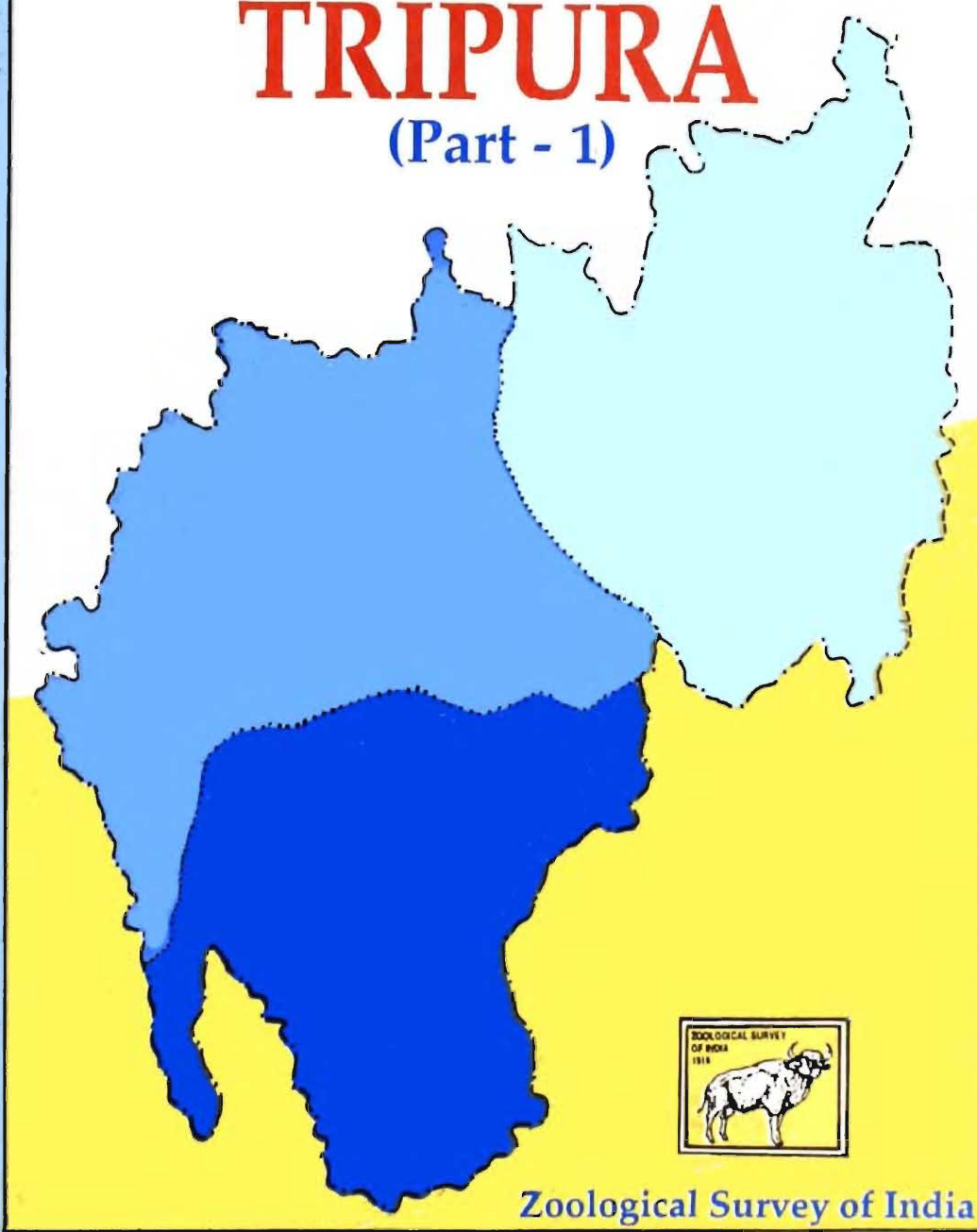
State Fauna Series - 7

FAUNA OF TRIPURA

(Part - 1)



Zoological Survey of India

State Fauna Series 7

FAUNA OF TRIPURA

(PART-1)

VERTEBRATES

Edited by

The Director
Zoological Survey of India, Kolkata

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Kolkata

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FAUNA OF TRIPURA

VERTEBRATES

PART-1 **2002** **Pages 1-365**

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THE STATE FAUNA OF TRIPURA : AN OVERVIEW

V. T. DARLONG AND J. R. B. ALFRED*

Ministry of Environment & Forests, North-East Regional Office, Shillong-793 003

1. INTRODUCTION

1.1. Location and area

Tripura, the smallest of the "seven sisters of the north-east", is situated between 22°51'-24°32' N and 90°10'-92°21' E. It has an international boundary of 8.39 km with Bangladesh towards its west, south and north. In the east, the state shares a common boundary with Mizoram and Assam for 109 km and 53 km respectively.

The state has a geographical area of 10,491 sq. km It accounts for 0.32% of the total land area of India and occupies the 22nd position in terms of the area among the States and Union Territories of India. The maximum length and breadth of the state measures 183,50 km and 112.70 km, respectively. About 70% of the state is hilly. The NH 44 passes through the state. Its capital, Agartala is situated on the bank of the river Haora at 23°50'40" N and 91°22'55" E with an altitude of 12.8 m.

1.2. History

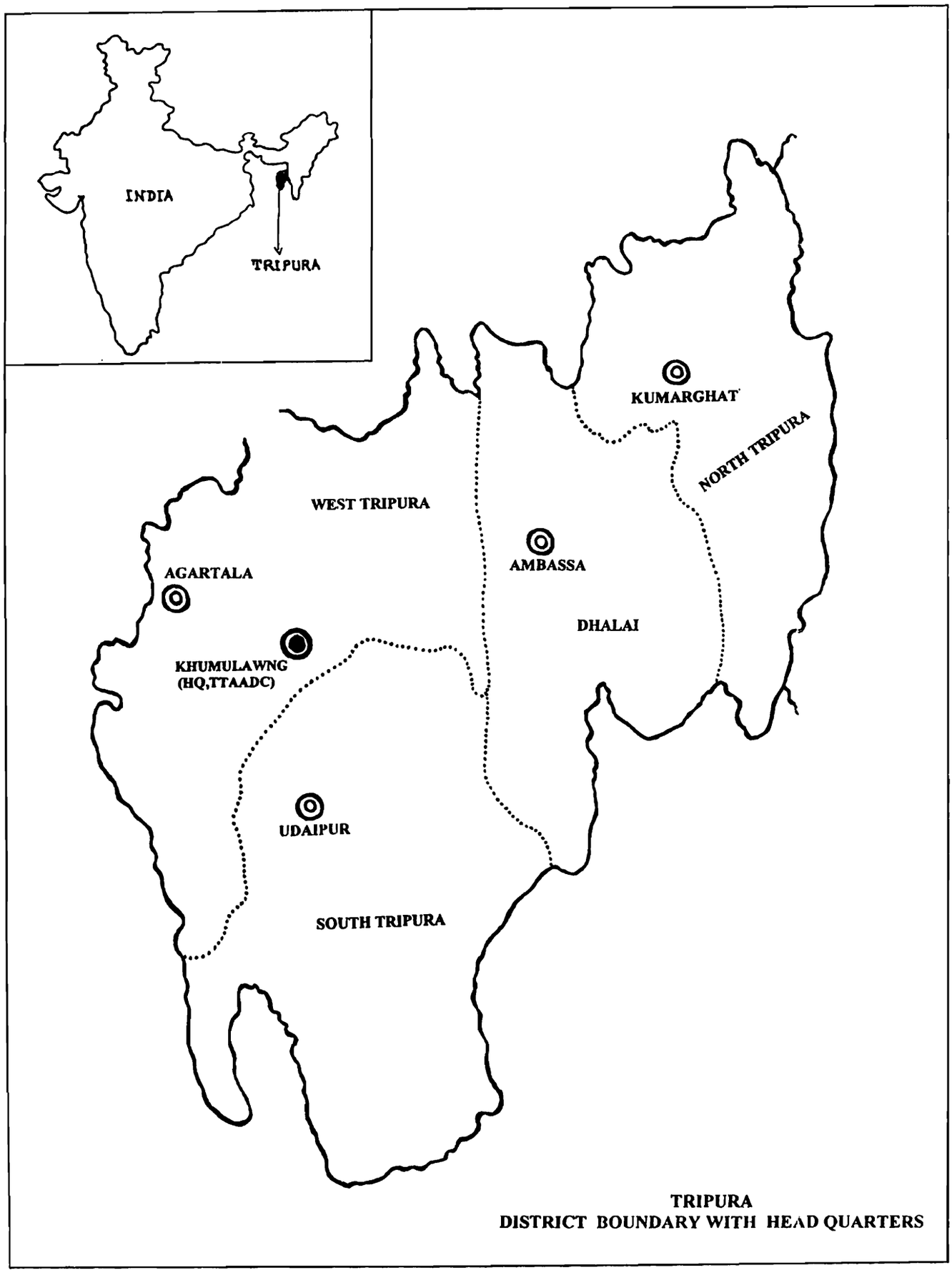
The British political parlance of Tripura was Tipperah or Hill Tipperah. The story of the origin of the name "Tripura" is shrouded in myth and legend. The name of the state is believed to have been coined in honour of the King Tripura, who was the 46th descendant of Chandra dynasty, an emperor considered to be contemporary of Raja Judhistir of the Mahabharata age. Some scholars ascribe the name to be in honour of the goddess Tripureswari or Tripura Sundari of Radha-kishorepur (Udaipur), Others treat Tripura as a derivative form of "Tri Puram" meaning 'a land of three cities' There are still others who believe that the name is a combine form of two tribal words, "tui' and "pra" which mean 'a land adjoing water' Yet others well-versed in the Sanskrit learning of yore have identified it with a name Tripura that occurs in ancient Sanskrit texts. The search into the genesis of the name thus continues and the arguments over the origin of the nomenclature "Tripura" remain inconclusive even today.

Whatever may be the historical fact, the history of Tripura and its kingdom was a very ancient one. It has been ruled by the Maharajas of Tripura for an unbroken period of thirteen hundred years. The history of Tripura can be understood from the Rajmala or Chronicles of the kings of Tipperah and the writing of Mohammedan historians since 1407 AD.

It is believed that the kingdom of Tipperah was founded by King Druhya, son of Yajati, one of the kings of the lunar (Chandra) race. King Tripura, the 46th descendant of Chandra dynasty was believed to be a contemporary of King Judhistir (of Mahabharat fame).

The Mohammedan attack on Tipperah started from 1279 AD but for about three centuries their attacks were bravely repulsed by the successive rulers of Tripura. About 1620, during the reign of Emperor Jahangir, the Mughal force attacked Tipperah and its Raja was taken prisoner to Delhi. During the reign of Maharaja Dharma Manikya, the Nawab of Murshidabad conquered a large portion of plain Tipperah but thereafter the hill Tipperah remained more or less under the peaceful possession of the Raja.

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TRIPURA
DISTRICT BOUNDARY WITH HEAD QUARTERS

During the British rule, the Rajas of Tipperah successively governed the State as semi-independent princes, although since 1808, from the reign of Durga Manikya, successive Raja has received investiture from the British Government. Prominent Rajas of Tipperah during the British period were Birchandra Manikya, Radha Kishore Manikya (1897-1909), Birendra Kishore Manikya (1909-1923), and Bir Bikram Kishore Manikya (1923-1947). After the death of Bir Bikram Kishore Manikya on 17th May 1947. Her Highness Maharani Kanchan Prova formed a Regency Council in order to carry out the administrative function of the State. On 15th October 1949, Tripura merged with the Union of India. The State attained full statehood on 21st January 1972 under the North-Eastern Regions Re-Organisation Act, 1971.

1.3. Administrative divisions

Until 1872, the general administration of the state was conducted from Agartala, the capital and residence of the Maharaja. In 1872, the north-eastern sub-division of Kailashahar was created and two years later in 1874, the south-western sub-division of Udaipur was created. On 15th October 1949, when the state merged with the Union of India, the administrative units of the state were termed divisions and tehsils upto 1952. From 1953 onwards, the entire state of Tripura was treated as one district territory. Until 1970, Tripura was still a district territory with ten sub-divisions. On 1st September 1970, the Union Territory of Tripura was divided into three districts, *viz.* North, West and South. Today, the entire state is divided into four districts, *viz.* North Tripura, Dhalai, West Tripura and South Tripura. In addition, with the creation of Tripura Tribal Areas Autonomous District Council, about two-third of the state, mainly encompassing tribal-compact areas, is under the Council, without of course effecting any change in its district or sub-divisional boundaries.

2. TOPOGRAPHY

True to its name (Hill Tipperah in British parlance), about 70% of the land in Tripura is hilly. Physiographically, the area represents the western fringe of the typical 'ridge and valley' structural province of the late Tertiary fold mountain belt, commonly known as the Indo-Burman Ranges or Purbachal Range. The general altitude of the State varies from 780 m in the northeastern part to 15 m or even less in the western part above mean sea level. The physiography of the entire state can be divided into three distinct physiographic zones :

Zone-I : Hill Ranges

This zone includes six major hill ranges running parallel with north-south orientation, each separated by a narrow valleys of about 20 km wide.

Zone-II : Highland and plateau

This zone forms the western limits of the hilly region. The plateau gradually rises from west to east with an elevation ranging from 3-37 m and finally merging with the eastern hilly tracts. This zone is dissected by valleys, streams and gullies and is severely eroded.

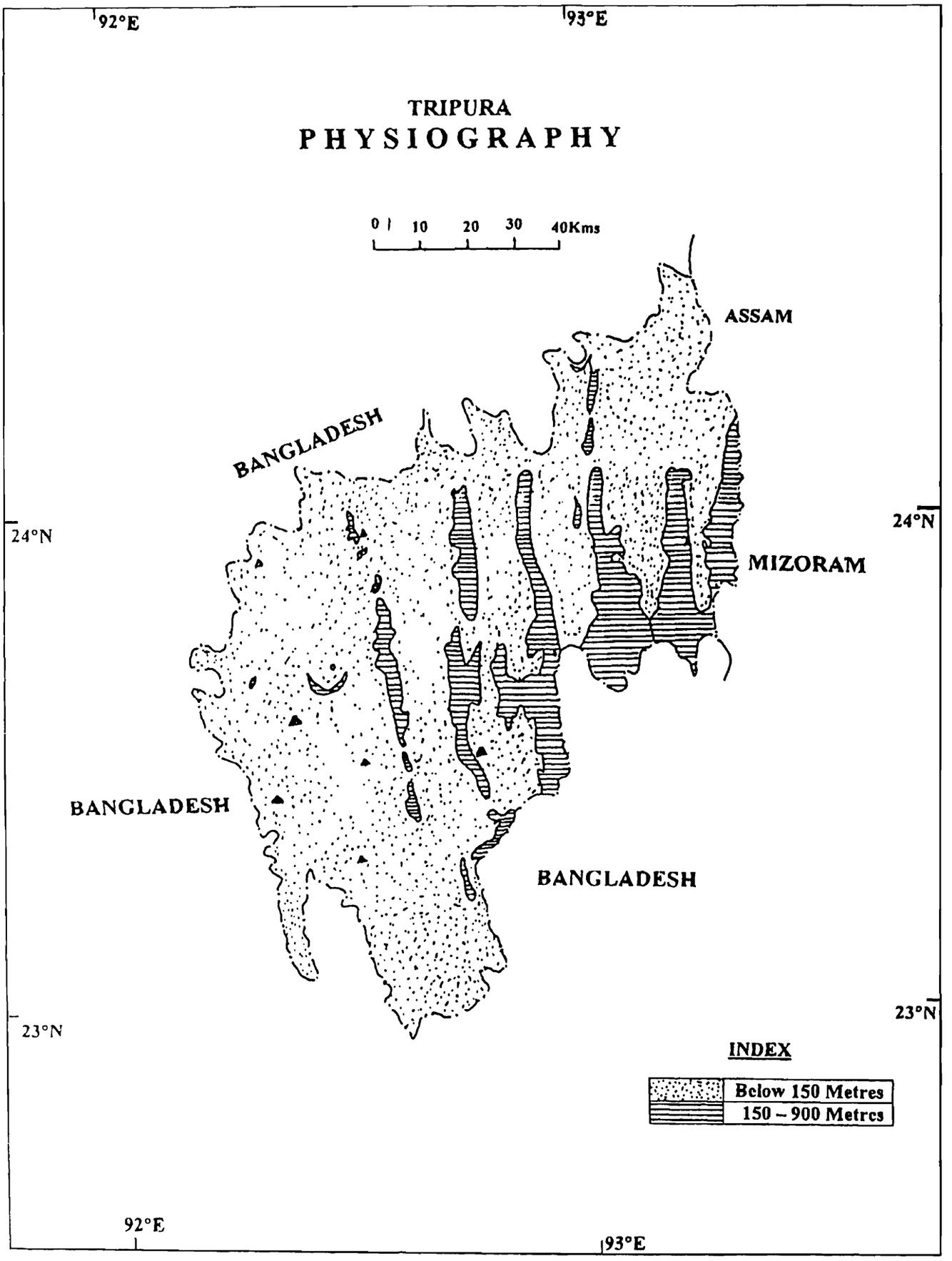
Zone-III : Alluvial Valleys

It is the zone with an average height of 7 m above mean sea level in the valleys. But in several areas such alluvial valleys are interspersed by hillocks or low hills called 'tilas' with an elevation of 30-60 m and swamps or marshy areas locally called 'loongas'/'lungas'

However, the most striking topographical feature of State area its six principal hill ranges. These are the Jampui, Sakhantlang, Longtarai, Atharamura, Baramura and Deotamura.

The Jampui range is the highest range in Tripura. It runs 74 km over north to south alignment. Betlinag sip (975.36m) lying to the extreme south is the highest peak of this range.

The Sakhantlang range lying to the west of Jampui range is lower in altitude than the former. It runs about 78 km in north-south directions. The range is bisected by the Deo river near Kumarghat into the Unokoti range towards the north and the Sakhantlang towards the south. The Unokoti range


92°E
93°E
TRIPURA
PHYSIOGRAPHY
0 10 20 30 40Kms
ASSAM
BANGLADESH
24°N
MIZORAM
BANGLADESH
BANGLADESH
23°N
INDEX
Below 150 Metres
150 – 900 Metres
92°E
93°E

is about 20 km in length, built up of coastal teritary deposits of sand and low in elevation. The famous holy shrine of Unokot near Kailashahar is located in this range. On the other hand, the Sakhantlang range from near Kumarghat runs towards the south for 58 km before it merges with Chittagong hill ranges. In this range the highest peak is the Sakhan (816.25 m).

To the West of Sakhantlang range is the Longtarai range. It is about 48 km in length. Phengpur (482 m) is the highest peak in this range. The local tribals (the Reangs) generally believe that the Longtarai devta (god) lives in this hill range.

The Atharamura (athra = eighteen; mura = hills) lying to the west of the Longtarai is lower in altitude than the former with 106 km, this is the longest hill range of Tripura. The highest elevation of this range is Niungmamura (482 m). Other important peaks of this range area Atharamura (436 m). Jarimura (457 m) and Tulamura (244 m). This hill range forms the demarcating boundary between Kamalpur and Khowai sub-divisions.

To the west of Atharamura is the Baramura (bara = big ; mura = hills) hill range. It is only 47 km in length. The notable peaks of this hill range are Saisunmura (248 m), Baramura (175 m) and Champamura (154 m). This hill range is rich in natural gas. This hill range runs over a common boundary between Khowai and Sadar Sub-division.

The Deotamura (deota or devta = god ; mura = hill) is about 85 km in length. Its highest peak is the Deotamura (247 m). This hill range runs over the boundary between Udaipur and Amarpur sub-division.

There are other geomorphologists who tend to describe the above landform of Tripura into two fundamental domains, *viz.* Neogene fold ridges and alluvial terrain. The major six hill ranges with north-south anticlinal ridges of nearly rounded a flat-topped Baramura to comparatively more rugged Atharamura having several spurs constitute the Neogene Fold Ridges.

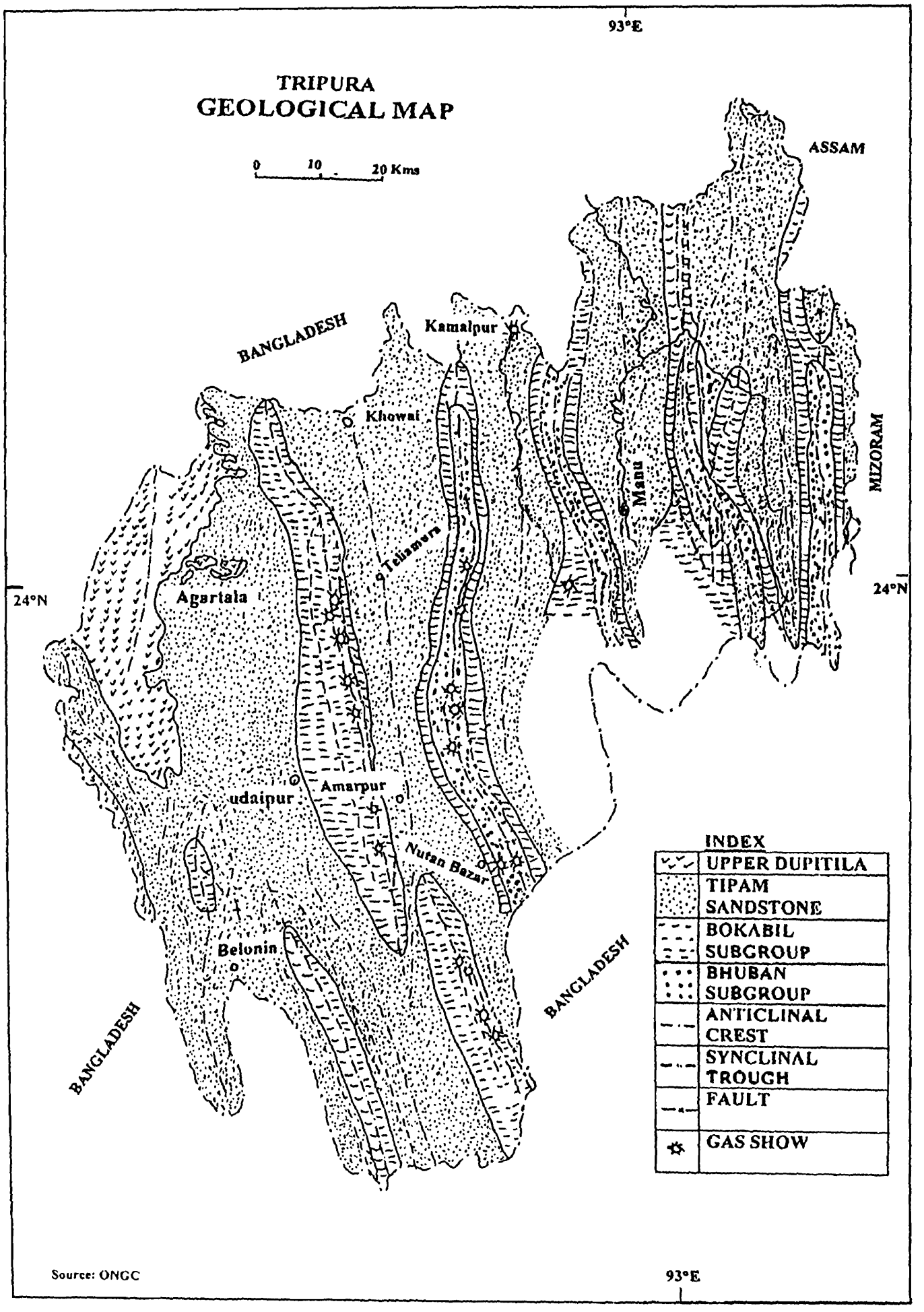
The Alluvial Terrain on the other hand can further be divisible into three groups based on the characteristic relief, slope, degree of dissection, soil character, landform assemblage and nature of alluvial fill. These are (i) the table lands or "tilla" lands and rolling mounds characterised by maximum dissection, drainage and weathering, (ii) the low lands or 'lunga' lands characterised by comparatively stabilised, undissected, higher flood plains and (iii) the recent flood plains constituting the present day flood-prone belts fringing the rivers and streams.

3. SEISMOTECTONICS

Tripura is located within the seismically active zone; the state experiences mild to moderately severe seismic shock very often. The Surma Basin in the Tripura-Mizoram area lies in between the seismically active Shilong Plateau to the north and Arakan Yoma to the east. It is recorded that although the epicentres of very few earthquake recorded during the recent past fall in this area, the state has however been affected by some of the famous earthquakes like the Great Assam (1897), Srimangal (1918), Dhubri (1930), Assam (1975) earthquakes etc. In fact, the epicentres of the devasting Srimangal earthquake of 1918 lies very close to the northern border of Tripura.

4. GEOLOGY

The geological setting of Tripura is considered to be fairly young in origin. As mentioned earlier, the geomorphology of the state is characterised by a succession of hill ranges and valleys of meridional and sub-meridional trends. The hill ranges are box like anticlines with relatively compact and resistant older rock units exposed in the narrow crests, whereas the valleys are flat synclines with younger and softer rock units exposed in the wide troughs. The folded belts constitutes the frontal sub-belt of the Assam-Arakan geosynclinal basin being separated on the east by the inner mobile sub-belt or Mizoram consisting of tight linear folds. Toward its west lies the fore deep of Bengal Basin covered


93°E
TRIPURA
GEOLOGICAL MAP
0 10 20 Kms
ASSAM
MIZORAM
BANGLADESH
Kamalpur
Khowai
Teliamura
Manu
Agartala
udaipur
Amarpur
Nutan Bazar
Belonia
BANGLADESH
BANGLADESH
24°N
24°N
INDEX
UPPER DUPITILA
TIPAM SANDSTONE
BOKABIL SUBGROUP
BHUBAN SUBGROUP
ANTICLINAL CREST
SYNCLINAL TROUGH
FAULT
GAS SHOW
Source: ONGC
93°E

completely by Gangetic alluvium and deltaic sediments (Biswas *et al.*, 1989).

The geology of Tripura exposes mainly sediments of the Neogene age comprising a poorly fossiliferous succession of alternating shales, mudstones, siltstones and sandstones in varying proportions. In addition, extensive sediments of Quarternary age occur as terraced valley fills comprising mainly unconsolidated sand, silt and clays in distinct cycles. The succession has been lithostratigraphically subdivided from bottom upwards into the standard Surma, Tipam and Dupi Tila Groups. The more argillacious rocks exposed in the cores of the anticlines are quivalent to the Surma Group of Mio-Pliocene age which is about 4 km thick in Tripura. The younger arenaceous beds in the flanks comprise the Tipam Group of probable Upper Piliocene age and are over 2 km thick. The sediments in the synclinal troughs in the West Tripura are at places unconformably overlain by a sequence of unconsolidated to semi consolidated sediments arranged in neat terraces which is named as Dupi Tila Group. This group of sediments range in age from Pleistocene to Recent and hence is of Quarternary age.

The Surma Group of rocks has been further subdivided into a lower, the relatively more arenaceous, Bhuban unit and upper, the mainly argillaceous, Boka Bil unit. The Bhuban formation exposed in the cores of the anticlines of Tripura consists of calcareous sandstone, calcareous shale, fine-grained sandstone and limestone. The sandstone forms the predominant rock type with shales occurring as the alternating unit. The limestones occur as small discontinuous lensoidal bodies within the shale, and vary in thickness from 0.2 to 2.3 m. Some of the sandstone and limestone beds contain fossils of mainly bivalves and gastropods. The available field and laboratory data suggest that the rocks of the Surma Group as a whole were deposited in an unstable, rapidly subsiding tectonic basin under mainly deltaic conditions, with at least three major intervals representing transgressive marine cycles. The Bōka Bil formation predominantly consists of siltstone with small interbedded sandstone. The thin sandstone units are restricted to the lower portion of the Boka Bil Formation. An intraformational conglomerate occurs towards the top of the formation. A number of thinly bedded micaceous sandstone marks the transition to the Tipam Group. The Tipam Group consists of sandstone with occasional thin bands of siltstone and boulders of calcareous concretion and coal streaks.

5. CLIMATE

Tripura enjoys a typical warm and humid tropical monsoon climate. Climatically, a year may broadly be divided into four seasons *viz.*, Winter (December-February), Summer (March-May), Monsoon or rainy season (June-September) and post-monsoon or autumn (October-November), which is locally called Sarat-Hemanta. Usually a brief spring season during March-April is also recognisable, which is locally known as Basanta.

The rainfall in Tripura is mostly influenced by the south-west monsoon. The annual average rainfall of the state is about 2100 mm, usually spread over a maximum period of six months *i.e.*, May through October, although maximum rainfalls between June-September. The pattern of rainfall throughout the state is not uniform. The alignment of the hill ranges in general affects both the temporal and spatial distribution of rainfall.

In terms of temperature, Tripura is neither too cold nor too hot but moderate in nature. The variation in temperature from one place to another is negligible, except in the hills. The range of variation of temperature in the plains or valleys of Tripura during summer could be from an average minimum of 21.4°C to an average maximum of 36.8°C. During the winter, the temperature could drop down to an average of 4-10°C in the plains and even lower in the hills. January is the coldest month while June-July remained the hottest months. Fogs are common in winter months. Cyclones are also common in the months of April-May. In summer, the plain areas in particular are hot humid, but otherwise also humidity is generally high throughout the year ranging from 70% to 80% on an average.

6. RIVER AND WATER RESOURCES

6.1. Rivers/surface hydrology

Tripura is well watered by as many as eleven major rivers. As significant feature of the rivers is that they are ephemeral in nature and their flows are directly related to rainfall. Consequently, the rivers are slender during the summer months and brimful during the rainy seasons, occasionally even causing devastating floods.

The rivers originate from the hill ranges and flow through the valleys. The rivers are also fed by numerous tributaries arising from the catchment areas. The upper part of these rivers pass through narrow gorges, while their lower parts becomes a broad sluggish river with shallow beds. Therefore, floods are very common in Tripura during the rainy season.

The principal rivers of Tripura are the Longai, Juri, Deo, Manu, Dhalai, Khowai, Haora, Gunti, Muhuri, Burigang and Fenni. Besides these, there are innumerable strams/streamlets called "charas"

Longai : It rises from the Jampui range. It is characterised by a northerly flow between the Mizo and Jampui Hills and enter Cachar district of Assam near Damchara. The flow length of the river is about 98 km.

Juri : The Jampui Hills are source of the river. It has a northerly flow through the Dharmanagar valley on the eastern side of the Sakhan range. Its length is about 97 km and merges with the river Kusiyara in Bangladesh.

Deo : Rising from the Jampui range it flows northward through the Kanchanpur valley between the Jampui and the Sakhan range and then turns westward, crosses the Sakhan and meets the Manu river near Kumarghat in the central part of the valley between the Sakhan and Longtharai. The flow length of the Deo river is 98 km from its source upto its confluence with the Manu.

Manu : It originates from the Sakhan range and is joined by the Chhamanu rising from the Longtharai hills and their combined flow drains the valley between the Sakhan and the Longtharai ranges in a northern direction. After intercepting the flow from the Deo river the Manu flows northward into Bangladesh part Kailasahar. The length of the river is about 167 km.

Dhalai : The source of the river is the Longtharai range. It is characterised by a northerly flow through the valley between the Longtharai and the Atharamura ranges and enters Bangladesh past Kamalpur. It is 117 km long.

Khowai : The river with its source in the Longtharai range flows north-westward upto a point near Teliamura, then it takes a northerly course through the valley between the Longtharai and the baramura ranges and debouches into Bangladesh past Khowai, the sub-divisional town. The river has a flow length of 166 km within the State.

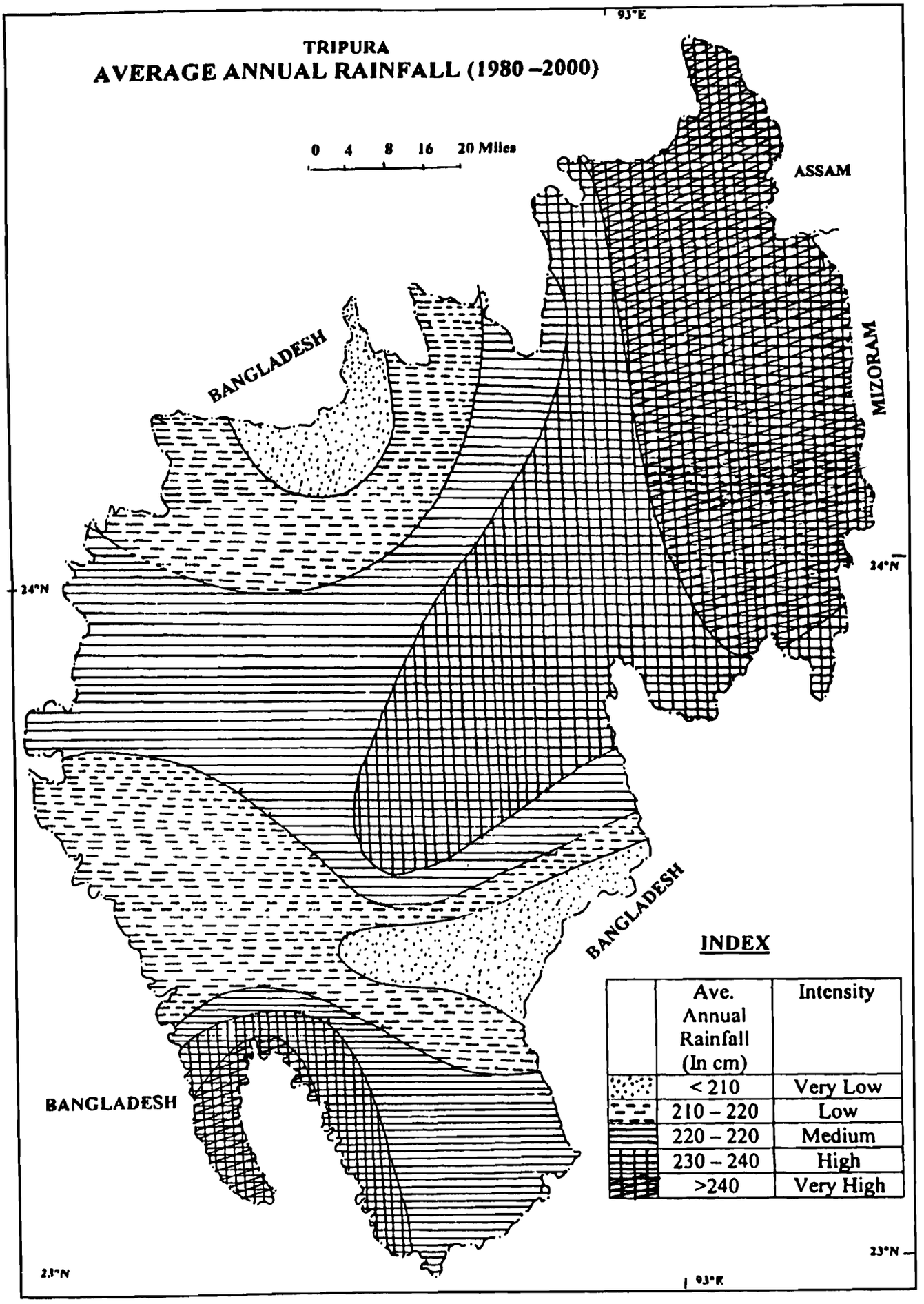
Haora : The river rising from the eastern side of the Baramura range flows westwards through the alluvial plains and passes by the southern periphery of the capital city of Agartala into Bangladesh territory. The flow length of the river is about 53 km.

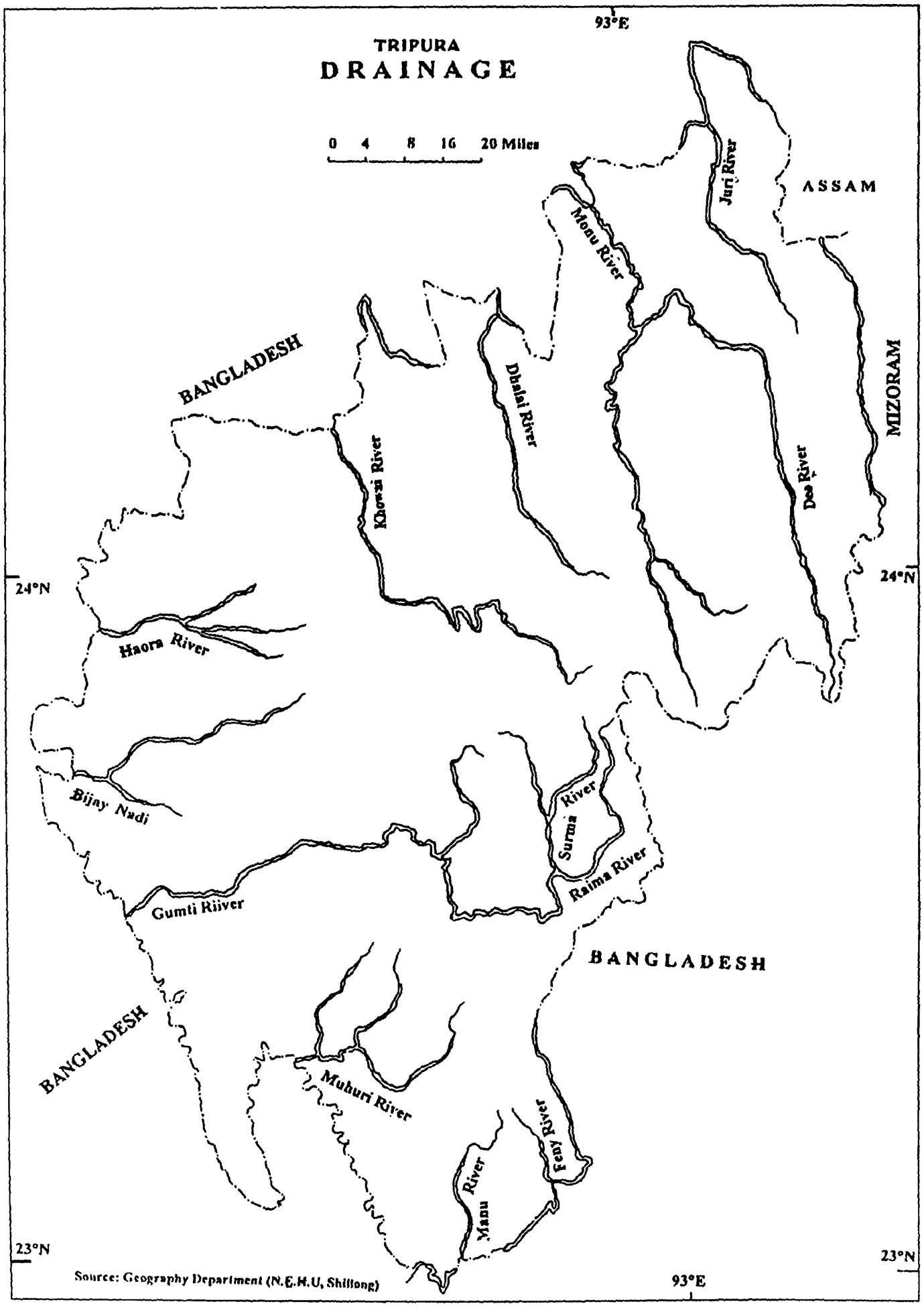
Burigang : A small river, or originating from Baramura hill ranges, passes sluggishly over Tripura until it finally merges with the river Gumti in Bangladesh. Its length is 35 km only.

Gumti : The catchment of the river lies in the southern part of the Longtharai and Atharamura range. The river flows westwards past the subdivisional towns of Amarpur, Udaipur and Sonamura into Bangladesh. The river is about 133 km long. A dam has been constructed in the gorge between the Atharamura and Kalijhari ranges for generation of Hydel power and development of irrigational facilities.

Muhuri : From its source in the Deotamura range with a flow length of 64 km it debouches westward through the hilly areas and plains of Belonia into Bangladesh.

Fenni : The river forms the border between Tripura State and Bangladesh. At the source there are 3 streams namely, Asalong, Rangafeni and Taindung, the Asalong being the main channel.


TRIPURA
AVERAGE ANNUAL RAINFALL (1980 –2000)
0 4 8 16 20 Miles
93°E
ASSAM
MIZORAM
BANGLADESH
BANGLADESH
BANGLADESH
24°N
24°N
23°N
23°N
93°E
INDEX
Ave. Annual Rainfall (In cm)
Intensity
< 210
Very Low
210 – 220
Low
220 – 220
Medium
230 – 240
High
>240
Very High


TRIPURA
DRAINAGE
0 4 8 16 20 Miles
93°E
ASSAM
MIZORAM
BANGLADESH
BANGLADESH
BANGLADESH
BANGLADESH
24°N
24°N
23°N
23°N
93°E
Juri River
Monu River
Dhalai River
Khowai River
Deo River
Haora River
Bijay Nadi
Gumti Riiver
Surma River
Raima River
Muhuri River
Manu River
Feny River
Source: Geography Department (N.E.H.U, Shillong)

The combined flow length of the 10 stream within the State is about 896 km.

6.2. Basin Characteristics and drainage

The basin drainage characteristics of the state is towards north, west and south. The drainage of the northern half is effected by the rivers Juri, Manu, Deo, Dhalai and Khowai. The areas to the south is drained by Gumti, Muhuri and Fenni. The western part of the state is drained by the Haora and Burigang rivers.

Of these rivers, the basins of eight rivers are within the territorial limit of the state, while the basin areas of Longai and Fenni are shared between Tripura, Mizoram and Bangladesh. The Gumti is the biggest basin with 22.65% of the total geographical area and the Longai is the smallest (3.25%) of all the river basins. The details about the basins characteristics are given below :

Table 1. Basin characteristics

Name of the Basin	Basin area (sq. km)	% of the basin of total geo-graphical area
1. Longai	342	3.25
2. Juri	586	5.57
3. Manu-Deo	1,979	18.86
4. Dhalai	695	6.61
5. Khowai	1,378	13.13
6. Haora	570	5.43
7. gumti	2,378	22.66
8. Muhuri	839	8.00
9. Burigang	658	6.27
10. Fenni	555	5.28
11. Other minor basin	511	4.90
	10,491	100.00

6.3 Harnessing of rivers

It is a fact that at present a large volume of water generated by the river systems of the State is being lost to the neighbouring country of Bangladesh. At present only the Gumti is being harnessed for generation of hydel power (installed capacity 3 × 5 MW). The Maharani barrage or reservoir has also been created with a potential to irrigate about 4486 ha to land in the Gumti valley along with 2 × 500 KW of hydel generating units Beside these, the Khowai and Manu projects are under implementation for development of irrigational facilities.

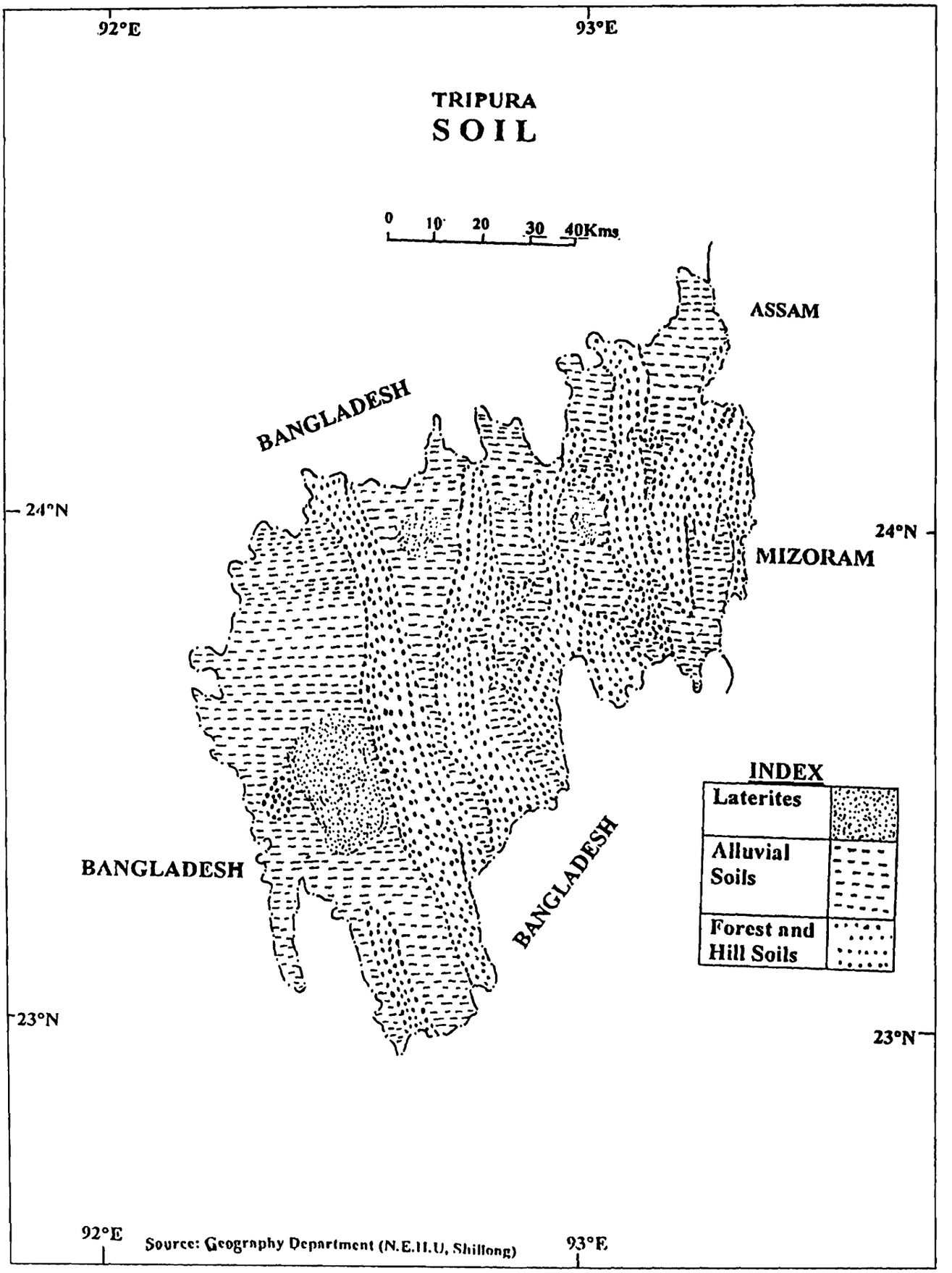
6.4 Wetlands

Tripura lacks in significant natural wetlands, although swamps or marshy areas are common in the 'lungas' or areas between valleys. Tripura has a good number of large ponds or artificial lakes locally called "dighee" most of which were dug during the time of the Maharajas. Some of these are Rudra Sagar at Melaghar (encompassing 3 sq. km of water body), Amar Sagar at Amarpur, Kamala Sagar, etc. The Kamala Sagar was excavated by Maharaja Dhanya Manikya in the late 15th century. Similar lakes or "dighees" are also seen in Agartala at Ujyanta Prasad Complex, Udaipur, etc. Artificial lake has also been created at Sepahijala Sanctuary. The reservoir created due to Dombur/Gumti Hydel Project is about 40 sq. km. Many of these aquatic bodies could have limnological significance and are known to be attracting migratory winter birds every years.

7. SOILS

As mentioned earlier, Tripura enjoys humid tropical monsoonic climate with fairly high annual average rainfall of 2000-3000 mm. Consequently, the soils and bedrocks of Tripura are subjected to severe chemical weathering and rapid erosion.

In general, the soils of Tripura can be grouped into five broad categories *viz.* (i) reddish yellow brown sandy soils, (ii) red loam and sandy loam soils, (iii) older alluvial soils, (iv) younger alluvial soils and (v) lateritic soils. It is observed that the occurrence of the different kinds of soils largely depends on the topographical condition, land gradient, parent rock materials, local climatic


92°E
93°E
TRIPURA
SOIL
0 10 20 30 40Kms
ASSAM
BANGLADESH
24°N
MIZORAM
INDEX
Laterites
Alluvial Soils
Forest and Hill Soils
BANGLADESH
BANGLADESH
23°N
92°E
Source: Geography Department (N.E.H.U, Shillong)
93°E

regime and vegetation type. Each group of soils again exists in association of several taxonomic units or series, which have developed in different phases of the landscape.

Nearly one-third of the geographical area of the state is covered with the yellow brown sandy type of soil. Practically all the hill ranges are composed of this type of soil, over which lush tropical forests trees grow luxuriantly. Based on their place or site of occurrence, the reddish yellow brown sandy soils of Tripura consists of as many as seven soil series. These are Chhanraipara series. Ramdurgabari series, Belbari series, Radhamani series, Dhumachara series. Naraifung series and Sankoma series.

The most extensively occuring soil groups are, however, the red loam and sandy loam soils, which cover about 43% of the total geographical area of the state. These groups of soils are associated with the numerous intermontane valleys and the forest-covered undulating uplands of the state. These soils are largely residual nature, having generated from the chemical decomposition of the bed rocks. These groups of soils are fairly rich in nutrients. Usually supporting luxuriant growth of vegetation but are susceptible to heavy erosion, especially those which are located on sloping grounds. According to the studies done by the National Bureau of Soil Survey and land Use Planning, the red loam and sandy loam soils of Tripura comprise at least 14 series, *viz.*, the Tuikarma, Chandrajaipara, Hazapara, Jainarayanpur, Khowai, Monguabari, Jukharaipara, Kathalbagan, Mahamunipara, Kathalia, Jagatramchara, Ambagan, Paglachara and Gangarai series.

The next group of soils, the so-called older alluvial soils, though of recent origin, are fairly mature soils. Being situated on the river terraces and high plains the profiles of this group of soils are usually well-developed. Such soils are rich in nutrients and are suitable for arable farming. At least five soil series have been identified in the older alluvial zone of Tripura. These are the Bakuri series, Tuikthang series, Kalachara series, Gangasardarbari series and Lalpumbari series.

The younger alluvial soils are mainly confined to the flood-plains of the state along the rivers such as the rivers Khowai, Haora, Manu, Muhuri, etc. Such soils are usually comprised of clay loams and are subjected to frequent floods or bank-erosion. A typical series of the younger alluvial soil is that of Janmejaynagar series. The young alluvial soils cover about 9% of the geographical area.

The lateritic soil in Tripura mainly occur towards the western boundary of the state. Such soils cover about 5% of the state's poor in nutrients and hence, are unsuitable for arable farming.

8. MINERAL RESOURCES

Tripura is not very rich in mineral resources. But the most important mineral potential of Tripura is oil and natural gas. Particularly the Baramura-Deotamura hill ranges, extending upto Rokhia and Gajalia anticlines are known to be rich in natural gas. Recent exploitations of these resources have led to establishment of gas based thermal power projects at Baramura (17 MW), Rokhia (32 MW) and Agartala (Ramchandranagar 84 (MW).

Apart from this other commercially exploitable mineral resources of the states are glass sand, limestone and plastic clay. Hard rocks are also available in the State, which are in great demand as road and building materials. Hard rock resources are mainly available in the Jampui hill areas.

Glass sand is one of the most important mineral resources of the State. The estimate of glass sand reserves of the State is calculated to be about 4.00 lakhs ton. Some of the important localities of glass sand occurrence are Bishramganj, Old Agartala, Jogendranagar, Sekerkote, Dasharambari, Mohanpur, etc.

The limestone occurrences are mainly in the Sakhan and Jampui hill ranges. Although the available limestone is not of cement grade it can be used along with clay for preparing inferior quality lime puzzolana mix.

Sedimentary clay deposits are scattered all over the state of Tripura. Good clay deposits have been found in several sites of the West and South Tripura districts. Most of the clay deposit are associated with glass sand along the river valleys.

9. AGRICULTURE AND HORTICULTURE

Agriculture is the principal occupation of the people, but the area available for agricultural activities is limited. The agriculture operations of the State is dominated by monsoon, and rice is the major agricultural crop. During the dry season, winter crops of cereals, pulses, oil seeds and vegetables are grown. Besides rice, other notable agricultural crops of Tripura are jute, sugar cane, cotton, tobacco, wheat, potato and varieties of pulses (gram, motor, etc.) and oil seeds (rape, mustard, etc.). Varieties of vegetables are also grown in Tripura. Tea and rubber is also extensively grown in the State.

Shifting cultivation of jhum is also common on the hill slopes of Tripura. As per the North Eastern Council, the annual area under shifting cultivation in Tripura is at least 223 sq. km and as much as 1,115 sq. km is considered to be minimum area under shifting cultivation at one time or the other. About 43,000 families are believed to be practising shifting cultivation in Tripura (NEC, 2000).

Horticulture is also developing in Tripura. The major horticultural crops of the State are oranges, jack fruits, pine apples, mangoes, lichies, cashew nuts, etc. Oranges (of Jampui) and pine apples are particularly worth mentioning as the major horticultural crops of the State. There is a pine apple juice concentration plant at Nalkata in Dhalai district under the auspice of the North Eastern Regional Agricultural and Marketing Corporation (NERAMAC).

10. HUMAN SETTLEMENT AND LAND USE

10.1 Demographic profile

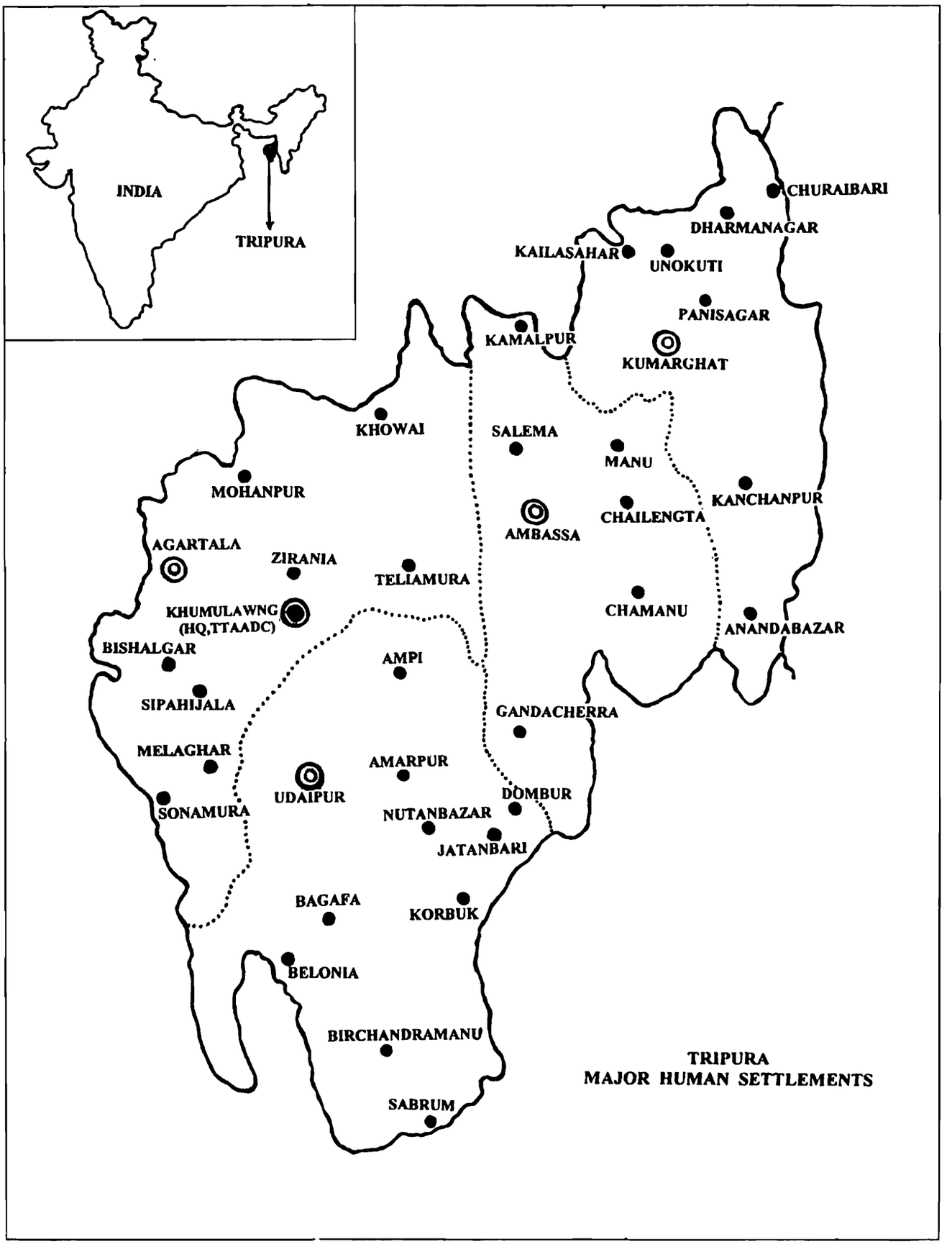
The total population of Tripura is 27,57,205 as per the 1991 census, which constitute about 0.3% of the total population of India. About 80% of the population of the State live in the rural areas. The majority of the population is Bengali Hindus domiciled from Bangladesh. The tribals constitute about one third of the total population of the State. Being agricultural economy, per capita income of the people is very low. About 68% of the population is still living below the poverty line. The average life expectancy of the people is short and the infant mortality is high.

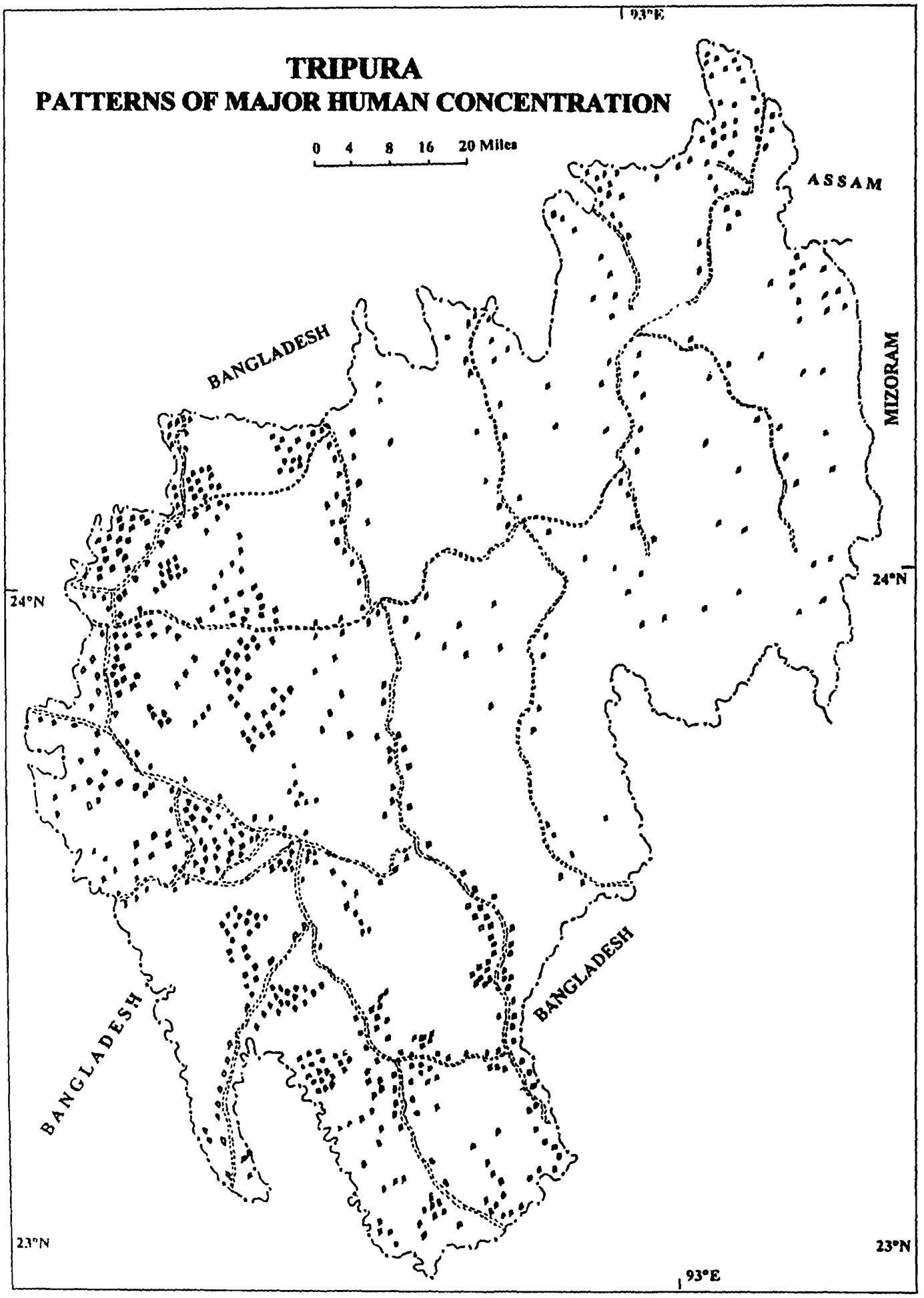
The distribution of population in the State is uneven, density being very high in the plains of Agartala and in the valleys of Gumti, Khowai and Manu. The variation and density of population of Tripura between 1901 to 1991 may be seen as below :

Table 2. Population and Density

Year	Population	Density
1901	1,73,325	17
1911	2,29,613	22
1921	3,04,437	29
1931	3,82,450	36
1941	5,13,010	49
1951	6,39,029	61
1961	11,42,005	109
1971	15,56,342	148
1981	20,60,189	196
1991	27,57,205	263

In this context, it may be appropriate to mention briefly on the tribes of Tripura. The tribals constitute about one third of the total population of the state. Altogether 19 scheduled tribes are recognised in the state. The major scheduled tribes of Tripura are the Tripuris, Reangs, Noatias, Halam, Chakma, Jamatia, Mog, Lushai and Kuki. Other non-indigenous tribes includes the Goars, Mundas, Khasis, Santals and Bhutias. Numerically, the Tripuris are the largest tribe belonging to the Bodo group of Indo-Mongoloid


INDIA
TRIPURA
CHURAIBARI
DHARMANAGAR
KAILASAHAR
UNOKUTI
PANISAGAR
KAMALPUR
KUMARGHAT
KHOWAI
SALEMA
MANU
MOHANPUR
KANCHANPUR
CHAILENGTA
AMBASSA
AGARTALA
ZIRANIA
TELIAMURA
CHAMANU
KHUMULAWNG
(HQ,TTAADC)
ANANDABAZAR
BISHALGAR
AMPI
SIPAHIJALA
GANDACHERRA
MELAGHAR
AMARPUR
UDAIPUR
DOMBUR
SONAMURA
NUTANBAZAR
JATANBARI
BAGAFA
KORBUK
BELONIA
BIRCHANDRAMANU
SABRUM
TRIPURA
MAJOR HUMAN SETTLEMENTS


TRIPURA
PATTERNS OF MAJOR HUMAN CONCENTRATION
0 4 8 16 20 Miles
93°E
ASSAM
MIZORAM
BANGLADESH
BANGLADESH
BANGLADESH
24°N
24°N
23°N
23°N
93°E

origin. The Bodos, who are spread over the whole of the Brahmaputra valley and North Bengal from the main bases of the present day population of the state. According to Major Fisher, the Tripuris are of the same origin as the Kacharis. The similarity of their appearance, religions and customs make this conjecture probable. The Reangs, the second largest tribe, originally came from Burma and entered Tripura through Chittagong hill tracts. The Halams belong to Kuki chin group of Tibeto-Chinese family and the Lushais belong to central chin sub group of Tibeto-Chinese family. The customs, languages and religions of the tribe varies but the Tripuris, Noatias, Reangs and Jamatias have the same religions, customs and speak the same language. They worship the gods of fire, water, forest etc. and conform in many respect to the religious observances of the Hindus. The Kukis are the same race as the Lushais. The Chakmas are Buddhists. Among the tribes, the Tripuris, Mogs, Chakmas and Jamatias reside in plains and have taken to settle cultivation. Other tribes such as the Reangs, Kukis, Lushais prefer to reside on hill tops. Many of them are still engaged in jhum cultivation. In general the tribals are poor. Their population is concentrated more in the rural areas than in the urban areas. Socially, educationally and economically the tribals are backward, although many of them are now opting for higher education. Their life and culture are at present suffering a change with the change of social environment.

10.2. Land use

Tripura's economy is a typical agarian. With about 80% of its population being concentrated in rural areas, there is tremendous pressure on land. Only about 29% of the geographical area is put to good agricultural use. About 58% of the State is covered by forests of different kinds and about 11% of the area is put to non-agricultural use such as tea gardens, rubber cultivation etc. The remaining area of about 2% is considered to be culturable wastelands and current jhum fallows.

11. FOREST AND VEGETATION

The forest cover to Tripura, as assessed by the Forest Survey of India in 2000, using remote sensing technique is about 52.8% of the total geographical area. Although 60% or 6292 sq. km of the State is recorded as forest area legally, the actual area covered with forest vegetation is calculated to be only 5538 sq. km, of which, 1825 sq. km is dense forest and 3710 sq. km open forest. Further, the reserved forests of the State is 4097 sq. km which is about 39% of the total geographical area. Most of the Unclassed State Forests (USF) falls under the jurisdiction of the Tripura Tribal Areas Autonomous District Council.

The forest types and their vegetation has been well described by Dr. B. D. Deb in his books on "The flora of Tripura, Vol. I & II" TTPP, New Delhi, 1981. According to him, based on the climate and altitude, the general forests of Tripura belong to the tropical forest types. They could be group and described as follows.

A. Climate types

1. Evergreen forest
2. Moist deciduous forest

(a) Sal forest

(b) Moist deciduous mixed forest

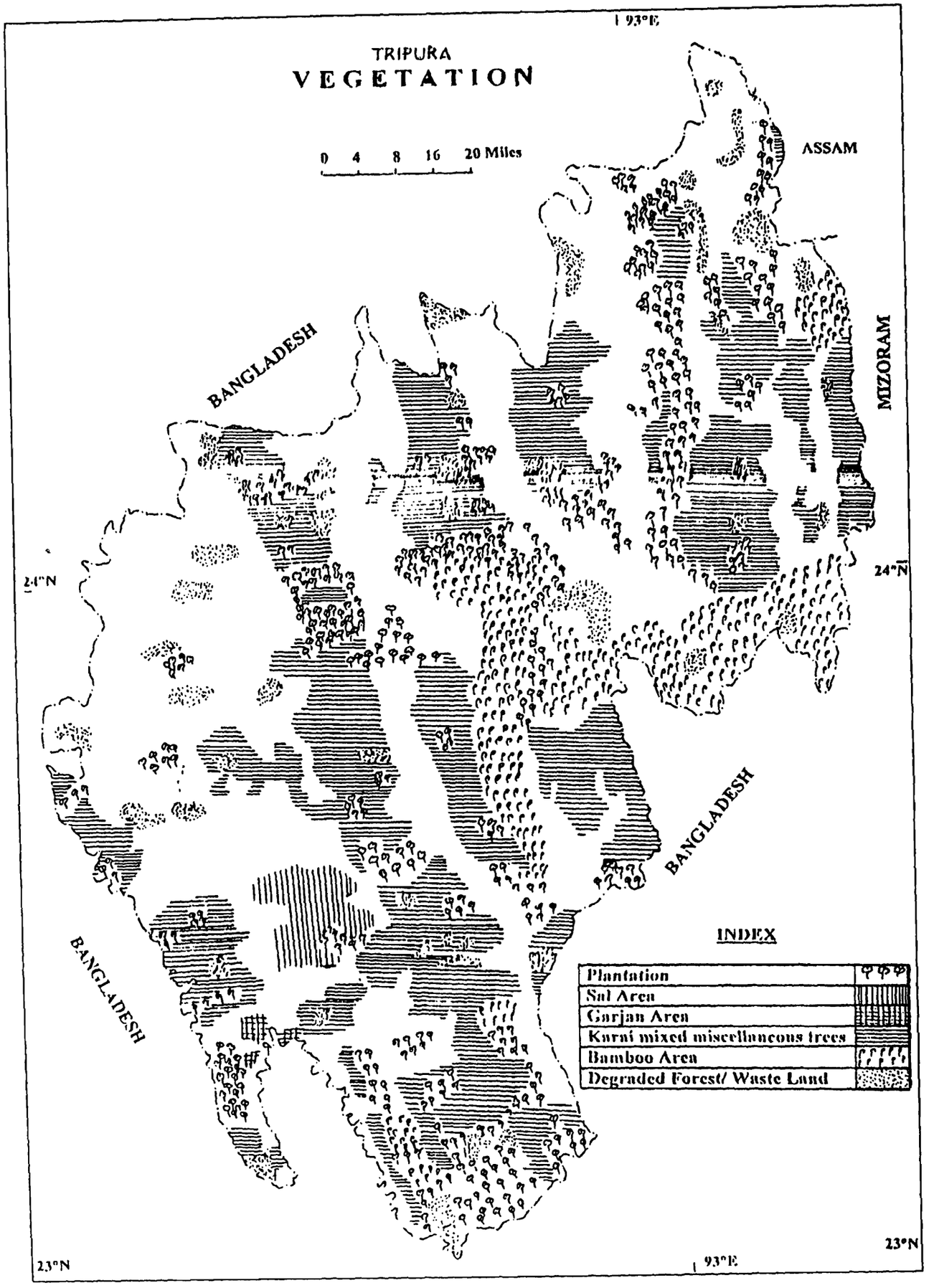
B. Seral types

3. Swamp vegetation

C. Subsidiary edaphic types

4. Bamboo forest
5. Cane brakes
6. Garjan forest
7. Savannah
8. Grass land vegetation

1. Evergreen forest : The evergreen forest covers the major part of the State in Dharmanagar, Kailashahar and Longtarai valley sub-divisions, Jampui and Sakhan Ranges, parts of Belonia,


TRIPURA
VEGETATION
0 4 8 16 20 Miles
93°E
ASSAM
MIZORAM
BANGLADESH
BANGLADESH
BANGLADESH
24°N
24°N
23°N
23°N
93°E
INDEX
Plantation
Sal Area
Garjan Area
Kurai mixed miscellaneous trees
Bamboo Area
Degraded Forest/ Waste Land

Sabroom, Kamalpur and Sadar Sub-Division. It occupied wider areas in the past. Having been persistently subjected to biotic influences, the forest is depleted to a very large extent. It now exists only in patches in the steep slopes, rocky and steady river banks and localities which are not suitable for shifting or plough cultivation. In the eastern part of the State, some such patches have been selected for cultivation of betle vine locally called Pan jhum. Evergreen forest of Tripura is intermediate in characteristics between 'Cachar evergreen forest' and 'Chittagong evergreen forest'

The evergreen forests of Tripura are characterised by the stratification of the stand into three distinct tiers (or storeys) formed of numerous species of trees, varied in size, but none of which is very abundant. Most of the species of the top canopy are evergreen with tall clear boles. Some of the species of the top canopy may be deciduous or semi-deciduous, which do not interfere with the evergreen nature of the forest as a whole. Leaves are thick and glossy. The middle and lower canopies are dense evergreen and varied. Bamboos are frequent. Small palms are common. Epiphytes are not very numerous. Aroids, ferns, mosses and orchids are the principal epiphytes. Lianas are very conspicuous. The undergrowth is often a tangle of canes. Ground vegetation is very rich comprising numerous herbaceous species. Saprophytes are also common.

The frequency, dominance and association of species very often vary from one forest to another. However, in most cases the evergreen forests of Tripura are generally dominated by *Dipterocarpus turbinatus. Artocarpus chaplasha, Michelia champaca, Ilex godajam, Schima wallichii,* etc.

2. Moist deciduous forest : The moist deciduous forest are characterised by the presence or absence of Sal and accordingly they may be called (a) Sal forest or (b) Moist deciduous mixed forest as the case may be.

(a) Sal forest : This occurs in southern region of the western low hills extending to the border of Bangladesh. It is found locally in Belonia, Udaipur, Sonamura and Sadar-Sub-Divisions. Local variations occur in floristic composition and abundance of different species and in the storeyed arrangement in different areas. *Shorea robusta* is the ecologically characteristic and economically important species that dominates over 60 per cent of the top canopy. *Dipterocarpus turbinatus. Lagerstroemia parviflora, Gmelina arborea Careya arborea, Terminalia bellicica, Dillenia pentagyna,* etc. also occur.

Ground cover is formed of a large number of grasses and sedges. In rainy season herbs belonging to the families *Commelinaceae, Zingiberaceae, Dioscoreaceae* and a host of others grow.

Due to local edaphic factors and biotic influences on certain localities, such as in Sonamura, the Sal forest has been reduced to a secondary savannah, where much of the area has been brought under paddy cultivation by felling the trees. Trees are stunted and crooked in form. Most of the plants appear to have come up from stumps.

(b) Moist deciduous mixed forest : Moist deciduous mixed forest covers a large area of the forest in Amarpur, Sonamura, Udaipur and Sadar Sub-Divisions and occurs in patches in Dharmanagar, Kailashahar, Longtarai valley and Kamalpur Sub-Divisions. This differs mainly from the preceeding one in the absence of Sal or in its scarcity. Dominants are mainly deciduous but sub-dominants and lower storeys are largely evergreen. Top canopy is not dense and even. It is about 18-25m high. Differentiation in canopy layers, is not conspicuous. *Schima wallichii, Dillenia pentagyna, Terminalia bellirica, Garuga pinnata, Lannea coromandelica* etc. constitute the top canopy.

Ground cover is formed of *Desmodium triquetrum, D. caudatum, D. heterocarpon, D. heterophyllum, Maughania strobilifera, M. stricta, Costus speciosus, Curcuma zedoaria,* and other Zingiberaceous plants and many others. *Eupatorium odoratum* L and *E. cannabinum* L. are fairly common.

Towards the middle of the hot season, the deciduous trees shed leaves but they are not completely leafless and they are again in leaf before the monsoon. Mostly the trees and other woody species flower in the hot season whereas the large number of herbaceous and suffruiticose perennials flower in cold season. Rhizomatous and bulbous families like *Liliaceae, Amaryllidaceae, Zingiberaceae* send up their scapes and produce beautiful flowers in the rainy season. These form a characteristic undergrowth in the monsoon period.

3. Swamp vegetation : Swamps locally 'Lunga' occupy a very large area all over the State. It comprises mostly herbaceous species, some woody shrubs and a few scattered trees. *Barringtonia acutangula, Lagerstroemia parviflora, Mallotus philippensis,* are the common trees. *Phragmites karka, Erianthus arundinaceus, E. procerus da and Sachharum spontaneum.*

4. Bamboo forest : Bamboo brakes differing widely in character and aspect cover very large areas in Tripura as in Burma and Chittagong. Continuous bamboo forests are interrupted with scattered evergreen trees or deciduous secondary stands. Sheltered hollows and other favourable sites are dominated by bamboo. The vast preponderance of bamboo forest may be the result of activity of man in his practice of shifting cultivation. Land cleared off forest, jhumed abandoned is favourable for bamboo growth. It is also possible that bamboo holds the ground as a primary edaphic sub-climax.

The most common bamboo of Tripura is the *Melocanna bambusoides,* Locally called as 'Muli' Other species are (with local name in parenthesis) *Bambusa balcooa* (Barak), *B. nutans* (Kali), *B. pallida* (Makal), *B. polymorpha* (Barua), *B. teres* (Parua), *B. tulda* (Mirtinga), *Dendrocalamus hamiltonii* (Pecha), *D. longispathus* (Rupai), *Oxytenanthera nigrociliata* (Kalyai) and *Neohouzeaua dullooa* (Dalu).

5. Cane brakes : Impenetrable thorny thickets are seen in the evergreen, semi evergreen and moist deciduous forests. They occur in wet hollows extending outwards to various distances and appear to be conspicuous with heavier and well distributed rainfall where the soil is finely clavey and very rich in humus. Consequent on high demand for cane during the war of 1939-1945, cane brakes have been destroyed. Common canes are *Calamus floribundus, C. guruba, and C. leptospadix.*

6. Garjan forest : The area occupied by the Garjan forest at present is small, but there are indications that Garjan used to occur in a far larger area all over the State in small or large groups. Stumps of Garjan are found near Khowai, Champaknagar, Betaga-Ludhua, Muhuri, Trishna, Tulatalikona, Chailengta, Deo, Juri, Ujan machmara, Damchara, Unakoti, Dharmanagar, Sonamura and Jalaya.

It occurs in groups and strips in scattered blocks on ferruginous red soiled elevated tillas. It also occurs in Sal forest. It forms a close canopy while growing in groups. All these appear to have been greatly influenced by man.

7. Savannah : This is caused by fresh deposit of silts or destruction of the forest. In high land- *Syzygium cerasoides, Ziziphus mauritiana, Z. rugosus, Garuga pinnata, Lannea coromandelica, Glochidion multiloculare, Vitex negundo, Meyna spinosa, Flacourtia indica, Desmodium triquetrum, Clerodendrum viscosum* etc. are common. In low land *Erianthus procerus, Saccharum spontaneum, Phragmites karka, Alpinia allughas, A. malaccensias, Hedychium ellipticum, H. thyrsiforme* grow in communities.

In the monsoon climbers of *Dioscoreaceae, Smilacaceae, Menispermaceae, Convovlaceae* and *Vitaceae* grow rapidly around trees and shrubs or sometimes they trail on the ground or over the herbaceous undergrowth.

8. Grass land vegetation : A large area of the State is covered with vast expanses of grasses. This grass land community is a biotic sub-climax. The vegetation is held here in a condition of equilibrium by the biotic influence.

The grazing ground is dominated by *Imperation cylindrica, Paspalum orbiculare, Cynodon*

dactylon, Chrysopogon aciculatus, Bothriochloa intermedia, Centotheca lappacea, Oplismenus compositus, Sacciolepis interrupta, Cyperus sp. and *Fimbristylis* sp.

Other commonly occuring herbs are *Desmodium heterophyllum, Centella asiatica, Leucas aspera, Rungia parviflora, Euphorbia thymifolia, Oxalis corniculata, Sida acuta, Urena lobata, Mimosa pudica, Solanum* sp. and *Polygonum* sp. etc.

12. FAUNAL RESOURCES

12.1. Faunal exploration

Knowledge on faunal or wildlife resources of Tripura is scanty as scientific exploration on the fauna of the State is limited. Recently, Gupta and Mukherjee (1994) briefly outlined history of wildlife exploration in Tripura while reporting on the status of wildlife of the State.

Information on the wild mammalian resources of Tripura is available from the study made by Bhattacharya and Chakraborty (1984) and that of the birds from the study of Mathur *et al.* (1984). From these account it is apparent that current wildlife resources of Tripura is limited due to habitat shrinkage, human population increase, extension or cultivable land and perhaps excessive hunting.

In the past, as reported in 'Rajmala' by Kailash Ch. Sinha in 1897, in the middle of the 18th century, the elephant and wild buffalo were reported to be numerous and the rhinoceros, bear, hog, deer, wild dogs, wild goats, slow loris, black panther, scaly ant-eater, tiger, gaint land turtles, etc. were all very common throughout the state. The elephants were so plentyful that in the year 1874-75, the Maharaja of Tripura earned a revenue of 2400 Pound from the capture of 86 elephants. Today elephants are occasionally seen in remote jungle area and their number has fallen drastically.

Along with the mammalian resources, varieties of birds and partridges were also plentiful in the past. It is reported that in 1875, 1000 parrots from Tripura were sold for 1.75 Pound in the market of neighbouring Comillah (now in Bangladesh). As per the study of Mathur *et al.* (1984), although Tripura may be having as many as 3000 species of birds, individual counts are not as many. Partridges and jungle fowls have also reduced drastically with limited distribution.

12.2 Faunal wealth and inventory

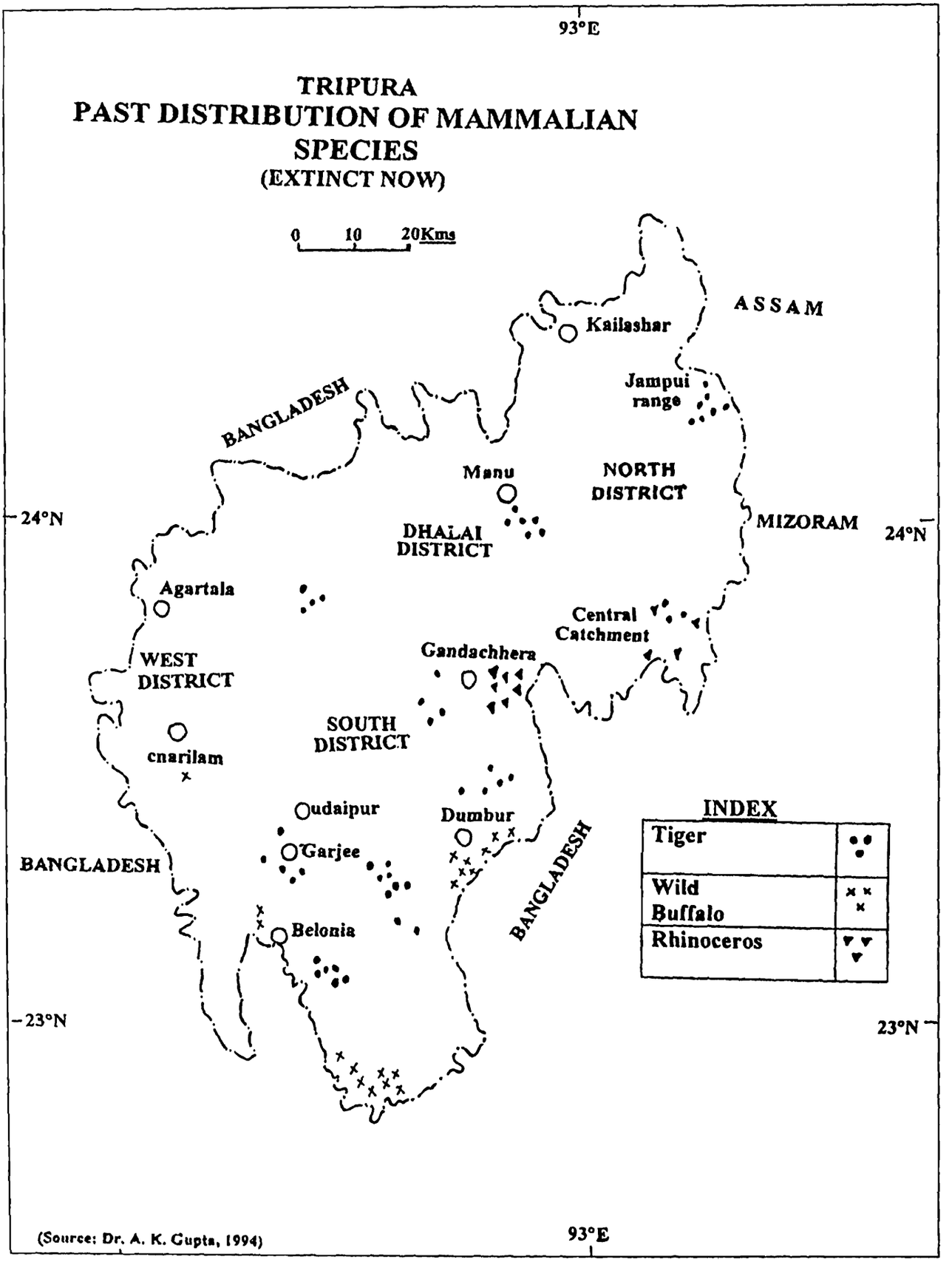
There is no precise scientific inventory of the faunal wealth of the state, which is why the need for the present volumes of publications by the Zoological Survey of India. As already mentioned earlier, Bhattacharjee and Chakraborty (1984) brought out an annotated list of the wild mammalian resources of Tripura. In the same line a check list of the common birds of Tripura was prepared by Mathur *et al.* (1984) listing about 341 species of birds found in Tripura. Further history of wildlife studies of Tripura may be seen from Gupta and Mukherjee (1994). The authors opine that due to her unique zoogeographical position and tropical humid climate with good rainfall, Tripura has been always inhabited by rich wildlife fauna. Out of a total of 135 genera of land mammals in India, 48.1% are represented in Tripura. Further, 14 genera and 18 species of land mammals belong to Schedule 1 of the Wildlife (Protection) Amendment Act, 1991 and 10 genera and 14 species of land mammals of the state belong to Appendix I of CITES (see Gupta and Mukherjee, 1994). It may, however, be mentioned here that *Rhinoceros unicornis has* disappeared since long from Tripura, although the authors continue to mention in their paper.

The analysis of the Fauna of Tripura, which will be brought out in four volumes reveals that there are 1708 species of animals in 1042 genera. Of these the largest group belongs to the Insects comprising of 536 species in 346 genera. Next in order of abundance after the insects, birds are the largest group with about 259 species in 157 genera. Total vertebrate fauna reveals 474 species under 301 genera.

12.3. Forestry development and wildlife management in Tripura

For long the forest and wild animals living therein have no value in Tripura. Only when the British Government developed the forests of neighbouring districts of Sylhet and Noakhali (both now in Bangladesh and the forest produce of Tripura found market in these places, the value of forest was increasingly realised.

It is recorded that way back in 1887 certain rules were framed for preservation of trees in the


93°E
TRIPURA
PAST DISTRIBUTION OF MAMMALIAN SPECIES
(EXTINCT NOW)
0 10 20Kms
ASSAM
Kailashar
Jampui range
BANGLADESH
Manu
NORTH DISTRICT
24°N
DHALAI DISTRICT
MIZORAM
24°N
Agartala
Central Catchment
Gandachhera
WEST DISTRICT
SOUTH DISTRICT
cnarilam
Oudaipur
Dumbur
Garjee
BANGLADESH
BANGLADESH
Belonia
INDEX
Tiger
Wild Buffalo
Rhinoceros
23°N
23°N
(Source: Dr. A. K. Gupta, 1994)
93°E

then so-called reserved areas. In 1903, certain other rules were framed for regulating collection of forest produce and payment of royalties thereof. A trained forester was engaged as early as in 1910-11 and by 1913, yet a comprehensive set of rules was drawn up. Thereafter, a regulation was issued classifying and declaring certain species of trees as reserved (Deb Burman, 1914). In 1935-36, about 1090 hac. of forests were declared as reserved. In 1938 an officer was appointed to look after this forest reserves and also to carry out plantation works. It was during this period onwards that the Forest Department was gradually origanised and more areas were declared reserved but actually demarcated only during 1954-55.

Till this time, however, there was no specific emphasis towards wildlife management in Tripura. The first ever attention towards wildlife matters seemed to have been specifically given when the assessment of the provisions of the Indian Forest Act 1927 and the Wild Elephant Preservation Act, 1879 were carried out and found to be altogether inadequate for the purpose of management and protection of wildlife in the State (Gupta and Mukherjee, 1994).

The first ever wildlife sanctuary of Tripura was gazetted in 1979, covering the Central Catchment area in the North District. But this was soon denotified due to political reason consequent to the pressure created by the local tribal pollution. Subsequently, the Trishna Wildlife Sanctuary, covering an area of 173 sq. km in the South District was declared in 1986. In 1989, three more sanctuaries were notified, *viz.*, the Gumti Wildlife Sanctuary (349 sq. km) in the South District, Sepahijala Wildlife Sanctuary (18 sq. km) in the West District and Rowa Wildlife Sanctuary (0.83 sq. km) in the North District. Although officially 540.83 sq. km or as much as 5.15% of the total land area of the state is presently being managed for the purpose of wildlife, the fact remains that the Gumti Wildlife Sanctuary is yet to take off in the spirit of wildlife management and protection due to tremendous pressure from the local tribal population, most of whom are oustees of the Dombur/Gumti-Hydel Project of the seventies.

12.4. Problems of wildlife management and protection in Tripura

The underlying reasons in the problems of management and protection of wildlife and their habitats (forest and wilderness) in Tripura are much the same as any other state in north-east India.

The unprecedented increase in the human population in a small state like Tripura, as may be seen from Table 2, had a direct and severe impact on the forest cover and wilderness areas of the state. This unabated increase in population caused tremendous pressure on land resulting in rapid depletion and competition in available wildlife habitat. This resulted in heavey and rapid encroachment, not only, of forest lands but also resulted in rapid conversion of weltands, the prime habitats of wildlife, into cultivable agricultural lands. These processes were aided by illegal allotment of forest lands, denotification of protected forests and amendment of the State Land Revenue Rules. These were necessiated not only to settle the landless tribal jhumias but also rehabilitate unending streams of incoming refugees from the erstwhile East Pakistan or present Bangladesh. Other equally appalling activities that have severely affected both the wildlife themselves and their habitats are the continuing practice of shifting cultivation of jhumming, hunting and meat eating population of the local tirbes, increased in numbers of domestic animals requiring larger grazing areas, forest fires particularly during the time of jhum burning, expansion of agricultural areas particularly disappearance of natural wetlands and so on. Coupled with these, there is general lack of awareness among the massess on the need and value of wildlife conservation. There is also insufficient integration of wildlife interests in the development philosophy and activities of various governmental department/organisations. Recent socio-political unrest in the form of insurgency of underground activities in the State has also added further dimension in the already fragile problems of wildlife management and protection in Tripura.

Table 3
COLLECTION LOCALITIES
(Alphabetically arranged)

NORTH TRIPURA	SOUTH TRIPURA	WEST TRIPURA	DHALAI
Agalpur	Abhaya	Abhayanagar	Ambassa
Anandabazar	Ampi	Agartala	Chailengta
Bagbasa	Amarpur	Amar colony	Chandramaritila
Baruakandi	Amarsagar lake	Anandnagar	Chaumanu
Birjendranagar	Bagapa	Asrambari	Dolubari
Choraibari	Bagma	Atharmura	Garobasti
Dakshinnayapara	Bajrabari	Bairagibazar	Gandacherra
Debchera	Balamukha	Baramura	Garjantila
Debsdichaudhurypara	Banbar	Badarghat	Geneira
Dharampur	Barspathari	Bagma	Halahali
Dharmanagar	Bazarbari	Batala	Harincherra
Fatikroy	Baijal bari	Benjimura village	Janthum
Kumarghat	Belonia	Biddhyanagar	Judurambari beat
Fuldungsei	Boltali pond	Bishalgarh	Kathalcherra
Ganganagar	Birchandrapur	Bijpur	Kanchancherra
Ghataltila	Bukshabari	Bishalgarh	Kamalpur
Gobindapur	Dhanisagar	Bisramgunj	Kamlacherra
Jampui Hills	Ekchhori	Brajapur	Karaichera
Joysri	Halkalia	Budha mandir	Kathalbagan
Kailasahar	Hatiposa village	Buxanagar	Kilahati
Kanchanpur	Hothalia	Chandrapur	Kollahati lake
Kanchansagar	Jagannathdighi	Chakmaghat forest	Kulai
Kasirampur	Jalefa	Champaknagar	Kukicherra
Katoldighi	Jatanbari	Charilam	Kushdinpara
Kendrachera	Jholaghati	Chebri	Mainama
Kumarghat	Kadalchera	Cheliakhella	Manughat
Kurti	Kanthalchari	Chelikhola	Manu river
Machmara	Karbuk	Chiaihani	Maramasamara
Nayapara	Garjee	Dakshinpulinpur	Nallkata
Pubiacherra	Rajnagar	Dullapur	Nepaltila
Panisagar	Manubazar	Golaghati	Salema

NORTH TRIPURA	SOUTH TRIPURA	WEST TRIPURA	DHALAI
Pecharthal	Matarbari	Hatipara	Sindukumarpara
Puchahal	Maichara	Hatipara salbagan	Sikaribari
Radhapur	Moinachara	Hawabari	
Raibasa village	Nutanbazar	Indiranagar	
Ramnagar	Paharpur	Jamaibari	
Saidarabari	Paratia	Jampuijala	
Sanicherra	Phatick sagar lake	Jatrapur	
Shibpara	Pulikhel	Jaynagar	
Unakuti	Pulikhet	Jirania	
Uptakhuli	Puranarajbari	Jogindranagar	
Vanghmun	Rimasurma lake	Kalachema	
Vijayanagar	Salambari	Kalikapur	
West Panisagar	Sahigara	Kalitilla	
	Salgara	Kalyanpur	
	Santibazar	Kamalghat	
	Sheikhbani	Kamalnagar	
	Sakhabari	Kamalsagar	
	Shipur	Kanchannagar	
	Sobrem	Kansiamangal	
	Sujannaia	Khayerpur	
	Suksagar lake	Khedabari	
	Trishna	Kotitila	
	Udaipur	Khowai	
	Zoalikhanar	Khumulog	
		Korilang	
		Kunjaban	
		Lakshmipur	
		Lembuchera	
		Maharani	
		Maharanipur	
		M.B.B. College campus	
		Mekhliband	
		Melaghar	
		Mohadevtilla	
		Mohanpur	

NORTH TRIPURA	SOUTH TRIPURA	WEST TRIPURA	DHALAI
		Moharchara Mongiabari Motinagar Nalchar Nandanagar Narayanpur Narsinghar Nirmahal Padampur village Pratapghar Padmabill Pulinpur Routhkhola Rudrasagar Sadar Senihani Simna Simug Sipahjaia Sipahijhala wildlife sanctuary Singerbil Sonamura Sonatila Teliamura Tuikorma	

Table 4 : Faunal Exploration

District	Number of Collection Localities
North Tripura	44
Dhalai	33
West Tripura	92
South	55

Table 5 : Faunal Wealth of Tripura : An Index

	Genera	Species
Vertebrate		
Mammals	33	44
Aves	157	259
Reptilla	28	32
Amphibia	5	11
Pisces : freshwater	78	128
Wetland faunal resources :		
Fish	54	77
Amphibia	3	6
Reptilia	5	6
Birds (Aves)	23	33
Invertebrate		
Protozoa	46	102
Trematoda : Digenea	29	36
Plant Parasitic Nematodes : (Tylenchida)	17	27
Nematode Parasites of Vertebrates	47	60
Acanthocephala	9	17
Freshwater Oligochaete	7	5
Oligochaete Earthworm	9	12
Freshwater Porifera (Rotifera : Eurotatoira)	31	119
Rotifera	15	29
Cladocera	29	49
Copepoda	13	17
Ostracoda	7	14
Decapoda	4	8
Mollusca	29	48
Insecta		
Insecta : Pthoptera : Acridoidae	36	49
„ „ Eunastacoidae	1	1
„ „ Tettigoniidae	8	8
„ Dermaptera	11	14

		Genera	Species
,,	Dictyoptera :Blatteriae	8	10
,,	Isoptera	17	30
,,	Psocoptera	4	5
,,	Hemiptera : Cercopoidea, Cicadelloidea Cicadoidae, Fulgoroidae	35	41
,,	,, Aphididae	27	54
,,	,, Coccoidae	30	41
,,	,, Reduviidae	11	12
,,	,, Coreoidea	10	18
,,	,, Heteroptera : Pentatomoidea	15	20
,,	,, Water Bugs	15	20
,,	Thysanoptera	20	33
,,	Coleoptera : Gyrinidae, Dytiscidae & Hydrophilidae	24	41
,,	,, Histeridae	10	16
,,	,, Staphylinidae	12	34
,,	,, Elateridae	9	15
,,	,, Silvanidae	3	5
,,	Hymenoptera	40	69
Crustacea : Shrimps		2	5
Hirudinea : Leeches		4	5
Freshwater bryozoa		2	4
Crustacea : Copepoda : Diaptomidae		4	5
Crustacea : Decapoda : Palaemonidae		1	8
Freshwater Oligochaetes		5	6
	Total	**1042**	**1708**

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MAMMALIA

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INTRODUCTION

Out of total of 4232 species of mammals known from the World, 390 species occur in the Indian Union (Wilson & Reeder 1993), of these, 44 species are reported from Tripura.

