygen
8. Carbon dioxide
9. Phosphate
10. Silicate
11. Nitrate
12. Calcium
13. Magnesium
Table-2 : Physico-chemical data of the twenty lentic systems.

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D-Domestic Pond, Byrnihat  
E-Fish Pond I, Kyrdem Kulai  
F-Fish Pond II, Kyrdem Kulai  
G-Fish Pond I, Mawpun  
H-Fish Pond II, Mawpun  
I-Domestic Pond, Mawprem  
J-Lady Hyderi Park Pond-I Shillong  
K-Lady Hyderi Park Pond II, Shillong  
L-Golflink Pond, Shillong  
M-Pologround Pond, Shillong  
N-Fish Dale Pond I, Shillong  
O-Fish Dale Pond II, Shillong  
P-Fish Dale Pond III, Shillong  
Q-Pond I, Upper Shillong  
R-Pond II, Upper Shillong  
S-Fish Pond, Ladthalaboh  

1. Air temperature  
2. Water temperature  
3. Secchi disc  
4. pH  
5. Conductivity  
6. Total alkalinity  
7. Oxygen  
8. Carbon dioxide  
9. Phoschate  
10. Silicate  
11. Nitrate  
12. Calcium  
13. Magnesium  

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M-Poluground Pond, Shillong  
N-Fish Dale Pond I, Shillong  
O-Fish Dale Pond II, Shillong  
P-Fish Dale Pond III, Shillong  
Q-Pond I, Upper Shillong  
R-Pond II, Upper Shillong  
S-Fish Pond, Ladthalaboh  
T-Thadlaskein Lake Jowai  

1. Air temperature  
2. Water temperature  
3. Secchi disc  
4. pH  
5. Conductivity  
6. Total alkalinity  
7. Oxygen  
8. Carbon dioxide  
9. Phosphate  
10. Silicate  
11. Nitrate  
12. Calcium  
13. Magnesium
### TABLE 3
**LIST OF PLANKTON GENERA RECORDED FROM TWENTY LENTIC SYSTEM**

#### 1 PHYTOPLANKTON

1. *Anabaena*  
2. *Actinastrum*  
3. *Antrodesmus*  
4. *Ankistrodesmus*  
5. *Botryococcus*  
6. *Bacillaria*  
7. *Closterium*  
8. *Coelosphaerium*  
9. *Cosmarium*  
10. *Calonis*  
11. *Coelastrium*  
12. *Cylindrocystis*  
13. *Chlamydomonas*  
14. *Chryaococcus*  
15. *Ceratium*  
16. *Characium*  
17. *Dictyosphaerium*  
18. *Desmidium*  
19. *Diatoma*  
20. *Dinobryon*  
21. *Euglena*  
22. *Eudorina*  
23. *Euastrium*  
24. *Eutonia*  
25. *Fragillaria*  
26. *Gymnozyga*  
27. *Gomphonema*  
28. *Gloeocapsa*  
29. *Gonium*  
30. *Gleocystis*  
31. *Gymnodinium*  
32. *Gonatozyгон*  
33. *Hormidium*  
34. *Merismopedia*  
35. *Microcytis*  
36. *Mastogloia*  
37. *Microsteriae*  
38. *Meridion*  
39. *Navicula*  
40. *Nitzschia*  
41. *Netrium*  
42. *Oedogonium*  
43. *Oscillatoria*  
44. *Phacus*  
45. *Pandorina*  
46. *Peridinium*  
47. *Pediastrum*  
48. *Pleurotaenium*  
49. *Pinnularia*  
50. *Penium*  
51. *Rhopalodina*  
52. *Synedra*  
53. *Staurastrum*  
54. *Scenedesmus*  
55. *Spirogyra*  
56. *Stauronsis*  
57. *Surirella*  
58. *Selenastrum*  
59. *Spirulina*  
60. *Trachelomonas*  
61. *Tetraedron*  
62. *Tribonema*  
63. *Urocelus*  
64. *Uronama*  
65. *Ulothrix*  
66. *Volvox*  
67. *Westella*  
68. *Xanthidium*  
69. *Zygnema*
### TABLE 3 (Contd.)