Records on the mammalian fauna of Tripura are available from the report of Blyth (1844, 1847), Sclater (1891) and Khajuria (1955) based on the collections made by F. Skipwith, A. Grote and J. Barbe during the middle of 19th century. During those days, Tripura was known as Tipperah and was in the former province of Bengal. Now, mainly the hilly portion of Tipperah lies within the Indian territory and the plains of Tipperah in Bangladesh.

Zoological Survey of India conducted three survey trips in the state for collection and observation of mammalian species during the year 1969-73.

Present report of the mammalian fauna of Tripura has been prepared on the basis of records made by Blyth (1844, 1847). Sclater (1891), Khajuria (1955), Agrawal & Bhattacharyya (1977), Mukherjee *et al.* (1933) and Das *et al.* (1995).

SYSTEMATIC ACCOUNT

Order INSECTIVORA

Small animals with pointed snout projecting far beyond lower jaw; eyes and ears small; limbs short and five toed; body covered with short closely set fur; orbits open posteriorly.

The order Insectivora is represented in Tripura by the family Soricidae only.

Family SORICIDAE

Only the genus *Suncus* of the family Soricidae occurs in Tripura.

Genus ***Suncus*** Ehrenberg, 1833

One species and subspecies of the genus *Suncus* occurs in Tripura.

1. ***Suncus murinus caerulescens*** (Shaw)

1800. *Sorex caerulescens* shaw, *Genl. Zool. Mammal.* 1 : 533 (India).

Common name : House shrew (Eng.).

Diagnosis : Largest of the Indian House Shrews; head and body length on average more than 135 mm; fur short less than 5 mm. in length; tail thick at base, thinly clad with hairs.

Distribution : India : Tripura : South district, West district, North district; throughout India particularly in cities. Nepal.

Order SCANDENTIA

Squirrel like in appearence; snout long and devoid of long whiskers; lower lobe of ears smaller than the upper; inner side of ears scantily haired.

Only one genus of the family *Tupaiidae*, namely *Tupaia*, occurs in Tripura.

Genus ***Tupaia*** Raffles, 1821

One species and subspecies of the genus *Tupaia* occurs in Tripura.

2. ***Tupaia belangeri assamensis*** Wroughton

1921. *Tupaia belangeri assamensis* Wroughton, *J. Bombay nat. Hist. Soc.*, 27 : 599 (Mokokchung, c 5000 ft., Naga Hills, Assam = Mokokchung, c 1524 m, Nagaland, India).

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

Diagnosis : Tail shorter than head and body length; dorsal colour a fine grizzle of brown and buff; ventral colour ranging from buff yellow to orange buff.

Distribution : India : Tripura : West district; North district; Arunachal Pradesh; Assam; Manipur; Meghalaya; Nagaland.

Order CHIROPTERA

The order Chiroptera represents the second largest order of class Mammalia in number of species and the largest in overall abundance. The order Chiroptera comprising of the animals are called as Bat. Bats are inconspicuous as being active at night, hidden by daytime. They do not resemble to any other group of mammals due to their morphological characteristics and behavioral peculiarities. Among all the mammals bats do fly with moving wings which are nothing but modified forelimbs.

The two suborders of the order Chiroptera, Megachiroptera and Microchiroptera, are distinguished by their different morphological and anatomical peculiarities. Bats belonging to both the suborders are represented in the state of Tripura.

Suborder MEGACHIROPTERA

The second finger always bears a claw (except the genus *Eonycteris*). Tail usualy short or absent. Eyes large. Tragus and noseleaf absent. The lower incisors 2 in number. Post-orbital process well developed. The bony palate elongated behind the tooth-rows.

The suborder Megachiroptera comprises of the only family Pteropodidae.

Family PTEROPODIDAE

The family Pteropodidae is represented in Tripura by four species and subspecies belonging to four genera.

Key to the genera, species and subspecies of the family PTEROPODIDAE.

1. Tongue longer, generally the tip of the tongue protrudes out of mouth in dead specimens; rostrum longer .....***Macroglossus s. sobrinus***

   Tongue moderate, generally the tip of the tongue does not protrude in dead specimens; inner margin of nostril projecting 2

2. Upper part of the body of one colour throughout 3

   Upper part of the body not of one colour throughout ....***Pteropus giganteus giganteus***

3. Five upper and six lower cheek-teeth ....***Rousettus l. leschenaulti.***

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

Genus ***Rousettus*** Gray, 1821

The genus *Rousettus* is represented in Tripura by one species and subspecies.

3. ***Rousettus leschenaulti leschenaulti*** (Desmarest)

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

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

Diagnosis : Fruit bats with forearm around 80.0 to 87.0 mm. Muzzle longish with large eyes. Tail shorter and looks rod like. Colour of dorsal fur slightly brown and that of ventral shades lighter. The antitragal lobe small and rounded.

Distribution : India : Tripura : North district; widely distributed in the Indian mainland, north to Jammu & Kashmir, south to Kerala and east to Arunachal Pradesh. Pakistan, Nepal, Sri Lanka, Bangladesh, Bhutan, Myanmar, Southern China including Tibet, Hong Kong, Vietnam, Laos, possibly Combodia, Thailand.

Genus ***Pteropus*** Brisson, 1762

The genus *Pteropus* is represented in Tripura by one species and subspecies.

4. ***Pteropus giganteus giganteus*** (Brünnich)

1782. *Vespertilio gigantea* Brünnich, *Dyrenes Hist. Dyre-Saml. Univ. Natur-Theater,* **1** : 45 (Bengal = West Bengal, India).

Common name : Indian Flying Fox (Eng.).

Diagnosis : Bats of largest size of Tripura. The second digit clawed. Colour of the fur of head and neck rufous brown. The skin of the wings completely naked. Ears long and extending beyond eye, naked posteriorly excepting at base. Interfemoral membrane hairy in centre and along inner side of the femur and proximal half of the tibia; broad inner margin of the membrane is naked. External tail is absent. The colour of the muzzle, chin and throat is blackish. Size large with forearm 163.0 to 175.0.

Distribution : India : Tripura : South district, West district, North district; widely distributed throughout the Indian Union including Andaman Islands. Pakistan, Nepal, Sri Lanka, Bangladesh, Myanmar.

Genus ***Cynopterus*** F. Cuvier, 1824

The genus *Cynopterus* is represented in Tripura by one species and subspecies.

5. ***Cynopterus sphinx sphinx*** (Vahl)

1797. *Vespertilio sphinx* Vahl, *Skr. Naturh-Selsk. Copenhagen*, 4 : 123 (Tranquebar, Thanjavur district, Tamil Nadu, India).

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

Diagnosis : Medium sized fruit bat with forearm 64-82 mm. Dorsal colour being greyish brown and ventrally paler. The skin of the wings naked. The size of the tail reduced and looks rod like. The ears are narrowly edged with white and the metacarpals and phalanges of long digits are whitish brown.

Distribution : India : Tripura : South district, West district, North district; widely distributed throughout the mainland of the Indian Union. Pakistan, Nepal, Sri Lanka, Bangladesh, Myanmar.

Genus ***Macroglossus*** F. Cuvier, 1824

The genus *Macroglossus* is represented in Tripura by one species and subspecies.

6. ***Macroglossus sobrinus sobrinus*** Andersen

1911. *Macroglossus minimus sobrinus* Andersen, *Ann. Mag. nat. Hist.*, 7 : 642 (Gonong Igari, 2000 ft. = c 610m. Perek, Peninsular Malaysia).

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

Diagnosis : Smallest fruit bat of Tripura with forearm measuring around 50 mm. A claw to index; wing from base of fourth toe. Head is very long; pelage light reddish brown, chest more brown; tail short and rod-like. The rostrum is longer (9.5 to 10.5 mm). The interfemoral membrane is narrow; muzzle long and cylindrical in shape. Tongue quite long with feathery tip.

Distribution : India : Tripura (Das *et. al.* 1995); Arunachal Pradesh; Meghalaya; Mizoram (Mandal *et. al.*), West Bengal. Myanmar, and Thailand to Sumatra, Nias Island, Krakatoa Island, Java.

Suborder MICROCHIROPTERA

The second finger bears no claw. Many of the bats belonging to this suborder are having either noseleaf or tragus or both. Tail totally or partly associated with the interfemoral membrane, often quite long and slender and in some cases short and stout. Post orbital process not developed. Bony palate does not extend behind tooth-row. Incisors of the lower jaw usually three pairs. Usually they depend on small insects but some are also carnivorous.

The suborder Microchiroptera is represented in Tripura by three families.

Key to the families of the suborder

MICROCHIROPTERA

1. A nose-leaf but no tragus present ..... RHINOLOPHIDAE.

   No nose-leaf but a tragus present 2

2. Tail entirely enclosed in interfemoral membrane ..... VESPERITILIONIDAE

3. Tail emerging from the upper surface of the interfemoral membrane ..... EMBALLONURIDAE

Family EMBALLONURIDAE

The family Emballonuridae is represented in Tripura by one genus.

Genus ***Taphozous*** E. Geoffroy, 1818

The genus *Taphozous* is represented in Tripura by one species and subspecies.

7. ***Taphozous longimanus longimanus*** Hardwicke

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

Common name : Long-armed Sheath-tailed Bat (Eng.).

Diagnosis : Bats of medium size, forearm measuring 58 to 62 mm, colour dark brown, tragus broad. A gular sac present in males, rudimentary in females. The interfemoral membrane is hairy to the exertion of tail. The radio-metacarpal pouch is moderately developed. The lower lip is scarcely grooved.

Distribution : India : Tripura : West district; widely distributed in the Indian Peninsula, northwards to Gujarat, Rajasthan on the west, West Bengal and Tripura in the east. Sri Lanka, Nepal, Bangladesh, Myanmar, Thailand, Cambodia.

Family RHINOLOPHIDAE

The family Rhinolophidae is represented in Tripura by one genus.

Genus ***Hipposideros*** Gray, 1831

Only one species of the *genus Hipposideros* occurs in Tripura.

8. ***Hipposideros lankadiva*** Kelaart

1850. Hipposideros lankadiva Kelaart, J. *Ceylon Brch. R. Asiat. Soc.*, 2 : 216 (Kornegalle Tunnel, Kandy, Ceylon = Sri Lanka).

Common name : Kelaart's Leaf-nosed Bat (Eng.).

Diagnosis : Larger bats with forearm measuring 85 to 94 mm bearing no frontal sac. The posterior nose-leaf not narrower than horse-shoe. Ears acutely pointed and large. The upper margin of the nose-leaf supported by three septa and looks semicircular.

Distribution : India : Tripura : North district; Andhra Pradesh; Karnataka; Madhya Pradesh; Maharashtra; Meghalaya; Orissa; West Bengal. Sri Lanka, northern Myanmar.

Family VESPERTILIONIDAE

Bats with no nose-leaf but a tragus present and well developed. Tail entirely enclosed in interfemoral membrane and longer. Incisors of the upper jaw are generally smaller and separated in the middle. Postorbital process is not present.

The family Vespertilionidae is represented in Tripura by the following genera.

Genus ***Pipistrellus*** Kaup. 1829

Two species and subspecies of the genus *Pipistrellus* occur in Tripura.

Key to the species and subspecies of the genus PIPISTRELLUS

1. Forearm less than 29.0 mm, skull shorter..... .....***Pipistrellus mimus***
2. Forearm more than 29.0 mm, skull longer ... .***Pipistrellus coromandra***

9. ***Pipistrellus coromandra coromandra*** (Gray)

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

Common name : Indian Pipistrelle (Eng.).

Diagnosis : Bats of smaller size with forearm measuring on average 32 mm. The colour of the dorsal fur being blackish brown and that of ventral fur slightly paler. A small calcarial lobe is present. Tragus bluntly rounded and forward curving. The tooth-row is longer.

Distribution : India : Tripura : North district; widely distributed in the Peninsular India, north

to Jammu & Kashmir, east to northeastern states; Car Nicobar. Afganistan, Pakistan, Sri Lanka, Nepal.

10. ***Pipistrellus mimus mimus*** Wroughton

1899. *Pipistrellus mimus* Wroughton, *J. Bombay nat. Hist. Soc.*, 12 : 722 (Maheshkatri, Dangs, Surat district = Maheskatri, The Dangs district, Gujarat, India).

Common name : Indian Pygmy Pipistrelle (Eng.).

Diagnosis : Pipistrells of smallest size in the state with forearm measuring 26 to 32 mm. Colour of the dorsal hair bistre brown and that of ventral parts slightly lighter. The base of hairs are almost black. The colour of the wing membranes, face and the ears are completely black. The wings originates from the base of the toes. The shape of the ears are nearly triangular. Tragus short and the post-calcarial lobe present. Skull and tooth-row shorter.

Distribution : India : Tripura : West district, North district; widely distributed throughout the mainland of Indian Union. Afganistan, Pakistan, Nepal, Sri Lanka, Bangladesh, Myanmar, Vietnam, Thailand.

Genus ***Tylonycteris*** Peters, 1872

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

11. ***Tylonycteris pachypus fulvida*** (Blyth)

1859. *Scotophilus fulvidus* Blyth, *J. Asiat. Soc. Beng.*, 28 : 293 (Schwegyin, Sittang River, Southeastern Myanmar).

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

Diagnosis : One of the two smallest bats of Tripura as well as of India (the other being *Pipistrellus mimus*). The forearm measuring 23 to 28 mm. Both dorsal and ventral colour is reddish brown. Tragus short with rounded tip. Skull noticeably flattened. The soles of the feet expanded into fleshy pads.

Distribution : India : Tripura : North district; Andaman Islands; Manipur; Mizoram (Mandal *et. al.*), Sikkim, West Bengal. Bangladesh, Myanmar, Thailand, Laos, Vietnam, southern China.

Genus ***Scotophilus*** Leach, 1821

The genus *Scotophilus* is represented by a single species and subspecies in Tripura.

12. ***Scotophilus kuhli kuhli*** Leach

1821. *Scotophilus kuhli* Leach, *Trans. Linn. soc. Lond.*, 13 : 72 (Type-locality unknown, but India, according to Hill & Thonglongya 1972).

Common name : Lesser Yellow Bat (Eng.).

Diagnosis : Bats of larger size, forearm 57 to 63 mm,. The dorsal colour olive brown and that of ventral creamy white. Ears Small. Tragus semilunar. The wings originate from side of foot near base of toes. The tip of tail free.

Distribution : India : Tripura : South district, West district, North district; widely distributed throughout the Indian Union, including Nicobar Islands. Pakistan, Sri Lanka, Bangladesh, Myanmar.

Order PRIMATES

Hands and feet adapted for climbing and other purposes; the thumb and big toe opposable to other digits and prehensile; skull large; complete bony rim around orbits; reduced dentition; brain well developed; complete set of collar bones.

Three families of the order Primates occur in Tripura.

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 Tripura.

13. *Nycticebus coucang bengalensis* (Lacepede)

1800. *Loris bengalensis* Lacepede, *Anat. Maki.*, 1 : 30 (Bengal).

Common name : Slow Loris (Eng.).

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 : Tripura : South district; West district; Assam; Manipur; Meghalaya; Mizoram; Nagaland. Bangladesh, Myanmar, Thailand.

Remarks : The Slow Loris is uncommon in Tripura.

Family CERCOPITHECIDAE

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

Key to the genera of the family

CERCOPITHECIDAE

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

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

Genus *Macaca* Lacepede, 1799

Three species of the genus *Macaca* occur in Tripura.

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

1. Tail inconspicuous, reduced to a stump and seldom longer than 50.0 mm ..... ***M. arctoides.***

   Tail conspicuous, less than half or about half the length of head and body 2

2. Tail thin 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 leonina***

   Tail haired, about half the length of head and body, not carried in an arch above; hairs on crown not radiating from centre ..... ***M. mulatta.***

14. *Macaca nemestrina leonina* (Blyth)

1863. *Macacus leoninus* Blyth, *Cat. Mammalia Mus. Asiat. Soc.*, : 7 (Northern Arakan, Myanmar).

Common name : Pig-tailed Macaque (Eng.).

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

Distribution : India : Tripura : South district; Assam; Meghalaya; Nagaland. Myanmar, Thailand, Malaya Peninsula.

Remarks : The pig-tailed Macaque is not very common in Tripura. Only a troop of 16 monkeys were seen at Paratia (Mukherjee *et al.* 1993).

15. *Macaca mulatta mulatta* (Zimmermann)

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

Common name : Rhesus Macaque (Eng.).

Diagnosis : Medium-sized monkey with tail about half of head and body length; crown hairs lying straight back; fur on lions, rump and base of tail orange-red coloured; face light pink.

Distribution : India : Tripura : South district, West district, North district; Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Delhi; Gujarat; Himachal Pradesh; Jammu & Kashmir; Madhya Pradesh; Meghalaya; Mizoram; Orissa; Punjab; Rajasthan; Sikkim; Uttar Pradesh. Bhutan, Bangladesh, Myanmar, China, Thiland, Vietnam.

16. ***Macaca arctoides*** (I. Geoffroy)

1831. *Macacus arctoides* I. Geoffroy. *Zool. Voy. de Belanger Indies Orient,.* : 61 (Cochinchine).

Common name : Stump-tailed Macaque (Eng.).

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

Distribution : India : Tripura : North district; Arunachal Pradesh; Assam; Manipur; Meghalaya; Mizoram; Nagaland. Bangladesh, Myanmar, Southern China, erstwhile Indochina, northern Malaya Peninsula.

Remarks : The Stump-tailed Macaque is not common in Tripura. A single troop was seen at Chailingta c 10 Km South of Manu.

Genus ***Presbytis*** Eschscholtz, 1821

Three species and subspecies of the genus ***Presbytis*** occur in Tripura.

Key to the species and subspecies of the genus PRESBYTIS

1. Area around eyes and lips milky white, colour dusky grey above and silvery white below .. ..***P. phayrei phayrei.***

   Area around eyes and lips of same colour of face, colour different 2

2. Colour on the back ranging from hair brown to slaty-grey; ventral colour golden yellowish .....***P. pileatus durga.***

   Dorsal and ventral colour golden yellowish all throughout .....***P. geei.***

17. ***Presbytis pileatus durga*** Wroughton

1916. *Presbytis durga* Wroughton, *J. Bombay nat. Hist. Soc.*, 24 : 655 (Cachar, Assam).

Common name : Capped Langur (Eng.).

Diagnosis : Slender built with a crown of erect, long hairs directed backwards from forehead; colour on the back and limbs ranges from hair-brown to slaty-grey; underparts golden yellowish.

Distribution : India : Tripura : South district; West district; North district; Assam; Manipur; Nagaland. Bangladesh.

18. ***Presbytis phayrei phayrei*** Blyth

1847. *Presbytis phayrei* Blyth, *J. Asiat. Soc. Beng.*, 16 : 733 (Arakan, Burma = Myanmar).

Common name : Phayre's Leaf Monkey (Eng.).

Diagnosis : Slender-built monkey with well defined crest over head; colour dusky grey above and silvery white below; fore and hind limbs of same colour as body; tail paler than body; area around eyes and lips milky white.

Distribution : India : Tripura : South district; West district, North district; Assam. Myanmar.

19. ***Presbytis geei*** Khajuria

1956. *Presbytis geei* Khajuria, *Ann. Mag. Nat.Hist.*, Ser 12, 9 : 86 (Jamduar, Goalpara district, Assam, India).

Common name : Golden Langur (Eng.).

Diagnosis : Face black; body colour rich golden to cream buff, hair on the flanks longer and reddish, and that of forehead radiating backwards and sidewards.

Distribution : India : Tripura : South district; West district; Assam. Bhutan.

Remarks : Golden Langur has been introduced in Sipahijola and Trishna Sanctuaries.

Family HYLOBATIDAE

The family Hylobatidae consists of the genus *Hylobates.*

Genus ***Hylobates*** Illiger, 1811

One species of the genus *Hylobates* occurs in Tripura. It is the only ape found in India.

20. ***Hylobates hoolock*** (Harlan)

1834. *Simia hoolock* Harlan, *Trans. Am. phil. Soc.*, 4 : 52 (Garo Hills, Meghalaya).

Common name : Hoolock Gibbon (Eng.).

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

Distribution : India : Tripura : West district; North district; Assam; Manipur; Meghalaya; Mizoram. Bangladesh, Myanmar, China.

Order CARNIVORA

Skull robust; front teeth consists of a pair of large conical canines with six closely set incisors between them in each jaw; fourth upper premolar and first lower molar developed into carnassial (flesh-cutting) teeth; movement of jaws restricted to only up and down.

Five families of the order Carnivora occur in Tripura.

Key to the families of the order CARNIVORA,

1. Bulla much dilated, rounded but not divided into chambers by a septum; head elongated with long muzzle; feet digitigrade, toes 5-4; fifth toe of fore foot very short not reaching ground; claws non-retractile .....CANIDAE

   Bulla much dilated, rounded, and divided into chambers by a septum 2

   Bulla not rounded but inflated, and 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, 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. Ears moderate in size, with well-developed bursa, no bony tube to auditory orifice; claws curved and more or less retractile; prescrotal gland generally present .....VIVERRIDAE

   Ears small and rounded, with vestigeal bursa, well developed bony tube to auditory orifice; claws lengthened, exerted, non-retractile; prescrotal gland absent .....HERPESTIDAE

4. Small-sized animal, with a moderately long tail; soles of feet not entirely covered with hairs; two lower molars present on each side .....MUSTELIDAE.

Family CANIDAE

One species and subspecies of the genus *Canis* of the present family occurs in Tripura.

Genus *Canis* Linnaeus, 1758

21. *Canis aureus indicus* Hodgson

1833. *Canis aureus indicus* Hodgson, *Asiat. Res.*, 18, 2 : 237 (Nepal).

Common name : Asiatic Jackal (Eng.).

Diagnosis : Smaller in built than Wolf, lacking the arching brows and elevated forehead; coat colour is a mixture of black and white, washed with buff at the shoulders, ears and legs.

Distribution : India : Tripura : South district; West district; North district; Arunachal Pradesh; Assam; Bihar; Manipur; Meghalaya; Nagaland; Sikkim; West Bengal. Bhutan, Myanmar, Thailand.

Family MUSTELIDAE

One species and subspecies of the genus *Martes* of the present family occurs in Tripura.

Genus *Martes* Pinel, 1792

22. *Martes flavigula flavigula* (Boddaert)

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

Common name : Yellow-throated Marten (Eng.).

Diagnosis : Head and body length 40-65 cm, tail equally long and bushy; colour of crown, nape and outer part of limbs and tail black; throat and cheeks white; chest yellow; rest of coat light brown.

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

Family VIVERRIDAE

Two genera of the family Viverridae occur in Tripura.

Key to the genera of the family VIVERRIDAE

Forehead broad; anterior edge of ears widely separated; a dorsal crest of long hairs extends posteriorly at least from the shoulders ..... ***Viverra***

Forehead narrow; anterior edge of ears set close together; no dorsal crest of long hairs. ..... ***Viverricula.***

Genus *Viverra* Linnaeus, 1758

One species and subspecies of the genus *Viverra* occurs in Tripura.

23. *Viverra zibetha zibetha* Linnaeus.

1758. *Viverra zibetha* Linnaeus, *Syst. Nat. 10th ed.*, 1 : 44 (India).

Common name : Large Indian Civet (Eng.).

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

Distribution : India : Tripura : South district; West district; North district; Arunachal Pradesh; Assam, Bihar, Madhya Pradesh; Manipur; Meghalaya; Mizoram; Nagaland; Sikkim; West Bengal. Bangladesh, Myanmar, Thailand, Vietnam, Malaysia, Singapore.

Genus *Viverricula* Hodgson, 1838

One species and subspecies of the genus *Viverricula* occurs in Tripura.

24. *Viverricula indica indica* (Desmarest)

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

Common name : Small Indian Civet (Eng.).

Diagnosis : Smaller than a common cat with shorter legs and longer tail; coat colour greyish-brown, spotted and striped lengthways with black; tail ringed with black and white.

Distribution : India : Tripura : South district; West district; North district; Andhra Pradesh; Arunachal Pradesh; Assam; Bihar; Goa; Gujarat; Himachal Pradesh; Jammu & Kashmir, Karnataka; Kerala; Madhya Pradesh; Maharashtra; Manipur; Meghalaya; Orissa; Sikkim; Tamil Nadu; Uttar Pradesh; West Bengal. Sri Lanka, Bhutan, Bangladesh.

Family HERPESTIDAE

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

Genus *Herpestes* Illiger, 1811

The genus is characterised by elongated body; short rounded ears, mostly concealed by hairs; contour hairs with alternate dark and light bands, giving a speckled appearence.

Two species of the genus *Herpestes* are known from Tripura.

25. *Herpestes auropunctatus birmanicus* Thomas

1886. *Herpestes birmanicus* Thomas, *Ann. Mag. nat. Hist.*, (5) 17 : 84 (Pegu, Burma = Myanmar).

Common name : Small Indian Mongoose (Eng.).

Diagnosis : No stripe on sides of neck; tail shorter than head and body; contour hair short, soft, silky, olive-brown in colour and gold-flecked.

Distribution : India : Tripura : South district, West District, North district. Myanmar.

26. *Herpestes urva* (Hodgson)

1836. *Gulo urva* Hodgson, *J. Asiat Soc. Beng.*, 5 : 238 (Nepal).

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

Diagnosis : A white stripe running along each side of neck to shoulders; fur coarse, ragged, dusky iron-grey in colour; under fur wolly, dark at base, pale brownish-yellow at tips.

Distribution : India : Tripura : West district, North district; Arunachal Pradesh; Assam;

Manipur; Meghalaya; Nagaland. Bangladesh, Myanmar, Thailand, China, Taiwan, Vietnam.

Family FELIDAE

The family Felidae is represented in Tripura by the genus *Felis* only.

Genus ***Felis*** Linnaeus, 1758

Two species of the genus *Felis* occur in Tripura.

27. ***Felis temmincki*** Vigors & Horsfield

1827. *Felis temmincki* Vigors & Horsfield, *Zool. J.*, 3 : 451 (Sumatra).

Common name : Golden Cat (Eng.).

Diagnosis : Fairly large cat, 70-90 cm in head and body length; tail long. Colour chestnut, a horizontal white cheek-stripe from below eyes to behind nape; ears brownish black on outer side with pale central spot; throat with imperfect bands; underparts generally pale with dusky spots.

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

28. ***Felis bengalensis*** Kerr

1792. *Felis bengalensis* Kerr, *Anim. Kingd.*, : 151 (Southern Bengal = West Bengal, India).

Common name : Leopard Cat (Eng.).

Diagnosis : Small-sized cat, 60-65 cm in head and body length with rather short tail; pelage ornamented with blackish brown spots; four longitudinal blackbands from forehead to neck which break up into short bands or elongated spots on the shoulders; back of ears black with round whitish spot in centre.

Distribution : India : Tripura : South district, West district, North district; Andhra Pradesh; Arunachal Pradesh; Assam; Maharashtra; Manipur; Meghalaya; Nagaland; Orissa; Karnataka; Kerala; Tamil Nadu; West Bengal. Bangladesh, Myanmar, Thailand, Yunnan, and erstwhile Indo-China.

Order PROBOSCIDEA

The order Proboscidea contains a single family Elephantidae

Family ELEPHANTIDAE

In India the family Elephantidae is represented by the genus *Elephus*

Genus ***Elephus*** Linnaeus, 1758

The genus *Elephus* is represented in Tripura by a single species and subspecies.

29. ***Elephus maximus indicus*** G. Cuvier

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

Common name : Indian Elephant (Eng.).

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

Distribution : India : Tripura : North district; Arunachal Pradesh; Assam; Bihar; Karnataka; Kerala; Meghalaya; Mizoram; Nagaland; Orissa; Tamil Nadu; Uttar Pradesh; West Bengal. Bangladesh, Bhutan, Myanmar, Thailand, Vietnam, Malaysia, 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 appearence of a single hoof split down in the middle.

The order Artiodactyla is represented in Tripura by two families.

Key to the families of the order

ARTIODACTYLA

Upper incisors present; animals devoid of horns and antlers ..... SUIDAE

Upper incisors absent; antlers present in males; antlers solid, branched, ornamented with knot

and ridges, and shed periodically ....CERVIDAE.

Family SUIDAE

The family Suidae is represented in Tripura by a single species and subspecies.

30. ***Sus scrofa cristatus*** Wagner

1939. *Sus cristatus* Wagner, Munch. Gelehrt. Anz., 9 : 435 (probably Malabar Coast, India).

Common name : Wild Boar (Eng.).

Diagnosis : 76-102 cm in shoulder height; 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.

Distribution : India : Tripura : South district, West district, North district; throughout India in forested tracts. Pakistan, Sri Lanka, Nepal, Bangladesh, Myanmar, Indonesia, Malaysia, Vietnam.

Family CERVIDAE

Three genera of the family Cervidae occur in Tripura.

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 .....***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 ....***Axis***

   Body unspotted; brow-tine form an acute angle with beam of antler .....***Cervus.***

Genus ***Muntiacus*** Rafinesque, 1815

One species and subspecies of the genus *Muntiacus* occurs in Tripura.

31. ***Muntiacus muntjak vaginalis*** (Boddaert)

1785. *Cervus vaginalis* Boddaert, *Elench. Anim.*, 1 : 136 (Bengal).

Common name : Barking Deer (Eng.).

Diagnosis : Antler small, consisting of a short brow-tine and an unbranched beam, set on bony hair-covered pedicel; upper canines tusk-like; tail as long as head; coat bright chestnut in colour, with black streaks along face-ridges inside; throat, groin and under-side of tail white.

Distribution : India : Tripura : South district, West district, North district; Arunachal Pradesh; Assam; Bihar; Manipur; Sikkim; Uttar Pradesh; West Bengal. Bhutan, Bangladesh, northern Myanmar, Yunnan, northern Vietnam.

Genus ***Axis*** Smith, 1827

The genus *Axis* is represented in Tripura by one species and subspecies.

32. ***Axis axis axis*** (Erxleben)

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

Common name : Spotted Deer, Chital (Eng.).

Diagnosis : Coat bright rufous-fawn, with white spots; antlers with three tines, a long brow-tine set nearly at right angles to the beam and with two branches at top.

Distribution : India : Tripura : West district; peninsular India, northward to Kumaon in Uttar Pradesh and Sikkim, and eastwards to West Bengal and Assam. Sri Lanka, Nepal, Bangladesh.

Genus ***Cervus*** Linnaeus, 1758

The genus *Cervus* is represented in Tripura by one species and subspecies.

33. ***Cervus unicolor equinus*** G. Cuvier

1823. *Cervus equinus* Cuvier, Oss. Foss. 2nd edn., 4 45 (Sumatra).

Common name : Sambar (Eng.).

Diagnosis : Largest Indian deer, coat coarse and shaggey; a mane present, in stag, about neck

and throat; general colour brown with yellowish or greyish tinge; old stag dark, almost black, underparts paler; females lighter in tone. Antler stout and rugged, brow-tine forming acute angle with main beam.

Distribution : India : Tripura : North district; Arunachal Pradesh; Assam; Meghalaya. Myanmar, China, Thailand, Malaysia, Sumatra, Yunnan, erstwhile Indo-China.

Order LAGOMORPHA

Only one family of the order Lagomorpha occurs in Tripura.

Family LEPORIDAE

One genus of the family Leporidae occurs in Tripura.

Genus ***Lepus*** Linnaeus, 1758

One species and subspecies of the genus *Lepus* occurs in Tripura.

34. ***Lepus nigricollis ruficaudatus*** Geoffroy

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

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

Diagnosis : Head and body 40-50 cm is length; ears longer than tail; fur coarse, reddish brown mixed with black above; throat, belly and underside of tail white; upper side of tail brown; a grey patch on nape.

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

Order RODENTIA

Rodents which are cosmopolitan in distribution, are characterised by the presence of a chisel-shaped incisors in each jew, and a distinct diastema between incisors and cheekteeth.

Two families of the order Rodentia, namely Sciuridae and Muridae, occur in Tripura.

Key to the family of the order RODENTIA

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

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

Family SCIURIDAE

In Tripura, the family Sciuridaé is represented by three genera.

Key to the genera of the family SCIURIDAE

1. Size large, over 280 mm in head and body length; maxillary teeth 4 in number ..... ***Ratufa***

   Size small, less than 280 mm in head and body length; maxillary teeth 5 in number..... 2

2 Length of nasal exceeds interorbital width of skull ..... ***Dremomys***

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

Genus ***Callosciurus*** Gray, 1867

The genus *Callosciurus* is represented by two species and subspecies in Tripura.

Key to the species of the genus ***Callosciurus***

Width of frontals approximates to one-third of the occipitonasal length or less ..... ***C. pygerythrus blythi***

Width of frontals clearly in excess of one-third of the occipitonasal length ..... ***C. erythraeus punctatissimus***

35. ***Callosciurus erythraeus punctatissimus*** (Gray)

1867. *Macroxus punctatissimus* Gray, *Ann. Mag. nat. Hist.*, 20 : 283 (India).

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

Diagnosis : Dorsal colour bone brown, that of ventral claret brown; tail black, tail hairs have

four light bands obscured by long black tips; throat punctate, extending posteriorly as a narrow wedge in the midline.

Distribution : India : Tripura : South district, West district, North district; Assam.

36. ***Callosciurus pygerythrus blythi*** (Tytler)

1854. *Sciurus blythii* Tytler, *Ann. Mag. nat. Hist.*, 14 : 172 (Dhaka, Bangladesh).

Common name : Irrawaddy Squirrel (Eng.).

Diagnosis : Olive-brown in mid-dorsal colour, grading into buffy-brown on the sides; venter colour whitish; head, hands and feet grey coloured; under side of tail light ochraceous buff in colour.

Distribution : India : Tripura : South district, West district, North district; Assam; Manipur; Maghalaya; Nagaland. Bangladesh, Myanmar.

Genus ***Dremomys*** Heude, 1898

One species and subspecies of the genus *Dremomys* occurs in Tripura.

37. ***Dremomys lokriah macmillani*** Thomas

1916. *Dremomys macmillani* Thomas, *J. Bombay nat. Hist. Soc.*, 24 : 238 (Tatkon, Western Burma = Myanmar).

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

Diagnosis : Colour of the throat and belly washed with buffy or yellowish; arboreal but seeks its food from ground; in habit as well as in ventral colour it resembles the tree-shrew (*Tupaia*).

Distribution : India : Tripura : West district; North district; Assam; Manipur; Meghalaya; Nagaland. Myanmar.

Genus ***Ratufa*** Gray, 1867

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

38. ***Ratufa bicolor gigantea*** (M'Clelland)

1839. *Sciurus giganteus* M'Clelland, *Proc. zool. Soc. Lond.*,: 150 (Assam).

Common name : Malayan Giant Squirrel (Eng.).

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

Distribution : India : Tripura : South district, West district, North district; Arunachal Pradesh; Assam; Manipur; Meghalaya; Mizoram; Nagaland; Sikkim; West Bengal. Bhutan, Myanmar, China.

Family MURIDAE

In Tripura, the family Muridae is represented by three genera.

Key to the genera of the family MURIDAE

1. Size large; coat harsh; condylobasal length exceeds or equal to occipitonasal length; upper incisors prodont; anterior palatal foramina elongated, more than 7 mm in length and extending between maxillary tooth-row ..... ***Bandicota***

   Size smaller; condylobasal length less than occipitonasal length; upper incisors opisthodont or orthodont 2

2. 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 ..... ***Rattus.***

Genus ***Rattus*** Fischer, 1803

Two species of the genus *Rattus* occur in Tripura.

Key to the species of the genus ***Rattus***

Nasals long, usually exceeding 38% of the occipitonasal length ..... ***R. nitidus***

Nasals short, usually less than 38% of the occipitonasal length ..... ***R. rattus***

39. ***Rattus Rattus arboreus*** (Horsfield)

1851. *Mus arboreus* (Buchanan Hamilton) Horsfield, *Cat. E. India Co. Mus.*, : 141 (Bengal).

Common name : House Rat (Eng.).

Diagnosis : The dorsal colour of body ranges from light brown to rufous brown and the ventral colour from milky white to white suffused with slaty.

Distribution : India : Tripura : South district, West district, North district; Bihar; Orissa; Uttar Pradesh; West Bengal. Nepal.

40. ***Rattus nitidus nitidus*** (Hodgson)

1845. *Mus nitidus* Hodgson, *Ann. Mag. nat. Hist.*, 15 : 267 (Nepal).

Common name : Himalayan Rat (Eng.).

Diagnosis : The dorsal colour of body ranges from ochraceous to olive and the ventral surface is ashy.

Distribution : India : Tripura : North district; Arunachal Pradesh; Assam; Meghalaya; Sikkim; Uttar Pradesh; West Bengal. Bhutan, Nepal, China.

Genus ***Mus*** Linnaeus, 1758

Two species of the genus *Mus* occur in Tripura.

Key to the species of the genus ***Mus***

Tail unicoloured and longer than head and body ..... ***M. musculus***

Tail bicoloured (dark above, pale below) and equal to or shorter than head and body ..... ***M. booduga***

41. ***Mus musculus castaneus*** Waterhouse

1843. *Mus castaneus* Waterhouse, *Ann. Mag. nat. Hist.*, 12 : 134 (Philippine Islands).

Common name : House Mouse (Eng.).

Diagnosis : Dorsal surface of body dark brown, under surface a little lighter.

Distribution : India : Tripura : West district, North district; Andhra Pradesh; Assam; Bihar; Delhi; Gujarat; Jammu & Kashmir; Karnataka; Kerala; Manipur; Meghalaya; Orissa; West Bengal. Africa, Sri Lanka, Myanmar, China, Thailand, Malaysia, Philippines, New Guinea.

42. ***Mus booduga booduga*** (Gray)

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

Common name : Little Indian Field Mouse (Eng.).

Diagnosis : Smaller in size; dorsal colour light brown, ventral milky white; occipitonasal length of skull less than 20.0 mm.

Distribution : India : Tripura : North district; Arunachal Pradesh; Assam; Bihar; Goa; Gujarat; Himachal Pradesh; Jammu & Kashmir; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Meghalaya; Orissa; Tamil Nadu; West Bengal. Bangladesh.

Genus ***Bandicota*** Gray, 1873

Two species of the genus *Bandicota* occur in Tripura.

Key to the species of the genus ***Bandicota***

Size large, head and body length more than 220.0 mm; anterior palatal foramina equally broad at both ends; nasal more than one-third of ocipitonasal length ..... ***B. indica***

Size small, head and body length less than 220.0 mm; anterior palatal foramina narrower posteriorly; nasal less than one-third of occipitonasal length ..... ***B. bengalensis***

43. ***Bandicota bengalensis bengalensis*** (Gray)

1835. *Arvicola bengalensis* Gray, *Ill Indian Zool.*, 2 : pl. 21 (Bengal).

Common name : Lesser Bandicoot Rat (Eng.).

Distribution : India : Tripura : South district; throughout India. Pakistan, Sri Lanka, Nepal, Bhutan, Bangladesh, Myanmar.

44. ***Bandicota indica nemorivaga*** (Hodgson)

1836. *Mus (Rattus) nemorivagus* Hodgson, *J. Asiat. Soc. Beng.*, 5 : 234 (Nepal).

Common name : Large Bandicoot Rat (Eng.).

Material examined : West district : 1 ♀, Agartala, Dr. S. Bhattacharya (Donor).

Measurements : Nil.

Distribution : India : Tripura : West district; Assam; Bihar; Manipur; Meghalaya; Sikkim; West Bengal. Nepal, Bangladesh, Thailand, Formosa.

SUMMARY

An account of the mammalian fauna of Tripura, based on published literature, is provided. A total of 44 species and subspecies belonging to 33 genera, 20 families and 9 orders have been reported.

Key and diagnostic character for identification of all the taxa have been given.

Detailed district-wise distribution in Tripura, along with the distributional range in India and outside for each taxon have also been provided.

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AVES

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INTRODUCTION

There is no authentic information about the avifauna of Tripura except that by Blyth (1845, 1846), Ali and Ripley (1968-74), and a recent publication by the International Waterfowl and Wetlands Research Bureau on Asian Waterfowl Census, 1989. Before independence, Tripura was known as Tipperah and was a part of the former province of Bengal. Now, mainly, the hilly portion of Tipperah lies within the Indian territory and the plains in Bangladesh (Agrawal and Bhattacharyya, 1977). First extensive survey of the State for mammals and birds was undertaken by Dr. V. C. Agrawal of the Zoological Survey of India during 1969-73. Recently (1991) one of us (N. M.) surveyed all the districts of Tripura especially for birds. As a result of different surveys as well as from the published literature, a consolidated list of birds has been prepared which represents 259 species and subspecies belonging to 56 families and 16 orders.

Though some of the species and subspecies are known from the eastern States of India and a few of them extend upto Burma (= Myanmar) and other countries of South-East Asia the detailed distribution of the species, barring a few, are not exactly known from the Tripura State. Hence the opportunity of filling up the specific lacunae is utilised here.

Measurements : For wing, tail and bill measurements, the standard methods were followed (Ali and Ripley, 1968) and are expressed in millimetres.

Weights (in gram) were taken in the field soon after the birds were killed. The sex was determined from actual examination of the gonads, whose measurements are also expressed in milimetres.

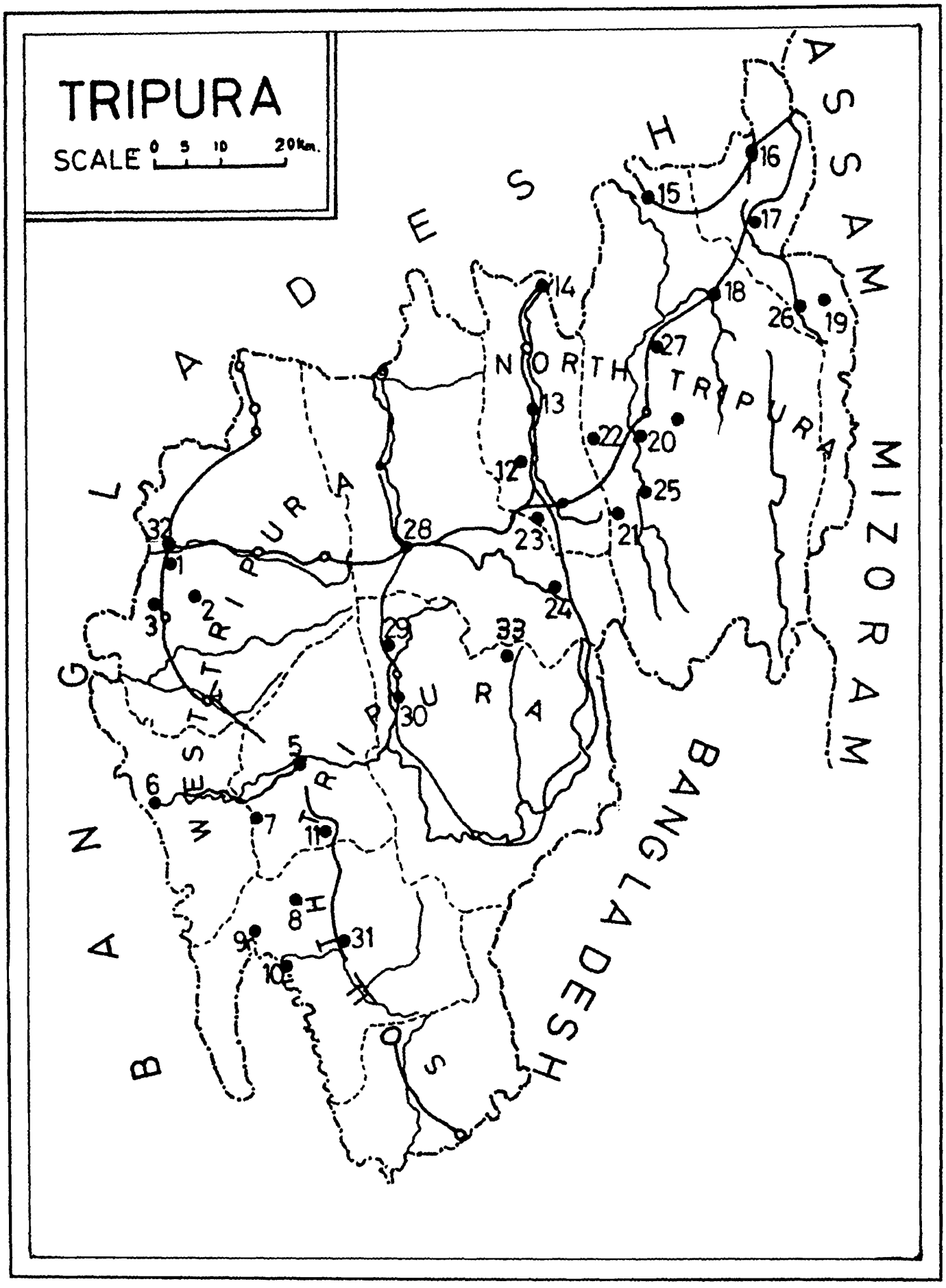
Local names were gathered from various sources in the field.

Ali and Ripley's (1968-1974) arrangement has been adopted in the present account.

All the keys to the families and the genera given in those pages deal with the families and the genera of Tripura only.

LIST OF COLLECTION AND OBSERVATION STATIONS IN TRIPURA STATE FOR BIRDS

1. Indranagar
2. Sepahijala
3. Garjee
4. Bisalgarh
5. Udaipur
6. Sonamura
7. Jamjuri
8. Abhoya
9. Rajnagar
10. Belonia
11. Paratia
12. Salenma
13. Chelingta
14. Kamalpur
15. Kailashahar
16. Dharmanagar
17. Panisagar
18. Pecharthal
19. Kanchanpur
20. Manu
21. Sidhukumar
22. Karamchhari
23. Ambassa
24. Khowaipar
25. Longthorai
26. Silbari
27. Kumarghat
28. Teliamura
29. Ampi
30. Amarpur
31. Hrishyamukh
32. Agartala
33. Jatanbari


TRIPURA
SCALE 0 5 10 20km.
ASSAM
MIZORAM
BANGLADESH
BANGLADESH
NORTH TRIPURA
WEST TRIPURA
SOUTH TRIPURA
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Map 1.

SYSTEMATIC LIST OF BIRDS FROM TRIPURA STATE

As reported in this paper

Order PODICIPEDIFORMES

Family PODICIPEDIDAE

1. *Podiceps ruficollis capensis* Salvadori

Order PELECANIFORMES

Family PHALACROCORACIDAE

2. *Phalacrocorax carbo* (Linnaeus)
3. *Phalacrocorax fuscicollis* Stephens
4. *Phalacrocorax niger* (Vieillot)
5. *Anhinga rufa melanogaster* Pennant

Order CICONIIFORMES

Family ARDEIDAE

6. *Ardea cinerea* Linnaeus
7. *Ardea purpurea manilensis* Meyen
8. *Ardea alba* Linnaeus
9. *Ardeola striatus chloriceps* (Bonaparte)
10. *Ardeola grayii grayii* (Sykes)
11. *Bubulcus ibis coromandus* (Boddaert)
12. *Egretta intermedia intermedia* (Wagler)
13. *Egretta garzetta garzetta* (Linnaeus)
14. *Nycticorax nycticorax nycticorax* (Linnaeus)
15. *Ixobrychus cinnamomeus* (Gmelin)
16. *Ixobrychus sinensis* (Gmelin)
17. *Ixobrychus flavicollis flavicollis* (Latham)

Family CICONIIDAE

18. *Mycteria leucocephala* (Pennant)
19. *Anastomus oscitans* (Boddaert)
20. *Ciconia episcopus episcopus* (Boddaert)
21. *Ciconia ciconia ciconia* (linnaeus)

Family THRESKIORNITHIDAE

22. *Threskiornis aethiopica melanocephala* (Latham)
23. *Platalea leucorodia major* Tamminck & Schlegel

Order ANSERIFORMES

Family ANATIDAE

24. *Anser anser rubrirostris* Swinhoe
25. *Dendrocygna javanica* (Horsfield)
26. *Dendrocygna bicolor*(Vieillot)
27. *Anas acuta* lInnaeus
28. *Anas crecca crecca* Linnaeus
29. *Anas platyrhynchos* Linnaeus
30. *Anas strepera strepera* Linnaeus
31. *Anas penelope* Linnaeus
32. *Anas clypeata* Linnaeus
33. *Aythya ferina* (Linnaeus)
34. *Nettapus coromandelianus coromandelianus* (Gmelin)

Order FALCONIFORMES

Family ACCIPITRIDAE

35. *Elanus caeruleus vociferus* (Latham)
36. *Milvus migrans govinda* Sykes
37. *Haliastur indus indus* (Boddaert)
38. *Accipiter badius dussumieri* (Temminck)
39. *Accipiter trivirgatus indicus* (Hodgson)
40. *Accipiter nisus nisosimilis* (Tickell)
41. *Buteo buteo japonicus* (Temminck & Schlegel)
42. *Sarcogyps calvus* (Scopoli)
43. *Gyps bengalensis* (Gmelin)
44. *Circus macrourus* (S. G. Gmelin)
45. *Circus aeruginosus aeruginosus* (Linnaeus)
46. *Spilornis cheela burmanicus* Swann

47. *Pandion haliaetus haliaetus* (Linnaeus)

Family FALCONIDAE

48. *Falco subbuteo* Linnaeus

Order GALLIFORMES

Family PHASIANIDAE

49. *Coturnix coromandelica* (Gmelin)
50. *Arborophila atrogularis* (Blyth)
51. *Lophura leucomelana lathami* (J. E. Grey)
52. *Gallus gallus murghi* Robinson & Kloss

Order GRUIFORMES

Family TURNICIDAE

53. *Turnix suscitator plumbipes* (Hodgson)

Family RALLIDAE

54. *Rallus aguaticus indicus* Blyth
55. *Porzana pusilla pusilla* (Pallas)
56. *Amaurornis phoenicurus chinensis* (Boddaert)
57. *Gallicrex cinerea* (Gmelin)
58. *Gallinula chloropus indica* Blyth
59. *Porphyrio prophyrio poliocephalus* (Latham)
60. *Fulica atra atra* Linnaeus

Order CHARADRIIFORMES

Family JACANIDAE

61. *Hydrophasianus chirurgus* (Scopoli)
62. *Metopidius indicus* (Latham)

Family CHARADRIIDAE

Subfamily CHARADRIINAE

63. *Vanellus indicus indicus* (Boddaert)
64. *Pluvialis dominica fulva* (Gmelin)
65. *Charadrius dubius curonicus* Gmelin
66. *Charadrius dubius jerdoni* (Legge)

Subfamily SCOLOPACINAE

67. *Tringa totanus totanus* (Linnaeus)
68. *Tringa stagnatilis* (Bechstein)
69. *Tringa nebularia* (Gunnerus)
70. *Tringa ochropus* Linnaeus
71. *Tringa glareola* Linnaeus
72. *Tringa hypoleucos* Linnaeus
73. *Gallinago stenura* (Bonaparte)
74. *Gallinago gallinago gallinago* (Linnaeus)
75. *Gallinago minima* (Brunnich)
76. *Scolopax rusticola rusticola* Linnaeus
77. *Calidris minuta* (Leisler)
78. *Calidris temminckii* (Leisler)
79. *Philomachus pugnax* (Linnaeus)

Family ROSTRATULIDAE

80. *Rostratula benghalensis benghalensis* (Linnaeus)

Family RECURVIROSTRIDAE

81. *Himantopus himantopus himantopus* (Linnaeus)

Family BURHINIDAE

82. *Burhinus oedicnemus indicus* (Salvadori)

Family GLAREOLIDAE

83. *Glareola pratincola maldivarum* J. R. Forster

Family LARIDAE

84. *Larus brunnicephalus* Herdon
85. *Sterna aurantia* J. E. Gray
86. *Sterna hirundo tibetana* Saunders
87. *Sterna acuticauda* J. E. Gray

Order COLUMBIFORMES

Family COLUMBIDAE

88. *Treron curvirostra nipalensis* (Hodgson)
89. *Treron pompadora phayrei* (Blyth)
90. *Ducula aenea sylvatica* (Tickell)
91. *Columba livia intermedia* Strickland
92. *Streptopelia decaocto decaocto* (Frivaldszky)
93. *Streptopelia transquebarica humilis* (Temminck)
94. *Streptopelia chinensis suratensis* (Gmelin)
95. *Streptopelia chinensis tigrina* (Temminck)
96. *Streptopelia senegalensis cambayensis* (Gmelin)
97. *Chalcophaps indica indica* (Linnaeus)

Order PSITTACIFORMES

Family PSITTACIDAE

98. *Psittacula eupatria avensis* (Kloss)
99. *Psittacula krameri borealis* (Neumann)
100. *Psittacula alexandri fascata* (P. L. S. Muller)
101. *Psittacula roseata juneae* Biswas
102. *Loriculus verna'is* (Sparrman)

Order CUCULIFORMES

Family CUCULIDAE

103. *Clamator jacobinus serratus* (Sparrman)
104. *Cuculus varius varius* Vahl
105. *Cuculus micropterus micropterus* Gould
106. *Cacomantis merulinus querulus* Heine
107. *Eudynamys scolopacea scolopacea* (Linnaeus)
108. *Rhopodytes tristis tristis* (Lesson)
109. *Centropus sinensis intermedius* (Hume)
110. *Centropus toulou bengalensis* (Gmelin)

Order STRIGIFORMES

Family STRIGIDAE

Subfamily STRIGINAE

111. *Otus scops sunia* (Hodgson)
112. *Otus bakkamoena lettia* (Hodgson)
113. *Bubo bubo bengalensis* (Franklin)
114. *Bubo zeylonensis leschenault* (Temminck)
115. *Glaucidium cuculoides rufescens* Baker
116. *Ninox scutulata burmanica* Hume
117. *Athene brama indica* (Franklin)
118. *Asio flammeus flammeus* (Pontoppidan)

Order CAPRIMULGIFORMES

Family CAPRIMULGIDAE

119. *Eurostopodus macrotis cerviniceps* (Gould)
120. *Caprimulgus macrurus albonotatus* Tickell
121. *Caprimulgus affinis monticola* Franklin

Order APODIFORMES

Family APODIDAE

Subfamily APODINAE

122. *Apus affinis subfurcatus* (Blyth)
123. *Cypsiurus parvus infumatus* (Sclater)

Subfamily HEMIPROCNINAE

124. *Hemiprocne longipennis coronata* (Tickell)

Order TROGONIFORMES

Family TROGONIDAE

125. *Harpactes erythrocephalus erythrocephalus* (Gould)

Order CORACIFORMES

Family ALCEDINIDAE

126. *Ceryle rudis leucomelanura* Reichenbach
127. *Alcedo hercules* Laubmann
128. *Alcedo atthis bengalensis* Gmelin

129. *Alcedo meninting coltarti* Baker
130. *Pelargopsis capensis capensis* (Linnaeus)
131. *Halcyon smyrnensis fusca* (Boddaert)
132. *Halcyon smyrnensis perpulchra* Madarasz
133. *Halcyon pileata* (Boddaert)

Family MEROPIDAE

134. *Merops leschenaulti leschenaulti* Vieillot
135. *Merops orientalis birmanus* Neumann
136. *Nyctyornis athertoni athertoni* (Jardine & Selby)

Family CORACIIDAE

137. *Coracias benghalensis affinis* Horsfield

Family UPUPIDAE

138. *Upupa epops longirostris* Jerdon

Family BUCEROTIDAE

139. *Rhyticeros undulatus ticehursti* Deignan
140. *Anthracoceros malabaricus malabaricus* (Gmelin)

Order PICIFORMES

Family CAPITONIDAE

141. *Megalaima lineata hodgsoni* Bonaparte
142. *Megalaima asiatica asiatica* (Latham)
143. *Megalaima australis cyanotis* (Blyth)
144. *Megalaima haemacephala indica* (Latham)

Family PICIDAE

Subfamily JYNGINAE

145. *Jynx torquilla himalayana* Vaurie

Subfamily PICINAE

146. *Micropternus brachyurus phaioceps* Blyth
147. *Picus canus hessei* (Gyldenstolpe)
148. *Picus flavinucha flavinucha* Gould
149. *Picus chlorolophus chlorolophus* Vieillot
150. *Picoides macei macei* (Vieillot)
151. *Picoides mahrattensis mahrattensis* (Latham)
152. *Picoides canicapillus canicapillus* (Blyth)
153. *Chrysocolaptes lucidus quttacristatus* (Tickell)

Order PASSERIFORMES

Family PITTIDAE

154. *Pitta nipalensis nipalensis* (Hodgson)

Family ALAUDIDAE

155. *Mirafra assamica assamica* Horsfield

Family HIRUNDINIDAE

156. *Hirundo rustica rustica* Linnaeus
157. *Hirundo rustica tytleri* Jerdon
158. *Hirundo daurica erythropygia* Sykes

Family LANIIDAE

159. *Lanius tephronotus tephronotus* (Vigors)
160. *Lanius schach tricolor* (Hodgson)
161. *Lanius cristatus cristatus* Linnaeus

Family ORIOLIDAE

162. *Oriolus oriolus kundoo* Sykes
163. *Oriolus xanthornus xanthornus* (Linnaeus)

Family DICRURIDAE

164. *Dicrurus adsimilis albirictus* (Hodgson)
165. *Dicrurus caerulescens caerulescens* (Linnaeus)
166. *Dicrurus annectans* (Hodgson)
167. *Dicrurus aeneus aeneus* Vieillot
168. *Dicrurus remifer tectirostris* (Hodgson)
169. *Dicrurus hottentottus hottentottus* (Linnaeus)

170. *Dicrurus paradiseus grandis* (Gould)

Family ARTAMIDAE

171. *Artamus fuscus* Vieillot

Family STURNIDAE

172. *Sturnus malabaricus malabaricus* (Gmelin)
173. *Sturnus pagodarum* (Gmelin)
174. *Sturnus contra contra* Linnaeus
175. *Acridotheres tristis tristis* (Linnaeus)
176. *Acridotheres fuscus fuscus* (Wagler)
177. *Acridotheres javanica infuscatus* (Baker)
178. *Gracula religiosa intermedia* A. Hay

Family CORVIDAE

179. *Cissa chinensis chinensis* (Boddaert)
180. *Dendrocitta vagabunda vagabunda* (Latham)
181. *Dendrocitta formosae himalayana* Jerdon
182. *Corvus splendens splendens* Vieillot
183. *Corvus macrorhynchos levaillantii* Lesson

Family CAMPEPHAGIDAE

184. *Hemipus picatus picatus* (Sykes)
185. *Tephrodornis gularis pelvica* (Hodgson)
186. *Tephrodornis pondicerianus pondicerianus* (Gmelin)
187. *Coracina novaehollandiae macei* (Lesson)
188. *Coracina novaehollandiae nipalensis* (Hodgson)
189. *Coracina melaschistos melaschistos* (Hodgson)
190. *Pericrocotus flammeus speciosus* (Latham)
191. *Pericrocotus cinnamomeus vividus* Baker

Family IRENIDAE

192. *Aegithina tiphia tiphia* (Linnaeus)
193. *Chloropsis aurifrons aurifrons* (Temminck)
194. *Irena puella puella* (Latham)

Family PYCNONOTIDAE

195. *Pycnonotus atriceps atriceps* (Temminck)
196. *Pycnonotus melanicterus flaviventris* (Tickell)
197. *Pycnonotus jocosus emeria* (Linnaeus)
198. *Pycnonotus cafer bengalensis* Blyth
199. *Pycnonotus cafer stanfordi* Deignan
200. *Criniger flaveolus flaveolus* (Gould)

Family MUSCICAPIDAE

Subfamily TIMALIINAE

201. *Pellorneum ruficeps chamelum* Deignan
202. *Trichastoma abbotti abbotti* (Blyth)
203. *Pomatorhinus schisticeps schisticeps* Hodgson
204. *Pomatorhinus hypoleucos hypoleucos* (Blyth)
205. *Macronous gularis rubricapilla* (Tickell)
206. *Timalia pileata bengalensis* Godwin-Austen
207. *Turdoides longirostris* (Hodgson)
208. *Garrulax monileger monileger* (Hodgson)
209. *Garrulax pectoralis melanotis* Blyth
210. *Garrulax ruficollis* (Jardine & Selby)
211. *Alcippe poioicephala fusca* Godwin-Austen

Subfamily MUSCICAPINAE

212. *Muscicapa parva albicilla* Pallas
213. *Muscicapa poliogenys* (Brooks)
214. *Muscicapa thalassina thalassina* Swainson
215. *Culicicapa ceylonensis calochrysea* Oberholser

Subfamily MONARCHINAE

216. *Cisticola juncidis cursitans* (Franklin)
217. *Prinia socialis inglisi* Whistler and Kinnear

218. *Orthotomus sutorius patia* Hodgson
219. *Megalurus palustris toklao* (Blyth)
220. *Acrocephalus aedon aedon* (Pallas)
221. *Phylloscopus inornatus inornatus* (Blyth)
222. *Phylloscopus trochiloides viridanus* Blyth

Subfamily TURDINAE

223. *Erithacus calliope* (Pallas)
224. *Copsychus saularis saularis* (Linnaeus)
225. *Copsychus malabaricus indicus* (Baker)
226. *Enicurus schistaceus* (Hodgson)
227. *Saxicola torquata przevalskii* (Pleske)
228. *Saxicola torquata indica* (Blyth)
229. *Saxicola caprata burmanica* Baker
230. *Saxicola jerdoni* (Blyth)
231. *Saxicola ferrea* Gray
232. *Monticola solitarius pandoo* (Sykes)
233. *Myiophonus caeruleus temminckii* Vigros
234. *Zoothera citrina citrina* (Latham)
235. *Zoothera dauma dauma* (Latham)
236. *Turdus dissimilis dissimilis* Blyth

Family PARIDAE

Subfamily PARINAE

237. *Parus major nipalensis* Hodgson

Family MOTACILLIDAE

238. *Anthus hodgsoni hodgsoni* Richmond
239. *Motacilla indica* Gmelin
240. *Motacilla citreola citreola* Pallas
241. *Motacilla cinerea cinerea* Tunstall

Family DICAEIDAE

242. *Dicaeum agile agile* (Tickell)
243. *Dicaeum chrysorrheum chrysochlore* Blyth
244. *Dicaeum erythrorhynchos erythrorhynchos* (Latham)
245. *Dicaeum cruentatum cruentatum* (Linnaeus)

Family NECTARINIIDAE

246. *Anthreptes singalensis rubinigentis* (Baker)
247. *Nectarinia zeylonica sola* (Vieillot)
248. *Nectarinia sperata brasiliana* (Gmelin)
249. *Nectarinia asiatica intermedia* (Hume)
250. *Aethopyga siparaja seheriae* (Tickell)
251. *Arachnothera longirostris longirostris* (Latham)

Family ZOSTEROPIDAE

252. *Zosterops palpebrosa palpebrosa* (Temminck)

Family PLOCEIDAE

253. *Passer domesticus indicus* Jardine & Selby
254. *Ploceus philippinus burmanicus* Ticehurst
255. *Estrilda amandava amandava* (Linnaeus)
256. *Lonchura striata acuticauda* (Hodgson)
257. *Lonchura punctulata punctulata* (Linnaeus)

Family FRINGILLIDAE

258. *Carpodacus erythrinus roseatus* (Blyth)

Family EMBERIZIDAE

259. *Melophus lathami* (Gray)

SYSTEMATIC ACCOUNT

Order PODICIPEDIFORMES

Family PODICIPEDIDAE

Genus ***Podiceps*** Latham, 1787

1. ***Podiceps ruficollis capensis*** Salvadori

1884. *Podiceps capensis* Salvadori, *Ann. Mus. Civ. Genova,* (2), 1 : 252 (Shoa, Africa).

1978. *Podiceps ruficollis capensis,* Ali and Ripely, Vol. 1 : 6.

Common name : Little Grebe or Dabchick (English) and Duburi (Bengali).

Material examined : Nil.

Diagnostic characters : A small tailess aquatic bird with short pointed bill. Legs placed backwardly for swiming and diving. Crown of head dark brown, sides of head, throat and neck chestnut.

Distribution : India : Tripura : Throughout the Indian Union, except the Andaman & Nicobar Islands. Elsewhere : Africa (northern part), Asia (south eastern part), Bangladesh, Bhutan, Madagascar, Middle East, Nepal and Pakistan.

Remarks : IWWRB (1989) recorded this bird from Tripura.

Order PELICANIFORMES

Family PHALACROCORACIDAE

Key to the genera of the family Phalacrocoracidae

Neck and body long, rather spindile-shaped, bill laterally compressed .....***Phalacrocorax***

Neck very slender with a bend at the 8th & 9th vertebrea, bill slender, straight, very sharp pointed .....***Anhinga***

Genus ***Phalacrocorax*** Brisson, 1760

2. ***Phalacrocorax carbo*** (Linnaeus)

1801. *Phelecanus sinenis* Shaw, Nat. Misc., 13 : pl. 529, text (China).

1982. *Phalacrocorax carbo*, Ripley : 10.

Common name : Large Cormorant (English), Pan-kawri (Bengali) and Pan-kowwa (Hindi).

Material examined : Nil.

Diagnostic characters : A black duck-like water bird with slender bill, hooked at tip. Tail longish and stiff. Facial skin and throat white; gular pouch bright yellow.

Distribution : India : Tripura : Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Sri Lanka.

Remarks : IWWRB (1989) reported this bird from Tripura.

3. ***Phalacrocorax fusciollis*** Stephens

1826. *Phalacrocorax fuscicollis* Stephens, in Shaw's *Genl. Zool.*, 13(1) : 91 (Bengali).

1978. *Phalacrocorax fuscicollis*, Ali and Ripley, Vol. 1 : 39.

Common name : Indian Shag (English).

Material examined : Nil.

Diagnostic characters : Glistening bronze-back water bird with white tuft of feathers on each side of neck behind ear-covers. Head with few white specks. Bill dark brown. Legs and feet black.

Distribution : India : Tripura : Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Pondicherry, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Remarks : IWWRB (1989) reported this bird from Tripura.

4. ***Phalacrocorax niger*** (Vieillot)

1817. *Hydrocorax niger* Vieillot, *Nouv. Dict. Hist. Nat.*, 8 : 88 (East Indies = Bengal).

1978. *Phalacrocorax niger*, Ali and Ripley, vol. 1 : 41.

Common name : Little Cormorant (English) and Pan Kawrai (Bengali)

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.

Distribution : India : Tripura : Throughout the Indian mainland (absent in the Himalayas). Elsewhere : Pakistan.

Remarks : IWWRr (1989) recorded this bird from Tripura.

Genus ***Anhinga*** Brisson, 1760

5. ***Anhinga rufa melanogaster*** Pennant

1769. *Anhinga melanogaster* Pennant, *Indian Zool.* : 13, p. 12 (Sri Lanka and Java).

1978. *Anhinga rufa melanogaster*, Ali and Ripley, vol. 1 : 43.

Common name : Darter or Snake-bird (English) and Goyar (Bengali).

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 : Tripura : Thoughout the Indian Union except Arunachal Pradesh, Manipur, Mizoram and Nagaland. Elsewhere : Bengladesh, Burma (= Myanmar), Malaysia, Pakistan, Old Indochina and Sulawesi.

Remarks : IWWRB (1989) observed this bird from Tripura.

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 enlongated plumes.....3

   Plumage mainly varied coloured 4

3. Bill yeloow .....***Bubulcus***

   Bill black.....***Egretta***

4. Plumage minaly 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

6. ***Ardea cinerea*** Linnaeus

1758. *Ardea cinerea* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 143 (Europe, restricted to Sweden).

1982. *Ardea cinerea,* Ripley : 13.

Common name : Grey Heron (English) and Anjan (Bengali).

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 middle of foreneck. Leg and neck very long. Breast with elongated black-streaked white feather. Abdominal feathers greyish white.

Distribution : India : Tripura : 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 : IWWRB (1989) noticed this bird from Tripura.

7. ***Ardea purpurea manilensis*** Meyen

1834. *Ardea purpurea* var *manilensis* Meyen, *Nova Acta Acad. Caes. Leop. Carol.*, 16, suppl. : 102-103 (Philipplines).

1978. *Ardea purpurea manilensis*, Ali and Ripley, vol. 1 : 57.

Common name : Eastern Purple Heron (English) and Lal Kank (Bengali).

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 buffy-white with black and chestnut streaks. Abdomen slaty black and chestnut.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian mianland. Elsewhere : Burma (= Myanmar), China South of the Yangtze, the Ryukyu Islands and Thailand.

Remarks : Seen this bird in the South Tripura district.

8. ***Ardea alba*** Linnaeus

1758. *Ardea alba* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 144 (in Europe = Sweden).

1982. *Ardea alba*, Ripley : 14.

Common name : Large Egret (English), Badabak (Bengali), Bada Bagla (Hindi) and Aurigra (Tripuri).

Material examined : Nil.

Diagnostic characters : Snow White marsh bird with blackish legs. Head with long stender neck and pointed black and yellow bill. In the breeding season, a bunch of ornamental filamentous plumes develop on the back.

Distribution : India : Tripura : Throughout the Indian Union. Elsewhere : Asia South to Australia and New Zealand, Pakistan, Nepal, Bangladesh, Sri Lanka, the Americas and Europe.

Remarks : IWWRB (1989) recorded this bird from Tripura.

Genus ***Ardeola*** Boie, 1822

9. ***Ardeola striatus chloriceps*** (Bonaparte)

1857. *Ardea chloriceps* 'Hodgs' = Bonaparte, *Consp. Gen. Av.*, 2 : 129 Nepal. (Restricted to Hitaura, Chisapani Garhi district, by Biswas, 1959, *Curr. Sci.*,28 : 288).

1982. *Ardeola striatus chloriceps*, Ripley : 14.

Common name : Little Green Heron (English) and Kana bak or Kuro bak (Bengali).

Material examined : Nil.

Diagnostic characters : A slaty grey with dark green and bronze-green bird. Crown and long occipital crest glossy, greenish black ; check white. Head and neck grey. Chin and centre of throat white. Under tail-coverts white with blackish tips.

Distribution : India : Tripura (South Tripura district : Throughout the Indian Union. Elsewhere : Bangladesh, Burma (= Myanmar), Celebes (Sulawesi), Indochina, Indonesia, Malaysia, Pakistan, the Philippines, the Sunda Islands and Thailand.

Remarks : Observed this bird in the South Tripura District.

10. ***Ardeola grayii grayiii*** (Sykes)

1832. *Ardea Grayii* Sykes, *Proc. zool. Soc. Lond.* : 158 (Dukhun = Deccan).

1978. *Ardeola grayii grayii*, Ali and Ripley, vol. 1 : 63.

Common name : Indian Pond Heron or Paddy-bird (English), *Kunch bagla* (Hindi) and Dok or Baga (Tripuri).

Material examined : West Tripura district : 1 ♂, charilam *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 18. xi. 1969.

Diagnostic characters : Earthy brown bird with head and neck dark brown, streaked with yellowish 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 laceolate plumes.

Measurements : 1 ♂ : Wing 221, tail 78, bill 77.

Distribution : India : Tripura (All districts : Throughout the Indian Union. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Iran, Iraq, Malayasia, Nepal, Pakistan and Sri Lanka.

Remarks : Very common in all the districts of Tripura State.

Genus ***Bubulcus*** Bonaparte, 1855

11. ***Bubulcus ibis coromandus*** (Boddaert)

1783. *Cancroma coromanda* Boddaert, *Tabl. pl. enlum.* : 54 (Coromandel, Tamil Nadu, India).

1978. *Bubulcus ibis coromandus*, Ali and Ripley, vol. 1 : 66.

Common name : Cattle Egret (English).

Material examined : North Tripura district : 1 ♀, Forest area *c.* 3 km. West of Rest House, Ampi, coll. V. C. Agrawal, 21. i. 1971. West

Tripura district : 1 ♂, Charilum *c.* 25 km. South of Agartala, coll. V. C. Agrawal, 18. xi. 1969.

Diagnostic characters : A snow white bird usually seen or grazing cattle. Bill yellow. Orbital and facial skin greenish yellow. Legs and feet black. In breeding, head, neck and back golden buff feathers distintegreated and hair-like.

Measurements :	Wing	Tail	Bill
1♂ :	262	87	73
1♀ :	253	94	76

Distribution : India : Tripura (North Tripura and West Tripura districts) : Thoughout the Indian Union. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, Burma (= Myanmar), Indochinese countries, Malaysia, S. China, Korea, S. Japan, Formosa, Hainan, the Philippines, The Sunda Islands, Celebes, Ceram, S. America and U. S. A.

Remarks : Noticed in all the districts of Tripura State. IWWRB (1989) also recorded this bird from Tripura.

Genus ***Egretta*** Forster, 1817

12. ***Egretta intermedia intermedia*** (Wagler)

1829. *Ardea intermedia* Wagler, *Isis von Oken*, col. 659 (Java).

1978. *Egretta intermedia intermedia*, Ali and Ripley, vol. 1 : 71.

Common name : Smaller or Median Egret (English), Korche bak (Bengali), and Karchia Bagla (Hindi).

Material examined : North Tripura districts : 1 ♀, Chailingta, coll. V. C. Agrawal, 18. xii. 1972.

Diagnostic characters : Plumage entirely whte. 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).

Measurement : 1 ♀ : Wing 302, tail 120, bill 89.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union. Elsewhere : Bangladesh, Burma (= Myanmar), China, the Indochinese countries, Japan, Malaysia, Nepal, the Philippines, the Greater Sunda Islands and Thailand.

Remarks : Observed in all the districts of Tripura. IWWRB (1989) reported this bird from Tripura.

13. ***Egretta garzetta garzetta*** (Linnaeus)

1766. *Ardea garzetta* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 237 ('Oriente' = northeast Italy).

197. *Egretta garzetta garzetta*, Ali and Ripley, vol. 1 : 72.

Common name : Little Egret (English) and Chhota Korche bak (Bengali).

Material examined : Nil.

Diagnostic characters : Size equal to a Hen. Plumage snow-white ; 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 : Tripura (all the districts) : 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 : Very common in all the districts of Tripura. IWWRB (1989) recorded this bird from Tripura.

Genus ***Nycticorax*** T. Forster, 1817

14. ***Nycticorax nycticorax nycticorax*** (Linnaeus)

1758. *Ardea Nycticorax* Linnaeus, *Syst. Nat.*, ed. 10. 1 : 142 (Southern Europe).

1978. *Nycticorax nycticorax nycticorax*, Ali and Ripley, vol. 1 : 78.

Common name : Night Heron (English) and Bachka (Bengali).

Material examined : Nil.

Diagnostic characters : Size equal to a Pond Heron. Bill stout. Back and scapular ashy grey with greenish black. Forehead and sides of head white. Occipital crest, crown and nape black. Sides of breat and belly ashy-grey. Legs and feet dull green.

Distribution : India : Tripura (South Tripura and West Tripura districts) : Throughout the Indian Union. Elsewhere : Africa, Bangladesh, Burma (= Myanmar), Bhutan, China, the Indochinese countries, Japan, Malaysia, Middle East, Nepal, Pakistan and Sri Lanka.

Remarks : Observed this bird in the South and West Tripura districts. IWWRB (1989) recorded it from Tripura.

Genus ***Ixobrychus*** Billberg, 1828

15. ***Ixobrychus cinnamomeus*** (Gmelin)

1789. *Ardea cinnamomea* Gmelin, *Syst. Nat.*, 1 (2) : 643 (China).

1978. *Ixobrychus cinnamomeus,* Ali and Ripley, vol. 1 : 84.

Common name : Chestunut Bittern (English), Lal bak (Bengali) and Dabri-khok (Tripuri).

Material examined : Nil.

Diagnostic characters : Size smaller than the preceding bird. In male, crown, crest, back and wings chestnut-cinnamon. China and throat whitish ; dark median stripe on forehead. In female, head and back chestnut-brown. Crown blackish. Underwing rufous buff.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union. Elsewhere : Bangladesh, Burma (= Mynamar), China from Manchuria to Hainan, Celebes (Sulawesi), Malaysia, Pakistan, Philippines, Sri Lanka, the Sunda Islands, Thailand and the Ryukhu Islands.

Remarks : Seen this bird in Ambassa, the North Tripura district.

16. ***Ixobrychus sinensis*** (Gmelin)

1789. *Ardea Sinensis* Gmelin, *Syst. Nat.* 1 (2) : 642 (China).

1978. *Ixobrychus sinensis,* Ali and Ripley, vol. 1 : 88.

Common name : Yellow Bittern (English), Kat bak (Bengali) and Fun bagla (Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to the preceding bird. In male, back chiefly yellowish brown ; bushy crest and crown black. Sides of neck vinous pink. Rump dark ashy, tail slaty black. Chin and throat pale yellow ; vent and abdomen yellowish buff. In female, similar to male except a buff mesial line down the forneck and throat.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian Union except Manipur, Mizoram, Nagaland and West Bengal. Elsewhere : Bangladesh, Nepal, Sri Lanka, Burma (= Mynamar), Thailand, Malaya to China, Japan, New Guinea and the Caroline Is.

Remarks : Seen this bird in the South Tripura district.

17. ***Ixobrychus flavicollis flavicollis*** (Latham)

1790. *Ardea flavicollis* Latham, *Index Orn.*, 2 : 701 (India).

1978. *Ixobrychus flavicollis flavicollis,* Ali and Ripley, vol. 1 : 88.

Common name : Black Bittern (English), Kalo bak (Bengali) and kala bagla (Hindi).

Material examined : Nil.

Diagnostic characters : Size slightly bigger thana 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 white and rufous.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian Union excluding the Andaman & Nicobar Islands. Elsewhere :

Bangladesh, Burma (= Myanmar), China, Celebes (Sulawesi), the Greater Sunda Is., Indochina, Malaysia, Nepal, and Pakistan.

Remarks : Observed this bird in the South Tripura district.

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 ..... ***Cionica***

Genus *Mycteria* Linnaeus, 1758

18. *Mycteria leucocephala* (Pennant)

1769. *Tantalus leucocephalus* Penant, *Indian Zool.*, 11, pl. 10 (Ceylon = Sri Lanka).

1978. *Mycteria leucocephala,* Ali and Ripley, vol. 1 : 93.

Common name : Painted Stork (English), Sona Jangha (Bengali) and Janghil (Hindi).

Material examined : Nil.

Diagnostic characters : Size euqal to a 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 acrossed with black band ; delicate rose-pink near the tail, shoulders and wing.

Distribution : India : Tripura : Throughout the Indian mainland except Arunachal Pradesh, Himachal Pradesh and Jammu & Kashmir. Elsewhere : Bangladesh, Burma (= Myanmar), China, the indochinese countries, Malaya Peninsula, Nepal, Pakistan, Sri Lanka and Thailand.

Remarks : IWWRB (1989) reported this species from Tripura.

Genus *Anastomus* Bonnaterre, 1791

19. *Anastomus oscitans* (Boddaert)

1783. *Ardea oscitans* Boddaert, *Table pl. enlum.*, 55 (Pondicherry, India).

1978. *Anastomus oscitans,* Ali and Ripley, vol. 1 : 95.

Common name : Openbill stork (English) and Tayung (Tripuri).

Material examined : North Tripura district : 1 ♀, Fatikroy, coll. V. C. Agrawal, 29. xii. 1972.

Diagnostic characters : Size equal to large Duck. Bill wedge-shaped, yellow. Legs and feet Pinkish brown. Neck, back and breast white ; mantle, wings and tail greenish black.

Measurements : 1 ♀ : Wing 370, tail 155, bill 130.

Distribution : India : Tripura (North Tripura, and South Tripura districts) : Throughout the Indian Union. Elsewhere : Bangladesh, Burma (= Myanmar), the Indochinese subregion, Malaysia, Nepal, Pakistan, Sri Lanka and Thailand.

Remarks : IWWRB (1989) also recorded this species from Tripura. We have noticed this bird in the South Tripura district.

Genus *Ciconia Brisson,* 1760

20. *Ciconia episcopus episcopus* (Boddaert)

1783. *Ardea episcopus* Boddaert, *Table pl. enlum.* : 54 (Coromandle Coast, Tamil Nadu).

1978. *Ciconia episcopus episcopus,* Ali and Ripley, vol. 1 : 98.

Common name : Whitenecked Stork (English), Manik jor (Bangali) and Laglag (Hindi).

Material examined : Nil.

Diagnostic characters : Back, wing and short tail black glossed with purpose or greenish blue. Crown black, neck white. Undertail-coverts white. Legs and feet long and red in colour.

Distribution : India : Tripura (South Tripura district) : Thoughout the Indian mainland except Arunachal pradesh, Himachal pradesh and Jammu

& Kashmir. Elsewhere : Bangaldesh, Burma (= Myanmar), Nepal, Pakistan and Sri Lanka.

Remarks : Observed in the South Tripura district.

21. ***Ciconia ciconia ciconia*** (Linnaeus)

1758. *Ardea ciconia* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 142 (Sweden).

1978. *Ciconia ciconia ciconia,* Ali and Ripley, vol. 1 : 99.

Common name : White Stork (English) and Bada retwa (Hindi).

Material examined : Nil.

Diagnostic characters : Back, neck and head all white. Scapulars and wing quills black. Leg and neck very long. Legs and heavy pointed bill red. Feathers of head, neck and breast long and lanceolate.

Distribution : India : Tripura : Andhra Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajashtan, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Nepal, Pakistan and Sri Lanka.

Breeds in Europe north to 60° N. lat., N. Africa, Western Asia (Asia Minor, Irq, Iran and Turkestan).

Remarks : IWWRB (1989) reported this species from Tripura.

Family THRESKIORNITHIDAE

Key to the genera of the family

THRESKIORNITHIDAE

1. Bill slender, slighly down curved, neck bare ..... ***Threskiornis***
2. Bill greatly flattended, becoming broader and spoon shaped at the tip, face and throat naked ..... ***Platalea***

Genus ***Threskiornis*** G. R. Gray, 1842

22. ***Threskiornis aethiopica melanocephala*** (Latham)

1790. *Tantalus melanocephalus* Latham, *Index Orn.*, 2 : 709 (India).

1978. *Threskiornis aethiopica melanocephala,* Ali and Ripley, vol. 1 : 110.

Common name : White Ibis (English), Sada dochara (Bengali) and Munda (Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to a large domestic Hen. Entire plumage excepting head and neck snow white ; head and neck black. Bill down curved, long and stout.

Distribution : India : Tripura : Throughout the Indian mainland. Elsewhere : Bangladesh, Burma (= Myanmar), China (sporadically), Japan, Nepal, Pakistan and Sri Lanka.

Remarks : IWWRB (1989) recorded this bird from Tripura.

Genus ***Platalea*** Linneaus, 1758

23. ***Platalea leucorodia major*** Temminck & Schlegel

1849. *Platalea major* Temminck & Schegel, in Siebold, *Fauna Jap., Aves* : 119, pl. 73 (Japan).

1978. *Platalea leucorodia major,* Ali and Ripley, vol. 1 : 116.

Common name : Spoonbill (English), Khunte bak (Bengali) and Chamcha (Hindi).

Material examined : Nil.

Diagnostic characters : Size bigger than a domestic Duck ; plumage snow white. Long-necked and long-legged (black). Bill black and yellow, spatula shaped. Cinnamon-yellow patch at foreneck.

Distribution : India : Tripura : Throughout the Indian mainland. Elsewhere : Bangladesh, Central Asia from China, Egypt, Japan, Nepal, Pakistan, Sri Lanka, Syria, Taiwan, Transbaikalia and Ussuriland.

Remarks : Data collected from Tripura, published by IWWRB (1989).

Order ANSERIFORMES

Family ANATIDAE

Key to the genera of the family ANATIDAE

1. Hind toe not lobed ..... ***Anser***

   Hind toe lobed 2

2. Hind toe narrowly lobed 3

   Hind toe broadly lobed ..... ***Aythya***

3. Bill short and goose like ..... ***Nettapus***

   Bill rather flat and broad 4

4. Primaries equal to secondaries in length ..... ***Dendrocygna***

   Primaries longer than the secondaries ..... ***Anas***

Genus ***Anser*** Brisson, 1760

24. ***Anser anser rubrirostris*** Swinhoe

1871. *Anser cinereus Var. rubrirostris* Swinhoe, *Proc. zool., Soc. Lond.*, : 416, *ex.* Gray, 1846 *Cat. Bds. Nepal*, 144, *nom. nud. ex.* Hodgson. 1844, *Zool. Misc.* : 86, *nom. nud.* (Shanghai).

1978. *Anser anser rubrirostris*, Ali and Ripley, vol. 1 : 129.

Common name : Eastern Grey Lag Goose (English), Rajhans (Bengali) and Rajhans (Hindi).

Material examined : Nil.

Diagnostic characters : Size bigger than a domestic Goose ; plumage barred with ashy brown. Upper tail-coverts white ; bill, legs and feet pink.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian mainland except Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. Elsewhere : Pakistan, Nepal, Bangladesh, eastern Mediterranean, Black and Caspian seas, and in Scistan and China. Breeds eastward from *c.* 40° E. and South of 60° N. through Asia Minor and Central Asia to Kamchatka.

Remarks : Observed in the Gomati Reservoir in the North Tripura district.

Genus ***Dendrocygna*** Swainson, 1837

25. ***Dendrocygna javanica*** (Horsfield)

1821. *Anas javanica Horsfield. Trans. Linn. Soc. Lond.*, 13 : 199, pl. 1 (Java).

1978. *Dendrocygna javanica*, Ali and Ripley, vol. 1 : 138.

Common name : Lesser Whistling Teal (English) and Taini-Takum (Tripuri).

Material examined : West Tripura district : 4 ♂, and 2 ♀, Sephaijala, coll. S. Chatterjee, 22 and 23. xi. 1988.

Diagnostic characters : Size smaller than a domestic Duck, Upper tail-coverts uniformly chestnut.

Measurements :	Wing	Tail	Bill
4 ♂ :	192-204	45-54	44-50
	(197)	(48)	(46)
2 ♀ :	197, 199	48(2)	45, 47

Distribution : India : Tripura : Throughout the Indian Union. Elsewhere : Bangladesh, Burma (= Myanmar), China (Southern part), Indonesia, Malaysia, Nepal, Pakistan, Ryukyu Is., Sri Lanka, Thailand and Vietnam.

Remarks : IWWRB (1989) also reported this species from Tripura.

26. ***Dendrocygna bicolor*** (Vieillot)

1816. *Anas bicolor Vieillot, Nouv. Dict. Hist. Nat.*, 5 : 136 (Paraguay).

1978. *Dendrocygna bicolor*, Ali and Ripley, vol. 1 : 139.

Common name : Large Whistling Teal (English) and Bada Saral (Bengali).

Material examined : Nil.

Diagnostic characters : Size slightly biger than the preceding bird ; upper tail-covered whitish. A broad rusty whitish colour round the middle of foreneck.

Distribution : India : Tripura : Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Orissa,

Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Pakistan, Bangladesh, Sri Lanka, Burma (= Myanmar), U. S. A., Mexico, Northern Tropical S. America, Brazil, Peru, south to Paraguay, N. Argentina, East Africa from Lake Chand to Nepal and Madagaskar.

Remarks : IWWRB (1989) reported this speices from Tripura.

Genus ***Anas*** Linnaeus, 1758

27. ***Anas acuta*** Linnaeus

1758. *Anas acuta* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126. (Sweden).

1978. *Anas acuta*, Ali and Ripley, vol. 1 : 149.

Common name : Pintail (English), Dig hans (Bengali) and Seenkh par (Hindi).

Material examined : Nil.

Diagnostic characters : Size smaller than a domestic Duck. In male, head and throat chocolate. A white band running down either side of neck. Speculum metallic bronze-green ; central tail feathers long, pointed and pin like. In female, tail without pin like elongation, colouration mottled brown and buff.

Distribution : India : Tripura : Throughout the Indian Union subcontinent excluding the Andaman and Nicobar Islands. Elsewhere : Europe, N. Amercia, including the British Isles. N. Africa, Ethiopia, the persian Gulf and China.

Remarks : IWWRB (1989) recorded this species from Tripura.

28. ***Anas crecca crecca*** Linnaeus

1758. *Anas Crecca* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Swedan).

1978. *Anas crecca crecca*, Ali and Ripley, vol. 1 : 151.

Common name : Common Teal (English), Patari hans (Bengali) and Chhoti murghabi (Hindi).

Material examined : Nil.

Diagnostic characters : Size smaller than a 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.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian union. Elsewhere : Nepal, Bangladesh, Burma (= Myanmar), China, Indo-Chinese countries, N. Africa, Nile Valley, Pakistan, the Phillipines, Persia, Sri Lanka, Somali Land. Breeds in Europe and Asia from Iceland to China, Manchuria and the Kurila Islands and Japan.

Remarks : Seen this bird in the South Tripura districts.

29. ***Anas platyrhynchos*** Linnaeus

1758. *Anas platyrhynchos* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 125 (Sweden).

1978. *Anas platyrhynchos*, Ali and Ripley, vol. 1 : 160.

Common name : Mallard (English), Nil Sir (Bengali and Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to a domestic Duck. In breeding male, head metallic dark green and neck separated from chestnut breast by narrow white collar. Speculum metallic purple blue, bordered in front and behind by narrow black and white bands. Bill yellowish green, legs orange. In female, colouration brown and buff, streaked and spotted with black. Chin throat and foreneck plain buff.

Distribution : India : Tripura : Andhra Pradesh, Assam, Bihar Gujarat, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh and West Bengal. Elsewhere : and Bangladesh, Burma (= Myanmar), China, Japan, Nepal, N. Africa, Nile Valley, Pakistan, Breeds in Europe and Asia from the Aretic circle south to the Mediterranean and roughly to latitude 30° N.

Remarks : IWWRB (1989) recorded this species from Tripura.

30. ***Anas strepera strepera*** Linnaeus

1758. *Anas strepera* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 125 (Sweden).

1978. *Anas strepera strepera*, Ali and Ripley, vol. 1 : 163.

Common name : Gadwall (English), Peeing hans (Bengali) and Myla (Hindi).

Material examined : Nil.

Diagnostic characters : Size smaller than the preceding bird. In breeding male, dark brown and grey with black tail. Chestnut patch with black and white speculum in wing. In female, duller and smaller, dark brown mottled with buff ; leg orange yellow, wing with white wing mirror (speculum).

Distribution : India : Tripura : Throughout the Indian Mainland, rare in South India. Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka, N. Africa, Ethiopia and China. Breeds in Eurasia from Iceland to Kamchatka, South to England, Holland, Germany, Central Russia, Caspian, Seistan and Transbaikalia.

Remarks : IWWRB (1989) reported this bird from Tripura.

31. ***Anas penelope*** Linnaeus

1758. *Anas penelope* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Sweden).

1978. *Anas penelope*, Ali and Ripley, vol. 1 : 167.

Common name : Wigeon (English), Chhota lal sir (Bengali and Hindi).

Material examined : Nil.

Diagnostic characters : Size less than a 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.

Distribution : Tripura : Throughout the Indian Mainland. Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka, China, Japan, Nile Valley and Abyssinia and Britain. Breeds in temperate regions north to the Arctic circle and beyond, from Iceland and Scotland to Kamchatka.

Remarks : IWWRB (1989) reported this species from Tripura.

32. ***Anas clypeata*** Linnaeus

1758. *Anas clypeata* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 124 (South Sweden).

1978. *Anas clypeata*, Ali and Ripley, vol. 1 : 172.

Common name : Shoveller (English), Khunte hans (Bengali) and Ghirat (Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to the preceding bird. In breeding male, head and neck glossy metallic green, wing shoulder patch pale bule. A white bar between with patch and metallic green speculum. Breast white, vent and abdomen reddish chestnut. In female, general aspect mottled dark brown and buff, with greyish blue sholder patch.

Distribution : India : Tripura : Throughout the Indian mainland. Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka, Burma (= Myanmar), China, Japan, Hawaii, Lower California, Hondurus, Florida (U. S. A.), East Africa & Persian Gulf. Breeds in Europe (commonly in Britain) Asia and N. Amercia.

Remarks : IWWRB (1989) recorded this species from Tripura.

Genus ***Aythya*** Boie, 1822

33. ***Aythya ferina*** (Linnaeus)

1758. *Anas ferina* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 126 (Sweden).

1978. *Aythya ferina*, Ali and Ripley, vol. 1 : 180.

Common name : Common pochard (English), Lal muri (Bengali) and Lal sir (Hindi).

Material examined : Nil.

Diagnostic characters : Size less than a 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.

Distribution : India : Tripura : Throughout the Indian mainland except Kerala, Meghalaya, Mizoram, Negaland and Tamil Nadu. Elsewhere : Pakistan, Nepal, Bengladesh, Burma (= Myanmar), China, Nile Valley. Breeds in the British Isles, S. Scandinavia, and from eastern Russia through W. Siberia to Lake Baikal, South to Holland, Germany, Balkans, Black sea, Kirghiz Steppes and Yarkand.

Remarks : Data collected from Tripura, published by IWWRB (1989).

Genus ***Nettapus*** Brandt, 1836

34. ***Nettapus coromandelianus coromandelianus*** (Gmelin)

1789. *Anas coromandelianus* Gmelin, 1789, *Syst. Nat.* 1(2) : 522 (Coromandel = Tamil Nadu, India).

1978. *Nettapus coromandelianus coromandelianus*, Ali and Ripley, vol. 1 : 190.

Common name : Cotton Teal or Quacky-duck (English), Bali hans (Bengali) and Girja (Hindi).

Material examined : Nil.

Diagnostic characters : Size smaller than the preceding bird. In breeding male, crown blackish brown, back blackish brown glossed with purple and green; black collar round the base fo 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 : Tripura (North Tripura 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 : Seen on the Gomati Reservoir, the North Tripura district.

Order FALCONIFORMES

Family ACCIPITRIDAE

Key to the genera of the family

ACCIPITRIDAE

1. Head and neck bare 2

   Head and neck feathered 3

2. Nostrils a narrow vertical slit ..... ***Gyps***

   Nostrils round or oval ..... ***Sarcogyps***

3. Tarsus long, two or more times length of bill from tip to gape 4

   Tarsus short, less than two times length of bill from tip to gape 6

4. Feathers across throat and up each side of neck forming conspicuous ruff ..... ***Circus***

   Ruff not present 5

5. Nuchal crest absent or pointed ..... ***Accipiter***

   Nuchal crest broad covering whole nape ..... ***Spilornis***

6. Front of tarsus covered with small hexagonal scales 7

   Front of tarsus scutellate 8

7. Size small, second primary largest .... ***Elanus***

   Size larger, 3rd or 4th primary longest ..... ***Pandion***

8. Tail forked ..... ***Milvus***

   Tail not forked 9

9. Tarsus scutellated behind ..... ***Buteo***

   Tarsus with large hexagonal scales behind ... ***Haliastur***

Genus ***Elanus*** Savigny, 1809

35. ***Elanus caeruleus vociferus*** (Latham)

1790. *Falco vociferus* Latham, *Index Orn.*, 1 : 46 (India = Coromandel Coast, ex. Sonnerat, apud. Hartert).

1978. *Elanus caeruleus vociferus*, Ali and Ripley, vol. 1 : 212.

Common name : Blackwinged Kite (English), Kapassi (Bengali) Kapassia (Hindi) and Taling (Tripuri).

Material examined : Nil.

Diagnostic characters : Size less than a House Crow. Plumage mainly grey and white. Crown, nape, back, rump and tail-coverts pale ashy grey. Tail white. Wing shoulders with black patches.

Distribution : India : Tripura (South and West Tripura districts) : Throughout the Indian mainland, and Lakshadweep Islands. Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka, east to S. Yunnan, South to N. Tenasserim and the Indochinese countries.

Remarks : Observed in the South Tripura and West Tripura districts.

Genus ***Milvus*** Lacepede, 1799

36. ***Milvus migrans govinda*** Sykes

1832. *Milvus Govinda* Sykes, *Proc. zool. Soc. Lond.* : 81 (Dukhun = Deccan, India).

1978. *Milvus migrans govinda*, Ali and Ripley, vol. 1 : 227.

Common name : Pariah Kite (English), Cheel (Bengali and Hindi).

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 : Tripura (South Tripura districts) : Throughout the Indian Union excluding the Nicobar Islands. Elsewhere : Banladesh, Burma (= Myanmar), Malaysia (occasional), Nepal, Pakistan and Sri Lanka.

Remarks : Observed in the South Tripura district.

Genus ***Haliastur*** Selby, 1840

34. ***Haliastur indus indus*** (Boddaert)

1783. *Falco Indus* Boddaert, *Table Pl. enlum* : 25 (Pondicherry, India).

1978. *Haliastur indus indus*, Ali and Ripley, vol. 1 : 230.

Common name : Brahminy Kite (English), Shankha cheel (Bengali) and Brahminy cheel (Hindi).

Material examined : Nil.

Diagnostic characters : Size slightly smaller than the preceding bird. Head, neck, upper back and breast white; lower back, wings, abdomen and tail rusty red or deep chestnut. Tips of wings black.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian Union excluding the Nicobar Islands. Elsewhere : Bangladesh, Pakistan, Nepal, Burma (= Myanmar), China, Sri Lanka, Thailand and Vietnam.

Remarks : Seen in the South Tripura district.

Genus ***Accipiter*** Brisson, 1760

38. ***Accipiter badius dussumieri*** (Termminck)

1824. *Falco dussumieri* Temminck, *Pl. Col. Livr.* : 52, text to pl. 308 (adult), pl. 336 (immature) (Bengal = West Bengal, India).

1978. *Accipiter badius dussumieri*, Ali and Ripley, vol. 1 : 235.

Common name : Indian Shikra (English) and Taling (Tripuri).

Material examined : North Tripura district : 1 ♀, Forest area *c.* 1 km. East of Rest House, Ambassa, coll. V. C. Agrawal, 3. ii. 1971. South Tripura district : 1 ♂ (juv.), Garjee *c.* 18 km. South of Udaipur, coll. V. C. Agrawal, 1. xi. 1969; 1 ♂, Paratia *c.* 12 km. South of Udaipur, coll. V. C. Agrawal, 30. xi. 1969.

Diagnostic characters : Size smaller than a 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 slighly larger and dark smoky brown.

Measurements :	Wing	Tail	Bill
1 ♂ :	195	142	24
1 ♀ :	220	170	25

Distribution : India : Tripura (North and South Tripura districts) : Throughout India except Assam, eastern India and Kerala. Elsewhere : Pakistan, Nepal and Bangladesh.

39. ***Accipiter trivirgatus indicus*** (Hodgson)

1836. *Astur indicus Hodgson, Bengal Sporting Mag.*, 8 : 177 (Nepal).

1978. *Accipiter trivirgatus indicus*, Ali and Ripley, vol. 1 : 240.

Common name : North Indian Crested Goshawk (English).

Material examined : Nil.

Diagnostic characters : Size slightly bigger than a House Crow. Forehead dark brown, crown and nuchal crest blackish grey. Throat white, breast white broadly streaked. Belly barred with rich rufous brown. Undertial-coverts white, tail with four dark brown bars. Female larger in size.

Distribution : India : Tripura (North Tripura district) : Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Orissa, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Nepal, Bhutan, Burma (= Myanmar), Thailand, Malay Peninsula, Indochina, China and Taiwan.

Remarks : Observed in the North Tripura district.

40. ***Accipiter nisus nisosimilis*** (Tickell)

1833. *Falco Nisosimilis* Tickell, *J. Asiat. Soc. Beng.*, 2 : 571 (Marcha, Borabhum, India).

1978. *Accipiter nisus nisosimilis*, Ali and Ripley, vol. 1 : 243.

Common name : Asiatic Sparrow-Hawk (English) and Basha ♀, Bashin ♂ (Hindi).

Material examined : Nil.

Diagnostic characters : Size slightly smaller than a 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.

Distribution : India : Tripura (West Tripura district) : Throughout the Indian Union except Nicobar islands, Lakshadweep and the Minicoy Islands. Elsewhere : Bangladesh, Pakistan, Nepal, Burma (= Myanmar) and China. Breeds in N. and C. Asia from Turkestan to the sea of Okhotsk, Japan, N. China and E. China south to the Yongtse. Winters to Burma (= Myanmar) and S. China.

Remarks : Noticed in the West Tripura district.

Genus ***Buteo*** Lacepede, 1799

41. ***Buteo buteo japonicus*** (Temminck & Schlegel)

1844. *Falco buteo japonicus* Temminck & Schlegel, *in Siebold's Fauna Jap.*, Aves : 16 (Japan).

1978. *Buteo buteo japonicus*, Ali and Ripley, vol. 1 : 255.

Common name : Buzzard (English) and Chuhamar (Hindi).

Material examined : Nil.

Diagnostic characters : Size slightly smaller than the preceding bird. So many phases occur. In one of these, head creamy brown, eye with a black marking; legs and feet yellow. Cere yellow.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian mainland. Elsewhere : Nepal, Bhutan, Bangladesh, Sri Lanka, Burma (= Myanmar) and China.

Breeds in Asia from E. Turkestan and the Upper Yenessi north to Dauria and Lake Baikal, east to Ussuriland, south to the Himalays. Manchuria, Korea and Japan.

Remarks : Observed this bird from the South Tripura district.

Genus ***Sarcogyps*** Lesson, 1842

42. ***Sarcogyps calvus*** (Scopoli)

1786. *Vultur calvus* Scopoli, *Del. Faun.* et. *Flor. Insurb.* 2 : 85 (Pondicherry, *ex.* Sonnerat).

1978. *Sarcogyps calvus,* Ali and Ripley, vol. 1 : 296.

Common name : Indian black Vulture (English), Kalo shakoon (Bengali), Bhaonra (Hindi) and Sikruk (Tripuri).

Material examined : Nil.

Diagnostic characters : Naked head, neck, thighs and legs deep yellowish red; breast and thigh patches white.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout the Indian Union. Elsewhere : Pakistan, Nepal, Bangladesh, Burma (= Myanmar), Thailand, Malay Peninsula and Vietnam.

Remarks : Observed this species in the North Tripura and South Tripura districts.

Genus ***Gyps*** Savigny, 1809

43. ***Gyps bengalensis*** (Gmelin)

1788. *Vultur bengalensis* Gmelin, *Syst. Nat.,* 1(1) : 245 (Bengal).

1978. *Gyps bengalensis.* Ali and Ripley, vol. 1 : 307.

Common name : Indian Whitebacked Vulture (English), Sakun (Bengali), Gidh (Hindi) and Sikruk (Tripuri).

Material examined : Nil.

Diagnostic characters : Back brownish black, neck naked, rump white. Whitish ruff of soft feathers round the base of scrawny neck.

Distribution : India : Tripura : Throughout the Indian Union except the Andaman & Nicobar Islands, Arunachal Pradesh, Lakshadweep, Meghalaya, Mizoram and Nagaland.

Remarks : Observed this species in all the districts of Tripura.

Genus ***Circus*** Lacepede, 1977

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

1770. *Falco macrourus* S. G. Gmelin, *Reise.* d. Russl. th., 1 : 48 (Voronezh, Southern Russia).

1978. *Circus macrourus,* Ali and Ripley, vol. 1 : 319.

Common name : Pale Harrier (English), Girgit mar (Hindi) and Math cheel (Bengali).

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 : Tripura (South Tripura district) : Throughout the Indian Union. Elsewhere : Pakistan, Nepal, Bangladesh, Sri Lanka, Burma (= Myanmar), in Africa from the Sudan to Cape Province. Breeds from the Baltic Sea provinces east to Tarbagatai and the Tian Shans, south to Rumania, S. Russia and Ferghana.

Remarks : Seen this species in the South Tripura district.

45. ***Circus aeruginosus aeruginosus*** (Linnaeus)

1758. *Falco aeruginosus* Linnaeus, Syst. Nat., ed. 10, 1 : 91 (Europe, restricted type locality, Sweden).

1978. *Circus aeruginosus aeruginosus* Ali and Ripley, vol. 1 : 324.

Common name : Marsh Harrier (English), Tika bauri (Bengali) 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 : Tripura (South Tripura district) : Throughout the Indian Union except the Nicobar Islands. Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, the Maldive Islands,

Burma (= Myanmar), Malay Peninsula, China, Japan, the Philippines and Africa. Breeds from S. Sweden and Denmark east to the Yenesei, south to the Mediterranean, Turkestan and Mongolia.

Remarks : Observed in the South Tripura district.

Genus ***Spilornis*** G. R. Gray, 1840

46. ***Spilornis cheela burmanicus*** Swann

1920. *Spilornis cheela burmanicus* Swann. *Syn. List Accipitr.* : 81 [Jobin, Thayetmyo, Burma (= Myanmar)].

1978. *Spilornis cheela burmanicus*, Ali and Ripley, vol. 1 : 331.

Common name : Burmese Crested Serpent Eagle (English).

Material examined : North Tripura district : 1 ♂, Forest, *c.* 4 km. N. of Forest Office, Kanchanpur, coll. V. C. Agrawal, 17. ii. 1971; 1 ♀, Chailingta, coll. V. C. Agrawal, 21. xii. 1972. West Tripura district : 1 ♀, Fatikroy, coll. V. C. Agrawal, 25. xii. 1972.

Diagnostic characters : Size larger than a kite. Back dark brown, head with a 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.

Measurements :	Wing	Tail	Bill
1 ♂ :	430	275	50
2 ♀ :	350, 405	260, 268	50, 52

Distribution : India : Tripura (North Tripura and West Tripura districts) : Assam and Andaman Islands. Elsewhere : Burma (= Myanmar) and Thailand.

Genus ***Pandion*** Savigny, 1809

47. ***Pandion haliaetus haliaetus*** (Linnaeus)

1758. *Falco Haliaetus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 91 (Europe, restricted type locality, Sweden ex Fn. Suec.)

1978. *Pandion haliaetus haliaetus*, Ali and Ripley, vol. 1 : 336.

Common name : Osprey (English), Utkrosh (Bengali) and Machlimar (Hindi).

Material examined : Nil.

Diagnostic characters : Size smaller than a 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 : Tripura (North Tripura and South Tripura districts) : Throughout the Indian Union except Arunachal Pradesh, Mizoram, and Nagaland. Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Burma (= Myanmar), Thailand, Malay Peninsula, the Philippines, the Sunda Islands and S. Africa. Breeds in Europe and Asia from Scotland (formerly) and Lapland east to Kamchatka and Japan, South to Spain, N. Africa, the Mediterranean islands, Greece, Red Sea coasts, S. Arabia and S. China.

Remarks : Seen this bird in the North and South Tripura districts.

Family FALCONIDAE

Genus ***Falco*** Linnaeus, 1758

48. ***Falco subbuteo*** Linnaeus

1758. *Falco subbuteo* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 89 (Europe, restricted type locality, Sweden).

1982. *Falco subbuteo*, Ripley : 63.

Common name : Hobby (English).

Material examined : Nil.

Diagnostic characters : Size equal to a Dove. Back slaty grey, chin with moustachial streaks; throat, breast and belly rusty white, broadly streaked with black, undertail-coverts rufous.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Kerala, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu and West Bengal. Elsewhere : Pakistan, Nepal, Bangladesh, Africa, China, Turkestan and Persia.

Remarks : Obsered this species in the North Tripura district.

Order GALLIFORMES

Family PHASIANIDAE

Key to the genera of the Family PHASIANIDAE

(Based on Adult males)

1. Wing over 200 mm 2
   Wing under 200 mm 3
2. A flesh erect comb on the crown .....***Gallus***
   No flesh comb on the crown .....***Lophura***
3. Size moderate, wing over 120 mm .....
   .....***Arborophila***
   Size small, wing under 120 mm .....***Coturnix***

Genus ***Coturnix*** Bonnaterre, 1791

49. ***Coturnix coromandelica*** (Gmelin)

1789. *Tetrao coromandelicus* Gmelin, *Syst. Nat.*, 1(2) : 764 (Coromandel coast, Tamil Nadu, India).

1969. *Coturnix coromandelica*, Ali and Ripley, vol. 2 : 45.

Common name : Rain Quail (English).

Material examined : Nil.

Diagnostic characters : Size smaller than a Grey Quail. In male, back distinctly buff spear-shaped streaks and irregular mottling and barring of reddish brown and black. Chin and 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.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian mainland. Elsewhere : Pakistan, Bangladesh, Sri Lanka and Burma (= Myanmar).

Remakrs : Observed this species in the North Tripura district.

Genus ***Arborophila*** Hodgson, 1837

50. ***Arborophila atrogularis*** (Blyth)

1850. *Arboricola atrogularis* Blyth, *J. Asiat. Soc. Beng.*, 18(2) : 819 (Assam, Sylhet and Arrakan).

1969. *Arborophila atrogularis*, Ali and Ripley, vol. 2 : 62.

Common name : Whitecheeked Hill Partridge (English).

Material examined : North Tripura district : 1 ♂, Chailingta, coll. V. C. Agrawal, 19. xii. 1972; 1 ♂, Ambassa, coll. V. C. Agrawal, 5. i. 1973.

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.

Measurements : 2 ♂ : Wing 139, 145; tail 55, 58; bill 21, 23.

Distribution : India : Tripura (North Tripura district) : Assam, Manipur, Meghalaya, Mizoram, and Nagaland. Elsewhere : Bangladesh and Burma (= Myanmar).

Genus ***Lophura*** Flemming, 1822

51. ***Lophura leucomelana lathami*** (J. E. Gray)

1829. *Phasianus lathami* J. E. Gray, *ex* Griffith, Cuvier, *Anim. Kingd.*, 8 (Aves, 3) : 26 (Sylhet, Bangladesh).

1969. *Lophura leucomelana lathami*, Ali and Ripley, vol. 2 : 99.

Common name : Blackbreasted Kaleej Pheasant (English).

Material examined : North Tripura district : 1 ♀, Ambassa, coll. V. C. Agrawal, 4. i. 1973.

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 balck, which appears plain chestnut.

Measurements : 1 ♀ : Wing 211, tail 200, bill 38.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Manipur, Meghalaya and Nagaland. Elsewhere : Bangladesh, Bhutan and Burma (= Myanmar).

Genus ***Gallus*** Brisson, 1760

52. ***Gallus gallus murghi*** Robinson & Kloss

1920. *Gallus ferrugineus murghi* Robinson & Kloss, *Rec. Indian Mus.*, 19 : 14 and 15 (Chirala, Gaya District, Bihar).

1969. *Gallus gallus murghi*, Ali and Ripley, vol. 2 : 102.

Common name : Indian Red Jungle fowl (English) and Tamsha (Tripuri).

Material examined : South Tripura district : 1 ♂, Lakshmipur *c.* 5 km. NW. of Belonia, coll. V. C. Agrawal, 6. xii. 1969. West Tripura district : 1 ♂ and 1 ♀, Forest area *c.* 4 km. South of Rest House, Teliamura, coll. V. C. Agrawal, 30. i. 1971 and 2 ii. 1971.

Diagnostic characters : Size equal to a domestic Fowl. 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 :	Wing	Tail	Bill
2 ♂ :	225, 236	260, 314	33 + 35
1 ♀ :	197	130	31 +

Distribution : India : Tripura (South and West Tripura districts) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Meghalaya, Orissa, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh and Pakistan.

Order GRUIFORMES

Family TURNICIDAE

Genus ***Turnix*** Bonnaterre, 1791

53. ***Turnix suscitator plumbipes*** (Hodgson)

1837. *Coturnix Plumbipes* 'Parbattiah' = Hodgson, *Bengal sport. Mag.*, 9 : 346 (Nepal).

1969. *Turnix suscitator plumbipes*, Ali and Ripley, vol. 2 : 132.

Common name : Northern Bustard-Quail (English) and Tabathai (Tripuri).

Material examined : North Tripura district : 1 ♂, Manu, coll. N. Majumdar, 23. vii. 1991.

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 84, tail 40, bill 17.

Distribution : Indian : Tripura (North Tripura district) : Assam, Bihar, Meghalaya, Sikkim and West Bengal. Elsewhere : Bangladesh, Nepal and Burma (= Myanmar).

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 or 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. Plumage black or blackish grey ..... ***Fulica***

No lobate fringe on toes 5

5. Plumage blue; frontal shield truncate behind .....***Porphyrio***

Plumage not blue; frontal shield not truncate behind 6

6. Toes with a narrow straight edged lateral fringe. Sexes alike.....***Gallinula***

Toes with fringes. Sexes not alike .***Gallicrex***

Genus ***Rallus*** Linnaeus, 1758

54. ***Rallus aguaticus indicus*** Blyth

1849. *Rallus indicus* Blyth, *J. Asiat. Sco. Beng.*, 18(2) : 820. (Lower Bengal and India generally).

1969. *Rallus aguaticus indicus,* Ali and Ripley, vol. 2 : 151.

Common name : Indian Water Rail (English) and Ambukukkut (Bengali).

Material examined : Nil.

Diagnostic characters : Size smaller than a Grey Partridge. Crown, back, wings and tail deep olive-brown boldly streaked with black. Brown eye-stripe prominent. Cheek and throat white. Sides of head, neck and breast pale grey. Belly and vent barred with black and white.

Distribution : India : Tripura : Assam and West Bengal. Elsewhere : Bengladesh, Burma (= Myanmar) and China. Breeds in E. Siberia from the Lena east to Amur and Ussuriland, South to Transbaikalia, Chihili, and Korea; the Japanese Islands from Sakhalin to Kyushu.

Remarks : IWWRB (1989) recorded this bird from Tripura.

Genus ***Porzana*** Vieillot, 1816

55. ***Porzana pusilla pusilla*** (Pallas)

1776. *Rallus pusillus* Pallas, *Reise Russ. Reichs* 3 : 700 (Dauria).

1969. *Porzana pusilla pusilla* Ali and Ripley, vol. 2 : 160.

Common name : Eastern Baillon's Crake (English).

Material examined : Nil.

Diagnostic characters : Size equal to a Grey Quail. Back rufescent olive-brown broadly streaked with dark brown. Scapulars, back, rump and upper tail-coverts with narrow white paint-like smears. Sides of head, neck and breast grey. Abdomen, belly, vent and under tail-coverts barred with brown and white.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian Union except the Nicobar Islands. Elsewhere : Bangladesh, Nepal, Burma (= Myanmar), Sri Lanka, China, Malay Archipelago and the Philippines. Breeds in C. and E. Asia from the upper to Amuriland and Japan, South to Kashmir, Mongolia, N. China and Korea; Lower Himalayas in N. India.

Remarks : Observed this bird in the South Tripura district.

Genus ***Amaurornis*** Reichenbac, 1853

56. ***Amaurornis phoenicurus chinensis*** (Boddaert)

1783. *Fulica chinensis* Boddaert, *Table pl. enlum.* : 54 (China, *ex* Daubenton, pl. 896, restricted to Hongkong by Stresemann, 1913, *Nov. Zool,* 20 : 304).

1969. *Amaurornis phoenicurus chinensis,* Ali and Ripley, vol. 2 : 168.

Common name : Chinese Whitebreasted Waterhen (English), Panpaira (Bengali), Dauk (Hindi) and Dok (Tripuri).

Material examined : Nil.

Diagnostic characters : Size equal to the preceding bird. Crown, hind neck, wings, back and tail dark slaty grey. Forehead, sides of head, chin, throat, breast and belly pure white. Vent and under tail-coverts rufous. Legs and feet yellowish green. Base of upper mandible red.

Distribution : India : Tripura : Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Orissa, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh,

Burma (= Myanmar), Thailand, China, Malay Peninsula, Cambodia, Taiwan and Hainan.

Remarks : IWWRB (1989) reported this bird from Tripura.

Genus ***Gallicrex*** Blyth, 1852

57. ***Gallicrex cinerea*** (Gmelin)

1789. *Fulica cinerea* Gmelin, *Syst. Nat.* 1(2) : 702 (Ghina, ex. Latham).

1982. *Gallicrex cinerea*, Ripley : 98.

Common name : Watercock (English), Jal morag (Bengali) and Kora (Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to a Grey Partridge. 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 horny shield on forehead projecting above the crown. Belly, vent and underparts of tail barred with grey. In breeding female, similar to male, excepting less barred on underparts.

Distribution : India : Tripura : Throughout the Indian Union except the Nicobar Islands, Arunachal Pradesh, Lakshadweep, Manipur, Meghalaya, Mizoram and Nagaland. Elsewhere : Bangladesh, Pakistan, Sri Lanka, Maldiva, Archipelago, Burma (= Myanmar), Malay Peninsula, Indochina, Indonesia, the Philippines, Celebes, China, Korea and Japan.

Remarks : IWWRB (1989) recorded this species from Tripura.

Genus ***Gallinula*** Brisson, 1760

58. ***Gallinula chloropus indica*** Blyth

1842. *Gallinula chloropus* ? Var. *indicus* Blyth, *J. Asiat. Soc. Beng.*, 11 : 887 (Calcutta, Calcutta district, West Bengal, India).

1969. *Gallinula chloropus indica*, Ali and Ripley, vol. 2 : 175.

Common name : Indian Moorhen (English), Jal murgi (Bengali and Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to the preceding bird. Back and wings black, slaty grey and brown. Wings white bordered. Head, neck and breast slaty grey, paler and whitish on centre of abdomen. Under tial-coverts white with a black central patch.

Distribution : India : Tripura : Throughout the Indian mainland. Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Burma (= Myanmar), Thailand, Malay Peninsula, Cambodia, Hainan, Taiwain, the Ryukyu Islands, Tibet, China and Japan.

Remarks : IWWRB (1989) recorded this bird from Tripura.

Genus ***Porphyrio*** Brisson, 1760

59. ***Porphyrio porphyrio poliocephalus*** (Latham)

1801. *Gallinula poliocephala* Latham, *Index Orn.*, Suppl. : 68 (India).

1969. *Porphyrio porphyrio poliocephalus*, Ali and Ripley, vol. 2 : 178.

Common name : Indian Purple Moorhen (English), Kam pakhi (Bangali) and Kaim (Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to a Hen. Back purplish lilac. A deep red casque covering the crown. Neck, breast and abdomen bluish with purple lilac; under tail-coverts white. Red legs and enormous toes.

Distribution : India : Tripura : Throughout the Indian mainland, except Arunachal Pradesh, Meghalaya, Mizoram and Nagaland. Elsewhere : Bangladesh, Pakistan and Sri Lanka.

Remarks : IWWRB (1989) observed this bird from Tripura.

Genus ***Fulica*** Linnaeus, 1758

60. ***Fulica atra atra*** Linnaeus

1758. *Fulica atra* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 152 (Europe, restricted type locality Sweden, ex ref. to Fn. Svec.).

1969. *Fulica atra atra*, Ali and Ripley, vol. 2 : 180.

Common name : Coot (English), Jal kukkut (Bengali) 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.

Distribution : India : Tripura : Throughout the Indian mainland. Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Java, Celebes, Sudan and Arabia. Breeds in greater part of Europe and Asia South to N. Africa, Asia Minor, and Southern China; Azores and Iceland.

Remarks : IWWRB (1989) reported this bird from Tripura.

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 lappert, 1st and 4th primaries attenuated ..... ***Hydrophasianus***

Genus ***Hydrophasianus*** Wagler, 1832

61. ***Hydrophasianus chirurgus*** (Scopoli)

1786. *Tringa Chirurgus* Scopoli, *Del.* Flor. *et. Faun. Insubr., fasc.* 2 : 92.
(In nova Guiana = Luzon *ex* Sonnerat).

1969. *Hydrophasianus chirurgus*, Ali and Ripley, vol. 2 : 199.

Common name : Pheasant-tailed Jacana (English) and Surdal (Bangali).

Material examined : Nil.

Diagnostic characters : Size equal to a Grey Partridge. Back rump and underparts chocolate brown. Tail pointed down curved Pheasant-like. Face and foreneck white, hindneck pale silky golden yellow.

Distribution : India : Tripura : Throughout the Indian mainland. Elsewhere : Bangladesh, Burma (= Myanmar), China, Cambodia, Java, Malay Peninsula, Nepal, Pakistan, the Philippines, Taiwan, Thailand and Sri Lanka.

Remarks : IWWRB (1989) reported this bird from Tripura.

Genus ***Metopidius*** Wagler, 1832

62. ***Metopidius indicus*** (Latham)

1790. *Parra indica* Latham, *Index. Orn.*, 2 : 765 (India).

1969. *Metopidius indicus*, Ali and Ripely, vol. 2 : 201.

Common name : Bronzewinged Jacana (English).

Material examined : South Tripura district : 2 ♂, (1 juvenile) Rajnagar *c.* 14 km. West of Belonia, coll. V. C. Agrawal, 7. xii. 1969.

Diagnostic characters : Size equal to the preceding bird. Back and wings metallic greenish bronze. Tail chestnut-red. A white stripe over eye to nape. Neck, breast and belly glossy black. Bill red at base, greenish yellow.

Measurements : 1 ♂ : Wing 160, tail 43, bill 37.

Distribution : India : Tripura (South Tripura district) : Throughout India. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Burma (= Myanmar), Thailand, Vietnam, Cambodia, Malay Peninsula, Java and Sumatra.

Family CHARADRIIDAE

Key to the Subfamilies of Family

CHARADRIIDAE

Bill sraight, like that of pigeon. Upper mandible-middle portion constructed, tip swollen ..... ***Charadriinae***

Bill straight or decurved or recurved. Upper mandible-tip occasionally flattended and pitted ..... ***Scolopacinae***

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

63. ***Vanellus indicus indicus*** (Boddaert)

1783. *Tringa Indica* Boddaert, Table pl. enlum. : 150 (Goa, India, ex Daubenton, pl. 807).

1969. *Vanellus indicus indicus*, Ali and Ripley, vol. 2 : 212.

Common name : Redwattled Lapwing (English), Titori (Hindi) and Tatadwai (Tripuri).

Material examined : North Tripura district : 1 ♀, Forest, *c.* 3 km. W. of Rest House, Ampi, coll. V. C. Agrwal, 21. i. 1971. South Tripura district : 1 ♂, Abhoya, *c.* 8 km. NW. of Belonia, coll. V. C. Agrawal, 4. xii. 1969.

Diagnostic characters : Back and wings bronze-brown. Head, neck and breast black. A creamson fleshy wattles infront of each eye. A white band behind eyes running down sides of neck and wings to meet the white underparts. Calls : Oid-ye-do-it.

Measurements :	Wing	Tail	Bill
1 ♂ :	217	110	39
1 ♀ :	217	109	34

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout the Indian mainland. Elsewhere : Arabia, Afghanistan, Bangladesh, Bhutan, Iran, Iraq, Nepal, Pakistan and eastern Transcaspian regions.

Remarks : IWWRB (1989) also recorded this bird from Tripura.

Genus ***Pluvialis*** Brisson, 1760

64. ***Pluvialis dominica fulva*** (Gmelin)

1789. *Charadrius fulvus* Gmelin, *Syst. Nat.*, 1(2) : 687 (Tąhiti).

1969. *Pluvialis dominica fulva*, Ali and Ripley, vol. 2 : 222.

Common name : Eastern Golden Plover (English) and Sona batan (Bengali).

Material examined : Nil.

Diagnositc 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.

Distribution : India : Tripura : (North Tripura district) : Throughout the Indian Union. Elsewhere : Australia, Bangladesh, Bhutan, Burma (= Myanmar), China (southern part), East Africa, Hawai Island, the Indochinese countries, Malaysia, Nepal, Ocenia, Pakistan, Sri Lanka, Pacific coast of North America and Thailand.

Remarks : Seen in the Gomati Reservoir in the North Tripura district.

Genus ***Charadrius*** Linnaeus, 1758

65. ***Charadrius dubius curonicus*** Gmelin

1789. *Charadrius curonicus* Gmelin, *Syst. Nat.*, 1(2) : 692 (Kurland).

1969. *Charadrius dubius curonicus*, Ali and Ripley, vol. 2 : 231.

Common name : European Little Ringed Plover (English), Firia (Bengali) and Merwa (Hindi).

Material examined : Nil.

Diagnostic characters : Back sandy brown. Forecrown black. A black band from lores through eye to ear-coverts. A double collar on hind neck (a upper white, the lower black); underparts white with a black pectoral band.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, Burma (= Myanmar), Thailand, Malay Peninsula, Indochina, New Guinea, Bismarck Archipelago, apparently also the Greater and Lesser Sunda Islands.

Remarks : Observed this bird in the Gomati Reservoir in the North Tripura district.

66. ***Charadrius dubius jerdoni*** (Legge)

1880. *Aegialitis jerdoni* Legge, *Proc. zool. Soc. Lond.* : 39 (Ceylon = Sri Lanka and miaddle India).

1969. *Charadrius dubius jerdoni,* Ali and Ripley, vol. 2 : 231.

Common name : Indian Little Ringed Plover (English), Firia (Bengali) and Merwa (Hindi).

Material examined : Nil.

Diagnostic characters : Similar to the preceding bird with smaller in size.

Distribution : India : Tripura : Throughout the Indian Union except Arunachal Pradesh, Manipur, Mizoram and Nagaland. Elsewhere : Bangladesh, Pakistan, Nepal, Burma (= Myanmar), Thailand, Malay Peninsula, Indochina, New Guinea, Bismarck Archipelago and the Sunda Islands.

Remarks : IWWRB (1989) reported this bird from Tripura.

Key to the ganera 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

67. ***Tringa totanus totanus*** (Linnaeus)

1758. *Scolopax Totanus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 145 (in Europe = Sweden).

1969. *Tringa totanus totanus,* Ali and Ripley, vol. 2 : 257.

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. Underparts white, breast finely streaked with brown. Bill straight slender, orange-red and black. White band on wings.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian Union. Elsewhere : Bangladesh, Malay States, Nepal, Pakistan, the Philippines, Sri Lanka and the Sunda Islands. Breeds in central and eastern Asia to Transbaikali and West Kansu.

Remarks : Seen in the South Tripura district.

68. ***Tringa stagnatilis*** (Bechstein)

1803. *Totanus stagnatilis* Bechstein, *Orn. Taschenb. Deutschl.* 2 : 292, pl. 29 (Germany).

1969. *Tringa stagnatilis,* Ali and Ripely, vol. 2 : 259.

Common name : Marsh Sandpiper or Little Greenshank (English) and Biler balubatan (Bengali).

Material examined : Nil.

Diagnostic characters : Upperback 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 narrowly barred, brownish.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union except the Andaman & Nicobar Islands and Lakshadweep. Elsewhere : Bangladesh, Pakistan, Sri Lanka, Burma (= Myanmar), the Indochinese countries, the Sunda Islands and the Muluccas to Australia, Africa and Arabia. Breeds in SE. 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 : Observed in the Gomati Reservoir area in the North Tripura district.

69. ***Tringa nebularia*** (Gunnerus)

1767. *Scolopax nebularia* Gunnerus, in *Leem. Beskr. Finn. Lapper* : 251 (District of Trondhjem, Norway).

1969. *Tringa nebularia*, Ali and Ripley, vol. 2 : 261.

Common name : Greenshank (English) and Gotra (Bengali).

Material examined : Nil.

Diagnostic characters : In non-breeding (winter) : Upperback 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 : Tripura (North Tripura and South Tripura districts) : Throughout the Indian Union. Elsewhere : Eastwards through Southeast Asia to Australia, Africa, Bangladesh, the Maldive Island, the Mediterranean countries, Nepal, Pakistan and Sri Lanka.

Remarks : Recorded this species from the North and the South Tripura districts.

70. ***Tringa ochropus*** Linnaeus

1758. *Tringa Ochrophus* Linnaeus, *Syst. Nat.*, ed. 10. 1 : 149 (in Europa = Sweden).

1969. *Tringa ochropus*, Ali and Ripley, vol. 2 : 263.

Common name : Green Sandpiper (English).

Material examined : North Tripura district : 1 ♀, Ailmara, *c.* 22 km. SE of Jatanbari, coll. S. Chatterjee, 3. xii. 1988. South Tripura district : 1 ♂, 3 km. E. of Garjee, coll. V. C. Agrawal 28. xi. 1969; 1 ♀, Abhoya, *c* 8 km. NW. of Belonia, coll. V. C. Agrawal, 4. xii. 1969.

Diagnostic characters : In non-breeding (winter) : Back dark brown glossed with bronze-green. Head and neck ashy brown. Rump and tail white. Tail faintly barred with blackish. Underparts whitish. Throat, breast and flanks finely streaked with brown.

Measurements :	Wing	Tail	Bill
1 ♂ :	143	60	39
2 ♀ :	140, 141	58, 62	41, 42

Distribution : India : Tripura (South Tripua district) : Throughout India except the Nicobar Islands, Mizoram and Nagaland. Elsewhere : Africa (south to Angola and Kenya), Bangladesh, British Isles, Burma (= Myanmar), the Indochinese countries, Hainan, the Mediterranean region, Nepal, Pakistan, the Philippines, Sri Lanka, Taiwan and Thailand.

71. ***Tringa glareola*** Linnaeus

1758. *Tringa Glareola* Linnaeus, *Syst. Nat.*, 10 ed., 1 : 149 (In Europa = Sweden).

1969. *Tringa glareola*, Ali and Ripley, vol. 2 : 265.

Common name : Wood Sandpiper (English).

Material examined : South Tripura district : 1 ♂, Paratia *c.* 6 km. South of Udaipur, coll. V. C. Agrawal, 30. xi. 1969.

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.

Measurements : 1 ♂ : Wing 123, tail 53, bill 32.

Distribution : India : Tripura (South Tripura districts) : Throughout India including the Andaman and Maldive Islands. Elsewhere : Bangladesh, Bhutan, Nepal, Pakistan and Sri Lanka. Breeds in North Europe and North Asia east to the Amur River, Kamchatka and the northern Kurile Islands. Wintering throughout Africa and S. E. Asia, Japan, the Philippines, Malaya Arichipelago to Australia.

Remarks : IWWRB (1989) also reported this species from Tripura.

72. ***Tringa hypoleucos*** Linnaeus

1758. *Tringa hypoleucos* Linnaeus, *Syst. Nat.*, ed. 10. 1 : 149 (in Europa = Sweden).

1969. *Tringa hypoleucus,* Ali and Ripley, vol. 2 : 271.

Common name : Common Sandpiper (English).

Material examined : Nil.

Diagnostic chareacters : In non-breeding (winter) : Back olive brown. Rump and tail brown. Outer rectrices white. Sides of head and neck ashy brown, streaked darker. Supercilium broad and pale. Underparts white with a broad diffused dusky band across breast.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout the Indian Union. Elsewhere : Africa, S. E. Asia north to S. China, Bangladesh, Bhutan, Burma (= Myanmar), Malay Archipelago to Austrialia, Nepal, the Philippines, Sri Lanka and Taiwan.

Remarks : Observed this species in North and South Tripura districts.

Genus ***Gallinago*** Brisson, 1760

73. ***Gallinago stenura*** (Bonaparte)

1830. *Scolopax stenura* "Kuhl" = Bonaparte, *Ann. Stor. Nat.* Bologna 4 : 335 (Sunda Islands).

1969. *Gallinago stenura,* Ali and Ripley, vol. 2 : 282.

Common name : Pintail Snipe (English), Kadakhocha (Bengali) and Chaha (Hindi).

Material examined : Nil.

Diagnostic characters : Crown with longitudinal stripes. Supercilium prominent. Broders of scapulars rufous. Outer tail feathers narow and stiff. Underwing-coverts much heavily and darkly barred. Legs and feet greyish green.

Distribution : India : Tripura : Throughout the Indian Union except Lakshadweep. Elsewhere : Bangladesh, Pakistan, Nepal, Bhutan, Sri Lanka, Indochinese countries, China, Hainan, Taiwan, the Sunda Islands and Timor. Breeds in E. Siberia west to the Yenisey, north to *c* lat. 67° south to E. Turkestan, N. Tibet, the upper Hoanng-Ho, Amurland and Sakhalin.

Remarks : IWWRB (1989) reported this species from Tripura.

Genus ***Gallinago*** Brisson, 1760

74. ***Gallinago gallinago gallinago*** (Linnaeus)

1758. *Scolopax Gallinago* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 147 (in Europa = Sweden).

1969. *Gallinago gallinago gallinago,* Ali and Ripley, vol. 2 : 287.

Common name : Fantail Snipe (English) and Kadakhocha (Bengali).

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 : Tripura (North Tripura and South Tripura districts) : Throughout the Indian Union. Elsewhere : Bangladesh, China, Egypt, East Africa south to Kenya, Indochinese countries, Japan, the Maldive Islands, the Mediterranean region, Nepal, Pakistan, Persia, Sri Lanka and the Sunda Islands.

Remarks : Observed this bird in the North and South Tripura districts.

75. ***Gallinago minima*** (Brunnich)

1764. *Scolopax Minima* Brunnich, *Orn. Boreal.* : 49 (E. Christianso, Denmark).

1969. *Gallinago minima*, Ali and Ripley, vol. 2 : 290.

Common name : Jack Snipe (English) and Chota chaha (Hindi).

Material examined : Nil.

Diagnostic characters : Back metallic green and purple sheen in the streaked dark brown. Crown without the central stripe. Tail wedge-shaped, uniformly dark and pointed. Bill shorter and stouter.

Distribution : India : Tripura : (North Tripura district) : Throughout the Indian Union. Elsewhere : Bangladesh, Pakistan, Napel, Sri Lanka, Burma (= Myanmar), West Europe, the Mediterranean region, Egypt, Iraq, Iran. 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; South-ward limit in W. and E. Siberia not known.

Remarks : Observed this species in the Gomati Reservoir, the North Tripura district.

Genus ***Scolopax*** Linnaeus, 1758

76. ***Scolopax rusticola rusticola*** Linnaeus

1758. *Scolopax Rusticola* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 146 (Europe, restricted type locality, Sweden).

1969. *Scolopax rusticola rusticola*, Ali and Ripley, vol. 2 : 292.

Common name : Woodcock (English).

Material examined : Nil.

Diagnostic characters : Back brownish grey blotched and barred with black, rufous and buff. Hind crown, neck and rump cross-barred 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.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout the Indian Union. Elsewhere : The Azores, Bangladesh, Bhutan, China, Canary Island, Egypt, Japan, Maderia, the Mediterranean region, Nepal, Pakistan and Sri Lanka.

Remarks : Seen this bird in North Tripura and South districts.

Genus ***Calidris*** Merrem, 1804

77. ***Calidris minuta*** (Leisler)

1812. *Tringa minuta* Leisler, *Nachtrage Zu Bechstein's Naturg. Deutschl.* : 74 (Hanau am Main, Germany).

1969. *Calidris minuta*, Ali and Ripley, vol. 2 : 301.

Common name : Little Stint (English) and Chhota panlowwa (Hindi).

Material examined : Nil.

Diagnostic characters : Back mottled greyish brown. Underparts white, outer tail feathers smoky brown. Bill and legs black. Wings with narrow wing ban.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian Union except the Nicobar Islands. Elsewhere : Pakistan, Nepal, Sri Lanka, Burma (= Myanmar), Africa and the Southern shores of Caspian Ocean. Breeds in U. S. S. R.

Remarks : Observed this species in the South Tripura district.

78. *Calidris temminckii* (Leisler)

1812. *Tringa Temminckii* Leisler, *Nachtrage Zu Bechstein's Naturg. Deutschl.* 64 (Hanua am Main, Germany).

1969. *Calidris temminckii*, Ali and Ripley, vol. 2 : 303.

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 : Tripura (North Tripura district) : Throughout the Indian Union. Elsewhere : Bangladesh, Pakistan, Maldive, Sri Lanka, Burma (= Myanmar), Malay Peninsula, China, Japan, Europe in the Mediterranean region, NE. Africa, Iraq and Iran. Breeds from N. Norway east to the Chukchi Peninsula but not north of lat. 72° at the mouth of Yenisey, north of 76° on Taimyr Peninsula; Kolguev and Vaigach Is.; exect 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 : Observed this species in the North Tripura district.

Genus ***Philomachus*** Merrem, 1804

79. *Philomachus pugnax* (Linnaeus)

1758. *Tringa Pugnax* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 148 (in Europa minus boreali = Southern Sweden).

1969. *Philomachus pugnax*, Ali and Ripley, vol. 2 : 318.

Common name : Ruff (English) and Geowala (Bengali).

Material examined : Nil.

Diagnostic characters : In non-breeding (winter) : Back dumpy greyish brown with bold blackish scally patterned. Wings with white wings bar. Rump dark. Tail with a white patch on either sides at its base.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union. Elsewhere : Africa, America (North), the Atlantic Islands (eastern), Antilles (Lesser), Bangladesh, Burma (= Myanmar), China, the Maldive Islands, Nepal, Pakistan and Sri Lanka.

Remarks : Seen this species in the Gomati Reservoir in the North Tripura district.

Family ROSTRATULIDAE

Genus ***Rostratula*** Vieillot, 1816

80. *Rostratula bengalensis bengalensis* (Linnaeus)

1758. *Rallus benghalensis* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 153 (Asia).

1969. *Rostratula benghalensis benghalensis*, Ali and Ripley, vol. 2 : 325.

Common name : Painted Snipe (English) and Baggarji (Bengali).

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 downcurved at tip.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout the Indian Union. Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Burma (= Myanmar), Malay Peninsula, Cambodia, the Philippines, Indonesia, China, Japan, Africa, Madagascar, Iran and Arabia.

Remarks : Observed this in the North and South Tripura districts.

Family RECURVIROSTRIDAE

Genus ***Himantopus*** Brisson, 1760

81. ***Himantopus himantopus himantopus*** (Linnaeus)

1758. *Charadrius Himantopus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 151.

1969. *Himantopus himantopus himantopus*, Ali and Ripley, vol. 2 : 329.

Common name : Indian Blackwinged Still (English), Lal thengi (Bengali) and Gazpaon (Hindi).

Material examined : Nil.

Diagnostic chareacters : 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 reddish.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union except the Andaman and Nicobar Islands. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh and Burma (= Myanmar). 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 this bird in the North Tripura district.

Family BURHINIDAE

Genus ***Burhinus*** Illiger, 1811

82. ***Burhinus oedicnemus indicus*** (Salvadori)

1865. *Oedicnemus indicus* Salvadori, *Atti Soc. Ital. Sci. Nat.*, Milano, 8 : 381 (India).

1969. *Burhinus oedicnemus indicus*, Ali and Ripley, vol. 3 : 2.

Common name : Indian Stone Curlew (English), Chhota Shilabatan (Bengali) and Barsiri (Hindi).

Material examined : Nil.

Diagnostic characters : Back dark-streaked sandy brown. Head thick. Legs long bare yellowish "thick-kneed" Eyes huge yellow "Goggle" like. A broad buffy bar on the closed wings. Two narrow white bars and a conspicuous white patch on wings.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout the Indian mainland. Elsewhere : Bangladesh, Nepal, Pakistan, Sri Lanka, Burma (= Myanmar), Thailand and Combodia.

Remarks : Observed this bird in the North and South Tripura districts.

Family GLAREOLIDAE

Genus ***Glareola*** Brisson, 1760

83. ***Glareola pratincola maldivarum*** J. R. Forster

1795. *Glareola (Pratincola) Maldivarum* J. R. Forster, *Faunula India*, ed. 2 : 11 (open sea in the latitude of the Maldive Islands, ex Latham, *Gen. Syn.* 5 : 224, Vr. B).

1969. *Glareola pratincola maldivarum*, Ali and Ripley, vol. 3 : 14.

Common name : Large Indian Pratincole or Swallow-Plover (English) and Bada babuibatan (Bengali).

Material examined : Nil.

Diagnostic characters : Size equal to a Myna. Crown and back olive-brown. Upper tail-coverts white. Tail black with white base, deeply forked. Chin and throat pale rufous buff. Legs and feet dusky black. Calls-Kirri-Kirri.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union except Lakshadweep. Elsewhere : Banlgladesh, Pakistan, Nepal, Sri Lanka, Burma (= Myanmar), Thailand, Indochina, Hainan and Australia.

Remarks : Seen this bird in the Gomati Reservoir in the North Tripura district.

Family LARIDAE

Key to the genera of the family LARIDAE

1. 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

84. ***Larus brunnicephalus*** Jerdon

1840. *Larus brunnicephalus* Jerdon, *Madras, J. Lit. & Sci.* 12 : 225 (West Coast of Indian Peninsula).

1969. *Larus brunnicephalus,* Ali and Ripley, vol. 3 : 31.

Common name : Brownheaded Gull (English) and Dhomra (Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to a Jungle Crow. Head and Chin dark coffee brown (in summer), greyish white (in winter) with a vertical black crescent mark behind the ear. Back grey, underparts white. Wings with blackish tip. Bill, legs and feet deep blood red.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian mainland. Elsewhere : Pakistan, Bangladesh, Sri Lanka and Southern Asia. Breeds in Ladakh between *c* 3000 and 4500 m. and in Central Asia from Chinese Turkestan to S. Mongolia.

Remarks : Seen this bird in the Gomati Reservoir in the North Tripura district.

Genus ***Sterna*** Linnaeus, 1758

85. ***Sterna aurantia*** J. E. Gray

1831. *Sterna aurantia* J. E. Gray, *in* Hardwicke's *Ill. Ind. Zool.,* 1(5) : pl. 69, f. 2. (India).

1969. *Sterna aurantia,* Ali and Ripley, vol. 3 : 48.

Common name : Indian River Tern (English) and Ganga cheel (Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to a House Crow. Back pale grey, underparts white. Wings narrow, pointed. Forehead and nape glossy jet black (in summer); flecked and streaked with black (in winter). Tail deeply forked; crown yellow.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian mainland. Elsewhere : Bangladesh, Pakistan, Nepal, Burma (= Myanmar), and Malay peninsula east to the Mekong river.

Remerks : Observed this bird in the Gomati Reservoir in the North Tripura district.

86. ***Sterna hirundo tibetana*** Saunders

1876. *Sterna tibetana* Saunders, *Proc. zool. Soc. Lond.* : 649.

1969. *Sterna hirundo tibetana,* Ali and Ripley, vol. 3 : 51.

Common name : Tibetan Common Tern (English) and Ganga cheel (Hindi).

Material examined : Nil.

Diagnostic characters : Size smaller than the preceding bird. Back dark ashy-grey and browner. Chin, throat and under tail-coverts dark grey.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian mainland. Elsewhere : Bangladesh, Sri Lanka and Malay Archipelago.

Remarks : Sighted during field study in the North Tripura district.

87. ***Sterna acuticauda*** J. E. Gray

1831. *Sterna Acuticauda* J. E. Gray, *in* Hardwicke's *Ill. Ind. zool.,* 1(6) : pl. 70, f. 3 (Cawnpore = Kanpur, India).

1969. *Sterna acuticauda,* Ali and Ripley, vol. 3 : 139.

Material examined : Nil.

Diagnostic characters : Back ashy grey. Forehead, crown, nape and crest glossy black. Lores and cheeks pure white. Chin and throat white: Breast, belly and vent black. Tail deeply forked.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union. Elsewhere : Pakistan, Bangladesh, Sri Lanka, Burma (= Myanmar), Thailand and the Indochinese countries.

Remarks : Observed this species in the Gomati Reservoir in the North Tripura district.

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 vanaceous 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. 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

88. ***Treron curvirostra nipalensis*** (Hodgson)

1836. *Toria Nipalensis* Hodgson, *Asiat. Res.*, 19(1) : 164 (Nepal).

1969. *Treron curvirostra nipalensis*, Ali and Ripley, vol. 3 : 97.

Common name : Thickbilled Green Pigeon (English) and Bang Faruk (Tripuri).

Material examined : North Tripura district : 2 ♂, Khowaipar, coll. V. C. Agrawal, 13. xii. 1972. South Tripura district : 1 ♂, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 30. xi. 1988.

Diagnostic characters : In male, back, scapulars and lesser wing-coverts chestnut-maroon; forehead ashy grey white, forecrown darker grey. Central tail feathers olive green, outer tail freathers 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.

Measurements :	Wing	Tail	Bill (from feathers)
2 ♂ :	140, 150	80, 82	14(2)
1 ♀ :	132	85	14

Distribution : India : Tripura (North Tripura and South Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries, Nepal and Thailand.

89. ***Treron pompadora phayrei*** (Blyth)

1862. *Osmotreron Phayrei* Blyth, *J. Asiat. Soc. Beng.*, 31 : 344 (Tounghoo, Burma).

1969. *Treron pompadora phayrei*, Ali and Ripley, vol. 3 : 102.

Common name : Ashyheaded Green Pigeon (English) and Chhota Hariyal (Bengali).

Material examined : North Tripura district : 1 ♂ and 1 ♀, For est, *c.* 8. km. W. of Kanchanpur, coll. V. C. Agrawal, 18. ii. 1971; 2 ♂ and 1 ♀, Fatikroy, coll. V. C. Agrawal, 25. xii. 1972; 2 ♂, Khowaipar, coll. V. C. Agrawal, 14. xii. 1972. South Tripura district : 1 ♀, Forest, *c.* 2 km. SE. of Rest House, Ampi, coll. V. C. Agrawal, 22. i. 1971. 1 ♂, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 29. xi. 1988; 1 ♂ and 1 ♀, Garjee, coll. V. C. Agrawal 1. xii. 1969. West Tripura district : 1 ♂, Chandmari Teela, Agartala, coll. V. C. Agrawal, 10. xi. 1969.

Diagnostic characters : Size smaller than the preceding bird. In male, back and scapulars chestnut-maroon; crown and nape dark ashy grey; sides of head greenish yellow, hind neck green.

Underparts greenish yellow; upper breast orange; lower breast and abdomen olivegreen; under tail-coverts cinnamon. In female, similar to male, but lacks chestnut mantle and orange breast.

Measurements :	Wing	Tail	Bill
8 ♂ :	145-163 (154)	86-90 (89)	19-20 (19)
4 ♀ :	144-160 (154)	84-89 (87)	19-20 (19)

Distribution : India : Tripura (North, South and West Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), the Indochinese countries and Thailand.

Genus ***Ducula*** Hodgson, 1836

90. ***Ducula aenea sylvatica*** (Tickell)

1833. *Columba Sylvatica* Tickell, *J. Asiat. Soc. Beng.*, 2 : 581 (Borabhum, Singhbum, Bihar, India).

1969. *Ducula aenea sylvatica,* Ali and Ripley, vol. 3 : 111.

Common name : Northern Green Imperial Pigeon (English).

Material examined : North Tripura district : 1 ♂, Forest area *c.* 2 km. South of Teliamura, coll. V. C. Agrawal, 28. i. 1971; 1 ♀, Forest area *c.* 1 km. East of Rest House, Ambassa, coll. V. C. Agrawal, 8. ii. 1971; 1 ♂, Khowaipar, coll. V. C. Agrawal, 12. xii. 1972.

Diagnostic characters : Size equal to a Crow. Head breast and belly pinkish grey; back, wing and tail bright metallic bronzy green. Under tail-coverts deep dull maroon.

Measurements :	Wing	Tail	Bill
2 ♂ :	237 (2)	152, 153	32, 35
1 ♀ :	230	145	33

Distribution : India : Tripura (North Tripura district) : Andhra Pradesh, Assam, Bhiar, Madhya Pradesh, Meghalaya, Orissa, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries and Thailand.

Genus ***Columba*** Linneaus, 1758

91. ***Columba livia intermedia*** Strickland

1844. *Columba intermedia* Strickland, *Ann. Mag. nat. Hist.*, 13 : (India = Calcutta, Calcutta district, West Bengal).

1969. *Columba livia intermedia,* Ali and Ripley, vol. 3 : 125.

Common name : Indian Blue Rock Pigeon (English), Gola Pyra (Bengali) 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 back bands.

Distribution : India : Tripura : Throughout the Indian Union. Elsewhere : Bangladesh, Nepal, Bhutan, Sri Lanka, Burma (= Myanmar) and Thailand.

Remarks : Sighted this bird during field survey in all the districts of Tripura.

Genus ***Streptopelia*** Bonaparte, 1855

92. ***Streptopelia decaocto decaocto*** (Frivaldszky)

1758. *Columba risoria* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 65 (Based on a pale domesticated bird).

1969. *Streptopelia decaocto decaocto,* Ali and Ripley, vol. 3 : 147.

Common name : Indian Ring Dove (English), Par ghughu (Bengali) and Takthu (Tripuri).

Material examined : Nil.

Diagnostic characters : Size smaller than a Pigeon. Entire plumage pale greyish brown. Hindneck with a narrow black half-collar. Outer rectrices with white edges, central pair blackish.

Distribution : India : Tripura : Throughout the Indian Union, except the Andaman & Nicobar Islands. Elsewhere : From Hungary over SE. Europe, Asia Minor and Sri Lanka.

Remarks : Seen in all the districts of Tripura.

93. ***Streptopelia tranquebarica humilis*** (Temminck)

1824. *Columba humilis* Temminck, *Pl. Col., livr.* 44 : 259 (but not pl. 258) (Bengal and Luzon).

1969. *Streptopelia tranquebarica humilis,* Ali and Ripley, vol. 3 : 151.

Common name : Burmese Red Turtle-Dove (English) and Lal ghughu (Bengali).

Material examined : South Tripura district : 1 ♂, Garjee, *c.* 18 km. S. of Udaipur, coll. V. C. Agrawal, 29. xi. 1969. West Tripura district : 2 ♀, Sepahijala, coll. S. Chatterjee, 19. xi. 1988.

Diagnostic characters : Size equal to a Myna. Head grey, back brick-red and underparts pinkish. Hindneck with a narrow black half collar.

Measurements :	Wing	Tail	Bill
1 ♂ :	134	85	19
2 ♀ :	130, 134	90, 92	20, 22

Distribution : India : Tripura (South Tripura and West Tripura districts) : The Andaman Islands, Arunachal Pradesh, Assam, Manipur, Meghalaya, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), China (northern part), the Indochinese countries, the Philippines, Thailand and Tibet.

94. ***Streptopelia chinensis suratensis*** (Gmelin)

1789. *Columba suratensis* Gmelin, *Syst. Nat.,* 1(2) : 778 (Surat, Gulf of Cambay, India).

1969. *Streptopelia chinensis suratensis,* Ali and Ripley, vol. 3 : 152.

Common name : Indian Spotted Dove (English), Telia ghughu (Bengali) and Takthu (Tripuri).

Material examined : North Tripura district : 1 ♂, Pecharthal, coll. N. Majumdar, 15. vii. 1991; 1 (juv.) Ambassa, coll. N. Majumder, 29. vii. 1991.

Diagnostic characters : Size smaller than a Pigeon. Back pinkish brown, head grey; hindneck and upper back with a conspicuous black and white "chess board" Chin vinous-grey paller on throat ; belly, vent and undertail-coverts white.

Measurements : 1 ♂ : Wing 145, tail 135, bill 21.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union except the Andaman and Nicobar Islands, Arunachal Pradesh, Manipur, Mizoram and Nagaland. Elsewhere : Bangladesh and Pakistan.

Remarks : Observed in all the districts of Tripura.

95. ***Streptopelia chinensis tigrina*** (Temminck)

1810. *Columba Tigrina* Temminck, *in* Knip, Les Pigeons, les colombes : 94, pl. 43 (Timor and Batavia; type from Java).

1969. *Streptopelia chinensis tigrina,* Ali and Ripley, vol. 3 : 154

Common name : Burmese Spotted Dove (English).

Material examined : West Tripura district : 1 ♂, Nandnagar, Agartala, coll. V. C. Agrawal, 13. xi. 1969; 1 ♂, Forest, *c.* 4 km. S. of Rest House. Teliamura, coll. V. C. Agrawal, 30. i. 1971.

Diagnostic characters : Back indistinctly marked with pinkish grey and brown. Hindneck with a conspicuous black and white "chessboard" Throat and breast Light pinkish, abdomen whitish. Tail blackish brown. White Undertail-coverts.

Measurements : 2 ♂, Wing 137, 142; tail 127, 134; bill 22(2).

Distribution : India : Tripura (South Tripura and West Tripura districts) : Assam, Manipur and Mizoram. Elsewhere ; Bangladesh, Borneo, Burma (= Myanmar), the Indochinese countries, Malay Peninsula, Palawan and the Sunda Islands.

Remarks : Seen also in the South Tripura district.

96. ***Streptopelia senegalensis cambayensis*** (Gmelin)

1789. *Columba cambayensis* Gmelin, *Syst. Nat.* 1(2) : 779 ('Cambaya', i. e. Gulf of Cambay, Gujarat, India).

1969. *Streptopelia senegalensis cambayensis,* Ali and Ripley, vol. 3 : 155.

Common name : Indian Little Brown Dove (English) and Chhota fakhta (Hindi).

Material examined : Nil.

Diagnostic characters : Size slightly smaller than a Myna. Head and back earthy brown. Wing with grey patches. On either sides of foreneck "Chess board" in black and rufous. Throat and breast pinkish brown. Belly and vent white.

Distribution : India : Tripura : Throughout the Indian Union except the Andaman (probably introduced) and Nicobar Islands, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Sikkim. Elsewhere : Bangladesh and Pakistan.

Remarks : Seen in all the districts of Tripura.

Genus ***Chalcophaps*** Gould, 1843

97. ***Chalcophaps indica indica*** (Linnaeus)

1758. *Columba indica* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 164 (Orientali = Amboina *vide* Stresemann, 1952, *Ibis* 94 : 511).

1969. *Chalcophaps indica indica,* Ali and Ripley, vol. 3 : 157.

Common name : Indian Emerald Dove (English), Raj Ghughu (Bengali) and Bank Faruk (Tripuri).

Material examined : Nil.

Diagnostic characters : Size slightly larger than a Myna. Upper back and wings with brilliant bronzed emerald-green. Forehead and eyebrows white; crown grey. A band of white fringed feathers across lower bands. Wings with whitish grey patch. Underparts chestnut.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union except Manipur, Mizoram and Nagaland. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Indochinese countries, Indonesia, Malay peninsula, Nepal and the Philippines.

Remarks : Observed this bird in Ambassa, the North Tripura district.

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

98. ***Psittacula eupatria avensis*** (Kloss)

1917. *Palaeornis eupatria avensis* Kloss, *J. Nat. Hist. Siam,* 2 : 219 (Bhamo, Burma).

1969. *Psittacula eupatria avensis* Ali and Ripley, vol. 3 : 167.

Common name : Large Burmese Parakeet (English) and Shilaw, Bhata (Tripuri).

Material examined : Nil.

Diagnostic characters : A large grass-green bird. Tail long pointed. Wing with a bright red shoulder patch.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Assam, Manipur and Nagaland. Elsewhere : Burma (= Myanmar).

Remarks : Observed this bird in the North and South Tripura districts.

99. ***Psittacula krameri borealis*** (Neumann)

1915. *Palaeornis krameri borealis* Neumann, *Orn. Monatsb.* 23 : 178 (Assam).

1969. *Psittacula krameri borealis,* Ali and Ripely, vol. 3 : 169.

Common name : Northern Roseringed Parakeet (English), Tiya tota (Bengali), Lybar tota (Hindi) and Shilaw, Bhata (Tripuri).

Material examined: Nil.

Diagnostic characters : Size slightly bigger than a Myna. In male, the entire plumage grass-green. A rose-pink and a black collar on neck. Wings without shoulder patch. In female, the neck collar is replaced by an indistinct emerald-green ring.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Andhra Pradesh, Assam, Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Meghalaya, Orissa, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Pakistan, Burma (= Myanmar), China and Vietnam.

Remarks : Observed this bird in the North and South Tripura districts.

100. ***Psittacula alexandri fasciata*** (P. L. S. Muller)

1776. *Psittacus fasciatus* P. L. S. Muller, Natursyst., Suppl. : 74 (Pondicherry, errore, restricted to Arakan by Ticehurst, 1933, *J. Bombay nat. Hist. Socl.*, 36 : 934).

1969. *Psittacula alexandri fasciata*, Ali and Ripley, vol. 3 : 172.

Common name : Indian Redbreasted Parakeet (English) and Madna (Hindi).

Material examined : West Tripura district : 6 ♂ and 1 ♀, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 17. xi. 1969; 1 ♂, Sepahijala, coll. S. Chatterjee, 19 xi. 1988.

Diagnostic characters : Size slightly smaller than a Pigeon. In male, head purplish grey, forehead black, back brighter green. A broad black stripes from lower mandible to sides 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 blue green, breast red and dark.

Measurements :	Wing	Tail	Bill
6 ♂ :	168-177	180-208	25-28
	(175)	(194)	(27)
1 ♀ :	167	167	27

Distribution : India : Tripura (West Tripura district) : Assam, Bihar, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Hainan Islands, the Indochinese countries, Nepal and Vietnam.

101. ***Psittacula roseata juneae*** Biswas

1951. *Psittacula roseata juneae* Biswas, *Amer. Mus. Novit.*, No. 1500 : 5 [Arakan, Burma (Myanmar)].

1969. *Psittacula roseata juneae*, Ali and Ripley, vol. 3 : 182.

Common name : Arakan Blossomheaded Parakeet (English).

Material examined : Nil.

Diagnostic characters : In male, back and wings yellowish green, head plum-colour with a black and verdigris collar. Wing shoulder with maroon-red patch. Central tail feathers with broad white tips. In female, head grey in colour, collar yellow.

Distribution : India : Tripura. Elsewhere : Bangladesh, Burma (= Myanmar), Indochina, Thailand and Vietnam.

Remarks : Though not observed in any of the districts of Tripura, Ali and Ripley (1969, vol. 3, p. 182) reported this bird from Tripura.

Genus ***Loriculus*** Blyth, 1850

102. ***Loriculus vernalis*** (Sparrman)

1787. *Psittacus vernalis* Sparrman, *Mus. Carls.*, fasc. 2. no. xxix and pl. (No locality = Cachar, Assam).

1969. *Loriculus vernalis*, Ali and Ripley, vol. 3 : 188.

Common name : Indian Lorikeet (English) and Taksui (Tripuri).

Material examined : West Tripura district : 1 ♀, Paharpur, coll. S. Chatterjee, 4. xii. 1988.

Diagnostic characters : Size equal to a Sparrow. Back, wings and tail bright grass-green. Rump with rich crimson. In male, throat with blue patch while absent in female.

Measurements : 1 ♀ : Wing 92, tail 42, bill 15 (from cere).

Distribution : India : Tripura (West Tripura district) : The Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland and Sikkim. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries, Nepal and Thailand.

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 spiny ....***Eudynamys***

   Plumage of head and shoulders spiny 3

3. Claw of hind toe much lengthen and nearly straight .....***Centropus***

   Claw of hind toe not as above ...***Rhopodytes***

4. Head crested, tarsus feathered top only ....***clamator***

   Head not crested, tarsus feathered throughout in front 5

5. Larger, wing 150 mm. or above .....***Cuculus***

   Smaller, wing below 150 mm. ...***Cacomantis***

Genus ***Clamator*** Kaup, 1829

103. ***Clamator jacobinus serratus*** (Sparrman)

1786. *Cuculus serratus* Sparrman, *Mus. Carls.*, fasc., I, no. 3 and pl. (Cape of Good Hope = Cape Peninsula, Cape Province, S. Africa).

1969. *Clamator jacobinus serratus*, Ali and Ripley, vol. 3 : 194.

Common name : Pied Crested Cuckoo (English), Shah bulbul (Bengali) and Papiya (Hindi).

Material examined : Nil.

Diagnostic characters : Size equal to a Myna. Black head with crest. Wings and tail black. Wings with roundish white patch. Tail graduated with white tips. Inner parts white.

Distribution : India : Tripura (North Tripura district) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Sikkim and Uttar Pradesh. Elsewhere : Bangladesh, Pakistan, Nepal, and Africa (South of Sahara).

Remarks : Observed in the North Tripura district.

Genus ***Cuculus*** Linnaeus, 1758

104. ***Cuculus varius varius*** Vahl

1797. *Cuculus varius* Vahl, *Skriv. Naturhist. Selsk., Kjobenhavn* 4(1) : 60 (Tranquebar).

1969. *Cuculus varius varius*, Ali and Ripley, vol. 3 : 200.

Common name : Common Hawk-Cuckoo (English) and Papiya (Bengali and Hindi).

Material examined : West Tripura district : 1 ♀, Nandnagar, Agartala, coll. V. C. Agrawal, 13. xi. 1969.

Diagnostic characters : Size equal to a 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 186, tail 155, bill 28.

Disribution : India : Tripura (West Tripura district) : Throughout the Indian mainland. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka.

105. ***Cuculus micropterus micropterus*** Gould

1837. *Cuculus micropterus* Gould, *Proc. zool. Soc. Lond.*, : 137 (Himalayas).

1969. *Cuculus micropterus micropterus* Ali and Ripley, vol. 3 : 204.

Common name : Indian Cuckoo (English) and Bou-katha-kao (Bengali).

Material examined : South Tripura district : 1 ♂, Paratia, *c.* 12 km. S. of Udaipur, coll. N. Majumdar, 8. vii. 1991.

Diagnostic characters : Size equal to the preceding bird. In male, back dark slaty grey with a brownish tinge. Tail long with a broad black subterminal band. Chin and throat pale ashy. Breast and belly white, cross-barred with widely spaced broad black bands. In female, chin and throat pale grey. Breast browner, with a rufous tinge.

Measuremants : 1 ♂ : Wing 190, tail 142, bill 30.

Disribution : India : Tripura (South Tripura district) : Throughout the Indian Union. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, Indonesia and the Philippines. Breeds also in Burma (= Myanmar), Thailand, Malay Peninsula, S. China, Korea and U. S. S. R.

Genus ***Cacomantis*** S. Muller, 1843

106. ***Cacomantis merulinus querulus*** Heine

1863. *Cacomantis querulus* Heine, *J. Orn.* 11 : 352. New name for *Polyphasia tenuirostries* Jerdon, 1862, not *Cuculus tenuirostris* Gray, 1834, which = *Cacomantis passerinus* (Vahl). (Lower Bengal, Assam Sylhet, Burma and China).

1969. *Cacomantis merulinus querulus,* Ali and Ripley, vol. 3 : 220.

Common name : Burmese Planintive Cuckoo (English) and Chhota bharau (Bengali).

Material examined : North Tripura district : 1 ♂, Kumarghat, coll. V C. Agrawal, 28. xii. 1972.

Diagnostic characters : Size euql to a Myna. In male, back ashy green and brown. Tail barred blackish, white tipped. Head ashy grey. Breast, belly and vent rufous-buff. In female, dimorphic with a hepatic phase.

Measurements : 1 ♂ : Wing 115, tail 120, bill 13.

Distribution : India : Tripura (North Tripura district) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, Hainan, the Indocinese countries, Malay Peninsula, Nepal and Thailand.

Genus ***Eudynamys*** Vigors & Horsfield, 1826

107. ***Eudynamys scolopacea scolopacea*** (Linnaeus)

1758. *Cuculus scolopaceus* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 111 (Malabar, Kerala, India).

1969. *Eudynamys scolopacea scolopacea,* Ali and Ripley, vol. 3 : 227.

Common name : Indian Koel (English) and Kokil (Bengali).

Material examined : Nil.

Diagnostic characters : Size equal to a 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 with spotted ; breast, belly and vent whitish barred with blackish.

Distribution : India : Tripura : Throughout the Indian Union except eastern India beyond Assam and the Andaman & Nicobar Islands. Elsewhere : Bengladesh, Bhutan, Nepal, Pakistan and Sri Lanka.

Remarks : Observed this bird in all the districts of Tripura.

Genus ***Rhopodytes*** Cabanis Heine, 1863

108. ***Rhopodytes tristis tristis*** (Lesson)

1830. *Melias tristis* Lesson, *Traite d 'Orn., livr.* 2 : 132 (Sumatra, *errore* = Bengal).

1969. *Rhopodytes tristis tristis,* Ali and Ripley, vol. 3 : 231.

Common name : Large Greenbilled Malkoha (English).

Material examined : North Tripura district : 1 ♂, Chailingta, coll. V. C. Agrawal, 21. xii. 1972, 1 ♀, Ambassa, coll. V. C. Agrawal, 4. i. 1973. South Tripura district : 1 ♂, Garjee Rest House *c.* 16 km. South of Udaipur, coll. V. C. Agrawal, 24. xi. 1969; 1 ♀, Amanpur, coll. V. C. Agrawal, 23. i. 1971. West Tripura district : 1 ♀, Indranagar, coll. V. C. Agrawal, 11. xi. 1969; 1 ♂, Bishalgarh *c.* 20 km. South of Agartala, coll. V. C. Agrawal, 20. xi. 1969.

Diagnostic characters : Size equal to a 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 :	Wing	Tail	Bill
3 ♂ :	155-165	285-360	36-38
	(160)	(340)	(37)
3 ♀ :	161-171	380-405	36-38
	(164)	(395)	(37)

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Bihar, Madhya Pradesh (Eastern), Manipur, Meghalaya, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan and Nepal.

Genus ***Centropus*** Illiger, 1811

109. ***Centropus sinensis intermedius*** (Hume)

1873. *Centrococcyx intermedius* A. O. H. (= Hume), *Str. Feath.*, 1 : 454, in text (Dhoon, Dacca = Dhaka and Thayetmyo).

1969. *Centropus sinensis intermedius,* Ali and Ripley, vol. 3 : 242.

Common name : East Pakistan Crow-Pheasant (English) and Kuka (Bengali).

Material examined : North Tripura district : 1 ♂, Forest, *c.* 3 km. SE. of Rest House, Ampi, coll. V. C. Agrawal, 21. iv. 1975. South Tripura district : 1 ♀, Rajnagar, *c.* 14 km. W. of Belonia, coll. V. C. Agrawal, 21. iv. 1975.

Diagnostic characters : Size smaller than a Jungle Crow. Back and tail glossy black. Wings chestnut. Tail long, broad and graduated.

Measurements :	Wing	Tail	Bill
1 ♂ :	202	254	33
1 ♀ :	198	238	32

Distribution : India : Tripura (North Tripura and South Tripura districts) : Assam, Manipur, Meghalaya, Mizoram, Nagaland and West Bengal. Elsewhere : Burma (= Myanmar), China, the Indochinese countries, Hainan and Thailand.

110. ***Centropus toulou bengalensis*** (Gmelin)

1788. *Cuculus bengalensis* Gmelin, *Syst. Nat.*, 1(1) : 412 (Bengal).

1969. *Centropus toulou bengalensis,* Ali and Ripley, vol. 3 : 246.

Common name : Lesser Coucal (English).

Material examined : North Tripura district : 1 ♀, Forest, *c.* 4 km. S. of Rest House, Teliamura, coll. V. C. Agrawal, 21. iv. 1975; West Tripura district : 1 ♀, Indranagar, Agartala, coll. V. C. Agrawal, 21. iv. 1975.

Diagnostic characters : Back and wings with glistening blue black with chestnut. Tail feathers slaty with white tipped.

Measurements : 2 ♀ : Wing 142, 158; tail 180, (–); bill 25, 27.

Distribution : India : Tripura : North Tripura and West Tripura districts) : Assam, Bihar, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Indochinese countries, Hainan, Nepal and Thailand.

Order STRIGIFORMES

Family STRIGIDAE

Key to the subfamilies of family STRIGIDAE

1. Facial disc and ruff well marked, ear-orifice

smaller than eye, middle claw pectinate ..... ***Tytoninae***

2. Facial disc and ruff ill marked, ear-orifice larger than eye, middle claw simple ..... ***Striginae***

Key to the genera of the subfamily STRIGINAE

1. Ear-tuft present 2
   Ear-tuft absent 4
2. Wing exceeding 250 mm 3
   Wing under 250 mm ..... ***Otus***
3. Wing exceeding 350 mm ..... ***Bubo***
   Wing 280-330 mm ..... ***Asio***
4. Plumage uniform above ..... ***Ninox***
   Plumage barred or spotted above 5
5. Plumage barred above ..... ***Glaucidium***
   Plumage spotted above ..... ***Athene***

Genus ***Otus*** Pennant, 1769

111. ***Otus scops sunia*** (Hodgson)

1836. *Scops sunia* Hodgson, *Asiat. Res.*, 19 : 175 (Nepal).

1969. *Otus scops sunia*, Ali and Ripley, vol. 3 : 262.

Common name : North Indian Scops Owl (English).

Material examined : North Tripura district : 1 ♀, Near Forest Office, Kanchanpur, coll. V. C. Agrawal, 17. ii. 1971.

Measurements : 1 ♀ : Wing 144, tail 66, bill 16 (from feathers).

Diagnostic characters : Head, back and wings brown with pale streaks. Head with ear-tufts; brown wings with white markings. Underparts whitish brown with dark blotches.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Nepal and Pakistan.

112. ***Otus bakkamoena lettia*** (Hodgson)

1836. *Scops lettia* Hodgson, *Asiat. Res.*, 19 : 176 (Nepal).

1969. *Otus bakkamoena lettia*, Ali and Ripley, vol. 3 : 270.

Common name : Burmese Collared Scops Owl (English).

Material examined : South Tripura district : 2 ♂, Paratia, coll. N. Majumdar, 8. vii. 1991; 1 ♂, Manu, coll. N. Majumdar, 19. vii. 1991. West Tripura district : 1 ♂, Sepahijala, coll. S. Chatterjee, 19. xi. 1988; 1 ♂, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 26. xi. 1988.

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.

Measurements: 2 ♂ : Wing 160, 163; tail 79, 83; bill 22, 23.

Distribution : India : Tripura (South Tripura and West Tripura districts) : Arunachal Pradesh, Bihar, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Thailand.

Genus ***Bubo*** Dumeril, 1806

113. ***Bubo bubo bengalensis*** (Franklin)

1831. *Otus Bengalensis* Franklin, *Proc. Comm. Zool. Soc. Lond.* : 115 (The Ganges between Calcutta and Benares and in the Vindhyan Hill between the latter place and Gurra Mundela).

1969. *Bubo bubo bengalensis*, Ali and Ripley, vol. 3 : 273.

Common name : Indian Great Horned Owl (English), Hutompecha (Bengali) and Takhuk (Tripuri).

Material examined : Nil.

Diagnostic characters : Size equal to a Pariah Kite. Back dark brown streaked and mottled with tony-buff and black. Head with two prominent blackish horns or ear-tufts. Chin whitish, throat light rufous with dark spots, breast and belly yellowish rufous with longitudinal streaks.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout the Indian mainland. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Pakistan.

Remark : Seen in the North and South Tripura districts.

114. ***Bubo zeylonensis leschenault*** (Temminck)

1820. *Strix leschenault* Temminck, *pl. col., livr.* 4, pl. 20; Eastern provinces of India = Chandernagore, West Bengal, India.

1969. *Bubo zeylonensis leschenault*, Ali and Ripley, vol. 3 : 280.

Common name : Brown Fish Owl (English).

Material examined : West Tripura districts : 1 ♂, Charilam, Agartala, coll. V. C. Agrawal, 15. xi. 1969.

Diagnostic characters : Size equal to a Pariah Kite. Head, back and tail rufous brown heavily streaked with black. Head with two "horns" Underparts whitish with fine wavy brown corss-bars and bold blackish streaks. A large white patch on throat and foreneck. Eyes bright golden yellow.

Meausrements : 1 ♂ : Wing 402, tail 190, bill 54.

Distribution : India : Tripura (West Tripura district) : Throughout the Indian mainland. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Burma (= Myanmar) and far east.

Genus ***Glaucidum*** Boie, 1826

115. ***Glaucidium cuculoides rufescens*** Baker

1926. *Glaucidium cuculoides rufescens* Baker, *Bull. Br. Orn.* Cl. 47 : 59 (Noong-Zai-ban = lat. 24°48' N, long. 93°12' E. Manipur, India).

1969. *Glaucidium cuculoides rufescens*, Ali and Ripley, vol. 3 : 291.

Common name : Burmese Barred Owlet (English) and Takhuk Pecha (Tripuri).

Material exemined : North Tripura district : 1 ♂, Forest, *c.* 8 km. W. of Kanchanpur, coll. V. C. Agrawal, 18. ii. 1971; 1 ♀, Chailingta, coll. V. C. Agrawal, 21. xii. 1972. South Tripura district : 1 ♂, Forest, *c.* 2 km. E. of Rest House, Ampi, coll. V. C. Agrawal, 19. i. 1971; 1 ♂, Sephaijala, coll. S. Chatterjee, 25. xi. 1988; 3 ♂ and 1 ♀, Paratia, coll. N. Majumdar, 6 and 8. vii. 1991. West Tripura district : 1 ♂ and 1 unsexed, Cherilum, coll. V. C. Agrawal, 18. xi. 1969.

Diagnostic characters : Size, smaller than the preceding bird. Colouration much richer rufous-brown. Breast more streaked, less barred.

Measurements :	Wing	Tail	Bill
4 ♂ :	152-160 (157)	90-93 (92)	23-24 (23)
1 ♀ :	157	90	23

Distribution : India : Tripura (Norh Tripura, South Tripura and West Tripura districts) : Assam, Manipur, Meghalaya and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), Laos and Vietnam.

Genus ***Ninox*** Hodgson, 1837

116. ***Ninox scutulata burmanica*** Hume

1876. *Ninox burmanica* Hume, *Stray Feathers*, 4 : 285 (Pegu and Tenasserim, Burma).

1969. *Ninox scutulata burmanica*, Ali and Ripley, vol. 3 : 294.

Common name : Burmese Brown Hawk-Owl (English).

Material examined : West Tripura district : 1 unsexed, Sepahijala, coll. S. Chatterjee, 19. xi. 1988.

Diagnostic characters : Back dark greyish brown. Lower plumage whitish streaked with brown. Tail barred with black and white tipped.

Measurements : 1 unsexed : Wing 213, tail 125, bill 24.

Distribution : India : Tripura (West Tripura district) : Assam, Manipur, Meghalaya, Mizoram and Nagaland. Elsewhere : Bangladesh, Burma (= Myanmar), China, the Indochinese countries, Malay Peninsula and Thailand.

Genus ***Athene*** Boie, 1822

117. ***Athene brama indica*** (Franklin)

1831. *Noctua indica* Franklin, *Proc. zool. Soc. Lond.*, 115 (Banks of the Ganges and in the mountain chain of upper Hindoostan, i. e., Uttar Pradesh, India).

1969. *Athene brame indica*, Ali and Ripley, vol. 3 : 229.

Common name : Northern Spotted Owlet (English).

Material examined : North Tripura district : 1 ♀, Near Forest office, Kanchanpur, coll. V. C. Agrawal, 17. ii. 1971; 1 ♀, Chailingta, coll. V. C. Agrawal, 23. xii. 1972, 1 ♀, Manu, coll. N. Majumdar, 19. vii. 1991. West Tripura district : 1 ♀, Near Dakbunglow, Agartala, coll. V. C. Agrawal, 12. xi. 1969.

Diagnostic characters : Size equal to a Myna. Head, back, wings and tail greyish brown white spotted. Underparts whitish with brown barred.

Measurements : 3 ♀ : Wing 156, 158(2); tail 82, 84(2); bill 21, 22(2).

Distribution : India : Tripura (North Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Nepal and Pakistan.

Genus ***Asio*** Brisson, 1760

118. ***Asio flammeus flammeus*** (Pontoppidan)

1763. *Strix Flammea* Pontoppidan, *Dansk. Atlas*, 1 : 617, pl. 25 (Sweden).

1969. *Asio flammeus flammeus*, Ali and Ripley, vol. 3 : 314.

Common name : Shorteard Owl (English).

Material examined : Nil.

Diagnostic characters : Size larger than a Pigeon. Head darker greyish; facial disc white with bristly black feathers intermined surrounded by a dark brown buff. Two blackish brown short ear-tufts. Wings and tail barred rufous and black. Underparts pale buff longitudinally streaked with brown.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian Union. Elsewhere : Aden, Africa (North), Bangladesh, Ethiopia, the Maldive Islands, the Mediterranean region, Nepal, Pakistan and Bangladesh.

Remarks : Observed in the North Tripura district.

Order CAPRIMULGIFORMES

Family CAPRIMULGIDAE

Key to the genera of the family CAPRIMULGIDAE

1. Ear-tufts well developed, rictal bristles absent ..... ***Eurostopodus***
2. Ear-tufts absent, rictal bristles present ..... ***Caprimulgus***

Genus ***Eurostopodus*** Gould, 1838

119. ***Eurostopodus macrotis cerviniceps*** (Gould)

1838. *Lyncornis cerviniceps* Gould, *Icones Avium* (2), pl. [14] and text (said to be a native of China or the adjacent islands).

1970. *Eurostopodus macrotis cerviniceps*, Ali and Ripley, vol. 4 : 5.

Common name : Burmese Great Eared Nightjar (English).

Material examined : Nil.

Diagnostic characters : Back mottled and vermiculated with grey, black, buff and chestnut. Behind the eyes two prominent erectile ear-tufts on both sides of head. Legs and feet fleshy brown. Bill pinkish horny.

Distribution : India : Tripura : Assam, Manipur, Mizoram, Nagaland and Sikkim. Elsewhere : Bangladesh, Burma (= Myanmar).

Remarks : Not observed in any of the districs by us. But Ripley (1982, p. 190) reported this bird from Tripura.

Genus ***Caprimulgus*** Linnaeus 1758

120. ***Caprimulgus macrurus albonotatus*** Tickell

1833. *Caprimulgus Albonotatus* Tickell, *J. Asiat. Soc. Beng.*, 2 : 580 (Dampara, Dholbhum and Singbhum district, Bihar, India).

1970. *Caprimulgus macrurus albonotatus*, Ali and Ripley, vol. 4 : 16.

Common name : Indian Longtailed Nightjar (English).

Material examined : North Tripura district : 1 ♂, Khowaipar, coll. V. C. Agrawal, 13. xii. 1972; 1 ♀, Near Rest House, Ampi, coll. V. C. Agrawal, 17. i. 1971; 1 ♀, Chailingta, coll. V. C. Agrawal, 23. xii. 1972; 1 ♂, Ambassa, coll. V. C. Agrawal, 16. i. 1973.

Diagnostic characters : Tail long and graduated. A white spot on first four primaries in male. In female, the outer tail feathers pale yellowish buff. Call-chaunk-chaunk-chaunk.

Measurements :	Wing	Tail	Bill
2 ♂ :	205, 215	154, 158	20, 21
2 ♀ :	200, 215	145, 165	19, 21

Distribution : India : Tripura (North Tripura district) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Haryana, Himachal Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Sikkim Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan and Nepal.

121. ***Caprimulgus affinis monticola*** Franklin

1831. *Caprimulgus monticolus* Franklin, *Proc. zool. Soc. Lond.* : 116 (Ganges between Calcutta and Benares, India).

1970. *Caprimulgus affinis monticola*, Ali and Ripley, vol. 4 : 23.

Common name : Franklin's Nightjar (English) and Chhippak (Hindi).

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.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout India except the Andaman and Nicobar Islands, Jammu & Kashmir and Arunachal Pradesh. Elsewhere : Bangladesh, Pakistan, Nepal, Bhutan, Burma (Myanmar) and Thailand.

Remarks : Observed in the North Tripura and South Tripura districts.

Order APODIFORMES

Family APODIDAE

Key to the subfamilies of the family APODIDAE

Wings extending beyond tail ..... ***Apodinae***

Wings not extending beyond tail ..... ***Hemiprocninae***

Subfamily APODINAE

Key to the genera of subfamily APODINAE

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 ***Apus*** Scopoli, 1777

122. ***Apus affinis subfurcatus*** (Blyth)

1849. *Cypselus subfurcatus* Blyth, *J. Asiat. Soc. Beng.*, 18(2) : 807 (Penang).

1970. *Apus affinis subfurcatus*, Ali and Ripley, vol. 4 : 55.

Common name : Malay House Swift (English) and Takbak (Tripuri).

Material examined : North Tripura district : 5 ♂ and 4 ♀, Ambassa, coll. N. Majumdar, 27 and 30. vii. 1991.

Diagnostic characters : Back, wings, head and tail smoky black ; rump white. Chin and throat white. Breast and abdomen smoky black. Wing long, narrow sickle-shaped. Tail slightly forked.

Measurements :	Wing	Tail	Bill
5 ♂ :	129-135 (133)	45-49 (47)	11
4 ♀ :	132-136 (134)	45-48 (46)	11

Distribution : India : Tripura (North Tripura district) : Assam, Manipur, Meghalaya and Nagaland. Elsewhere : Bangladesh, Burma (= Myanmar), Malay Peninsula, Thailand, the Indochinese countries, the Indonesian Islands and China.

Genus ***Cypsiurus*** Lesson, 1843

123. ***Cypsiurus parvus infumatus*** (Sclater)

1865. *Cypselus infumatus* Sclater, *Proc. zool. Soc. Lond.* : 602 (Banjermassing, Borneo).

1970. *Cypsiurus parvus infumatus*, Ali and Ripley, vol. 4 : 57

Common name : Eastern Palm Swift (English).

Material examined : Nil.

Diagnostic characters : Back, wings and tail darker sooty grey, throat with chestnut. Breast light blue, abdomen and vent white. Tail deeply forked.

Distribution : India : Tripura (North Tripura and South Tripura districts) (Ali and Ripley, 1970, vol. 4, p. 57) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and Nagaland. Elsewhere : Bangladesh, Burma (= Myanmar), Hainan Island, Indonesia, Malay Peninsula, Tambelan Island and Thailand.

Remarks : Observed in the North Tripura and South Tripura districts.

Genus ***Hemiprocne*** Nitzsch. 1833

124. ***Hemiprocne longipennis coronata*** (Tickell)

1833. *Hirundo Coronata* Tickell, *J. Asiat. Soc. Beng.*, 2 : 580 (Jungles of Borabhum and Dholbhum).

1970. *Hemiprocne longipennis coronata*, Ali and Ripley, vol. 4 : 58.

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.

Distribution : India : Tripura (South Tripura distirct) : Throughout the Indian Union. Elsewhere : Bangladesh, Burma (= Myanmar), the Indochinese countries, Nepal, Sri Lanka and Thailand.

Remarks : Seen in the South Tripura district.

Order TROGONIFORMES

Family TROGONIDAE

Genus ***Harpactes*** Swainson, 1833

125. ***Harpactes erythrocephalus erythrocephalus*** (Gould)

1834. *Trogon erythrocephalus* Gould, *Proc. zool. Soc. Lond.* Pt. 2 : 25 (Rangoon, Burma).

1970. *Harpactes erythrocephalus erythrocephalus*, Ali and Ripley, vol. 4 : 66.

Common name : East Pakistan Redheaded Trogon (English).

Material examined : North Tripura district : 1 ♂, Forest, *c.* 8 km. W. of Kanchanpur, coll. V. C. Agrawal, 18. ii. 1971; 1 ♂, Longtharai Range, *c.* 30 km. E. of Agartala, Coll. V. C. Agrawal, 1. i. 1973.

Diagnostic characters : Size bigger than a 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 : 2 ♂ : Wing 144(2), tail 145, 165; bill 21, 22.

Distribution : India : Tripura (North Tripura district) : Elsewhere : Bangladesh, Burma (= Myanmar) and Thailand.

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 shorter than bill ..... ***Alcedo***

   Tail longer than bill 3

3. Bill compressed, culmen flattended and grooved on either side ..... ***Pelargopsis***

   Bill not compressed, culmen rounded and not grooved ..... ***Halcyon***

Genus ***Ceryle*** Boie, 1828

126. ***Ceryle rudis leucomelanura*** Reichenback

1851. *Ceryle leucomelanura* Reichenback, *Handb. Spec. Orn.* : 21, pl. ccix b, of 3488 (Ceylon = Sri Lanka).

1970. *Ceryle rudis leucomelanura*, Ali and Ripley, vol. 4 : 71.

Common name : Indian Pied Kingfisher (English), Phatka machhranga (Bengali) and Masuranga (Tripuri).

Material examined : Nil.

Diagnotic characters : Plumage black and white. Bill long and compressed. Wings rather pointed. Tail longer than culmen. It can be identified by its spectacular habit of "Standing on its tail" in mid-air, hovering over water.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian mainlands except Kerala. Elsewhere : Afghanistan, Bangladesh, Bhutan, Burma (= Myanmar), Nepal, Pakistan, Sri Lanka, Thailand and Vietnam.

Remarks : Seen in the South Tripura district.

Genus ***Alcedo*** Linnaeus, 1758

127. ***Alcedo hercules*** Laubmann

1845. *Alcedo grandis* Blyth, *J. Asiat. Soc. Beng.*, 14(1) : 190 (Darjeeling = Darjiling, Darjiling district, West Bengal, India).

1970. *Alcedo hercules*, Ali and Ripley, vol. 4 : 74.

Common name : Blyth's or Great Blue Kingfisher (English).

Material examined : Nil.

Diagnostic characters : Small, blue and green Kingfisher with brilliant blue black and rump with white throat and deep rust-coloured chest and abdomen.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh and Bhutan.

Remarks : Observed in the North Tripura district.

128. ***Alcedo atthis bengalensis*** Gmelin

1788. *Alcedo bengalensis* Gmelin, *Syst. Nat.*, 13 ed. 1 : 450 (Bengala = Bengal, India).

1970. *Alcedo atthis bengalensis*, Ali and Ripley, vol. 4 : 76.

Common name : Indian Small Blue Kingfisher (English) and Masuranga (Tripuri).

Material examined : North Tripura district : 1 ♂, Ambassa, coll. N. Majumdar, 26. vii. 1991; 1 ♂, Jaganathpur, *c.* 3 km. South of Ambassa, coll. V. C. Agrawal, 7. ii. 1971; 2 ♀, Pachartal; coll. N. Majumdar, 13. vii. 1991. South Tripura district : 1 ♀, Rajnagar *c.* 14 km. West of Belonia, coll. V. C. Agrawal, 7. xii. 1969.

Diagnostic characters : A small blue Kingfisher with a white patch on both sides of

neck. Throat white ; chest and belly light rusty coloured.

Measurements :	Wing	Tail	Bill
2 ♂ :	69, 73	35, 37	45, 47
2 ♀ :	67, 70	30, 32	43 (2)

Distribution : India : Tripura (North and South Tripura districts) : The Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Napal and Pakistan.

129. ***Alcedo meninting coltarti*** Baker

1919. *Alcedo asiatica coltarti* Baker, *Bull. Brit. Orn. Cl.*, 39 : 39 (Saddya, Assam).

1970. *Alcedo meninting coltarti*, Ali and Ripley, vol. 4 : 78.

Common name : Assam Blue-eared Kingfisher (English).

Material examined : Nil.

Diagnotic 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.

Distribution : India : Tripura : Assam, Goa, Karnataka, Kerala, Manipur, Meghalaya, Orissa, Nagaland, Tamil Nadu and West Bengal. Elsewhere : Bangladesh, Nepal, Bhutan, Burma (= Myanmar), Thailand and the Indochinese countries.

Remarks : Though not observed in any of the districts of Tripura, Ripley (1982, p. 206) reported this bird from Tripura.

Genus ***Pelargopsis*** Gloger, 1842

130. ***Pelargopsis capensis capensis*** (Linnaeus)

1766. *Alcedo capensis* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 180 (Cape of Good Hope = Chandernagor, Hugli district, West Bengal, India, *vide* Stresemann, 1952, *Ibis* 94 : 517-21).

1970. *Pelargopsis capensis capensis*, Ali and Ripley, vol. 4 : 84.

Common name : Brownheaded Storkbilled Kingfisher (English) and Gurial (Bengali).

Material examined : Nil.

Diagnostic characters : A great-sized like a pigeon with enormous blood-red dagger-shaped bill. Head dark greyish brown and the back with brilliant pale greenish blue with a yellowish collar on hindneck.

Distribution : India : Tripura (South Tripura district) : Assam, Gujarat, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Sikkims, Uttar Pradesh and West Bengal. Elsewhere Bangladesh, Bhutan, Napal and Sri Lanka.

Remarks : Seen in the South Tripura district.

Genus ***Halcyon*** Swainson, 1821

131. ***Halcyon smyrnensis fusca*** (Boddaert)

1783. *Alcedo fusca* Boddaert, *Table pl. enlum.*, 54 (Malabar coast *ex* Daubenton, *pl. enlum.*, no. 894.

1970. *Halcyon smyrnensis fusca*., Ali and Ripley, vol. 4 : 90.

Common name : Indian Whitebreasted Kingfisher (English).

Material examined : North Tripura district : 1 ♂, Chailingta, Manu, coll. V. C. Agrawal, 23. xii. 1972. South Tripura district : 1 ♂ and 1 ♀, Garjee, *c* 10 km. South of Udaipur, coll. V. C. Agrawal, 25 and 26. xi. 1969; 1 ♂ Abhoya *c*. 8 km. NW of Belonia, coll. V. C. Agrawal, 4 xii. 1969; 1 ♀, Near Forest *c* 2 km. East of Rest House, Ampi, coll. V. C. Agrawal, 19. i. 1971.

Diagnostic characters : Size bigger than a Myna. Head, neck and belly chocolate brown ; back and wings brilliant turquoise-blue. Chin, throat and centre of breast glistening white. Wing with a white wing patch, Bill long, heavy, pointed and coral-red.

Measurements :	Wing	Tail	Bill
3 ♂ :	115-123 (120)	76-88 (83)	61-64 (62)
2 ♀ :	116, 119	78, 84	63, 65

Distribution : India : Tripura : (North Tripura and South Tripura districts) : Bihar, Goa, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Pondicherry, Sikkim, Tamil Nadu, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Nepal and Sri Lanka.

132. ***Halcyon smyrnensis perpulchra*** Madarasz

1904. *Halcyon perpulchra* Madarasz, *Anm. Mus. nat. Hungar.*, 2 : 85 (Singapore).

1970. *Halcyon smyrnensis perpulchra*, Ali and Ripley, vol. 4 : 92

Common name : Eastern Whitebreasted Kingfisher (English) and Sadabuk machhranga (Bengali).

Material examined : Nil.

Diagnostic characters : Size larger than a Myna. Back torquoise blue; head, neck and belly pale chocolate-brown. Wing with white wing-patch. Chin, throat and centre of breast glistening white. Bill long, heavy and pointed coral-red.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Orissa and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, Hainan, the Indochinese countries, Malay Peninsula, Taiwan and Thailand.

Remarks : Seen in the North Tripura and South Tripura districts.

133. ***Halcyon pileata*** (Boddaert)

1783. *Alcedo pileata* Boddaert, *Table Pl. enlum.* : 41 (China, *ex* Daubenton, *Pl. enlum.*, no. 673).

1970. *Halcyon pileata*, Ali and Ripley, vol. 4 : 94.

Common name : Blackcapped Kingfisher (English).

Material examined : Nil.

Diagnostic characters : Back deep cobalt blue; crown velvety black. Head seperated from back by a prominent white collar. Bright coral-red bill. A large white patch in wing. Underparts pale rusty buff.

Distribution : India : Tripura (West Tripura district) : The Andaman & Nicobar Islands, Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Maharashtra, Manipur, Nagaland, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), China, Hainan, the Indochinese countries, the Indonesian Islands, Korea, Malay Peninsula, the Philippines, Sri Lanka and Thailand.

Remarks : Observed in the West Tripura district.

Family MEROPIDAE

Key to the genera of the family MEROPIDE

Breast and throat feathers not elongated .... ***Merops***

Breast and throat feathers elongated, loose and coloured differently from surrounding plumage ..... ***Nyctyornis***

Genus ***Merops*** Linnaeus, 1758

134. ***Merops leschenaulti leschenaulti*** Vieillot

1817. *Merops Leschenaulti* Vieillot, *Nouv. Dict. d' Hist. Nat.*, 14 : 17 (Java, errore = Ceylon = Sri Lanka).

1970. *Merops leschenaulti leschenaulti*, Ali and Ripley, vol. 4 ; 99.