#### II - ZOOPLANKTON

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A to T : Names of the Ponds as for Table-1.  I to 69 : Same as in Table-3.
Table-5: Abundance of phytoplanktonic genera (Number/litre) in the spring season of the twenty lentic systems.

|   | A   | B   | C   | D   | E   | F   | G   | H   | I   | J   | K   | L   | M   | N   | O   | P   | Q   | R   | S   | T   |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 |     |     |     |     |     |     | 1410|     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3 |     |     |     |     |     | 240 | 180 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4 |     |     | 40  | 40  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 5 |     |     |     |     |     |     |     | 20  |     |     |     |     |     |     |     |     |     |     |     |     |
| 6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 80  |     |     |     |
| 7 | 10  | 480 | 40  | 10  |     |     |     |     | 170 |     |     |     |     |     |     | 2160| 180 | 140 | 20  | 120 | 100 |
| 8 |     | 860 | 180 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 9 |     |     |     |     |     |     |     |     |   50|     |     |     |     | 40  |     | 100 | 10  | 80  | 820 | 60  | 40  | 80  |
| 10|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 80  |
| 11|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 140 | 460 |     |     |     |
| 12|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 13|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 14|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 15|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 16|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 17|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 18|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 19|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 20|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 21| 860 | 480 | 20  | 90  | 50  |     |     |     | 10  | 120 | 160 | 40  | 20  | 160 | 10  | 60  |     |     |     |     |     |
| 22|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 23|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 24|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 25|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 26|     |     | 390 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 27|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 28|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 29|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 30|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 31|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 32|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 33|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 34| 200 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 35|     |     |     |     | 19642|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

A to T: Names of the Ponds as for Table-1.  1 to 69: Same as in Table-3.

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Table-5 : Abundance of phytoplanktonic genera (Number/litre) in the spring season of the twenty lentic systems.

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A to T : Names of the Ponds as for Table-1. I to 69 : Same as in Table-3
Table 6: Abundance of phytoplanktonic genera (Number/litre) in autumn season at the twenty lentic systems.

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A to T: Names of the Ponds as for Table-1.  1 to 69: Same as in Table-3  Contd. on next page
Table 6: Abundance of phytoplanktonic genera (Number/litre) in autumn season at the twenty lentic systems.

|   | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T |
|   |   |   |   |   | 80 | 480 | 60 | 120 | 10 |   |   |   |   | 150 | 100 |   |   |   |   |   |
| 37 |   |   |   | 80 |   |   | 40 |   | 10 |   |   |   |   |   | 40 |   |   |   |   |   |   |
| 38 | 40 | 80 | 180 | 660 | 140 | 610 | 180 | 1680 | 480 | 160 | 290 | 160 | 410 | 640 | 140 | 160 |   |   |   |   |
| 39 | 20 |   |   | 200 | 860 | 10 | 40 | 140 |   |   |   | 20 | 120 | 140 | 160 |   |   |   |   |   |
| 40 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 41 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 42 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 43 | 160 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 44 | 240 | 160 |   | 90 | 80 | 120 | 210 | 190 |   | 80 |   |   |   |   |   |   |   |   |   |   |
| 45 | 140 |   |   | 1860 | 170 |   | 150 | 620 | 110 |   |   |   |   |   |   |   |   |   |   |   |
| 46 | 290 |   | 60 |   |   |   |   |   |   |   |   |   |   |   | 120 | 80 |   |   |   |   |
| 47 | 40 | 43630 | 960 | 40 | 400 | 2040 |   | 110 |   | 290 | 10 | 120 | 80 | 60 |   |   |   |   |   |
| 48 | 80 | 20 | 160 |   | 10 | 80 |   |   |   |   |   |   |   |   | 110 |   |   |   |   |
| 49 |   | 60 |   | 60 |   | 120 | 20 | 50 | 30 | 20 | 20 |   |   |   |   |   |   |   |
| 50 | 120 | 40 | 10 | 20 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 51 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 52 | 20 | 120 | 20 |   |   | 50 |   |   |   |   |   |   |   |   |   |   |   |   |
| 53 | 160 | 150 | 7960 | 39600 | 36010 | 2040 | 160 | 180 | 160 |   | 140 | 40 | 10 | 2090 |   |   |   |   |
| 54 | 860 | 2060 | 3690 | 180 | 1240 | 680 | 80 | 180 | 40 | 140 | 60 | 60 | 160 | 110 | 120 | 160 |   |   |
| 55 | 40 |   |   | 10 |   | 60 |   |   |   |   |   |   |   | 110 |   |   |   |   |
| 56 | 60 |   |   | 40 |   |   |   |   |   |   |   |   |   |   | 60 |   |   |   |
| 57 | 10 | 110 |   | 10 | 120 | 80 |   |   |   |   |   |   |   |   |   |   |   |   |
| 58 |   |   | 2160 | 180 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 59 | 60 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 60 | 1160 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 61 |   |   |   | 960 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 62 |   |   |   | 1460 |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 63 | 10 | 150 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 64 |   |   |   | 80 |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 65 | 29640 |   | 9640 | 580 | - | 10 |   |   |   |   |   |   |   | 2980 |   |   |   |
| 66 | 580 | 2140 | - | 10 |   |   |   |   |   |   |   |   |   |   |   |   |
| 67 | 108170 | 2010 | 26940 | 108170 | 44320 | 5400 | 3200 | 7360 | 590 | 1620 | 3130 | 1090 | 1810 | 2640 | 780 | 2310 | 1790 | 1110 | 13640 |
| 68 | 890 | 36180 | 2010 | 26940 | 108170 | 44320 | 5400 | 3200 | 7360 | 590 | 1620 | 3130 | 1090 | 1810 | 2640 | 780 | 2310 | 1790 | 1110 | 13640 |