Common name : Chestnutheaded Bee-eater (English).

Material examined : North Tripura district : 1 ♂, Ambassa, coll. N. Majumdar, 26. vii. 1991; 1 ♀, Pecharthal, coll. N. Majumdar, 15. vii. 1991.

Diagnostic characters : Size equal to a Bulbul. Crown, hindneck and upperback bright cinnamon-chestnut. Chin and throat yellow bordered by a rufous and black gorget. Lowerback, wings, breast, belly and tail grass-green. Bill black, slender, curved and pointed.

Measurements :	Wing	Tail	Bill
1 ♂ :	100	70	38
1 ♀ :	98	76	35

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Bihar, Goa, Karnataka, Kerala, Manipur, Meghalaya, Nagaland, Orissa, Tamil Nadu, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bengladesh, Bhutan, Burma, China, the Indochinese countries, Malay Peninsula, Nepal, Sri Lanka and Thailand.

Remakrs : Observed in the North Tripura District.

135. ***Merops orientalis birmanus*** Neumann

1910. *Merops viridis birmanus* Neumann, *Orn. Monatsb.*, 18 : 80 (Myringan [= Myingyan], Irawaddy River, Burma).

1970. *Merops orientalis birmanus*, Ali and Ripley, vol. 4 : 110.

Common name : Burmese Small Green Bee-eater (English).

Material examined : North Tripura district : 1 ♀, Ambassa, coll. V. C. Agrawal, 2. i. 1973; 1 ♀, coll. N. Majumdar, 20. vii. 1991. South Tripura district : 1 ♀, Hathalia, *c.* 12 km. NW. of Belonia, coll. V. C. Agrawal, 5 xii. 1969. West Tripura district : 1 ♀, charilum, coll. V. C. Agrawal, 18. xi. 1969; 1 ♂, Sepahijala, coll. S. Chatterjee, 19. xi. 1988.

Diagnostic characters : A slender grass-green bird. Upper parts of head and neck ferruginous. Bill slender, long and slightly curved, black. Central pair of tail feathers projecting as blunt pins beyond tail.

Measurements :	Wing	Tail (central)	Tail (outer)	Bill
1 ♂ :	94	72	120	35
3 ♀ :	92-94 (93)	70-73 (72)	105-125 (116)	32-33 (32)

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Assam. Elsewhere : Burma (= Myanmar), China, Indochinese countries, Thailand and Vietnam.

Genus ***Nyctyornis*** Jardine and Selby, 1830

136. ***Nyctyornis athertoni athertoni*** (Jardine & Selby)

1830. *Merops athertoni* Jardine & Selby, *Ill. Orn.* 2, pl. 58 and text (India = near Bangalore, Karnataka).

1970. *Nyctyornis athertoni athertoni*, Ali and Ripley, vol. 4 : 112.

Common name : Bluebearded Bee-eater (English).

Material examined : West Tripura district : 1 unsexed, Sephaijala, coll. S. Chatterjee, 21. xi. 1988.

Diagnostic characters : Size euqal to a Pigeon. Back wings and tail grass-green; pale greenish blue forehead, upper breast light blue. Rest of lowerparts rusty buff, broadly streaked with green. Bill black, long, slender and slightly curved.

Measurements : 1 unsexed : Wing 138, tail 135, bill 35.

Distribution : India : Tripura (West Tripura district) : Throughout the Indian mainland except Arunachal Pradesh, Gujarat, Haryana, Jammu & Kashmir and Rajasthan. Elsewhere : Bangladesh, Bhutan, the Indochinese countries, Nepal and Thailand.

Family CORACIIDAE

Genus ***Coracias*** Linnaeus, 1758

137. ***Coracias benghalensis affinis*** Horsfield

1839-40. *Coracias affinis* Horsfield, *Proc. Zool. Soc. Lond.*, pt. 7 : 164.

1970. *Coracias benghalensis affinis*, Ali and Ripley, vol. 4 : 119.

Common name : Burmese Roller (English).

Material exemined : North Tripura district : 1 ♂ and 1 ♀, Forest, *c.* 3 km. of Rest House, Ampi, coll. V. C. Agrawal, 18 and 21. i. 1971; 1 ♀, Chailingta, coll. V. C. Agrawal, 23. xii. 1972.

South Tripura district : 1 ♀, Abhoya, *c.* 8 km. NW. of Belonia, coll. V. C. Agrawal, 4. xii. 1969. West Tripura district : 1 ♂, Bishalgarh, *c.* 20 km. S. of Agartala, coll. V. C. Agrawal, 20. xi. 1969.

Diagnostic characters : Back brownish rufous. Crown light blue. Throat and breast rufous brown streaked with white. Abdomen and vent pale blue. Under wing-coverts deep blue. Bill almost black.

Measurements :	Wing	Tail	Bill
2 ♂ :	187, 190	120, 125	45, 46
2 ♀ :	180, 196	121, 130	42, 45

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Assam, Manipur, Meghalaya, Nagaland and Sikkim. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Indochinese countries, Nepal and Thailand.

Family UPUPIDAE

Genus ***Upupa*** Linnaeus, 1758

138. ***Upupa epops longirostris*** Jerdon

1862. *Upupa longirostris* Jerdon, Bds. India, 1 : 393 (Burma).

1970. *Upupa epops longirostris*, Ali and Ripley, vol. 4 : 128.

Common name : Burmese Hoopoe (English).

Material examined : South Tripura district : 1 ♂ and 2 ♀, Hathalia *c.* 12 km. NW. of Belonia, coll. V. C. Agrawal, 5. xii. 1969.

Diagnostic characters : Size equal to a Myna. Head, upper back, throat and breast fawn colour. Lower back, wings, and tail with black and white zebra markings. Crown with prominent black tipped crest. Bill long, slender and curved.

Measurements :	Wing	Tail	Bill
1 ♂ :	143	102	66
2 ♀ :	138 (2)	93, 97	58, 60

Distribution : India : Tripura (South Tripura district) : Assam, Manipur, Meghalaya and Orissa. Elsewhere : Bangladesh, Burma, Thailand, Indochinese countries, Malay Peninsula, Sumatra and Thailand.

Family BUCEROTIDAE

Key to the genera of the family

BUCEROTIDAE

Casque large in adults, as high as, or higher than the upper mandible.....***Anthracoceros***

Casque moderate, small or absent ***Rhyticeros***

Genus ***Rhyticeros*** Reichenbach, 1849

139. ***Rhyticeros undulatus ticehursti*** Deignan

1941. *Rhyticeros undulatus ticehursti* Deignan, *Auk*, 58 : 397 (Huai Oi, Nan Province, Thailand).

Common name : Assam Wreathed Hornbill (English).

Material examined : Nil.

Diagnostic characters : In male, back, wings and breast black. Tail entirely white. Forehead, crown and nape deep chestnut passing into black on hindneck. Sides of head and neck buffy white. Bill pale yellow. Throat patch bright yellow. Base of both mandibles with transverse ridges. In female, except tail, entire head, neck and body black.

Distribution : India : Tripura : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Indochinese countries, Malay Peninsula, Mergui Archipelago and Thailand.

Remarks : Though not observed in any of the districts of Tripura, Ripley (1982), p. 219 reported this bird from Tripura.

Genus ***Anthracoceros*** Reichenbach, 1849

140. ***Anthracoceros malabaricus malabaricus*** (Gmelin)

1788. *Buceros malabaricus* Gmelin, *Syst. Nat.*, 1(1) : 359 (India = Chandernagor, *apud* Baker).

1970. *Anthracoceros malabaricus malabaricus*, Ali and Ripley, vol. 4 : 140.

Common nane : Indian Pied Hornbill (English) and Takchin (Tripuri).

Material examined : North Tripura district : 2 ♀, Khowaipar, coll. V. C. Agrawal, 14 and 15. xii. 1972; 1 ♀, Chailingta, coll. V. C. Agrawal, 20. xii. 1972.

Diagnostic characters : Back, head, neck and upper breast black, underparts white and ponderous pale yellow and black bill surmounted by a ridge-like casque. Outer tail feathers black, only white at the ends.

Measurements : 3 ♀ : Wing 280-295 (287); tail 260-272 (266); bill 138-145 (142).

Distribution : India : Tripura (North Tripura district) : Andhra Pradesh, Bihar, Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Pondicherry, Tamil Nadu and West Bengal. Elsewhere : Sri Lanka.

Order PICIFORMES

Family CAPITONIDAE

Genus ***Megalaima*** G. R. Gray, 1842

141. ***Megalaima lineata hodgsoni*** Bonaparte

1850. *Megalaima hodgsoni* Bp. = Bonaparre, *Consp. AV.*, 1 : 144 (Nepal, restricted to Simra, Central Nepal, by Ripley, 1950, *Proc. Biol. Soc.* Washington, 63 : 102).

1970. *Megalaima lineata hodgsoni*, Ali and Ripley, vol. 4 : 154.

Common name : Eastern Lineated Barbet (English).

Material examined : North Tripura district : 1 ♂, Near Forest *c.* 3 km. West of Forest Rest House, Kanchanpur, coll. V. C. Agrawal, 15. ii. 1971, 2 ♂, Chailingta, coll. V. C. Agrawal, 18 and 21. xii. 1972. South Tripura district : 1 ♀, Garjee Rest House *c.* 10 km. South of Udaipur, coll. V. C. Agrawal, 24. xi. 1969; 1 ♂ and 1 ♀, Paratia. *c.* 12 km. S of Udaipur, coll. N. Majumdar, 9. vii. 1991. West Tripura district : 1 ♂ and 1 ♀, Charilam *c.* 25 km. South of Agartala, coll. V. C. Agrawal, 15 and 22. xi. 1969.

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.

Measurements :	Wing 8	Tail	Bill
4 ♂ :	125-132 (130)	83-86 (85)	33-34 (33.5)
2 ♀ :	130, 136	82, 86	35, 38

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Assam, Bihar, Manipur, Meghalaya, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries, Malaya Peninsula, Thailand and Nepal.

142. ***Megalaima asiatica asiatica*** (Latham)

1790. *Trogon asiaticus* Latham, 1790, *Index Orn.* 1 : 201 (India = Calcutta, Calcutta district, West Bengal, India, vide Baker).

1970. *Megalaima asiatica asiatica*, Ali and Ripley, vol. 4 : 158.

Common name : Bluethroated Barbet (English) and Bada basantha bauri (Bengali).

Material examined : North Tripura district : 1 ♀, Khowaipar, coll. V. C. Agrawal, 9. v. 1975; 1 ♀, Forest, *c.* 8 km. W. of Kanchanpur, coll. V. C. Agrawal, 9. v. 1975.

Diagnostic characters : Size equal to the preceding bird. Entire plumage excepting 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 the 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 : 2 ♀ : Wing 101, 102; tail 60, 61; bill 27(2).

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere: Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Pakistan.

143. *Megalaima australis cyanotis* (Blyth)

1847. *Bucco cyanotis* Blyth, *J. Asiat. Soc. Beng.*, 16(1) : 465 (Arakan, Burma).

1970. *Megalaima australis cyanotis*, Ali and Ripley, vol. 4 : 160.

Common name : Indian Blue-eared Barbet (English).

Material examined : South Tripura district : 1 ♂, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 28. xi. 1988.

Diagnostic characters : A bright grass-green bird. Rictal bristles projecting beyond the tip of bill. Lores, forehead and forecrown black, hindcrown cobalt blue. Chin and throat pale verditer-blue.

Measurements : 1 ♂ : Wing 85, tail 48, bill 19.

Distribution : India : Tripura (South Tripura district) : Assam, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries, Nepal and Thailand.

144. *Megalaima haemacephala indica* (Latham)

1788. *Bucco indicus* Latham, *Index Orn.* 1(1) : 205 (India).

1970. *Megalaima haemacephala indica*, Ali and Ripley, vol. 4 : 163.

Common name : Copper Smith (English), Chhota basantha bauri (Bengali) and Chhota basanth (Hindi).

Material examined : Nil.

Diagnostic characters : Size slightly larger than a sparrow. Back grass-green with throat yellow; breast and forehead crimson. Abdomen and vent green streaked yellowish. Tail short and trancated.

Distribution : India : Tripura : Throughout the Indian mainland except Kerala. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh, Yunnan, Malaya, Thailand and the Indochinese countries.

Remarks : Observed in all the districts of Tripura.

Family PICIDAE

Key to the subfamilies of family PICIDAE

Shafts of tail feathers stout and rigid ..... ***Picinae***

shafts of tail feathers soft and flexible ..... ***Jynginae***

Subfamily JYNGINAE

145. *Jynx torquilla himalayana* Vaurie

1959. *Jynx torquilla himalayana* Vaurie, *Amer. Mus. Novit.*, No. 1963 : 9 (Inshan, Wardwan Valley, Kashmir).

1970. *Jynx torquilla himalayana*, Ali and Ripley, vol. 4 : 170.

Common name : Kashmir Wryneck (English).

Material examined : North Tripura district : 1 ♀, Chailingta, coll. V. C. Arawal, 20. xii. 1972. West Tripura district : 1 unsexed, Near Dakbunglow, Agartala, coll. V. C. Agrawal, 13. xi. 1969.

Diagnostic characters : Size smaller than a Bulbul. Back and wings silvery grey-brown streaked and vermiculated with black and fulvous, underparts whitish with blackish arrow-head markings like cross-barred pattern. Tail with 3 or 4 conspicuous dark bands.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Orissa, it breeds in the North-west Himalayas from the Kurram Valley to Chitral; Gilgit, Ladakh, Baltistan, Kashmir and Himachal Pradesh.

Subfamily PICINAE

Key to the genera of the subfamily PICINAE

1. Nostrils concealed by feathers 2
   Nostrils exposed 3
2. Mantle wholly or partly green .....***Picus***
   Mantle black and white .....***Picoides***
3. Mantle rufous or crimson banded .... ***Micropternus***
   Mantle golden olive, not banded ....***Chrysocolaptes***

Genus ***Micropternus*** Blyth, 1845

146. ***Micropternus brachyurus phaioceps*** Blyth

1845. *Micropternus phaioceps* Blyth, *J. Asiat. Soc.* Beng., 14(1) : 195 (Arrakan, Burma) (Near Calcutta, Calcutta district, West Bengal, India, *Vide* Ticehurst, *J. Bombay, nat. Hist. Soc.*, 35 : 32).

1970. *Micropternus brachyurus phaioceps,* Ali and Ripley, vol. 4 : 178.

Common name : Eastern Rufous Woodpecker (English) and Takthunta (Tripuri).

Material examined : North Tripura district : 1 ♂ and 1 ♀, Forest, *c.* 2 km. N. of Rest House, Ampi, coll. V. C. Agrawal, 20. i. 1971. South Tripura district : 1 ♀, Lakshimpur, *c.* 5 km. NW. of Belonia, coll. V. C. Agrawal, 6. xii. 1969. 1 ♂ and 1 ♀, Paratia *c* 12 km. S. of Udaipur. coll. N. Majumdar, 10. vii. 1991.

Diagnositc characters : Size slightly larger than a 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 cirmson patch on feathers under the eye.

Measurements :	Wing	Tail	Bill
1 ♂ :	124	63	29
2 ♀ :	120, 121	61, 62	29, 30

Distribution : India : Tripura (North Tripura and South Tripura districts) : Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Meghalaya, Manipur, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Thailand.

Genus ***Picus*** Linnaeus, 1758

147. ***Picus canus hessei*** (Gyldenstolpe)

1916. *Gecinus canus hessei* Gyldenstolpe, *Orn. Monatsbr.*, 24 : 28 (N. Siam = Thailand).

1978. *Picus canus hessei,* Majumdar, *J. Bombay nat. Hist. Soc.*, vol. 75(3) : 924.

Common name : Assam Blacknaped Green Woodpecker (English) and Takthunta (Tripuri).

Material examined : South Tripura district : 1 ♂ and 1 ♀, Rajnagar, *c.* 14 km. S. of Belonia, coll. V. C. Agrawal, 7. xii. 1969. West Tripura district : 1 ♂, Sepahijala, coll. S. Chatterjee, 21. xi. 1988.

Diagnostic characters : Back dark green, rump with bright yellow. Wing dark brown with white bars. Forehead and forecrown crimson. Hindcrown, occipital crest and nape black, Chin and throat greyish ashy with black malar stripe from lower mandible. Tail black imperfectly barred paler.

Measurements :	Wing	Tail	Bill
2 ♂ :	145, 151	97, 105	41, 44
1 ♀ :	144	107	41

Distribution : India : Tripura (South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries, Nepal and Thailand.

148. ***Picus flavinucha flavinucha*** Gould

1834. *Picus flavinucha* Gould, *Proc. zool. Soc. Lond.*, (1) : 120 (Himalayas, Darjeeling, West Bengal, India).

1970. *Picus flavinucha flavinucha,* Ali and Ripley, vol. 4 : 190.

Common name : Eastern Large Yellownaped Woodpecker (English) and Takthunta (Tripuri).

Material examined : North Tripura district : 1 ♂, Khowaipar, coll. V. C. Agrawal, 15. xii. 1972. South Tripura district : 1 ♀, Garjee, *c.* 13 km. S. of Udaipur, coll. V. C. Agrawal, 27. xi. 1969; 1 ♀, Paratia, *c.* 6 km. S. of Udaipur, coll. V. C. Agrawal, 30. xi. 1969; 1 ♀, Paratia, *c.* 6 km. S. of Udaipur, coll. V. C. Agrawal, 30. xi. 1969; 2 ♀, coll. N. Majumdar, 9. vii. 1991.

Diagnostic characters : Size equal to a Pigeon. In male, back yellow green; wings rufous banded, dark brown and a conspicuous nuchal crest golden yellow. Underparts olive-grey. Tail black and unbarred chin and throat bright lemon yellow, foreneck rich brown streaked with white. In female, similar to male, but chin and throat rufous brown instead of yellow.

Measurements :	Wing	Tail	Bill
1 ♂ :	63	112	40
3 ♀ :	164-167 (166)	107-121 (115)	39-40 (39)

Distribution : India : Tripura (North Tripura and South Tripura districts) : Arunachal Pradesh, Assam, Bihar, Manipur, Mizoram, Nagaland, Orissa and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Thailand.

149. ***Picus chlorolophus chlorolophus*** Vieillot

1818. *Picus chlorolophus* Vieillot, *Nouv. Dict. d' Hist. Nat.* 26 : 78 (Bengal).

1970. *Picus chlorolophus chlorolophus,* Ali and Ripley, vol. 4 : 193.

Common name : East Himalayan Small Yellownaped Woodpecker (English) and Takthunta (Tripuri).

Material examined : North Tripura district : 1 ♀, Khowaipar, coll. V. C. Agrawal, 12. xii. 1972. South Tripura district : 1 ♀, Forest, *c.* 3 km. E. of Garjee, coll. V. C. Agrawal, 28. xi. 1969.

Diagnostic characters : Size larger than a 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 : 2 ♀ : Wing 130, 134; tail 82, 90; bill 28, 30.

Distribution : India : Tripura (North Tripura and South Tripura districts) : Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Thailand.

Genus ***Picoides*** Lacepede, 1799

150. ***Picoides macei macei*** (Vieillot)

1818. *Picus macei* Vieillot, *Nouv. Dict. d' Hist. Nat.*, 26 : 80 (Bengal).

1970. *Picoides macei macei,* Ali and Ripley, vol. 4 : 224.

Common name : Indian Fulvousbreasted Pied Woodpecker (English) and Takthunta (Tripuri).

Material examined : West Tripura district : 2 ♂, Fatikroy, col. V. C. Agrawal, 25 and 29. x. 1972.

Diagnostic characters : In male, back and wing black, barred with white. Crown with crest crimson. A black moustachial streak extends behind ear-coverts. Chin, throat, sides of head and foreneck uniform pale rufous brown; breast and belly fulvous, faintly black streaked. In female, characters similar to male, excepting crown and crest black.

Measurements : 2 ♂ : Wing 103, 105, tail 60(2); bill 26, 35.

Distribution : India : Tripura (West Tripura district) : Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Pakistan.

151. ***Picoides mahrattensis mahrattensis*** (Latham)

1801. *Picus Mahrattensis* Latham, *Index Orn.* Suppl, xxxi (India = Mahratta country ex. *Gen. Syn., Suppl.* 2 : 142, No. 7).

1970. *Picoides mahrattensis mahrattensis,* Ali and Ripley, vol. 4 : 226.

Common name : Yellow fronted Pied or Mahratta Woodpecker (English), Katphora (Hindi) and Takthunta (Tripuri).

Material examined : Nil.

Diagnostic characters : Size smaller than a 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.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian Union except the Andaman and Nicobar Islands, Arunachal Pradesh, Lakshdweep, Manipur, Mizoram and Nagaland. Elsewhere : Bangladesh, Pakistan, Nepal and Sri Lanka.

Remarks : Observed this bird in the South Tripura district.

152. ***Picoides canicapillus canicapillus*** (Blyth)

1845. *Picus canicapillus* Blyth, *J. Asiat. Soc. Beng.,* 14(1) : 197 (Arrakan; type from Ramree Island, Burma).

1970. *Picoides canicapillus canicapillus,* Ali and Ripley, vol. 4 : 230.

Common name : Burmese Greycrowned Pygmy Woodpecker (English) and Takthunta (Tripuri).

Material examined : South Tripura district : 1 ♂, Paratia, *c.* 12 km. S. of Udaipur, coll. V. C. Agrawal, 30. xi. 1969; 1 ♀, Hathalia, *c.* 12 km. NW. of Belonia, coll. V. C. Agrawal, 5. xii. 1969. West Tripura district : 1 ♂, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 21. xi. 1969.

Diagnostic characters : Upper back black; wings, lower back and rump black broadly barred with white. Forehead and crown ashy grey. In male, short occipital crest scarlet, surrounded by black. In female, scarlet of hindcrown replaced by black. Chin and throat whitish streaked with ashy, breast and vent fulvous-brown, streaked with black. Upper tail-coverts barred black and white.

Measurements :	Wing	Tail	Bill
2 ♂ :	84, 85	43, 45	17, 18
1 ♀ :	93	47	17

Distribution : India : Tripura (South Tripura and West Tripura districts) : Manipur and Mizoram. Elsewhere : Bangladesh, Burma (= Myanmar), Indochinese countries and Thailand.

Genus ***Chrysocolaptes*** Blyth, 1843

153. ***Chrysocolaptes lucidus guttacristatus*** (Tickell)

1833. *Picus Guttacristatus* Tickell, *J. Asiat. Soc. Beng.,* 2 : 578 (Jungles of Borabhum and Dholbhum = Dhalbhum, Singbbhum Dist., Bihar, India).

1970. *Chrysocolaptes lucidus guttacristatus,* Ali and Ripley, vol. 4 : 243.

Common name : Eastern Larger Goldenbacked Woodpecker (English).

Material examined : North Tripura district : 1 ♂, Forest *c.* 1 M, Khowaipar, coll. V. C. Agrawal, 13. xii. 1972; 1 ♂, Forest S. 4 km. S. of Rest House, Teliamura, coll. V. C. Agrawal, 1. ii. 1971, 2 km. N. of Rest House, Ampi, coll. V. C. Agrawal 20. i. 1971, South Tripura district : 1 ♂, Paratia, coll. N. Majumdar, 6. vii. 1991; West Tripura district : 2 ♂, Charilam, *c.* 25 km. S. or Agartala, coll. V. C. Agrawal, 19. xi. 1969; 1 ♂, Sepahijala, coll. S. Chatterjee, 19. xi. 1988.

Diagnostic characters : Size equal to a 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 crest black stippled with white.

Measurements : 6 ♂ : Wing 162-175 (169); tail 81-94 (89); bill 52-55 (54).

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Andhra Pradesh, Arunachal Pradesh, Assam, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal, Thailand and Vietnam.

Order PASSERIFORMES

Family PITTIDAE

Genus ***Pitta*** Vieillot, 1816

154. ***Pitta nipalensis nipalensis*** (Hodgson)

1837. *Paludicola nipalensis* Hodgson, *J. Asiat. Soc. Beng.*, 6 : 103 (Nepal).

1970. *Pitta nipalensis nipalensis*, Ali and Ripley, vol. 4 : 250.

Common name : Bluenaped Pitta (English).

Material examined : North Tripura district : 1 ♂, Forest, *c.* 4 km. S. of Rest House, Teliamura, coll. V. C. Agrawal, 30. i. 1971; 1 ♂, Ambassa, coll. V. C. Agrawal, 2. i. 1973. South Tripura district : 1 ♂, Forest, *c.* 2 km. SE. of Rest House, Ampi, coll. V. C. Agrawal, 24. i. 1971.

Diagnostic characters : In male, back blue and greenish brown. Underparts plain fulvous. Nape and hindneck bright blue. Tail brown tinged with green. In female, similar to male but hindcrown rufous-fulvous instead of blue a hindneck green. Throat whitish.

Measurements : 3 ♂ : Wing 122-123 (122), tail 63-65 (64), bill 32(3).

Distribution : India : Tripura North Tripura, South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Nagaland and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Vietnam.

Family ALAUDIDAE

Genus ***Mirafra*** Horsfield, 1821

155. ***Mirafra assamica assamica*** Horsfield

1839. *Mirafra assamica* Horsfield, Proc. zool. Soc. Lond. : 162 (Assam, India).

1972. *Mirafra assamica assamica*, Ali and Ripley, vol. 5 : 4.

Common name : Bengal Bush Lark (English), Bhiriri (Bengali) and Aggin (Hindi).

Material examined : North Tripura district : 1 ♂, Manu, coll. N. Majumdar, 22. vii. 1991. South Tripura district : 1 ♂, Garjee, *c* 18 km. S. of Udaipur, coll. V. C. Agrawal, 29. xi. 1969; 1 ♂, Abhoya, *c.* 8 km. NW. of Belonia, coll. V. C. Agrawal, 4. xii. 1969. West Tripura district : 1 ♂ and 1 ♀, Chandmari Teela, Agartala, coll. V. C. Agrawal, 10. xi. 1969. 1 ♂, Trishna Wildlife Sanctuary, coll. S. Chatterjee, 29. xi. 1988.

Diagnostic characters : Back ashy-brown streaked with blackish, wings with some chestnut. Inner web of outer rectrices all brown. Inner and outer webs of primaries rufous and separated by a brown band. Underparts fulvous, coarsely streaked with triangular brown marks.

Measurements :	Wing	Tail	Bill
4 ♂ :	82-84 (83)	49-51 (50)	18-19 (18)
1 ♀ :	84	52	19

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Assam, Bihar, Delhi, Haryana, Madhya Pradesh (northern part), Manipur, Orissa (northern part), Uttar Pradesh and West Bengal. Elsewhere : Bangladesh and Burma (= Myanmar).

Family HIRUNDINIDAE

Genus ***Hirundo*** Linnaeus, 1758

156. ***Hirundo rustica rustica*** Linnaeus

1758. *Hirundo rustica* Linnaeus, *Syst. Nat.* ed. 10, 1 : 191 (Sweden).

1972. *Hirundo rustica rustica*, Ali and Ripley, vol. 5 : 57.

Common name : Western Swallow (English) and Ababil (Bengal & Hindi).

Material examined : North Tripura district : 2 ♂ and 1 ♀, Manu, coll. N. Majumdar, 19 and 23. vii. 1991. West Tripura district : 1 ♂ and 1 ♀, Trishna Wildlife Sanctuary, coll. S. Chatterjee, 29. xi. 1988.

Diagnostic characters : Size larger than the preceding bird. Back glossy steel blue ; forchead, chin and throat chestnut. Throat with a blue black pectoral or breast band. Tail deeply forked.

Measurements :	Wing	Tail (inner)	Tail (outer)	Bill
2 ♂ :	115, 117	43, 47	63, 97	10, 11
1 ♀ :	116	47	80	11

Distribution : India : Tripura (North Tripua and West Tripura districts) : Throughout the Indian mainlands. Elsewhere : Afghanistan Arabia, Asia minor, Europe, Iran, Iraq, Nepal, Pakistan, Russian Turkestan and Sri Lanka.

157. ***Hirundo rustica tytleri*** Jerdon

1864. *Hirundo Tytleri* Jerdon, *Bds.* India (3) : 870 (Dacca = Dhaka, Bangladesh).

1972. *Hirundo rustica tytleri*, Ali and Ripley, vol. 5 : 60.

Common name : Chestnutbellied Swallow (English) and Lal ababil (Bengali).

Material examined : Nil.

Diagnostic characters : Size equal to the preceding bird. Back glossy blue black; incomplete blue black pectoral band. Chin, throat and abdomen deep chestnut. Tail long forked and with spot.

Distribution : India : Tripura : Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland and West Bengal. Elsewhere : Bangladesh, Bhutan and Burma (= Myanmar). Breeds in extreme NE. Asia and Kamchatka.

Remarks : Observed this bird in all the districts of Tripura.

158. ***Hirundo daurica erythropygia*** Sykes

1832. *Hirundo erythropygia sykes, Proc. zool. Soc. Lond.* : 83 (Dukhun = Poona = Pune).

1972. *Hirundo daurica erythropygia*, Ali and Ripley, vol. 5 : 70.

Common name : Indian Striated swallow (English).

Material examined : Nil.

Diagnostic characters : Size larger than the preceding bird. Back glistening steely blue black; a narrow supercilium and sides of head, chestnut connected by a chestnut half collar on hindneck. Chin, throat, breast and belly fulvous white, finely streaked with dark brown. Rump chestnut. Tail deeply forked.

Distribution : India : Tripura (West Tripura district) : Throughout the Indian mainland except Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland and West Bengal. Elsewhere : Sri Lanka.

Remarks : Observed this bird in the West Tripura district.

Family LANIIDAE

Genus ***Lanius*** Linnaeus, 1758

159. ***Lanius tephronotus tephronotus*** (Vigors)

1831. *Collurio tephronotus* Vigors, *Proc. zool. Soc. Lond.* : 43 (Himalayas, restricted to Gyantse, Tibet, by Baker, 1924, *Faun. Br. India* 2 : 297 re-restricted to 'Foothills of the Himalayas near Darjeeling = Darjiling, Darjiling dist, West Bengal, India, where breeding birds of the Gyantse dist., may be expected to winter 'by Mayr, 1947, *J. Bombay nat. Hist. Soc.*, 47, 127).

1972. *Lanius tephronotus tephronotus*, Ali and Ripley, vol. 5 : 92.

Common name : Eastern Tibet Greybacked Shrike (English).

Material examined : North Tripura district : 1 ♂, Karbuk and Ailmara, *c.* 22 km. SE. of Jatanbari, coll. S. Chatterjee, 3. xii. 1988. 1 ♀, Fatikroy, coll. V. C. Agrawal, 29. xii. 1972. South Tripura district : 1 ♀, Forest, *c.* 3 km. SE. of Rest House, Ampi, coll. V. C. Agrawal, 25. ii. 1971. West Tripura district : 1 ♂, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 15. xi. 1969.

Diagnostic characters : Size larger than the preceding birds. 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 :	Wing	Tail	Bill
2 ♂ :	92, 100	107, 113	22, 24
2 ♀ :	101, 106	107, 120	22, 24

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalya, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Indochinese countries and Thailand. Breeds in eastern Tibet north to Sikang, South to N. Yunnan, east to W. Szechuan.

160. ***Lanius schach tricolor*** (Hodgson)

1837. *(Collurio) Tricolor* Hodgson, *Ind. Rev.*, 1(10) : 446 (Nepal, restricted to Kathmandu, Nepal valley, by Biswas, 1950, *J. Bombay nat. Hist. Soc.*, 49(3) : 451.

1972. *Lanius schach tricolor*, Ali and Ripley, vol. 5 : 96.

Common name : Blackheaded Shrike (English).

Material examined : North Tripura district : 1 ♂, Forest, *c.* 2 km. N. of Rest House, Ampi, coll. V. C. Agarwal, 20. i. 1971; 1 ♀, Ambassa, coll. V. C. Agrawal, 4. i. 1973.

Diagnostic characters : Size smaller than the preceding bird. Upper back ashy grey, lower back light chestnut. Head tail and wings black; a small white patch on wing, crown, sides of head, nape and hindneck black.

Measurements :	Wing	Tail	Bill
1 ♂ :	102	129	24
1 ♀ :	97	118	22+

Distribution : India : Tripura (North Tripura district) : Assam, Bihar, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Bhutan and Nepal.

161. ***Lanius cristatus cristatus*** Linnaeus

1758. *Lanius cristatus* Linnaeus, *Syst. Nat.*, 10 ed., 1 : 93 (Benghala = Bengal, India).

1972. *Lanius cristatus cristatus*, Ali and Ripley, vol. 5 : 98.

Common name : Brown Shrike (English).

Material examined : North Tripura district : 1 ♂, Fatikroy, coll. V. C. Agrawal, 29. xii. 1972. South Tripura district : 1 ♂, Garjee, *c.* 15 km. S. of Udaipur, coll. V. C. Agrawal, 26. xi. 1969. West Tripura district : 1 ♀, Nandnagar, Agartala, coll. V. C. Agrawal, 13. xi. 1969.

Diagnostic characters : Size equal to a Bulbul. Crown, upper back, rump and upper tail-coverts reddish brown. White forehead and supercilium; a black line through eyes to ear-coverts. Wings brownish black. Tail rufous brown. Chin, cheeks and throat white.

Measurements :	Wing	Tail	Bill
2 ♂ :	89, 91	87, 88	20, 21
1 ♀ :	84	80	20

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Throughout the Indian mainland except Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab and Rajasthan. Elsewhere : Bangladesh, Bhutan, Maldive, Nepal and Sri Lanka.

Family ORIOLIDAE

Genus ***Oriolus*** Linnaues, 1766

162. ***Oriolus oriolus kundoo*** Sykes

1832. *Oriolus Kundoo* Sykes, *Proc. zool. Soc. Lond.* : 87 (Dukhum, Poona = Pune, India).

1972. *Oridus oriolus kundoo,* Ali and Ripley, vol. 5 : 103.

Common name : Indian Golden Oriole (English), Sona bau (Bengali) and Peelak (Hindi) and oludya (Tripuri).

Material examined : Nil.

Diagnostic characters : Size equal to a Myna. In male, head, back and underparts bright golden yellow. Wings and tail black. A conspicuous black streaked from lores through and behind eye. In female and young male, head and back duller and greenish yellow. Chin, throat, breast and belly whitish and streaked with dull brown.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian mainland except Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Pakistan, Nepal, Bangladesh and Sri Lanka.

Remarks : Observed this bird at Pecharthal in the North Tripura district.

163. ***Oriolus xanthornus xanthornus*** (Linnaeus)

1758. *Coracias Xanthornus* Linnaeus, *Syst. Nat.* ed. 10, 1 : 108 (In America = Chandernagar, Hugli district, West Bengal, India).

1972. *Orilus xanthornus xanthornus,* Ali and Ripley, vol. 5 : 108

Common name : North Indian Blackheaded Oriole (English), Bene bau (Bengali), Zardak (Hindi) and Oludya (Tripuri).

Material examined : North Tripura district : 1 ♂ and 1 ♀, Forest, *c.* 4 km. S. of Rest House, Teliamura, coll. V. C. Agrawal; 1 ♂, Khowaipar, coll. V. C. Agrawal, 11. xii. 1972. South Tripura district : 1 ♀, Paratia, *c.* 6 km. S. of Udaipur. West Tripura district : 1 unsexed, Nandnagar, Agartala, coll. V. C. Agarwal, 13. xi. 1969; 2 ♀, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 18 and 21. xi. 1969.

Diagnostic characters : Size equal to the proceding bird. 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 :	Wing	Tail	Bill
1 ♂ :	135	90	35
3 ♀ :	135-139 (137)	85-90 (88)	30-33 (32)

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Madhya Pradesh, (northern part), Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal and Thailand.

Family DICRURIDAE

Genus ***Dicrurus Vieillot,*** 1816

164. ***Dicrurus adsimilis albirictus*** (Hodgson)

1836. *(Bhuchanga) Albirictus* Hodgson. *Ind. Rev.* 1(8) : 326 (Nepal).

1972. *Dicrurus adsimilis albirictus,* Ali and Ripley, vol. 5 : 114.

Common name : North Indian Black Drongo (English); Finga (Bengali) and Bujanga (Hindi).

Material examined : North Tripura district : 1 ♂, Chailingta, Manu, coll. V. C. Agrawal, 23. xii. 1972; 1 ♀ Manu, coll. N. Majumdar, 18. vii. 1991. South Tripura district : 1 ♀, Ampi, coll. V. C. Agrawal, 21. i. 1971. West Tripura district : 1 ♂, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 18. xi. 1968.

Diagnostic characters : Size slightly larger than the preceding bird. Entire body into the head and tail glossy jet black. Tail long, deeply forked. White rictal spot present.

Measurements :

	Wing	Tail (inner)	Tail (outer)	Bill
2 ♂ :	153, 161	118, 119	173, 180	28, 30
1 ♀ :	142	108	160	26

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Assam, Bihar, Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Punjab, Rajasthan, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Afghanistan, Bangladesh, Bhutan, Burma (= Myanmar), Iran (South eastern part), Nepal and Pakistan.

165. ***Dicrurus caerulescens caerulescens*** (Linneus)

1758. *Lanius caerulescens* Linnaeus, *Syst. Nat.*, 10 ed. 1 : 95 (Benghala = Bengal).

1972. *Dicrurus caerulescens caerulescens*, Ali and Ripley, vol. 5 : 122.

Common name : Indian Whitebellied Drongo (English) and Dhouli (Bengali).

Material examined : Nil.

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.

Distribution : India : Tripura : Throughout the Indian Union except the Andaman and Nicobar Islands, Haryana, Jammu & Kashmir, Lakshadweep and Rajasthan.

Remarks : Seen this bird all the districts of Tripura.

166. ***Dicrurus annectans*** (Hodgson)

1836. (*Bhuchanga*) *Annectans* Hodgson, *Ind. Rev.*, 1(8) : 326 (Nepal).

1972. *Dicrurus annectans*, Ali and Ripley, vol. 5 : 125.

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.

Distribution : India : Tripura : Arunachal Pradesh, Assam, Manipur Meghalaya, Nagaland, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indonesian Islands, Malay Peninsula, Nepal and Thailand.

Remarks : Observed this species in all the districts of Tripura.

167. ***Dicrurus aeneus aeneus*** Vieillot

1817. *Dicrurus aeneus* Vieillot, *Nouv. Diet. d'Hist. Nat.* 9 : 586 (Bengal, restricted to Dacca by Baker, 1924, *Faun. Br. India*, Birds 2 : 368.

1972. *Dicrurus aeneus aeneus*, Ali and Ripley, vol. 5 : 126.

Common name : Bronzed Drongo (English).

Material examined : South Tripura district : 1 ♀, Garzee Rest House, *c.* 10 km. S. of Udaipur, coll. V. C. Agrawal, 24. xi. 1969. 1 ♂ and 1 unsexed, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 30. xi. 1988.

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 tial-coverts grey. Tail less deeply forked.

Distribution : India : Tripura (South Tripura district) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Daman & Diu, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma, the Indochinese countries; Malayasia, Nepal, Thailand and Yunnan.

168. ***Dicrurus remifer tectirostris*** (Hodgson)

1836. (*Bhringa*) *Tectirostris* Hodgson, *Ind. Rev.* 1(8) : 325 (Nepal).

1972. *Dicrurus remifer tectirostris*, Ali and Ripley, vol. 5 : 128.

Common name : Lesser Racket-tailed Drongo (English) and Chhota bhimraj (Bengali).

Material examined : North Tripura district : 1 unsexed, Khowaipar, coll. V. C. Agrawal, 11. x. 1972.

Diagnostic characters : Size larger than a Myna. Entire plumage glossy metallic black; a velvety tuft of feathers above base on bill. Two elongated "Wires" like outer tail-feathers ending in spatulae or "Rackets" fully webbed on both sides of shaft.

Measurements : 1 unsexed : Wing 138, tail 122/415, bill 28.

Distribution : India : Tripura (North Tripra district) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Indochinese countries, Nepal and Thailand.

169. *Dicrurus hottentottus hotentottus* (Linnaeus)

1766. *Corvus hottentottus* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 155 (Cape of Good Hope, restricted to Sikkim, India, by Baker, 1919, re-restricted to "region between Ayuthia and head of the Gulf", Siam by Kloss, 1921, *J. Fed,* Malay States Mus. 10 : 223. Re-restricted to Chandernagor, Hugli district, West Bengal, India by Stresemann, 1952, *Ibis* 94 : 517-521).

1972. *Dicrurus hottentottus hottentottus,* Ali and Ripley, vol. 5 : 131.

Common name : Haircrested Drongo (English), Keshraj (Bengali), Kesraj (Hindi) and Takprengsha Tripuri).

Material examined : South Tripura district : 1 ♂, Paratia ca 10 km. S. of Udaipur, coll. N. Majumdar, 7. vii. 1991. West Tripura distirct : 1 ♀, Sepahijala, coll. S. Chatterjee, 20. xi. 1988.

Diagnostic characters : Size equal to a Myna. Entire plumage irridescent 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 :	Wing	Tail (inner)	Tail (outer)	Bill
1 ♂ :	172	132	153	43
1 ♀ :	160	124	156	40

Distribution : India : Tripura (West Tripura district) : Throughout the Indian mainland except Himachal Pradesh, Jammu & Kashmir, Mizoram and Rajasthan. Elsewhere : Bangladesh, Bhutan and Nepal.

170. *Dicrurus paradiseus grandis* (Gould)

1836. *Edolius grandis* Gould, *Proc. zool. Soc. Lond.* 5 (Nepalia).

1972. *Dicrurus paradiseus grandis,* Ali and Ripley, vol. 5 : 136.

Common name : Northern Large Racket-tailed Drongo (English), Bhringraj (Bengali and Hindi) and Takparang (Tripuri).

Material examined : North Tripura district : 1 ♂, Forest, *c.* 4 km. S. of Rest House, Teliamura, coll. V. C. Agrawal, 2. ii. 1971. 2 ♂, Forest, *c.* 1 (one) km. E. of Rest House, coll. V. C. Agrawal, 4. ii. 1971; 1 ♀, Chailingta, coll. V. C. Agrawal, 20. xii. 1972; 1 ♀, Ambassa, coll. V. C. Agrawal, 5. i. 1973. South Tripura district : 1 ♂, Garjee *c.* 10 km. S. of Udaipur, coll. V. C. Agrawal, 25. xi. 1969; 2 ♂, Sekhabari, *c.* 6 km. SE. of Abhoya, Belonia, coll. V. C. Agrawal, 3. xii. 1969; 1 ♂, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 29. xi. 1988. West Tripura district : 1 ♀, Bishalgarh, *c.* 20 km. S. of Agartala, coll. V. C. Agrawal, 20. xi. 1963.

Diagnostic characters : Size equal to the 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 :

	Wing	Tail (Central	Bill (Outer)	
2 ♂ :	180, 182	153, 158	475, 496	44(2)
2 ♀ :	173, 175	153, 165	390, 400	41, 4

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Throughout the Indian mainland except Haryana, Goa, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Punjab and Rajasthan. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Nepal, Vietnam and Yunnan.

Family ARTAMIDAE

Genus ***Artamus*** Vieillot, 1816

171. ***Artamus fuscus*** Vieillot

1817. *Artamus fuscus* Vieillot, *Nouv. Dict. d'Hist. Nat.* 17 : 297.

1972. *Artamus fuscus*, Ali and Ripley, vol. 5 :

Common name : Ashy Swallow-shrike (English), Tal Charai (Bengali) and Tadi ababeel (Hindi).

Material examined : West Tripura district : 2 ♀, Ricefield, *c.* 4 km. N. of Agartala, coll. V. C. Agrawal, 9. xi. 1969.

Diagnostic characters : Size equal to a Bulbul. Entire head and back dark slaty grey; rump paler than back and slaty grey brown. Underparts paler. Tail short slaty black, tipped with white. Bill bluish and heavy, undertail-coverts white.

Measurements : 2 ♀ : Wing 131, 132, tail 54, 55; bill 22, 23.

Distribution : India : Tripura (West Tripura district) : Throughout the Indian mainland except Jammu & Kashmir. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Indochinese countries, Nepal and Sri Lanka.

Family STURNIDAE

Key to the genera of the family STURNIDAE

1. Distinct white wing-patch on the underparts of the wings 2

   No wing-patch or patch suffused .....***Sturnus***

2. Patch near base of wings .....***Acridotheres***

   Patch at about middle length of wing ....***Gracula***

Genus ***Sturnus*** Linnaeus, 1758

172. ***Sturnus malabaricus malabaricus*** (Gmelin)

1789. *Turdus malabaricus* Gmelin, *Syst. Nat.*, 1 : 816 (Malabar, Kerala, India).

1972. *Sturnus malabaricus malabaricus*, Ali and Ripley, vol. 5 : 152.

Common name : Greyheaded Myna (English), Desi pawei (Bengali), pawei (Hindi) and Myna (Tripuri).

Material examined : North Tripura district : 1 ♂, Near Rest House, Ambassa, coll. V. C. Agrawal, 6. ii. 1971; 2 ♂ and 1 ♀, Ambasa, coll. N. Majumdar, 29. vii. 1991; 1 ♂, Fatikroy, coll. V. C. Agrawal, 26. xii. 1972. South Tripura district : 1 ♂, Forest, *c.* 3 km. E. of Garjee, coll. V. C. Agrawal, 28. xi. 1969. West Tripura district : 1 ♂ and 1 ♀, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 15 and 17. xi. 1969.

Diagnostic characters : Size smaller than a common Myna. Head and back brownish grey; forehead and 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.

Measurements :	Wing	Tail	Bill
4 ♂ :	100-103	62-67	20-24
	(102)	(64)	(22)
1 ♀ :	97	60	23

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Throughout the Indian mainland except Jammu and Kashmir, Kerala, Manipur and Nagaland. Elsewhere : Nepal, Bhutan and Bangladesh.

173. ***Stunus pagodarum*** (Gmelin)

1789. *Turdus pagodarum* Gmelin, Syst. Nat., 1 : 816 (Malabar).

1972. *Sturnus pagodarum*, Ali and Ripley, vol. 5 : 160.

Common name : Blackheaded Myna (English), Harbola (Bengali), Kalasir Myna (Hindi) and Myna (Tripuri).

Material examined : Nil.

Diagnostic characters : Size slightly larger than the preceding bird. Black grey, underparts reddish fawn. Forehead glossy black. Crown and neck with long pointed black crest. Wings blackish; tail slightly graduated, brown with white edging and tip.

Distribution : India : Tripura : Throughout the Indian mainland except Arunachal Pradesh, Manipur, Meghalaya, Mizoram and Nagaland. Elsewhere : Bangladesh, Pakistan and Sri Lanka.

Remarks : Observed this species in all the districts of Tripura.

174. ***Sturnus contra contra*** (Linnaeus)

1758. *Sturnus Contra* Linnaeus, *Syst. Nat.* ed., 10, 1 : 167 (India, restricted to Chandernagore) Hooghly = Hugli, Hugli district, West Bengal) by Stresemann, 1952, *Ibis* 94 : 517).

1972. *Sturnus contra contra,* Ali and Ripley, vol. 5 : 172.

Common name : Indian Pied Myna (English), Guye Salik (Bengali) and Ablaki Myna (Hindi).

Material examined : North Tripura district : 1 ♂ and 1 ♀, Near Forest Office compound, Kanchanpur, coll. V. C. Agrawal, 13. ii. 1971; 1 ♂ and 2 ♀, Manu, coll. N. Majumdar, 20 and 23. vii. 1991.

Diagnostic characters : Size equal to the 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.

Measurements :	Wing	Tail	Bill
1 ♂ :	112	64	33
1 ♀ :	124	65	33

Distribtion : India : Tripura (North Tripura district) : Andhra Pradesh, Assam, Bihar, Haryana, Madhya Pradesh, Meghalaya, Orissa, Punjab, Rajasthan and West Bengal. Elsewhere : Bangladesh, and Nepal.

Genus ***Acridotheres*** Vieillot, 1816

175. ***Acridotheres tristis tristis*** (Linnaeus)

1766. *Paradisea tristis* Linnaeus, *Syst. Nat.*, ed. 12, 1 : 167. (Philippines, errore-Calcutta, Calcutta district, West Bengal, India, *vide* Baker, 1926, *Faun. Br. India* 3 : 53 = Pondicherry, India, *vide* Stresemann, 1952, *Ibis* : 515).

1972. *Acridotheres tristis tristis,* Ali and Ripley; voll. 5 : 177.

Common name : Indian Myna (English), Salik (Bengali), Desi Myna (Hindi) and Myna (Tripuri).

Material examined : North Tripura district : 1 ♂, Manu, coll. N. Majumdar, 22. vii. 1991. South Tripura district : 1 ♀ near Rest House, Ampi, coll. V. C. Agrawal, 19. i. 1971; 1 ♂, Paratia, coll. N. Majumdar, 6. vii. 1991.

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 :	Wing	Tail	Bill
1 ♂ :	140	80	27
2 ♀ :	135, 140	81, 83	27 (2)

Distribution : India : Tripura (North Tripura and South Tripura districts) : Throughout the Indian Union, introduced in the Andaman & Nicobar Islands. Elsewhere : Afghanistan, Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries, Nepal, Pakistan, Sri Lanka and Thailand. Introduced in Australia, Hawai, Mauritius, New Zealand, Seychelles, South Africa and Russian Turkestan,

176. ***Acridotheres fuscus fuscus*** (Wagler)

1827. *Pastor fuscus* Wagler, *Syst. Av. Pastor* sp. 6 (India = East Bengal, Bangladesh, Baker, 1921).

1972. *Acridotheres fuscus fuscus,* Ali and Ripley, vol. 5 : 183.

Common name : Northern Jungle Myna (English), Jungli Salik (Bengali), Pahari Myna (Hindi) and Kala Myna (Tripuri).

Material examined : North Tripura district : 1 M, Chailingta, coll. V.C. Agrawal, 18. xii. 1972.

Diagnostic characters : Size euqal to a Common Myna. Back, throat and breast grey-brown. Wing with large white wing-patch. Forehead with a prominent tuft of errect black feathers at base of bill. Tail broad white tipped. Bill yellow-orange. Legs and feet yellow-ochre.

Measurements : 1 ♂ : Wing 124, tail 72, bill 26.

Distribution : India : Tripura (North Tripura district) : Assam, Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Nepal and Pakistan.

177. ***Acridotheres javanica infuscatus*** (Baker)

1918. *Aethiopsar fuscus infuscatus* Baker, *Bull. Birt. Orn. Cl.* 38 : 70 (Lower Chindwin).

1972. *Acridotheres javanica infuscatus*, Ali and Ripley, vol. 5 : 187.

Common name : Orangebilled Jungle Myna (English).

Material examined : North Tripura district : 1 ♂, Manu, coll. N. Majumdar, 20. vii. 1991.

Diagnostic characters : Similar to the preceding bird but hackled feathers of head longer. The general colouration much blacker. Wing with a prominent white wing-patch. Bill orange yellow. Irides reddish to orange-brown. Underparts ashy black, vent ashy.

Measurements : 1 ♂ : Wing 127, tail 78, bill 30.

Distribution : India : Tripura (North Tripura district) : Mainpur, Mizoram and Nagaland. Elsewhere : Bangladesh, and Burma (= Myanmar).

Genus ***Gracula*** Linnaeus, 1758

178. ***Gracula religiosa intermedia*** A. Hay

1844. *Gracula intermedia* A. Hay, *Madras J. Lit. Sci.* 13 : 157 (Cachar, Cachar district, Assam, India).

1972. *Gracula religiosa intermedia*, Ali and Ripley, vol. 5 : 191.

Common name : Northern Hill Myna (English) and Pahari Myna (Bengali and Hindi).

Material examined : Nil.

Diagnostic characters : Size slightly larger than a Common Myna. Entire plumage jet black. Bright orange-yellow patches of nacked skin and fleshy wattles on sides of head and neck. Wing with a broad white patch on primaries.

Distribution : India : Tripura (North Tripura district) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Nepal, Bhutan, Bangladesh, Burma (= Myanmar), Thailand and the Indochinese countries.

Remarks : Seen this bird in large numbers in Pecharthal and in Ambassa in the North Tripura district.

Family CORVIDAE

Key to the genera of the family CORVIDAE

1. Plumage predominantly black or black with ashy nape and central rectrices not elongated ..... ***Corvus***

   Plumage with brilliant or contrasting colours with two central rectrices elongated 2

2. Plumage with shades of blue ..... ***Cissa***

   Plumage with shades of brown .. ***Dendrocitta***

Genus ***Cissa*** Boie, 1826

179. ***Cissa chinensis chinensis*** (Boddaert)

1783. *Coracias chinensis* Boddaert, *Table pl.* enlum. : 38 (China, corrected to southern Thailand by Robinson & Kloss, 1923 = Mergui, Burma, *vide* Stresemann, 1952, *Ibis* 94 : 516).

1972. *Cissa chinensis chinensis*, Ali and Ripley, vol. 5 : 204.

Common name : Green Magpie (English) and Sirgang (Bengali).

Material examined : North Tripura district : 1 ♀, Forest *c.* 4 km. S. of Rest House, Teliamura, coll. V. C. Agrawal, 31. i. 1971; 1 ♀, Ambassa, coll. V. C. Agrawal, 1. i. 1973. South Tripura district : 1 ♂, Garjee, *c.* 13 km. S. of Udaipur, coll. V. C. Agrawal, 27. xi. 1969.

Diagnostic characters : Size equal to a common Myna. Back and underparts bright-leafgreen. Wings chinnamon-red. A broad black band running backward through eyes to meet on nape. Tail long, graduated, black and white tipped. Bill and legs bright coral-red.

Measurements :	Wing	Tail	Bill
1 ♂ :	152	197	40
2 ♀ :	140, 148	197, 198	39, 40

Distribution : India : Tripura (North Tripura and South Tripura districts) : Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttar Pradesh and West Bengal.

Genus ***Dendrocitta*** Gould, 1833

180. ***Dendrocitta vagabunda vagabunda*** (Latham)

1790. *Coracias vagabunda* Latham, *Index Orn.* 1 : 171 (India, restricted to Calcutta, Calcutta district, West Bengal, India, by Ticehurst, 1922, *Ibis* : 537).

1972. *Dendrocitta vagabunda vagabunda*, Ali and Ripley, vol. 5 : 218.

Common name : Northeastern Tree Pie (English), Handi Chacha (Bengali) and Mahalat (Hindi).

Material examined : West Tripura district : 1 ♀, Chandmari Teela, Agartala, coll. V. C. Agrawal, 10, xi. 1969; 2 ♀, Indranagar, Agartala, coll. V. C. Agrawal, 11. xi. 1969; 1 ♀, Nandnagar, Agartala, coll. V. C. Agrawal, 11. xi. 1969; 1 ♂, Sepahijala, coll. S. Chatterjee, 26. xi. 1988.

Diagnostic characters : Back and scapulars dark brownish fulvous. Rump, belly and under tail-coverts fulvous buff. Head, neck and breast dark sootygrey. Tail long, graduated, greyish with broad black tips. Greyish white and black pattern on wings.

Measurements :	Wing	Tail	Bill
1 ♂ :	147	230	36
3 ♀ :	151-153 (152)	228-250 (240)	35-36 (35)

Distribution : India : Tripura (West Tripura district) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh and Nepal.

181. ***Dendrocitta formosae himalayana*** Jerdon

1864. *Dendrocitta himalayana* 'Blyth' = *Jerdon, Bds. India* 3 : 874 (Sikkim, India, restricted by Ticehurst, 1925, *Bull. Br. Orn. Cl.* 46 : 22).

1972. *Dendrocitta formosae himalayana*, Ali and Ripley, vol. 5 : 226.

Common name : East Himalayan Tree Pie (English).

Material examined : North Tripura district : 1 ♀, Khowaipar, coll. V. C. Agrawal, 15. xii. 1972.

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 : 1 ♀ : Wing 138, tail 198, bill 34.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, Hainnan, Laos, Nepal, Taiwan and Vietnam.

Genus ***Corvus*** Linnaeus, 1758

182. ***Corvus splendens splendens*** Vieillot

1817. *Corvus splendens* Vieillot, *Nouv. Dic. d'Hist. Nat.* 8 : 44 (Bengal).

1972. *Corvus spledens spledens*, Ali and Ripley, vol. 5 : 244.

Common name : Indian House Crow (English), Kak (Bengali) and Desi Kowwa (Hindi).

Material examined : Nil.

Diagnostic characters : Glossy black forehead, crown and throat. Nape, neck, upper breast and upper back glossy black with dusky grey. Bill thick and black. Eyes whitish.

Distribution : India : Tripura (West Tripura district) : Throughout India except Jammu & Kashmir, Himachal Pradesh, Kerala, Lakshadweep and Punjab. Introduced in the Andaman Islands. Elsewhere : Bangladesh and Burma (= Myanmar).

Remarks : Only found in Agartala town in the West Tripura district.

183. ***Corvus macrorhynchos levailantii*** Lesson

1831. *Corvus levaillantii* Lesson, *Traite d Orn.* : 328 (Bengal).

1972. *Corvus macrorhynchos levaillantii,* Ali and Ripley, Vol. 5 : 254.

Common name : Eastern Jungle Crow (English), Dand Kak (Bengali) and Takha (Tripuri).

Material examined : North Tripura district : 1 ♀, Ambassa, coll. V. C. Agrawal, 2 i. 1973. South Tripura District : 1 ♀, Near Rest House, Ampi, coll. V. C. Agrawal, 24. i. 1971. West Tripura district : 1 ♀, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 19. xi. 1969.

Diagnostic characters : Size larger than a House Crow. Entire plumage glistening jet black. Base of nape feathers dusky-grey. Bill heavy, curved and black.

Measurements : 3 ♀ : Wing 297-307 (301) ; tail 173-178 (175); bill 62-66 (64).

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : The Andaman Islands, Assam, Manipur, Meghalaya, Nagaland and West Bengal.

Remarks : Seen throughout Tripura in forest as well as in human habitats.

Family CAMPEPHAGIDAE

Key to the genera of the family

COMPEPHAGIDAE

1. Tail square ..... ***Tephrodornis***

   Tail more or less graduated 2

2. Shafts of rump-feathers soft ..... ***Hemipus***

   Shafts of rump-feathers spiny 3

3. Outer rectrices more than half length of tail ..... ***Pericrocotus***

   Outer rectrices more than three quarters length of tail ..... ***Coracina***

Genus ***Hemipus*** Hodgson, 1844

184. ***Hemipus picatus picatus*** (Sykes)

1832. *Muscicapa picata* Sykes, *Proc. Comm. Sci. Corr. Zoll. Soc.* Lond. : 85 (Dukhun).

1971. *Hemipus picatus picatus,* Ali and Ripley, vol. 6 : 3.

Common name : Blackbacked Pied Flycatcher-Shrike (English), Chhota Kala latora (Hindi).

Material examined : South Tripura district : 1 ♂ and 1 ♀, Garjee, *c.* 10 km. S. of Udaipur, coll. V. C. Agrawal, 25. xi. 1969.

Diagnostic characters : Size equal to a Sparrow. In male, head and back glossy black; chin and throat pure white; breast and belly pinkish white. White collar round hindneck; rump white. Wings and tail black and white. In female, the black colour replaced by sooty brown colour.

Measurements :	Wing	Tail	Bill
1 ♂ :	65	60	17
1 ♀ :	62	63	19

Distribution : India : Tripura (South Tripura district) : Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Tamil Nadu and West Bengal. Elsewhere : Bangladesh, the Indochinese countries, Indonesia and Thailand.

Genus ***Tephrodornis*** Swainson, 1832

185. ***Tephrodornis gularis pelvica*** (Hodgson)

1837. *Tenthaca Pelvica* Hodgson, *Ind. Rev.*, 1 (10) : 447 (Nepal).

1971. *Tephrodornis gularis pelvica*, Ali and Ripley, vol. 6 : 6.

Common name : Nepal Wood Shrike (English).

Material examined : North Tripura district : 1 ♂, Pecharthal, coll. N. Majumdar, 13. vii. 1991. South Tripura district : 1 ♀, Paratia *c.* 12 km. S. of Udaipur, coll. N. Majumdar, 10. vii. 1991.

Diagnostic characters : In male, back, wings and tail ashy brown. Crown and nape ashy grey. A broad black band from lores through eye to ear-coverts. Rump and upper tail-coverts whitish and ashy brown. Chin, throat and breast pale, ashy fawn. Centre of abdomen whitish. In female, crown and back same colour, eye band brown.

Measurements :	Wing	Tail	Bill
1 ♂ :	115	82	29
1 ♀ :	117	84	28

Distribution : India : Tripura (North Tripura and South Tripura districts) : Andhra Pradesh, Assam, Bihar, Manipur, Meghalaya, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Nepal and Bhutan.

186. ***Tephrodornis pondicerianus pondicerianus*** (Gmelin)

1789. *Muscicapa pondiceriana* Gmelin, *Syst. Nat.*, 1 : 939. (Coromandel, Tamil Nadu, India).

1971. *Tephrodornis pondicerianus pondicerianus*, Ali and Ripley, vol. 6 : 11.

Common name : Indian Wood Shrike (English), Chudukka (Bengali) and Keroula (Hindi).

Material examined : North Tripura district : 1 unsexed, Paharpur, *c.* 12 km. W. of Jatanbari, coll. S. Chatterjee, 3. xii. 1988.

Diagnostic characters : Size equlal to a Bulbul. Back, wings and tail greyish brown; a dark brown stripe below the eye from lores to ear-coverts; supercilium whitish. Rump feathers white, outer rectrices white.

Measurements : 1 unsexed : Wings 87, tail 66, bill 22.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian mainland except Haryana, Himachal Prachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Punjab and Rajasthan. Elsewhere : Bangladesh.

Genus ***Coracina*** Vieillot, 1816

187. ***Coracina novaehollandiae macei*** (Lesson)

1830. *Graucalus macei* Lesson, *Traite d' Orn* : 349 (Calcutta, Calcutta district, West Bengal, India).

1971. *Coracina novaehollandiae macei*, Ali and Ripley, vol. 6 : 14.

Common name : Indian Large Cuckoo-Shrike (English), Kabasi (Bengali) and Kasya (Hindi).

Material examined : West Tripura district : 1 ♂, Sepahijala, coll. S. Chatterjee, 20. xi. 1988.

Diagnostic characters : Size smaller than a 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 are barred with grey and white.

Measurements : 1 ♂ : Wing 173, tail 131, bill 30.

Distribution : India : Tripura (West Tripura district) : Throughout the Indian mainland except, Arunachal Pradesh, Assam, Haryana, Himachal Pradesh, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Punjab and Sikkim. Elsewhere : Bangladesh.

188. ***Coracina novaehollandiae nipalensis*** (Hodgson)

1836. *Graucalus Nipalensis* Hodgson, *Ind. Rev.*, (18) : 327. (Nepal).

1971. *Coracina novaehollandiae nipalensis*, Ali and Ripley, vol. 6 : 16.

Common name : Himalayan Large Cuckoo Shrike (English).

Material examined : North Tripura district : 1 ♀, Khowaipar, coll. V. C. Agrawal, 10. xii. 1972. 1 ♂, Ambassa, coll. V. C. Agrawal, 1. i. 1973. South Tripura district : 1 ♂, Garjee Rest House, *c.* 16 km. S. of Udaipur, coll. V. C. Agrawal, 24. xi. 1969; 1 ♂, Near Forest, *c.* 2 km. S. of Rest House, Ampi, coll. V. C. Agrawal, 17. i. 1971; 2 ♂, Paratia, *c.* 12 km. South of Udaipur, coll. N. Majumdar, 8 and 9. vii. 1991. West Tripura district : 1 ♂ and 2 ♀, Charilum *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 19 and 22. xi. 1969.

Diagnostic characters : Size slightly larger than the preceding bird. In male, chin, throat and breast grey; belly without any barring. In female, chin, throat and breast grey and belly barred.

Measurements :	Wing	Tail	Bill
2 ♂ :	176, 183	125, 128	33, 35
2 ♀ :	164, 179	130, 142	32, 34

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Assam, Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Punjab, Sikkim, Uttar Pradesh and West Bengal.

189. *Coracina melaschistos melaschistos* (Hodgson)

1836. *Volvocivora Melaschistos* Hodgson, *Ind. Rev.*, 1(8) : 328 (Nepal).

1971. *Coracina melaschistos melaschistos*, Ali and Ripley, vol. 6 : 19.

Common name : Smaller Grey Cuckoo-Shrike (English) and Kabasi (Bengali).

Material examined : South Tripura district : 1 ♀, Garjee, *c* 13 km. S. of Udaipur, coll. V. C. Agrawal, 27. xi. 1969.

Diagnostic characters : Size between the Bulbul and the Myna. In male, head and back dark bluish grey; eye-stripe dark. Wings and tail black. Central rectrices narrowly and the lateral ones broadly tipped white. In female, similar but paler grey and with barred underparts. Terminal margin of the tail is white.

Measurements : 1 ♀ : Wing 114, tail 116, bill 22.

Distribution : India : Tripura (South Tripura district) : Andhra Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Meghalaya, Nagaland, Orissa, Sikkim Uttar Pradesh, and West Bengal. Elsewhere : Pakistan, Nepal, Bhutan Bangladesh, China, Taiwan and the Indochinese countries.

Genus ***Pericrocotus*** Boie, 1826

190. ***Pericrocotus flammeus speciosus*** (Latham)

1790. *Turdus speciosus* Latham, *Index Orn.*, 1 : 363 (India, restricted to Darjeeling = Darjiling, Darjiling district, West Bengal, India by Baker).

1971. *Pericrocotus flammeus speciosus*, Ali and Ripley, vol. 6 : 25.

Comman name : North India Scarlet Minivet (English), Sayali (Bengali) and Pahari bulalchasam (Hindi).

Material examined : North Tripura district : 1 ♂, Fatikroy, coll. V. C. Agrawal, 25. xii. 1972; 1 ♂ and 1 ♀, Ambassa, coll. V. C. Agrawal, 3 and 4. i. 1973. South Tripura district : 1 ♀, Garjee, *c.* 18 km. S. of Udaipur, coll. V. C. Agrawal, 29. xi. 1969; 1 ♀, Hathalia, *c* 12 km. NW. of Belonia, coll. V. C. Agrawal, 5. xii. 1969. West Tripura district : 1 ♂, Near Forest, *c.* 4 km. S. of Rest House, Teliamura, coll. **V.C. Agrawal** , 31. i. 1971.

Diagnostic chracters : Size larger than a Bulbul. In adult male, head and back glistening black; breast, belly and vent orange red to deep scarlet. In female, crown and back yellowish grey; chin, throat, breast and belly bright yellow and two yellow bars on black wings.

Measurements :	Wing	Tail	Bill
1 ♂ :	98	100	21
2 ♀ :	95, 97	92, 100	21(2)

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) :

Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Pakistan, Nepal and Bhutan.

191. ***Pericrocotus cinnamomeus vividus*** Baker

1920. *Pericrocotus cinnamomeus vividus* Baker, *Bull. Br. Orn. Cl.*, 40 : 114 (Attaran River, Amherst Dist., Tenasserim Div., Burma restricted to Pabyouk, 22 m. SE. of Moulmein, Burma, by Deignan).

1971. *Pericrocotus cinnamomeus vividus*, Ali and Ripley, vol. 6 : 44.

Common name : Eastern Small Minivet (English) and Chhoto sath sayali (Bengali).

Material examined : North Tripura district : 1 ♂ and 1 unsexed, Chailingta, coll. V. C. Agrawl, 17. xii. 1972. South Tripura district : 1 ♀, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 1. xii. 1988.

Diagnostic characters : Size smaller than the sparrow. In male, head and back dark grey, rump orange red. Black wings with yellow-orange patch. Tail long, black above, yellow-orange below. Throat dark grey, breast bright orange and belly yellow. In female, upper parts like male, but paler; below, whitish grey suffused with yellow; wing-patch smaller and less bright.

Measurements : 2 ♂ : Wing 70, 71; tail 74, 75; bill 13, 14.

Distribution : India : Tripura (North Tripura and South Tripura districts) : The Andaman Islands, Assam, Manipur, Meghalaya, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Burma, Laos, Nepal and Thailand.

Family IRENIDAE

Key to the genera of the family IRENIDAE

1. General colouration yellow ..... ***Aegithina***

   General colouration not yellow 2

2. General colouration grass green ... ***Chloropsis***

   General colouration deep blue ..... ***Irena***

Genus ***Aegithina*** Vieillot, 1816

192. ***Aegithina tiphia tiphia*** (Linnaeus)

1758. *Motacilla Tiphia* Linnaeus, *Syst. Nat.*, ed., 10, 1 : 186 (Benghala = neighbourhood of Calcutta, Calcutta district, West Bengal, India).

1971. *Aegithina tiphia tiphia*, Ali and Ripley, vol. 6 : 49.

Common name : Common Iora (English); Fatik-jal (Bengali) and Shaubeegi (Hindi).

Material examined : North Tripura district : 1 ♂, Chailingta, Manu, coll. V. C. Agrawal, 22. xii. 1972; 1 ♂, Fatikroy, coll. V. C Agrawal, 29. xii. 1972. South Tripura district : 2 ♂, Abhoya, *c.* 8 km. NW. of Belonia, coll. V. C. Agrawal, 4 and 8. xii. 1969. West Tripura district : 1 unsexed, Indranagar, Agartala, coll. V. C. Agrawal, 11. xi. 1969.

Diagnostic characers : Size equal to a sparrow. Crown, nape and back greenish. In male, crown, nape and back greenish-yellow chin, throat and breast yellow.Black wing with two white wing bars. Tail black. In female, yellowish green with wing greenish brown with two white bars. *Call-note :* Chee-chit-chit-chit.

Measurements : 4 ♂ : Wing 63-68 (65); tail 51-54(53); bill 16-18 (17).

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar) and Nepal.

Genus ***Chloropsis*** Jardine and Selby, 1827

193. ***Chloropsis aurifrons aurifrons*** (Temminck)

1829. *Phyllornis aurifrons* Temminck, *Pl. Col. d' Ois., Livr.* 81, pl. 484, fig. 1 (Sumatra, India = Cachar, Cachar district, Assam, India).

1971. *Chloropsis aurifrrons aurifons*, Ali and Ripley, vol. 6 : 55.

Common name : Northern Goldfronted Chloropsis (English), Harewa (Bengali) and Sabz harewa (Hindi).

Material examined : South Tripura district : 2 ♀, Garjee, *c.* 10 km. S. of Udaipur, 25 and 27 xi. 1969; 1 ♂, Abhoya, *c.* 8 km. NW. of Belonia, coll. V. C. Agrawal. 2 ♂, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 30. xi. 1988. West Tripur district : 3 ♂, Khowaipar, coll. V. C. Agrawal, 9 and 10. xii. 1972.

Diagnostic charcters : Size equal to a Bulbul. Crown, nape and tail leaf-green, forehead orange, shoulder, with blue patches. Bill black and curved. Lores, eye, ear-coverts and lower throat black. Cheeks and chin dark blue.

Measurements :	Wing	Tail	Bill
2 ♂ :	92, 93	68, 70	24, 25
2 ♀ :	87, 88	63, 64	22, 24

Distribution : India : Tripura (South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan and Nepal.

Genus ***Irena*** Horsfield, 1821

194. ***Irena puella puella*** (Latham)

1790. *Coracias puella* Latham, *Index Orn.*, 1 : 171 (India, restricted to Travancore, S. Kerala).

1971. *Irena puella puella*, Ali and Ripley, vol. 6 : 63.

Common name : Fairy Bluebird (English), and Dao gatang (Cachari).

Material examined : South Tripura district : 2 ♂, Trishna Wildlife Sanctuary, coll. S. Chatterjee, 29. xi. 1988.

Diagnostic characters : In male, back crown and tail brilliant ultramarine blue. Wings, sides of head, chin, throat and breast deep velvety black. Under tail-coverts blue. In female, dull blue green with blackish lores.

Measurements : 2 ♂ : Wing 132, 133; tail 99, 104; bill 30(2).

Distribution : India : Tripura (West Tripura district) : The Andaman & Nicobar Islands, Assam, Kerala, Maharashtra, Manipur, Meghalaya, Sikkim, Tamil Nadu and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries, and Nepal.

Family PYCNONOTIDAE

Key to the genera of the family PYCNONOTIDAE

Numerous hair springing from nape and hindneck; with long pointed crest.... ***Criniger***

No numerous hair springing from nape and hindneck; without long pointed crest ..... ***Pycnonotus***

Genus ***Pycnonotus*** Boie, 1826

195. ***Pycnonotus atriceps atriceps*** (Temminck)

1822. *Turdus atriceps* Temminck, *Pl. col.*, livr. 25, pl. 147 (Java and Sumatra, restricted to Java by Robinson & Kloss, 1923, *J. Fed. Malay States Mus.*, 11 : 55).

1971. *Pycnonotus atriceps atriceps*, Ali and Ripley, vol. 6 : 68.

Common name : Blackheaded Bulbul (English) and Takbulu, Lambala (Tripuri).

Material examined : South Tripura district : 1 ♂, Lakshmipur, *c.* 5 km. NE. of Belonia, coll. V. C. Agrawal, 6. xxii. 1969.

Diagnostic characters : Two colour phases. Normal phase-Back olive; rump olive mottled with black. Wings olive and black. Head glossy black. Tail olive with a black subterminal band. Throat and upper breast glossy black. Lower breast olive, vent yellow. Grey phase—All olive or yellow parts replaced by ashy grey. Terminal band of tail white.

Measurements : 1 ♂ : Wing 86, tail 76, bill 17.

Distribution : India : Tripura (South Tripura district) : Assam, Manipur, Meghalaya and Nagaland. Elsewhere : Bangladesh, Borneo, Burma, throughout the Indochinese subregion, Malaysia, Palawan and the Sunda Islands.

197. ***Pycnonotus melanicterus flaviventris*** (Tickell)

1833. *Vanga flaviventris* Tickell, *J. Asiat. Soc. Beng.* 2 : 573 (Dampara in Dhaolbhum, Singhbhum, Bihar, India).

1971. *Pycnonotus melanicterus flaviventris*, Ali and Ripley, vol. 6 : 72.

Common name : Blackcrested Yellow Bulbul (English), Zard bulbul (Hindi) and Takbulu (Tripuri).

Material examined : South Tripura district : 1 ♂, Garjee Rest House, *c.* 10 km. S. of Udaipur, coll. V. C. Agrawal, 24. xi. 1969. West Tripura district : 1 ♂, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 22. xi. 1969.

Diagnostic characters : Entire head with crest glossy black, back olive-yellow. Tail brown. Eyes pale yellow colour. Breast and belly yellow.

Measurements : 2 ♂ : Wing 90, 92; tail 90(2); bill 16(2).

Distribution : India : Tripura (South Tripura and West Tripura districts) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma, China and Nepal.

197. ***Pycnonotus jocosus emeria*** (Linnaeus)

1758. *Motacilla Emeria* Linnaeus, *Syst. Nat.*, 1 : 187 (Benghala).

1971. *Pycnonotus jocosus emerian*, Ali and Ripley, vol. 6 : 79.

Common name : Bengal Redwhiskered Bulbul (English), Sipahi Bulbul (Bengali), Pahari bulbul Hindi and Takbulu, Lambala (Tripuri).

Material examined : North Tripura district : 1 ♂, Pecharthal, coll. N. Majumdar, 13. vii. 1991; 1 ♂ and 1 ♂, Manu, coll. N. Majumdar, 21. vii. 1991. 2 ♀, Ambassa, coll. N. Majumdar, 25 and 27. vii. 1991. West Tripura district : 1 ♂ and 1 ♀, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 16 and 17. xi. 1969; 1 ♀, Khowaipar, coll. V. C. Agrawal, 9. xii. 1972; 1 ♀, Forest, *c.* 8 km. W. of Kanchanpur, coll. V. C. Agrawal.

Diagnostic characters : Forehead, crown with pointed black crest; back hair brown. Crimson tufts behind the eyes; chin, throat and belly white with dark collar on breast. Under tail-coverts scarlet.

Measurements :	Wing	Tail	Bill
2 ♂ :	82, 83	80, 83	19(2)
2 ♀ :	82, 85	77, 80	17, 18

Distribution : India : Tripura (North Tripura and West Tripura districts) : Andhra Pradesh, Meghalaya, Orissa, Tamil Nadu and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar) and Thailand.

198. ***Pycnonotus cafer bengalensis*** Blyth

1845. *Pycnonotus bengalensis* Blyth, *J. Asiat. Soc. Beng.*, 14 : 566 (Bengal).

1971. *Pycnonotus cafer bengalensis*, Ali and Ripley, vol. 6 : 90.

Common name : Bengal Redvented Bulbul (English), Kala bulbul (Bengali) and Takbulu, Lambala (Tripuri).

Material examined : North Tripura district : 1 ♂, Pecharthal, coll. N. Majumdar, 13. vii. 1991; 2 ♂ and 4 ♀, Manu, coll. N. Majumdar, 19-22. vii. 1991; 1 ♂, Ambassa, coll. N. Majumdar, 28. vii. 1991.

Diagnostic characters : Crested head black. Back earth brown. Black throat, breast and back with scale like marking with narrow pale edges.

Measurements :	Wing	Tail	Bill
4 ♂ :	99-100 (99)	92-99 (98)	22-23 (22)
4 ♀ :	90-95 (93)	80-87 (85)	21-23 (22)

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Bihar, Meghalaya, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Nepal and Bhutan.

199. ***Pycnonotus cafer stanfordi*** Deignan

1949. *Pycnonotus cafer stanfordi* Deignan, *Jour. Washington Acad. Sci.*, 39 : 277 (Taro or Dalu, Upper Chindwin district, Burma).

1971. *Pycnonotus cafer stanfordi*, Ali and Ripley, vol. 6 : 91.

Common name : Burmese Redvented Bulbul (English) and Takbulu, Lambala (Tripuri).

Material examined : West Tripura district : 1 ♂, Ricefield, *c.* 4 km. N. of Agartala, coll. V. C. Agrawal, 9. xi. 1969; 1 ♂, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 16. xi. 1969; 1 ♀ Khowaipar, coll. V. C. Agrawal, 12. xii. 1972.

Diagnostic characters : Back earthly brown. Head black with less crested feathers. Feathers of back and breast with sclae like marking with broad pale edges. Rump white, vent scarlet, white tipped blackish tail.

Measurements :	Wing	Tail	Bill
2 ♂ :	93, 100	87, 92	21(2)
1 ♀ :	96	93	21

Distribution : India : Tripura (West Tripura district) : Arnuachal Pradesh, Assam and Manipur, Meghalaya. Elsewhere : Bangladesh, Burma (= Myanmar) and Yunnan (S. China).

Genus ***Criniger*** Temminck, 1820

200. ***Criniger flaveolus flaveolus*** (Gould)

1836. *Trichophorus flaveolus* Gould, *Proc. zool. Soc. Lond.* : 6 (Nepal, *vide* Koelz, 1954, *Contrib. Inst. Regional Exploration No.* : 1 : 10).

1971. *Criniger flaveolus flaveolus*, Ali and Ripley, vol. 6 : 100.

Common name : Whitethroated Bulbul (English).

Material examined : North Tripura district : 2 ♂ and 1 ♀, Ambassa, coll. N. Majumdar, 26 and 27. vii. 1991.

Diagnostic characters : Back olive-green; crown with crest rufous-brown. wings and tail with rufous-brown; supercilium whitish, sides of head grey; chin and throat white, breast and belly lemon-yellow.

Measurements :	Wing	Tail	Bill
2 ♂ :	95, 98	88, 94	21, 22
1 ♀ :	97	90	21

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh and Burma (= Myanmar).

Family MUSCICAPIDAE

Key to the genera of the family

MUSCICAPIDAE

1. Wing more than 100 mm 2
   Wing less than 100 mm 7
2. Wing more or less equal or smaller than tail 3
   Wing larger than tail 4
3. Wing more or less equal to tail ... ***Garrulax***
   Wing smaller than tail ..... ***Megalurus***
4. Sexes dissimilar 5
   Sexes alike ..... ***Myiophoneus***
5. White on bases of secondaries and part of primaries 6
   No white on bases of primaries and secondaries ..... ***Turdus***
6. Plumage largely with blue or bluish ..... ***Monticola***
   Plumage largely with brownish and slaty ... ***Zoothera***
7. Plumage mainly black and white or with black and brown 8
   Plumage other than black and white 9
8. Sexes alike ..... ***Enicurus***
   Sexes dissimilar ..... ***Copsychus***
9. Bill stout, strong and large 10
   Bill small, pointed 11

10. Head, back and tail feathers colour uniform ..... ***Turdoides***

    Head, back and tail feathers colour not uniform ..... ***Pomatorhinus***

11. Plumage colouration mainly brown ..... ***Trichastoma***

    Plumage colouration mainly green or other than brown 12

12. Colouration mainly green 13

    Colouration other than green 15

13. Head, back and tail uniform colour ..... ***Phylloscopus***

    Head differs from back and tail 14

14. Head brownish ..... ***Orthotomus***

    Head grey colour ..... ***Culicicapa***

15. Bill depressed, wide at base..... ***Muscicapa***

    Bill not depressed 16

16. Chin, throat and breast with streak 21

    Chin, throat and breast not streaked 17

17. Tail feathers narrow and steeply graduated ..... ***Acrocephalus***

    Tail feathers not narrow and steeply graduated 18

18. Chin and throat with prominent markings, scarlet or blue in colour ..... ***Erithacus***

    Chin and throat without prominent markings 19

19. Tail equal to wing or shorter than wing 20

    Tail larger than wing ..... ***Prinia***

20. Tail shorter than wing ..... ***Saxicola***

    Tail and wing more or less equal ..... ***Alcippe***

21. Chin, throat and breast whitish, tail graduated ..... ***Timalia***

    Chin, throat whitish and breast buff, tail not graduated ..... ***Pellorneum***

Genus ***Pellorneum*** Swainson, 1832

201. ***Pellorneum ruficeps chamelum*** Deignan

1947. *Pellorneum ruficeps chamelum* Deignan, *Smith. Misc. Coll.* 107 : 6 (Gunjong, Cachar).

1971. *Pellorneum ruficeps chamelum*, Ali and Ripley, vol. 6 : 119.

Common name : Assam Spotted Babbler (English).

Material examined : North Tripura district : 1 ♂, Manu, coll. N. Majumdar, 20. vii. 1991.

Diagnostic characters : Back brown and streaked; crown with darker chestnut-brown cap. Light supercilium extending well behind the eye. Ear-coverts brown. Chin and throat white; breast and abdomen buff. Breast boldly streaked and spotted with dark brown.

Measurements : 1 ♂ : Wing 69, tail 69, bill 19.

Distribution : India : Tripura (North Tripura district) : Assam and Meghalaya. Elsewhere : Bangladesh.

Genus ***Trichastoma*** Blyth, 1842

202. ***Trichastoma abbotti abbotti*** (Blyth)

1845. *Malacocincla Abbotti* Blyth, *J. Asiat. Soc. Beng.*, 14 : 601 (Ramree Island, Arakan, Burma).

1971. *Trichastoma abbotti abbotti*, Ali and Ripley, vol. 6 : 127.

Common name : Abbott's Babbler (English).

Material examined : North Tripura district : 2 ♀, Chailingta, Manu, coll. V. C. Agrawal, 22. xii. 1972; 2 ♂ and 2 ♀, Ambassa, coll. N. Majumdar, 26, 27 and 28. vii. 1991. West Tripura district : 1 ♀, Charilum, *c.* 25 km. S. of Agartala, coll. V. C. Agrawal, 16. xi. 1969.

Diagnostic characters : Above, head, back and tail olive-brown; chin and throat greyish white; whitish belly, breast and flanks olive; under tail-coverts bright ochraceous.

Measurements :	Wing	Tail	Bill
2 ♂ :	74, 77	49, 52	22(2)
2 ♀ :	72, 74	48(–)	22(2)

Distribution : India : Tripura (North Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma, Nepal and Thailand.

Genus ***Pomatorhinus*** Horsfield, 1821

203. ***Pomatorhinus schisticeps schisticeps*** Hodgson

1836. *Pomatorhinus schisteceps* Hodgson, *Asiat. Res.*, 19 : 181 (Nepal).

1971. *Pomatorhinus schisticeps schisticeps*, Ali and Ripley, vol. 6 : 131.

Common name : East Himalayan Statyheaded Scimitar. Babbler (English) and Pabdoa (Bengali).

Material examined : North Tripura district : 1 ♂, Ambassa, coll. V. C. Agrawal, 4. i. 1973. South Tripura district : 1 ♀, Forest, *c.* 2 km. SE. of Rest House, Ampi, coll. V. C. Agrawal, 24. i. 1971.

Diagnostic characters : Back olive-brown, crown slaty grey. Supercilium white. Bill black and yellow curved. Throat, breast and belly white bordered with chestnut. Lower flanks and under tail-coverts olive-green.

Measurements :	Wing	Tail	Bill
1 ♂ :	98	104	35
1 ♀ :	99	104	36

Distribution : India : Tripura (North Tripura and South Tripura districts) : Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar) and Nepal.

204. ***Pomatorhinus hypoleucos hypoleucos*** (Blyth)

1844. *Orthorhinus hypoleucos* Blyth, *J. Asiat. Soc. Beng.*, 13 : 371 (Arakan, Burma).

1971. *Pomatorhinus hypoleucos hypoleucos*, Ali and Ripley, vol. 6 : 144.

Common name : Large Scimitar Babbler (English).

Material examined : Nil.

Diagnostic characters : Back olive-brown; wings and tail brown. A rusty line from eye to nape. Throat, breast and belly white. Vent slaty. Bill long, stout and curved.

Distribution : India : Tripura : Arunachal Pradesh, Assam and Meghalaya. Elsewhere : Bangladesh and Burma.

Remarks : Though not observed by us in Tripura, Ripley (1982, p. 326) recorded this bird from Tripura.

Genus ***Macronous*** Jardine and Selby, 1835

205. ***Macronous gularis rubricapilla*** (Tickell)

1833. *Motacilla rubricapilla* Tickell, *J. Asiat. Soc. Beng.*, 2 : 576 (Borabhum).

1971. *Macronous gularis rubricapilla*, Ali and Ripley, vol. 6 : 185.

Common name : Yellowbreasted Babbler (English).

Material examined : North Tripura district : 3 ♂, Manu, coll. N. Majumdar, 20 and 22. vii. 1991. South Tripura district : 2 ♂ and 2 ♀, Paralia *ca.* 10 km. S. of Udaipur, coll. N. Majumdar 6, 7 and 8. vii. 1991. West Tripura district : 1 ♂, Sepahijala, coll. S. Chatterjee, 25. xi. 1988.

Diagnostic characters : Back, Greyish olive; crown with tawny olive cap. Supercilium pale yellow. Chin, throat and breast pale yellow with dark streaks. Bill slaty, legs pale brown.

Measurements :	Wing	Tail	Bill
2 ♂ :	54, 58	49, 53	15, 16
2 ♀ :	53, 54	47, 48	15(2)

Distribution : India : Tripura (North Tripura and West Tripura districts) : Andhra Pradesh, Assam, Bihar, Karnataka, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Orissa, Sikkim and West Bengal. Elsewhere : Bangladesh and Nepal.

Genus ***Timalia*** Horsfield, 1821

206. ***Timalia pileata bengalensis*** Godwin-Austen

1872. *Timalia bengalensis* Godwin-Austen, *J. Asiat. Soc. Beng.*, 41 : 143 (Khasi Hills, Meghalaya).

1971. *Timalia pileata bengalensis*, Ali and Ripley, vol. 6 : 187.

Common name : Redcapped Babbler (English).

Material examined : North Tripura district : 2 ♂, Ambassa, coll. V. C. Agrawal, 4. i. 1973. South Tripura district : 1 ♂, Dyke No. 4, Trishna Wildlife Sanctuary, coll. S. Chatterjee, 3. xii. 1988.

Diagnostic characters : Back olive-brown slightly streaked on upper back. Crown chestnut. Lores and stout bill black. Tail brown, graduated and narrowly barred. Chin and throat white. Throat with fine black streaks. Belly buff. Vent olive brown.

Measurements : 2 ♂ : Wing 62(2); tail 74, 75; bill 19(2).

Distribution : India : Tripura (North Tripura and South Tripura districts) : Assam, Manipur, Meghalaya, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar) and Nepal.

Genus ***Turdoides*** Cretzschmar, 1826

207. ***Turdoides longirostris*** (Hodgson)

1854. *Pyctorhis longirostris* Hodgson, *in* Horsfield & Moore, *Cat. Bds. Mus.* E. I. Co. 1 : 408 (Nepal).

1971. *Turdoides longirostris*, Ali and Ripley, vol. 6 : 219.

Common name : Slenderbilled Babbler (English) and Taknakkarai (Tripuri).

Material examined : Nil.

Diagnostic characters : Head, back and tail deep reddish brown. Lores and cheeks whitish. Ear-coverts ferruginous. Bill black, slender and curved. Chin and upper throat whitish. Lower throat, breast and vent ferruginous becoming albescent. Tail cross-barred.

Distribution : India : Tripura (North Tripura district) : Assam, Manipur, Meghalaya, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Nepal and Burma (= Myanmar).

Remarks : Observed this bird in flocks in Ambassa, the North Tripura district.

Genus ***Garrulax*** Lesson, 1831

208. ***Garrulax monileger monileger*** (Hodgson)

1836. *Cinclosoma monileger* Hodgson, *Asiat. Res.*, 19 : 147 (Nepal).

1972. *Garrulax monileger monileger*, Ali and Ripley, vol. 7. : 6.

Common name : Necklaced Laughing Thrush (English).

Material examined : North Tripura district : 1 ♂, Manu, coll. N. Majumdar, 21. vii. 1991. South Tripura district : 2 ♂, Garjee, *c.* 15 km. S. of Udaipur, coll. V. C. Agrawal, 26 and 27. xi. 1969; 2 ♀, Abhoya, *c.* 8 km. NW. of Belonia, coll. V. C. Agrawal, 8. xii. 1969; 1 ♂ and 2 ♀, Pariatia, *c.* 10 km. South of Udaipur, coll. N. Majumdar, 7. vii. 1991.

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. Shoulder olive-brown, concolorous with back. Bill entirely black.

Measurements :	Wing	Tail	Bill
2 ♂ :	122, 134	125, 135	31, 33
2 ♀ :	122, 128	126, 130	28, 29

Distribution : India : Tripura (North Tripura and South Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar) and Nepal.

209. ***Garrulax pectoralis melanotis*** Blyth

1843. *Garrulax melanotis* Blyth, *J. Asiat. Soc. Beng.*, 12 : 949 (Arracan, Burma).

1972. *Garrulax pectoralis melanotis*, Ali and Ripley, vol. 7 : 8.

Common name : Assam Blackgorgeted Laughing Thrush (English) and Bada penga (Bengali).

Material examined : South Tripura district : 1 ♀, Garjee, *c.* 13 km. S. of Udaipur, coll. V. C. Agrawal, 27. xi. 1969. 1 ♂, Trishna Wildlife Sanctuary, coll. S. Chatterjee, 29. xi. 1988. West Tripura district : 1 ♂, Fatikroy, coll. V. C. Agrawal, 25. xii. 1972.

Diagnostic characters : Size larger than a Myna. Back olive-brown and underparts fulvous; nuchal collar rufous; supercilium extends to collar. Throat whitish buff bordered by a black broad necklace.

Measurements :	Wing	Tail	Bill
2 ♂ :	144, 149	130, 141	35(2)
1 ♀ :	149	131	35

Distribution : India : Tripura (South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar) and China.

210. ***Garrulax ruficollis*** (Jardine & Selby)

1838. *Ianthocincla ruficollis* Jardine & Selby, 111. *Orn.* 2, pl. 21 (Himalayas = Sikkim, India, restricted by Meinertzhagen, 1928, *Ibis* : 515).

1972. *Garrulax ruficollis*, Ali and Ripley, vol. 7 : 36.

Common name : Rufousnecked Laughing Thrush (English) and Hath gurri gurri (Bengali).

Material examined : North Tripura district : 4 ♂, Ambassa, coll. V. C. Agrawal, 23. i. 1971 and 8. ii. 1971. 1 ♂, Manu, coll. N. Majumdar, 19. vii. 1991. South Tripura district : 1 ♂, Ailmora, *c.* 22 km. SE. of Jatanbari, coll. S. Chatterjee, 3 xii. 1988.

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.

Measurements : 5 ♂ : Wing 99-105 (102); tail 108-115 (110); bill 25-26 (25).

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan and Nepal.

Genus ***Alcippe*** Blyth, 1844

211. ***Alcippe poioicephala fusca*** Godwin-Austein

1877. *Alcippe fusca* Godwin-Austen, *J. Asiat. Soc. Beng.*, 45 : 197 (Naga Hills).

1972. *Alcippe poioicephala fusca*, Ali and Ripley, vol. 7 : 124.

Common name : Assam Quaker Babbler (English).

Material examined : South Tripura district : 1 ♂, Lakshmipur, *c.* 5 km. NW. of Belonia, coll. V. C. Agrawal, 6. xii. 1969. West Tripura district : 1 ♂, Sepahijala, coll. S. Chatterjee, 25. xi. 1988.

Diagnostic characters : Back, wing and tail olive-brown. Crown and nape brownish grey. Ear-coverts and sides of neck ochraceous. Breast and belly ochraceous. Edges of wings and tail fulvous-olive.

Measurements : 2 ♂ : Wing 67, 70; tail 63, 68; bill 16, 17.

Distribution : India : Tripura (South Tripura and West Tripura districts) : Assam, Manipur, Meghalaya, Mizoram and Nagaland. Elsewhere : Bangladesh.

Genus ***Muscicapa*** Brisson, 1760

212. ***Muscicapa parva albicilla*** Pallas

1811. *Muscicapa Albicilla* Pallas, *Zoogr. Rosso-Asiat.*, 1 : 462, Aves, pl. 1 (Dauria).

1972. *Muscicapa parva albicilla*, Ali and Ripley, vol. 7 : 156.

Common name : Eastern Redbreasted Flycatcher (English), Chatki (Bengali) and Turra (Hindi).

Material examined : South Tripura district : 1 ♂, Garjee, coll. V. C. Agrawal, 29. xi. 1969; 1 ♀,

Hathalia, *c.* 12 km. NW. of Belonia, coll. V. C. Agrawal, 5. xii. 1969; 1 ♂, Forest, *c.* 3 km. SE. of Rest House of Ampi, coll. V. C. Agrawal, 25. i. 1971. West Tripura district : 2 ♂ and 1 ♀, Sepahijala, coll. S. Chatterjee 21-25. xi. 1988.

Diagnostic characters : Back and wing olive-brown. Throat rufous, breast and belly buff. Tail black with white patches on either sides of basal half.

Measurements :	Wing	Tail	Bill
1 ♂ :	72	52	13
2 ♀ :	68, 69	50, 52	13(2)

Distribution : India : Tripura (South Tripura and West Tripura districts) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Manipur, Maharashtra, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Uttar Pradesh, and West Bengal. Elsewhere : Nepal, Bhutan, Burma (= Myanmar), Thailand and the Indochinese countries.

213. ***Muscicapa poliogenys poliogenys*** (Brooks)

1879. *Cyornis poliogenys* Brooks, *Stray Feathers* 8 : 469 (Salbari, Sikkim Terai).

1972. *Muscicapa poliogenys poliogenys*, Ali and Ripley, vol. 7 : 186.

Common name : Western Brooks's Flycatcher (English).

Material examined : South Tripura district : 1 ♀, Garjee, coll. V. C. Agrawal, 29. xi. 1969.

Diagnostic characters : Back olive-brown, crown and sides of head grey, Tail rufous-brown. Chin and throat whitish, breast dark fulvous and belly fulvous.

Measurements : 1 ♀ : Wing 74, tail 60, bill 15.

Distribution : India : Tripura (South Tripura district) : Assam, Meghalaya, Mizoram, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, and Nepal.

214. ***Muscicapa thalassina thalassina*** Swainson

1838. *Muscicapa thalassina* Swainson, *Nat. Library. Flycatchers* 21 : 252 (India).

1972. *Muscicapa thalassina thalassina*, Ali and Ripley, vol. 7 : 198.

Common name : Verditer Flycatcher (English) and Nil-Katkatia (Bengali).

Material examined : Nil.

Diagnostic characters : Entire plumage blue-green or verdigris, brighter on head and throat, darker on wings and tail. Black lore very prominent. In female, colouration comparatively duller and greyer.

Distribution : India : Tripura : Throughout India. Elsewhere : Pakistan, Bangladesh, Burma (= Myanmar), the Indochinese countries, Vietnam and China.

Remarks : Observed this bird in all the districts.

Genus ***Culicicapa*** Swinhoe, 1871

215. ***Culicicapa ceylonensis calochrysea*** Oberholser

1848. *'Cryptolopha cinereocapilla* (Vieillot)' Hutton. *Nom. nud.* J. Asiat. Soc. Beng. 17 : 689 (Himalaya).

1972. *Culicicapa ceylonensis calochrysea*, Ali and Ripley, vol. 7 : 202.

Common name : Northern greyheaded Flycatcher (English) and Zard-phutki (Bengali).

Material examined : North Tripura district : 1 ♂ and 1 ♀, Ambassa, coll. V. C. Agrawal, 3 and 5. i. 1973. South Tripura district : 1 ♂, Garjee, coll. V. C. Agrawal, 29. xi. 1969. West Tripura district : 1 ♀, Sepahijala, coll. S. Chatterjee, 20. xi. 1988.

Diagnostic characters : Back yellowish green. Head neck, throat and breast ashy grey. Wings and tail brown edged with yellow. Rump and belly bright yellow.

Measurements :	Wing	Tail	Bill
2 ♂ :	62, 63	52, 53	13, 14
1 ♀ :	59	51	13

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Throughout the Indian mainland except Kerala and Tamil Nadu. Elsewhere : Bangladesh, Bhutan, Borneo, Burma (= Myanmar), China, the Indochinese countries, Nepal, Pakistan, Pulawan, the Sunda Islands and Timor.

Genus ***Cisticola*** Kaup, 1829

216. ***Cisticola juncidis cursitans*** (Franklin)

1831. *Prinia cursitans* Franklin, *Proc. zool. Soc. Lond.* : 118 (Between Calcutta and Benares).

1973. *Cisticola juncidis cursitans*, Ali and Ripley, vol. 8 : 33.

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 : Tripura (West Tripura district) : Throughout the Indian Union except Manipur, Mizoram and Naga Hills. Elsewhere : Bangladesh, Pakistan and Sri Lanka.

Remarks : Seen this bird in West Tripura district.

Genus ***Prinia*** Horsfield, 1821

217. ***Prinia socialis inglisi*** Whistler & Kinnear

1933. *Prinia socialis inglisi* Whistler & Kinnear, *J. Bombay nat. Hist. Soc.*, 36 : 574 (Bhutan Duars).

1973. *Prinia socialis inglisi*, Ali and Ripley, vol. 8 : 59.

Common name : Assam Ashy Wren-Warbler (English).

Material examined : North Tripura district : 2 ♂ and 1 ♀, Paratia, *c.* 12 km. S. of Udaipur, coll. N. Majumdar, 6, 7 and 10. vii. 1991.

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.

Measurements :	Wing	Tail	Bill
2 ♂ :	44, 45	45, 46	15(2)
2 ♀ :	40	42	14

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Sikkim and West Bengal. Elsewhere : Bangladesh and Bhutan.

Genus ***Orthotomus*** Horsfield, 1821

218. ***Orthotomus sutorius patia*** Hodgson

1845. *Orthotomus patia* Hodgson, *Proc. zool. Soc. Lond.* : 29 (Nepal, restricted to Kathmandu by Ripley, 1950, *J. Bombay nat. Hist. Soc.*, 49 : 402).

1973. *Orthotomus sutorius patia*, Ali and Ripley vol. 8 : 84.

Common name : Bengal Tailor Bird (English) and Tuntuni (Bengali).

Material examined : North Tripura district : 1 ♂, Pecharthal, coll. N. Majumdar, 15. vii. 1991. West Tripura district : 1 ♂, Sepahijala, coll. S. Chatterjee 24 xi. 1988.

Diagnostic characters : Size euqal to a Sparrow. Back yellowish green. Whitish buff underparts, rust-coloured crown; tail long, and middle feather pointed.

Measurements : 2 ♂, Wing 45, 48; tail 39, 41; bill 15, 16.

Distribution : India : Tripura (North Tripura and West Tripura districts) : Assam, Bihar, Meghalaya, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar) and Nepal.

Genus ***Megalurus*** Horsfield, 1821

219. ***Megalurus palustris toklao*** (Blyth)

1843. *Turdus toklao* Blyth, *J. Asiat. Soc. Beng.* 12 : 179 (Calcutta, Calcutta district, West Bengal, India), ex. 1842. *J. Asiat. Soc. Beng.* 11 : 603.

1973. *Megalurus palustris toklao,* Ali and Ripley, vol. 8 : 96.

Common name : Striated Marsh Warbler (English).

Material examined : North Tripura district : 1 ♂, Chailingta, coll. V. C. Agrawal, 19. xii. 1972.

Diagnostic characters : Size larger than a 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.

Measurements : 1 ♂ : Wing 102, tail 127, bill 21.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Bihar, Haryana, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Orissa, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Indochinese countries, the Indonesian Islands, Nepal, Pakistan the Philippines and Thailand.

Genus ***Acrocephalus*** Naumann, 1811

220. ***Acrocephalus aedon aedon*** (Pallas)

1776. *Muscicapa Aedon* Pallas, *Reise Russ. Reichs* 3 : 695 (Dauria).

1982. *Acrocephalus aedon aedon,* Ripley : 422.

Common name : Thickbilled Warbler (English).

Material examined : North Tripura district : 1 ♂, Chailingta, Manu, coll. V. C. Agrawal, 22 xii. 1972. West Tripura district : 1 ♀, Sepahijala, coll. S. Chatterjee, 19. xi. 1988.

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.

Measurements :	Wing	Tail	Bill
1 ♂ :	81	83	20
1 ♀ :	81	85	20

Distribution : India : Tripura (North Tripura and West Tripura districts) : Andhra Pradesh, Assam, Gujarat, Karnataka, Maharashtra, Meghalaya, Kerala, the Nicobar Islands, Rajasthan, Tamil Nadu, Orissa and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries, Malaya Peninsula and Nepal. Breeds in Japan, southern Siberia from the Ob river to northeastern China.

Genus ***Phylloscopus*** Boie, 1826

221. ***Phylloscopus inornatus inornatus*** (Blyth)

1842. *Regulus inornatus* Blyth, *J. Asiat. Soc. Beng.,* 11 : 191 (Darjeeling = Darjiling, Darjiling dist., West Bengal, India).

1973. *Phylloscopus inornatus inornatus,* Ali and Ripley, vol. 8 : 156.

Common name : Siberian Yellowbrowed Leaf Warbler (English).

Material examined : South Tripura district : 1 ♂, Trishna Wildlife Sanctuary, Rajnagar, coll. S. Chatterjee, 1. xii. 1988.

Diagnostic characters : Wings and tail brown edged with greenish two white bars on wings; entire lower plumage sultied white.

Measurements : 1 ♂, Wing 55, tail 40, bill 11.

Distribution : India : Tripura (South Tripura district) : Assam, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, China, the Indochinese countris, Taiwan and Nepal. Breeds in Siberia.

222. ***Phylloscopus trochiloides viridanus*** Blyth

1843. *Phylloscopus viridanus* Blyth, *J. Asiat. Soc. Beng.,* 12 : 967 (Calcutta, Calcutta district, West Bengal, India).

1973. *Phylloscopus trochiloides viridanus,* Ali and Ripley, vol. 8 : 166.

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.

Distribution : India : Tripura (South Tripura district) : Throughout the Indian mainland except Rajasthan. Elsewhere : Bangladesh, Pakistan, Nepal, Sri Lanka, Burma (= Myanmar) and the Indochinese countries.

Remarks : Observed this bird in the South Tripura district.

Genus ***Erithacus*** Cuvier, 1800

223. ***Erithacus calliope*** (Pallas)

1776. *Motacilla Calliope* Pallas, *Reise Russ. Reichs* 3 : 697 (Yenesei).

1973. *Erithacus calliope*. Ali and Ripley, vol. 8 : 215.

Common name : Rubythroat (English) and Gunpigora (Bengali).

Material examined : West Tripura district : 1 ♂ and 1 ♀, Sepahijala, coll. S. Chatterjee, 23. xi. 1988.

Diagnostic characters : Back olive-brown; white supercilium. Chin and throat scarlet bordered with a black line on sides on chin. Breast and flanks pale buffish brown, belly white. In female, throat colour of male replaced by white and buff.

Measurements :	Wing	Tail	Bill
1 ♂ :	76	59	17
1 ♀ :	72	59	17

Distribution: India : Tripura (West Tripura district) : Throughout northern India. South upto Andhra Pradesh through Madhya Pradesh. Meghalaya and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Indochinese countries, Nepal, the Philippines and Taiwan. Breeds in Siberia from the Ural Mts. to Anadyr, Kamchatka and Hokkaido.

Genus ***Copsychus*** Wagler, 1827

224. ***Copsychus saularis saularis*** (Linnaeus)

1758. *Gracula Saularis* Linnaeus, *Syst. Nat.* ed. 10, 1 : 109 (Asia = Bengal, India).

1973. *Copsychus saularis saularis*. Ali and Ripley, vol. 8 : 242.

Common name : Indian Magpie-Robin (English), Dhaiyal (Bengali and Hindi) and Takula (Tripuri).

Material examined : North Tripura district : 2 ♂, Chailingta, Manu, coll. V. C. Agrawal, 21 and 23. xii. 1972; 1 ♂ and 1 ♀, Pacharthal, coll. N. Majumdar, 13 and 16. vii. 1991; 1 ♂, Manu, coll. N. Majumdar, 22. vii. 1991, 1 ♂, Ambassa, coll. N. Majumdar, 28. vii. 1991. West Tripura district : 1 ♂, Indranagar, Agartala, coll. V. C. Agrawal, 11. xi. 1969; 1 ♂, Ricefield, *c.* 4 km. N. of Agartala, coll. V. C. Agrawal, 9. xi. 1969; 1 ♂, Sepahijala, coll. S. Chatterjee, 24. xi. 1988.

Diagnostic characters : In male, head, throat, breast, back and tail glossy blue-black. Wings blackish brown with a prominent long white-patch. Tail graduated black with white outer rectrices. In female, back slaty and grey on throat and breast.

Measurements :	Wing	Tail	Bill
1 ♂ :	97	88	26
2 ♀ :	85, 94	73, 85	24(2)

Distribution : India : Tripura (North Tripura and West Tripura districts) : Throughout the Indian mainland except eastern India beyond West Bengal and Kerala. Elsewhere : Bangladesh, Nepal and Pakistan.

225. ***Copsychus malabaricus indicus*** (Baker)

1924. *Kittacincla malabarica indica* Baker, *Faun. Br. India.* Birds 2 : 118 (Bhutan duars).

1973. *Copsychus malabaricus indicus*, Ali and Ripley, vol. 8 : 246.

Common name : Indian Shama (English).

Material examined : North Tripura district : 1 ♂, Forest, *c.* 4 km. S. of Rest House, Teliamura, coll. V. C. Agrawal, 2. ii. 1971; 1 ♂, Chailingta, coll. V. C. Agrawal, 17. xii. 1972; 1 ♂, Manu, coll. N. Majumdar, 20. vii. 1991; 1 ♂, Ambassa, coll. N. Majumdar, 27. vii. 1991. West Tripura district : 1 ♀, Bishalgarh, *c.* 20 km. S. of Agratala, coll. V. C. Agrawal, 20. xi. 1969.

Diagnostic characters : In male, head, upper back, chin, throat and upper breast glossy black. Belly and vent deep rufous. Rump white. Tail graduated, central rectrices black and elongated; outer rectrices largely white. In female, the black is replaced by grey.

Measurements :	Wing	Tail	Bill
4 ♂ :	92-97 (94)	125-152 (140)	19-21 (20)
1 ♀ :	89	110	21

Distribution : India : Tripura (North Tripura and West Tripura districts) : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

Genus ***Enicurus*** Temminck, 1822

226. ***Enicurus schistaceus*** (Hodgson)

1836. *Motacilla (Enicurus) schistaceus* Hodgson, *Asiat. Res.* 19 : 189 (Nepal).

1973. *Enicurus schistaceus,* Ali and Ripley, vol. 9 : 10.

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 bank and short supercilium white. Chin and sides of throat black. Throat, breast and vent white.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), the Indochinese countries and China.

Remarks : Observed this bird in the North Tripura district.

Genus ***Saxicola*** Bechstein, 1803

227. ***Saxicola torguata przevalskii*** (Pleske)

1889. *Pratincola maura var. Przevalskii* Pleske, *Wiss. Res. Przevalskii's Reise,* Th. Vog. 2 : 46, pl. 4 (Kansu).

1973. *Saxicola torguata przevalskii,* Ali and Ripley, voll. 9 : 27

Common name : Tibetan Collared Bush Chat (English).

Material examined : North Tripura district : 1 ♂, Chailingta, coll. V. C. Agrawal, 23 xii. 1972.

Diagnostic characters : In male (summer) : head, back, tail and wing black. Wing with white wing-patch. Rump white. Throat black. Breast rufous-chestnut, belly buff. In female, back wings and tail rufous-brown streaked with dark brown. Rump pale rufous. Tail blackish brown. Breast rufous.

Measurements : 1 ♂ : Wing 76, tail 60, bill.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Meghalaya and Nagaland. Elsewhere : Nepal. Breeds in Tibet and in the mountanis of western China.

228. ***Saxicola torquata indica*** (Blyth)

1847. *Pratincola indica* Blyth, *J. Asiat. Soc. Beng.* 16 : 129 (India = Calcutta).

1973. *Saxicola torquata indica,* Ali and Ripley, vol. 9 : 28.

Common name : Indian Collared Bush Chat (English).

Material examined : North Tripura district : 1 ♂, Karbuk, coll. S. Chatterjee, 31. xii. 1988.

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 rufous, breast rufous.

Measurements : 1 ♂ : Wing 73, tail 54, bill 14.

Distribution : India : Tripura (North Tripura district) : Throughout the Indian mainland except

Kerala and Tamil Nadu. Elsewhere : Bangladesh, Bhutan, Nepal and Pakistan.

229. *Saxicola caprata burmanica* Baker

1923. *Saxicola caprata burmanica* Baker, *Bull. Brit. Orn. Cl.* 43 : 9 (Pegu).

1973. *Saxicola caprata burmanica*, Ali and Ripley, vol. 9 : 34.

Common name : Burmese Pied Bush Chat (English).

Material examined : North Tripura district : 1 ♀, Chailingta, coll. V. C. Agrawal, 22. xii. 1972; 1 ♂, Karbuk & Ailmara, coll. S. Chatterjee, 31. xii. 1988.

Diagnostic characters : In male, head, back, wing and tail jet black. Wing with white wing-patch, Upper tail-coverts white. Chin and throat black. Belly white. In female, head, back and wing brown. Tail blackish brown. Breast and belly rusty.

Measurements :	Wing	Tail	Bill
1 ♂ :	70	51	15
1 ♀ :	70	55	15

Distribution : India : Tripura (North Tripura district) : Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), the Indochinese countries and Thailand.

230. *Saxicola jerdoni* (Blyth)

1867. *Oreicola jerdoni* Blyth, *Ibis* : 14, new name for *Rhodophila melanoleuca* Jerdon, 1863, *Bds. India* 2 : 128 (Purneah) nec *Oenanthe melanoleuca* Vieillot, 1818, Baker, FBI No. 501, vol. 2 : 35

1973. *Saxicola jerdoni*, Ali and Ripley, vol. 9 : 36.

Common name : Jerdon's Bush Chat (English).

Material examined : Nil.

Diagnostic characters : In male, entire head, neck, wings, back and tail glossy black. Chin, throat, breast and belly white. In female, head, back, wings and tail brown tinged with rufous. Throat white. Breast and belly pale fulvous.

Distribution : India : Tripura (West Tripura district), (Ali and Ripley, 1973, vol. 9, p. 36) : Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Nagaland and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), Thailand and Vietnam.

Remarks : Observed this bird in the West Tripura district.

231. *Saxicola ferrea* Gray

1846. *Saxicola ferrea* Gray, *Cat. Mamms. Bds. Nepal* : 71, 153 (Nepal).

1973. *Saxicola ferrea*, Ali and Ripley, vol. 9 : 37.

Common name : Dark-grey Bush Chat (English).

Material examined : Nil.

Diagnostic characters : Size equal to a sparrow. In male, apparently pied black and white plumages. Supercilium white. Black tail with whitish outer edges. Throat and belly white. Breast and flanks pale grey. In female, crown, back and tail rufous brown faintly streaked with darker brown. Supercilium pale; sides of head dark brown. Chin and throat white, vent and belly fulvous.

Distribution : India : Tripura (North Tripura district) : Assam, Arunachal Pradesh, Bihar, Manipur, Meghalaya, Mizoram, Nagaland and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), Thailand and Vietnam.

Ramarks : This bird was observed in Ambassa, the North Tripura district.

Genus *Monticola* Boie, 1822

232. *Monticola solitarius pandoo* (Sykes)

1832. *Petrocincla pandoo* Sykes, *Proc. zool. Soc. Lond.* : 87 (Ghatus, Dukhun, Poona = Pune, India).

1973. *Monticola solitarius pandoo*, Ali and Ripley, vol. 9 : 73.

Common name : Indian Blue Rock Thrush (English).

Material examined : North Tripura district : 1 ♂, Longtharai *c.* 15 km. E. of Ambassa, coll. V. C. Agrawal, 1. i. 1973; 1 ♀, Ambassa, coll. V. C. Agrawal, 4. i. 1973. South Tripura district : 1 ♂, Sekhabari, *c.* 6 km. SE. of Abhoya, Belonia, coll. V. C. Agrawal. 3 xii. 1969. West Tripura district : 1 ♂, Gumti Wildlife Sanctuary, coll. S. Chatterjee, 2. xii. 1988.

Diagnostic characters : Size equal to a Bulbul. In male, very bright almost azure blue plumage in summer. Tail and wings brown. In summer, 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 :	Wing	Tail	Bill
3 ♂ :	114-125 (12)	78-88 (75)	25-28 (27)
1 ♀ :	112	83	26

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : The Andaman Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Meghalaya, Punjab, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bhutan, Burma (= Myanmar), Nepal, Pakistan, Sri Lanka, Turkestan and Tibet.

Genus ***Myiophonus*** Temminck, 1822

233. ***Myiophonus caeruleus temminckii*** (Vigors)

1832. *Myiophonus Tmminckii* Vigors, *Proc. zool. Soc. Lond.* : 171 (Himalayan Mountains = Simla – Almora district, India).

1973. *Myiophonus caeruleus temminckii,* Ali and Ripley, vol. 9 : 79.

Common name : Himalayan Whistling Thrush (English).

Material examined : North Tripura district : 1 ♀, Longtharai, *c.* 17 km. E. of Ambassa, coll. V. C. Agrawal, 1 i. 1973.

Diagnostic characters : Equal to a Pigeon. Upper and below plumages entirely dark purple-blue 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.

Measurements : 1 ♀ : Wing 159, tail 113, bill 37.

Distribution : India : Tripura (North Tripura district) : Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Afghanistan, Bhutan, China, the Indo-chinese countries, the Indonesian Islands, Japan, Nepal, Pakistan and Turkestan.

Genus ***Zoothera*** Vigors, 1832

234. ***Zoothera citrina citrina*** (Latham)

1790. *Turdus citrinus* Latham. *Index Orn.*, 1 : 350 (India, Cachar).

1973. *Zoothera citrina citrina,* Ali and Ripley, vol. 9 : 86.

Common name : Orangeheaded Ground Thrush (English) and Dama (Bengali).

Material examined : Nil.

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 : Tripura (North Tripura district) : Throughout the India Union except Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra and Nagaland. Elsewhere : Bangladesh, Pakistan and Nepal.

Remarks : Observed this species in Ambassa, the North Tripura district.

235. ***Zoothera dauma dauma*** (Latham)

1790. *Turdus Dauma* Latham, *Index Orn.* 1 : 362 (India = Kashmir).

1973. *Zoothera dauma dauma,* Ali and Ripley, vol. 9 : 97.

Common name : Smallbilled Mountain Thrush (English).

Material examined : West Tripura district : 1 ♂, Sepahijala Forest Rest House, coll. S. Chatterjee, 23. xi. 1988.

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.

Measurements : 1 ♂ : Wing 143, tail 106, bill 28.

Distribution : India Tripura (West Tripura district) : Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, Nepal, Thailand and Vietnam.

Genus ***Turdus*** Linnaeus, 1758

236. ***Turdus dissimilis dissimilis*** Blyth

1847. *T. (urdus) dissimilis* Blyth, *J. Asiat. Soc. Beng.*, 16 : 144 (Lower Bengal).

1973. *Turdus dissimilis dissimilis*, Ali and Ripley, vol. 9 : 106.

Common name : Blackbreasted Thrush (English).

Material examined : Nil.

Diagnostic characters : In male, upper back, tail and wings slaty. Whole head and nape black. Chin, throat and breast black. Upper belly, flanks and axillaries orange-rufous. Vent and undertail-coverts white. In female, back, wing and tail dark olive-brown. Throat whitish streaked with brown. Breast olivaceous streaked with black.

Distribution : India : Tripura (Ali and Ripley, 1973, vol. 9, p. 106) : Assam, Manipur, Meghalaya and Nagaland. Elsewhere : Bangladesh, China and Vietnam.

Remarks : Though this bird was not observed by us, Ali and Ripley (1973) reported from Tripura.

Family PARIDAE

Genus ***Parus*** Linnaeus, 1758

237. ***Parus major nipalensis*** Hodgson

1837. ***Parus Nipalensis*** Hodgson, *Ind. Rev.*, 2(1) : 31 (Nepal).

1973. *Parus major nipalensis*, Ali and Ripley, vol. 9 : 168.

Common name : Nepal Grey Tit (English) and Ram-ganga (Bengali).

Material examined : West Tripura district : 1 ♂, Sepahijala, coll. S. Chatterjee, 22. xi. 1988.

Diagnostic characters : Back grey, crown black; cheeks and nuchal patch white. Wings dark brown with wing-bar. Black throat ended in a broad black band running down the middle of white underparts.

Measurements : 1 ♂ : Wing 65, tail 58, bill 12.

Distribution : India : Tripura (West Tripura district) : Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Nagaland, Punjab, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar) and Nepal.

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

238. ***Anthus hodgsoni hodgsoni*** Richmond

1907. *Anthus trivialis hodgsoni* Richmond, 1907, in Blackwelder, Res, in China, (2) : 493, new name for *Anthus maculatus* Jerdon, 1864. *Bds.* India 3 : 873. [Type locality from 1863, *ibid.* 2 : 228 Calcutta, Calcutta district, West Bengal, India]. nec. *Anthus maculatus* Vieillot.

1973. *Anthus hodgsoni hodgsoni*, Ali and Ripley, vol. 9 : 243.

Common nane : Indian Tree Pipit (English), Muchassi (Bengali) and Musarichi (Hindi).

Material examined : North Tripura district : 1 ♂, Ambassa, coll. V. C. Agrawal, 3. i. 1973. South Tripura district : 1 ♀, Trishna Reserve Forest, coll. S. Chatterjee, 22. xi. 1988. West Tripura district : 1 ♂, Charilum coll. V. C. Agrawal, 16. xi. 1969; 1 ♀, Forest Officer Compound, Kanchanpur, coll. V. C. Agrawal, 16. ii. 1971.

Diagnostic characters : Size equal to the preceding bird. Crown and back greenish brown with dark brown streakes, supercilium whitish; wing-bars (two) and outer rectrices white. Throat, breast and belly whitish with broad and dark brown streaks.

Measurements :	Wing	Tail	Bill
2 ♂ :	85, 87	63, 68	15(2)
1 ♀ :	82	59	15

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Throughout India except Kashmir. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), China, the Indochinese countries, Japan, Korea, Malayasia and the Philippines.

Genus ***Motacilla*** Linnaeus, 1758

239. ***Motacilla indica*** Gmelin

1789. *Motacilla indica* Gmelin, *Syst. Nat.*, 1 : 962 (India, *ex* Sonnerat, restricted to Malabar by Ripley, 1961. Synopsis : 574).

1973. *Motacilla indica*, Ali and Ripley, vol. 9 : 273.

Common name : Forest Wagtail (English) and Tetetaiwung (Tripuri).

Material examined : Nil.

Diagnostic characters : Size equal to a sparrow. Back olive, brown. Tail dark 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.

Distribution : India : Tripura (Ali and Ripley, 1973, vol. 9, p. 273) : Throughout the Indian mainland except Arunachal Pradesh, Haryana, Jammu & Kashmir, Mizoram, Punjab, Rajasthan, Sikkim and Uttar Pradesh. Elsewhere : Sri Lanka. Breeds in eastern Asia from the Ussuri region south through Korea, Manchuria and China to Kweichow and southwestern Szechuan, Winters mostly in southern China, the Indochinese countries, Sumatra, Java and Borneo.

Remarks : Though this bird was not seen by us, Ali and Ripley (1973) reported from Tripura.

240. ***Motacilla citreola citreola*** Pallas

1776. *Motacilla citreola* Pallas, *Reise Russ. Reichs* 3 : 696 (Siberia, U. S. S. R.).

1973. *Motacilla citreola citreola*, Ali and Ripely, vol. 9 : 282.

Common name : Northern Yellowheaded Wagtail (English), Pani-ka-pilkya (Hindi) and Tetetaiwung (Tripuri).

Material examined : West Tripura district : 1 ♂, Charilum, *c.* 26 km. S. of Agartala, coll. V. C. Agrawal, 17. xi. 1969.

Diagnostic characters : Size equal to the preceding bird. Back, rump and tail-coverts grey; head, neck and underparts rich lemon-yellow. A prominent black hindcollar on nape separating yellow head from grey back.

Measurements : 1 ♂ : Wing 91, tail 84, bill 17.

Distribution : India : Tripura (West Tripura district) : Andhra Pradesh, Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal. Elsewhere : Bangladesh, Burma (= Myanmar), the Indochinese countries, china, Malay Archipelago, Nepal, Pakistan, Sri Lanka and Thailand.

241. ***Motacilla cinerea cinerea*** Tunstall

Motacilla Cinerea Tunstall, *Orn. Br.* : 2 (Type locality fixed as Wycliffe, Yorkshire, England by Clancey, 1946, *Bull. Orn. Cl.* 66 : 28).

1973. *Motacilla cinerea cinerea*, Ali and Ripley, vol. 9 : 285.

Common name : Grey Wagtail (English) and Tetetaiwung (Tripuri).

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). Tail blackish brown with white outer edges. In winter, throat buffish, belly pale yellow, vent bright yellow. In female, throat buff (in winter), mottled with black (in summer).

Distribution : India : Tripura (North Tripura district) : The Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Orissa, entire peninsular India, Sikkim, Uttar Pradesh and West Bengal. Elsewhere : Pakistan, Afghanistan, Nepal. Bangladesh, the Maldive Islands. Kamchatka, Japan, China, the British Isles, Burma, Sri Lanka, the Mediterranean region, Africa, Iran, Turkestan, Taiwan, the Indochinese countries, Indonesia and the Philippines.

Remarks : Seen this bird at Ambassa, the North Tripura district.

Family DICAEIDAE

Genus ***Dicaeum*** Cuvier, 1817

242. ***Dicaeum agile agile*** (Tickell)

1833. *Fringilla Agilis* Tickell, *J. Asiat. Soc. Beng.*, 2 : 578 (Borabhum and Dholbhum).

1974. *Dicaeum agile agile*, Ali and Ripley, vol. 10 : 2.

Common name : Indian Thickbilled Flowerpeeker (English).

Material examined : Nil.

Diagnostic characters : Small olive-green bird with a tail having a terminal white band. Bill very short, thick and horny grey coloured. Breast with greyish white faintly brown streaked.

Distribution : India : Tripura : Throughout the Indian mainland except Punjab and Rajasthan. Elsewhere : Pakistan, Nepal, Bhutan, Bangladesh and Burma (= Myanmar).

Remarks : Observed in all the districts of Tripura.

243. ***Dicaeum chrysorrheum chrysochlore*** Blyth

1843. *Dicaeum chrysochlore* Blyth, *J. Asiat. Soc. Beng.*, 12 : 1009 (Arracan).

1974. *Dicaeum chrysorrheum chrysochlore*, Ali and Ripley, vol. 10 : 5.

Common name : Yellowvented Flowerpecker (English).

Material examined : South Tripura district : 1 ♂, Garjee, *c.* 15 km. S. of Udaipur, coll. V. C. Agrawal, 26. xi. 1969. West Tripura district : 2 ♀, Fatikroy, coll. V. C. Agrawal, 26 and 29. xii. 1972.

Diagnostic characters : Back and head olive-green. Wings and tail dark brown. Chin, throat and breast buffish white streaked with dark brown. Undertail-coverts bright yellow.

Measurements :	Wing	Tail	Bill
1 ♂ :	58	29	14
1 ♀ :	56	28	13

Distribution : India : Tripura (South Tripura and West Tripura districts) : Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), Indochinese countries, Nepal, Thailand and Vietnam.

244. ***Dicaeum erythrorhynchos erythrorhynchos*** (Latham)

1790. *Certhia erythrorhynchos* Latham, *Index Orn.*, 1 : 299.

1974. *Dicaeum erythrorhynchos erythrorhynchos*, Ali and Ripley, vol. 10 : 10.

Common name : Tickell's Flowerpecker (English) and Phoolchuki (Hindi).

Material examined : North Tripura district : 1 ♂, Ambassa, coll. N. Majumdar, 26. vii. 1991. West Tripura district : 1 ♂ and 1 ♀, Sepahijala, coll. S. Chatterjee, 19 and 25. xi. 1988.

Diagnostic characters : Back, head, wing and tail brownish tinged with olive. Chin, throat and breast greyish white. Bill flesh coloured and shorter.

Measurements :	Wing	Tail	Bill
1 ♂ :	52	23	13
1 ♀ :	47	23	12

Distribution : India : Tripura (North Tripura and West Tripura districts) : Throughout the Indian mainland except Arunachal Pradesh, Haryana, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Punjab, Rajasthan and Sikkim. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar) and Nepal.

245. ***Dicaeum cruentatum cruentatum*** (Linnaeus)

1758. *Certhia cruentata* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 119 (Benghala = Bengal).

1974. *Dicaeum cruentatum cruentatum*, Ali and Ripley, vol. 10 : 15.

Common name : Scarletbacked Flowerpecker (English).

Material examined : North Tripura district : 1 ♂, Ambassa, coll. N. Majumdar, 26. vii. 1991. South Tripura district : 1 ♂, Garjee, *c.* 15 km. S. of Udaipur, coll. V. C. Agrawal, 26. xi. 1969. West Tripura district : 2 ♂, Fatikroy, coll. V. C. Agrawal, 26. xii. 1972; 1 ♂, Sepahijala, coll. S. Chatterjee, 19. xi. 1988.

Diagnostic characters : In male, back, crown and rump crimson. Wings and tail glossy blue black. Sides of head black. Centre of throat, breast and belly pale buff. Sides of throat black. In female, back and crown olive. Tail black. Wings dark brown. Uppertail-coverts crimson.

Measurements : 4 ♂, Wing 48-51 (50), tail 25-28 (27), bill 12-13 (12.5).

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Bhutan, Burma (= Myanmar), the Indochinese countries and southern China to Fukien.

Family NECTARINIIDAE

Key to the genera of the family NECTARINIIDAE

1. Central rectrices not elongated 1
   Central rectrices elongated ..... ***Aethopyga***
2. Plumage non-metallic ..... ***Arachnothera***
   Plumage of male metallic 2
3. Lower mandible curved downward ..... ***Nectarinia***
   Lower mandible straight or nearly so ..... ***Anthreptes***

Genus ***Anthreptes*** **Swainson,** 1837

246. ***Anthreptes singalensis rubinigentis*** (Baker)

1930. *Chalcoparia singalensis rubinigentis* Baker, *Fauna Brit. Ind., Bds.* 7 : 282, new name for *chalcoparia singalensis lepida* (Latham), cited in Baker, 1926, FBI 3 : 370 (India, restricted to Cachar).

1974. *Anthreptes singalensis rubinigentis*, Ali and Ripley, vol. 10 : 19.

Common name : Rubycheek (English).

Material examined : North Tripura district : 1 ♂, Ambassa, coll. N. Majumdar, 26. vii. 1991.

Diagnostic characters : In male, crown and back brilliant metallic green. Ear-coverts copper coloured, border below by a brilliant violet-purple line, Chin, throat and breast rufous. Abdomen and vent lemon-yellow. In female, crown and back olive green, wing yellowish. Throat, breast and abdomen similar to male.

Measurements : 1 ♂ : Wing 50, tail 40, bill 16.

Distribution : India : Tripura (North Tripura district) : Assam, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Nepal, Bhutan, Burma (= Myanmar) and Thailand.

Genus ***Nectarinia*** Illiger, 1811

247. ***Nectarinia zeylonica sola*** (Vieillot)

1819. *Cinnyris sola* Vieillot, *Nouv. Dist, d' Hist. Nat.* 31 : 512.

1974. *Nectarinia zeylonica sola,* Ali and Ripley, vol. 10 : 22.

Common name : Indian Purplerumped Sunbird (English), Man choongi (Bengali) and Shakar Khora (Hindi).

Material examined : North Tripura district : 1 ♂ and 1 ♀, Ambassa, coll. N. Majumdar, 28 and 29. vii. 1991. West Tripura district : 1 ♂, Sepahijala, coll. S. Chatterjee, 24. xi. 1988.

Diagnostic characters : Male with yellow abdomen, throat metallic purple red and uppertail-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.

Measurements :	Wing	Tail	Bill
2 ♂ :	53, 59	37, 40	20, 22
1 ♀ :	53	36	19

Distribution : India : Tripura (North Tripura and West Tripura districts) : Throughout the Indian mainland except Arunachal Pradesh, Haryana, Jammu & Kashmir, Manipur, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim and West Bengal. Elsewhere : Bangladesh, Nepal, Bhutan, Burma (= Myanmar) and Thailand.

248. ***Nectarinia sperata brasiliana*** (Gmelin)

1788. *Certhia brasiliana* Gmelin, *Syst. Nat.* 1 : 474 (Brazilia errore = Java).

1974. *Nectarinia sperata brasiliana,* Ali and Ripley, vol. 10 : 26.

Common name : Van Hasselt's Sunbird (English).

Material examined : Nil.

Diagnostic characters : In male, upper back black. Rump and shoulder patch metallic purple-blue. Crown metallic green. Tail and wings blackish. Throat metallic purple. Breast and upper belly deep maroon-crimson. Lower belly and vent sooty brown. In female, back olive, tail black. Throat and breast yellow. Belly brighter yellow.

Distribution : India : Tripura (Ali and Ripley, 1974, vol. 10, p. 26) : Assam and Manipur. Elsewhere : Bangladesh, Burma (= Myanmar), Indonesia and Thailand.

Remarks : This bird was not seen by us. Ali and Ripley (1974) reported this bird from Tripura.

249. ***Nectarinia asiatica intermedia*** (Hume)

1870. *Arachnechthra intermedia* Hume, *Ibis* : 436 (Tippera).

1974. *Nectarinia asiatica intermedia,* Ali and Ripley, vol. 10 : 37.

Common name : Assam Purple Sunbird (English).

Material examined : North Tripura district : 1 ♂, Ambassa, coll. V. C. Agrawal, 4. i. 1973. South Tripura district : 1 ♂, Forest, *c.* 2 km. N. of Rest House, Ampi, coll. V. C. Agrawl, 20. i. 1971. West Tripura district : 2 ♂, Ricefield, *c.* 4 km. N. of Agartala, coll. V. C. Agrawal. 9. xi. 1969.

Diagnostic characters : In male, head, tail and back metallic dark blue and purple. Throat and breast metallic purple, sides blue-green. Breast separated by a narrow, inconspicuous reddish brown band from dark purple belly. In female, back olive-brown. Throat, breast and belly dull yellow.

Measurements : 2 ♂ : Wing 56, 57; tail 36, 37; bill 22(2).

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Assam and Orissa. Elsewhere : Bangladesh, Burma (= Myanmar) and Indochinese peninsula.

Genus ***Aethopyga*** Cabanis, 1851

250. ***Aethopyga siparaja seheriae*** (Tickell)

1833. *Nectarinia seheriae* Tickell, *Jour. Asiat. Soc. Bengal* 2 : 577.

1974. *Aethopyga siparaja seheriae*, Ali and Ripley, vol. 10 : 47.

Common name : Indian Yellowbacked Sunbird (English).

Material examined : North Tripura district : 1 ♂, Kumarghat, V. C. Agrawal, 30. xii. 1972. West Tripura district : 2 ♂ and 1 unsexed, Khowaipar, coll. V. C. Agrawal, 15. ii. 1971, 9 and 10. xii. 1972; 1 ♂, Fatikroy, coll. V. C. Agrawal, 26. xii. 1972.

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 : 4 ♂, Wing 56-59 (57), tail 44-59 (56), bill 22-23 (22.5).

Distribution : India : Tripura (North Tripura and West Tripura districts) : Bihar, Himachal Pradesh, Madhya Pradesh, Meghalaya, Orissa, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Bangladesh, Bhutan and Nepal.

Genus ***Arachnothera*** Temminck, 1826

251. ***Arachnothera longirostris longirostris*** (Latham)

1790. *Certhia longirostra* Latham, *Index Orn.*, 1 : 299 (Bengal, restricted to Sylhet, Bangladesh, by Baker, *J. Bombay nat. Hist. Soc.*, 28 : 124).

1974. *Arachnothera longirostris longirostris*, Ali and Ripley, vol. 10 : 52.

Common name : Little Spiderhunter (English).

Material examined : North Tripura district : 2 ♂, Ambassa, coll. V. C. Agrawal, 9. ii. 1971 and 4. i. 1973; 2 ♂, coll. N. Majumdar, 26 and 27. vii. 1991. South Tripura district : 1 ♀, Rajnagar Wildlife Sanctuary, coll. S. Chatterjee, 28. xi. 1988. West Tripura district : 2 ♂, Khowaipar, coll. V. C. Agrawal, 11. xii. 1972; 1 unsexed, Near Forest Office, Kanchanpur, coll. V. C. Agrawal, 15. ii. 1971.

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 :	Wing	Tail	Bill
5 ♂ :	64-67 (65)	39-43 (42)	38-41 (39)
1 ♀ :	62	38	35

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Andhra Pradesh, Arunachal Pradesh, Assam, Goa Karnataka, Kerala, Manipur, Meghalaya, Orissa, Tamil Nadu and West Bengal. Elsewhere : Bengladesh, Burma (= Myanmar) and Thailand.

Family ZOSTEROPIDAE

Genus ***Zosterops*** Vigors and Horsfield, 1827

252. ***Zosterops palpebrosa palpebrosa*** (Temminck)

1824. *Sylvia palpebrosa* Temminck, *Pl. Col. d' Ois.* 49, pl. 293, fig. 3 (Bengal Bengal).

1974. *Zosterops palpebrosa palpebrosa*, Ali and Ripley, vol. 10 : 57.

Common name : Indian White eye (English) and Baboona (Hindi).

Material examined : West Tripura district : 1 ♂ and 1 ♀, Khowaipar, coll. V. C. Agrawal, 9. xii. 1972; 1 ♀, Fatikroy, coll. V. C. Agrawal, 26. xii. 1972; 2 ♂, Sepahijala, coll. S. Chatterjee, 23 and 26. xi. 1988.

Diagnostic characters : A yellow-olive bird with a very distinct white eye-ring. Throat and undertail-coverts bright yellow; breast greyish white and belly whitish.

Measurements :	Wing	Tail	Bill
2 ♂ :	51, 52	37, 39	14(2)
1 ♀ :	52	37	13+

Distribution : India : Tripura (West Tripura district) : Throughout the Indian mainland except

Andhra Pradesh, Kerala and Tamil Nadu. Elsewhere : Bangladesh, Burma (= Myanmar), China, Indochinese peninsula, Nepal, Pakistan and Tibet.

Family PLOCEIDAE

Key to the subfamilies of the family PLOCEIDAE

1. 1st primary long, much extending the greater wing-coverts ..... ***Passerinae***

   1st primary minute, never exceeding the wing-coverts 2

2. Bill longer than the width at base ..... ***Ploceinae***

   Bill shorter than the width at base ..... ***Estrildinae***

Key to the genera of the family PLOCEIDAE

1. Bill short and stout, culmen slightly curved. 2

   Bill broad at base, stout, culmen not curved ..... ***Lonchrua***

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

253. ***Passer domesticus indicus*** Jardine & Selby

1835. *Passer indicus* Jardine & Selby, Ill. Orn., 3 pl. 118 (India, restricted to Bangalore, Bangalore district, Karnataka by Kinnear, 1925, *Ibis* : 751).

1974. *Passer domesticus indicus*, Ali and Ripley, vol. 10 : 63.

Common name : Indian House Sparrow (English), Choti charai (Bengali), Churi (Hindi) and chora, charai (Tripuri).

Material examined : North Tripura district : 5 ♂ and 1 ♀, Manu, coll. N. Majumdar, 18 and 19. vii. 1991. South Tripura district : 1 ♂, Near Rest House, Ampi, coll. V. C. Agrawal, 19. i. 1971. West Tripura district : 1 ♀, Near Forest Office, Kanchanpur, coll. V. C. Agrawal, 17. ii. 1971.

Diagnostic characters : 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 :	Wing	Tail	Bill
2 ♂ :	73, 75	57, 58	15, 16
1 ♀ :	70	55	16

Distribution : India : Tripura (North Tripura, South Tripura and West Tripura districts) : Throughout the Indian Union including Andamans, except Jammu & Kashmir and Sikkim. Elsewhere : Arabia, Bangladesh, Burma (= Myanmar), Pakistan and Sri Lanka, Introduced in South Africa, Comoro and the Mascarene Islands.

Genus ***Ploceus*** Cuvier, 1816

254. ***Ploceus philippinus burmanicus*** Ticehurst

1932. *Ploceus infrontunatus burmanicus* Ticehurst, *Bull. Brit. Orn. Cl.*, 52 : 105 (Akyab).

1974. *Ploceus philippinus burmanicus*, Ali and Ripley, vol. 10 : 93.

Common name : Indian Baya (English), Babui (Bengali), Baya (Hindi) and Chenchu, Payara (Tripuri).

Material examined : North Tripura district : 8 ♂ and 3 ♀, Manu, coll. N. Majumdar, 22, 23 and 27. vii. 1991; 2 ♀, Ambassa, coll. N. Majumdar, 27. vii. 1991.

Diagnostic characters : In male, crown yellow. Back dark brown streaked with yellow. Throat

whitish grey. Breast and abdomen cream buff. In famale, back and crown yellowish buff streaked with dark brown. Throat white, breast yellowish buff.

Measurements :	Wing	Tail	Bill
3 ♂ :	74-75 (74)	49-50 (49)	20-21 (20)
2 ♀ :	74, 75	45, 46	21(2)

Distribution : India : Tripura (North Tripura district) : Assam, Bihar Meghalaya and West Bengal. Elsewhere : Bangladesh, Nepal and Burma (= Myanmar).

Genus ***Estrilda*** Swainson, 1827

255. ***Estrilda amandava amandava*** (Linnaeus)

1758. *Fringilla Amandava* Linnaeus, *Syst. Nat.*, ed 10, 1 : 180 (Eastern India, restricted to Calcutta, Calcutta district, West Bengal, India, by Baker, 1921, *J. Bombay nat. Hist. Soc.*, 27 : 725).

1974. *Estrilda amandava amandava*, Ali and Ripley, vol. 10 : 101.

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 : Tripur (North Tripura district) : Throughout the Indian mainlands except Kerala, Manipur, Meghalaya, Mizoram, and Nagaland. Elsewhere : Bangladesh, Pakistan, Nepal, China, the Indochinese countries and the Sunda Islands.

Remarks : Seen this bird at Pecharthal, in the North Tripura district.

Genus ***Lonchura*** Sykes, 1832

256. ***Lonchura striata acuticauda*** (Hodgson)

1836. *M. (unia) Acuticauda* Hodgson, *Asiat. Res.* 19 : 153 (Nepal).

1974. *Lonchura striata acuticauda*, Ali and Ripley, vol. 10 : 107.

Common name : Whitebacked Munia (English) and Shakari munia (Bengali and Hindi).

Material examined : South Tripura district : 1 ♀, Paratia, *c.* 10 km. South of Udaipur, coll. N. Majumdar, 10. vii. 1991.

Diagnostic characters : Back brown with very fine pale shaft-streakes and rump white. Forehead, wings and tail blackish brown. Chin, throat and breast blackish brown. Abdomen and belly greyish white, finely streaked. Bill heavy bluish and conical. Tail pointed.

Measurements : 1 ♀ : Wing 51, tail 37, bill 13.

Distribution : India : Tripura (South Tripura district) : Arunachal Pradesh, Assam, Manipur, Meghalaya, Nagaland, Sikkim and West Bengal. Elsewhere : Bangladesh, Nepal, Bhutan, Burma (= Myanmar) and Thailand.

257. ***Lonchura punctulata punctulata*** (Linnaeus)

1758. *Loxia punctulata* Linnaeus, *Syst. Nat.*, ed. 10, 1 : 173. (Asia = Calcutta, Calcutta district, West Bengal, India).

1974. *Lonchura punctulata punctulata*, Ali and Ripley, vol. 10 : 113.

Common name : Indian Spotted Munia (English), Tiley munia (Bengali), Telia munia (Hindi) and Takrai (Tripuri).

Material examined : North Tripura district : 1 ♂ and 1 ♀, Manu, coll. N. Majumdar, 19 and 23. vii. 1991; 1 ♂, Ambassa, coll. N. Majumdar, 30. vii. 1991. West Tripura district : 1 ♂, Ricefield, *c.* 4 km. N. of Agratala, coll. V. C. Agrawal, 9. xi. 1969; 1 ♀, Near Dakbungalow, Agartala, coll. V. C. Agarwal, 13. xi. 1969.

Diagnostic characters : Size less than a House Sparrow, chocolate-brown with faint pale shaft-streaks above. Undertail-coverts fulvous, rump barred with white. Tail tawny-olive. Sides of head, neck and throat chestnut. Breast and abdomen speckled black and white; belly white.

Measurements :	Wing	Tail	Bill
1 ♂ :	51, 56	37, 44	13(27)
1 ♀ :	56, 58	35, 43	14(2)

Distribution : India : Tripura (North Tripura and West Tripura districts) : Andhra Pradesh, Bihar, Gujarat, Goa, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, and West Bengal.

Family FRINGILLIDAE

Genus ***Carpodacus*** Kaup, 1829

258. ***Carpodacus erythrinus roseatus*** (Blyth)

1842. *Pyrrhula roseata* 'Tickell' = Blyth, *J. Asiat. Soc. Beng.* 11 : 461 ('sold.....in Calcutta, Calcutta district, West Bengal, India).

1974. *Carpodacus erythrinus roseatus*, Ali and Ripley, vol. 10 : 164.

Common name : Indian Rosefinch (English) and Lal tuti (Bengali and Hindi).

Material examined : Nil.

Diagnostic characters : In male, crown crimson, back and wings crimson and brown. Rump dark crimson. Cheeks 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 : Tripura : Throught the Indian mainland except Himachal Pradesh, Jammu & Kashmir. Elsewhere : Nepal, Bangladesh, Burma (= Myanmar), the Indochinese countries, China and Tibet.

Remarks : Observed this species in all the districts of Tripura.

Family EMBERIZIDAE

Genus ***Melophus*** Swainson, 1837

259. ***Melophus lathami*** (Gray)

1831. *Emberiza lathami* Gray, Zool. Misc., 1 : 2 (Canton, Kwanglung).

1982. *Melophus lathami*, Ali and Ripley, vol. 10 : 232.

Common name : Crested Bunting (English) and Patthar-chiria (Hindi).

Material examined : Nil.

Diagnostic characters : In male, crown with long, pointed black crest. Back and tail black. Wings chestnut. In female, crest shorter. Back olive-brown with dark brown streaks. Wings edges and outer rectrices rufous.

Distribution : India : Tripura (South Tripura district) : Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Rajasthan, Sikkim, Uttar Pradesh, and West Bengal. Elsewhere : Pakistan, Nepal, Bhutan and Bangladesh.

Remarks : Observed in the North and South Tripura districts.

SUMMARY

1) A list of 259 species and subspecies based on the collection present in the N. Z. C., as well as from literature is given from Tripura. It belongs to 157 genera, 56 families and 16 orders.

2) 25 species and subspecies are recorded for the first time from Tripura.

3) The family Muscicapidae with 27 species and subspecies forms the largest group in the bird fauna of Tripura State.

ACKNOWLEDGEMENTS

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District wise distribution of avian species from Tripura

Serial No.	Systematic List Name of the species and subspecies	North Tripura	South Tripura	West Tripura	Tripura State Where Exact Locality is not known
1	2	3	4	5	6
	ORDER PODICIPEDIFORMES				
	Family PODICIPEDIDAE				
1.	*Podiceps ruficollis capensis* Salvadori				+
	ORDER PELECANIFORMES				
	Family PHALACROCORACIDAE				
2.	*Phalacrocorax carbo* (Linnaeus)				+
3.	*Phalacrocorax fuscicollis* Stephens				+
4.	*Phalacrocorax niger* (Vieillot)				+
5.	*Anhinga rufa melanogaster* Pennant				+
	ORDER CICONIIFORMES				
	Family ARDEIDAE				
6.	*Ardea cinerea* Linnaeus				+
7.	*Ardea purpurea manilensis* Meyen		+		
8.	*Ardea alba* Linnaeus				+
9.	*Ardeola striatus chloriceps* (Bonaparte)		+		
10.	*Ardeola grayii grayii* (Sykes)	+	+	+	
11.	*Bubulcus ibis coromandus* (Boddaert)	+	+	+	+

1	2	3	4	5	6
12.	*Egretta intermedia intermedia* (Wagler)	+	+	+	+
13.	*Egretta garzetta garzetta* Linnaeus	+	+	+	+
14.	*Nycticorax nycticorax nycticorax* (Linnaeus)		+	+	+
15.	*Ixobrychus cinnamomeus* (Gmelin)	+			
16.	*Ixobrychus sinensis* (Gmelin)		+		
17.	*Ixobrychus flavicollis flavicollis* (Latham)		+		
	Family CICONIIDAE				
18.	*Mycteria leucocephala* (Pennant)				+
19.	*Anastomus oscitans* (Boddaert)		+		+
20.	*Ciconia episcopus episcopus* (Boddaert)		+		
21.	*Ciconia ciconia ciconia* (Linnaeus)				+
	Family THRESKIORNITHIDAE				
22.	*Threskionis aethiopica melanocephala* (Latham)				+
23.	*Platalea leucorodia major* Temminck & Schlegel				+
	ORDER ANSERIFORMES				
	Family ANATIDAE				
24.	*Anser anser rubrirostris* Swinhoe	+			
25.	*Dendrocygna javanica* (Horsfield)				+
26.	*Dendrocygna bicolor* (Vieillot)				+
27.	*Anas acuta* Linnaeus				+
28.	*Anas crecca crecca* Linnaeus		+		
29.	*Anas platyrhynchos* Linnaeus				+

1	2	3	4	5	6
30.	*Anas strepera strepera* Linnaeus				+
31.	*Anas penelope* Linnaeus				+
32.	*Anas clypeata* Linnaeus				+
33.	*Aythya ferina* (Linnaeus)				+
34.	*Nettapus coromandelianus coromandelianus* (Gmelin)	+			
	ORDER FALCONIFORMES				
	Family ACCIPITRIDAE				
35.	*Elanus caeruleus vociferus* (Latham)		+	+	
36.	*Milvus migrans govinda* Sykes		+		
37.	*Haliastur indus indus* (Boddaert)		+		
38.	*Accipiter badius dussumieri* (Temminck)	+	+		
39.	*Accipiter trivirgatus indicus* (Hodgson)	+			
40.	*Accipiter nisus nisosimilis* (Tickell)				+
41.	*Buteo buteo japonicus* (Temminck & Schlegel)		+		
42.	*Sarcogyps calvus* (Scopoli)	+	+		
43.	*Gyps bengalensis* (Gmelin)	+	+	+	
44.	*Circus macrourus* (S. G. Gmelin)		+		
45.	*Circus aeruginosus aeruginosus* (Linnaeus)		+		
46.	*Spilornis cheela burmanicus* Swann	+		+	
47.	*Pandion haliaetus haliaetus* (Linnaeus)	+	+		
	Family FALCONIDAE				
48.	*Falco subbuteo* Linnaeus	+			

1	2	3	4	5	6
49.	*Coturnix coromandelica* (Gmelin)	+			
50.	*Arborophila atrogularis* (Blyth)	+			
51.	*Lophura leucomelana lathami* (J. E. Gray)	+			
52.	*Gallus gallus murghi* Robinson & Kloss		+	+	
	ORDER GRUIFORMES				
	Family TURNICIDAE				
53.	*Turnix suscitator plumbipes* (Hodgson)	+			
	Family RALLIDAE				
54.	*Rallus aquaticus indicus* Blyth				+
55.	*Porzana pusilla pusilla* (Pallas)		+		
56.	*Amaurornis phoenicurus chinensis* (Boddaert)				+
57.	*Gallicrex cinerea* (Gmelin)				+
58.	*Gallinula chloropus indica* Blyth				+
59.	*Porphyrio porphyrio poliocephalus* (Latham)				+
60.	*Fulica atra atra* Linnaeus				+
	ORDER CHARADRIIFORMES				
	Family JACANIDAE				
61.	*Hydrophasianus chirurgus* (Scopoli)				+
62.	*Metopidius indicus* (Latham)		+		
	Family CHARADRIIDAE				
63.	*Vanellus indicus indicus* (Boddaert)	+	+		+
64.	*Pluvialis dominica fulva* (Gmelin)	+			

1	2	3	4	5	6
65.	*Charadrius dubius curonicus* Gmelin	+			
66.	*Charadrius dubius jerdoni* (Legge)				+
67.	*Tringa totanus totanus* (Linnaeus)		+		
68.	*Tringa stagnatilis* (Bechstein)	+			
69.	*Tringa nebularia* (Gunnerus)	+	+		
70.	*Tringa ochropus* Linnaeus	+	+		
71.	*Tringa glareola* Linnaeus		+		
72.	*Tringa hypoleucos* Linnaeus	+	+		
73.	*Gallinago stenura* (Bonaparte)				+
74.	*Gallinago gallinago gallinago* Linnaeus	+	+		
75.	*Gallinago minima* (Brunnich)	+			
76.	*Scolopax rusticola rusticola* Linnaeus	+	+		
77.	*Calidris minuta* (Leisler)	+			
78.	*Calidris temminckii* (Leisler)	+			
79.	*Philomachus pugnax* (Linnaeus)	+			
	Family ROSTRATULIDAE				
80.	*Rostratula bengalensis bengalensis* (Linnaeus)	+	+		
	Family RECURVIROSTRIDAE				
81.	*Himantopus himantopus himantopus* (Linnaeus)	+			
	Family BURHINIDAE				
82.	*Burhinus oedicnemus indicus* (Salvadori)	+	+		

1	2	3	4	5	6
	Family GLAREOLIDAE				
83.	*Glareola pratincola maldivarum* J. R. Forster	+			
	Family LARIDAE				
84.	*Larus brunnicephalus* Jerdon	+			
85.	*Sterna aurantia* J. E. Gray	+			
86.	*Sterna hirundo tibetana* Saunders	+			
87.	*Sterna acuticauda* J. E. Gray	+			
	ORDER COLUMBIFORMES				
	Family COLUMBIDAE				
88.	*Treron curvirostra nipalensis* (Hodgson)	+	+		
89.	*Treron pompadora phayrei* (Blyth)	+	+	+	
90.	*Ducula aenea sylvatica* (Tickell)	+			
91.	*Columba livia intermedia* Strickland	+	+	+	
92.	*Streptopelia decaocto decaocto* (Frivaldszky)	+	+	+	
93.	*Streptopelia tranquebarica humilis* (Temminck)		+	+	
94.	*Streptopelia chinensis suratensis* (Gmelin)	+	+	+	
95.	*Streptopelia chinensis tigrina* (Temminck)		+	+	
96.	*Streptopelia senegalensis combayensis* (Gmelin)	+	+	+	
97.	*Chalcophaps indica indica* (Linnaeus)	+			
	ORDER PSITTACIFORMES				
	Family PSITTACIDAE				
98.	*Psittacula eupatria avensis* (Kloss)	+	+		

1	2	3	4	5	6
99.	*Psittacula krameri borealis* (Neumann)	+	+		
100.	*Psittacula alexandri fasciata* (P. L. S. Muller)		+	+	
101.	*Psittacula roseata juneae* Biswas				+
102.	*Loriculus vernalis* (Sparrman)			+	
	ORDER CUCULIFORMES				
	Family CUCULIDAE				
103.	*Clamator jacobinus serratus* (Sparrman)	+			
104.	*Cuculus varius varius* Vahl			+	
105.	*Cuculus micropterus micropterus* Gould		+		
106.	*Cacomantis merulinus querulus* Heine	+			
107.	*Eudynamys scolopacea scolopacea* (Linnaeus)	+	+	+	
108.	*Rhopodytes tristis tristis* (Lesson)	+	+	+	
109.	*Centropus sinensis intermedius* (Hume)	+	+		
110.	*Centropus toulou bengalensis* (Gmelin)	+		+	
	ORDER STRIGIFORMES				
	Family STRIGIDAE				
111.	*Otus scops sunia* (Hodgson)	+			
112.	*Otus bakkamoena lettia* (Hodgson)		+	+	
113.	*Bubo bubo bengalensis* (Franklin)	+	+		
114.	*Bubo zeylonensis leschenault* (Temminck)			+	
115.	*Glaucidium cuculoides rufescens* Baker	+	+	+	
116.	*Ninox scutulata burmanica* Hume			+	

1	2	3	4	5	6
117.	*Athene brama indica* (Franklin)	+		+	
118.	*Asio flammeus flammeus* (Pontoppidan)	+			
	ORDER CAPRIMULGIFORMES				
	Family CAPRIMULGIDAE				
119.	*Eurostopodus macrotis cerviniceps* (Gould)				+
120.	*Caprimulgus macrurus albonotatus* Tickell	+			
121.	*Caprimulgus affinis monticola* Franklin	+	+		
	ORDER APODIFORMES				
	Family APODIDAE				
122.	*Apus affinis subfurcatus* (Blyth)	+			
123.	*Cypsiurus parvus infumatus* (Sclater)	+	+		
124.	*Hemiprocne longipennis coronata* (Tickell)		+		
	ORDER TROGONIFORMES				
	Family TROGONIDAE				
125.	*Harpactes erythrocephalus erythrocephalus* (Gould)	+			
	ORDER CORACIIFORMES				
	Family ALCEDINIDAE				
126.	*Ceryle rudis leucomelanura* Reichenbach		+		
127.	*Alcedo hercules* Laubmann	+			
128.	*Alcedo atthis bengalensis* Gmelin	+	+		
129.	*Alcedo meninting coltarti* Baker				+
130.	*Pelargopsis capensis capensis* (Linnaeus)		+		

1	2	3	4	5	6
131.	*Halcyon smyrnensis fusca* (Boddaert)	+	+		
132.	*Halcyon smyrnensis perpulchra* Madarasz	+	+		
133.	*Halcyon pileata* (Boddaert)			+	
	Family MEROPIDAE				
134.	*Merops leschenaulti leschenaulti* Vieillot	+			
135.	*Merops orientalis birmanus* Neumann	+	+	+	
136.	*Nyctyornis athertoni athertoni* Jardine & Selby			+	
	Family CORACIIDAE				
137.	*Coracias benghalensis affinis* Horsfield	+	+	+	
	Family UPUPIDAE				
138.	*Upupa epops longirostris* Jerdon		+		
	Family BUCEROTIDAE				
139.	*Rhyticeros undulatus ticehursti* Deignan				+
140.	*Anthracoceros malabaricus malabaricus* (Gmelin)	+			
	ORDER PICIFORMES				
	Family CAPITONIDAE				
141.	*Megalaima lineata hodgsoni* Bonaparte	+	+	+	
142.	*Megalaima asiatica asiatica* (Latham)	+			
143.	*Megalaima australis cyanotis* (Blyth)		+		
144.	*Megalaima haemacephala indica* (Latham)	+	+	+	
	Family PICIDAE				
145.	*Jynx torquilla himalayana* Vaurie	+		+	

1	2	3	4	5	6
146.	*Micropternus brachyurus phaioceps* Blyth	+	+		
147.	*Picus canus hessei* (Gyldenstolpe)		+	+	
148.	*Picus flavinucha flavinucha* Gould	+	+		
149.	*Picus chlorolophus chlorolophus* Vieillot	+	+		
150.	*Picoides macei macei* (Vieillot)			+	
151.	*Picoides mahrattensis mahrattensis* (Latham)		+		
152.	*Picoides canicapillus canicapillus* (Blyth)		+	+	
153.	*Chrysocolaptes lucidus guttacristatus* (Tickell)	+	+	+	
	ORDER PASSERIFORMES				
	Family PITTIDAE				
154.	*Pitta nipalensis nipalensis* (Hodgson)	+	+		
	Family ALAUDIDAE				
155.	*Mirafra assamica assamica* Horsfield	+	+	+	
	Family HIRUNDINIDAE				
156.	*Hirundo rustica rustica* Linnaeus	+		+	
157.	*Hirundo rustica tytleri* Jerdon	+	+	+	
158.	*Hirundo daurica erythropygia* Sykes			+	
	Family LANIIDAE				
159.	*Lanius tephronotus tephronotus* (Vigors)	+	+	+	
160.	*Lanius schach tricolor* (Hodgson)	+			
161.	*Lanius cristatus cristatus* Linnaeus	+	+	+	
	Family ORIOLIDAE				
162.	*Oriolus oriolus kundoo* Sykes	+			

1	2	3	4	5	6
163.	*Oriolus xanthornus xanthornus* (Linnaeus)	+	+	+	
	Family DICRURIDAE				
164.	*Dicrurus adsimilis albirictus* (Hodgson)	+	+	+	
165.	*Dicrurus caerulescens caerulescens* (Linnaeus)	+	+	+	
166.	*Dicrurus annectans* (Hodgson)	+	+	+	
167.	*Dicrurus aeneus aeneus* Vieillot		+		
168.	*Dicrurus remifer tectirostris* (Hodgson)	+			
169.	*Dicrurus hottentottus hottentottus* (Linnaeus)		+	+	
170.	*Dicrurus paradiseus grandis* (Gould)	+	+	+	
	Family ARTAMIDAE				
171.	*Artamus fuscus* Vieillot			+	
	Family STURNIDAE				
172.	*Sturnus malabaricus malabaricus* (Gmelin)	+	+	+	
173.	*Sturnus pagodarum* (Gmelin)	+	+	+	
174.	*Sturnus contra contra* (Linnaeus)	+		+	
175.	*Acridotheres tristis tristis* (Linnaeus)	+	+		
176.	*Acridotheres fuscus fuscus* (Wagler)	+			
177.	*Acridotheres javanica infuscatus* (Baker)	+			
178.	*Gracula religiosa intermedia* (A. Hay)	+	+		
	Family CORVIDAE				
179.	*Cissa chinensis chinensis* (Boddaert)	+	+		
180.	*Dendrocitta vagabunda Vagabunda* (Latham)		+	+	
181.	*Dendrocitta formosae himalayana* Jerdon	+			
182.	*Corvus splendens splendens* Vieillot			+	

1	2	3	4	5	6
183.	*Corvus macrorhynchos levailantii* Lesson	+	+	+	
	Family CAMPEPHAGIDAE				
184.	*Hemipus picatus picatus* (Sykes)		+		
185.	*Tephrodornis gularis pelvica* (Hodgson)	+	+		
186.	*Tephrodornis pondicerianus pondicerianus* (Gmelin)	+			
187.	*Coracina novaehollandiae macei* (Lesson)			+	
188.	*Coracina novaehollandiae nipalensis* (Hodgson)	+	+	+	
189.	*Coracina melaschistos melaschistos* (Hodgson)		+		
190.	*Pericrocotus flammeus speciosus* (Latham)	+	+	+	
191.	*Pericrocotus cinnamomeus vividus* Baker	+	+		
	Family IRENIDAE				
192.	*Aegithina tiphia tiphia* (Linnaeus)	+	+	+	
193.	*Chloropsis aurifrons aurifrons* (Temminck)		+	+	
194.	*Irena puella puella* (Latham)		+		
	Family PYCNONOTIDAE				
195.	*Pycnonotus atriceps atriceps* (Temminck)		+		
196.	*Pycnonotus melanicterus flaviventris* (Tickell)		+	+	
197.	*Pycnonotus jocosus emerica* (Linnaeus)	+		+	
198.	*Pycnonotus cafer bengalensis* Blyth	+			
199.	*Pycnonotus cafer stanfordi* Deignan			+	
200.	*Criniger flaveolus flaveolus* (Gould)	+			
	Family MUSCICAPIDAE				
201.	*Pellorneum ruficeps chamelum* Deignan	+			
202.	*Trichastoma abotti abotti* (Blyth)	+		+	

1	2	3	4	5	6
203.	*Pomatorhinus schisticeps schisticeps* Hodgson	+	+		
204.	*Pomatorhinus hypoleucos hypoleucos* (Blyth)				+
205.	*Macronous gularis rubricapilla* (Tickell)	+	+	+	
206.	*Timalia pileata bengalensis* Godwin-Austen	+	+		
207.	*Turdoides longirostris* (Hodgson)	+			
208.	*Garrulax monileger monileger* (Hodgson)	+	+		
209.	*Garrulax pectoralis melanotis* Blyth		+	+	
210.	*Garrulax ruficollis* (Jardine & Selby)	+	+		
211.	*Alcippe poioicephala fusca* Godwin-Austen	+		+	
212.	*Muscicapa parva albicilla* Pallas		+	+	
213.	*Muscicapa poliogenys poliogenys* (Brooks)		+		
214.	*Muscicapa thalassina thalassina* Swainson	+	+	+	
215.	*Culicicapa ceylonensis calochrysea* oberholser	+	+	+	
216.	*Cisticola juncidis cursitans* (Franklin)			+	
217.	*Prinia socialis inglisi* Whistler & Kinnear	+			
218.	*Orthotomus sutorius patia* Hodgson	+		+	
219.	*Megalurus palustris toklao* (Blyth)	+			
220.	*Acrocephalus aedon aedon* (Pallas)	+		+	
221.	*Phylloscopus inornatus inornatus* (Blyth)		+		
222.	*Phylloscopus trochiloides vividanus* Blyth		+		
223.	*Erithacus calliope* (Pallas)			+	
224.	*Copsychus saularis saularis* (Linnaeus)	+		+	
225.	*Copsychus malabaricus indicus* (Baker)	+		+	
226.	*Enicurus schistaceus* (Hodgson)	+			

1	2	3	4	5	6
227.	*Saxicola torquata przevalskii* (Pleske)	+			
228.	*Saxicola torquata indica* (Blyth)	+			
229.	*Saxicola caprata burmanica* Baker	+			
230.	*Saxicola jerdoni* (Blyth)			+	
231.	*Saxicola ferrea* Gray	+			
232.	*Monticola solitarius pandoo* (Sykes)	+	+	+	
233.	*Myiophonus caeruleus temminckii* Vigors	+			
234.	*Zoothera citrina citrina* (Latham)	+			
235.	*Zoothera dauma dauma* (Latham)			+	
236.	*Turdus dissimilis dissimilis* Blyth				+
	Family PARIDAE				
237.	*Parus major nipalensis* Hodgson			+	
	Family MOTACILLIDAE				
238.	*Anthus hodgsoni hodgsoni* Richmond	+	+	+	
239.	*Motacilla indica* Gmelin				+
240.	*Motacilla citreola citreola* Pallas			+	
241.	*Motacilla cinerea cinerea* Tunstall	+			
	Family DICAEIDAE				
242.	*Dicacum agile agile* (Tickell)	+	+	+	
243.	*Dicaeum chrysorrheum chrysochlore* Blyth		+	+	
244.	*Dicaeum erythrorhynchos erythrorhynchos* (Latham)	+		+	
245.	*Dicaeum cruentatum cruentatum* (Linnaeus)	+	+	+	

1	2	3	4	5	6
	Family NECTARINIIDAE				
246.	*Anthreptes singalensis rubinigentis* (Baker)	+			
247.	*Nectarinia zeylonica sola* (Vieillot)	+		+	
248.	*Nectarina sperata brasiliana* (Gmelin)				+
249.	*Nectarinia asiatica intermedia* (Hume)	+	+	+	
250.	*Aethopyga siparaja seheriae* (Tickell)	+		+	
251.	*Arachnothera longirostris longirostris* (Latham)	+	+	+	
	Family ZOSTEROPIDAE				
252.	*Zosterops palpebrosa palpebrosa* (Temminck)			+	
	Family PLOCEIDAE				
253.	*Passer domesticus indicus* Jardine & Selby	+	+	+	
254.	*Ploceus philippinus burmanicus* Ticehurst	+			
255.	*Estrilda amandava amandava* (Linnaeus)	+			
256.	*Lonchura striata acuticauda* (Hodgson)		+		
257.	*Lonchura punctulata punctulata* (Linnaeus)	+		+	
	Family FRINGILLIDAE				
258.	*Carpodacus erythrinus roseatus* (Blyth)	+	+	+	
	Family EMBERIZIDAE				
259.	*Melophus lathami* (Gray)	+	+		

Based on the speciemens present in the National Zoological collections extant literature and recent observations.
N. B. + sign indicates the presence of species.

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REPTILIA

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INTRODUCTION

The forest and hill ranges of Tripura are in close continuti with the Chittagong Hill tracts and the hills of southern Assam. It is therefore, natural to expect that the reptile fauna of Tripura will bear a close resemblance to that of these adjoining areas. Since the plains of the western border of this territory are continuous with the plains of Bangladesh, one may also expect to find here many raptiles commonly seen in the plains of Bangladesh. Tripura therefore, has a reptile fauna which is a mixture of those of southern Assam and of Bangladesh. Menon (1975), Talukdar (1978) and Whitekar *et. al.* (1979). But persual of literature shows that adequate attention has not yet been paid to make a comprehensive account on the reptile fauna of this state. The state may yield further novelty to science in relation to reptile fauna if more extensive surveys can be carried out in the above region.

This paper deals with 32 species under 28 genera belonging to 11 families out of which 18 species have been collected from the above region by the various survey parties of the Zoological Survey of India, while the others are likely to occur in Tripura.

MATERIALS AND METHODS

The reptiles reported in this paper have been collected by survey parties of Zoological Survey of India from several ecological niches of Tripura. In the field, notes have been taken on the habits and habitats of the reptiles. For collection, aquatic vegetation, bushes grown on moist soil, heap of rotton leaves or straw, burrows made on elevated banks of ponds and canals, dark corner of village huts, undersurface of barks of trees, soil under stones etc. were explored. After making the collection, the materials were killed by anaesthesizing them with chloroform and then put into 5% solution of formaldehyde for fixation. Before putting the specimens in the formaldehyde solution a small incision (for bigger material) was made on the abdomen to ensure penetration of the solution inside. After fixation for two to three days, the materials along with labels containing the data of locality, altitude, habitat, date of collection and name of collector. were taken out from the solution and washed in water and then put in 90% alcohol for permanent preservation for the purpose of study. All the above materials belonging to 18 species were studied and identified with the help of standard literature. Colouration of specimens described is of specimens preserved in formalin and stored in alcohol.

SYSTEMATIC LIST

(*Species likely to occur; not yet recorded)

Class REPTILIA

Order I CHELONIA

Suborder(i) CRYPTODIRA

Family 1. EMYDIDAE

*1. *Morenia petersi* (Anderson)

*2. *Hardella thurgii* (Gray)

Family 2. TRIONYCHIDAE

3. *Lissemys punctata andersoni* Webb.

Order II SQUAMATA

Suborder (ii) SAURIA

Family 3. GEKKONIDAE

4. *Cyrtodactylus khasiensis* (Jerdon)
5. *Hemidactylus frenatus* Schlegel
*6. *H. flaviviridis* Rüppell
7. *Cosymbotus platyurus* (Schneider)
8. *Gekko gecko* (Linnaeus)

Family 4. AGAMIDAE

9. *Calotes versicolor* (Daudin)

Family 5. SCINCIDAE

10. *Mabuya macularia* (Blyth)
11. *M. multifasciata multifasciata* (Kuhl)
12. *M. carinata* (Schneider)
13. *Riopa albopunctata* Gray
14. *Sphenomorphus maculatum* (Blyth)

Family 6. VARANIDAE

* 15. *Varanus bengalensis* (Daudin)
* 16. *V. salvator* (Laurenti)

Suborder (iii) SERPENTES

Family 7. TYPHLOPIDAE

17. *Ramphotyphlops braminus* (Daudin)
18. *Typhlops diardi diardi* Smith

Family 8. BOIDAE

*19. *Python molurus molurus* Smith

Family 9. COLUBRIDAE

20. *Ptyas mucosus* (Linnaeus)
*21. *Ahaetulla nasutus* (Lacepede)
22. *Lycodon aulicus aulicus* Smith
23. *Amphiesma stolata* (Linnaeus)
24. *Xenochrophis piscator* (Schneider)
25. *Rhabdophis subminiata* (Schlegel)
*26. *Chrysopelea ornata* (Shaw)
*27. *Dendrelaphis tristis* (Daudin)

Family 10. ELAPIDAE

*28. *Bungarus caeruleus* (Schneider)
*29. *B. fasciatus* (Schneider)
*30. *Naja naja* (Linnaeus)
*31. Ophiophagus hannah (Cantor)

Family II. VIPERIDAE

* 32. *Vipera russelli* (Shaw)

The species marked with asterisk are not available in the collection but recorded in the literature.

SYSTEMATIC ACCOUNT

Class REPTILIA

Order I CHELONIA

Suborder (i) CRYPTODIRA

Key to the families

1. Forelimbs paddle-shaped with morethan 3 claws; carapace covered with horny shields .....EMYDIDAE
2. Forelimbs semi-paddle shaped with 3 claws, carapace covered with smooth skin ....TRIONYCHIDAE

Key to the genera of family EMYDIDAE

1. Hexagonal neural plates, short sided infront. Skin of the hinder part of the head transversely striated.....*Morenia*
2. Elongate neural plates, hexagonal short-sided infront. Skin of the hinder part of the head divided.....*Hardella*

Genus 1. ***Morenia*** Gray, 1870

* 1. ***Morenia petersi*** (Anderson)

(Indian Eyed Turtle)

1879. *Bataqur* (Morenia) *Petersi* Anderson, *Anat. Zool Res. W. Yunnan.* 761, pl. 59.

1889. *Morenia Petersi*, Boulenger, *Cat. Chel. Brit. Mus.* : 68 and Fauna Brit. India. 1890, : 36.

Material examined : Material not available. Description based on the literature.

Distribution : (Likely to occur in Tripura) : *Elsewhere :* Distribution of Indian Eyed Turtle is restricted to the eastern part of the Ganga and the western part of the Brahmaputra. Annandale (1906) wrote that several specimens were obtained from the neighbourhood of Calcutta.

Remarks : Fuglar (1984) considered the species to be semiaquatic and it inhabits rivers. However it may also occur in standing bodies of water. Mall and Vijaya (1986) found it in weed choked nullahs with little current, as well as in an ox-bow lake. The species basks in rows in the sandbars or on sand slabs along eroded river banks, dropping into water when disturbed. It is mainly herbivorous. It breeds during the winter months.

Status : Though the species has a restricted natural distribution, it may be abundant in certain localities. However, its overall status needs to be ascertained.

Genus 2. ***Hardella*** Gray, 1870.

* 2. ***Hardella thurgii*** (Gray)
(Crowned River Turtle)

1831. *Emys thurgi* Gray, *Syn. Rept.* : 22, 72 and *Illus Ind. Zool.* Pt. 7, 183 = Vol. 1, pl. 73.

1889. *Hardella thurgi*, Boulenger, *Cat. Chel. Brit. Mus.* : 63. figs, 18, 19 and *fauna Brit. Ind.* 36. (1890).

Material examined : Material not available. Description based on the literature; Menon (1975) mentioned that a specimen with its shell measuring about 400 mm, in length and 250 mm. in the breadth was once caught from the Rudrasagar beel, approx 50 kms away from Agartala in Sonamura sub-division, West Tripura district.

Distribution : The species is distributed over the flood plains of the northern parts of the Indian subcontinent, including the drainages of the Indus, Ganga and Brahmaputra.

Remarks : The species is entirely aquatic inhabiting stagnant ponds, canals and backwaters and hardly emerges for basking. The species is entirely herbivorous and devours fruits and vegetables.

Status : The large growing species is extremely vulnerable. This main threat to the species is through over-exploitation of adults and their eggs by animal predators and man for food and habit destruction. Its flesh is consumed on a very large scale throughout its range and is said to be excellent.

Family 2. TRIONYCHIDAE

Genus 3. ***Lissemys*** Smith, 1931.

3. ***Lissemys puncta andersoni*** Webb.

(Indo Gangetic Flapshell Turtle)

1789. *Testudo punctata*, Bonnaterre, in *Daubenton's Tab. Encycl. Meth., Erpet.* : 30, pl. 6.

1980. *Testudo punctata*, Webb. *Bull Mus. Hist. Nat. Paris* **2** (2) : 547-557.

1982. *Lissemys punctata* (Lacepede) Webb. *Amphibia-Reptilia* **3** : 179-184.

Material examined : 1 ex. Teliamura, 5. i. 1991, Coll. R. K. Ghosh (ii)

Diagnostic character : Shell is low domed and oval. The head is moderately large, the snout is short and broad. Shell bones finely granular, eight pairs of costal plates, the last pair meeting medially. A small prenuchal, lying anterior to the nuchal. Plastron is with seven callosities, peripheral presesnt. Limbs are fully webbed, with only three claws on each foot. Tail is very short. Carapace is olive-green with dark yellow blotches, pale yellow below. The head is olive with yellow blotches.

Distribution : Tripura as mentioned above in the *material*. With its two subspecies, the Indian Flapshell Turtle is widely distributed in the Indian subcontinent. The subspecies *andersoni* is found in northern Indian, Pakistan, Bangladesh and Nepal in areas watered by the Indus, Ganga, Brahmaputra, and their tributaries.

Remarks : The subspecies is an voracious feeder and feeds mainly on frogs, fishes, shrimps, snails etc. It lays 12 eggs in a single clutch.

Status : Still common in velatively undisturbed environments throughout the subcontinent. The species is, for some inexplicable reason protected under shedule I of the Indian wildlife (Protection) Act, 1972.

Order II SQUAMATA

Suborder (ii) SAURIA

Key to the families

1. Eyes without movable eyelids; Tongue broad and short, covered with villose papillae; Top of head with a symmetrical shields .... GEKKONIDAE

   Eyes with movable eyelids ..... 2.

   Tongue short; smooth or covered with villose papillae; no symmetrical shields on top of head..... AGAMIDAE

   Tongue moderately to very long ..... 3.

   Tongue bifid; back covered with rounded scales; top of head with small scales .... VARANIDAE

   Tongue not bified; body covered with cycloid, imbricate scales; head with symmetrical shields above ..... SCINCIDAE

Key to the genera of family GEKKONIDAE

1. Digits not dilated ..... 2.
2. Body variously scaled; pupil vertical; the two or three distal phalanges more less compressed, forming an angle with the basal portion of the digits. ..... *Cyrtodactylus*

   Digits moderately dilated ..... 3.
3. Terminal phalanges of outer four digits slender, compressed, clawed, attached to the dilated portion; inner digit well developed, clawless ..... *Gekko*
4. Finger free or partly webbed; terminal phalanges long; slender, clawed, free, rising angularly from within the expansion. Dorsal scales granular, uniform or intermixed with larger tubercles. ..... *Hemidactylus*
5. Finger webbed; terminal phalanges long, slender, clawed, free, rising angularly from within the expanded portion ; a cutaneous expansion along the side of the body..... ..... *Cosymbotus*

Family 3. GEKKONIDAE

Genus 4. ***Cyrtodactylus*** Gray, 1827

4. ***Cyrtodactylus khasiensis*** (Jerdon)

(Khasi Hills bent Toed gecko)

1870. *Pentadactylus khasiensis* Jerdon, *P. Asiat. Soc. Bengal* **75.**

1926. *Gymnodactylus khasiensis* Hora, *Rec. Inda Mus.* **28** : 189. pl. figs-4-6.

1945. *Cyrtodactylus khasiensis* Underwood, *Proc. Zool. Soc.* London, **124 :** 475.

Material examined : 1 ex., Kukichera, North Tripura, 13. vi. 1988. Coll. V. T. Darlong.

Diagnostic character : Head moderate; snout longer than the distance between the eye and the ear-opening, the diameter of which is half that of the eye. The body and limbs above with small granular scales inter mixed with larger rounded keeled tubercles. Belly with rounded imbricate scales. Grey-brown above with dark spots more or less regularly arranged. Belly whitish.

Distribution : *Tripura* as mentioned in the *material. Elsewhere :* Assam (Khasi Hills), Arunachal Pradesh, Darjeeling district (West Bengal) also Upper Myanmar (Burma).

Status : Common.

Genus 5. ***Hemidactylus*** Oken, 1817,

Key to the species of genus **Hemidactylus**

Free distal phalanx of inner digit atleast half as long as the dilated portion; inner toe well developed, more than half the length of the second; males with femoral pores only..... ..... ***Flaviviridis***

Free distal phalanx of inner digit not half as long as the dilated portion; inner toe not half the length of the second; males with a continuous series of preano-femoral pores.... .....***Frenatus***

5. ***Hemidactylus frenatus*** Schlegel.

(South Asian Walf Gecko)

1836. *Hemidactylus frenatus* Schlegel, in Dum. & Bibr. *Erp. Gen.* paris **3** : 366-368.

Material examined : 4 ex., Sepahijala, 12. ix. 1988; 2 ex., Forest rest house, Paratia, Udaipur, South Tripura, 16. ix. 1988, Coll. A. K. Sarkar, 3 ex., Sepahijala, 18.i. 1991; Coll. N. C. Gayen 1 ex., Santibazar, 7. viii. 1981, Coll. K. P. Singh. 1 ex., Kanchanpur, 2. iv. 1988; Coll. V. T. Darlong.

Measurements : Snout to vent. 32-50 mm. Tail 32-57 mm.

Diagnostic character : Body smooth. Head rather large. Upper labials 10-11, lower labials 8-10. Mental large, subtriangular; two well developed pairs of postmentals. Free distal phalanx of inner digit not half as long as the dilated portion; inner toe not half the length of the second, moderately dilated, with oblique lamellae, 4 or 5 under first toe, 9 or 10 under the forth toe. Tail feebly depressed. Males with a continuous series of 26 to 36 preano-femoral pores. Dark brownish dorsally and dirty whitish below.

Distribution : *Tripura.,* as mentioned in the *material. Elsewhere :* Bengal; southern India; Sri Lanka; southern Indo-China. Today this lizard is virtually tropicopolitan, and the limits of the original range may never be known, although it was probably south Asian.

Remarks : Although it is characteristically a domestic gecko over much of its range this species quiet often found in parks and nurseries, particularly where there are coconut palms or beneath debris in outdoor locations. The call of this gecko is a series of loud, It accto notes, It breeds in the hot weather. The eggs in clutches of two are in April-May and hatch after 6 weeks.

Status : Common.

* 6. ***Hemidactylus flaviviridis*** Rüppell

(Yellow-Bellied House-Gecko)

1835. *Hemidactylus flaviviridis* Ruppell, *Neue. Wirb. Faun. Abyss.* **18** pl. vi, fig. 2.

Material examined : Not available. Description based on the literature.

Description : Free distal phalanx of inner digits at least half as long as the dilated portion; inner toe well developed, more than half the length of the second; males with femoral pores.

Distribution : (Likely to occur in Tripura). This species occurs from the shores of the Red Sea and around the coast of Arabia and Iran, thence across-northern India to West Bengal and south to the vicinity of Bombay.

Remarks : This gecko is seldom seen far from human dwellings but is found occasionally on huge banyan trees. It is an excellent climber of high ceilings, never descending to the ground. The prey is often surprisingly large in comparison with the lizard's size. This lizard is pugnacious and often pursues smaller lizards of its own or other species. Prolonged fights between adults are common.

Status : Common.

Genus 6. ***Cosymbotus*** Fitzinger, 1843

7. ***Cosymbotus platyurus*** (Schneider)

(Frilled House Gecko)

1792. *Stellio platyurus* Schneider, *Amphib. Physiol.* **2** : 30.

1932. *Cosymbotus platyurus* Deraniyagala, *Ceylon J. Sci. B,* **16** : 306.

Material examined : 1 ex., Sepahijala Bio-complex, West Tripura, 18.1.1991, Coll. N. C. Gayen,

Measurements : Snout to vent. 43 mm. Tail 48.

Diagnostic character : Head moderate covered above with minute granular scales, largest upon

the snout; back with uniform small granular scales; belly with large, smooth, rounded, imbricate scales. Digits one third webbed. Tail very strongly depressed, with broad, sharply denticulated lateral marging covered above with small scales. A well-marked dermal fringe along the sides of the body from the axilla to groin. Colour greyish-brown above, yellowish below.

Distribution : *Tripura* : as mentioned in the *material. Elsewhere;* Arunachal Pradesh, Assam, Manipur, Meghalaya, West Bengal. Nepal; Indo-China; Hong-kong; Formosa.

Status : Common.

Genus 7. ***Gekko*** Laurenti, 1768.

8. ***Gekko gecko*** (Linnaeus)

(Tucktoo) (Textplate I)

1758. *Lacerta gecko* Linnaeus, *Syst. Nat ed.* **10** : 205.

1912. *Gekko gecko* Barbour, *Mem. Mus. Comp. Zool. Harvard Coll.*, Cambridge, **44** : 82.

Material examined : 4 ex., Forest rest house, Paratia, Udaipur, S. Tripura, 16. ix. 1988; Coll. A. K. Sarkar, 4 ex., Pacharthal, 13. vii. 1991; 3ex., Ambasa, N. Tripura, 25. vii; 1991. 1 ex., Manu, N. Tripura, 20. vii, 1991. All collected by Dr. N. Majumder.

Measurement : :Snout to vent 54 to 160 mm; Tail 50 to 120 mm.

Diagnostic character : Head rather large 12 upper labials, the first touching the nostril 5 pairs of postmentals. Rostral not touching the nostril. 2 large internasals. Head covered above with small polygonal scales. Dorsal with small juxtaposed flat scales, intermixed with larger subconical tubercles arranged in about 12 longitudinal series, 3 to 5 small scales between the dorsal tubercles. Belly with large, rounded, imbricate scales. Digits free, grey above. Tail slightly depressed annulate, covered with subquadrangular smooth scales and regular rows of large conical tubercles, banded black and white. Below whitish.

Distribution : *Tripura* : As mentioned in the *material. Elsewhere* : Bengal and Assam. Also found in Andamans. Widely distributed in the Indo-Chinse sub-region. Pillai and Talukdar (1973) recorded it from Darugiri reserve forest, Garo Hill, Assam. Talukdar (1975) recorded it first time from Tripura.

Remarks : The largest among the geckos. The common name is derived from its loud call tucktoo. According to Mertens (1960) only males of this species give the familier call. A clutch of two eggs is laid in July and hatch 64 days later. One example (Reg. No. 24856) with bifid tail was caught from pacharthal, N. Tripura. Regeneration of tails in Geckos is not an uncommon feature (Das, 1932).

Status : Common.

Family 4. AGAMIDAE

Genus 8. ***Calotes*** Rafinesque, 1815.

9. ***Calotes versicolor*** (Daudin)

(Indian Garden Lizard)

1802. *Agama versicolor* Daudin, *Hist. Nat., Rept.* **3** : 395.

1853. *Calotes versicolor,* Jerdon, *J. Asiat. Soc. Beng.* **22** : 470.

Material examined : 1 ex., Sepahijala Bio-complex, 12.ix. 1988; 1 ex., Nayabasti near Agartala, 16.ix. 1988. All collected by A. K. Sarkar. 2 ex. 20 Karamcherra, 20. viii. 1986; coll. V. T. Darlong.

Measurements : Snout to vent 45-85 mm. Tail 120-235 mm.

Diagnostic character : A medium sized arboreal, lizard with ovall head and laterally compressed body. Tympanum about diameter of eye opening. Limbs well developed, with long slender digits ending in powerful claws. Body scales keeled and directed backwards and upwards. Dorsal scales large and arranged in 35 to 52 rows at midbody, dorsinuchal crest composed of 41-49 lanceolate spines extending on to the tail.

Distribution : Tripura : As mentioned in the *material Elsewhere* : From Sumatra to South China and west through most of India, Sri Lanka.

Remarks : The common Garden lizard is dorsally light sandy brown in live depending on metachoric changes. Ventral surfaces white with dark streaks. Female and young usually with two lateral stripes with patterns in between. Throat of fully grown males with a black bar. During the breeding season the males assumes a brilliant crimson or scarlet colour which has given rise to the erroneous belief that this lizard sucks blood and hence called misappropriately as 'Bloodsucker' It is essentially arboreal in its habits but is also found in the open fields; hedges and gardens. It feeds upon spiders and various kinds of insects. The breeding season starts early in May and ends in September. The eggs numbering 4-12 are buried for more than a couple of inches in the soil.

Status : The commonest agamid lizard of India.

Family 5. SCINCIDAE

Key to the genera of Family SCINCIDAE

1. Supranasals absent.....***Sphenomorphus***
   Supranasals present 2
2. Scales not smooth with 2 to 7 keels .....
   .....***Mabuya***
   Scales smooth .....***Riopa***

Genus 10. ***Mabuya*** Rafinesque, 1815.

Key to the species of the genus Mabuya

1. Postnasals present.....***carinata***
   Postnasals absent .....2.
2. Frontonasal as long as broad .....***macularia***
   Frontonasal broader than long .....
   .....***multifasciata multifasciata***

10. ***Mabuya macularia*** (Blyth)

(The Bronze Grass Skink)

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

1887. *Mabuia macularia* Boulenger, *Cat. Liz. Brit. Mus.* **3** : 182.

1931. *Mabuia macularia.* Deraniyagala, *Ceylon. J. Sci. B.* **16** (2) : 165.

Material examined : 1 ex., Karamcherra bamboo forest, 21. iv. 1987,Coll V. T. Darlong.

Diagnostic character : A slender skink with snout to vent length not exceeding 75 mm. 28-30 scales round the body. The dorsals and laterals with 5 or 7 strong keels. Frontonasal about as long as broad. Digits moderately long, with obtusely keeled lamellae, 12 to 17 under the fouth toe. Tail not twice the length of the head and body. Dark bronze above with or without small black spots longitudinally arranged. A light dorso-lateral stripe more or less distinct. Sides of neck and flank dark brown, usually with white spots. A light line starting from the upper lip extends backward or to the anterior part of the flank. Smith (1935) distinguishes as many as five forms based on the colouration of this skink.

Distribution : *Tripura* : As mentioned in the *material. Elsewhere* : The species is currently distributed from Laos and Combodia to northern Malaya and west through most of Myanmar (Burma), India, and Sri Lanka to Southern Baluchistan.

Remarks : The bronze grass skink is a shy and sinuous lizard, usually glimpsed as it slips through low vegetation and fallen leaves. It inhabits grassland and the edges of cultivated fields, also parks and gardens. Oviparous. Females lay eggs with 3-5 in number.

Status : It is common in forested areas of the peninsula.

11. ***Mabuya multifasciata multifasciata*** (Kuhl)

1820. *Scincus multifasciatus* Khul, *Beitr. Zool. Vergl. Anat.* : 126.

1887. *Mabuya multifasciatus* Boulenger, *Cat. liz. Brit. Mus.* **3** : 186 and *Fauna Brit. Ind.* 1890 : 191, and *Faun. Malay Pen.* 1912, : 84.

Material examined : 1 ex., Belonia, South Tripura, 1. x. 1988. Coll. A. K. Sarkar.

Measurements : Snout to vent. 105 mm. Tail 190 mm.

Diagnostic character : Supranasal seperated from one another. Fronto-nasal broader than long. Prefrontal in contact with one another; a pair of

nuchals. A postnasal. Digits moderately long. Olive-brown above with dark brown longitudinal spots along the lateral margins of the scales. Whitish below.

Distribution : *Tripura* : As mentioned in the *material, Elsewhere* : The Indo Chinese subregion, extending in the north-west to Cachar, the Naga Hills and Sibsagar (Assam). The Nicobar Is.

Remarks : This skin is commonly seen in gardens and open wooded places in many parts. Viviparous, producing from 5 to 7 youngs.

Status : Common.

12. ***Mabuya carinata*** (Schneider)
(Common or Brahminy Skink)

1801. *Scincus carinatus*, Schneider, *Hist. Amphib.* **2** : 183.

1887. *Mabuia carinata*, Boulenger, *Cat. liz. Brit. Mus.* **3** : 181 and *Fauna. Brit. Ind.* 1890 : 188.

Material examined : 1 ex., Kanchipura, N. Tripura, 17. vi.1988. Coll V. T. Darlong.

Diagnostic character : No postnasal, supranasals separate, fronto-nasal longer than broad; prefrontals separate; a pair of nuchals. Dorsal and lateral scales subequal, with 3 or 5 distinct keels, the three median keels are strongly marked, outer two are often absent in the young ; from 30 scales round the middle of the body. Digits moderately long, with smooth lamellae. Bronze above. Body characterised by two prominent dorso-lateral stripes-one starting from above the eye and extending to the tail and a second staring from the upper lip and extending to the groin.

Distribution : *Tripura* : As mentioned in the *material. Elsewhere* : Widely distributed in the Indian peninsula except the extreme north-west. Common in Bengal. This is the commonest and best known of Indian skink.

Remarks : Almost a commensal of man. Equally at home in semi-urban areas and the forest. Found in the plains and low hills. It is seen as it glides fast through low shrubs and fallen leaves. It frequents the grassland, the edges of vice-fields, and is commonly seen within parks, nurseries and gardens. The female lays from 11-23 eggs in the loose soil under decaying grass.

Status : Very common.

Genus 11. ***Riopa*** Gray, 1839.

13. ***Riopa albopunctata*** Gray
(Snake Skink)

1846. *Riopa albopunctata* Gray, *Ann. Mag. Nat Hist.* **18** : 430.

Material examined : 1 ex., Holakhal vill., South Tripura, 29.ix. 1988; 3 ex., Sepahijala, 13.ix. 1988. Coll. A. K. Sarkar.

Measurements : Snout to vent 42-57 mm. Tail 50-65 mm.