A to T: Names of the Ponds as for Table-1. 1 to 69: Same as in Table-3.
Table-7: Abundance of phytoplanktonic (Number/litre) genera in winter season at the twenty lentic systems.

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A to T: Names of the Ponds as for Table-1. 1 to 69: Same as in Table-3.
### Table-9: Quantitative occurrence (Units/litre) of summer zooplankton in twenty lentic systems.

|   | A  | B  | C  | D  | E  | F  | G  | H  | I  | J  | K  | L  | M  | N  | O  | P  | Q  | R  | S  | T  |
|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 2 | -  | 60 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 3 | 20 | 10 | 20 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 4 | -  | 240| 10 | 100| -  | 80 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 5 | -  | -  | -  | -  | 210| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 6 | -  | -  | -  | 50 | -  | -  | 140| 10 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 7 | 240| 10 | 10 | 30 | -  | -  | 40 | -  | -  | -  | -  | 110| -  | -  | 80 | 100| -  | -  | -  | -  |
| 8 | 120| 20 | 220| 20 | -  | -  | -  | -  | -  | 90 | 10 | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 9 | 20 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 10| 220| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 11| 60 | 80 | 20 | 20 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 12| -  | 10 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 13| 80 | 10 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 14| 100| 120| 60 | 170| 60 | 340| 40 | 10 | 20 | 140| 80 | 90 | 90 | 80 | 140| 10 | 40 | 20 | -  | -  |
| 15| 60 | 60 | 100| 60 | 170| 60 | 340| 40 | 10 | 20 | 140| 80 | 90 | 90 | 80 | 140| 10 | 40 | 20 | -  | -  |
| 16| 180| 140| 10 | 140| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 17| 10 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 18| 770| 20 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 19| -  | 10 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 20| -  | 20 | 120| 50 | 60 | 340| 40 | 10 | 20 | 140| 80 | 90 | 90 | 80 | 140| 10 | 40 | 20 | -  | -  |
| 21| 110| 30 | 20 | 80 | 20 | 110| 10 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 22| 80 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 23| 10 | 320| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 24| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 25| 50 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 26| 410| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 27| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 28| -  | -  | -  | 40 | -  | -  | 160| 210| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 29| -  | -  | 110| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 30| -  | -  | 20 | 60 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 31| -  | 40 | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |
| 32| -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  | -  |

A to T: Names of the Ponds as for Table-1.  
1 to 69: Same as in Table-3.
Table-10: Quantitative occurrence (Units litre) of autumn zooplankton genera in twenty lentic system.

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A to T: Names of the Ponds as for Table-1. 1 to 69: Same as in Table-3.
Table-11: Quantitative occurrence (Units/litre) of winter zooplankton genera in twenty lentic systems.

|   | A  | B  | C   | D   | E   | F   | G   | H   | I   | J   | K   | L   | M   | N   | O   | P   | Q   | R   | S   | T   |
|---|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 20 |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 2 |    | 150|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3 |    |    | 60  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4 | 1520| 70 |     | 560 |     |     |     | 10  | 20  | 20  | 10  |     |     |     |     |     |     |     |     |     |     |     |
| 5 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 6 |    |    |     | 80  |     |     |     | 210 | 40  |     | 10  |     |     |     |     |     |     |     |     |     |     |     |
| 7 | 140 |    |     | 80  |     |     |     |     |     |     |     |     | 20  |     |     |     |     |     |     |     |     |     |
| 8 | 60  | 80  |     | 210 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 9 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|10 |    |    | 180 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|11 |    | 40  | 120 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|12 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 120 |     |     |
|13 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 60  |
|14 | 120 |    |     | 20  | 80  |     |     | 10  | 60  | 110 | 40  |     |     |     |     |     |     |     |     |     |     |     |
|15 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|16 | 310 | 340 |     | 250 |     |     |     | 20  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|17 | 60  | 70  |     |     |     |     |     |     |     |     |     |     | 10  |     |     |     |     |     |     |     |     |
|18 |    |    | 160 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|19 |    |    |     |     |     |     |     |     |     |     |     |     |     |     | 60  |     |     |     |     |     |     |
|20 |    |    | 190 |     | 40  | 60  | 160 | 20  |     | 110 | 80  | 100 | 80  | 150 | 210 | 80  | 80  |     |     |     |     |
|21 | 100 |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|22 | 290 |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|23 |    | 40  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|24 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|25 |    | 10  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|26 | 160 |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|27 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|28 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     | 60  |
|29 |    |    | 180 |     | 20  | 300 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|30 |    |    | 20  |     | 240 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|31 |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|32 | 130 |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

A to T: Names of the Ponds as for Table-1.  I to 32: Names of zooplankton genera (Same as in Table-3.)
SUMMARY

Twenty waterbodies of Ri Bhoi and surrounding areas of Khasi and Jaintia hills of Meghalaya State were surveyed for their physico-chemical and biological nature. The ponds represented different types and were situated at different altitudes starting from around 100 m above sea level (Valley of Gauhati) to about 1900 m above sea level (Shillong peak).

It was observed that as one goes from hills down to lower altitudes, the values of temperature, both air and water, pH, conductivity, and total alkalinity increased but dissolved oxygen exhibited a reverse pattern. Among nutrients, the values were quite less to be indicative of any relationship to altitude except phosphate where a slight increase was noticed in lower altitudes.

Among phytoplankton, the managed waterbodies like fish ponds contained less varieties but those present, were higher in density. Green algae and diatoms dominated in the ponds of higher altitudes which were replaced by desmids and blue green algae in ponds of lower altitudes and plains.

Variations in zooplankton also reflected almost similar pattern. While rotifers occur more in higher altitude ponds, crustacean zooplankton were in abundance in plains.

ACKNOWLEDGEMENTS

We are grateful to the Director, Zoological Survey of India to enable us to publish this paper as part of the State Fauna series in the State Fauna of Meghalaya.

REFERENCES


WILDLIFE AND ITS CONSERVATION IN MEGHALAYA

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Zoological Survey of India
'M' Block, New Alipore, Calcutta 700 053, West Bengal

INTRODUCTION

Wildlife in the Indian context came into being only after the promulgation of the Indian Wildlife (Protection) Act of 1972. Wildlife as defined therein, broadly includes all living species of Flora and Fauna. But unlike Biodiversity, the immediate implications of Wildlife do not cover each and every species of plants and animals. As a priority it takes into account only those species which were designated earlier as wild game or of high economic value, and especially those which are rare, or threatened with extinction.

Wildlife therefore includes Mammals, Birds, Reptiles, Fishes considered as hunter's pride as also some colourful butterflies and beetles. Some of these animals were killed for their meat, hide, horns, antlers and tusks. They were at one time abundant but due to destruction of habitat and human interference have now become scarce and, hence, need protection before they are completely wiped off from the face of the Earth. This knowledge comes from detailed accounts of natural history, accounts of hunters and their game, and extensive literature on Flora and Fauna written by both specialists and naturalists.