Diagnostic character : Body elongate, lower eyelid scaly, two or three of the central scales often much larger than the others; fifth supralabial longer than the other labials. Body scales subequal or the dorsals a little larger than the laterals, 26 or 28 scales round the middle; 63 to 72 down the middle of the back, 12 to 15 lamellae beneath the 4th toe. Brown above. A dark spot is present on each scale and thus forming a longitudinal series.

Distribution : *Tripura* : As mentioned in the *material. Elsewhere* : Uttar Pradesh, Bihar, Orissa, West Bengal; Assam. Also from Nepal.

Remarks : It is not often seen as it spends most of its life underground. Its habits are little known.

Status : Common.

Genus 12. ***Sphenomorphus*** Fitzinger, 1843.

14. ***Sphenomorphus maculatum*** (Blyth)
(Spotted litter Skink)

1853. *Lissanota maculata* Blyth, *J. Asiat. Soc. Beng.* **22** : 653.

1887. *Lygosoma maculatum* Boulenger, *Cat. Liz. Brit. Mus.* **3** : 242; *Fauna. Brit. Ind.*, 1890 : 196.

1935. *Sphenomorphus maculatus* pope *Rept. china* New York 483.

Material examined : 8 ex., Sepahijala, 13. ix. 1988; Coll. A. K. Sarkar. 1 ex., South Tripura, 17. ix. 1988. Coll. A. K. Sarkar.

Measurements : Snout to vent 25-50 mm. Tail 24-55 mm.

Diagnostic character : Snout short; obtuse; rostral flat in contact with the fronto-nasal, which is broader than long; prefrontals small separated from one another. Frontal longer than the fronto-parietals and interparietal together no nuchals. 5 supraoculars, first longest, fifth smallest; ear-opening quite as large as the eye-opening. 7 supralabials, the fifth and sixth below the eye, separated from it by small scales. Scales of the body smooth. 38 to 40 round the body. Limbs moderate. Brown above with small indistinct light spots and two median series of small black spots. lower parts of flanks thickly specked with black and white.

Distribution : *Tripura* : As mentioned in the *material. Elsewhere* : The Eastern Himalayas, Sikkim, Assam, North Bengal. The Andaman and Nicobar Is. Also recorded from S. W. Yunan, Myanmar (Burma), Siam as the Isthmus of Kra, Cambodia, S. Annanm.

Status : It is the commonest skink in many parts of its distribution.

Family 6. VARANIDAE

Genus 13. ***Varanus*** Merrem, 1820.

Key to the species of the genus ***Varanus***

Nostril nearer to the orbit than to the end of the snout, nuchal scales not larger than those on crown of head; snout convex at the end, its length from two to two and a halftimes its height ..... ***Bengalensis***

Nostril twice as nearer to orbit as to the end of snout; nuchal scales smaller than those on crown of head; snout depressed at the end, its length at least three times its height. ..... ***Salvator***

*15. ***Varanus bengalensis*** (Daudin)

(Common Indian Monitor)

1802. *Tupinambis bengalensis* Daudin, Hist. Nat. Rept. iii : 67.

1885. *Varanus bengalensis,* Boulenger, *Cat. Liz. Brit. Mus.* **2.** : 310 and *Fauna Brit. Ind.* 1890 : 164.

Material examined : Material not available. Description based on the literature.

Description : In addition to the species character listed above : head long and narrow, with snout pointed, neck long and mobile; tail laterally compressed; midbody scale rows 132-176; no femoral pores. Digits elongate young and adult differ in colouration. Young dark olive above with numerous light spots or ocelli alternating with dark bars and whitish on the undersides with narrow transverse bars sometimes broken up into spots. Adult brownish or olive above with blackish dots on the back; lower parts yellowish, mottled with black.

Distribution : (Likely to occur in Tripura) Throughout India; Myanmer, (Burma). Nepal, Pakistan, Eastern Iran and Southern Uzbekistan.

Status : Placed under schedule I of Indian wildlife Act, 1972.

*16.***Varanus salvator*** **(Laurenti)**

(Water Monitor)

1768. *Stellio salvator* Laurenti, *Syn. Rept.* (based on Seba's Illustr. **2**, Pl. 88 fig. 2)

1847. *Varanus salvator,* Cantor, *Cat. Rept. Malay. Pen* : 29.

1885. *Varanus salvator,* Boulenger, *Cat. Liz. Brit. Mus.* **2** : 314 and *Fauna Brit. Ind* 1890 : 166.

Material examined : Material not available. Description based on the literature.

Description : In addition to the species character listed above : Dorsal scales keeled. Abdominal scales feebly keeled in from 80 to 95 transverse series. Digits elongate. Tail strongly compressed, with a low double toothed crest above. The young are blackish above with yellow spots or ocelli arranged in transverse rows. The colour fades with age.

Distribution : (Likely to occur in Tripura) *Elsewhere* : Orissa, Bengal, eastern India, and Bangladesh. The distribution extends eastwards. Also occurs in Sri Lanka and the Andaman Islands.

Remarks : It is the largest among the Indian monitor lizards reaching a total length of C. 2.5 m. A large made 2.35 m. in length weighted 14 kg. The most aquatic of Indian monitors. It is found in fresh as well as salt water. It is seen in coastal estuaries searching for crustaceans and molluscs during low tide. It is very fond of eggs and can be destructive to poultry and birds eggs as it readily climbs trees. It breeds at the begining of rains.

Status : It is listed in schedule I of the wild life preservation Act of 1972.

Suborder (iii) SERPENTES

Family 7. TYPHLOPIDAE

Key to the genera of Family TYPHLOPIDAE

Nasal suture terminating at the edge of preocular ..... *Ramphotyphlops*

Nasal suture not terminating at the edge of preocular ..... *Typhlops*

Genus 14. ***Ramphotyphlops*** Fitzinger, 1843

17. ***Ramphotyplops braminus*** (Daudin)

(Common Blind Snake)

1803. *Eryx braminus* Daudin, *Hist, Nat. Rept.* **7** : 279.

1890. *Typhlops braminus* Boulenger, *Fauna Brit. Ind.* : 236.

1937. *Typhlops braminus* Fraser, *J. Bombay Nat. Hist. Soc.* **39** : 464.

1980. *Ramphotyplops braminus* Nussbaum Herpetologica. Lawrence, **36** : 215.

Material examined : 1 ex., Sepahijala Biocomples compound; 13. ix. 1988. Coll. A. K. Sarkar.

Measurements : Total length 85 mm.

Diagnostic character : Rostral large, snout rounded; four upper labials, the last two in contact with ocular; nasal suture terminating at the edge of preocular. 20 scales round midbody. Back is brown above paler below.

Distribution : *Tripura* : As mentioned in the *material. Elsewhere* : Throughout the oriental region, Africa, Mexico and New Guinea.

Remarks : It lives beneath the soil, or stones, or debris, and is seen only when these are turned over, or when flushed out of its subterranean burrow by rain. Often seen inside houses. Its takes larvae, pupae, and imagines of ants and other small insects.

Status : Common.

Genus 15. ***Typhlops*** Dumeril and Bibron, 1844.

18. ***Typhlops diardi diardi,*** Smith (Diard's Blind Snake)

1839. *Typhlops diardi,* Schlegel, ***Abbild. Amphib*** : 39.

1923. *Typhlops diardi diardi,* Smith, *J. N. H. S. Siam* **6** : 52.

Material examined : 1 ex., Sepahijala, Biocomplex, 12. ix. 1988. Coll. A. K. Sarkar.

Measurements : Total length 230 mm.

Diagnostic Character : Snout rounded, strongly projecting, nostril lateral. Nasal incompletely divided, the lower cleft passing to the 2nd labial. Eye distinct, blackish above, paler below.

Distribution : Tripura : As mentioned in the material. *Elsewhere* : Arunachal Pradesh, Assam, Manipur, Meghalaya, Bengal, Dun valley (Uttar Pradesh). Also Myanmar (Burma).

Status : Common.

Family 8 BOIDAE

Genus 16. ***Python*** Daudin, 1803.

*19. ***Python molurus molurus*** Smith. (Indian Python).

1758. *Coluber molurus* Linnaeus *Syst. Nat. 10th ed.* **1** : 225.

1943. *Python molurus molurus* Smith. *Fauna Brit, Ind.* **3.** : 108.

Material examined : Material not available. Description based on the literature.

Discription : Nostril at the posterior and upper part of a large anterior nasal; rostral with a deep pit covered with irregular scales. 11 to 13 supra labials, first 2 deeply pitted, 6th or 7th labial touching the eye; lance-shaped mark on the top of the head distinct posteriorly, on either side; internasal distinct; parietal, loreal and temporal regions.

Distribution : (Likely to occur in Tripura). The range of the nominate subspecies is found in peninsular India to the extreme limit of Sind and the Punjab in the North-West and to Bengal in the North-east. Also Sri Lanka.

Remarks : These snakes inhabit marshes, gallery forest and rocky elefts and caves, abandoned big mammal burrows, hollow trees, dense water reed and mangrove thickets. Between March and June, the female lays upto 100 eggs in a safe undisturbed hole cave hollow and remains coiled on them for 68 to 80 days. They feed mainly on warm-blooded prey ranging in size from mice and birds to jackals, civets and even deer and wild boar.

Status : It is listed in schedule I of the wildlife preservation Act, 1972.

Family 9. COLUBRIDAE

Key to the genera of Family COLUBRIDAE

1. Pupil horizontal. ..... *Ahaetulla*
   Pupil not horizontal 2
2. Pupil vertically elliptic ..... *Lycodon*
   Pupil round 3
3. Snout much depressed and broadly ..... truncate ..... *Chrysopelea*
   Snout slightly depressed and minutely ..... truncate 4
4. Internasals distinctly narrowed anteriorly .... *Xenochrophis*
   Internasals broadly truncate anteriorly ..... 5.
5. Nuchal groove present ..... *Rhabdophis*
   Nuchal groove absesnt 6
6. Scales keeled ..... *Amphiesma*
   Scales smooth 7
7. Scales in 13 to 15 rows ..... *Dendrelaphis*
   Scales in 17 rows ..... *Ptyas*

Genus 17. ***Ptyas*** Fitzinger, 1843.

20. ***Ptyas mucosus*** (Linnaeus)

(Dhaman or Common Rat snake)

1758. *Coluber mucosus* Linnaeus, *Mus. Ad. Frid.* **1** : 37, pl. 23 and *Syst. Nat. Ed. 10* : 226.

1860. *Ptays mucosus* pope *Proc. Acad. Nat. Sci.* philadelphia 12 : 563.

Material examined : 1 ex., Kakraban. Coll. Principal Basic Training College, Tripura.

Measurements : Snout to vent 1200 mm. Tail 225 mm.

Diagnostic character : Head long distinctly wider than neck. Eyes large and lustrous. Midbody scale rows, 17. Nostrils large occupying the whole depth of the suture between nasals. Rostral higher than wide. Loreals 3, preoculars 2, upper one is about four times size of lower, 2 postoculars. Body robast, compressed, tapering towards both ends. Tail cylindrical. Olivaceous brown above. Scales on the posterior part irregularly coloured with black forming a reticulated pattern to form cross bars. Belly greyish white.

Distribution : Tripura : as mentioned in the *material. Elsewhere* : From South China and Vietnam through all of India and westward into Iran and southern Afghanistan to Transcaspia.

Remarks : It inhabit damp grass land, or cultivated areas and may not be commonly seen during daytime. It enters readily to water and swims vigorously with the head above the water. It climb into trees and bushes in search of birds egg. It also found in walls and roofs of thatched huts. Derouring almost anything that chance brings within its reach but shows a preference for frogs and toads.

Status : Common.

Genus 18. ***Ahaetulla*** Link, 1807.

*21. ***Ahaetulla nasutus*** (Lacepede)

(Common Green Whip Snake)

1789. Coluber nasutus Lace'pe'de, *Hist. Nat. serp.* **1** : 100.

1933. *Ahaetulla nasutus* Stejneger, *Copeia* : 203.

Material examined : Material not available. Description based on the literature.

Description : Snout ending in a pointed, dermal appendage extending far beyond the lower jaw. Eyes large with horizontal pupil, iris powdered with gold. Tongue pale pinkish with white tip. Tail cylindrical and very long. above bright verdant green.

Distribution : (Likely to occur in Tripura). *Elsewhere* : The whole of Peninsular India, Sri Lanka, Myanmar (Burma), Thailand and Combodia.

Remarks : It is diurnal and usually reclines on the topmost boughs of bushes. An elegant snake with a wonderful turn of speed over foliage. It is known to take small mammals, birds, lizards and occationally other snakes and frogs. It is ovo-viviparous and the young is born free from the caul.

Status : Very common.

Genus 19. ***Lycodon*** Boie, 1826.

22. ***Lycodon aulicus aulicus*** Smith

(Common Wolf Snake)

1754. *Coluber aulicus* Linnaeus, *Mus. Adolph. Frider.* **1**. : 29. Pl. 12, Fig. 2.

1943. *Lycodon aulicus aulicus* Smith. *Fauna, Brit. Ind.* Vol. **3** : 265.

Material examined : 1 ex., Udaipur, 11. ii. 1983. Coll S. K. Chanda.

Measurements : Snout to vent, 430 mm. Tail 90 mm.

Diagnostic character, 17 scale rows at midbody loreal in contact with internasal. 9 supralabials. Nasal touching lst and 2nd supralabials. pupil vertically elliptic.

Distribution : Tripura : As mentioned in the material. *Elsewhere* : India, Nepal, Sri Lanka, & Myanmar (Burma).

Remarks : Colour and markings variable. Two races are recognised. The specimen under study has 12 white cross.bars on the back and confirms with Smith's (1943) description. The snake most seen near and in human habitations, It is often often confused with the common krait from its almost identical colour pattern and the long teeth on the upper and lower jaws which are mistaken for fangs. The common wolf snake is most often met within houses whether in the country or heavily congested urban areas.

Status : The commonest snakes of the Indian plains.

Genus. 20. ***Amphiesma*** Dumeril and Bibron, 1854.

23. ***Amphiesma stolata*** (Linnaeus)

(Striped Keelback)

1758. *Coluber stolatus* Linnaeus, *Syst. Nat.. 10th Ed.* 1 : 219.

1935. *Natrix stolata* Pope, *Rept. China* : 128.

1954. *Amphiesma stolata* Dumeril and Bibron, *Erp. Gen. paris* **7 (1)** : 724.

Material examined : 1 ex., Udaipur 1. ii. 1983, Coll. S. K. Chanda, 1 ex., Garce, South Tripura, 21. ix. 1988. Coll A. K. Sarkar.

Measurements : Snout to vent 250-400 mm. Tail 88-135 mm.

Diagnostic character : Head distinct from neck, snout rounded, rostral about as wide as high; nostril between nasals; internasals broadly truncate anteriorly; loreal small, square; eye with round pupil. One preocular and three post oculars. Upper labials 7, 3rd & 4th in contact with eye. Body cylindrical. Scale rows at midbody 19. Scales keeled except for lowest row. Ground colour olivaceous brown. A pair of conspicuous buff stripes covering one whole or two half rows of scales front neck or forebody to tip of tail. Some black, irregular crossbars on body, Olivaceous anteriorly. Head olivaceous brown. Short black bars in front of and below eye and

from postoculars to angle of mouth. Belly white, usually with black dots at tips of ventrals.

Distribution : Tripura : As mentioned in the material. *Elsewhere* : The range extends from the valley of the Mekong River in Laos and Thiland north to southern China and west through India and Sri Lanka to the valley of the Indus.

Remarks : It inhabits banks of rivers and marshy areas, common in fields, grassy and cultivated areas of open country during rainy season. It is choice of food is frogs and toads.

Status : Very common.

Genus 21. ***Xenochrophis*** Gunthers 1864.

24. ***Xenochrophis piscator*** (Schneider)
(Checkered Keelback)

1799. Hydrus piscator Schneider, *Hist. Amph.* **1**. : 247.

1935. *Natrix piscator* Pope, *Rept. China* : 120

1965. *Xenochrophis piscator* Malnate and Minton. *Proc. Acad. nat. Sci. Philad*, **117** (2) : 19.

Material examined : 1 ex., Tripura, 1971. Coll. V. C. Agarwal.

Measurements : Snout to vent 650 mm. Tail 230.

Diagnostic character : Body rather stout. Head slightly flattened, distinct from neck; snout bluntly pointed; rostral wider than high nostrils between nasals. One large loreal; eye with round pupil. Internasals distinctly narrowed anteriorly 10 upper labials. 4th & 5th. touching eye 10 lower labials. 19 scale rows at midbody. Scales of lateral rows smooth, those of median rows feebly keeled. Colouration variable. Dorsal ground colour olive brown with five rows of small spots varying in size sometimes occupying most of the back. Head olive brown with two black streaks one below and one behind the eye.

Distribution : Tripura : as mentioned in the material. *Elsewhere* : It is found throughout the Indian subcontinent from Baluchistan to Assam into upper Myanmar (Burma).

Status : One of the commonest of Indian snakes.

Genus 22. ***Rhabdophis*** Fitzinger, 1843.

25. ***Rhabdophis subminiata*** (Schlegel)

(Red-necked Keelback)

1837. *Tropidonotus subminiatus* Schlegel, *Phys. Serp.* **11** : 313.

1923. *Rhabdophis subminiatus* Wall, *J. Bombay nat. Hist. Soc.* **29** : 606.

Material examined : 1 ex., Tripura, 3. viii. 1979. Coll. K. P. Singh.

Diagnostic character : Nuchal groove present. Scales on each side of the groove enlarged and paired. Nostrils lateral; internasals as long as the prefrontals; 1 preocular. 8 supralabials. 3rd, 4th and 5th touching the eye. Scales in 19 rows, strongly keeled, outer row smooth. Olive-brown above with black and yellow veticulations; an oblique black bar below the eye.

Distribution : Tripura : As mentioned in the material. *Elsewhere* : The whole of the Indo-Chinese subregion as far as Sikkim in the northwest ; Southern China ; Hainan ; Hongkong, the Malay Peninsula.

Status : Common.

Genus 23. ***Chrysopelea*** Boie, 1826.

* 26. ***Chrysopelea ornata*** Shaw

(Golden Tree or Flying Snake)

1802. *Coluber ornatus* Shaw, *Gen. Zool.* **3** : 477.

1827. *Chrysopelea ornata*, Boie, *Isis. Vonoken* : 546.

Material examined : Material not available. Description based on the literature.

Description : Snout much depressed and broadly truncate. The lateral, sharp and pronounced keeled condition of the ventrals in association with the un-enlarged vertebral row of scales distinguish this snake. Internasal shorter than the prefrontals; frontal bell-shaped. loreal elongate. 1 large preocular; 2 postoculars, 9 upper labials, 4th just touching, 5th and 6th below the eye.

Distribution : (Likely to occur in Tripura). *Elsewhere* : The Andaman Is, Western Ghats,

south of Goa, North Bihar, West Bengal eastwards throughout the Indo-Chinese subregion. Also Sri Lanka.

Remarks : It is essentially arboreal in habits but also seen in grass and on low bushes. It feeds largely on geckos and other lizards.

Status : Common.

Genus 24. ***Dendrelaphis*** Boulenger, 1890.

*27. ***Dendrelaphis tristis*** (Daudion)

(Common Indian Bronze-back)

1803. *Coluber tristis* Daudin, *Hist. Nat Rept.* **6**. : 430.

1894. *Dendrelaphis tristis,* Boulenger, *Cat. Sn. Brit. Mus.* **2** : 88.

Material examined : Material not available. Description based on the literature.

Description : Snout broadly rounded. Internasals shorter than the prefrontals. 15 scales at midbody. 9 upper labials 5th and 6th touching the eye. Neck distinctly constricted, body long. Belly ridged on either side. Tail long and tapering. The back is bronze brown in colour, which is marked with a distinctive dark stripe on the side. A yellow, black-bordered flank stripe from neck to vent, upper lip yellow. A roundish yellow spot on parietal suture. Belly uniform creamy yellow.

Distribution : (Like to occur in Tripura), *Elsewhere* : The whole of Peninsular India, Sri Lanka and as far as Sind in the North West.

Remarks : It lives almost entirely on trees and shrubs. A diurnal snake and feeds mainly on lizards and tree frogs.

Status : This is one of the commonest Indian snakes.

Family 10. ELAPIDAE

Key to the genera of Family ELAPIDAE

1. Vertebral series of scales strongly enlarged 2

   Vertebral series of scales not enlarged..... .....*Ophiophagus*

2. Scales in 13-19 rows; nostril between two nasals .....***Bungarus***

   Scales in 15-25 rows; nostril between anterior and a posterior nasal. .....*Naja*

Genus 25. ***Bungarus*** Daudin, 1803.

Key to the species of genus Bungarus

Dorsal vertebrac forming a ridge down the back .....***fasciatus***

Dorsal vertebrac not forming a ridge down the back .....***caeruleus***

*28. ***Bungarus caeruleus*** (Schneider)

(Common Indian Krait)

1801. *Pseudoboa caerulea* Schneider, *Hist* ***Amphib.*** **2** : 284.

1890. *Bungarus caeruleus.* Boulenger, *Fauna Brit. Ind.* : 388.

Material examined : Material not available. Description based on the literature.

Description : Head flat barely distinct from neck, snout blunt, rostral wider than high; nostril between two nasals; eye small with round pupil. The enlarged hexagonal vertebral scales, subcaudals entire, uniformly white belly and the narrow white cross bars on the back, more or less distinctly in pairs distinguish the species.

Distribution : (Likely to occur in Tripura). *Elsewhere* : It occurs from western Bengal through Peninsular India and Sri Lanka.

Remarks : It is generally found in fields, low scrub jungles and is common in the vicinity of human habitations. It is Nocturnal in habits. Feeds mainly on snakes frogs, lizards and small mammals are also taken.

Status : Common.

* 29. ***Bungarus fasciatus*** (Schneider)

(Banded Krait)

1801. *Pseudoboa fasciata* Schneider, *Hist. Amph.* **2** : 283.

1803. *Bungarus fasciatus* : Daudin, *Hist. Nat. Rept.* **5** : 263.

Material examined : Material not available. Description based on the literature.

Description : Scales in 15 rows throughout. A prominent ridge down the back and tail formed by the spinous processes of the vertebrae. It can be distinguished by the enlarged vertebrals, entire subcaudals, blunt tail and alternating yellow and black bands completely encircling the body.

Distribution : (Likely to occur in Tripura) : *Elsewhere* : North-East Peninsular India, Assam, Bengal, Bihar, Orissa. The Indo-Chinese subregion.

Remarks : It prefers open tracts and scrub jungle but often seen in populated areas. Feeds mainly on snakes.

Status : Indeterminate.

Genus. 26. ***Naja*** Laurenti, 1768.

*30. ***Naja naja*** (linnaeus)

(Indian Cobra)

1758. *Coluber naja* Linnaeus, *Syst. Nat. 10th end.* **1** : 221.

1924. *Naja naja* Prater, *J. Bombay nat. Hist. Soc.* **30** : 175.

Material examined : Material not available. Description based on the literature.

Description : Head wider and heavier and slightly distinct from neck; rostral wider than high; eye moderately large, with round pupil. It can be distinguished from other land snakes by the presence of a small triangular shield (cuncate) between the 4th and 5th lower labials at oral margin. Another distinguishing character is the preocular touching the internasal and the 3rd upper labial in contact with the eye. Head shields glossy. Scales in 13-19 rows. Extremely variable in coloration and markings. Three races are recognised on the basis of the hood pattern.

Distribution : (Likely to occur in Tripura) : *Elsewhere* : The whole of India.

Remarks : Found almost anywhere in heavy jungle, open cultivated land, in populated areas where old masonary construction from ideal refuge. Feeds principally on rats, frogs and toads.

Status : Common.

Genus. 27. ***Ophiophagus*** Gunther, 1864.

* 31. ***Ophiophagus hannah*** (Cantor)

(Hamadrya ; King Cobra)

1836. *Hamadryas hannah* Cantor, *Asiat. Research.* **19** : 187. pl. 10-11.

1924. *Naja hannah Wall, J. Bombay nat. Hist. Soc.*, **30** : 189.

1945. *Ophiophagus hannah* Bogert *copeia. Ann. Arbor* : 47.

Material examined : Material not available. Description based on the literature.

Description : Frontal not truncate anteriorly; preocular squarish, separated from the internasl by the prefrontal. A pair of large occipital shields in contact with one another; no cuncate scale on the lower jaw. Vertebral series of scales not enlarged. The body is fairly robust and the scales glossy. The hood is velatively less dilated than in the cobra. Head flat. Eye with round pupil. Adults blackish brown to light brown with 32 to 43 lighter bands and round body and 11 to 13 round tail.

Distribution : (Likely to occur in Tripura) : *Elsewhere* : Himalayan foot hills, West Bengal Bihar, Assam, Orissa, Western Ghats, Andamans. Also found in Bangladesh, Myanmar (Burma) and eastwards to the Philippines; Hongkong.

Remarks : It is a diurnal snake and feeds entirely on snakes. The female king cobra displays an unusual maternal instinct by building a nest for its 20 to 40 eggs and lying coiled over the heap for the entire period of about 60 to 90 days it takes for the eggs to hatch.

Status : Not a common snake in India.

Family 11. VIPERIDAE

Genus. 28. ***Vipera*** Laurenti, 1768.

* 32. ***Vipera russelli*** (*Shaw*)

(Russell Viper)

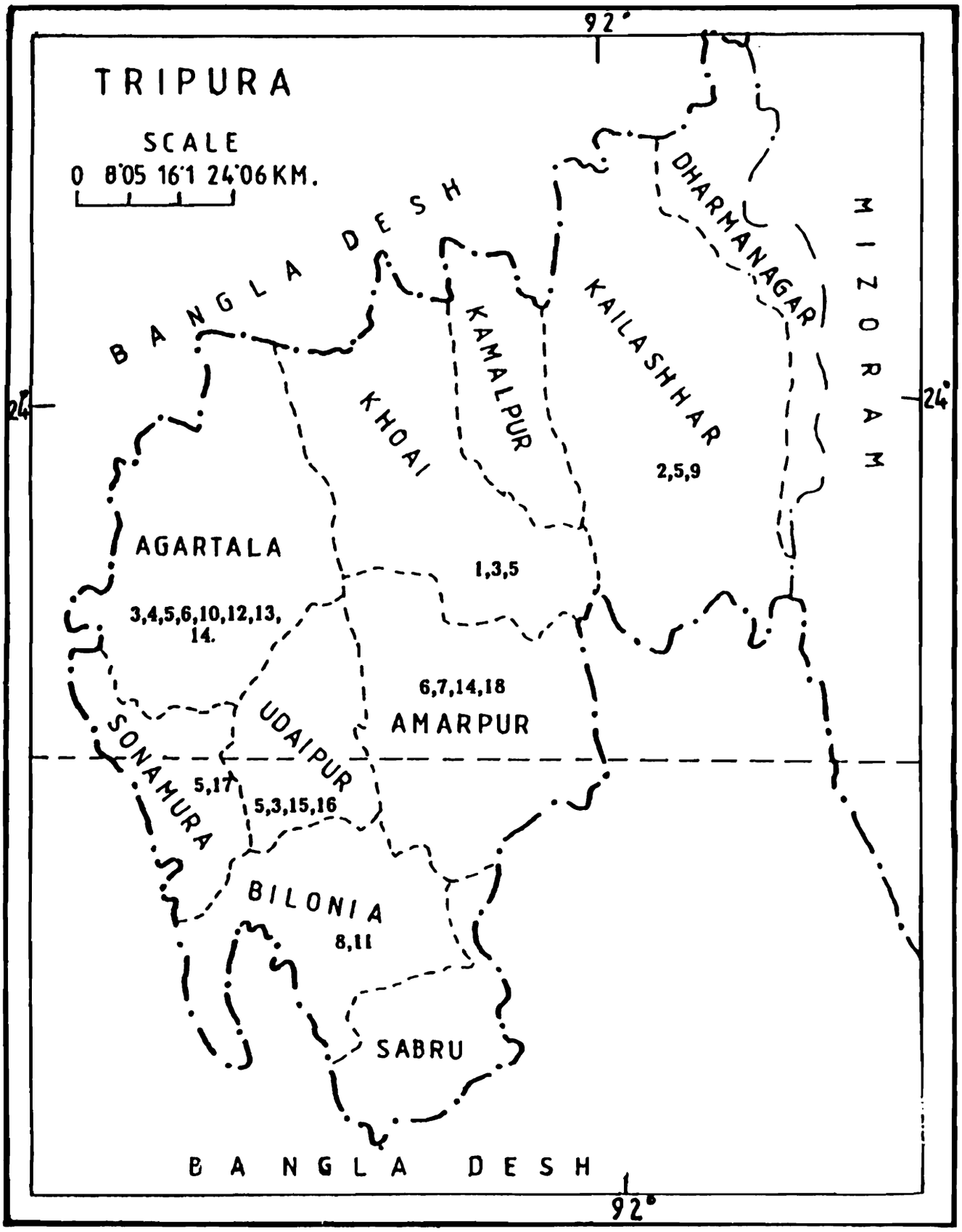
1797. *Coluber russelli* Shaw, *Nat. Misc.*, 8 Pl. 291.

1890. *Vipera russelli* Boulenger, *Fauna Brit. Ind.*, 420.

Material examined : Material not available. Description based on the literature.



Fig. 1. *Gekko gecko* (Linnaeus) showing bifid tail



Map (Showing locality-wise distribution of species)

Description : Head flat, triangular, wider than neck, Snout bluntly pointed; rostral about twice as high as wide; nostril large crescent shaped in large nasal. Supraocular entire. 11 or 12 upper labials seperated from eye by three or four rows of small scales. Head covered with small scales and without shields. 27 to 33 scales at midbody. Subcaudals divided. Body massive, cylindrical, narrowing at both ends. Tail short. The colouration and markings of this snake are so distinctive that there is no mistaken it for any other snake if once seen. There are three longitudinal rows of reddish brown or dark brown rings with black or black and white edges form a chain-like pattern on the back and sides.

Distribution : (Likely to occur in Tripura). *Elsewhere* : It occurs from the Indus valley to Kashmir and Bangladesh and southwards through most of Peninsular India and Sri Lanka.

Remarks : It is frequent grassland, cultivated fields. It is slow in movement and feeds mostly on small mammals, especially rats, but birds, lizards and frogs are also take. It is a nocturnal snake although it is seen sometimes abroad during the day. It is viviparious,

Status : In some parts of the country it is very common and rare in others.

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SUMMARY

The paper deals with the reptilian fauna of Tripura based on the collections made by the surveys undertaken by the scientist of Zoological Survey of India during 1988 to 1991. A few examples collected prior to that and available with the unnamed collections of Reptilia section and in the Eastern Regional station, Zoological Survey of India, Shillong have also been utilized. This paper deals with 32 species, under 28 genera, and 11 families. Out of which, 18 species have actually been collected from the above region by the various survey parties of the Zoological Survey of India, and the rest 14 species have been included in this paper which are known other from adjacent region and are likely to occur in Tripura. Except *Hardella thurgi* and *Gekko gecko,* the remaining 16 species are recorded for the first time form Tripura. Keys and short diagnostic characters of the species have been given in the paper for determination of the species. A text plate with bifid tail of *Gekko gecko* and a map showing distribution of species have also been provided in the paper.

Species	**Symbol of Species**
Lissemys punctata andersoni Webb	1
Cyrtodactylus khasiensis (Jerdon)	2
Hemidactylus frenatus Schlegel	3
Cosymbotus platyurus (Schneider)	4
Gekko gecko (Linnaeus)	5
Calotes versicolor (Daudin)	6
Mabuya macularia (Blyth)	7
Mabuya multifasciata multifasciata (Kuhl)	8
Mabuya carinata (Schneider)	9
Sohenomorphus maculatum (Blyth)	10
Riopa albopunctata Gray	11
Ramphotyphlops braminus (Daudin)	12
Typhlops diardi diardi Smith	13
Ptyas mucosus (Linnaeus)	14
Lycodon aulicus aulicus Smith	15
Amphiesma stolata (Linnaeus)	16
Xenochrophis piscator (Schneider)	17
Rhabdophis subminiata (Schlegel)	18

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AMPHIBIA

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INTRODUCTION

There is very little information about the amphibian fauna of Tripura. Menon (1975) merely records three anuran species namely, *Rana cyanophlyctis, Rana tigerina and Bufo melanostictus* in Tripura District Gazetteers. The second report, considerably an elaborate one, is by Mansukhani and Sarkar (1981) in which six species of anurans inclusive of those recorded by Menon have been reported. This is the third and most elaborate report of amphibians of Tripura which covers 307 examples of amphibians belonging to eleven species (203 species so far reported from India, and 4014 species from the World : Frost, 1985), five genera, four families and one Order, of which *Kaloula pulchra, Microhyla berdmorei, Rana crassa, Rana keralensis and Rana nicobariensis* are new record. The Orders Apoda and Caudata are not represented in the Collection.

Physiogeorgraphically Tripura is situated in the eastern part of Indian Union and lies between latitudes 22° 56' 24° 32' N and longitudes 91°12' - 92°22' E. Five major ranges of hills, running from north-west to south-east and alternating with marshy valleys are spread over the State. They are : Jampoi, Sakhantlang, Langtharai, Atharamura and Barmura. The highest peak in the state namely, 'Betalang Shiv' (984.6m) is situated in the Jampoi hill range. Abhoya, Khowai, Deo, Gomti, Manu, etc. rivers drain the territory. Evergreen, semievergreen and moist deciduous forests are found in the State. Bamboo is of common occurrence throughout the State. Forest Department has raised a secondary plantation of Sal, Teak and Rubber in different areas of the State. The State is divided into three districts with ten subdivisions. The three districts are : Tripura west with Agartala as its head quarter as well as State Capital, Tripura North and Tripura South with Kaila Sahar and Udaipur respectively as their district head quarters. The State is connected with rest of India by a road which runs through the hills to the border of Cachar district in Assam. Dharmanagar, a Subdivisional town in the north-east, is only connected by rail through Assam.

Data on field observation are included in the 'Remarks' of the species.

MATERIAL AND METHOD

Amphibians are either aquatic, terrestrial or arboreal. Aquatic form has been collected by the help of water-net, a net fitted with a metal ring fixed at the end of a long bamboo-pole, cast-net and fishing hook. Both terrestrial and arboreal forms have been collected by hand or long forceps. The amphibians reported in this paper have been collected by survey parties of Zoological Survey of India from several ecological niches of Tripura. As amphibians hibernate during winter, collections have mainly been made during pre-monsoon and monsoon months, the breeding season of amphibians. In the field, notes have been taken regarding the habits and habitats of the frogs and toads. For collection, aquatic vegetations, bushes grown on moist soil, heap of rotton leaves or straw, burrows made on elivated banks of ponds and canals, dark corners of village huts, undersurface of barks of trees, soil under stones etc. are explored. Nocturnal fauna has been explored by the help of lamps. The collected material are first chloroformed and then put into 5% formalin solution atleast for 24 hours for fixation. Before putting in the formalin, an incision on the abdomen for the smaller specimens, and

injection of 10% formalin solution inside the abdomen for larger specimens are given for the fixation or viscera. The fixed material alongwith labels containing the data of locality, altitude, habitat, date of collection and name of collector, are packed properly and kept in 5% formalin again. After returning from the tour the material are unpacked, washed properly in fresh water, and preserved in 90% alcohol for studies. Then the material have been studied and identified with the help of literature in the laboratory.

Text- fig. 1. Illustrations of measurements and essential morphological characters used in the paper.

A 1 : Snout to vent length, A 2 : Snout length, A 3 : Head length, A 4 : Head width, A 5 : Tympanum, A 6 : Glandular dorso-lateral fold, A 7 : Width of interorbital space. B 1 : Foot length, B 2 : Suctorial disc, B 3 : Subarticular tubercles, B 4 : Inner metatarsal tubercle, B 5 : Outer metatarsal tubercle, B 6 : Webs of toes. C 1 : Position of tibiotarsal articulation when hind limb is kept parallel to body, C 2 : Tibia, C 3 : Tarsus. D 1 : Position of Choanae, D 2 : Position of vomerine teeth, D 3 : Tongue (bifid). E 1 : Tongue (entire). F 1 : Cylindrical sacral vertebra. G 1 : Dilated sacral vertebra.

SYSTEMATIC ACCOUNT

Class : AMPHIBIA

Order : ANURA

Key to the families

1. Jaws toothless 2

   Upper jaw toothed 3

2. Skin rough with well-developed warts, parotoids present ..... BUFONIDAE

   Skin more or less smooth, parotoids absent ..... MICROHYLIDAE

3. No intercalary ossification (extra cartilaginous bone) between the distal and penultimate phalanges ..... RANIDAE

   An intercalary ossification between the distal and penultimate phalanges ..... RHACOPHORIDAE

Family 1. BUFONIDAE

Genus 1. ***Bufo*** Laurenti, 1768.

1. ***Bufo melanostictus*** Schneider (Common Indian Toad)

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

1963. *Bufo melanostictus* : Daniel, *J. Bombay nat. Hist. Soc.* **60**(2) : 435-437.

1981. *Bufo melanostictus* : Mansukhani and Sarkar, *Rec. zool. surv. India*, **79** : 272.

Material examined : 1 ex., Gorkha Bastee, Agartala, 10. ix. 1988; 1 ex., Ranibazar, Agartala, 11.ix. 1988; 1 ex., Sepahijala, 12.ix.1988; 3 ex., Paratia, Udaipur, 17, 19 & 24.ix.1988; 1ex., Pratichhari, 20.ix.1988; 1 ex., Amarpur, 22.ix.1988; 1 ex., Udaipur, 26.ix.1988; 1 ex., Belonia 28.ix.1988. All coll. A. K. Sarkar. 2 ex., Teliamura, 4 & 5. i. 1991; 2 ex., Ambasa, 9.i.1991; 2 ex., Ganganagar, 13.i.1991; 1 ex., Paratia, 25.i.1991. All coll. R. K. Ghosh II and S. Ray. 1 ex., Subal Lake, Jumpoi Hills, 5.iv.1991, T. Ray.

Measurements : Snout to vent length 18-95 mm.

Diagnostic character : Head broader than long, with cornified bony ridges; snout rounded, nearly equal the diameter of the eye; nostril a little nearer to the tip of snout than to the eye; interorbital width broader than that of upper eyelid; tympanum very distinct, two third the diameter of the eye. Fingers free, first a little longer than second, tips of fingers and toes swollen. Toes nearly half-webbed, more than three phlanges of fourth toe free; two oval (inner and outer) metatarsal tubercles present. Tarsometatarsal articulation reaches in between tympanum and eye. Dorsum dark brownish, rough with several spiny warts, parotoid large, kidney-shaped. Venter dull whitish with numerous small spiny warts.

Distribution : Tripura : As mentioned in the Material examined. Mansukhani and Sarkar (1981) recorded it from Agartala. *Elsewhere* : Common throughout the plains of India, and

Andaman and Nicobar. Also Pakistan, Nepal, Bangladesh, Sri Lanka, Myanmar, South China, Malaya Peninsula and Archipelago.

Remarks : Big-sized toad. It is nocturnal in habit and found in gardens and road sides preying on arthropodes and other invertebrates. Terrestrial, and found in and near water during breeding season. The toads are used for dissection in college laboratories, and the males are used in pregnency diagnosis tests of human beings. Ventral surface of one example collected from Ambasa (North Tripura) and another example from Ganganagar (South Tripura) both collected in January, possess black spots.

Status : Common.

Family II. MICROHYLIDAE

Key to the genera of family MICROHYLIDAE

1. Two small but distinct, and normal (not shovel-shaped) matatarsal tubercles present ..... ***Microhyla***
2. Two large, shovel-shaped metatarsal tubercles (inner larger) present ..... ***Kaloula***

Genus 2. ***Microhyla*** Tschudi, 1838.

Key to the species of the genus Microhyla

Toes webbed to the tips, with distinct discs. ..... *berdmorei*

Toes with a rudiment of web, without discs ..... *ornata*

2. ***Microhyla berdmorei*** (Blyth) (Berdmore's Microhylid Frog)

(Text-fig. 1)

1856. *Engystoma berdmorei* Blyth, *J. Asiat. Soc. Bengal,* **24** : 720

1882. *Microhyla berdmorei* : Boulenger, *Cat. Batr. Salientia Br. Mus.* London, : 166.

1934. *Microhyla berdmorei* : Parker, *Monogr. Microhylidae* : 127-128.

1981. *Microhyla berdmorei* : Pillai and Chanda, *Rec. zool. Surv. India,* **79** : 166.

Material examined : 7 ex. (Rubber Plantation), Sepahijala Biocomplex, 13 & 14.ix.1988; 1 ex., Paratia, Udaipur, 20.ix.1988. All coll. A. K. Sarkar. 1 ex., Fuldungsei, jumpoi Hills, 5.iv.1991, T. Ray.

Measurements : Snout to vent length 27-36 mm.

Diagnostic character : Head broader than long; snout obtusely pointed, as long as or a little longer than the diameter of the eye; nostril nearer to the tip of the snout than the eye; interorbitral-width generally a little broader than that of upper eyelid; tympanum hidden. Fingers free, first shorter than second, tips flattened with a median groove on the upper surface of the tip separating two swellings. Toes webbed to the tips with distinct discs; two distinct metatarsal tubercles present. Tibiotarsal articulation reaches beyond the snout. Dorsum with some small tubercles, brownish with darker shades. Venter smooth, dull whitish, and granular on hinder parts of thighs and anal region.

Distribution : Tripura : As mentioned in the Material examined. First record from Tripura. Pillai and Chanda (1981) recorded it from Garo Hills of Meghalaya. *Elsewhere* : Myanmar, Thailand, Malayasia and Sumatra.

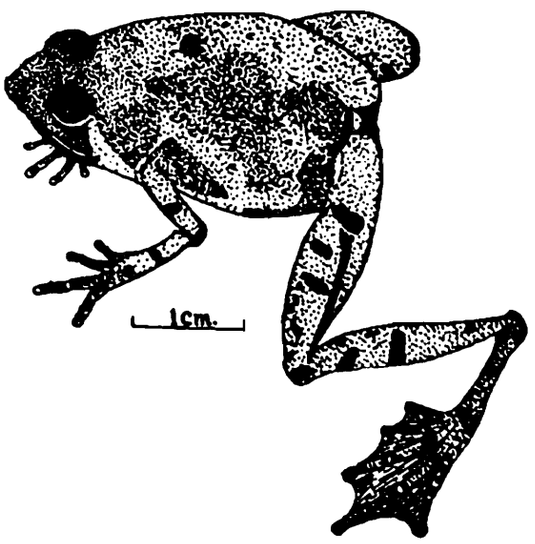


Fig. 1 : *Microhyla berdmorie* (Blytls)

Remarks : Medium-sized frog. The frogs have been collected mainly from the bush and decaying leaves inside deep forests in Tripura.

Status : Rare.

3. *Microhyla ornata* (Dumeril & Bibron) (Ornate Microhylid)

1841. *Engystoma Ornatum* Dumeril and Bibron, *Erpet. Gen.*, **8** : 745.

1934. *Microhyla Ornata* : Parker, *Monogr. Microhylidae* : 139-141.

1981. *Microhyla Ornata* : Mansukhani and Sarkar, *Rec. zool. Surv. India*, **79** : 271.

Material examined : 8 ex., Sepahijala, 13 & 14.ix. 1988; 1 ex., Paratia, Udaipur, 17.ix. 1988; 1 ex., Bagma, 18.ix.1988; 2 ex., Pratichhari, 20.iv.1988; 1 ex., Gorjee, 21.ix.1988; 2 ex., Belonia, 23, 28.ix. 1988. All coll. A. K. Sarkar. 1 ex., Vangmum, Jumpoi Hills, 5.iv.1991; 1 ex., Fuldungsei, Jumpoi Hills, 5.iv.1991. All coll. T. Ray.

Measurements : Snout to vent length 13-25 mm.

Diagnostic character : Head broader than long; snout obtusely pointed, a little longer than the diameter of the eye; mostril nearer to the tip of snout than the eye; interorbital width a little broader than that of upper eyelid; tympanum not so distinct. Fingers free, first shorter than second, tips flattened. Toes with a rudiment of web, tips blunt, two small but distinct oval (inner and outer) metatarsal tubercles present. Tibiotarsal articulation reaches near to eye. Dorsum smooth, brownish with broad darker markings. Venter smooth, dull whitish, little darker on throat.

Distribution : Tripura : As mentioned in the Material examined. Mansukhani and Sarkar (1981) recorded it from Ampi and Ambasa. *Elsewhere* : It is widely distributed species in India and found all over the plains of the Country upto an altitude of 1524 metres, and Andaman. Also Pakistan, Nepal, Bangladesh, Sri Lanka, Myanmar, South China, South east Asia and Taiwan.

Remarks : Small frog. The frogs are normally found inside the bush, and under dry leaves spread over moist soil. They are nocturnal in habit, and sometimes found inside human dwellings during monsoon days.

Status : Common.

Genus 3. *Kaloula* Gray, 1831.

4. *Kaloula pulchra* Gray (Painted Frog)

(Text-fig. 2)

1831. *Kaloula pulchra* Gray, *zool. Misc.*, **1** : 38.

1934. *Kaloula pulchra* : Parker, *Monogr. Microhylidae*, : 84-86.

1986. *Kaloula pulchra* : Inger & Dutta, *J. Bombay nat. Hist. Soc.*, **83** : 136

Material examined : 1 ex., Subal Lake and surroundings, Jumpoi Hills, 5.iv.1991, T. Ray.

Measurements : Snout to vent length 82 mm.

Diagnostic character : Head broader than long; snout rounded, as long as the diameter of the eye; nostril nearer to the tip of snout than the eye; interorbital width much broader than that of upper eyelid; tympanum hidden. Fingers free, first shorter than second, tips bearing well-developed truncate discs; subarticular tubercles of fingers and toes distinct. Toes webbed at the base, tips

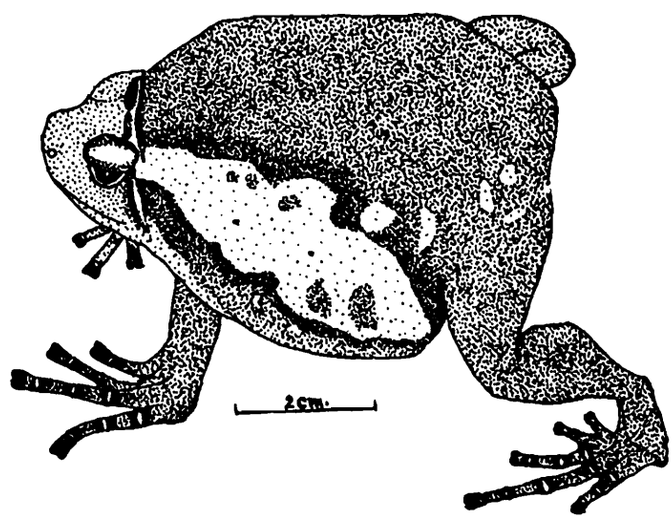


Fig. 2 : *Kaloula pulchra* Gray

obtusely swollen; inner metatarsal tubercle well developed, large, shovel-shaped, outer metatarsal tubercle small, shovel-shaped. Tibiotarsal articulation reaches the axil. Dorsum rough with scattered warts, and greyish with reddish brown patches margined with black. Venter wrinkled on belly, granular on throat and under surface of thighs, and light brownish.

Distribution : Tripura : As mentioned in the Material examined. First record from Tripura. It has so far been recorded from Assam, West Bengal, Madhya Pradesh, Karnataka and Tamil Nadu States in India. *Elsewhere* : Nepal, Sri Lanka, South China, Myanmar, Malaysia and Sumatra.

Remarks : Medium-sized frog. Specimen at our disposal measures 82 mm. from snout to vent, 'as against 76 mm. (Van Kampen, 1923)' Terres-trial and nocturnal in habit. The frog is mostly found underground, and surfaces during breeding season (Monsoon months). The frog has been collected during rains. Sarkar (1984) gives a detailed account of its habit. Dorsum of our specimen is darker with broad dull brownish lateral patch and flat warts. Venter dark brownish, wrinkle, and granular on gular region. Undersurface of thighs granular with small white spots. Balloon-like flabby body. This is the largest specimen so far recorded for the species.

Status : Rare.

Family III. RANIDAE

Genus 4. ***Rana*** Linnaeus, 1758.

Key to the species of the genus Rana

1. Tips of fingers and toes with discs ..... ***nicobariensis***

   Tips of fingers and toes without discs 2

2. Toes entirely webbed 3
   Toes not entirely webbed 4

3. Inner metatarsal tubercle digitiform (toe-like), ***cyanophlyctis***

   Inner metatarsal tubercle not digitiform 5

4. Two phalanges of fourth-toe free from webbing, male with internal vocal sacs ..... ***keralensis***

   Three phalanges of fourth-toe free from webbing, male with extermal vocal sacs ..... ***limnocharis***

5. Inner metatarrsal tubercle blunt, not shovel-shaped. Heels strongly overlapping..... ***tigerina***

   Inner matatarsal tubercle shovel-shaped. Heels do not overlap..... ***crassa***

5. ***Rana nicobariensis*** (Stoliczka) (Nicobar Frog)

(Text-fig. 3)

1870. *Hylorana nicobariensis* Stoliczka, *J. Asiat. Soc. Bengal*, **39** : 150.

1920. *Rana nicobariensis* : Boulenger, *Rec. Indian Mus.*, **20** : 162-165.

1990. *Rana nicobariensis* : Sarkar, *Rec. zool. Surv. India*, **86(1)** : 113-114.

Material examined : 13 ex. (Rubber plantation), Sepahijala Biocomplex, 13 & 14.ix.1988; 2 ex., Paratia, Udaipur, 14 & 27.ix.1988; 1 ex., Manu Bazar, 23.ix.1988; 1 ex., Belonia, 28.ix.1988; 4 ex., Pratichhari, 20.ix.1988. All coll. A. K. Sarkar.

Measurements : Snout to vent length 18-53 mm.

Diagnostic character : Head longer than broad; snout more or less pointed, longer than the eye; nostril nearer the tip of the snout then the eye; interorbital width equals to that of the upper eyelid; tympanum very distinct, three-fourth the diameter of the eye. Fingers free, first longer than second, tips with small discs; subarticular tubercles of finger and toe distinct. Toes half webbed, three phalanges of fourth toe free, tips with small discs; inner metatarsal tubercle oval, outer metatarsal tubercle small, round, situated at the base of fourth toe. Tibiotarsal articulation reaching in between nostril and tip of snout. Dorsum dark-reddish brown with darkar spots, granular, with glandular dorosolateral fold running from above the tympanum to the hip. Venter dull white, spotted with chocolate, smooth.

Distribution : Tripura : As mentioned in the Material examined. First record from Tripura. *Elsewhere* : Nicobars in India, Malaysia, Sumatra, Borneo and Java.

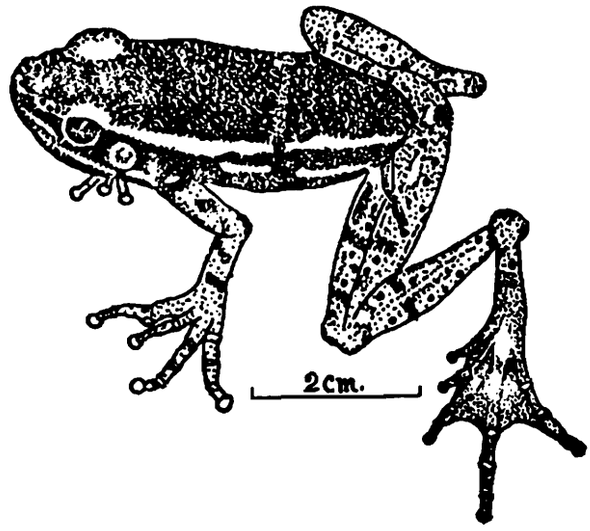


Fig. 3 : *Rana nicobariensis* (Stoliczka)

Remarks : Medium-sized frog. The frogs are normally found in the bush grown in rubber plantations. They prefer deep forest with thick canopy of lofty trees where sun light can not penetrate properly. The frogs are not very active, and escape inside the crevices under the tree-trunk when disturbed. The specimens at our disposal are a little stouter than those from Nicobars; dorsum granular, dark brown with irregular darker spots, and darker colouration on the lateral sides of the head and body below the lateral folds.

Status : Fairly common in west and south Tripura.

6. ***Rana cyanophlyctis*** Schneider (Skipping Frog)

1799. *Rana cyanophlyctis* Schneider, *Hist. Amph.*, **1** : 137.

1920. *Rana cyanophlyctis* : Boulenger, *Rec. Indian Mus.*, **20** : 12.

1975. *Rana cyanophlyctis* : Daniel, *J. Bombay nat. Hist. Soc.*, **72 (2)** : 510-512.

1981. *Rana cyanophlyctis* : Mansukhani and Sarkar, *Rec. zool. Surv. India*, **79** : 269.

Material examined : 2 ex., Pratapgar, Agartala, 9.ix.1988; 2 ex., Gorkha Bastee, Agartala, 10.ix.1988; 1 ex., Rani Bazar, 11.ix.1988; 1 ex., Sepahijala, 12.ix.1988; 2 ex., Amtali, 13.ix.1988; 1 ex., Bishramganj, 15.ix.1988; 1 ex., Chandrapur, Udaipur, 17.ix.1988; 1 ex., Bagma, 18.ix.1988; 2 ex., Paratia, Udaipur, 19.ix.1988; 1 ex., Gorjee, 21.ix.1988; 1 ex., Amarpur, 22.ix.1988; 1 ex., Manu Bazar, 23.ix.1988; 1 ex., Santi Bazar, 25.ix.1988; 1 ex., Udaipur, 26.ix.1988; 3 ex., Paratia, 27.ix.1988. All coll. A. K. Sarkar. 4 ex., Anand Bazar, Dharampur, 5.xii.1989; 2 ex., Unokoti, Kailasahar, 6.xii.1989; 12 ex., Panisagar, Dharamnagar, 7.xii.1989; 22 ex., Dootpur, Kailasahar, 7.xii.1989; 2 ex. & 1 tadpole, Kamalpur, Ambasa, 8.xii.1989; 3 ex., Manu, Kailasahar, 9.xii.1989; 9 ex., Tarakpur, Dharamnagar, 15.xii.1989; 3 ex., Ranibari, Dharamnagar, 16.xii.1989; 18 ex., Bagbasa, Dharamnagar, 18.xii.1989; 8 ex., Churraibari, Dharamnagar, 19.xii.1989. All coll. Y. P. Sinha. 1 ex., Ranibazar, 5.i.1991; 1 ex., Manu, 10.i.1991; 1 ex., Ganganagar, 13.i.1991; 2 ex., Sepahijala, 17.i.1991; 2 ex., Bagma, 18.i.1991; 2 ex., Amarpur, 25.i.1991. All coll. R. K. Ghosh II and S. Ray. 2 ex., Dharamnagar, 29.iii.1991; 6 ex., Bagon, Dharamnagar, 30.iii.1991; 2 ex., Churaibari, Dharamnagar, 30.iii.1991; 11 ex., & 1 Juv., Subhashnagar, Kanchanpur, 5.iv.1991; 5 ex., Kailasahar, 8.iv.1991; 4 ex., West Gobindapur, Kailasahar, 8.iv.1991. All coll. T. Ray.

Measurements : Snout to vent length 24-57 mm.

Diagnostic character : Head broader than long; snout generally rounded, equal or a little longer than the diameter of the eye; nostril equidis tant from the tip of the snout and the eye; interorbital width much smaller than that of the upper eyelid; tympanum distinct, nearly once the diameter of the eye. Fingers free, first equals second, tips pointed; subarticular tubercles of fingers and toes feebly prominent. Toes fully webbed, tips swollen; a pointed digit-like inner metatarsal tubercle present, outer metatarsal

tubercle absent. Tibiotarsal articulation reaches in between posterior end of tympanum and nostril. Dorsum darker with small warts. Venter whitish and smooth.

Distribution : Tripura : As mentioned in the Material examined. Mansukhani and Sarkar (1981) recorded it from Agartala, Charilum, Udaipur, Abhoya, Ampi, Teliamura and Kanchanpur. *Elsewhere* : Throughout the plains of India, and upto 1846 m. in the Himalayas. Also Pakistan, Afghanistan, Beluchistan, Iran, South Arabia, Nepal, Bangladesh, Thailand and Sri Lanka.

Remarks : Medium-sized frog. The frogs are normally found floating on the surface of water. Adults can be used in college laboratories for dissecting purpose.

Status : Very common.

7. ***Rana keralensis*** Dubois (Gunther's Warty-Frog)

1875. *Rana verrucosa* Gunther, *Proc. zool. Soc.*, London, p. 567

1980. *Rana keralensis* Dubois, *Bull. Mus., natn. Hist. nat.* Paris, (94) 2, Sec. A : 928 (replacement name).

Material examined : 2 ex., Vangmun, Jumpoi Hills, 5.iv.1991, T. Ray.

Measurements : Snout to vent length 45-48 mm.

Diagnostic character : Head a little broader than long; snout bluntly pointed, equals the diameter of the eye ; nostril equidistant from the tip of the snout and the eye; interorbital width shorter than that of upper eyelid; tympanum distinct, about two-third the diameter of the eye. Fingers free, first longer than second, tips more or less pointed; subarticular tubercles of fingers and toes large and distinct. Toes three-fourth webbed, two phalanges of fourth toe free ; inner matatarsal tubercle elliptical, outer metatarsal tubercle small, oval. Tibiotarsal articulation reaching in between nostril and tip of snout. Dorsum greyish and warty. Venter whitish, smooth.

Distribution : Tripura : As mentioned in the *Material examined.* First record from Tripura. *Elsewhere* : Tamil Nadu and Kerala States in India.

Remarks : Medium-sized frog. These frogs are normally found inside bush grown by the sides of fast flowing stream. Both the examples reported here are with darker colouration and less warty on dorsum, two penultimate phalanges of fourth toe free, and tibiotarsal articulation reaches beyond the nostril.

Status : Very rare.

8. ***Rana limnocharis*** Boie (Cricket Frog)

1835. *Rana limnocharis* (Boie), Wiegmann, *N. Acta. Ac. Leop. -Carol.* **17 (i)** : 255.

1920. *Rana limnocharis* : Boulenger, *Rec. Indian Mus.*, **20** : 28

1981. *Rana limnocharis* : Mansukhani and Sarkar, *Rec. zool. Surv.* India, **79** : 269-270

Material examined : 3 ex., Agartala, 9-10.ix.1988; 2 ex., Ranibazar, 11.ix.1988; 14 ex., Sepahijala Bio-complex, 12-14.ix.1988; 2 ex., Amtali, 13.ix.1988; 3 ex., Bishramganj, 15.ix.1988; 16 ex., Paratia, Udaipur, 16, 17, 19, 24 & 27.ix.1988; 3 ex., Bagma, 18.ix.1988; 4 ex., Pratichhari, 20.ix.1988; 2 ex., Gorjee, 21.ix.1988; 5 ex., Amarpur, 22.ix.1988; 3 ex., Manu bazar, 23.ix.1988; 3 ex., Shanti bazar, 25.ix.1988; 5 ex., Udaipur, 26.ix.1988; 1 ex., Belonia, 28.ix.1988. All coll. A. K. Sarkar. 1 ex., Kailasahar, 7.xii.1989; 1 ex., Dharmanagar, 12.xii.1989. All coll. Y. P. Sinha. 2 ex., Sepahijala, 17.i.1991; 2 ex., Bagma, 18.i.1991. All coll. R. K. Ghosh II and S. Ray. 3 ex., Dharmanagar, 29.iii.1991; 1 ex., Fuldunsei, Jumpoi Hills. All coll. T. Ray.

Measurements : Snout to vent length 16-62 mm.

Diagnostic character : Head generally as long as broad; snout generally pointed, projecting beyond the mouth, as long as or a little longer than the diameter of the eye, nostril, nearer to the tip of snout than the eye; interorbital width much smaller than that of the upper eyelid; tympanum

distinct, nearly two-third the diameter of the eye. Fingers free, first longer than second, tips swollen; subarticular tubercles of fingers and toes distinct. Toes half-webbed, normally three phalanges of fourth toe free; a distinct oval inner metatarsal tubercle, and a feebly distinct outer metatarsal tubercle present. Tibiotarsal articulation reaches in between tympanum and nostril. Dorsum greyish and warty. Venter whitish and smooth.

Distribution : Tripura : As mentioned in the Material examined. Mansukhani and Sarkar (1981) recorded it from Ampi, Teliamura, Ambasa and Kanchanpur. *Elsewhere* : It is a broadly distributed species in India and found almost all the biotopes of the country, and Andaman and Nicobar. Also eastern Asia from Pakistan, Nepal, Bengladesh, Sri Lanka, and China to Japan.

Remarks : Medium-sized frog. Largest specimen in the present report measures 62 mm. from snout to vent. Three examples collected from Sepahijala Bio-complex and one example collected from Belonia in September possess stout physique, and third penaltimate phalange of fourth tow covered with web, a character of *Rana keralensis*. All other morphological characters of these frogs tally completely with those of *Rana limnocharis*. The frogs are normally found inside bush on the demarcation lines of cultivated land, and banks of ditches, pools and canals, and on moist forest-bed wrapped with dry leaves.

Status : Common.

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

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

1920. *Rana tigerina* : Boulenger, *Rec. Indian Mus.*, **20** : 17-20.

1981. *Rana tigerina* : Mansukhani and Sarkar, *Rec. zool. Surv. India*, **79** : 270.

Material examined : 2 ex. (tadpoles), Khowai river, Teliamura, 2.ii.1971; 5 ex., (tadpoles), Deo river, Kanchanpur, 15.ii.1971. All coll. V. C. Agrawal. 1 ex., Gorjee, 21.ix.1988; 1 ex., Udaipur, 26.ix.1988; 1 ex., Paratia, Udaipur, 27.ix.1988. All coll. A. K. Sarkar. 1 ex., Teliamura, 4.i.1991; 1 ex., Paratia, Udaipur, 25.i.1991. All coll. R. K. Ghosh II and S. Ray.

Measurements : Snout to vent length 52-105 mm.

Diagnostic character : Head as long as broad or a little broader than long; snout rounded or pointed, projecting beyond the mouth, longer than the diameter of the eye; nostril generally equidistant from the tip of snout and the eye; interorbital width much smaller than that of the upper eyelid; tympanum distinct, nearly equal to the diameter of the eye. Fingers free, first longer than second, tips not sharply pointed; subarticular tubercles of fingers and toes not very distinct. Toes entirely webbed, tips not pointed, a blunt, not shovel-shaped inner metatarsal tubercle present, outer metatarsal tubercle absent. Tibiotarsal articulation reaches in between posterior end of eye and nostril. The heels overlaping when the limbs are folded at right angles to the body. Dorsum olive green with darker spots, distinct warts and long glandular folds. Venter whitish and smooth.

Distribution : Tripura : As mentioned in the Material examined. A. K. Sarkar, Scientist-'SD' found some frogs in a rain-fed cemented tank behind the office of Chief Conservator of Forest, Kunjaban, Agartala. Menon (1975) reported it from Tripura. *Elsewhere* : The species is common throughout India from the base of the Himalaya to Southern part of the country, and Andaman. Also Pakistan, Nepal, Bangladesh, Sri Lanka, Myanmar, Thailand, South China and Taiwan.

Remarks : Large frog. Mansukhani and Sarkar (1981) included the species in their report from Tripura District Gazetteer. They had no material in their disposal. It frequents inside bushes grown on the banks of ditches, ponds, canals and rivers. The frog jumps in the water when disturbed. Its population has depleted owing to at random lifting of frogs from the nature for commercial use. Bhattacharya (1936) reported its tadpoles feeding on mosquito larvae. Abdulali (1985) stated its utility in the control of agricultural pests. Sarkar (1984) gave an account of its habit, habitat and food.

Status : Common.

10. ***Rana crassa*** Jerdon

(Jerdon's Bull Frog)

1853. *Rana crassa* Jerdon, *J. Asiat. Soc. Beng.*, **22** : 531.

1947. *Rana crassa* : Bhaduri, *J. Bombay nat. Hist. Soc.*, **44** (3 & 4) : 481-484.

1986. *Rana crassa* : Inger and Dutta, *J. Bombay nat. Hist. Soc.*, **83** : 137.

Material examined : 1 ex., Subal Lake, Jumpoi Hills, 5.iv.1991, T. Ray.

Measurements : Snout to vent length 64 mm.

Diagnostic character : Head a little broader than long; snout generally pointed, projecting beyond the mouth, longer than the diameter of the eye; nostril generally equidistant from the tip of snout and the eye; interorbital width much smaller than that of upper eyelid; tympanum distinct, nearly equal to the diameter of the eye. Fingers free, first longer than second; subarticular tubercles of fingers and toes feebly distinct. Toes entirely webbed, penultimate phalange of fourth toe free, tips not pointed; a highly developed, shovel-shaped inner metatarsal tubercle present, outer metatarsal tubercle absent. Tibiotarsal articulation reaches the tympanum or the eye. The heels do not overlap when the limbs are folded at right angle to the body. Dorsum light greyish with interrupted long warts. Venter dull whitish with darker spots on throat, and smooth.

Distribution : Tripura : As mentioned in the Material examined. First record from Tripura. It has so far been recorded from Kerala, Tamil Nadu, Andhra Pradesh, Orissa, Bihar, Uttar Pradesh and West Bengal States in India. *Elsewhere* : Sri Lanka.

Remarks : Medium-sized frog. The frog is nocturnal in habit. Spends day inside the crevices on the elivated walls of ditches, ponds and lakes. The example (M) reported here possesses two penultimate phalanger of fourth toe free, broad dorsal vertebral streak, and toad-like stouter body.

Status : Rare.

Family IV. RHACOPHORIDAE

Genus 5. ***Polypedates*** Tschudi, 1838.

11. ***Polypedates leucomystax*** Gravenhorst

(Tree frog)

1829. *Hyla leucomystax* Gravenhorst, *Delic. Mus. Vralislav.*, **1** : 26.

1889. *Rhacophorus leucomystax* : Boulenger, *Proc. zool. Soc.* London : 29.

1981. *Rhacophorus leucomystax* : Mansukhani and Sarkar, *Rec. zool. Surv. India*, **79** : 271.

1986. *Polypedates leucomystax* : Inger and Dutta, *J. Bombay nat. Hist Soc.*, **83** : 139.

Material examined : 3 ex., Gondachhera, 11.i.1991, coll. R. K. Ghosh II and S. Ray. 2 ex., Vangum, Jumpoi Hills, 5.iv.1991, T. Ray.

Measurements : Snout to vent length 45-60 mm.

Diagnostic character : Head broader than long, skin on head rugose; snout not pointed, projecting a little beyond the mouth, greater than the diameter of the eye; nostril nearer to the tip of the snout than the eye; interorbital width much broader than that of the upper eyelid; tympanum distinct, about three-fourth diameter of the eye. Fingers free, first equals the second, tips of fingers and toes bear horse-shoe shaped distinct discs; subarticular tubercles of fingers and toes distinct. Toes three fourth webbed, one phalange of fourth toe free; a distinct oval inner metatarsal tubercle present, outer metatarsal tubercle absent. Tibiotarsal articulation reaches in between eye and tip of snout. Dorsum light chocolate and smooth. Venter dull whitish and granular.

Distribution : Tripura : As mentioned in the Material examined. Mansukhani and Sarkar (1981) recorded it from Agartala. A. K. Sarkar, Scientist-'SD' and party have observed the frogs in Sepahijala Biocomplex in the month of September. It has so far been recorded from Andaman and Nicobar, Arunachal Pradesh, Meghalaya, Assam, Sikkim and West Bengal States in India. *Elsewhere* : Myanmar, South China to Malayasia.

Remarks : Medium-sized frog. It is tree frog, and normally found inside thick bush and crevices

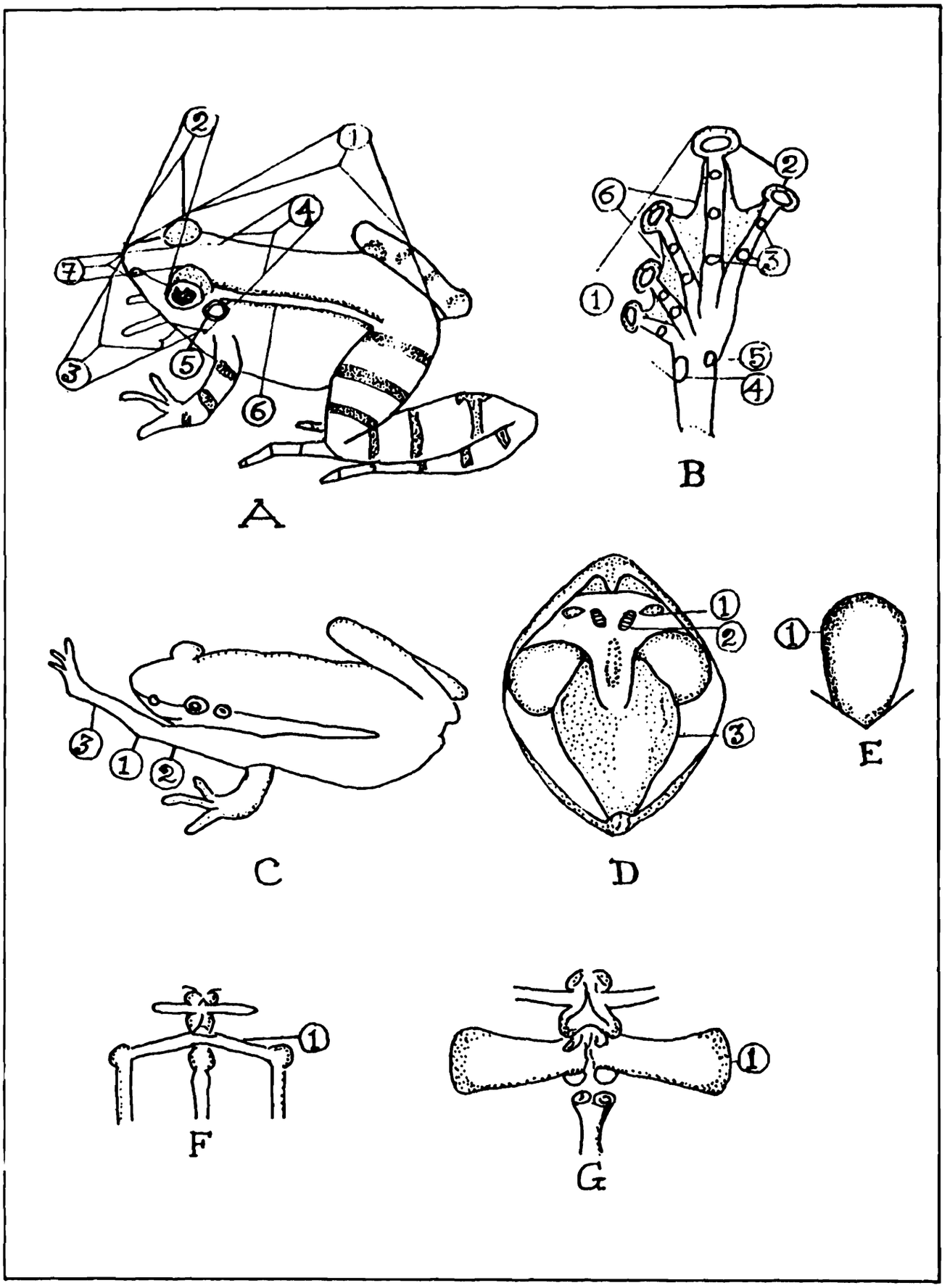


Fig. 4. : Illustration of measurements and essential morphological characters.

on tree-trunk. Three examples of frogs collected from Gondachhera, South Tripura, possess rugose head, light darker bands on the head and body, and darker reticulated spots on the hinder sides of the thighs. These frogs are found resting on the elivated wooden doors covered with thick curtain in Forest Rest House in the month of January.

Status : Common.

ACKNOWLEDGEMENT

Authors are highly indebted to the Director, Zoological Survey of India for providing with all sorts of facilities to carry out this work; to Dr. A. K. Ghosh, Joint Director (Scientist 'SF'), and Mr. D. P. Sanyal, Scientist-'SD', for constant inspiration to carry out these studies, to all the collectors for collecting the material and handing over the same to us for the study. Thanks are also due to the Officers and staff, Deptt. of Forests, Govt. of Tripura for providing necessary help and guidance during field trips.

SUMMARY

The paper deals with the Amphibian fauna of Tripura based on the collections made by the surveys undertaken by the Scientists of Zoological Survey of India during September, 1988 to April, 1991. A few examples collected prior to that and available with the unnamed collections of Amphibia Section have also been utilized. The paper consists of 307 examples of amphibians belonging to four families, five genera, and eleven species, of which *Kaloula pulchra, Microhyla berdmorei, Rana crassa, Rana keralensis and Rana nicobariensis* are recorded for the first time from Tripura. Keys, illustrations of morphological characters to follow the key, and short diagnostic characters of the species have been added in the paper for determination of the species. Diagrams of three un-common species namely, *Kaloula pulchra, Microhyla berdmorei and Rana nicobariensis,* and a map showing distribution of species have also been provided in the paper.

Map (Showing locality-wise distribution of species)

Species	Symbol of species
Bufo Melanostictus	1
Kaloula pulchra	2
Microhyla berdmorei	3
Microhyla ornata	4
Rana crassa	5
Rana cyanophlyctis	6
Rana keralensis	7
Rana limnocharis	8
Rana nicobariensis	9
Rana tigerina	10
Polypedates leucomystax	11

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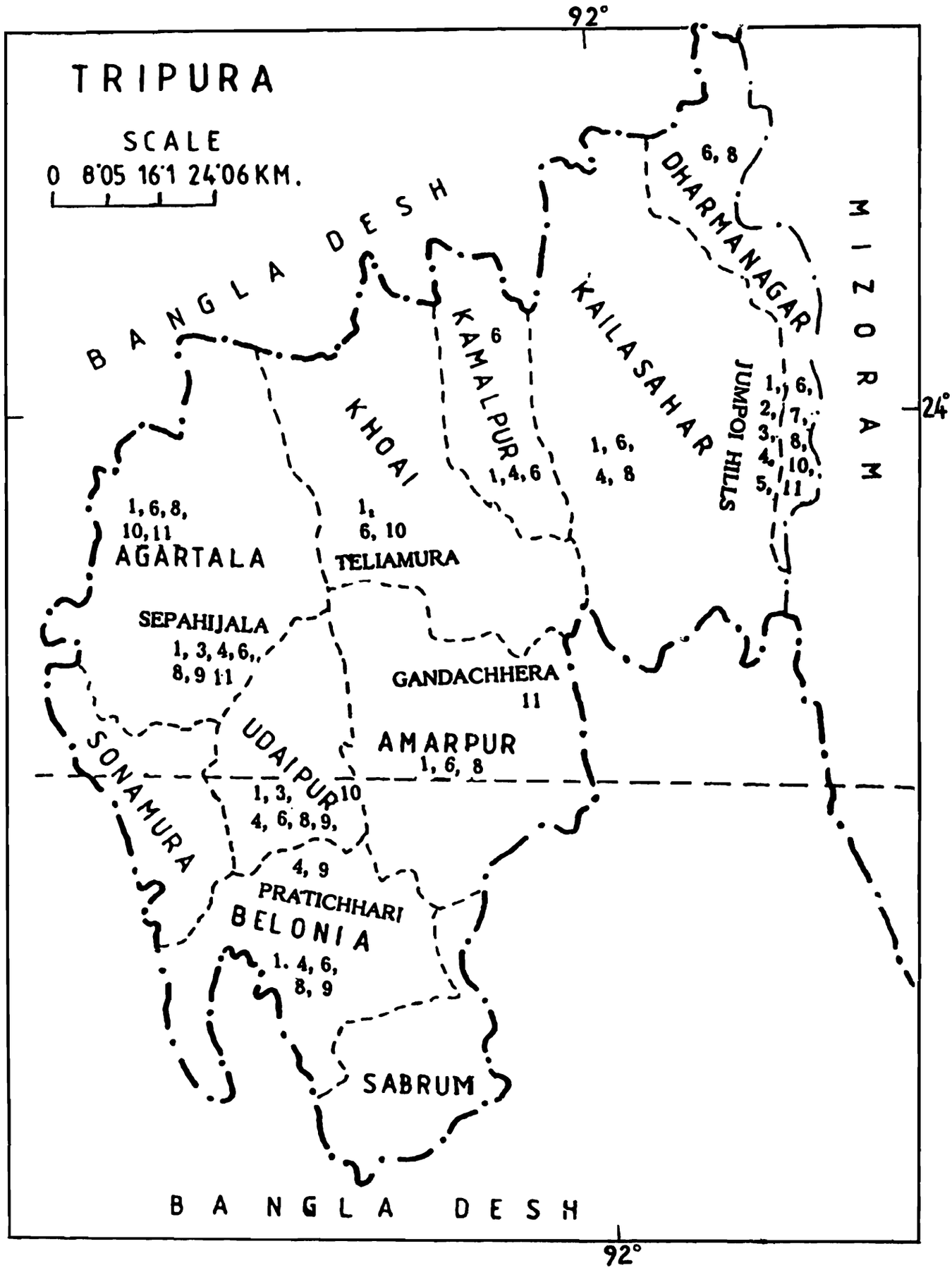
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Map showing the locality-wise distribution of species (see page 189 for details of symbol used)

Zool. Surv. India
State Fauna Series 7 : Fauna of Tripura, Part 1, 191-320 : 2002

PISCES : FRESHWATER FISHES

R. P. BARMAN
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INTRODUCTION

Tripura is a locked hilly state with an area of 10,47,700 hectares surrounded by Bangladesh on three sides and by Assam and Mizoram on one side. The estimated 24 lakhs population in the state are almost cent percent fish eaters. In the state the present demand is 22,000 Metric tons and the estimated demand at the end of 1994-95 will be 27,000 metric tones against the anticipated estimated production of 18,000 metric tons at the end of 1989-90. Even after achieving this target, there will be vast gap between the demand and supply of fish in the state. The natural resources of rivers and rivulets are very limited and not rich in fishery. All the rivers flow into Bangladesh and there remains no scope for the development of riverine fisheries. Hence the strategy for development of fish and fisheries, has been to utilise all the available resources towards horizontal expansion by creation of water areas, and towards vertical increase in production of fish through supply of quality fish seed and other inputs, and popularising modern scientific techniques of pisciculture. In the state there is only Gumti reservoir covering an area of 4500 hectares created due to Hydro-electric project in South Tripura district. The present average yield of this reservoir is 88 kg per hectare. Insignificant natural recruitment of Fish seed and inadequate stocking of reservoir had been the main reason for low production. But where regular stocking can be done, increased production can be obtained. This type of reservoir can be treated as "Culture-cum-captures fisheris."The state possesses an area of 5,000 hectares of combined river system, 4,473 hectares under public and private sector and 4,500 hectares under newly created Gumti reservoir.

The geographical location of Tripura lying in the sub-Himalayan region with its varying physiographical features have contributed to the creation of a diverse fish fauna. But a perusal of the existing literatures on fish fauna of Tripura shows that adequate attention has not been yet paid so far to make comprehensive consolidated account of the fish faunal resources since the inception of this state in 1972. This region deserves more fish faunal surveys for the exploration of many unexplored localities of this state. Accordingly, an effort is being made to make a comprehensive survey of the fish faunal resources and to prepare a consolidated account of fish fauna of Tripura. I am quite conscious that this goal is too ambitious and that it has not been fully attained.

The main rivers of this state are Khowai, Dhalai, Manu, Juri and Langai flowing towards the north, and those flowing towards west are Gumti, (the largest river of the state); Muhuri and Fenny. The drainage patterns are of dendritic, parallel to sub-parallel, and rectangular types. All these rivers flow into the river Meghna in Bangladesh. These features have somewhat reduced the chances of availability of riverine fishes in the state. However, during monsoon (June to August) when the rivers swell enormously and inundate the adjoining low-lying areas many fishes migrate from the major rivers of Bangladesh. While studing the fishes of this state

the following literatures have been consulted, Annandale and Hora (1921), Anon (1975), Bhattacharya (1988), Chaudhuri (1913), Choudhury and Sen (1977), Datta (1977), Datta and Barman (1985), Day (1875-78), Day (1889), Hamilton (1822), Hora (1921, 1924, 1935, 1936), Hora and Mukherji (1935), Howes (1980) Jayaram (1977 and 1981), Jayaram and Majumdar (1964), Jhingran (1983), Lipton (1983-84), Menon (1954, 1973, 1974 and 1987), Menon (1952), Misra (1962 and 1976), Motwani, Jayaram and Sehgal (1962), Pillai and Yazdani (1974 and 1977), Sehgal (1959), Srivastava (1966), Yazdani (1977) and Barman (1988).

Three field surveys (1985, 1989 and 1990) were undertaken covering almost all the important fish landing centres throughout the state. In the preparation of the presesnt work I have made use of all the earlier informations on the fish fauna of this region in addition to all the information I have been able to collect through my extensive filed surveys and continued studies. These fish collections reveal a wide range of both riverine and torrential forms along with some freshwater visiting marine forms or in other words the migratory forms. These fishes belongs to 129 species under 78 genera, 33 families, and 11 orders. 26 species of fishes form the new state record. 8 species of fishes appear to me as rare species and 2 species seems to me as vulnerable species of the state.

Notopterus chitala (Hamilton Buchanan) and *Bagarius bagarius* (Hamilton Buchanan) appear to be vulnerable species and *Danio rerio* (Hamilton Buchanan), *Rasbora elanga* (Hamilton Buchanan), *Aspidoparia jaya* (Hamilton Buchanan), *Amblyceps mangois* (Hamilton Buchanan), *Olyra longicaudata* McClell and *Olyra kempi* Chaudhuri, *Channa barca* (Hamilton Buchanan) and *Colisa sota* (Hamilton Buchanan) seem to be rare species.

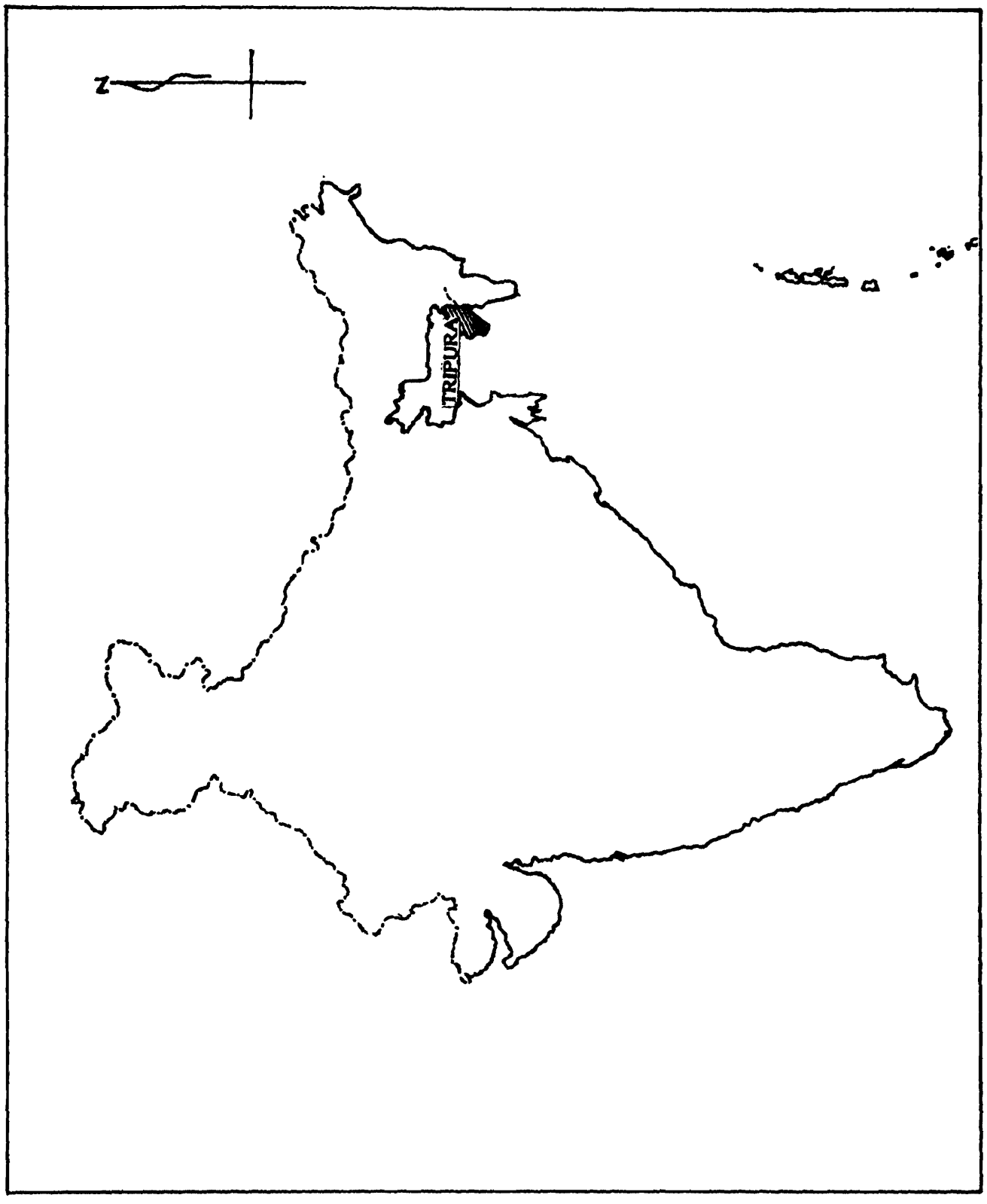
Brief description of all the orders, families, subfamilies, genera and species are given along with key to the above systematic catagories. In the systematic account all the species have been described giving their first reference with type-locality and in order to facilitate easy reference, names of fishes as found in Day's Fishes of India (1885-78) and Day's Fauna of British India, Fish series (1889) and Jayaram's freshwater fishes of India (1981) followed by materials examined local and English names, diagnostic features, Colour in alcohol, Distribution, size and remarks on systematic characters or other relevant information whenever necessary.

I hope this work will be useful not only as a guide in courses devoted to the study of fishes of Tripura but also as an opening to those interested in the field of systematic study will be stimulated to discover more species of fishes to be added to the so far known fishes of the state and even new to science. I accept sole responsibility for any errors in any form of commission or ommission that may appear and the readers' suggestions for improvement will be welcome.

TOPOGRAPHY OF TRIPURA

Tripura, one of the North-Eastern states of India attained the status of a full flazed state on 21st January, 1972. It is bordered by Bangladesh on the West, South and North, by Assam on the North-East and by Mizoram on the East (Map No. 1). The state in connected with the rest of India by only one road which runs through the hills of the border of Cachar district in Assam. Only Dharmanagar, a sub-divisional town in the North-East and very recently Kumarghat are connected by railways. This state lies approximately between latitude 22°56' to 24°32' North and longitude 91°12' to 91°21' East in the sub Himalayan region. The state is having three districts with ten sub-divisions. The three districts are West Tripura District with Agartala as its head-quarter which is also the state capital, North Tripura district and South Tripura district with Kailasahar and Udaipur respectively as district head-quarters.

The principal hill ranges of the state from the East are the Jampai, Sakhan, Tlang, Langtarai, Atharamura and Baramura. The highest peak of the state is known as Be-talang Shiv (3200 feet) in the Jampai hill range. These hill ranges increase



Map 1 : Indian map showing the location of Tripura

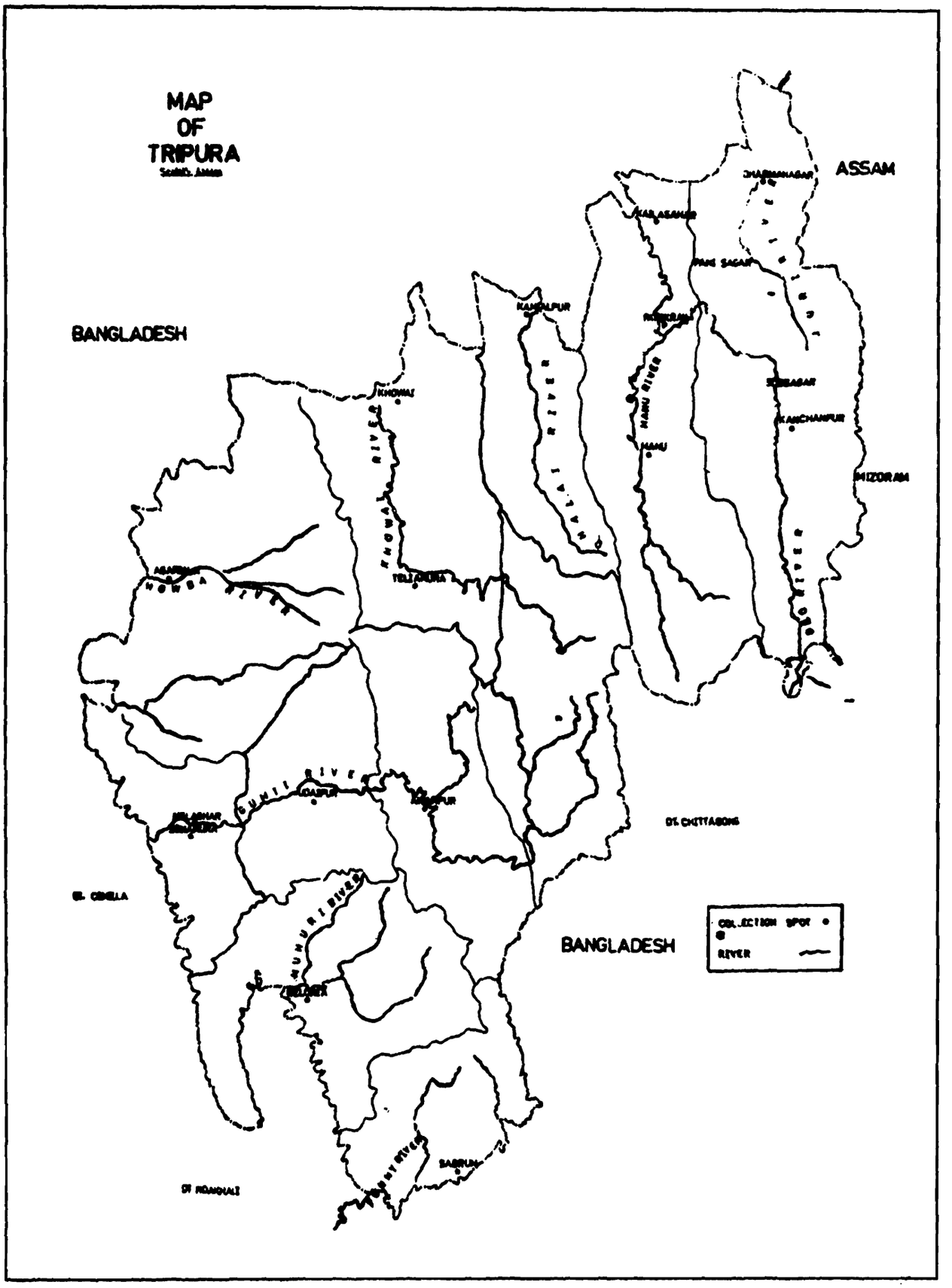
in height towards south from the plains of Sylhet in Bangladesh and towards north form Chittagong district of Bangladesh. In Tripura, they gain height from west to east. All ranges run more or less parallel to one another in a northernly direction. The drainage from these hill ranges pour down to the north by Khowai, Dhalai, Manu, Juri and Langai rivers, in the east by Gumti and Haorah rivers and in the south-east by the Fenny and Muhuri rivers. The Fenny and Muhuri are the two tidal rivers of Tripura (Map No. 2). These tidal rivers are connected with the Bay of Bengal through Bangladesh. The Gumti is the largest river in the state flowing from the eastern side towards the western side of the state. The river Gumti originating from the hill range, Langtarai passes through four subdivisions of the state, viz., Tirthamukh, Amarpur, Udaipur and Sonamura. This river enters into the territory of Bangladesh from the subdivision of Sonamura. This river receives a number of southflowing streams and cuts across the ranges in a steep-sided valley from east to west before emerging out of the hills near Radhakishorepur. There are a number of waterfalls in its channel through the Dumbura Hill, where lies the beutiful Dumbur falls believed to be one of the most important holy places and the landscape in the neighbourhood is exceedingly pictureque. The river Gumti is considered to the most sacred of all the rivers in Tripura. As in north India, the Ganges is loved and respected by all and considered to the symbol of hopes and fears in north India. In Tripura this river is believed to gush down the earth from its heavenly abode. The drainage patterns of the rivers are of dendritic, parallel ot sub-parallel and ractangular types. All the rivers of Tripura flow into the river Meghna in Bangladesh. This somewhat reduced the scope of availability of the riverine fishes in the state. In this state there is only Gumti reservoir covering an area of 4500 hectares created due to Hydro-electric project in South Tripura district yields 88 kg. of fishes per hectare. Rudrasagar, a water body in Melagarh, West Tripura district is a place where a good quantity of different species of fishes are cultivated.

The climate of the state is generally hot and humid. The average maximum temperature is 35°C in May-June and the average minimum temperature is 10.5°C in December-January. The average rainfalls is 230 cm. per annum. The monsoon starts generally in April and continues up to September.The state's forests which cover about three-fourths of the total area are of mixed types and the quantity of their timber at least until recently was not very high. They consist mostly of bamboo. In recent years they are gradually being replaced by valuable timber plants., viz., Sal, Garjan etc.

METHODS OF MEASUREMENTS AND COUNTS

(a) Measurements : Since the fish grows throughout the life, the absolute size of any part of the body, for example head length or body depth will mean nothing unless compared with that of head length or body depth of any another specimen of the same size. However, the different parts of body of a fish grows approximately in the same rate. The most important use of the relative lengths is that of head or body depth, if it is said 4 times in the length of one species and 5 times in the length of another species, it may be concluded that the former species has a longer head length or deeper body depth than the latter species. Sharp pointed needle-like dividers or dial-reading calipers are used for taking the different morphometric measurements. For accurate readings, a stainless steel scale with measurements to millimeter is recommended.

The measurements used in the descriptions and keys to the species in this study is furnished below. The *TOTAL LENGTH* (TL) of a fish is the straight line distance from the tip of snout to tip of caudal fin. Where the caudal fin has either of the lobes longer than the other, the maximum length is taken. The *STANDARD LENGTH* (SL) is the striaght line distance from tip of snout to end of hypural plate. The *HEAD LENGTH* is the greatest striaght line distance from the tip of snout to the posterior margin of the gill cover. All fleshy membranes (if presesnt) of the gill cover is also included. The *BODY DEPTH* is the greatest depth the body attains. It need not necessarily be in the middle of the fish. The *EYE DIAMETER* is the horizontal distance across the exposed part of



Map 2 : Tripura showing the drainage pattern of the river system of Tripura

the eyeball. The *SNOUT LENGTH* is the striaght line distance from tip of snout to the anterior hard margin of the orbit.

(b) Counts : The accurate enumeration of meristic counts are extremely useful in diagnosis of related species. Unlike morphometric measurements, the countable features do not differ with the growth of the fish. Among the fins the branched rays in the dorsal and anal fins have been counted and studies as important feature for identification of species. The fin rays count have been taken by holding the fin against the light and dissection microscope with the light directed through the fin rays from below. Fin formulae have been given in the text. *LATERAL LINE* scale counts are the scales or pores along the lateral line or along the normal course of lateral line up to the structural caudal fin base or end of hypural plate or the flexure of the body. These have been indicated as LL. or L.I. along with fin formulae. Rows of scales between lateral line and base of pelvic fins are counted as above but from below upwards and forwards from base of pelvic fins to lateral line. Small scales not included. *PREDORSAL SCALES* are the scales from the origin of the dorsal fin to the occiput.