The Flora and Fauna of the north eastern hills of India of which Meghalaya is a part possess a diverse and interesting mosaic of plant and animal species. Much of these living species are either endemic or very rare. The Nokrek Biosphere Reserve-cum-Gene-Sanctuary and the Balphakram National Park are repositories of the State's rare and threatened species. The geographical location of Meghalaya in the North-Eastern Region of India favoured immigration and introduction of various animal and plant species from the neighbouring States of North-East India as well as from bordering countries like China, Burma and Bangladesh.

FOREST TYPES

The luxuriant, dense forest covers of the Khasi and the Garo Hills in particular are due to the interplay of temperature and abundant rainfall. A long stretch of original vegetation cover between river Kynshi in the East and the Simsang Someswari river valley, still remains untouched by man. Another striking feature of Meghalaya is the presence of remnants of innumerable small primary forests called sacred groves or Law Lyngdoh in the Khasi and Jaintia Hills. From time immemorial, the plants in these forests are left unhindered to grow, live, decay and re-grow, without any interference from man. The local villagers do not collect the fallen leaves, twigs or branches nor does anyone pluck fruits. Neither is the wood of trees or even shrubs and herbs used for fuel, timber,
medicines or even for ornamentation. It is a belief that if trees are cut or flowers plucked the wrath of the deities which reside there would fall on them. The one at Mawphlang and another at Shillong peak deserves mention.

The State of Meghalaya boasts of nearly eight forest types - Sal, Mixed Deciduous, Evergreen, Bamboo, Grassland, very Moist Sal, Eastern Himalayan Deciduous and Assam sub-Tropical Pine. In the upper hill regions from 1200 meters above, in the Central Plateau of Khasi Hills, the most prominent vegetation is the Coniferous Pine trees. From the Central Plateau upto Jowai and Pasri in Jaintia Hills, Khasi Pine can be found - though somewhat stunted in Jaintia Hills. The Northern hills abound in forests of red Rhododendrons and a diversity of Orchids. In the middle hill slopes between 600 meters and 1200 metres altitude, temperate forests and Grasslands occur, while the lower hill slopes between 300 meters and 600 meters abound in sub-Tropical Deciduous forests and Grasslands and finally in the lower hills, Canes and Bamboos are abundant.

HABITATS

Unfortunately, Meghalaya has barren/degraded wasteland amounting to 8150 sq.km. All this is primarily due to shifting cultivation also known as Jhum. This is a practice of cultivation where forests are cut and burned and a multiple number of crops like rice, barley, cucumber etc. are harvested in a year. Thereafter the area is left as fallow for an indefinite period. Earlier this period of leaving the land fallow allowing secondary vegetation growth was for nearly 20-30 years. This helped the soil fertility to return to its near original state. Unfortunately this period of allowing the land to lie fallow has been reduced to only 4-5 years primarily due to increased population pressure. This renders the land totally degraded. Most of all, this also renders the forest corridors bare, leading to large scale depredation of elephants. Moreover the population of Gibbons (the only living ape in India) and other non-human primates is reduced due to the non-availability of territory and contiguous forest canopy for foraging. The Forest Department of Meghalaya has taken steps to rectify this situation. 427 sq.km. of barren land has been brought under artificial plantation upto the Seventh Plan. The species planted are mostly Khasi Pines and broad leaved economic and fast growing species. The physical target for the Eighth Plan is proposed to be 620 sq.km.

BIOGEOGRAPHY

Meghalaya is known to be a paradise for Botanists, But it is no less to the Zoologists for its interesting, rare and diverse faunal wealth. Many biologists consider Meghalaya as the gateway through which many species of Indo-Chinese origin particularly mammals migrated to Peninsular India. Though the present day Fauna of Meghalaya is now primarily of Indo-Chinese origin, however, Peninsular Indian Fauna are also abundant along with Ethiopian elements and Palearctic elements. Many of the relict species of animals confined to the Western Ghats have closely related species not only in Meghalaya but in the North East regions of India.