ARRANGEMENT OF DESCRIPTIONS

The present study deals with 129 species under 78 genera, 33 families and 11 orders. It covers all the so far known freshwater fishes indigenous and 4 exotic fishes found within the political boundary of Tripura. All the known 129 species have been described along with their keys to the orders, families, subfamilies, genera and species. Brief diagnostic characters of all the taxa, genera, subfamilies, families and orders are given. Dichotomous keys are given for all the orders, families, subfamilies, genera and species of fishes known to occur in the state. All the keys are artificial in the sense that they do not reflect any phylogeny. Each species has been described giving its diagnostic characters, colour in alcohol, distribution, size and systematic notes and remarks if any, along with fins formulae and meristic counts. The synonymy under each species is not intended to provide a complete catalogue of all the published references to that species. All those papers which give changes in name are included, giving its original reference of the species with its type-locality, and in order to facilitate easy reference, names of fishes as found in Day's Fishes of India (1875-78) and Fauna of British India (1889), Fish Series and Jayaram's (1981) the freshwater fishes of India are given in the specific synonymies. Under each species local names and English names of the fishes and localities from where the species were collected are given.

The classification adopted here is that of Greenwood et al. (1966), Rosen and Patterson (1969) and Jayaram (1981). Genera are arranged according ot their phylogentic and intergeneric affinities. Species are arranged and described alphabetically. An index to the scientific names of the fishes described in this work is also provided.

SYSTEMATIC LIST OF FISHES OF TRIPURA

Class PISCES

Subclass TELEOSTOMI

Order I. ANGUILLIFORMES

Family 1. ANGUILLIDAE

Genus 1. ***Anguilla*** Shaw

*1. *A. bengalensis bengalensis*

(Gray and Hardwicke)

Family 2. OPHICHTHIDAE

Genus 2. ***Pisodonophis*** Kaup

*2. *P. boro* (Hamilton Buchanan)

Order II. CLUPEIFORMES

Family 3. CLUPEIDAE

Subfamily (i) ALOSINAE

Genus 3. ***Hilsa*** Regan

3. *H. ilisha* (Hamilton Buchanan)

Genus 4. ***Gudusia*** Fowler

4. *G. chapra* (Hamilton Buchanan)

Subfamily (ii) DOROSOMATINAE

Genus 5. ***Nematolosa*** Regan

*5. *N. nasus* (Bloch)

Order III. OSTEOGLOSSIFORMES

Family 4. NOTOPTERIDAE

Genus 6. ***Notopterus*** Lacepede

6. *N. chitala* (Hamilton Buchanan)

7. *N. notopterus* (Pallas)

Order IV CYPRINIFORMES

Family 5. CYPRINIDAE

Subfamily (i) CULTRINAE

Genus 7. *Chela* Hamilton Buchanan

*8. *Chela (Chela) cachius* (Hamilton Buchanan)

9. *Chela (Chela) laubuca* (Hamilton Buchanan)

Genus 8. *Salmostoma* Swainson

10. *S. bacaila* (Hamilton Buchanan)

Subfamily (ii) HYPOPHTHALMICHTHYINAE

*11. *S. clupeoides* (Bloch)

Genus 9. Hypophthalmichthys Bleeker

*12. *H. molitrix* (Valenciennes)

Subfamily (iii) RASBORINAE

Genus 10. ***Esomus*** Swainson

13. *E. danricus* (Hamilton Buchanan)

Genus 11. ***Danio*** Hamilton Buchanan

14. D. aequipinnatus (McClelland)

15. *D. dangila* (Hamilton Buchanan)

16. *D. devario* (Hamilton Buchanan)

17. *D. rerio* (Hamilton Buchanan)

Genus 12. ***Rasbora*** Bleeker

18. *R. daniconius daniconius* (Hamilton Buchanan)

19. *R. elanga* (Hamilton Buchanan)

* New state record

Genus 13. ***Aspidoparia*** Heckel

20. *A. jaya* (Hamilton Buchanan)

*21. *A. morar* (Hamilton Buchanan)

Genus 14. *Amblypharyngodon* Bleeker

22. *A. mola* (Hamilton Buchanan)

Genus 15. ***Barilius*** Hamilton Buchanan

23. *B. barila* (Hamilton Buchanan)

24. *B. barna* (Hamilton Buchanan)

25. *B. bendelisis* (Hamilton Buchanan)

26. *B. gatensis* Valenciennes)

**27. *B. nelsoni* Barman

28. *B. shacra* (Hamilton Buchanan)

29. *B. tileo* (Hamilton Buchanan)

Genus 16. ***Raiamas*** Jordan

30. *R. bola* (Hamilton Buchanan)

Subfamily (iv) CYPRININAE

Genus 17. ***Cyprinus*** Linnaeus

31. *C carpio carpio* Linnaeus

Genus 18. ***Semiplotus*** Bleeker

32. *S. semiplotus* (McClelland)

Genus 19. ***Puntius*** Hamilton Buchanan

33. *P. chola* (Hamilton Buchanan)

34. *P. clavatus clavatus* (McClelland)

35. *P. conchonius* (Hamilton Buchanan)

* 36. *P. gelius* (Hamilton Buchahan)

37. *P. sarana sarana* (Hamilton Buchanan)

38. *P. sophore* (Hamilton Buchanan)

39. P. *ticto ticto* (Hamilton Buchanan)

Genus 20. ***Osteobrama Heckel***

40. *O. cotio cotio* (Hamilton Buchanan)

Genus 21. ***Schismatorhynchus*** Bleeker

41. *S. (Nukta) nukta* Sykes

* New state record

** New species

Genus 22. ***Labeo*** cuvier

42. *L. bata* (Hamilton Buchanan)
43. *L. boga* (Hamilton Buchanan)
44. *L. calbasu* (Hamilton Buchanan)
45. *L. gonius* (Hamilton Buchanan)
46. *L. nandina* (Hamilton Buchanan)
47. *L. pangusia* (Hamilton Buchanan)
48. *L. rohita* (Hamilton Buchanan)

Genus 23. ***Chagunius*** H. M. Smith

49. *C. chagunius* (Hamilton Buchanan)

Genus 24. ***Tor*** Gray

50. *T. putitora* (Hamilton Buchanan)
51. *T. tor* (Hamilton Buchanan)

Genus 25. ***Cirrhinus*** Oken

52. *C. mrigala* (Hamilton Buchanan)
53. *C. reba* (Hamilton Buchanan)

Genus 26. ***Catla*** Valenciennes

54. *C. catla* (Hamilton Buchnan)

Genus 27. ***Ctenopharyngodon*** Steindachner

*55. *C. idella* (Valenciennes)

Subfamily (v) GARRINAE

Genus 28. ***Crossocheilus*** Van Hasselt

*56. *C. latius latius* (Hamilton Buchanan)

Genus 29. ***Garra*** Hamilton Buchanan

57. *G. gotyla gotyla* (Gray)

Family 6. PSILORHYNCHIDAE

Genus 30. *Psilorhynchus* McClelland

58. *P.* balitora (Hamilton Buchanan)
*59 *P.* sucatio (Hamilton Buchanan)

Family 7. HOMALOPTERIDAE

Genus 31. ***Noemacheilus*** Van Hasselt

60. *N. botia* (Hamilton Buchanan)
61. *N. scaturigina* (McClelland)
62. *N. spilopterus* (Valenciennes)

Family 8. COBITIDAE

Subfamily (i) BOTINAE

Genus 32. ***Botia*** Gray

63. *B. dario* (Hamilton Buchanan)
64. *B. rostrata* Gunter

Subfamily(ii) COBITINAE

Genus 33. ***Somileptes*** Swainson

65. *S. gongota* (Hamilton Buchanan)

Genus 34. ***Lepidocephalus*** Bleeker

*66. *L. annandalei* Chaudhuri
67. *L. berdmorei* Blyth
68. *L. guntea* (Hamilton Buchanan)

Order V. SILURIFORMES

Family 9. BAGRIDAE

Genus 35. ***Rita*** Bleeker

69. R. *rita* (Hamilton Buchanan)

Genus 36. ***Batasio*** Blyth

70. *B. batasio* (Hamilton Buchanan)

Genus 37. ***Mystus*** *Scopoli*

71. *M. bleekeri* (Day)
*72. *M. cavasius* (Hamilton Buchanan)
73. *M. vittatus* (Bloch)

Genus 38. ***Aorichthys*** *Wu*

74. *A. aor* (Hamilton Buchanan)
75. A. *seenghala (Sykes)*

Family 10. SILURIDAE

Genus 39. ***Ompok*** *Lacepede*

76. *O. bimaculatus* (Bloch)
77. *O. pabda* (Hamilton Buchanan)

Genus 40.***Wallago*** Bleeker

78. *W. attu* (Schneider)

New state record

* New state record

Family 11. SCHILBEIDAE

Subfamily (i) AILINAE

Genus 41. ***Ailia*** Gray

79. *A. coila* (Hamilton Buchanan)

Subfamily (ii) SCHILBEINAE

Genus 42. ***Pseudeutropius*** Bleeker

80. *P. atherinoides* (Bloch)

Genus 43. ***Clupisoma*** swainson

81. *C. gaura* (Hamilton Buchanan)

*82. *C. montana* Hora

Genus 44. ***Eutropiichthys*** Bleeker

83. *E. murius* (Hamilton Buchanan)

84. *E. vacha* (Hamilton Buchanan)

Genus 45. ***Silonia*** Swainson

85. *S. silondia* (Hamilton Buchanan)

Family 12. PANGASIIDAE

Genus 46. *Pangasius* Valenciennes

*86. *P. pangasius* (Hamilton Buchanan)

Family 13. AMBLYCIPITIDAE

Genus 47. ***Amblyceps*** Blyth

87. *A. mangois* (Hamilton Buchanan)

Family 14. SISORIDAE

Genus 48. ***Bagarius*** Bleeker

88. *B. bagarius* (Hamilton Buchanan)

Genus 49. ***Gagata*** Bleeker

*89. *G. cenia* (Hamilton Buchanan)

Genus 50. ***Nangra*** Day

*90. *N. viridescens* (Hamilton Buchanan)

Genus 51. ***Erethistoides*** Hora

*91. *E. montana montana* Hora

Genus 52. ***Hara*** Blyth

92. *H. hara* (Hamilton Buchanan)

Genus 53. ***Laguvia*** Hora

93. *L. ribeiroi ribeiroi* Hora

Genus 54. ***Glyptothorax*** Blyth

94. *G.* cavia (Hamilton Buchanan)

* 95. *G. conirostrae conirostrae* (Steindachner)

96. *G. telchitta telchitta* (Hamilton Buchanan)

Family 15. CLARIIDAE

Genus 55. ***Clarias*** Scopoli

97. *C. batrachus* (Linnaeus)

Family 16. HETEROPNEUSTIDAE

Genus 56. ***Heteropneustes*** Miiller

98. *H. fossilis* (Bloch)

Family 17. CHACIDAE

Genus 57. ***Chaca*** Gray

99. *C. chaca* (Hamilton Buchanan)

Family 18. OLYRIDAE

Genus 58 ***Olyra*** McClelland

*100. *O. kempi* Chaudhuri

101. *O. longicaudata* McClelland

Order VI. ATHERINIFORMES

Family 19. BELONIDAE

Genus 59. ***Strongylura*** van Hasselt

102. *S. strongylura* (van Hasselt)

Genus 60. ***Xenentodon*** Regan

103. *X cancila* (Hamilton Buchanan)

Family 20. CYPRINODONTIDAE

Genus 61. ***Aplocheilus*** McClelland

104. *A. panchax* (Hamilton Buchanan)

Order VII. CHANNIFORMES

Family 21. CHANNIDAE

New state record

* New state record

Genus 62. ***Channa*** Scopoli

*105. *C. barca* (Hamilton Buchanan)

106. *C. marulius* (Hamilton Buchanan)

107. *C. orientalis* Schneider

108. *C. punctatus* (Bloch)

109. *C. striatus* (Bloch)

Order VIII. SYNBRANCHIFORMES

Family 22. SYNBRANCHIDAE

Genus 63. ***Monopterus*** Lacepede

110. *M. cuchia* (Hamilton Buchanan)

Order IX. PERCIFORMES

Family 23. CHANDIDAE

Genus 64. *Chanda* Hamilton Buchanan

111. *C. baculis* Hamilton Buchanan

112. *C. nama* Hamilton Buchanan

113. *C. ranga* Hamilton Buchanan

Family 24. SCIAENIDAE

Genus 65. ***Johnius*** Bloch

*114. *J. coitor* (Hamilton Buchanan)

Family 25. NANDIDAE

Genus 66. ***Badis*** Bleeker

*115. *B. badis* (Hamilton Buchanan)

Genus 67. ***Nandus*** *Valenciennes*

116. *N. nandus* (Hamilton Buchanan)

Family 26. CICHLIDAE

Genus 68. ***Oreochromis*** Gunther

*117. *O. mossambica* (Peters)

Family 27. MUGILIDAE

Genus 69. ***Sicamugil*** Fowler

*118. *S. cascasia* (Hamilton Buchanan)

Genus 70. ***Rhinomugil*** Gill

*119. *R. corsula* (Hamilton Buchanan)

Family 28. GOBIIDAE

Subfamily (i) GOBIINAE

Genus 71. ***Glossogobius*** Gill

120. *G. giuris* (Hamilton Buchanan)

Subfamily (ii) APOCRYPTINAE

Genus 72. ***Apocryptes*** Valenciennes

121. *A. bato* (Hamilton Buchanan)

Family 29. ANABANTIDAE

Genus 73. ***Anabas*** Cuvier

122. *A. testudineus* (Bloch)

Family 30. BELONTIDAE

Genus 74. ***Colisa*** Cuvier

123. *C. fasciata* (Schneider)

124. *C. sota* (Hamilton Buchanan)

Family 31. OSPHRONEMIDAE

Genus 75. ***Osphronemus*** Lacepede

125. *O. goramy* Lacepede

Order X. MASTACEMBELIFORMES

Family 32. MASTACEMBELIDAE

Genus 76. ***Macrognathus*** Lacepede

126. *M. aculeatus* (Bloch)

Genus 77. ***Mastacembelus*** Scopoli

127. *M. armatus armatus* Lacepede

128. *M. pancalus* (Hamilton Buchanan)

Order XI. TETRAODONTIFORMES

Family 33. TETRAODONTIDAE

Genus 78. ***Tetraodon*** Linnaeus

129. *T. cutcutia* (Hamilton Buchanan)

SYSTEMATIC ACCOUNT

Class PISCES

Fishes are cold-blooded animals, typically with backnones, gills and fins (rather than pentadactyl limbs) and are primarily dependant on water as a medium in which to live. Their study comprises the pure and applied aspects of the science of Ichthyology.

* New state record

Subclass TELEOSTOMI

Skeleton bony. Gills cover by bony operculum and having only one external opening on each side. Skin normally covered with overlapping scales which in some families may be obsolete and in others modified by calcification into a hard covering, ossified dermal plates or a complete bony casing. Caudal fin almost symetrical.

Key to the Orders

1. Body elongated, almost cylindrical and eel-like 2

   Body not elengated, cylindrical and eel-shaped, but fusiform and compressed 5

2. Gill openings small, confluent as a single transverse opening. ..... SYNBRANCHIFORMES.

   Gill openings wide, non-confluent as two lateral slits 3

3. Pelvic girdle and fins absent ..... MASTACEMBELIFORMES

   Pelvic girdle and fins present 4

4. Dorsal and anal fins far from caudal fin. Gill openings wide, membranes of two sides connected beneath isthmus. Scales moderately large..... CHANNIFORMES

   Dorsal and anal fins confluent with caudal fin when the latter is present (absent in Ophichthidae). Gill openings of moderate extent situated near base of pecteral fins. Scales present or absent, when present embedded in skin..... ANGUILLIFORMES

5. Body short, rounded. Bones of upper and lower jaw modified 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 modifications as above..... 6

6. Skin without scales, either smooth or covered with osseous plates or with scattered tubercles. Pectoral fins with outer most ray modified into osseous spine or thicky ray. ..... SILURIFORMES

   Skin scaled or rarely without scales, but never with osseous plates. Pectoral fins without any such modifications..... 7

7. Abdominal edge keeled with single or double serrations..... 8

   Abdominal edge smooth, rounded. 9

8. Lateral line present. Abdomen with double serrations. ..... OSTEOGLOSSIFORMES

   Lateral line absent. Abdomen with single serration. ..... CLUPEIFORMES

9. Pelvic fins inserted in the thoracic region and with spines. Dorsal and anal fins with spines. Mostly dorsal fin in two parts, continuous or separate, one spiny, another with soft rays. ..... PERCIFORMES

   Pelvic fins inserted in the abdominal region and without spines. Dorsal and anal fins without spines. Mostly with a single dorsal spine 10

10. Head and body with scales. Teeth present on jaws. ..... ATHERINIFORMES

    Head without scales. Jaws without teeth. .... CYPRINIFORMES.

Order ANGUILLIFORMES
Eels

Body elongated and cylindrical (snake-like) with spineless fins. Pelvic fins absent. Pectoral fins laterally placed when present. Generally the dorsal, the anal and the caudal fins are joined together to form one continuous fin over the rear of the body. Body with minute or rudimentary scales embedded in skin or absent. Gill openings comparatively narrow. Lateral line present, sometimes obsolete.

Key to the families

Dorsal and anal fins well-developed, confluent with caudal fin ..... ANGUILLIDAE

Dorsal and anal fins low when present, not extending to tip of caudal. Caudal fin absent. ..... OPHICHTHIDAE

Family ANGUILLIDAE

Freshwater eels

Fishes eel-like, cylindrical with minute embedded scales. Gill openings vertical slits near base of pectoral fins. Pectoral fins well-developed. Dorsal fin inserted at some distance behind nape, far behind gill openings. Vertical fins confluent. Lateral line present.

Genus *Anguilla* Shaw

1803. *Anguilla* Shaw, *General Zoology*, **4** :15 (type-species : *Anguilla vulgaris* Shaw).

1981. *Anguilla*, Jayaram, *Handbk. Freshw. Fish. India*, : 27 (genus characters and distribution).

For genus characters, see the family characters ***Anguilla bengalensis bengalensis*** (Gray and Hardwicke) (Text-fig.1).

1834. *Muraena bengalensis* Gray and Hardwicke, *Illust. Indian Zool.*, : pl. 95, fig. 5 (type-locality : the River Ganges).

1878. *Anguilla bengalensis*, Day, *Fish.* India : 659, pl. 168, fig.1; 1889, Day, *Fauna Br. India, Fish*, **1** : 86, fig. 35.

1981. *Anguilla bengalensis bengalensis*, Jayaram, *Handbk. Freshw. Fish. India* : 27, 28 (distribution and key to species).

Local name : eel.

English name : Long-finned eel.

Materials examined : 1 ex., 590 mm. TL.; Melagarh, West Tripura; R. P. Barman and party; 31. 10. 89.

Diagnostic features : D. 250-305, P. 18, A. 220-250, C. 10-12.

Head length 3.00 to 3.15 in distance between snout tip and vent, broader than body. Body snake-like, cylindrical anteriorly. Mouth slightly oblique, extending beyond the orbit. Teeth small, conical, in cardiform bands in jaws and vomer; teeth in lower jaw divided by a longitudinal groove. Dorsal fin inserted in middle of gill openings and anal fin origin. Dorsal, Anal and Caudal fins confluent. Pectoral fins well-developed.

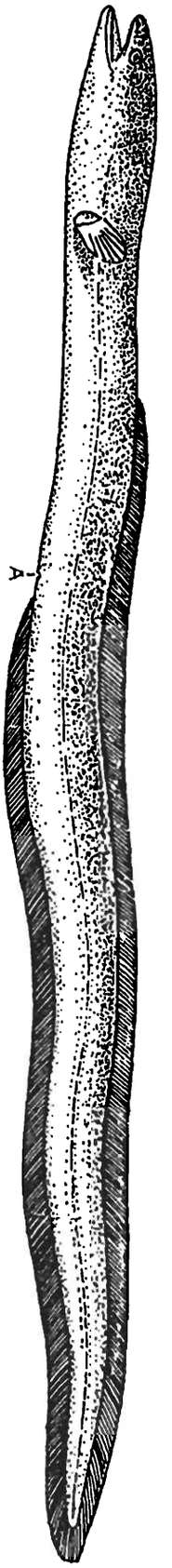


Fig. 1 : *Anguilla bengalensis bengalensis* (Gray & Hardwicke)

Colour in alcohol : Dorsal surface brownish, becoming yellowish on sides and abdomen, generally with black spots and blotches superiorly. Fins yellowish mottled with brown.

Distribution : Throughout Tripura and Freshwaters and seas of India, Pakistan, Sri Lanka, the Andamans, Burma and the East Indies.

Size : It attains 1,219 mm. (4 feet) and upwards in total length.

Remarks : *A. bengalensis bengalensis* is a common fish found throughout Tripura and it is one of the costly fishes. It is esteemed as a very good tasty fish because of its oil content soft flesh, contradictory to Day's (1878, 1889) comments, "It is being seldom eaten except the lower classes, there is but little demand for them" It is being recorded for the first time from Tripura.

Family OPHICHTHIDAE
Snake eels

Gill openings small, slit-like or rounded. Body very long and snake-like, cylindrical anteriorly. Posterior nostrils labial. Teeth variable, strong and fang-like, small and pointed or blunt and granular, uniserial to polyserial in jaws. Dorsal and anal fins continuous around the tail externally, or discontinuous, with the caudal fin rays reduced. Pectoral fins present or absent. Pelvic fins absent. Scales absent.

Genus ***Pisodonophis*** Kaup

1856. *Pisodonophis* Kaup, *Arch. Naturges.*, **22** (1) : 47 (type-species : *Pisodonophis carcrivorus* Richardson).

1984. *Pisodonophis*, Talwar and Kacker, *Commercial Sea Fishes of India* : 248 (Synonymy and genus characters)

Boby very long, snake-like, cylindrical. Snout obtuse, greatly or moderately produced. Dorsal fin low inserted above or behind gill openings. Pectoral and anal fins may be reduced. Tip of tail free, blunt without any fin rays. Caudal fin and scales absent.

Pisodonophis boro (Hamilton Buchanan)

(Text-fig. 2)

1822. *Ophisurus boro* Hamilton Buchanan, *Fish. Ganges* : 20, pl. 5, fig. 5 (type-locality : Hooghly estuary near Calcutta).

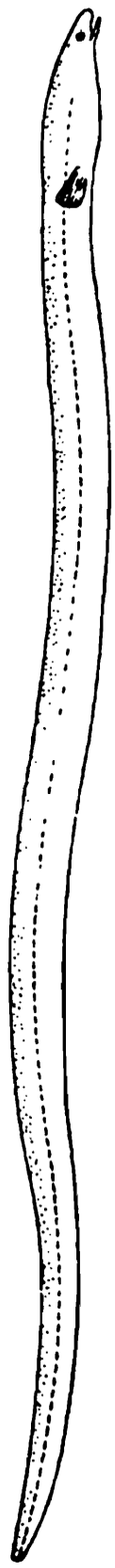


Fig. 2 : *Pisodonophis boro* (Hamilton Buchanan)

1878. *Ophichthys boro*, Day Fish. India : 664, pl.171, fig. 2; 1889, Day *Fauna Br. India, Fish*, **1** : 94, fig. 41.

1984. *Pisodonophis boro*, Talwar and Kacker, *Commercial Sea Fishes of India* : 249 (species description).

Local name : Ghaoura.

English name : Low-finned eel

Materials examined : (i) 2 exs., 162 -182 mm. TL.; Udaipur, South Tripura; R. P. Barman and party; 14.8.85 (ii) 1 ex., 255 mm.TL.; Melagarh, West Tripura; R. P. Barman and party; 31.10.89.

Diagnestic features : D. 300-500, A. 250-300, P. 12.

Body elongated and cylindrical, snake-like. Head length 3.50 to 4.00 in distance between snout and vent. Body depth 30 to 36 times in total length and 2.60 to 3.60 in head length. Cleft of mouth extending behind the orbit. Dorsal fin considerably behind tip of pectoral fins. Dorsal and anal fins low, end before tip of tail.

Colour in alcohol : Body uniform brownish olive back, pinkish or yellowish on sides and abdomen.

Distribution : India : Tripura : West and South Tripura district. Ganga and its tributaries. Bangladesh, Pakistan, Burma, South Afraica, Malaya, Thailand, Formosa, China, Philippines and Melanesia.

Size : It attains 914 mm. (3 feet) in total length.

Remarks : *P. boro* is a common fish found in Tripura particularly in the river Gumti. I have recorded this species for the first time from this state (Barman, 1988). It is also a basically marine fish but it enters rivers. This fish may have migrated to Tripura from the Bay of Bengal of Bangladesh.

Order CLUPEIFORMES

Body oblong, usually compressed, with cycloid scales. Abdomen with keeled scutes along the ventral midline. Branchiostegal rays numbering as high as 15 but generally fewer. Recessus lateralis present. Hypurals on 1 to 3 centra. Dorsal and anal fins without spines. Almost all marine though some enter estuaries and freshwater.

Family CLUPEIDAE
Sardines, Shads

Clupeids are typically silvery fusiform fishes, with a complete series of scutes along the abdomen. Pelvic scutes always present. Mouth terminal, lower jaw short but deep, giving typical clupeid mouth shape. Barbels absent. Cycloid scales presesnt on body but head scaleless. Fins spineless. Dorsal and pelvic fins usually present. Anal fin generally short (Less than 30 rays). Caudal fin deeply forked.

Key to the subfamilies

Mouth inferior. Lower jaw flared outwards at corners. Last dorsal ray often filamentous.... .....DOROSOMATINAE

Mouth terminal. Lower jaw not flared outwards at corners. Last dorsal ray never filamentous .....ALOSINAE

Subfamily ALOSINAE
Shads, River-Shads

Indo-pacific clupeid fishes with a distinct notch in middle of upper jaw. Body compressed, with pre-and post pelvic scutes. Mouth terminal, lower jaw normal. Dorsal fin almost in middle of body, last ray normal.

Key to the genera

Scales large, 37 to 47 in lateral series. ....***Hilsa***

Scales small, 77 to 91 in lateral series..... .....***Gudusia***

Genus ***Hilsa*** Regan

1917. *Hilsa* Regan, Ann. Mag. nat. Hist., (8) **19** : 303 (type-species :*Paralosa durbanensis* Regan : *Clupea kelee* (Cuvier).

1981. *Hilsa*, Jayaram, *Handbk. Freshw. Fish. India*, 39 (genus characters and distribution)

Body oblong and compressed. Abdomen with 15 to 18 prepelvic and 11 to 16 postpelvic scutes. Mouth usually terminal, upper jaw with a distinct median notch. Dorsal fin with 11 to 16

branched rays. Anal fin with 14 to 24 branched rays. Pelvic fins with 8 rays. Caudal fin forked. Scales largs, 37 to 47 in lateral series. Lateral line absent.

Hilsa ilisha (Hamilton Buchanan)

(Text-fig. 3)

1822. *Clupanodon ilisha* Hamilton Buchanan, *Fish. Ganges* : 243. 382, pl. 19, fig. 73 (type-locality : Ganges estuary).

1878. *Clupea ilisha*, Day, *Fish. India* : 640, pl.162, fig. 3; 1889, Day, *Fauna Br. India, Fish.* 1 : 376, fig. 115.

1984. *Hilsa ilisha*, Talwar and Kacker, *Commercial Sea Fishes of India*, : 163, 164 (synonymy, species characters and distribution).

Local name : Ilish.

English name : Indian shad, Hilsa shad.

Materials examined : (i) 2 exs. 185-240 mm. TL.; Udaipur, South Tripura; R. P. Barman and party; 16.8.85. (ii) 1 ex., 160 mm. TL., Sonamura, West Tripura; R. P. Barman and party; 17.8.85.

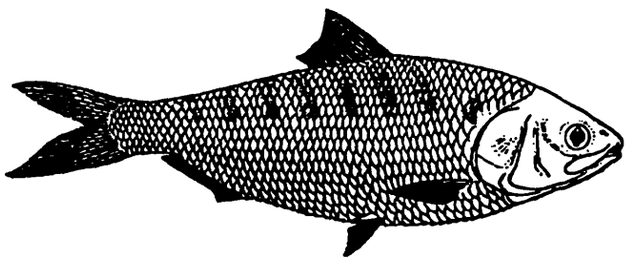


Fig. 3 : *Hilsa ilisha* (Hamilton Buchanan)

Diagnostic features : D. 18-19, A. 19-22, P. 15, V. 8, C. 19, LL. 39-44.

Head length 4.25 to 4.50 and body depth 3.50 to 4.00 in total length. Eye diameter 4.50 to 6.00 in head length. Upper jaw with a distinct median notch. Dosal fin inserted nearer to snout tip than to caudal fin base. Prepelvic scutes 16 to 17 and postpelvic scutes 14 to 15.

Colour in alcohol : Body silvery shot with gold and purple. Young specimens with bronge colour along back with a row of spots in upper half of body.

Distribution : India : Tripura : South and West Tripura districts. Ganga, Yamuna, Narmada, Tapti, Krishna, Godavari, Cauvery and Pennar river systems. Pakistan. Bangladesh. Burma. Sri Lanka. Iraq and Persian Gulf.

Size : It attains 600 mm. (2 feet) in standard length.

Remarks : It is one of the migratory fishes of Tripura. During monsoon (June to August) when the rivers swell enormously and inundate the adjoining low-lying areas, this fish migrate from the major rivers of Bangladesh into the territory of Tripura. It is a very popular well-known Indian clupeid fish of considerable commercial importance all over India (Particularly to the Bengalees), Pakistan, Bangladesh and Burma.

Genus ***Gudusia*** Fowler

1911. *Gudusia Fowler Proc. Acad. nat. Sci. Philad.* : 207 (type-species : *Clupanodon chapra* Hamilton Buchanan).

1911. *Gudusia*, Jayaram, *Handbk. Freshw. Fish. India* : 40 (genus characters and distribution).

Body deep and compressed.Abdomen serrated and keeled with 18 to19 prepelvic and 8 to10 postpelvic scutes. Mouth terminal, slightly upturned. Maxilla extending to below the middle of the orbit. Upper jaw with a distinct median notch. Dorsal fin inserted above pelvic fin origin, with 16 rays. Anal fin with 21 to 24 rays, well behind dorsal fin base. Pelvic fin with 8 rays. Caudal fin deeply forked. Scales small, 77 to 91 in lateral series. Lateral line absent.

Gudusia chapra (Hamilton Buchanan)

(Text-fig. 4)

1822. *Clupanodon chapra* Hamilton Buchanan, *Fish. Ganges* : 248, 383 (type-locality : Upper parts of the Ganges).

1878. *Clupea chapra*, Day, *Fish. India* : 639, pl. 161, fig. 1; 1889, Day, *Fauna Br. India, Fish*, 1 : 375.

1981. *Gudusia chapra*, Jayaram, *Handbk. Freshw. Fish. India*, : 40 (genus characters and distribution).

Local name : *Khoira, Chapila.*

English name : Ganges shad

Materials examined : (i) 2 exs., 58-63 mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 14.8.85.(ii) 2 exs. 45-54 mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 17.8.85. (iii) 2 exs., 75-82 mm. SL.; Kumarghat, North Tripura; R. P. Barman and party; 21.10.89.

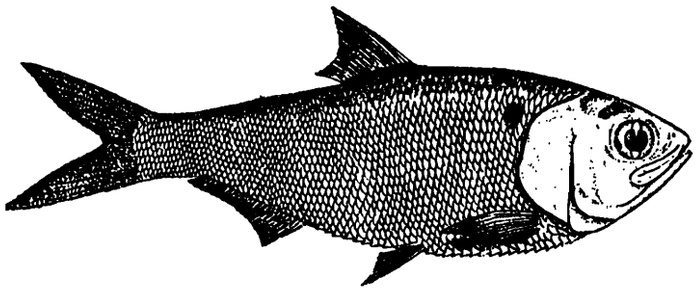


Fig. 4 : *Gudusia chapra* (Hamilton Buchanan)

Diagnostic features : D. 14-16(2-3/12-13), A. 21-24(2/19-22), P.13, V. 8, C. 17, LL. 77-91

Head length 4.25 to 4.50 and body depth 3.50 to 4.00 in total length. Eye diameter 3.50 to 4.00 in head length. Maxilla extending to middle of the orbit. Dorsal fin inserted nearer to posterior base of anal fin than to snout tip. Lateral transverse rows of scales 33 to 35. Prepelvic scutes 18 to 19 and postpelvic scutes 9 to 10. Predorsal scales 23 to 25. Caudal fin deeply forked, lower lobe slightly longer.

Colour in alcohol : Body silvery shot with gold at sides. Dorsal surface dark. Generally a shoulder dark spot present in this species.

Distribution : Throughout Tripura and India. Bangladesh (rivers of India and Bangladesh affluent to the Bay of Bengal chiefly the Ganges and Brahmaputra river systems and Mahanadi river of Orissa). Pakistan. Nepal. Burma and Malaya.

Size : It attains 203 mm. (8 inches) in standard length.

Remarks : It is a very common fish found throughout Tripura. It is also a popular fish among the common people for its taste and moderate price.

Subfamily DOROSOMATINAE

Gizzard shads

Mouth inferior. Lower jaw flared outwards at corners. Scutes on abdomen present. Last dorsal ray may or may not be filamentous.

Genus *Nematolosa* Regan

1917. *Nematolosa* Regan, *Ann. Mag. nat. Hist.*, (8)**19** : 313 (type-species : *Clupea nasus* Bloch).

1984. *Nematolosa*, Talwar and Kacker, *Commercial . Sea Fishes of India*, : 171 (Synonymy and genus characters).

Body oblong and compressed. Mouth small and inferior. Abdomen keeled and serrated. Dorsal fin with 15 to 17 rays, last ray much prolonged, reaching caudal fin base. Anal fin with 22 to 24 rays. Caudal fin deeply forked. Lateral line absent. 45 to 50 scales in lateral series. Dentary flared outward ahead of maxillary.

Nematolosa nasus (Bloch)

(Text-fig. 5)

1795. *Clupea nasus* Bloch, *Naturges. ausland. Fische*, **9** : 116, pl. 429, fig. 1 (type-locality : Malabar).

1878. *Chatoessus nasus*, Day, *Fish, India* : 634, pl.160, fig. 4; 1889, Day, *Fauna Br. India, Fish*, **1** : 387, fig. 120.

1984. Nematolosa *nasus*, Talwar and Kacker, *Commercial Sea Fishes of India* : 172 (synonymy, species description).

Local name : Nil.

English name : Bloch's gizzard-shad.

Material examined : 1 ex., 120 mm. TL.; Udaipur, South Tripura; N. C. Ghose; 3.11.89.

Diagnostic features : D. 15-17, A. 22-24, P. 12, V. 8, C. 19, LL. 45-50.

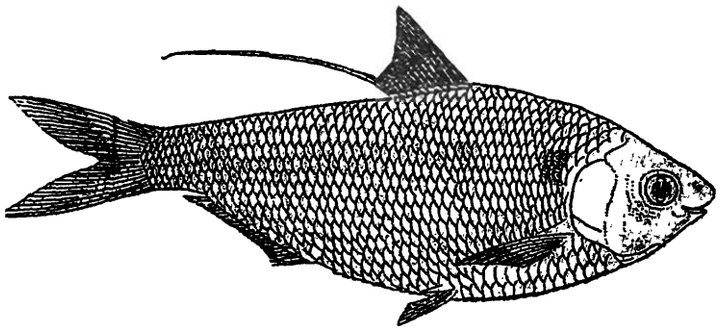


Fig. 5 : *Nematolosa nasus* (Bloch)

Head length 4.50 to 5.00 and body depth 3.25 to 3.50 in total length. Eye diameter 3.25 to 4.00 in head length. Mouth inferior. Maxilla not extending the orbit. Lower jaw flared laterally. Abdomen keeled and serrated, with 17 to 19 prepelvic and 11 to 13 postpelvic scutes. Dorsal fin inserted considerably nearer to snout tip than to caudal fin base. Last ray elongated, often reaching caudal fin base. Lateral line absent.

Colour in alcohol : Dorsal surface black greenish and flanks silvery. A blue spot present on superior angle of gill-openings. Fins yellowish.

Distribution : India : Tripura : South Tripura district and all coastal states of India. Pakistan, Bangladesh, Burma, Sri Lanka, Gulf of Aden, the Persian Gulf, Thailand, Vietnam, Indonesia, Japan and Philippines.

Size : It attains 203 mm. (8 inches) in total length.

Remarks : *N. nasus* is an another migratory fish found in the river Gumti of Tripura.

It is usually found in the commercial catches of Bombay, Karnataka and Kerala coasts of India (Talwar and Kacker, 1984). It is basically a marine fish. Jayaram (1981) recorded it as a "species visiting freshwater" The zoogeographical note of this fish which is new to Tripura has been described by me (Barman, 1990). This species may have migrated to Tripura from the Bay of Bengal of Bangladesh through the river Gumti which is interconnected with the river Meghna of Comilla district of Bangladesh.

Order OSTEOGLOSSIFORMES

Body and head strongly compressed, with ornamental scales. Abdomen non-keeled. Caudal region very long and tapering Maxillaries well-toothed forming the greater part of the upper jaw. Maxilla and premaxilla bound together and have restricted mobility. Branchiostogal rays 3 to 5. Dorsal fin present or absent. Pelvic fins abdominal. Barbels absent. Anal fin long, united with caudal fin. Caudal fin skeleton is greatly reduced and no distinct caudal fin.

Family NOTOPTERIDAE

Featherbacks or knifefishes

Body broad, elongated and greatly compressed with ornamental scales including head. Abdomen serrated anterior to pelvic fins, with almost 28 prepelvic double serration. Maxilla extending up to or beyond posterior border of the orbit. Maxilla well-toothed and firmly bound together with the premaxilla. Barbels absent. Dorsal fin small, tuftlike, with 8 to 10 rays. Anal fin very long, with 100 to 110 rays, confluent with caudal fin. No distinct caudal fin. Pelvic fins very small, with 3 to 6 rays. Lateral line almost arched with 120 to 180 scales.

Genus ***Notopterus*** Lacépéde

1800. *Notopterus* Lacépe'de, *Hist. nat.* Poiss., **2** : 189 (type-species :*Notopterus kapirat* Lacépéde = *Gymnotus notopterus* Pallas).

1981. *Notopterus*, Jayaram, *Handbk. Freshw. Fish. India* : 53 (genus characters and distribution).

For characters of genus, consult characters of family.

Key to the species

Cleft of mouth extending beyond posterior margin of the orbit. .....***N. chitala***

Cleft of mouth not extending beyond posterior margin of the orbit. .....***N. notopterus***

Notopterus chitala (Hamilton Buchanan)

(Text-fig. 6)

1822. *Mystus chitala* Hamilton Buchanan, *Fish. Ganges* : 236, 382 (type-locality : larger freshwater rivers of Bengal).

1878. *Notopterus chitala*, Day, *Fish. India* : 653, pl. 159, fig. 5; 1889, Day *Fauna Br. India, Fish*, **1** : 407.

1981. *Notopterus chitala*, Jayaram, *Handbk. Freshw. Fish. India* : 53, 54 (Distribution and key to species).

Local name : Chital.

English name : Humped feather-back.

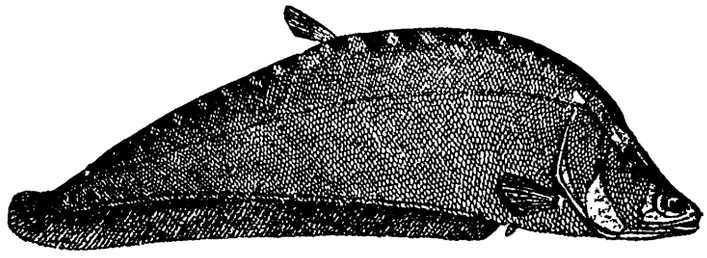


Fig. 6 : *Notopterus chitala* (Hamilton Buchanan)

Material examined : No specimen collected by me. This species has been recorded by Lipton (1983-84).

Diagnostic features : D. 9-10, A. 110-125, C. 12-14, LL. 180.

Head length 4.50 to 5.00 and body depth 3.50 to 4.00 in total length. Eye diameter 7.00 to 8.00 in head length. Upper profile of head deeply concave. Maxilla extending beyond hind border of the orbit. Preorbital entire. Dorsal fin when present small, inserted in the caudal region. Scales on opercle not larger than those on body.

Colour in alcohol : Dorsal surface copper brown and silvery at sides and ventral surface. About 15 transverse, greyish silvery bars joining over back.

Distribution : India : Tripura : rivers and lakes of Tripura (Lipton, 1983-84) and North India, Pakistan, Bangladesh, Burma, Thailand and Malaya Archipelago.

Size : It attains at least 1,219 mm. (4 feet) in total length.

Remarks : It is one of the vulnerable species of fishes in the rivers of Tripura. During my three (1985, 1989 and 1990) field surveys and studies on the fishes of Tripura I could not collect a single specimen of this fish and even seen in the market throughout the state. The State Fish and Fisheries department of Tripura is of opinion that this fish is on the verge of extinction in the state.

Notopterus notopterus (Pallas)

(Text-fig. 7)

1769. *Gymnotus notopterus* Pallas, *Specil. zool.*, **7** : 40, pl. 6, fig.2 (type-locality : Indian ocean).

1878. *Notopterus* kapirat, Day, *Fish. India* : 653 pl. 159, fig. 4; 1889, Day *Fauna Br. India, Fish*, **1** : 406, fig. 129.

1981. *Notopterus notopterus* Jayaram, *Handbk. Freshw. Fish. India* : 53.54 (distribution and key to species).

Local name : Phouli.

English name : Feather back.

Materials examined : (i) 1 ex., 68 mm. SL.; Amarpur, South Tripura ; R. P. Barman and party; 8. 8. 85. (ii) 2 exs., 63-70 mm. SL.; Udaipur, South Tripura; R. P. Barman and party;14.8.85. (iii) 1 ex., 148 mm. T.L.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and Party; 31.10.89.

Diagnostic features : D. 8-10(1-2/7-8), A. 100-110, P. 17, V. 5-6, C. 19, LL. 120-180.

Head length 4.50 to 5.50 and body depth 3.50 to 4.00 in total length. Eye diameter 4.50 to 5.00 in head length. Maxilla extending to below middle of the orbit. Preorbital serrated. Dorsal fin small, inserted midway between the snout tip and tip of caudal fin. Scales on opercle larger than those on body.

Colour in alcohol : Silvery sides with bluish grey back golden yellow tinge on head. Juvenile



Fig. 7 : *Notopterus notopterus* (Pallas)

specimens may have some vertical bars on lateral sides of the body.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma, Thailand, Malaya and Indonesia.

Size : It attains 609 mm. (2 feet) in total length.

Remarks : It is one of the very common fish found throughout Tripura. It is a good tasty fish particulary to the Bengalee though it contains numerous small bones. It is in demand as food fish.

Order CYPRINIFORMES

Body usually with scales. Head scaleless. Head and body plates never developed. Branchiostegal rays 3 to 5. Jaws, palatine and pterygoid bones toothless. Suprabranchial organ absent. A single dorsal fin. Adipose fin absent. Barbels generally present. Lateral Line usually present. Swimbladder free or often closed in a bony capsule in bottom dwelling forms. Weberian apparatus connects the swimbladder with the internal ear.

Key to the families

1. Paired fins horizontally inserted. Two or more anterior rays of pectoral fins simple. 2

   Paired fins laterally inserted. Not more than one anterior ray of pectoral fins simple or may be all branched. 3

2. Barbels absent. Swimbladder free in the abdominal cavity. .....PSILORHYNCHIDAE

   Barbels present. Swimbladder partly enclosed in a bony capsule. .....HOMALOPTERIDAE

3. Barbels four or two or absent. CYPRINIDAE

   Barbels eight or six. .....COBITIDAE

Family CYPRINIDAE

Carps

Body with scales, generally compressed. Abdomen rounded or cutting. Mouth with or without a sucker, sometimes with a symphysial knob. Lips developed in various stages, sometimes absent from one of the jaws or closely infesting both jaws or reflected from one of the other. Some genera sometimes provided with a horny cartilaginous covering to either of the lips or both. Gill openings wide. Barbels 4 or 2 or absent. Lateral line complete, incomplete or absent. Swimbladder divided into an anterior and a posterior chamber not surrounded by a capsule.

Key to the subfamilies

1. Abdomen or part of abdomen compressed into a sharp keel-like edge. Barbels absent. 2

   Abdomen rounded or flat, not compressed. Barbels four or two or absent. 3

2. Abdomen entirely keeled from throat to vent. Gill rakers fused into a spongious plate. Scales do not extend to the interorbital space. ....HYPOPHTHALMICHTHYINAE

   Abdomen partly keeled. Gill rakers free. Scales extend to the interorbital space ....CULTRINAE

3. Upper lip continuous with skin of snout. Mouth inferior. Lower lip with or without a adhesive disk. ..... GARRINAE

   Upper lip separated from skin of rostrum by a deep groove. Mouth anterior, inferior or subinferior. Lower lip without an adhesive disk 4

4. Lower jaw with a symphysial knob (exception *Aspidoparia* Heckel). Lateral line when complete with an abrupt downward curvature anteriorly, running in lower half of caudal peduncle. Dorsal fin without any osseous simple ray ..... RASBORINAE

   Lower jaw without symphysial knob. Lateral line complete or incomplete running along the middle of caudal peduncle. Dorsal fin with or without an osseous simple ray ..... CYPRINIANE

Subfamily CULTRINAE

A symphysial knob on lower jaw present or absent. A part or whole of abdominal edge cutting. Barbels absent. Mouth directed upward. Dorsal fin without osseous ray, inserted in posterior half of body. Lateral line concave.

Key to the genera

Lower jaw with a symphysial knob. Predorsal scales extend to the interorbital space. Pelvic fin with outer ray usually not elongated. ..... ***Salmostoma***

Lower jaw without a symphysial knob. Predorsal scales do not extend to the interorbital space. Pelvic fins with outer ray elongated ..... ***Chela***

Genus ***Chela*** Hamilton Buchanan

1822. *Chela* Hamilton Buchanan, *Fish. Ganges* : 258, 383 (type-species *Cyprinus (Chela) cachius* Hamilton Buchanan).

1860. *Laubuca* Bleeker, *Ichth. Archipel. Indici. Prodr.* **2**, Cyprini (type-species : *Perilampus guttatus* McClelland = *Cyprinus (Chela) laubuca* (Hamilton Buchanan).

1958. *Chela*, Silas, *J. Bombay nat. Hist. Soc.* **55** (1) : 54-99 (revision).

Body oblong, compressed with a cutting abdominal edge. Mouth directed upward, cleft extending to below anterior margin of the orbit. Lower jaw without a symphysial knob. Dorsal fin with 9 to 11 rays. Pelvic fins, with outer ray elongated. Anal fin with 17 to 25 rays. Caudal fin emarginate. Lateral line curved downwards, with 34 to 68 scales. Predorsal scales do not extend to interorbital space.

Key to the species

Lateral line scales 51 to 68. Elongated ray of pelvic fin extending to middle or even end of anal fin base. ..... ***C. cachius***

Lateral line scales 34 to 37. Elongated ray of pelvic fin end before anal fin base ..... ***C. laubuca***

Chela (Chela) cachius (Hamilton Buchanan)

(Text-fig. 8)

1822. *Cyprinus cachius* Hamilton Buchanan. *Fish. Ganges* : 258, 384 (type-locality : River Ganges, about the commencement of the delta).

1822. *Cyprinus atpar* Hamilton Buchanan, *Fish. Ganges* : 259, 384 (type-locality : branches of the Ganges, the Jamuna and Brahmaputra).

1878. *Perilampus atpar*, Day. *Fish. India* : 598, pl. 151, fig.6; 1889, Day, *Fauna Br. India, Fish*, **1** : 359.

1958. *Chela (Chela) cachius*. Silas, *J. Bombay nat. Hist. Soc.*, **55** (1) : 667 (rivision).

Local name : Chapkhowari, Kachhi.

English name : Chela.

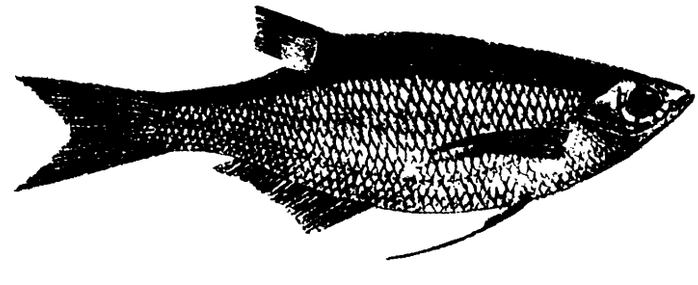


Fig. 8 : *Chela (Chela) cachius* (Hamilton Buchanan)

Materials examined : (i) 5 exs., 45-55 mm. TL.; Udaipur, Tripura; R. P. Barman and party; 29.10.89.

Diagnostic features : D. 9-10(2/7-8), A. 20-25 (2-3/18-23), P. 1/8-11, V. 1/4-5, C. 19, LL. 51-68.

Head length 4.50 to 5.75 and body depth 4.00 to 6.00 in total length. Eye diameter 2.75 to 4.00 in head length. Dorsal fin inserted opposite to the second third of anal fin. Pectoral fin not reaching anal fin. Pelvic fin with an elongated ray extending to middle or even end of caudal fin.

Colour in alcohol : Body silvery with a brownish lateral band. Dorsal and caudal fins yellow.

Distribution : *Throughout* India : Tripura : South Tripura district and throughout India, Pakistan, Nepal, Bangladesh and Burma.

Size : It attains 102 mm. (4 inches) in total length.

Remarks : The presence of this species in Tripura forms the first record from the state.

It is a larvicidal fish generally found to live in ponds, tanks and rivers.

Chela (Chela) laubuca (Hamilton Buchanan)

(Text-fig. 9)

1822. *Cyprinus laubuca* Hamilton Buchanan, *Fish. Ganges* : 260, 384 (type-locality : ponds of the northern parts of Bengal).

1878. *Perilampus laubuca*, Day, *Fish. India* : 598, pl. 151, fig. 5; 1889, Day *Fauna Br. India, Fish*, **1** : 360.

1958. *Chela (Chela) laubuca*, Silas, *J. Bombay nat. Hist. Soc.*, **55** (1) : 70-85 (revision).

Local name : Chapkhowari, Dankena, Layubuka.

English name : Winged rasbora.

Materials examined : (i) 10 exs., 37-60 mm. SL.; Udaipur, Soutth Tripura; R. P. Barman and party; 15.8.85 (ii) 3 exs., 45-72 mm. SL.; Kanchanpur, North Tripura; R. P. Barman and party; 22. 10. 89.

Diagnostic features : D. 10-11(2/8-9), P. 1/8-11, V. 1/6, A. 19-23(2/17-21), C. 19, LL. 34-37.

Head length 5.00 to 6.00 and body depth 2.50 to 4.08 in total length. Eye diameter 2.66 to 4.00 in head length. Dorsal fin inserted slightly behind anal fin origin. Pectoral fins almost reaching anal fin. Pelvic fins with elongated ray ends before anal fin base.

Colour in alcohol : Body silvery with golden vertical stripes when alive and two black marks, one at the base of caudal fin and the other at the base of pectoral fin. A dark spot on the superior angle of gill openings present.

Distribution : India : Tripura : North & South Tripura districts. North-East India, Orissa, West

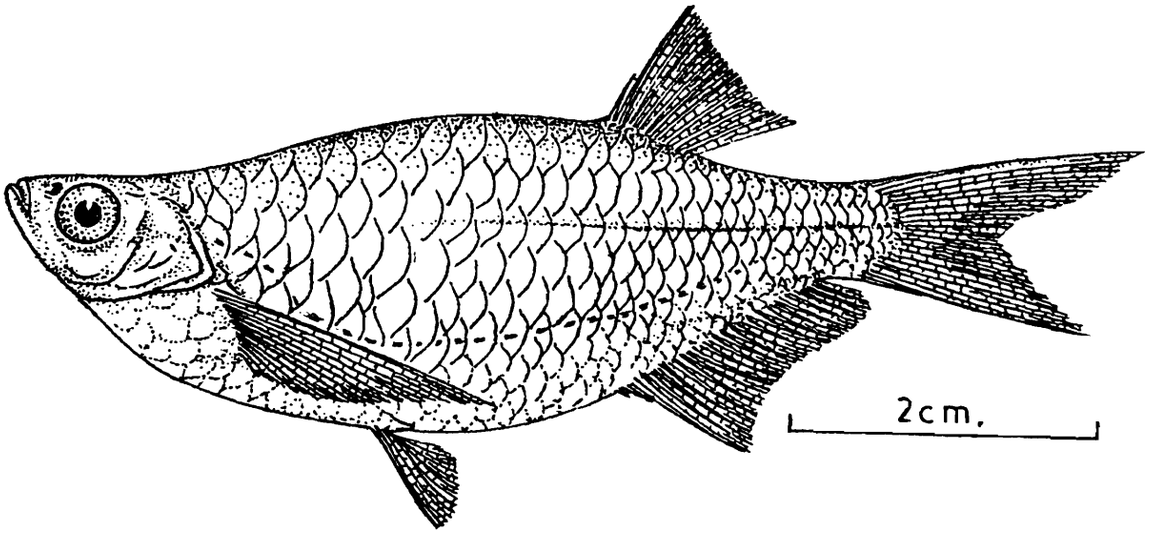


Fig. 9 : *Chela (Chela) laubuca* (Hamilton Buchanan)

Bengal, Madhya Pradesh, Gujarat, Andhra Pradesh, Tamil Nadu, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, Peninsular Thailand, Malaya Peninsula, and Sumatra.

Size : It attains 89 mm. ($3^1/_2$ inches) in total length.

Remarks : It is also a larvicidal fish usually found to live in ditches and ponds along with rivers. It is a common species found in this state.

Genus ***Salmostoma*** Swainson

1839. *Salmostoma* Swainson, *Nat. Hist. Fish.*, **2** : 184 (type-species : *Cyprinus bacaila* Hamilton Buchanan).

1968. *Salmostoma*, Banarescu, *Rev. Roum. Biol. Zool.*, **13** (1) : 3-14 (revision).

Body elongated and compressed. Abdomen keeled from pectoral fin to vent, keel not hardened. Mouth oblique, with a symphysial knob on lower jaw. Barbels absent. Dorsal fin usually inserted opposite to anal fin, with 9 to 10 rays. Pelvic fins outer ray generally not elongated. Anal fin with 13 to 22 rays. Caudal fin deeply forked. Lateral line complete, generally decurved with 39 to 112 scales. Predorsal scales extend to interorbital space.

Key to the species

3 to 4 rows of scales between lateral line and base of pelvic fins. Gill rakers from 24 to 29. ..... ***S. clupeoides***

4 to 6 rows of scales between lateral line and base of pelvic fin. Gill rakers from 17 to 21 ..... ***S. bacaila***

Salmostoma bacaila (Hamilton Buchanan)

(Text-fig. 10)

1822. *Cyprinus bacaila* Hamilton Buchanan, *Fish. Ganges* : 265, 384, pl. 8, fig. 76 (type-locality : freshwater rivers of all the Gangetic provinces).

1878. *Chela bacaila*, Day, *Fish. India:* 603, pl. 152, fig. 5; 1889, Day, *Fauna Br. India, Fish*, **1** : 367.

1981. *Salmostoma bacaila*, Jayaram, *Handbk. Freshw. Fish. India* : 74,75 (distribution and key to species).

Local name : Chela, Jellahri.

English name : *Chela* .

Materials examined : (i) 7 exs., 60-97 mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 14. 8. 85. (ii) 3 exs., 58-68 mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 17.8.85. (iii) 5 exs., 65-80 mm. SL.; Kailasahar, North Tripura; R. P. Barman and party; 23.10.89.

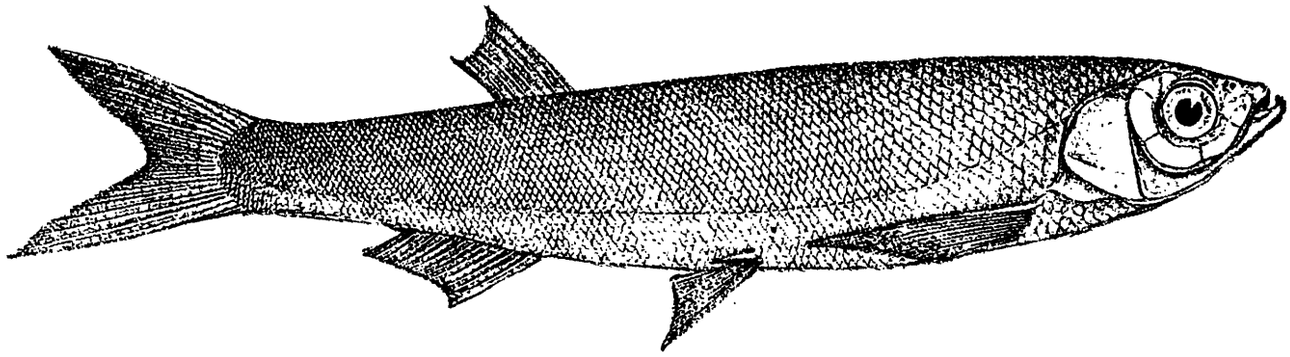


Fig. 10 : *Salmostoma bacaila* (Hamilton Buchanan)

Diagnostic features : D. 9(2/7), P. 13, V. 9, A. 13-15(2/11-13), C. 19, LL. 86-110.

Head length 5.25 to 6.00 and body depth 5.50 to 6.00 in total length. Eye diameter 3.50 to 3.75 in head length. Gill rakers 17 to 21. Cleft of mouth extends to below first fourth of orbit. Keeled portion of abdomen commences opposite to pectoral fins. Dorsal fin inserted half anterior to anal fin. 4 to 6 rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Body uniformly silvery.

Distribution : India : Throughout Tripura, Ganga, Brahmaputra, Mahanadi Gumti river systems. Pakistan, Bangladesh, Nepal.

Size : It attains at least 177 mm. (7 inches) in total length.

Remarks : It is a very common fish found to live throughout Tripura. This is one of the popular fish of the state for their taste and moderate price among the common people.

Salmostoma clupeoides (Bloch)

1795. *Cyprinus clupeoides* Bloch, *Naturg. Ausland. Fische*, **12** : 49, pl. 408, fig. 2 (type-locality : Tranquebar, Tamil Nadu).

1878. *Chela clupeoides*, Day, *Fish. India*, : 602; 1889. Day, *Fauna Br. India, Fish*, **1** : 366.

1981. *Salmostoma clupeoides*, Jayaram, *Handbk. Freshw. Fish. India* : 74, 75 (distribution and key to species).

Local name : Selkona.

English Name : Chela.

Materials examined : (i) 1 ex. 90 mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 4 exs., 75-130 mm. SL.; Sonamura, West Tripura; R. P. Barman and party ; 17.8.85 (iii) 2 exs., 80-140 mm. SL.; Sabroom, South Tripura; R. P. Barman and party; 27.10.89.

Diagnostic features : D. (2/7), P. 13, V. 9, A. 13-15 (2/11-13), C. 19; LL. 80-93.

Head length 5.50 to 5.75 and body depth 5.50 to 7.50 on total length. Eye diameter 4.00 in head length. Gill rakers 24 to 29. Dorsal fin inserted anterior to anal fin. 3 to 4 rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Uniformly silvery body.

Distribution : India : Tripura : South & West Tripura districts. Narmada, Tapi, Krishna, Godavari and Cauvery river systems. Burma.

Size : It attains 152 mm. (6 inches) in total length.

Remarks : This species has been recorded for the first time from Tripura by me (Barman, 1988). It is also a popular fish of the state for their taste and moderate price among the common people of Tripura.

Subfamily HYPOPHTHALMICHTHYINAE

Abdomen strongly keeled from breast to vent. Barbels absent. Scales do not extend to interorbital space.

Genus ***Hypophthalmichthys*** Bleeker

Silver Carp

1859. *Hypophthalmichthys* Bleeker, *Nat. Tijdschr. Ned. India* (type-species : *Leuciscus molitrix* Valenciennes).

1981. *Hypophthalmichthys*, Jayaram, *Handbk. Freshw. Fish. India* : 76 (genus characters and distribution).

Body stout and abdomen strongly compressed with a sharp keel from breast to vent. Barbels absent. Dorsal fin inserted behind pelvic fins or above tip of pectoral fins, with 10 rays. Anal fin with 14 to 17 rays. Caudal fin forked. Lateral line decurved, complete with 110 to 115 cycloid scales.

Hypophthalmichthys molitrix (Valenciennes)

(Text-fig. 11)

1983. *Hypophthalmichthys molitrix*, Jhingran, *Fish and Fisheries of India* : 436-446.

Local name : Silver carp.

English name : Silver carp.

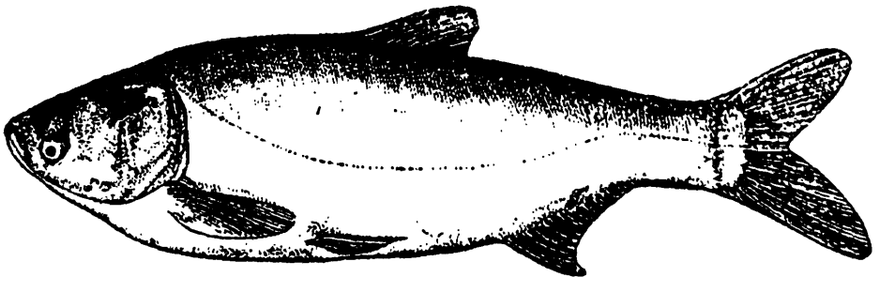


Fig. 11 : *Hypophthalmichthys molitrix* (Valenciennes)

Materials examined : 3 exs., 222-295 mm. TL; Kumarghat, North Tripura; R. P. Barman and party; 21.10.89.

Diagnostic features : D. 3/7, A. 2-3/12-14, V. 1/7, LL. 110-115.

Head length 3.55 to 4.62 and body depth 3.81 to 4.62 in total length. Eye diameter 5.33 to 7.54 in head length. Body oblong. Snout bluntly rounded. Lower jaw slightly protruding with a tubercle, upper jaw slightly notched. Pectoral fins extending beyond origin of pelvic fins. Dorsal fin inserted between tip of snout and base of caudal fin.

Colour in alcohol : Body silvery with blood red spots usually on the caudal peduncle region. Fins dark.

Distribution : Naturally occurs in the river systems of Yangtse, West river Kwangsi, Kwagtung in south and central China and in the Amur basin in U.S.S.R. In India, the first ever consignment of 360 fingerlings of silver carp was brought from Japan in 1959 to the Pond Culture Division of CIFRI, Cuttack, Orissa (Jhingran, 1983).

Size : It attains an average length of 81.4 cm. and 7.2 kg. in weight within a period of approximately more than 4 years.

Remarks : In Tripura, Silver carp was introduced in 1964 to culture in tanks and ponds by Shri N. C. Ghose, the then Deputy director of fisheries, South Tripur. It is being recorded here for the first time from Tripura.

Subfamily RASBORINAE

Mouth oblique or directed upwards. A symphysial knob generally present. Dorsal fin without an ossous ray. Barbels present or absent. Lateral line if present, abruptly bending downwards, if complete running along lower half of caudal fin peduncle.

Key to the genera

1. Cleft of mouth extending beyond posterior border of the orbit ..... ***Raiamas***

   Cleft of mouth not extending posterior border of the orbit.....2

2. Lower lip absent. Lower jaw with a sharp crescentic edge ..... ***Aspidoparia***

   Lower lip present. Lower jaw with or without a symphysial knob. 3

3. Maxillary barbels very long. Symphysial knob on lower jaw absent ..... ***Esomus***

   Maxillary barbels short or absent. A symphysial knob on lower jaw present 4

4. Cleft of mouth extending up to middle of the orbit ..... ***Barilius***

   Cleft of mouth not extending beyond anterior margin of the orbit 5

5. Upper lip absent ..... ***Amblypharyngodon***

   Upper lip present.....6

6. Lower Jaw with three prominences. Anal fin with 8 to 9 rays ..... ***Rasbora***

   Lower jaw with a single symphysial knob. Anal fin with 11 to 20 rays. ..... ***Danio***

Genus ***Esomus*** Swainson

1839. *Esomus* Swainson, *Nat. Hist. Fishes*, **2** : 285 (type-species : *Esomus vittatus* Swainson = *Cyprinus danrica* Hamilton Buchanan).

1928. *Esomus*, Hora and Mukherji, *Rec. Indian Mus.*, **30** (1) : 41-50 (revision).

1981. *Esomus*, Jayaram, *Handbk. Freshw. Fish. India* : 77 (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Mouth narrow, directed obliquely upwards. Symphysial knob absent. Barbels 2 pairs, maxillary pair extending up to anal fin. Dorsal fin inserted in the opposite interspace between pelvic and anal fin, nearer to anal fin than to pelvic fin, with 8 to 9 rays and without spine. Anal fin with 5 to 6 branched rays. Caudal fin forked. Lateral line, when present, passing to the lower half of caudal peduncle, with 27 to 34 scales.

Esomus danricus (Hamilton Buchanan)

(Text-fig. 12)

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

1878. *Nuria danrica*, Day, *India*, : 583, pl. 145, fig. 7; 1889. Day, *Fauna Br. India, Fish.* **1** : 334, fig. 106.

1981. *Esomus danricus*, Jayaram, *Handbk. Freshw. Fish., India*, : 77, 78, fig. 41 (distribution and key to species).

Local name : Darkina.

English name : Flying barb.

Materials examined : (i) 6 exs., 35-45 mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 7 exs., 33-42 mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 16.8.85. (iii) 10 exs., 30-43 mm. SL.; Kumarghat, Tripura; R. P. Barman and party; 22.10.89. (iv) 5 exs., 40-46 mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 5.7.90.



Fig. 12 : *Esomus danricus* (Hamilton Buchanan)

Diagnostic features : D. 8 (2/6), P. 15, V. 9, A. 8-9(3/5-6), C. 19, LL. 30-34.

Head length 4.75 to 5.25 and body depth 5.00 to 5.50 in total length. Eye diameter 3.25 to 4.00 in head length. Barbels 2 pairs, rostral pair slightly longer than the orbit and maxillary pair extending up to base of anal fin. Lateral line either absent or pierces only up to 4 to 6 anterior scales. 2 rows of scales between lateral line and base of pelvic fin. Dorsal fin inserted considerably nearer to caudal fin than to tip of snout. Caudal fin emarginate.

Colour in alcohol : Dorsal surface light olive and sides silvery with a broad black lateral band which sometimes may be wanting.

Distribution : India : Throughout Tripura, North and North-East India, West Bengal, Bihar, Madhya Pradesh, Orissa, Tamil Nadu, Andhra Pradesh and gujarat. Pakistan. Nepal. Bangladesh. Burma. Sri Lanka. Malaya and Thailand.

Size : It attains at least 177 mm. (5 inches) in total length.

Remarks : It is a very common fish found to live in shallow waters of ponds, tanks, pools, paddy-fields, ditches etc. along with rivers throughout Tripura. It is a larvicidal fish with less economic importance.

I have recorded this fish from Mizoram (Barman, 1989 b).

Genus ***Danio*** Hamilton Buchanan

1822. *Danio* Hamilton Buchanan, *Fish. Ganges*, 321, 390 (type-species : *Cyprinus dangila* Hamilton Buchanan).

1916. *Brachydanio* Weber and de beaufort, *Fish. Indo-Austral. Archipel.*, **3** : 85 (type- species : *Brachydanio albolineatus* Blyth).

1991a. *Danio*, Barman, *Rec. Zool. Surv. India* Occ. Paper No. **137** : 1-91, text figs. 20 (synonymy & revision).

Body elongated or oblong, compressed with abdomen rounded. Mouth anterior, obliquely directed upward. Lower jaw with a symphysial knob. Maxilla not extending beyond anterior border of the orbit. Barbels 2 pairs or 1 pair or absent. Dorsal fin with 6 to 17 branched rays, inserted opposite interspace between pelvic and anal fin, its posterior part extending at least above half of anal fin. Anal fin with 11 to 20 rays. Lateral line concave, complete, incomplete or absent, with 28 to 65 scales along the normal course of lateral line. Caudal fin emarginate, lunate or forked. Body usually with longitudinal bands.

Key to the species

1. Lateral line incomplete or absent entirely. ....***D. rerio***

   Lateral line complete. 2

2. Lateral line scales 45 to 52 .....***D. devario***

   Lateral line scales not more than 40 3

3. A preorbital spinous process on the anterior rim of the orbit present. Both pairs of barbels shorter than the orbit.....***D. aequipinnatus***

   Preorbital spinous prcess absent. Both pairs of barbels much longer than the orbit..... .....***D. dangila***

Danio aequipinnatus (McClelland)

(Text-fig. 13)

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

1878. *Danio aequipinnatus* Day, *Fish. India,* : 596, pl. 150, fig. 6; 1889, Day, *Fauna Br. India, Fish,* **1** : 356, fig. 3.

1991a. *Danio aequipinnatus,* Barman, *Rec. zool. Surv. India, Occ. Paper No.* **137** : 22-27, figs. 3, 3a & 3b (synonymy and revision).

Local name : Ghila.

English name : Giant Danio.

Material examined : (i) 6 exs. 44-60 mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 3 exs., 55-78 mm. SL.; Belonia South Tripura; R. P. Barman and party; 26. 10.89.

Diagnostic Features : D. 13-15(2-3/11-12), P. 13, V. 8, A. 16-18 (2-3/14-15), C. 19, LL. 35-37.

Head length 3.53 to 4.33 and body depth 2.92 to 3.47 in standard length. Eye diameter 3.00 to 4.00 in head length. Eye provided with a backwardly directed preorbital spinous process on the anterior rim of the orbit. Barbels 2 pairs, rostral pair equal to half of the orbit and maxillary pair shorter than rostral pair. Dorsal fin inserted between the centre of the orbit and caudal fin base. Caudal fin forked. $1^1/_2$ to $2^1/_2$ rows of scales between lateral line and pelvic fin base.

Colour in alcohol : Yellowish white with a wide bluish lateral band extending from the opercular end to caudal fin base. Another narrow longitudinal band above and two other lighter bands below them. Fins yellowish, dorsal and anal fins each with a broad bluish band along their rays. A well defined dark spot on the superior angle of gill openings usually present.

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

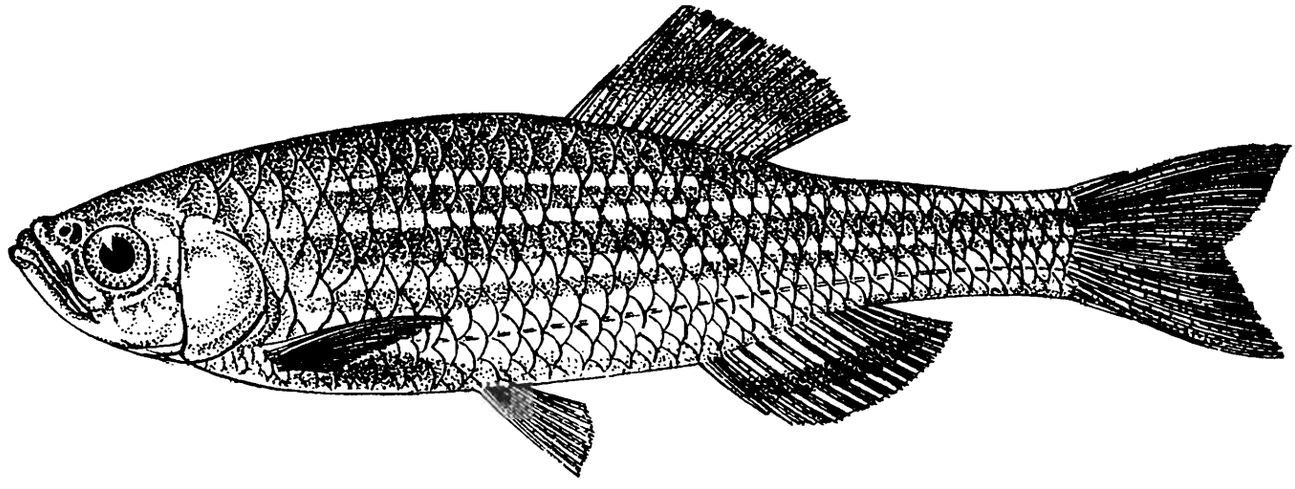


Fig. 13 : *Danio aequipinnatus* (McClelland)

Size : It attains 152 mm. (6 inches) in total length.

Remarks : It is a common fish particularly in the river Gumti and Muhuri of Tripura.

Notes on Synonymy and systematic notes of this species has been provided by me (Barman, 1991a). A preorbital backwardly directed spinous process on the anterior border of the orbit present in this species (Barman, 1985, 1988).

Danio dangila (Hamilton Buchanan)

(Text-fig. 14)

1822. *Cyprinus dangila* Hamilton Buchanan, *Fish. Ganges*, : 321, 309 (type-locality : mountain streams of Monghyr, Bihar).

1878. *Danio dangila*, Day, *Fish. India*, : 596, pl. 150, fig. 3; 1889. Day, *Fauna Br. India, Fish, I* : 356.

(1991a). *Danio dangila*, Barman, *Rec. zool. Surv. India. Occ. Paper* No. 137 : 38-41, text fig. 8 (synonymy and revision).

Local name : Naptamach.

English name : Danio.

Head length 4.33 to 4.62 and body depth 3.25 to 3.66 in standard length. Eye diameter 2.50 to 3.75 in head length. Barbels 2 pairs, rostral pair slightly shorter than head length and maxillary pair longer than head length. Dorsal fin inserted in the middle of tip of snout and caudal fin tip. Caudal fin emarginate. $1^{1}/_{2}$ to $2^{1}/_{2}$ rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Sides of body provided with several narrow blue bands, which in anterior half or two thirds of body form a beautiful network. A dark spot present on the superior margin of the gill openings. Anal fin provided with 2 or 3 blue stripes across their rays.

Distribution : India : Tripura South Tripura district, Assam, Meghalaya, Arunachal Pradesh, Tripura, Nagaland, Manipur, West Bengal, Bihar, Madhya Pradesh, Uttar Pradesh. Bangladesh. Nepal And Burma.

Size : It attains 152 mm. (6 inches) in total length.

Systematic notes : *D. dangila* is the only species belonging to the genus *Danio* Hamilton Buchanan possessing both pairs of barbels well developed, much longer than the orbit. This species can be easily separated from the other species of the genus by its conspicuous lateral blue bands which breaks up anteriorly to form a mottled pattern.

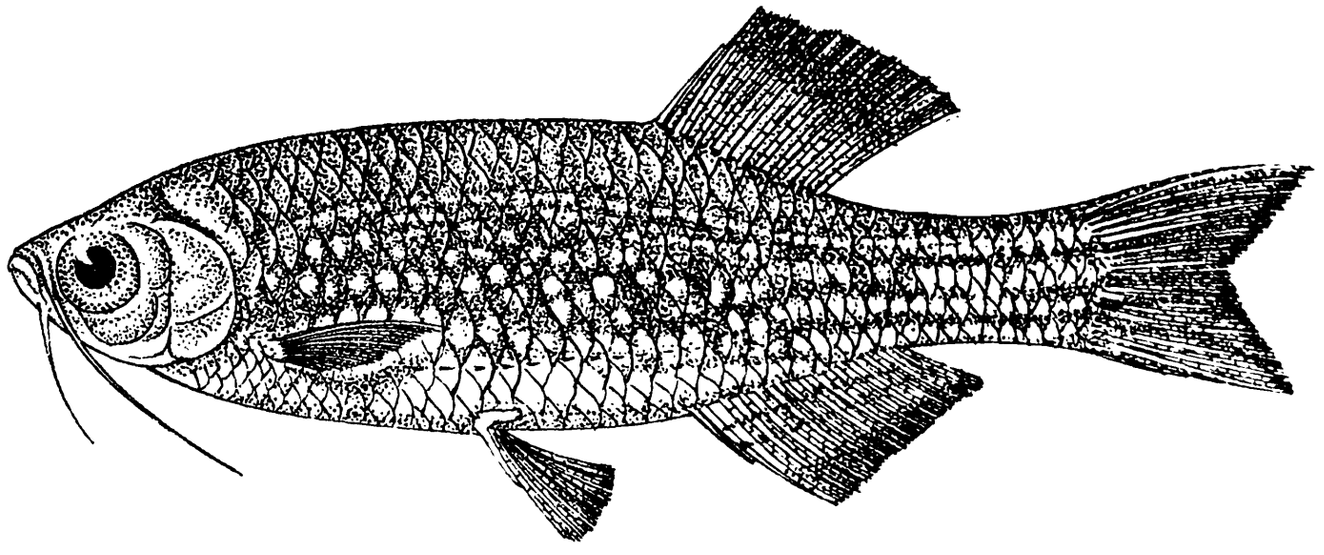


Fig. 14 : *Danio dangila* (Hamilton Buchanan)

Materials examined : 2 ex., 30-53 mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85.

Diagnostic features : D. 11-13 (2/9-11), P.12, V. 8., A. 14-18 (2-3/12-15), C. 19, LL. 36-40

Remarks : I have synonymised *Danio feegradei* Hora (1937a) with this species (Barman, 1987). Notes on synonymy of this species has been furnished by me (Barman, 1991a).

Danio devario (Hamilton Buchanan)

(Text-fig. 15)

1822. *Cyprinus devario* Hamilton Buchanan, *Fishes. Ganges*, : 341, 393, pl.6, fig. 94 (type-locality : rivers and ponds of Bengal).

1878. *Danio devario*, Day, *Fish. India*, : 595, pl. 150, fig. 4; 1889, Day, *Fauna Br. India, Fish*, **1** : 354.

1991a. *Danio devario*, Barman, *Rec. zool. Surv. India, Occ. Paper* No. **137** : 441-44, text fig. 9 (Synonymy and revision).

Local name : Bashpata.

English name : Danio.

Materials examined : (i) 1 ex., 51 mm. SL.; Udaipur South Tripura, R. P. Barman and party; 14.8.85 (ii) 2 exs., 37-42 mm. SL.; Belonia, South Tripura; R. P. Barman and party ; 26.10.89.

Diagnostic features : D. 17-20(2-3/15-17), P. 13, V. 9, A. 18-20(2-3/16-17) C. 19, LL. 45-52.

Head length 3.90 to 4.33 and body depth 2.60 to 2.86 in standard length. Eye diameter 2.57 to 3.00 in head length. Barbels absent or 1pair very short maxillary barbels, present at the junction of upper and lower jaw. Dorsal fin insearted almost between snout tip and caudal fin base. $2^1/_2$ rows of scales between lateral line and pelvic fin base. Caudal fin emarginate.

Colour in alcohol :Dorsal surface greenish and sides slivery. Three blue narrow bands divided by yellow bands extending backwards to caudal fin base. Sometimes a pair of blue marks present at the base of caudal fin.

Distribution : India : Tripura : South Tripura district, North India, North-East India, Rajasthan, Gujarat, Madhya Pradesh, Orissa, Karnataka and Andhra Pradesh. Bangladesh. Nepal and Pakistan.

Size :It attains 103 mm. (4 inches) in total length.

Systematic notes : Hamilton (1822) and Day (1878, 1889) described this species without barbels. The systematic studies of this species shows that barbels may be absent or 1 pair very short maxillary barbels present at the junction of upper and lower jaw.

It is also a common fish of Tripura particularly in the the river Gumti and Muhuri.

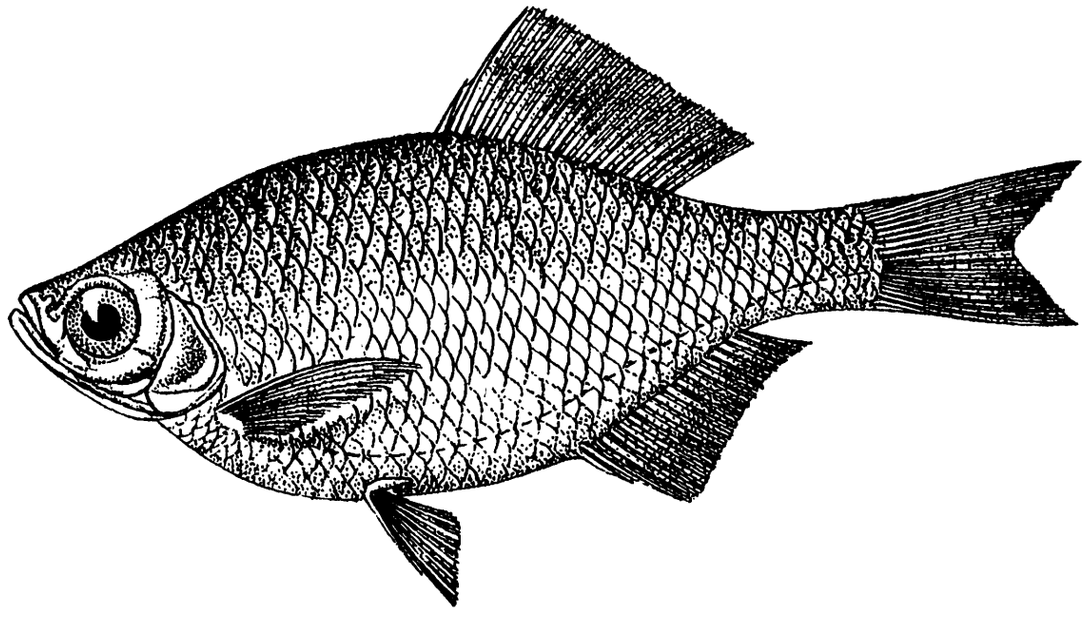


Fig. 15 : *Danio devario* (Hamilton Buchanan)

Danio rerio (Hamilton Buchanan)

(Text-fig.16)

1822. *Cyprinus rerio* Hamilton Buchanan, *Fish. Ganges*, : 323 (type-locality : River kosi).

1878. *Danio rerio*, Day, *Fish. India*, : 597, pl.151, fig. 4; 1889. Day, *Fauna Br. India, Fish*, **1** : 358.

1991a. *Danio rerio*, Barman, *Rec. Zool. Surv. India Occ. Paper* No. **137** : 57-60, text fig. 17 (synonymy and revision).

Local name :*Anju.*

English name : Zebra fish.

Materials examined : 2 exs., 40-42 mm. SL.; Manu, North Tripura; R. P. Barman and party; 23.10.89.

Diagnostic features : D. 8-9 (2/6-7), P. 12, V. 8, A. 14-16(2-3/12-13), C. 19, LL. 32-34.

Head length 3.76 to 4.44 and body depth 3.36 to 4.16 in standard length. Eye diameter 3.00 to 3.50 in head length. Barbels 2 pairs, rostral pair much longer than the orbit and maxillary pair reaching beyond the half length of pectoral fins. Dorsal fin inserted considerably nearer to caudal fin base than to tip of snout. Lateral line is highly variable, it may be incomplete extending up to base of pelvic fin or absent entirely. Lateral transverse rows of scales 6 to 7. Caudal fin deeply forked.

Colour in alcohol : Four metallic longitudinal bands separated by three narrow silver ones along either side present forming three bands on the caudal fin. Anal fin with three bands across their rays.

Distribution : India : Tripura : North Tripura district, North India, North-East India, Rajasthan, Madhya Pradesh, Karnataka, Andhra Pradesh, Kerala, Gujarat, Bihar, Orissa and West Bengal. Pakistan. Bangladesh. Burma. Sri Lanka and Nepal.

Size : It attains 50 mm. (2 inches) in total length.

Remarks : D. *rerio* is known as the "Zebra fish" because of its blue and silver body stripes which reminds us the body stripes of Zebra. It is also one of the most popular aquarium fishes for its beautiful body colouration, its constant activity and its inoffensive nature.

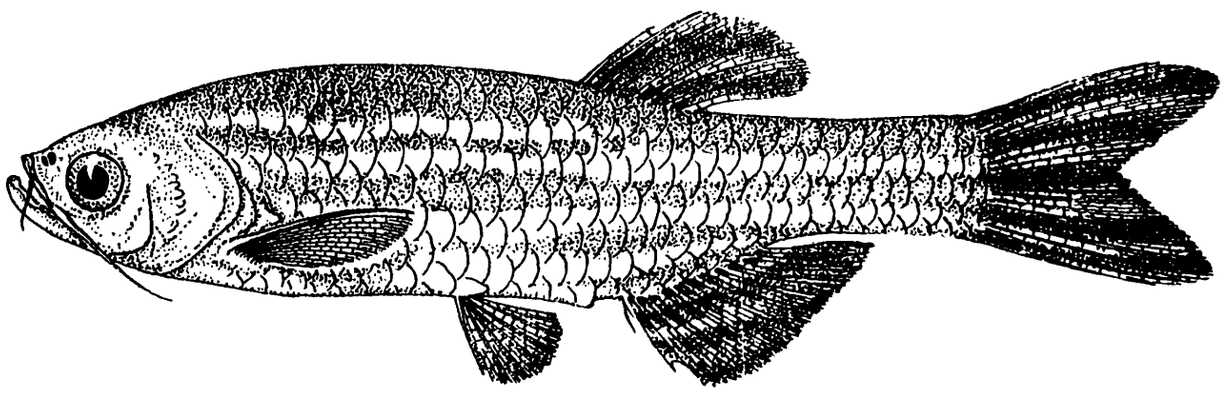


Fig. 16 : *Danio rerio* (Hamilton Buchanan)

It appears to me *D. rerio* is one of the rare fishes of Tripura because it is not generally found throughout the state.

Genus ***Rasbora*** Bleeker

1860. *Rasbora* Bleeker, Acta. Soc. Sci. *Indo-Neerl.*, 7 : 435 (type-species : *Cyprinus rasbora* Hamilton Buchanan).

1981. *Rasbora*, Jayaram, *Handk. Freshw. Fish. India*, : 83 (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Cleft of mouth oblique, lower jaw with one central and two lateral prominences. Barbels 1 pair or absesnt Dorsal fin inserted posterior to pelvic fins, with 9 rays without any spine. Anal fin with 7 to 9 rays. Caudal fin emarginate or

forked. Lateral line complete, with 26 to 44 scales.

Key to the species

Lateral line scales 30 to 34. Barbels absent.. .....***R. daniconius daniconius***

Lateral line scales 40 to 44. Barbels 1 pair .. ..***R. elanga***

Rasbora daniconius daniconius (Hamilton Buchanan)

(Text-fig. 17)

1822. *Cyprinus daniconius* Hamilton Buchanan, *Fish. Ganges,* : 327, Pl. 15, fig. 89 : 323 (type-locality : rivers of southern Bengal).

1878. *Rasbora daniconius* Day, *Fish India,* : 584, pl. 146, figs. 2 and 3 ; 1889. Day, *Fauna Br. India, Fish,* **1** : 336.

1981. *Rasbora daniconius daniconius,* Jayaram, *Handbk. Freshw. Fish. India.* : 84, 85, fig. 43 (distribution and key to species).

Local name : Darkina

English name : Common rasbora.

Materials examined : (i) 5 exs., 51-75mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85 (ii) 10 exs., 46-58 mm. SL.; Sonamura West Tripura; R. P. Barman and party; 17.8.85. (iii) 4 exs., 38-45 mm. SL.; Kanchanpur; North Tripura; R. P. Barman and party; 22.10 89. (iv) 3 exs., 50-56 mm. SL.; Sabroom, South Tripura; R. P. Barman and party; 27.7.90.

Diagnostic reatures : D. 9-10(2/7-8), P. 15, V. 9, A. 7-9(2-3/5-6), C. 19, LL. 30-34.

Head length 4.50 to 5.00 and body depth 4.50 to 6.00 in total length. Eye diameter 3.75 to 4.25 in head length. Barbels absent. Dorsal fin inserted naerer to caudal fin base than to snout tip. 2 rows of scales between lateral line and base of pelvic fins. Caudal fin emarginate.

Colour in alcohol : Dorsal surface yellow and sides silvery, with a black band almost distinct extending from posterior to the orbit to the base of caudal fin. Sometimes this lateral band exists at its termination towards base of caudal fin or in some specimens it may be bright silvery. Caudal fin sometimes with its lobes tipped with grey.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma, Malaya Archipelago and Zanzibar.

Size : It attians 203 mm.(8 inches) in total) in total length.

Remarks : It is a very common species found to live throughout Tripura.

Rasbora elanga (Hamilton Buchanan)

(Text-fig. 18)

1822. *Cyprinus elanga* Hamilton Buchanan, *Fish. Ganges,* : 281, 386 (Tye-locality : rivers and ponds of Bengal).

1878. *Rasbora elanga,* Day, *Fish. India,* : 586, pl. 146, fig. 1; 1889, Day *Fauna Br. India, Fish.* **1** : 336.

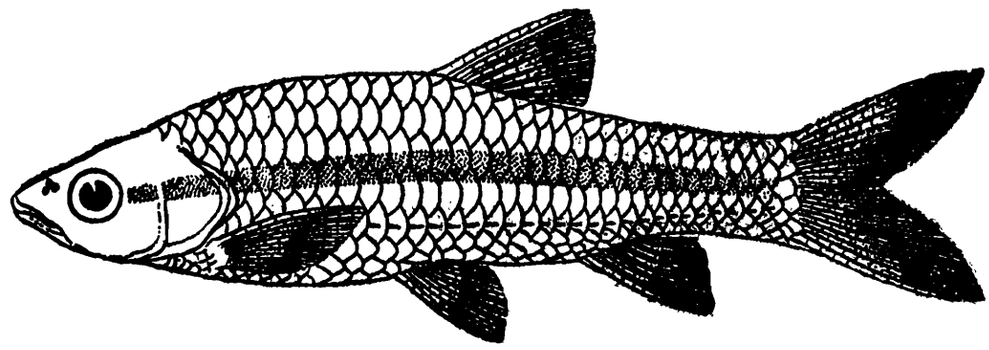


Fig. 17 : *Rasbora daniconius daniconius* (Hamilton Buchanan)

1981. *Rasbora elanga,* Jayaram, *Handbk. Freshw. Fish. India,* : 84 (distribution and key to species).

Local name : Elang.

English name : *Rasbora.*

Material examined : No specimen obtained by me. It has been recorded by Lipton (1983-84) from Howdah river, West Tripura district.

Diagnostic features : D. 9(2/7), P. 15, V. 9, A.7(2/5), C. 19, LL. 40-44.

Head length 5.00 to 5.50 and body depth 4.50 to 5.00 in total length. Eye diameter 3.00 to 4.00 in head length. Barbels 1 pair, short, rostral. Dorsal fin inserted midway between the posterior border of the orbit and caudal fin base. Caudal fin forked. $1^1/_2$ to 2 rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Body silvery, with sometimes a leaden coloured band along the upper portion of the side.

Distribution : India : Assam, Tripura (West Tripura district), West Bengal. Bangladesh and Burma.

Size : It attains at least 203mm. (8 inches) in total length.

Remarks : It appears to me that *R. elanga* is a rare species of Tripura because it is generally not found throughout the state.

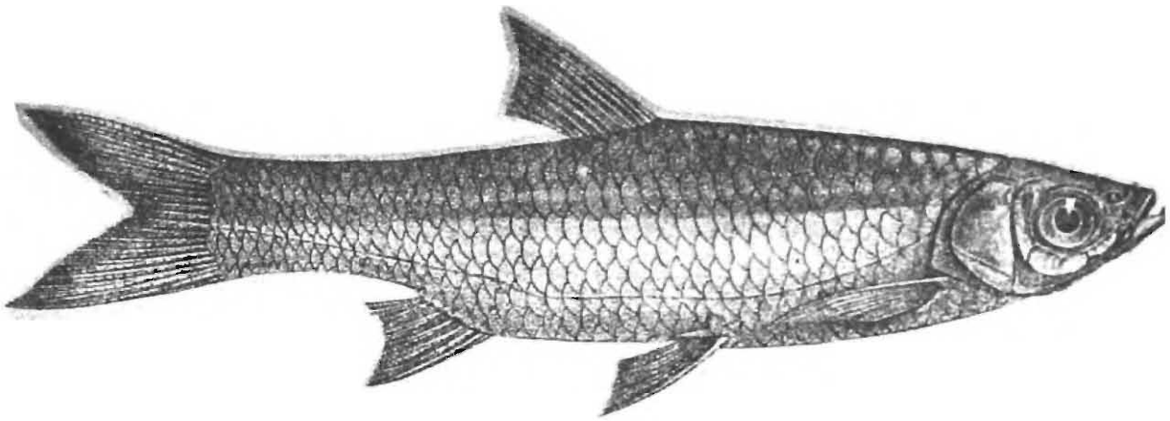


Fig. 18 : *Rasbora elanga* (Hamilton Buchanan)

Genus *Aspidoparia* Heckel

1843. *Aspidoparia* Heckel, in Fenzl. *Abbild. Thiere pfl. Syr. Fish.*, : 186 (type-species ; *Aspidoparia sardina* Heckel =*Aspidoparia morar* (Hamilton Buchanan).

1859. *Morar*, Bleeker, *Nat. Tijds. Ned. India*, **20** : 102 (tyepe-species : *Cyprinus morar* Hamilton Buchanan).

1981. *Aspidoparia*, Jayaram, *Handbk. Freshw. Fish. India* : 85 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Mouth small and inferior. Lower jaw without lip and with a sharp crescentic bony edge. Barbels absent. Dorsal fin inserted posterior to pelvic fins, with 9 to 10 rays and without any spine. Anal fin with 9 to 12 rays and no spine. Caudal fin forked. Lateral line concave, passing along the lower half of caudal fin base, with 38 to 60 scales.

Key to the Species

Lateral line scales 52 to 60. $4^1/_2$ rows of scales between lateral line and base of pelvic fin... .....***A. jaya***

Lateral line scales 38 to 42. $2^1/_2$ to 3 rows of scales between lateral line and pelvic fin base. .....***A. morar.***

Aspidoparia jaya (Hamilton Buchanan)

(Text-fig. 19)

1822. *Cyprinus jaya* Hamilton Buchanan, *Fish. Ganges.* 333, 392 (type-locality : North Bihar).

1878. *Aspidoparia jaya*, Day, *Fish. India*, : 585, pl. 145, fig. 9; 1889. Day, *Fauna Br.* India, *Fish.* **1** : 339.

1981. *Aspidoparia jaya*, Jayaram, *Handbk. Freshw. Fish. India*, : 85, 86 (distribution and key to species).

Local name : Chola, Bariala.

English name : Aspidoparia.

Material examined : No specimen obtained by me. It has been recorded by Lipton (1983-84) from Tripura.

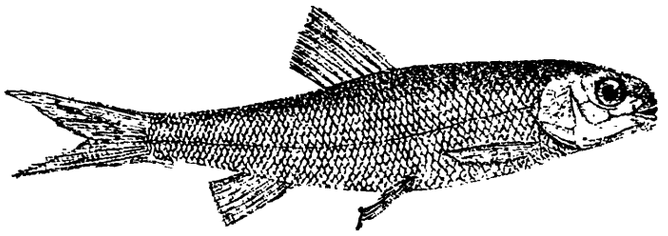


Fig. 19 : *Aspidoparia jaya* (Hamilton Buchanan)

Diagnostic features : D. 9(2/7), P. 15, V. 8, A. 9(2/7), C. 21, LL. 52-60

Head length 5.25 to 5.50 and body depth 5.00 in total length. Eye diameter 3.50 in head length. Dorsal fin inserted midway between snout tip and caudal fin base. Lateral line curving at its termination on to lower half of caudal fin. $4^1/_2$ rows of scales between lateral line and pelvic fin base.