STATUS OF WILDLIFE

This chapter is primarily to highlight those animals which have been enlisted in the Schedules of the Wildlife (Protection) Act, 1972 and its subsequent amendments. The Schedules are based on the
status of the species viz., rare, endangered, threatened, vulnerable, etc. According to the threat of extinction, Schedule I contains those species which need top most priority, while Schedule II, III, IV and V have accordingly lesser degree of threat. Similarly some of them feature in Appendix I or II of CITES (Convention on International Trade in Endangered Species of Flora and Fauna) as well as in the ZSI Red Data Book of Indian animals.

Among the vertebrates it has been recorded till date that Meghalaya has 139 species of Mammals, 541 species of Birds, 94 species of Reptiles, 33 species of Amphibia and 152 species of Fishes. Of these 35 species of Mammals are endangered, vulnerable or insufficiently known. Similarly 10 species among Birds and 9 species among Reptiles are either endangered or vulnerable.

SELECTED REFERENCES
Gee, E.P. 1964. The Wildlife of India
Pocock, R.I. 1939-1941. Fauna of British India, Mammalia (2nd ed) Vol I-II.

LIST OF THREATENED SPECIES OF ANIMALS

MAMMALIA

<table>
<thead>
<tr>
<th>Species</th>
<th>Threat Status</th>
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<tr>
<td>Nycticebus coucang bengalensis (Lacepede)</td>
<td>Slow Loris</td>
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<tr>
<td>Macaca nemestrina leonina Blyth</td>
<td>Pigtail Macaque</td>
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<td>Macaca arctoides (I. Geoffroy)</td>
<td>Stumptail Macaque</td>
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<td>Presbytis pileatus (Blyth)</td>
<td>Capped Langur</td>
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Hylobates hoolock (Harlan) Hoolock Gibbon EN
Manis pentadactyla aurita Hodgson Indian Pangolin IK
Helarctos malayanus (Raffles) Malayan Sun Bear EN
Martes falvigula flavigula (Boddart) Yellowthroated Marten V
Mustela kathiah (Hodgson) Weasel V
Melogale personata nipalensis (Hodgson) Ferret Badger V
Ailurus fulgens F. Cuvier Red Panda EN
Arctonyx collaris collaris F. Cuvier Hog-Badger IK
Aonyx cinerea concolor (Rafinesque) Oriental Small Clawed Otter V
Viverra zibetha zibetha Linnaeus Large Civet V
Viverricula indica (Desmarest) Small Indian Civet V
Paradoxurus hermaphroditus (Phallas) Palm Civet V
Paguma larvata neglecta Pocock Himalayan Palm Civet V
Arctictis binturong (Raffles) Binturong EN
Felis marmorata Martin Marbled Cat EN
Felis temmincki Vigors & Horsfield Golden Cat EN
Felis bengalensis bengalensis Kerr Leopard Cat V
Neofelis nebulosa (Griffith) Clouded Leopard EN
Panthera pardus fusca (Meyer) Leopard V
Panthera tigris tigris (Linnaeus) Tiger V
Elephus maximus indicus G. Cuvier Asiatic Elephant V
Cervus duvaucelli G. Cuvier Swamp Deer V
Tetraceros quadricornis (Blainville) Fourhorned Antelope V
Bos gaurus H. Smith Gaur V
Bubalus bubalis (Linnaeus) Water Buffalo EN
Capricornis sumatraensis (Bechstein) Serow V
Belomys pearsoni (Gray) Small Flying Squirrel V
Petaurista petaurista lylei Bonhote Giant Flying Squirrel V
Petaurista alborufous candidulus Wroughton Wroughton's Flying Squirrel V
Petaurista magnificus (Hodgson) Hodgson's Flying Squirrel V
Hylopetes alboniger alboniger (Hodgson) Particoloured Flying Squirrel V

EN = Endangered;  V = Vulnerable;  IK = Insufficiently Known
BIRDS

*Platalea leucorodia major* Temminck & Schlegal  
Spoonbill  
EN

*Aviceda leuphotes syama* (Hodgson)  
Blackcrested Baza  
V

*Pandion haliaetus haliaetus* (Linnaeus)  
Osprey  
V

*Bambusicola fytchii hopkinsoni* Godwin Austen  
Assam Bamboo Partridge  
V

*Pavo cristatus* Linnaeus  
Indian Peafowl  
V

*Ptilolaemus tickelli austeni* (Jerdon)  
Brownbacked Hornbill  
V

*Aceros nipalensis* (Hodgson)  
Rufousnecked Hornbill  
V

*Rhyticero undulatus tichehursti* Diegnan  
Wreathed Hornbill  
V

*Anthracoceros malabaricus malabaricus* (Gmelin)  
Indian Pied Hornbill  
V

*Polyplectron bicalcaratum*  
Peacock Pheasant  
V

REPTILIA

*Kachuga tecta* (Gray)  
Indian Tent Turtle  
V

*Geoclemys hamiltoni* (Gray)  
Spotted Black Terrapin  
V

*Melanochelys tricarinata* (Blyth)  
Eastern Hill Terrapin  
V

*Lissemys punctata punctata* (Lacepede)  
Indian Flapshelled Turtle  
V

*Trionyx hurum* (Gray)  
Peacockmarked Spottedshelled Turtle  
V

*Varanus bengalensis* (Daudin)  
Common Indian Monitor Lizard  
EN

*Varanus salvator* (Laurenti)  
Water Monitor Lizard  
EN

*Varanus flavescens* (Gray)  
Yellow Monitor Lizard  
EN

*Python molorus* (Linnaeus)  
Rock Python  
EN

EN = Endangered;  V = Vulnerable;  IK = Insufficiently Known
### Distribution of major wildlife species with special reference to different districts & conservation areas of Meghalaya

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<td>4. Spoonbill <em>Platalea leucorodia</em></td>
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<td>6. Blyth's Baza <em>Aviceda jerdoni</em></td>
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<td>7. Goshawk <em>Accipiter gentilis</em></td>
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<td>10. Sparrow-Hawk <em>A. nissus melaschistos</em></td>
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<td>11. Eastern Besra Sparrow-Hawk <em>A. virgatus gularis</em></td>
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<td>12. White-eyed Buzzard Eagle <em>Butastur teesa</em></td>
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<td>13. Eastern Steppe Eagle <em>Aquila repax nipalensis</em></td>
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<td>14. Black Eagle <em>Ictinaetus malayensis</em></td>
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<td>15. Black or King Vulture <em>Sarcogyps calvus</em></td>
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<td>16. Redbreasted Falconet <em>Nicrohierax caerulescens</em></td>
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<td>17. Peregrine Falcon <em>Falco p. peregrinator</em></td>
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<td>18. Merlin, <em>Falco columbarinus</em></td>
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<td>19. Kistrel, <em>F. trinnunculus</em></td>
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<td>20. Bamboo Patridge <em>Bambusicola fytchii</em></td>
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<td>21. Red Slurfowl <em>Galloperdix spadiacea</em></td>
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<td>22. Blyths Gryballed Tragopan <em>Tragopan blythii</em></td>
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<td>23. Kalij Pheasant <em>Lophura leucomelana</em></td>
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<td>24. Peacock Pheasant <em>Polyplectron bicalcaratum</em></td>
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State Fauna Series 4: Fauna of Meghalaya
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| 25. | Common Peafowl *Pavo cristatus* | | | | | | | | | | | | | | | | |
| REPTILIA | | | | | | | | | | | | | | | | |
| 1. | Indian Mud Turtle *Lessemys punctata* | +  | +  | +  | +  | +  | +  | II | I  | V.C. | | | | | | | | |
| 2. | Eastern Hill Tortoise *Geochelone emys* | +  | +  | +  | +  | +  | +  | IV | IV | R. | | | | | | | | |
| 3. | Bengal Monitor *Varanus bengalensis* | +  | +  | +  | +  | +  | +  | I  | I  | F.C. | | | | | | | | |
| 4. | Water Monitor *V. salvator* | +  | +  | +  | +  | +  | +  | +  | I  | I  | F.C. | | | | | | | | |
| 5. | Indian Python *Python molurus* | +  | +  | +  | +  | +  | +  | +  | I  | I  | R. | | | | | | | | |
| 6. | King Cobra *Ophiophagus hannah* | +  | +  | +  | +  | +  | | | | | | | | | | | | |

C = Common, R = Rare, V.R. = Very Rare, Sc. = Scarce, N.R.R. = No Recent Records, F.C. = Fairly Common