Colour in alcohol : Body silvery with black dorsal surface.

Distribution : India : Assam, throughout Tripura and Uttar Pradesh. Bangladesh and Nepal.

Size : It attains 102 mm. (4 inches) in total length.

Remarks : It appears to me *A jaya* is a rare species of Tripura for its occurrence in the state is not normally found.

Aspidoparia morar (Hamilton Buchanan)

(Text-fig. 20)

1822. *Cyprinus morar* Hamilton Buchanan, *Fish. Ganges,* : 264, 384, pl. 31, fig. 75 (type-locality : rivers of Yamuna and Teesta).

1878. *Aspidoparia morar,* Day, *Fish. India, :* 585, pl. 146, fig. 4; 1889. Day, *Fauna Br. India, Fish,* **1** *:* 338, fig. 108.

1981. *Aspidoparia morar,* Jayaram, *Handbk. Freshw. Fish. India, :* 85, 86 (distribution and key to species).

Local name : Morari, Morar.

English name : Aspidoparia.

Materials examined : (i) 2 exs., 80-82mm. TL.; Kumarghat, North Tripura, R. P. Barman party; 21.10.89. (ii) 4 exs., 82-100mm. TL.; Kanchanpur, North Tripura; R. P. Barman and party; 22.10.89. (iii) 2 exs., 77-78 mm. TL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

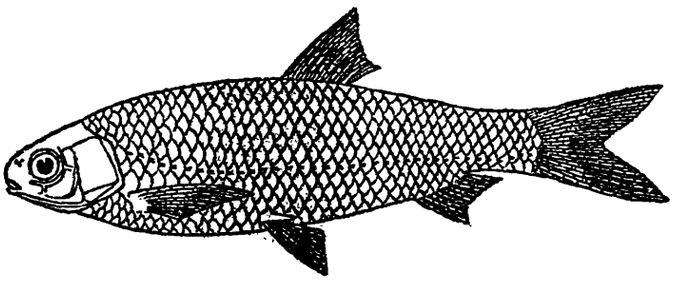


Fig. 20 : *Aspidoparia morar* (Hamilton Buchanan)

Diagnostic features : D. 9-10(2-3/7-8), P. 15, V. 8, A. 10-12(2-3/8-10), C. 19, LL. 38-42.

Head length 5.00 to 6.00 and body depth 4.00 to 5.50 in total length. Eye diameter 3.00 to 3.75 in head length. Dorsal fin inserted nearer to caudal fin base than to snout tip. $2^1/_2$ to 3 rows of scales between lateral line and pelvic fin base. Caudal fin emarginate with lower lobe slightly longer.

Colour in alcohol : Dorsal surface light brown, divided from the silvery sides by a burnished streak.

Distribution : India : Tripura : North & South Tripura districts. Throughout India except the western coast and localities South of the Krishna river. Pakistan. Bangladesh. Burma and Thailand.

Size : It attains at least 177mm. (7 inches) in total length.

Remarks : This species is being recorded here for the first time from the rivers of Tripura. It is a common fish specially in the northern Tripura district.

Genus ***Amblypharyngodon*** Bleeker

1860. *Amblypharyngodon* Bleeker, *Ichth. Arch. Ind. Prodr.,* **2** : 409 (type-species : *Cyprinus mola* Hamilton Buchanan).

1981. *Amblypharyngodon,* Jayaram, *Handbk. Freshw. Fish. India. :* 86 (genus characters and distribution).

Body somewhat elongated with abdomen rounded. Upper lip absent. Barbels absent. Dorsal fin inserted slightly behind insertion of pelvic fin, with 9 rays and no spine. Anal fin with 7 rays. Caudal fin forked. Lateral line incomplete, with 55 to 75 scales.

Amblypharyngodon mola (Hamilton Buchanan)

(Text-fig. 21)

1822. *Cyprinus mola* Hamilton Buchanan, *Fish. Ganges,* : 334, 392, pl.38, fig. 92 (type-locality : ponds and freshwater rivers in every part of the Gangetic Provinces).

1878. *Amblypharyngodon mola,* Day, *Fish. India :* 555, pl. 135, fig. 4; 1889, Day, *Fauna Br. India, Fish,* **1** : 291, fig. 101.

1981. *Amblypharyngodon mola,* Jayaram, *Handbk. Freshw. Fish. India, :* 86 (distribution and key to species).

Local name : Maka.

English name : Mola, Indian carplet.

Materials examined : (i) 25 exs., 43-60mm. SL., Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 5 exs., 36-50mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 15.8.85. (iii) 6 exs., 46-66 mm. SL.; Sonamura; West Tripura; R. P. Barman and party; 17.8.85. (iv) 2 exs., 43-60mm. SL,; Deo river, Kanchanpur, North Tripura; R. P. Barman and party; 22.10.89.

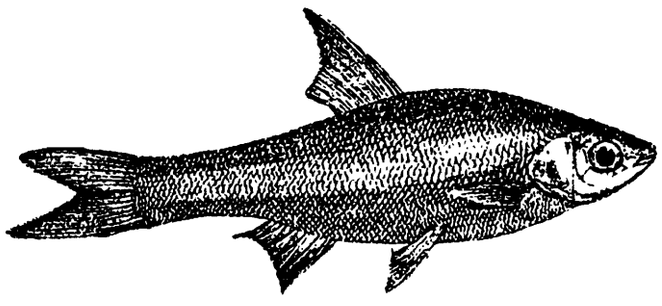


Fig. 21 : *Amblypharyngodon mola* (Hamilton Buchanan)

Diagnostic features : D. 9(2/7)., P. 15, V. 9, A. 8(3/5), C. 19, LL. 65-75.

Head length 4.50 to 5.00 and body depth 4.00 to 4.25 in total length. Eye diameter 3.50 to 4.00 in head length. Dorsal fin inserted behind pelvic fin origin, nearer to caudal fin base than to tip of snout. Caudal fin forked. Lateral line ceases after 15 anterior scales. 9 to 10 rows of scales between lateral line base of pelvic fin.

Colour in alcohol : Body with a lateral silvery band. Generally dark markings on dorsal, caudal and anal fins present.

Distribution : Throughout Tripura and India except Kerala, Nepal, Bangladesh, Pakistan and Burma.

Size : It attains at least 85mm. ($3^1/_2$ inches) in total length.

Remarks : It is a very common fish found to live in swampy fields and ponds along with the rivers in Tripura. It is also a popular fish among the common people for their taste and moderate price.

Genus ***Barilius*** Hamilton Buchanan

1822. *Barilius* Hamilton Buchanan, *Fish. Ganges, :* 384 *(type-species : Cyrpinus barila* Hamilton Buchanan).

1981. *Barilius,* Jayaram, *Handbk. Freshw Fish. India, :* 87 (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Mouth anterior or obliquely directed upwards. Maxilla extending below up to middle of the orbit. Upper jaw longer than lower which is generally provided with a symphysial knob. Barbels 2 pairs or 1 pair or absent. Dorsal fin inserted opposite interspace between pelvic and anal fins, with 9 to 13 rays and no spine. Anal fin with 9 to 17 rays. Caudal fin forked. Lateral line complete, with 38 to 75 scales. Body generally with vertical bands or clusters of dots.

Key to the Species

1. Lateral line scales 60 to 75.....2

   Lateral line scales 34 to 46.....3

2. Barbels 2 pairs, well developed, equal to or longer than the orbit. Body with 12 vertical

bars. Lateral line scales 60 to 70. ..... ***B. shacra***

Barbels absent or very short, much shorter than the orbit. Body with 2 rows of spots. Lateral line scales 70 to 75. ..... ***B. tileo***

3. Body with a longitudinal darkish band. ..... ***B. nelsoni***

Body without a longitudinal band. ..... 4.

4. Anal fin with 9 to 11 rays. Adult specimen with each scale provided with a black spot.. ..... ***B. bendelisis***

Anal fin with 13 to 17 rays. Adult specimen provided with lateral vertical bands. 5

5. Anal fin with 15 to 17 rays. Dorsal and anal fins with dark bases. ..... ***B. gatensis***
Anal fin with 13 to 14 rays. Dorsal and anal fin with light bases. 6

6. Lateral line with 43 to 46 scales. Body depth 4.77 to 5.22 in standard length. ..... ***B. barila***
Lateral line with 39 to 42 scales. Body depth 3.22 to 3.68 in standard length. ..... ***B. barna***

Barilius barila (Hamilton Buchanan)

(Text-fig. 22)

1822. *Cyprinus barila* Hamilton Buchanan, *Fish. Ganges,* : 267, 384 (type-locality : rivers of northern Bengal).

1878. *Barilius barila*, Day, *Fish. India,* : 591, pl. 148, fig. 4; 1889. Day, *Fauna Br. India, Fish,* **1** : 348

1981. *Barilius barila,* Jayaram, *Handbk. Freshw. Fish. India,* : 88, 89 (distribution and key to species).

Local name : Gilland, Caedra.

English name : Hill trout.

Materials examined : 7 exs., 45-56 mm. SL.; Muhuri river, Belonia, South Tripura; R. P. Barman and party; 26.10.89.

Diagnostic features : D. 9(2/7), P. 13, V. 9, A. 13-14(3/10-11), C. 19, LL. 43-46.

Head length 5.00 to 5.50 and body depth 5.25 to 5.50 in total length. Eye diameter 3.25 to 4.00 in head length. Barbels 2 pairs, rostral pair longer than maxillary pair, both shorter than the orbit. Dorsal fin inserted midway between the posterior margin of the orbit and base of caudal fin. Caudal fin forked, lower lobe slightly longer. $1^1/_2$ to 2 rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Body silvery with 10 to 15 vertical black bands.

Distribution : India : Tripura : South Tripura district. North India, North-East India, Madhya Pradesh, Orissa, Andhra Pradesh and Karnataka. Nepal. Pakistan.

Size : It attains 100mm. (4 inches) in total length.

Systematic notes : Day (1878,1889) described this species with 1 pair of barbels. Hora (1921) and Tilak (1967) already pointed out that this species is provided with both the pairs of barbels. I have also pointed out that this species possess 2 pairs of barbels (Barman, 1993).

Barilius barna (Hamilton Buchanan)

(Text-fig. 23)

1822. *Cyprinus barna* Hamilton Buchanan, *Fish. Ganges,* : 268, 384 (type-locality : Yamuna and Brahmaputra).

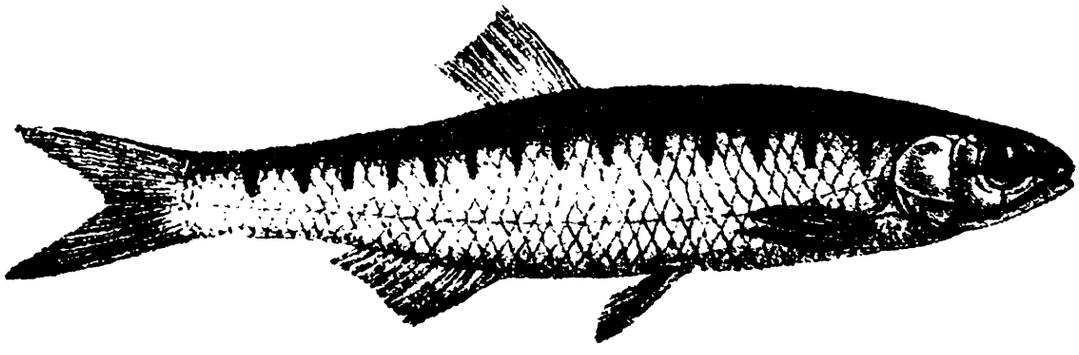


Fig. 22 : *Barilius barila* (Hamilton Buchanan)

1878. *Barilius barna*, Day, *Fish. India*, : 592, pl. 148, fig. 1, 1889, Day, *Fauna Br. India, Fish* **1** : 350.

1981. *Barilius barna*, Jayaram, *Handbk. Freshw. Fish. India*, : 88, 89 (distribution and key to species).

Local name : Bhola, Ghol.

English name : Hill trout.

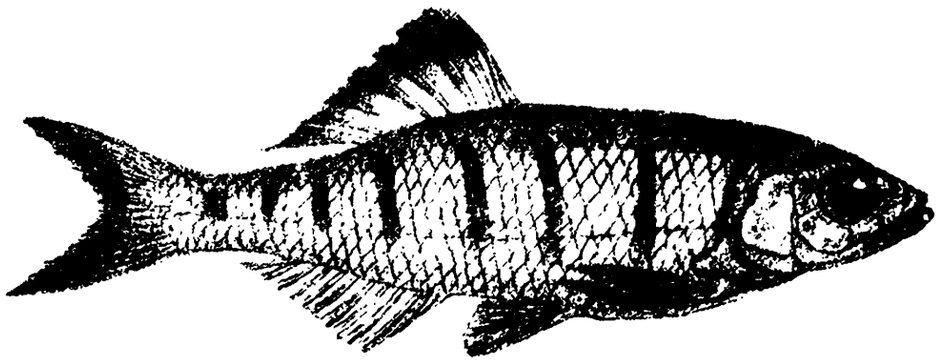


Fig. 23 : *Barilius barna* (Hamilton Buchanan)

Materials examined : (i) 10 exs., 40-55mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 14.8.85. (ii)1 ex., 43mm. SL.; Deo river, Kanchanpur, North Tripura; R.P. Barman and party; 22.10.89.

Diagnostic features : D. 9(2/7), P. 15, V. 9, A. 13-14(3/10-11), C. 19, LL. 39-42.

Head length 4.75 to 5.25 and body depth 3.50 to 4.00 in total length. Eye diameter 2.50 to 3.50 in head length. Barbels 2 pairs, or absent when present very short. Dorsal fin highly variable, commencing midway between the orbit and the caudal fin base. $2^1/_2$ rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Body dull green with 9 to 11 vertical bands on sides. Dorsal and anal fin edged with black.

Distribution : India : Tripura : North & South Tripura districts. Ganga, Brahmaputra, Mahanadi and Krishna river systems. Bangladesh, Nepal.

Size : It attains 125mm. (5 inches) in total length.

Systematic notes : Day (1878, 1889) described this species without barbels. I have already pointed out that specimens of this species from Tripura are provided with both the pairs of barbels (Barman, 1988).

Barilius bendelisis (Hamilton Buchanan)

(Text-fig. 24)

1807. *Cyprinus bendelisis* Hamilton Buchanan, *Journey Mysore*, **3** : 345, pl. 32 (type-locality : rivers of Mysore).

1878. *Barilius bendelisis*, Day *Fish. India*, : 590, pl. 148, fig. 7, 8 and 9: 1889. Day, *Fauna Br. India, Fish*, **1** : 347.

1981. *Barilius bendelisis*, Jayaram, *Handbk. Freshw. Fish. India*, : 88, 89 (distribution and key to species).

Local name : Khoksa, Joia.

English name : Hill trout.

Materials examined : 3 exs., 65-72 mm. SL.; Muhuri river, Belonia, South Tripura; R. P. Barman and party; 27.10.89.

Diagnostic features : D. 9(2/7), P. 15, V. 9, A. 9-11(2-3/7-8), C. 19, LL. 40-43.

Head length 4.50 to 5.25 and body depth 4.25 to 5.25 in total length. Eye diameter 4.25 to 4.60 in head length. Barbels 2 pairs, usually short, rostral pair occasionally absent. Dorsal fin inserted nearer to caudal fin base than to tip of snout, not extending to over anal fin. Caudal fin forked, lower lobe slightly longer. $2^1/_2$ to $3^1/_2$ rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Dorsal surface slaty grey becoming purplish silvery at sides. Young specomens have vertical bands on sides which become indistinct in adult specimens. Each individual in the adult stage provided with a black spot at its base and two on each forming lateral line but no spot in the young specimens.

Distribution : India : Tripura : South Tripura district and throughout India. Pakistan, Nepal, Bangladesh, and Sri Lanka.

English name : River carp.

Materials examined : No specimen obtained by me. Recorded by Datta (1977).

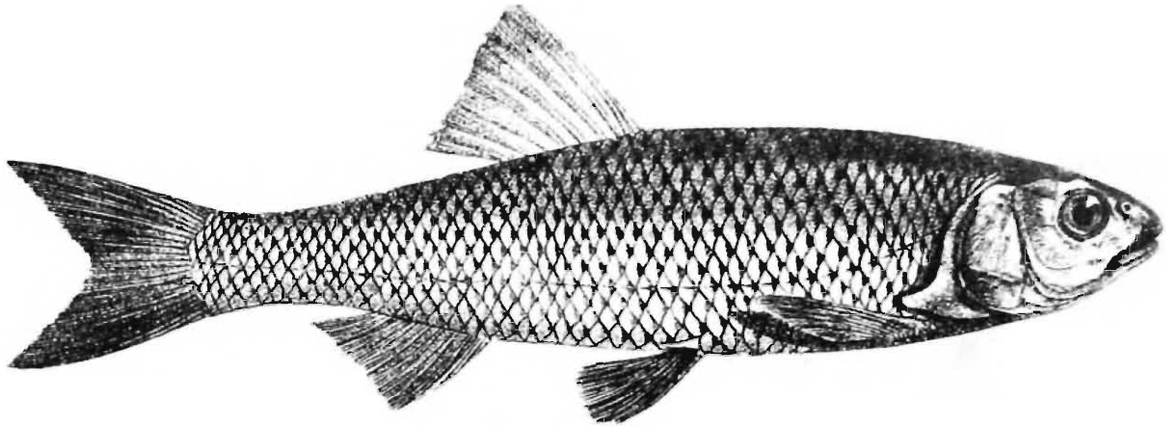


Fig. 24 : *Barilius bendelisis* (Hamilton Buchanan)

Size : It attains 152mm. (6 inches) in total length.

Systematic notes : This species shows a considerable variations in colour and forms as it grows older, there are likewise individual variations. *B. bendelisis chedra* and *B. bendelisis cocsa* has been synonymised with this species (Tilak et al, 1984).

Barilius gatensis (Valenciennes)

(Text-fig. 25)

1844. *Leuciscus gatensis* Valenciennes, *Hist. nat. poiss.*, **18** : 309, pl. 503 (type-locality : Western Ghat).

1878. *Barilius gatensis*, Day, *Fish. India*, : 592, pl. 149, fig. 2; 1889, Day, *Fauna Br. India, Fish*, **1** : 349.

1981. *Barilius gatensis*, Jayaram, *Handbk. Freshw. Fish. India*, : 89, 90 (distribution and key to species).

Local name : Nil.

Diagnostic features : D. 10-12(2-3/8-9), P. 15, V. 9, A. 15-17(3/12-14), C. 19, LL. 39-40.

Head length 4.25 to 4.50 and body depth 4.00 to 4.50 in total length. Eye diameter 3.00 to 4.50 in head length. Barbels 2 pairs, maxillary pair slightly longer than rostral pair, both the pairs of barbels shorter than the orbit. Dorsal fin inserted nearer to caudal fin base than to tip of snout. $2^1/_2$ rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Dorsal surface light dark and sides sivery grey with 13 to 15 vertical bars descending from back downwards beyond lateral line or reach near to it. Dorsal and anal fins with dark bases and light margins.

Distribution : India : Tripura and Peninsular India.

Size : It attains 152mm. (6 inches) in total length.



Fig. 25 . *Barilius gatensis* (Valenciennes)

Remarks : It may be a rare species, if at all available in Tripura for not a single specimen was found in the state.

Barilius nelsoni Barman

(Text-fig. 26)

1989. *Barilius nelsoni* Barman, *J. Bombay nat.* Hist. Soc., **86** (2) : 213-215. (type-locality : Gumti river, Udaipur, South Tripura).

Local name : Nil.

English name : Nil.

Materials examined : (i) 9 exs., 42-62 mm. SL., Gumti river, Udaipur, South Tripura; R. P. Barman and party; 15.8.85. (ii) 2 exs., 45-55mm. SL.; Muhuri river, Belonia, South Tripura, R. P. Barman and party; 26.10.89. (iii). 8 exs., 44-55mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

Diagnostic features : D. 9(2/7), P. 1/12, V. 9, A. 11-15 (3/11-12), C. 19, LL. 38-39.

Head length 4.54 to 4.76 and body depth 4.33 to 4.58 in standard length. Eye diameter 3.25 to 3.66 in head length. Barbels 2 pairs, anterior or rostral pair slightly longer than posterior or maxillary pair. Both pairs of barbels shorter than the orbit. Dorsal fin inserted midway between the hind border of the orbit and base of caudal fin. Caudal fin froked, lower lobe longer than upper.

Colour in alcohol : Dorsal surface light grey and sides silvery. A light darkish longitudinal band extending from behind the head to base of caudal fin.

Distribution : *India* : Tripura : South Tripura district.

Size : It attains 62 mm. ($2^1/_2$ inches) in standard length.

Remarks : Reference may be made to Barman (1989) for its systematic discussion.

Barilius shacra (Hamilton Buchanan)

(Text-fig. 27)

1822. *Cyprinus shacra* Hamilton Buchanan, *Fish. Ganges*, : 271, 385 (type-locality : Kosi river).

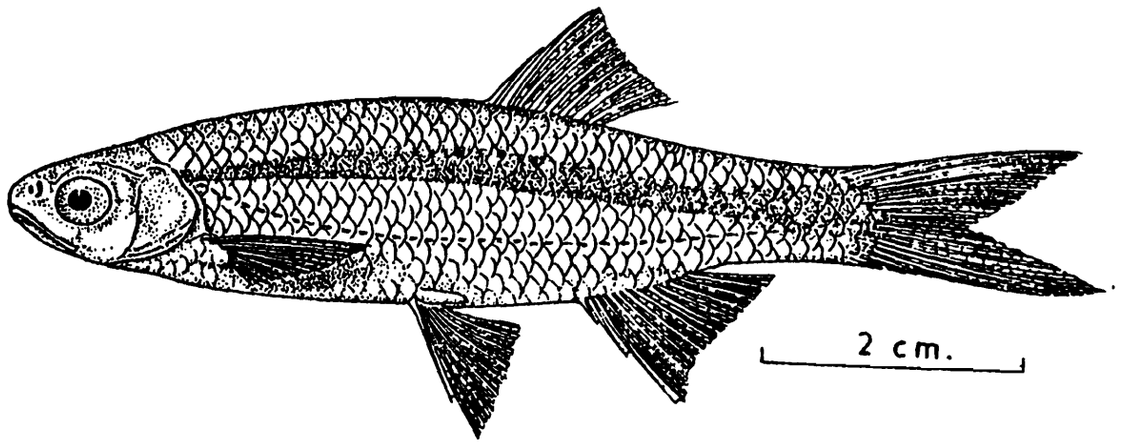


Fig. 26 : *Barilius nelsoni* Barman

1878. *Barilius shacra*, Day, *Fish. India*, : 590, pl. 148. fig. 5; 1889. Day, *Fauna Br. India. Fish*, **1** : 346-347.

1981. *Barilius shacra*, Jayaram, *Handbk. Freshw. Fish. India*, : 89 (distribution and key to species).

Local name : Koksha.

English name : Hill trout.

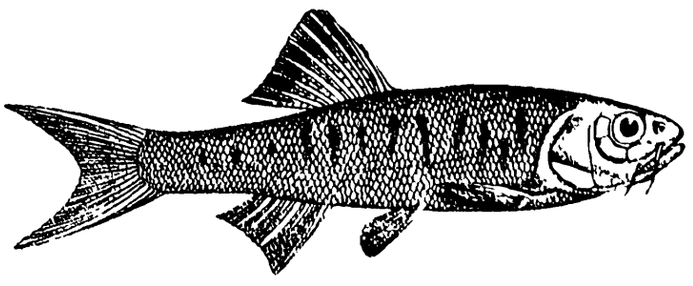


Fig. 27 : *Barilius shacra* (Hamilton Buchanan)

Materials examined : No speceimen obtained by me. Recorded by Lipton (1983-84).

Diagnostic features : D. 9-10(2/7-8), P. 15, V. 9, A. 10-11(2/8-9), C. 19, LL. 60-70.

Head length 3.64 to 4.00 and body depth 4.42 to 4.66 in standard length. Eye diameter 3.81 to 4.25 in head length. Barbels 2 pairs, maxillary pair equal to the orbit and rostral pair slightly longer. $7^1/_2$ rows of scales between lateral line and base of pelvic fins. Dorsal fin inserted nearer to caudal fin base than to tip of snout.

Colour in alcohol : Dorsal surface olive, rest of the body pinkish silvery. About 12 incomplete bars extending from back downwards the lateral line. A dark bar along the upper third of dorsal fin.

Distribution: India : Ganga, Yamuna, Brahmaputra river systems and Tripura (South & North Tripura districts) Pakistan. Nepal and Bangladesh.

Size : It attains 125mm. (5 inches) in total length.

Barilius tileo (Hamilton Buchanan)

(Text-fig. 28)

1822. *Cyprinus tileo* Hamilton Buchanan, *Fish. Ganges,* : 276, 385 (type-locality : Kosi river).

1878. *Barilius tileo,* Day, *Fish. India,* : 593, pl. 149, fig. 5; 1889. Day, *Fauna Br. India, Fish,* **1** : 351-352.

1981. *Barilius tileo,* Jayaram,*Handbk. Freshw. Fish. India,* : 89, 90 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : (i) 3 exs., 70-95mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 3 exs., 75-120 mm. SL.; Kumarghat, North Tripura; R. P. Barman and party; 22.10.89. (iii) 4 exs., 76-110mm. SL.; Muhuri river, Belonia, South Tripura; R. P. Barman and party; 26.10.89. (iv) 2 exs., 115-123mm. SL.; Gumti river, Udaipur, South Tripura; N. C. Ghose; 3.11.89.

Diagnostic features : D..9(2/7), P..14, V..9, A..13-14 (3/10-11), C. 20, LL. 70-75.

Head length 4.75 to 5.25 and body body depth 4.25 to 4.60 in total length. Eye diameter 3.50 to 4.50 in head length. Upper jaw slightly longer. Symphysial knob absent. Barbels 2 pairs, very short. Dorsal fin inserted midway between the posterior border of the orbit and base of caudal fin. Caudal fin deeply forked. $3^1/_2$ to $4^1/_2$ rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Dorsal surface bluish becoming silvery on sides and beneath. 2 or 3 rows of blue spots and blotches, having a vertical character along sides. Dorsal and caudal fins dark grey, with a light pinkish margin.

Distribution : India : Assam, Tripura (North & South Tripura districts) and West Bengal. Pakistan. Nepal and Bangladesh

Size : It attains 152mm. (6 inches) in total length.

Systematic notes : Day (1878, 1889) described this species without barbels or very short. Examination of the specimens of this species

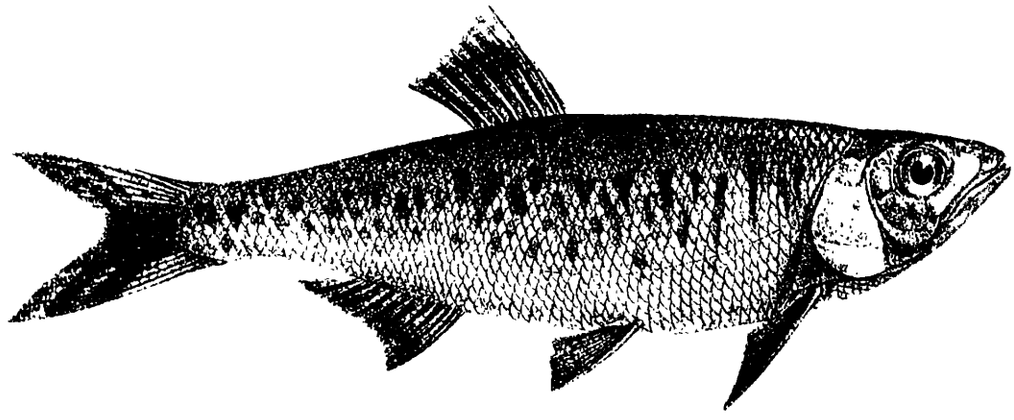


Fig. 28 : *Barilius tileo* (Hamilton Buchanan)

show that both pairs of barbels are always present though very short.

Genus ***Raiamas*** Jordan

1919. *Raiamas* Jordan, *Proc. Acad. Nat. Sci. Philad.*, **70** : 344 (type-species : *Cyprinus bola* Hamilton Buchanan).

1980. *Raiamas*, Howes, *Bull. Br. Mus. Nat. Hist. (Zool)* **37** (3) : 193-194 (*C. bola* has been segregated from *Barilius* of Hamilton Buchanan and included under this genus).

Body elongated, compressed with abdomen rounded. Mouth deeply cleft, maxilla extending beyond posterior border of the orbit. Barbels absent. Lower jaw always longer than the combined lengths of snout and orbit. Maximum length of the third intraorbital exceeds that of snout. Dorsal fin inserted opposite interspace between pelvice and anal fins, with 10 to 11 rays. Anal fin with 13 rays. Caudal fin forked.

Raiamas bola (Hamilton Buchanan)

(Text-fig. 29)

1822. *Cyprinus bola* Hamilton Buchanan, *Fish. Ganges*, : 274, 385 (type-locality : the Brahmaputra river).

1878. *Barilius bola*, Day, *Fish. India*, : 594, pl. 149, fig. 4; 1889. Day, *Fauna Br. India, Fish*, **1** : 352-353, fig. 110.

1980. *Raiamas bola*, Howes, *Bull. Br. Mus. Nat. Hist. (Zool).* **37** (3) : 193-194 (*C. bola* Hamilton Buchanan has been segregated from *Barilius* Hamilton Buchanan and included in *Raiamas* Jordan).

Local name : Bola, Bhola, Goha.

English Name : Indian trout, Hill trout.

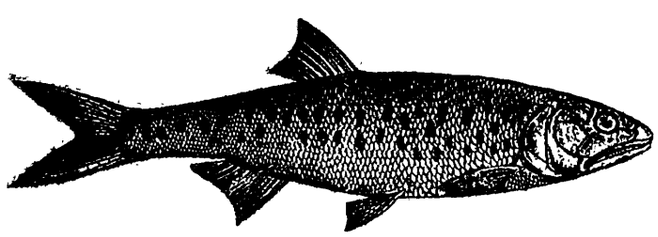


Fig. 29 : *Raiamas bola* (Hamilton Buchanan)

Materials examined : No specimen obtained by me. It was recorded by Bhattachraya (1988) from the Gumti reservoir, Trithmukh, South Tripura.

Diagnostic features : D. 10-11(3/7-8), P. 13, V. 9, A. 13(3/10), C. 19, LL. 88-94.

Head length 4.50 to 4.75 and body depth 5.00 to 6.00 in total length. Eye diameter 4.50 to 7.00 in head length. Snout pointed. Lower jaw with a well developed symphysis. Cleft of mouth extending to hind border of the orbit. Barbels absent. Dorsal fin inserted behind pelvic fins, midway between angle of preopercle and base of caudal fin. Caudal fin lobed. $4^1/_2$ to 5 rows of scales between lateral line and base of pelvic fins. Predorsal scales 40.

Colour in alcohol : Body silvery with two or more rows of vertical bluish blotches along the sides, the upper row with 12 to 20 blotches and lower intermediate. Lower half of dorsal fin slightly grey. Caudal fin orange, stained with grey and black.

Distribution : Tripura : South Tripura district, Africa, Nilotic Guinean and Zairean ichthyofaunal provinces, North India, Burma and Malaya Peninsula (Howes, 1980).

Size : It attains at least 300mm. (1 foot) in total length.

Remarks : Hora (1937b) discussed the systematic position and colour pattern of this fish. It is one of the game fishes of India, takes the fly well. It is also one of those termed "Rajah mas" or chief of the fishes in the rivers of Assam.

Subfamily CYPRININAE

Abdominal edge rounded. Barbels present or absent. Dorsal fin with 7 to 30 branched rays, with or without an osseous simple ray. A symphysial knob on lower jaw usually absent. Lateral line complete or incomplete, generally straight in middle of lateral sides.

Key to the genera

1. Anal fin with anterior rays osseous, third spine serrated ..... ***Cyprinus***

   Anal fin with anterior rays not osseous .. 2.

2. Snout projecting over mouth, horizonally divided by a deep groove passing from one orbit to opposite one, giving the appearance of a blunt compressed knob between and before the orbit ..... ***Schismatorhynchus***

   Snout plain, not divided. 3

3. Dorsal fin inserted posterior to pelvic fins in the interspace between pelvic and anal fins, usually extending to over anal fin. ..... ***Osteobrama***

   Dorsal fin inserted above pelvic fins or slightly anterior to it 4

4. A knob or a horny tubercle present at the symphysis of lower jaw. 5

   Symphysial knob on lower absent. 6

5. Dorsal fin with 10 to 19 rays. ..... ***Cirrhinus***
   Dorsal fin with 24 to 28 rays. ***Semiplotus***

6. Upper lip absent. Scales large (40 to 43 along Lateral line). ..... ***Catla***

   Upper lip present 7

7. Lower lip with an uniterrpted posterior groove, continuous around corners of the mouth 8

   Lower lip with posterior groove interrupted in middle when a groove is present or without any groove 9

8. Barbels present. Dorsal fin with a spine ..... ***Tor***

   Barbels absent. Dorsal fin without a spine ..... ***Ctenopharyngodon***

9. Snout with median and lateral lobes. Snout and cheeks beset with horny tubercles in both sexes. Anal fin rays elongated in male specimens but normal in female specimens. ..... ***Chagunius***

   Snout entire without any lobes. Cheeks free from tubercles. Snout rarely tuberculated. Anal fin rays not elongated. 10

10. A horny covering on the inner side of the lips. Lips thick, fleshy, fringed, covering both jaws, continuous at the angle of mouth forming a labial fold. ..... ***Labeo***

    No such horny covering on the lips. Lower jaw covered by lip. Lower lip attached to the lower jaw along the entire mouth. ..***Puntius***

Genus ***Cyprinus*** Linnaeus

1758. *Cyprinus* Linnaeus, *Syst. Nat.* ed. 10, **1** : 320 (type-species : Cyprinus *carpio Linnaeus*).

1981. *Cyprinus*, Jayaram, *Handbk. Freshw. Fish. India*, : 94 (genus characters and distribution).

Body robust anteriorly, almost compressed with abdomen rounded. Mouth terminal, oblique, gape not extending to anterior margin of orbit. Maxillary protractile, reaching to anterior nostril. Barbels 2 pairs, one pair each of rostral and maxillary. Dorsal fin very long with 3 spines and 17 rays, third spine strongest and serrated. Anal fin with 3 spines and 5 rays. Caudal fin deeply emarginate. Lateral line complete and straight with 30 to 40 cycloid scales.

Cyprinus carpio carpio Linnaeus

(Text-fig. 30)

1758. *Cyprinus carpio* Linnaeus, *Syst. Nat.* ed. 10, **1** : 525 (type-locality : Eurpoe).

1981. *Cyprinus carpio carpio*, Jayaram, *Handbk. Freshw. Fish. India*, : 94 (distribution).

Local name : Carpio.

English name : Common Carp.

Materials examined : (i) 2 exs., 182-210mm. TL. Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 1 ex., 86mm. TL.; Kumarghat, North Tripura; R. P. Barman and party; 21.10.89.

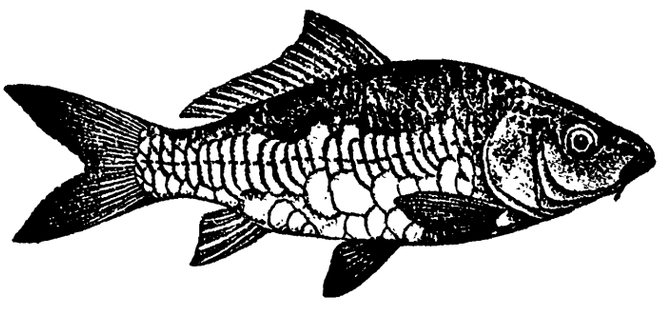


Fig. 30 : *Cyprinus carpio carpio* Linnaeus

Diagnostic features : D. 3-4/17-22, P. 1/15-16, V. 2/8-9, A.3/5, C. 17-19, LL. 30-40

Head length 3.80 to 4.50 and body depth 3.00 to 3.33 in total length. Moderately deep and slightly compressed body. Mouth surrounded by fleshy lips, directed forward, protrusible. Barbels 2 pairs, one pair each of rostral and maxillary. Eyes placed relatively high on head. Eye diameter 5.00 to 5.50 in head length. Lateral line complete. Caudal fin deeply emarginate.

Colour in alcohol : Dorsal surface dark with golden yellowish sides and white abdomen with dark and pink tinge fins.

Distribution : Naturally found all through China, Korea, Japan, Taiwan, Europe and America. This fish was introduced in India and Sri Lanka in 1939.

Size : A growth of 10 kg. body weight of a 30 months old specimen of this species is known from the Barang Fish farm, Orissa.

Remarks : It is an exotic fish introduced in different states of India in 1939. Three varieties are known as follows.

1. *Cyprinus carpio communis* (the Scale Carp)—Body fully covered by regularly arranged rows of scales. This is supposed to be the original form.
2. *Cyprinus carpio specularies* (the Mirror Carp)—Body covered unevenly with a few large and bright scales. A large area of body is without scales.
3. *Cyprinus carpio nudus* (the Leather Carp)—Body almost without scales and has a leathery appearance.

These fishes breed throughout the year but unlike the major carps such as *Labeo rohita. Catla catla* and *Cirrhinus mrigala,* these fishes also breed in ponds.

Genus ***Semiplotus*** Bleeker

1859. *Semiplotus* Bleeker, *Nat. Tijdschr. Ned. Ind.,* **20** : 424 (type-species : *Cyprinus semiplotus* McClelland).

1981. *Semiplotus,* Jayaram, *Handbk. Freshw. Fish. India,* : 95, 96 (genus characters and distribution).

Body deep and compressed with abdomen rounded. Snout thick and prominent. A row of about six open pores passing across snout towards orbit present. Mouth wide, transverse, inferior, with a knob at the symphysis. Barbels absent. Dorsal fin with 24 to 28 rays and with a smooth or serrated spine. Anal fin with 9 to 10 rays. Caudal fin forked. Lateral line complete with 27 to 34 scales.

Semiplotus semiplotus (McClelland)

(Text-fig. 31)

1839. *Cyprinus semiplotus* McClelland, *Asiat. Res.,* **19** : 274, fig. 2 (type-locality : the Brahmaputra river in the upper Assam).

1877. *Semiplotus mcClellandi,* Day, *Fish. India.:* 550, pl. 138, fig. 4 ; 1889. Day, *Fauna Br. India, Fish.* **1** : 281-282, fig. 97.

1981. *Semiplotus semiplotus,* Jayaram, *Handbk. Freshw. Fish. India,* : 96 (distribution and key to species).

Local name : Badangi.

English name : King fish.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from the river Khowai.

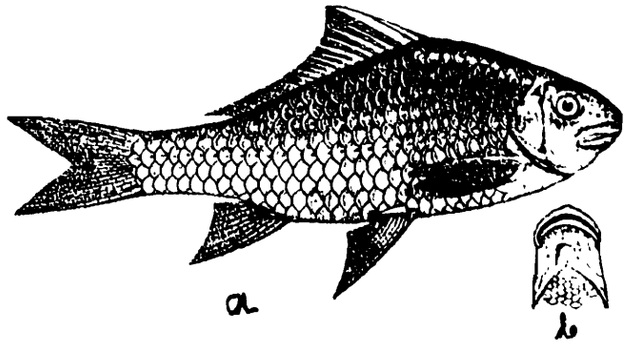


Fig. 31 : *Semiplotus semiplotus* (McClelland)
a : Lateral view
b : Ventral view of mouth region

Diagnostic features : D. 27-28 (3/24-25), P. 16, V. 10 9(2/7), C. 19 LL. 27-33.

Head length 5.50 to 6.00 and body depth 3.50 in total length. Eye diameter 4.00 to 6.00 in head length. Snout obtuse, thickended and tuberculated. Lower jaw with an internal horny layer. Barbels absent. Dorsal fin inserted midway between tip

of snout and posterior margin of anal fin base, dorsal spine bony, entire. $3^1/_2$ rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Dorsal surface dark and sides leaden silvery. Pectoral, pelvic and anal fins orange.

Distribution : India : Assam, Meghalaya, Tripura (West Tripura district) Arunachal Pradesh and West Bengal. Burma

Size : It attains at least 609mm. (2 feet) in total length.

Remarks : This fish has been recorded by me from Arunachal Pradesh (in Datta and Barman, 1985). This fish is often termed "Rajah-mas or kings fish" in upper Assam, as it is asserted that when captured it had to be taken to the Rajahs for their own consumption.

Genus ***Puntius*** Hamilton Buchanan

1822. *Puntius* Hamilton Buchanan, *Fish. Ganges, :* 310, 388 (type-species : *Cyrpinus sophore* Hamilton Buchanan).

1981. *Puntius*, Jayaram, *Handbk. Freshw. Fish. India,* : 97, 98 (description of genus and distribution).

Body short to moderately elongated, compressed with abdomen rounded. Mouth arched, anterior or inferior. Lips thin covering the jaws, may have leathery lobes, but without any horny covering. Jaws simple, covered by lips, without any knob or tubercle at the symphysis. Barbels 2 pairs or 1 pair or absent. Dorsal fin inserted almost opposite to pelvic fins, with 9 to 13 rays with or without any spine. Anal fin with 7 to 9 rays. Caudal fin forked. Lateral line complete or incomplete, with 20 to 47 scales.

Key to the species

1. Barbels present 2
   Barbels absent 4
2. Barbels 1 pair. ..... ***P. chola***
   Barbels 2 pairs. 3
3. Lateral line scales 32 to 34. ..... ***P. sarana sarana***
   Lateral line scales 42. .. ***P. clavatus clavatus***
4. Lateral line complete. Dorsal spine smooth.. ..... ***P. sophore***
   Lateral line incomplete. Dorsal spine serrated. ..... 5.
5. Body with vertical black coloured bands..... ..... ***P. gelius***
   Body without any vertical coloured bands..6
6. Body depth 2.40 to 2.50 in total length .... ***P. conchonius***
   Body depth 3.00 to 3.50 in total length..... ..... ***P. ticto ticto***

Puntius chola (Hamilton Buchanan)

(Text-fig. 32)

1822. *Cyprinus chola* Hamilton Buchanan, *Fish. Ganges,* : 312. 389 (type-locality : North-Eastern parts of Bengal).

1878. *Barbus chola,* Day, *Fish. India,* : 571, pl. 142, fig. 4; 1889. Day, *Fauna Br.* India, *Fish,* **1** : 317.

1981. *Puntius chola,* Jayaram, *Handbk. Freshw. Fish. India,* : 100, 107 (distribution and key to species).

Local name : Tit puti.

English name : Green barb.

Materials examined : (i) 4 exs., 47-58mm. SL.; Amarpur, South Tripura, R. P. Barman and

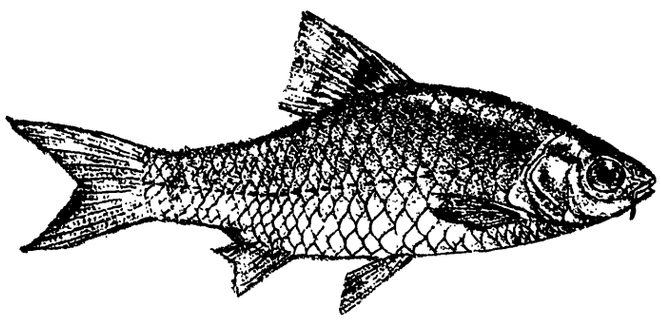


Fig. 32 : *Puntius chola* (Hamilton Buchanan)

party; 8.8.85. (ii) 12 exs., 51-63mm. Sl.; Udaipur, South Tripura; R. P. Barman and party; 14.8.85

(iii)2 exs., 46-64mm. SL.; Pacherthal, North Tripura; R. P. Barman and party; 22.10.89.

Diagnostic features : D. 11(3/8), P. 15, V. 9, A. 7(2/5), C. 19, LL. 26-28

Head length 4.50 to 4.75 to body depth 3.25 to 3.75 in total length. Eye diameter 3.50 to 4.00 in head length. Barbels 1 pair, almost half of the orbit. Dorsal fin inserted opposite the pelvic fins, in middle between snout tip and caudal fin base, its last undivided ray osseous and smooth. Lateral line complete, 3 to $3^1/_2$ rows of scales between lateral line and pelvic fin base. Predorsal scales 10 to 12.

Colour in alcohol : Body silvery, opercles shot with purple and gold. A dark blotch usually present on side of free part of tail from 23rd to 25th scales on lateral line. Sometimes a dark spot behind the gill openings present. A dark spot along base of anterior dorsal fin ray and a row of dark spots along its centre.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma and Sri Lanka.

Size : It attains 130mm. (5 inches) in total length.

Remarks : It is a very common fish found to live all water-logged areas throughout Tripura.

***Puntius clavatus* clavatus** (McClelland)

1845. *Barbus clavatus* McClelland, *Calcutta Jour. Nat. Hist.*, : 280, pl. 21, fig. 2 (type-locality : North Bengal below the Himalayan foot hills).

1878. *Barbus clavatus*, Day, *Fish. India*, : 560; 1889. Day, *Fauna Br. India, Fish*, **1** : 300.

1981. *Puntius clavatus clavatus*, Jayaram, *Handbk. Freshw. Fish. India*, : 100, 103 (distribution and key to species).

Local name : Puti.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Tripura.

Diagnostic features : D. 11(3 8), P. 16, V. 10, A. 8(3/5), C. 19, LL. 42.

Head length 5.00 to 5.30 in total length. Body depth equal to length of caudal fin. Eye diameter longer than snout length. Snout covered with small thorny tubercles. Barbels 2 pairs, well developed. Dorsal fin inserted midway between snout tip and base of caudal fin, with last undivided ray osseous, strong and serrated. $4^1/_2$ rows of scales between lateral line and base of pelvic fins.

Colour in alcohol : Dorsal surface blue becoming white below. Fins pale bluish white.

Distribution : India : Throughout Tripura, North Bengal below the Himalayan foot hills. Sikkim, Nepal and Bangladesh

Size : It attains 175mm. (7 inches) in total length.

Remarks : This fish is mainly confined to North Eastern Himalayas ranges.

Puntius conchonius (Hamilton Buchanan)

(Text-fig. 33)

1822. *Cyprinus conchonius* Hamilton Buchanan, *Fish. Ganges*, : 317, 389 (type-locality : ponds of north-east of Bengal and in the rivers of kosi and Ami).

1878. *Barbus conchonius*, Day, *Fish. India*, : 576, pl.143, fig. 7; 1889. Day, *Fauna Br. India, Fish.* **1** : 325.

1981. *Puntius conchonius*, Jayaram, *Handbk. Freshw. Fish. India*, : 100, 109 (distribution and key to species).

Local name : Kanchan Puti.

English name : Stigma barb.

Materials examined : (i) 8 exs., 41-68mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85 (ii) 7 exs., 35-45mm. SL.; Muhuri river, Belonia, South Tripura; R. P. Barman and party; 26.10.89. (iii) 13 exs., 35-63mm. SL.; Deo river, Kanchanpur, North Tripura; R. P. Barman and party; 22.10.89. (iv) 11 exs., 37-45mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89.

Diagnostic features : D. 11(3/8), P. 11, V. 9, A. 7(2/5), C. 19, LL .24-26.

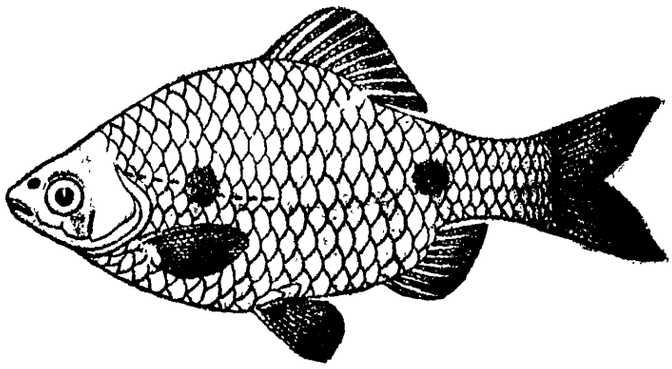


Fig. 33 : *Puntius conchonius* (Hamilton Buchanan)

Head length 4.00 to 5.00 and body depth 2.40 to 2.50 in total length. Eye diameter 3.00 to 3.25 in head length. Barbels absent. Dorsal fin inserted midway between anterior border of orbit and caudal fin base. Dorsal spine serrated.. Lateral line incomplete, ceasing after 18 anterior scales. 4 to $4^1/_2$ rows of scales between lateral line and pelvic fin base. Predorsal scales 9.

Colour in alcohol : Dorsal surface greenish grey becoming silvery towards sides. A large dark spot above hind part of anal fin. Fins orange coloured, dorsal fin with its upper half black.

Distribution : India : Ganga, Brahmaputra, Mahanadi river system in Uttar Pradesh, Bihar, West Bengal, Orissa, throughout Tripura, Andhra Pradesh and Cauvery river system. S. India, Pakistan, Nepal, Bangladesh.

Size : It attains at least 127 mm. (5 inches) in total length.

Remarks : It is a very common fish found to live throughout Tripura.

Puntius gelius (Hamilton Buchanan)

1822. *Cyprinus gelius* Hamilton Buchanan, *Fish. Ganges.* : 320, 390, pl. 145, fig. 3 (type-locality : North-Eastern parts of Bengal).

1878. *Barbus gelius*, Day, *Fish. India.* : 577, pl. 145, fig. 3; 1889. Day, *Fauna Br. India, Fish.* **1** : 327.

1981. *Puntius gelius*, Jayaram, *Handbk. freshw. Fish. India.* : 100. 109 (distribution and key to species).

Local name : Puti.

English name : Nil.

Materials examined : 7 exs., 20-33mm SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and Party; 31.10.89.

Diagnostic features : D. 10-11(2-3/8), P. 15, V. 9, A. 8(3/5), C. 19, LL. 23-24.

Head length 4.25 to 4.50 and body depth 3.00 to 3.50 in total length. Eye diameter 2.00 to 2.50 in head length. Barbels absent. Dorsal fin inserted slightly ahead of pelvic fins, its osseous ray serrated. Caudal fin deeply forked. Lateral line incomplete, ceasing after 5 or 6 anterior scales. 3 rows of scales between lateral line and base of pelvic fin. Predorsal scales 8.

Colour in alcohol : Body reddish brown, with a black band over tail a little anterior to base of caudal fin and another less distinct close to base of that fin. A silvery band along the sides. A black spot passes across the base of anterior half of dorsal fin, extending one third the distance up the rays. A black band over base of anal fin, highest in front.

Distribution : India : Assam, Bihar, Orissa, West Bengal, Tripura (West Tripura district) and Andhra Pradesh, Bangladesh, Pakistan.

Size : It attains 75mm. (3 inches) in total length.

Remarks : This species is being recorded here for the first time from Tripura.

Puntius sarana sarana (Hamilton Buchanan)

(Text-fig. 34)

1822. *Cyprinus sarana* Hamilton Buchanan, *Fish. Ganges.* : 307, 388 (type-locality : Gangetic river system, Bengal).

1878. *Barbus* sarana, Day, Fish. India. : 560, pl. 136, fig. 2; 1889. Day, *Fauna Br. India, Fish,* **1** : 300.

1981. *Puntius sarana sarana*, Jayaram, *Handbk. Freshw. Fish. India,* : 102, 104 (distribution and key to species).

Local name : Swarna puti.

English name : Olive carp.

Materials examined : 2 exs., 125-135mm. SL; Gumti river, Udaipur, South Tripura, R. P. Barman and party; 29.10.89.

Size : It attains at least 304mm. (1 foot) in total length.

Remarks : It is one of the well known commercially very important species under the genus for its comparatively larger size and oily good taste.

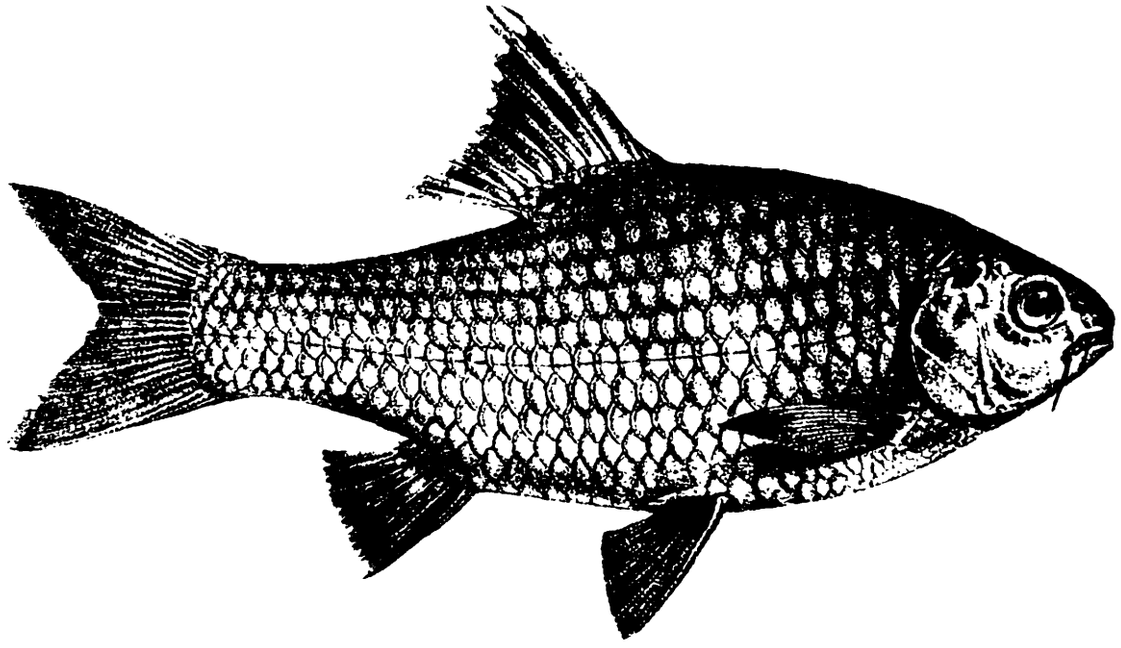


Fig. 34 : *Puntius sarana sarana* (Hamilton Buchanan)

Diagnostic features : D. 11(3/8), P. 15, V. 9, A. 8(3/5), C. 19, LL. 32-34.

Head length 5.00 to 5.25 and body depth 3.50 to 3.75 in total length. Eye diameter 4.25 to 4.75 in head length. Barbels 2 pairs, rostral pair equal to orbit and maxillary pair equal to or $1^1/_2$ times eye diameter. Dorsal spine serrated. Lateral line complete, $3^1/_2$ to 4 rows of scales between it and base of pelvic fin. Predorsal scales 10 to 11. Caudal fin forked.

Colour in alcohol : Dorsal surface dark grey and silvery below. Sometimes young specimens have dull blotch on lateral line before base of caudal fin. Horizontal bands along the rows of scales in upper half of body sometimes present.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma, Thailand and China.

Puntius sophore (Hamilton Buchanan)

(Text-fig. 35)

1822. *Cyprinus sophore* Hamilton Buchanan, *Fish. Ganges,* : 310, 389 (type-locality : pond of Bengal).

1844. *Leuciscus stigma* Valenciennes, *Hist. Nat. Poiss.*, 17 : 93, pl. 489 (type-locality : Mysore).

1878. *Barbus sophore,* Day, *Fish. India,* : 566, pl. 143, fig. 4; 1889. Day, *Fauna Br. India, Fish,* **1** : 309.

1981. *Puntius sophore,* Jayaram, *Handbk. Freshw. Fish. India,* : 192, 110 (distribution and key to species).

Local name : Sar puti.

English name : Stigma barb.

Materials examined : (i) 17 exs., 36-65mm. SL. Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 3 exs., 44-59mm. SL.; Deo river, Kanchanpur, North Tripura; R. P. Barman and party; 22.10.89. (iii) 3 exs., 30-45mm. SL.; Rudra sagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89.

Diagnostic features : D. 11-12(3/8-9) P. 15, V. 9, A. 8(3/5), C. 19, LL. 23-28.

Head length 4.50 to 5.00 and body depth 3.50 to 3.75 in total length. Eye diameter 3.00 to 4.00

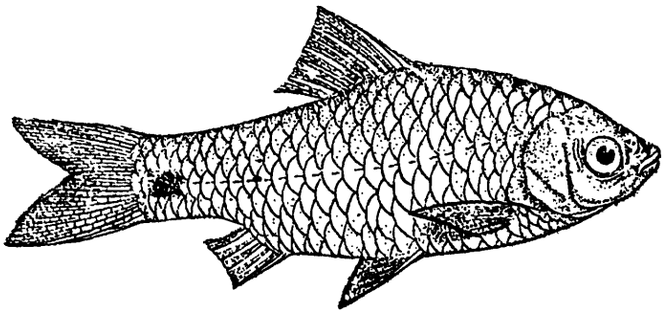


Fig. 35 : *Puntius sophore* (Hamilton Buchanan)

in head length. Dorsal fin inserted midway between tip of snout and base of caudal fin, its last undivided ray osseous, rather weak or moderately strong. Lateral line complete, $2^1/_2$ to $3^1/_2$ rows of scales between it and base of pelvic fin. Predorsal scales 8 to 9.

Colour in alcohol : Body silvery, generally with scarlet, lateral band. A dark spot at the base of caudal fin.

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

Size : It attains at least 127 mm. (5 inches) in total length.

Remarks : It is a very common fish found to live throughout Tripura.

Puntius ticto ticto (Hamilton Buchanan)

(Text-fig. 36)

1822. *Cyrpinus ticto* Hamilton Buchanan, *Fish. Ganges,*: 314, 389, pl. 8, fig. 87 (type-locality : South Eastern parts of Bengal).

1878. *Barbus ticto,* Day, *Fish. India,* : 576, pl. 144, fig. 7; 1889. Day *Fauna Br. India, Fish,* **1** : 325.

1981. *Puntius ticto ticto,* Jayaram, *Handbk. Freshw.* Fish. India, : 103, 109 (distribution and key to species).

Local name : Tit puti.

English name : Fire fin barb.

Materials examined : 5 exs., 32-58mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

Diagnostic features : D. 11(3/8), P. 15, V. 9, A. 7(2/5), C. 19. LL. 23-26

Head length 5.00 to 5.25 and body depth 3.00 to 3.25 in total length. Eye diameter 2.75 to 3.25 in head length. Dorsal fin spine strong and serrated. Caudal fin forked. Lateral line incomplete, ceasing after 6 to 8 scales, 4 to 5 rows of scales between lateral line and base of pelvic fin. Predorsal scales 11 to 12.

Colour in alcohol : Body silvery, sometimes stained with red, a black spot on the side of tail anterior to caudal fin base and just posterior to

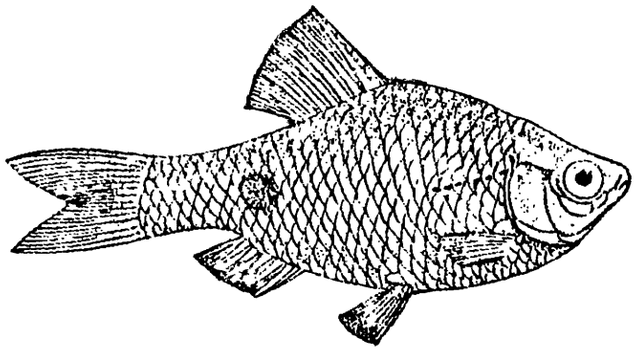


Fig. 36 :*Puntius ticto ticto* (Hamilton Buchanan)

anal fin. Sometimes a small dark spot at the commencement of lateral present. Fins often black, sometimes orange.

Distribution : Throughout Tripura and India, Nepal, Pakistan, Bangladesh, Sri Lanka, Burma and Thailand.

Size : It attains 100mm. (4 inches) in total length.

Remark : It is found to live in ponds, tanks and beels throughout Tripura.

Genus ***Osteobrama*** Heckel

1842. *Osteobrama* Heckel, *Ichth. Russengger's Reisen in Europe,* Asia and Africa, **1** : 1033 (type-species : Cyprinus cotio Hamilton Buchanan).

1981. *Osteobrama,* Jayaram, *Handbk. Freshw. Fish. India,* : 112. 113 (genus characters and distribution).

Body deep, compressed with abdomen rounded. Mouth small, somewhat directed upwards. Barbels 2 pairs, 1 pair or absent. Dorsal fin inserted slightly posterior to pelvic fins, with 11 to 12 rays and a strong spine. Anal fin with 14 to 36 rays. Caudal fin deeply forked. Lateral lines complete with 42 to 80 scales.

Osteobrama cotio cotio (Hamilton Buchanan)

(Text-fig. 37)

1822. *Cyprinus cotio* Hamilton Buchanan, *Fish. Ganges. :* 339, pl. 39, fig. 93 (type- locality : ponds and ditches of Bengal).

1878. *Rohtee cotio*, Day, *Fish, India, :* 587, pl. 151, fig. 1; 1889. Day, *Fauna Br. India, Fish,* **1** : 340.

1981. *Osteobrama cotio cotio*, Jayaram, *Handbk. Freshw. Fish, India, :* 113 (distribution and key to species).

Local name : Gila Khani.

English name : Cotio.

Materials examined : (i) 4 exs. 46-70, SL. Udaipur, South Tripura; R. P. Barman and party; 15.8.85. (ii) 1 ex. 50mm. Sl.; Muhuri river,

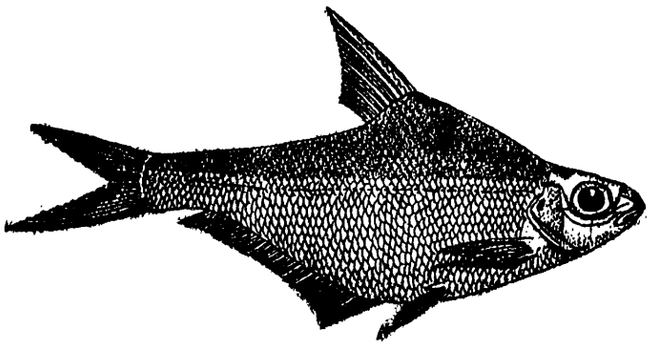


Fig. 37 : *Osteobrama cotio cotio* (Hamilton Buchanan)

Belonia, South Tripura; R. P. Barman and party; 26.10.89. (iii) 2 exs., 56-65mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89.

Diagnostic features : D. 11-12(2-3/9), P. 13, V. 10, A. 29-36(2-3/27-33), C. 19, LL. 55-70.

Head length 5.00 to 6.00 and body depth 3.00 to 3.50 in total length. Eye diameter 2.50 to 3.00 in head length. Upper jaw slightly longer. Barbels absent. Dorsal fin inserted nearer to tip of snout than to caudal fin base, dorsal spine weak and serrated. $10^{1}/_{2}$ to 13 rows of scales between lateral line and base of pelvic fin. Caudal fin deeply forked.

Colour in alcohol : Dorsal surface silvery black, sometimes with a silvery band. Usually with a dark blotch at the anterior base of dorsal fin.

Distribution : Throughout Tripura and India, except Malabar. Bangladesh, Nepal, Pakistan and Burma.

Size : It attains 152mm. (6 inches) in total length.

Remarks : It is a very common species found to live throughout Tripura.

Genus ***Schismatorhynchus*** Bleeker

1855. *Schismatorhynchus* Bleeker, *Nat. Tijdschr. Ned. India.*, **9** : 258, 269 (type-species : *Schismatorhynchus heterorhynchus* Bleeker).

1981. *Schismatorhynchus*, Jayaram, *Handbk. Freshw. Fish. India :* 115, 116 (genus characters and distribution).

Body almost elongated with abdomen rounded. Snout projecting over mouth and having a deep groove passing from one orbit to another, with two short horns or projections on the interorbital space. Mouth moderate width, subterminal. Lower lip reflected, not continuous with upper lip. (Subgenus *Schismatorhynchus*) or continuous with upper lip and with large papillae (subgenus *Nukta*). Lower jaw separated from lower lip by post labial groove. Post labial groove divided by a longitudinal fleshy frenulum in a median and lateral part *(Schismatorhynchus)* or without such prolongations (*Nukta*). A pair each of maxillary and rostral barbels (*Schismatorhynchus)*) or absent (*Nukta).* Dorsal fin inserted considerably ahead of pelvic fins, with 11 rays. Caudal fin deeply forked. Lateral line complete with 37 to 38 scales.

Schismatorhynchus (Nukta) nukta (Sykes)

(Text-fig. 38)

1841 *Cyprinus nukta* Sykes, *Trans. Zool. Soc. Lond.*, **2** : 355 (type-locality : Mahloongeh, 18 miles north of Poona from the Indranee river).

1877. *Labeo nukta*, Day, *Fish. India*, : 543, pl. 128, fig. 5; 1889. Day, *Fauna Br. India, Fish*, **1** : 270.

1981. *Schismatorhynchus (Nukta) nukta*, Jayaram, *Handbk. Freshw. Fish. India*, : 116 (distribution).

Local name : Nil.

English name : King fish.

Materials examined : No specimen obtained by me. It was recorded by Bhattacharya (1988) from the Gumti reservoir, Tirthmukh, South Tripura.

Diagnostic features : D. 11(2/9), P. 15, V. 9, A. 7(2/5) C. 19, LL. 37-38.

Head length 5.00 to 6.25 and body depth 4.50 in total length. Eye diameter 4.00 to 6.00 in head length. Dorsal profile convex and ventral profile somewhat horizontal. Lips not fringed, with a thin deciduous horny layer internally. Snout with a deep groove. Barbels 1 pair, very short, maxillary. Dorsal fin inserted anterior to pelvic fins, nearer to tip of snout than to caudal fin base. Caudal fin forked. Lateral line badly marked. $4^1/_2$ rows of scales between lateral line and caudal fin base.

Colour in alcohol : Body silvery, with some red marks on the scales. Fins reddish, caudal fin edged with grey.

Distribution : India : Peninsular India, Tripura (South Tripura district).

Size : It attains at least 304mm. (1 foot) in total length.

Genus ***Labeo*** Cuvier

1817. *Labeo* Cuvier, *Regne Animal.*, **2**, ed.1 : 194 (type-species : *Cyprinus niloticus* Forsskal).

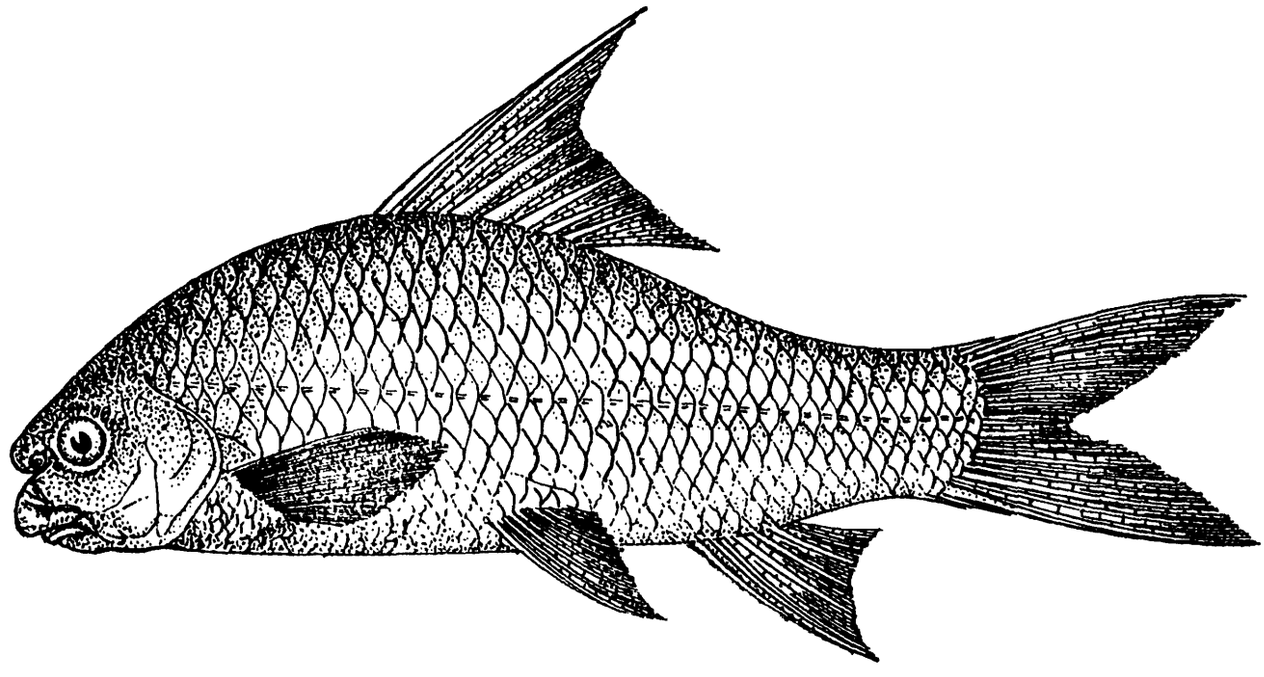


Fig. 38 : *Schismatorhynchus (Nukta) nukta* (Sykes)

1981. *Labeo*, Jayaram, *Handbk. Freshw. Fish. India*, : 116, 117 (genus characters and distribution).

Body moderately elongated with abdomen rounded. Mouth generally inferior, transverse and semioval. Lips thick covering the jaws, continuous at the angle of mouth and one or both having an inner transverse fold. A soft and movable horny covering, with a sharp margin on the inner side of one or both lips. Barbels, when present, 2 pairs or 1 pair, if there is only one pair, they are on the

maxilla, the pair being on the snout. Dorsal fin inserted anterior to pelvic fins, with 11 to 26 rays and without any spine. Anal fin with 7 to 8 rays. Caudal fin emarginate or forked. Lateral line complete, with 36 to 85 scales.

Key to the species

1. Dorsal fin rays not more than 13. Only one pair of barbels.....2

   Dorsal fin rays more than 13. Two pairs of barbels .....4.

2. Pectoral fins reaching pelvic fins .....***L. bata***
   Pectoral fins not reaching pelvic fins.....3

3. Snout with a distinct lateral lobe. ....***L. pangusia***

   Snout without any lateral lobe. .....**L. *boga***

4. Lateral line scales 71 to 84 ..... ***L. gonius***

   Lateral line scales less than 71 (40 to 44) 5

5. Dorsal fin rays 24 to 26.....***L. nandina***

   Dorsal fin rays less than 24 (15 10 18) 6

6. Dorsal fin rays 15 to 16. Scales between lateral line and base of pelvic fins 6 to $6^1/_2$. Head length 4.50 to 5.00 in lotal length. Bluish or brownish above and silvery below ..... ***L. rohita***

   Dorsal fin rays 16 to 18. Scales between lateral line and base of pelvic fins $5^1/_2$ to 6. Head length 5.00 to 6.00 in total length. Body blackish becoming lighter below..... .....***L. calbasu***

Labeo bata (Hamilton Buchanan)

(Text-fig. 39)

1822. *Cyprinus bata* Hamilton Buchanan, *Fish. Ganges,* : 283, 386 (type-locality : rivers and ponds of Bengal).

1877. *Labeo bata,* Day, *Fish. India,* : 542, pl. 129, fig. 5 ; 1889. Day *Fauna Br. India, Fish.* **1** : 268.

1981. *Labeo bata,* Jayaram, *Handbk. Freshw. Fish. India,* : 117, 119 (distribution and key to species).

Local name : Bhangna.

English name : Bata.

Materials examined : 3 exs., 155-172mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85.

Diagnostic features : D. 11-13(2-3/9-10), P. 18, V. 9, A. 7(2/5), C. 19, LL. 37-40.

Head length 5.50 to 5.75 and body depth 4.30 to 4.75 in total length. Eye diameter 4.00 to 4.30 in head length. Lips thin, continuous; a tubercle inside lower jaw above symphysis and no horny covering inside jaws. Barbels 1 pair, very short, maxillary. Dorsal fin inserted slightly nearer to tip of snout than to base of caudal fin. Pectoral

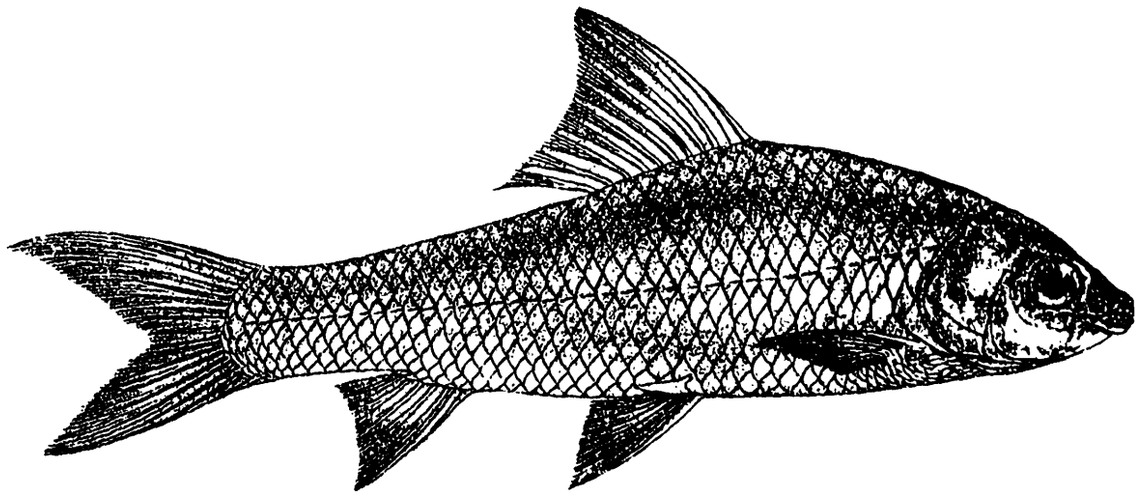


Fig. 39 : *Labeo bata* (Hamilton Buchanan)

fins reaching pelvic fins. Caudal fin deeply forked. 5½ rows of scales between lateral line and base of pelvic fins.

Colour in alcohol : Dorsal surface grey and silvery abdomen, with lower fins stained orange. Young specimens sometimes with 3 to 4 small, lateral black spots.

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

Size : It attains 609mm. (2 feet) in total length.

Remarks : This fish is employed extensively for stocking tanks almost throughout Tripura. It is a good taste fish of commercial importance.

Labeo boga (Hamilton Buchanan)

(Text-fig. 40)

1822. *Cyprinus boga* Hamilton Buchanan, *Fish. Ganges. :* 286, 386, pl. 28, fig. 80 (type-locality : River Bramaputra).

1877. *Labeo boga*, Day, *Fish. India, :* 543, pl. 128, fig. 3 and pl. 131, fig. 4; 1889, Day, Fauna Br. India, Fish, **1** : 269.

1981. *Labeo boga*, Jayaram, *Handbk. Freshw. Fish. India, :* 117. 120 (distribution and key to species).

Local name : Bangum bata.

English name : Burmese fish, Jamuna fish.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from the river Fenny, Sabroom, South Tripura.

Diagnostic features : D. 11-13(2-3/9-10), P. 16, V. 9, A. 7(2/5), C. 19, LL. 37-39.

Head length 5.25 to 5.50 and body depth 5.50 to 5.75 in total length. Eye diameter 3.75 to 4.00 in head length. Lips somewhat thick with a thin layer of cartilage to inner surface of lower jaw. Snout sometimes covered with tubercles. Barbels 1 pair, very short, maxillary. Dorsal fin inserted considerably ahead of pelvic fins, nearer to tip of snout than to base of caudal fin. Pectoral fins not reaching pelvic fins. Caudal fin deeply forked with equal lobes. 5 rows of scales between lateral line and base of pelvic fins.

Colour in alcohol : Body orange, with fins of reddish tinge. Sometimes with a dark spot on the superior angle of gill openings.

Distribution : India : Tripura : South Tripura district. Punjab, Uttar Pradesh, West Bengal and Deccan. Bangladesh, Nepal, Burma and Pakistan

Size : It attains 304mm. (1 foot) in total length.

Labeo calbasu (Hamilton Buchanan)

(Text-fig. 41)

1822. *Cyprinus calbasu* Hamilton Buchanan, *Fish. Ganges, :* 297, 387, pl. 2, Fig. 83 (type-locality : rivers and ponds Bengal and in the Western provinces).

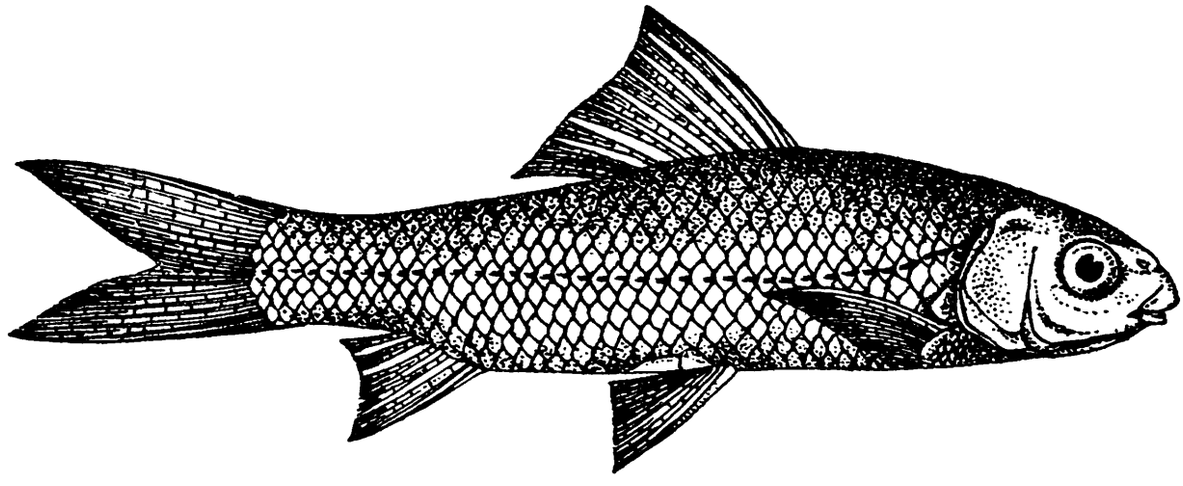


Fig. 40 : *Labeo boga* (Hamilton Buchanan)

1877. *Labeo calbasu*, Day, *Fish. India,* : 536, pl.126, fig. 4; 1889. Day, *Fauna Br. India, Fish,* **1** : 259.

1981. *Labeo calbasu*, Jayaram, *Handbk. Freshw. Fish. India*, : 117, 121 (distribution and key to species).

Local name : Kalbasu

English name : Calbasu, Orange fin labeo.

Materials examined : (i) 2 exs., 40-75mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 16.8.85.

Diagnostic features : D. 16-18(3/13-15), P. 19, V. 9, A. 7(2/5), C. 19, LL. 40-44.

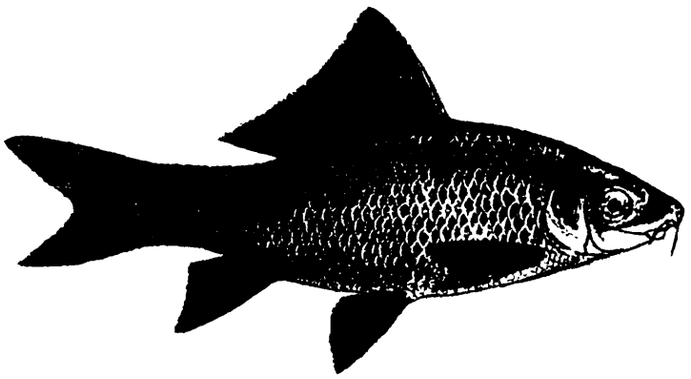


Fig. 41 : *Labeo calbasu* (Hamilton Buchanan)

Head length 5.00 to 6.00 and body depth 4.00 in total length. Eye diameter 4.00 to 5.00 in head length. Lips thick, fringed and each having a distinct inner fold. Snout with pores. Barbels 2 pairs, rostral pair slightly longer, almost equal to diameter of orbit. Dorsal fin inserted ahead of pelvic fins, midway between tip of snout and base of caudal fin. Caudal fin deeply forked. $5^1/_2$ to 6 rows of scales between lateral line and base of pelvic fins.

Colour in alcohol : Body blackish green, becoming lighter below. Fins black, upper tips of caudal fin generally edged white.

Distribution : Throughout Tripura and India, Pakistan, Bangladesh, Nepal, Burma, Thailand and Yunnan.

Size : It attains 914mm. (3 feet)in total length.

Remarks : It is an important food and game fish of India. It is largely used in stocking ponds throughout Tripura.

Labeo gonius (Hamilton Buchanan)

(Text-fig. 42)

1822. *Cyprinus gonius* Hamilton Buchanan, *Fish. Ganges*, : 292, 387 (type-locality : Freshwater rivers and ponds of Bengal).

1877. *Labeo gonius*, Day, *Fish. India*, : 537, pl. 127, fig. 1; 1889. Day, *Fauna Br. India, Fish.* **1** : 261.

1981. *Labeo gonius*, Jayaram, *Handbk. Freshw. Fish. India*, : 118, 120 (distribution and key to species).

Local name : Gonya.

English name : Nil.

Materials examined : (i) 1 ex., 110mm. SL.; Deo river, Kanchanpur, North Tripura; R. P. Barman and Party; 22.10.89. (ii) 2 exs., 115-120mm.SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

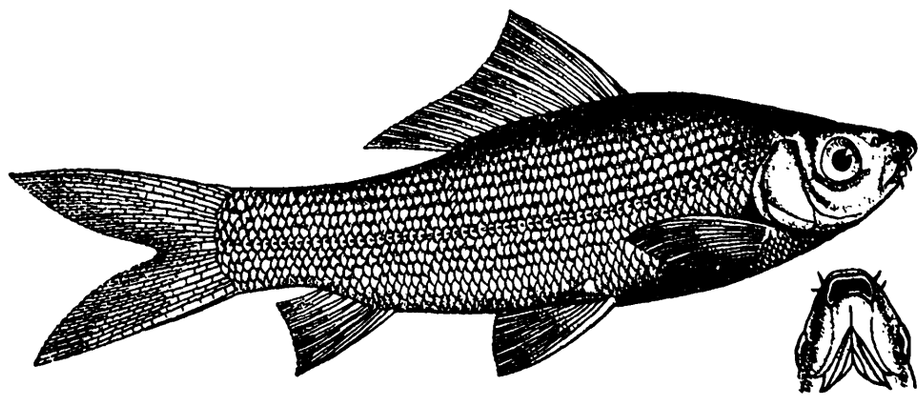


Fig. 42 : *Labeo gonius* (Hamilton Buchanan)

Diagnostic features :D. 15-17(2-3/13-14), P. 17, V. 9, A. 7(2/5), C. 19, LL. 71-84.

Head length 5.00 to 5.50 and body depth 4.00 to 4.50 in total length. Eye diameter 4.50 to 5.00 in head length. Lips thick, fringed, horny covering inside of both jaws. Snout with numerous pores. Barbels 2 pairs, rostral and maxillary pair, short. Dorsal fin inserted nearer to snout tip than to caudal fin base. Caudal fin deeply forked. 9 to 13 rows of scales between lateral line and base of pelvic fins.

Colour in alcohol : Dorsal surface greenish grey becoming light below. Scales darkest at their margins, many with red lunules on them.

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

Size : It attains almost 1,524mm. (5 feet) in total length.

Remarks : This is extensively employed for stocking tanks almost throughout Tripura.

Labeo nandina (Hamilton Buchanan)

(Text-fig. 43)

1822. *Cyprinus nandina* Hamilton Buchanan, *Fish. India,* : 300, 388, pl. 8, fig. 84 (type-locality : Mahananda river).

1877. *Labeo nandina,* Day, *Fish. India,* : 535, pl. 126, figs. 1 & 2; 1889. Day, *Fauna Br. India, Fish,* **1** : 258.

1981. *Labeo nandina,* Jayaram, *Handbk. Freshw. India,* : 118, 120 (distribution and key to species).

Local name : Nandin.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Agartala, West Tripura.

Diagnostic features : D. 24-26(2-3/22-24), P. 15, V. 9, A. 7(2/5), C. 19, LL. 42-44.

Head length 4.50 to 5.00 and body depth 4.00 in total length. Eye diameter 4.50 to 5.00 in head length. Barbels 2 pairs, short. Dorsal fin inserted midway between snout and end of base of anal fin. Caudal fin deeply forked. 5 rows of scales between lateral line and base of pelvic fins.

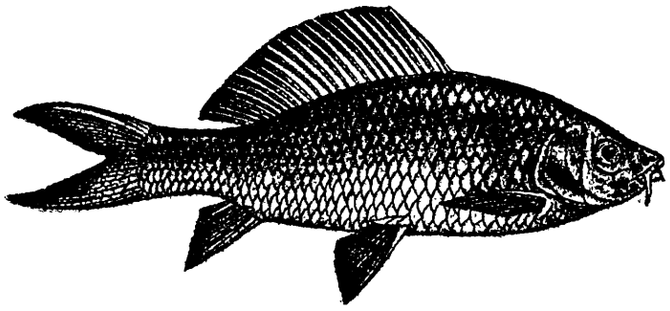


Fig. 43 : *Labeo nandina* (Hamilton Buchanan)

Colour in alcohol : Dorsal surface dark greenish, becoming lighter on sides and abdomen. A few cloudy blotches along the sides. The centres of many scales reddish.

Distribution : India : Assam, Tripura (West Tripura district), West Bengal. Bangladesh and Burma.

Size : It attains 900mm. (3 feet) in total length.

Labeo pangusia (Hamilton Buchanan)

(Text-fig. 44)

1822. *Cyprinus pangusia* Hamilton Buchanan, *Fish. Ganges,* : 285, 386 (type-locality : Kosi River).

1877. *Labeo pangusia,* Day, *Fish. India,* : 541, pl. 131, fig. 1; 1889. Day, *Fauna Br. India, Fish,* **1** : 266, 267.

1981. *Labeo pangusia,* Jayaram, *Handbk. Freshw. Fish. India,* : 118, 119 (distribution and key to species).

Local name : Loannee, Utti.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Bhattacharya (1988) from the Gumti reservoir, Tirthmukh, South Tripura.

Diagnostic features : D. 13(2/11), P. 15, V. 9, A. 7 (2/5), C. 19, LL. 40-42.

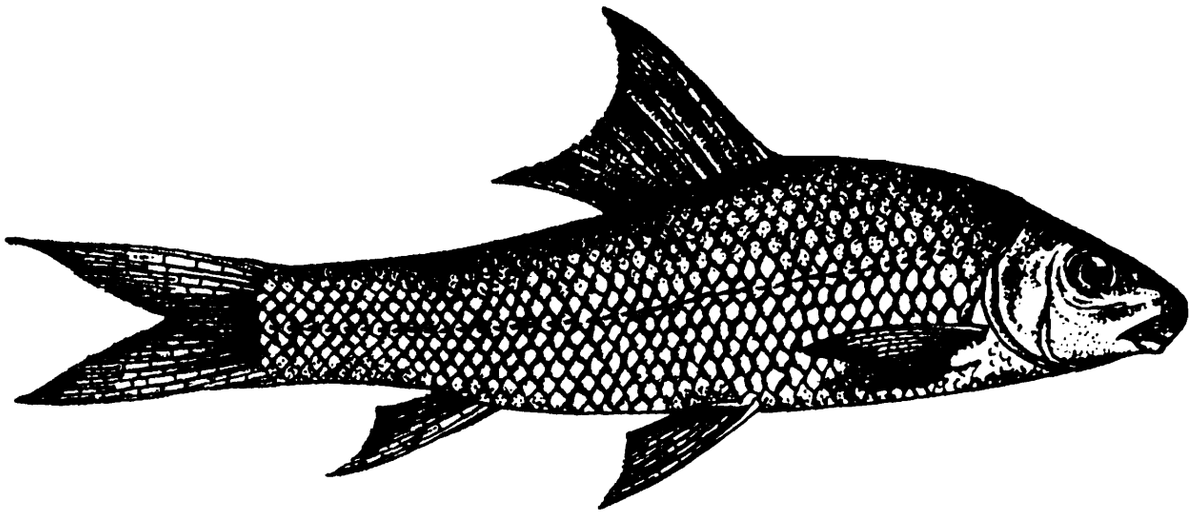


Fig. 44 : *Labeo pangusia* (Hamilton Buchanan)

Head length 5.25 to 6.00 and body depth 4.50 in total length. Eye diameter 4.50 to 5.50 in head length. Snout obtuse, projecting over the jaws and having a very distinct lateral lobe. Lips not fringed but thick, with a distinct inner fold which is not continued across the lower jaw. Snout covered with large pores. A cartilaginous covering to inner surface of both lips. Barbels 1 pair; short maxillary, hidden in the labial fold. Dorsal fin inserted nearer to tip of snout than to base of caudal fin. Caudal fin deeply forked. $5^1/_2$ to 6 rows scales between lateral line and base of pelvic fins.

Colour in alcohol : Body dull green, becoming lighter on sides and below. sometimes the base of each scale has a dark mark.

Distribution : India : Assam, Tripura (South Tripura district), West Bengal and Deccan. Pakistan, Bangladesh, Burma, Sind.

Size : It attains 635mm. (25.5 inches) in total length.

Labeo rohita (Hamilton Buchanan)

(Text-fig. 45)

1822. *Cyrpinus rohita* Hamilton Buchanan, *Fish. Ganges*, : 301, 388, Pl. 36, fig. 85 (type-locality : Freshwater rivers of Gangetic provinces).

1877. *Labeo rohita*, Day, *Fish. India*, : 538, pl. 127, fig. 4; 1889. Day, *Fauna Br. India, Fish*, **1** : 262.

1981. *Labeo rohita*, Jayaram, *Handbk. Freshw. Fish. India*, : 118, 120 (distribution and key to species).

Local name : Rui, Rohu.

English name : Rohu.

Materials examined : (i) 8 exs., 135-210mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85.

Diagnostic features : D. 15-16(3/12-13), P. 17, V. 9 A.7(2/5), LL. 40-42.

Head length 4.50 to 5.00 and body depth 4.50 in total length. Eye diameter 4.00 to 6.00 in head length. Lips thick, fringed, with a distinct inner fold above and below. Barbels a short, thin maxillary pair and sometimes a rostral pair

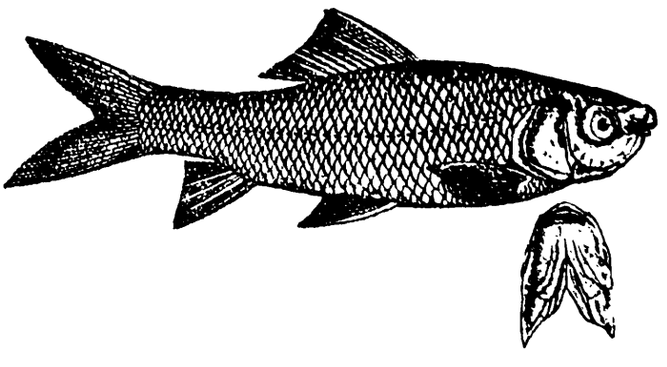


Fig. 45 : *Labeo rohita* (Hamilton Buchanan)
a : Lateral view
b : Ventral view of mouth region

present. Dorsal fin inserted almost midway between tip of snout and caudal fin base. Caudal fin deeply forked. 6 to $6^1/_2$ rows of scales between lateral line and base of pelvic fins.

Colour in alcohol : Dorsal surface bluish or brownish, becoming silvery on sides and ventral surface. Fins sometimes black.

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

Size : It attains 914mm. (3 feet) in total length.

Remarks : This is one of the most commercially important fishes of India. It is extensively used and cultured almost throughout Tripura.

Genus ***Chagunius*** H. M. Smith

1938. *Chagunius* H. M. Smith, *Proc. biol. Soc. Washington,* **51** : 157 (type-species : *Cyprinus chagunio* Hamilton Buchanan).

1981. *Chagunius*, Jayaram, *Handbk. Freshw. Fish. India,* : 123 (genus characters and distribution).

two ends directed backwards. Barbels 2 pairs, a pair each of rostral and maxillary, well developed. Dorsal fin inserted slightly anterior to pelvic fins, with 11 rays and a stout, strong, serrated spine. Anal fin with 8 rays. Caudal fin forked. Lateral line complete, with 44 to 48 scales.

Chagunius chagunio (Hamilton Buchanan) (Text-fig. 46)

1822. *Cyprinus chagunio* Hamilton Buchanan, *Fish. Ganges* : 295, 385 (type-locality : the Yamuna and in the rivers of Bihar and Bengal).

1878. *Barbus chagunio*, Day, *Fish. India,* : 559, pl. 136, fig. 1; 1889. Day, *Fauna Br. India, Fish.* **1** : 299, fig. 103.

1981. *Chagunius chagunio*, Jayaram, *Handbk. Freshw. Fish. India,* : 123 (genus characters and distribution).

Local name : Puti.

Eglish name : Nil.

Materials examined : No specimen obtained by me. Recorded by Lipton (1983-84) from the river Gumti, Tripura.

Diagnostic features : D. 11(3/8), P. 15, V. 9, A. 8(3/5), C. 19, LL. 44-48.

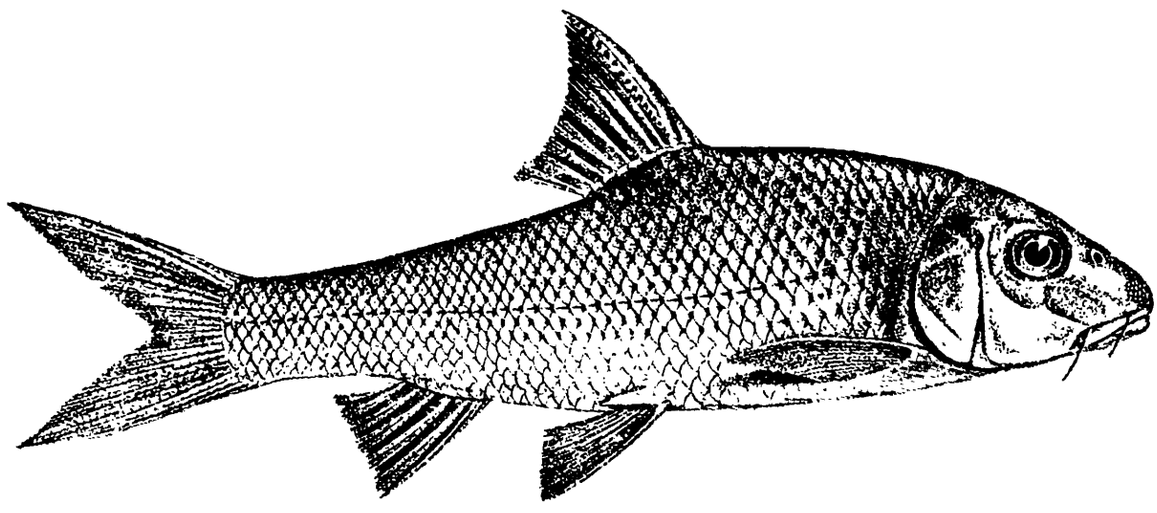


Fig. 46 : *Chagunius chagunio* (Hamilton Buchanan)

Body elongated with abdomen rounded. Snout overhanging, divided into a central and two lateral lobes by a groove extending upward and forward from the base of each rostral barbel. Snout and cheek of male specimen beset with short, horny tubercles which are smaller and fewer in female specimens. Mouth subterminal, U-shaped, with

Head length 4.50 to 5.00 and body depth 4.00 to 4.25 in total length. Eye diameter 5.00 to 6.50 in head length. Suborbital region, cheeks and anterior superior margin of the orbit often covered with numerous pores. Barbels 2 pairs, longer than the orbit. Dorsal fin inserted midway between

snout tip and caudal fin base, its last undivided ray is osseous, strong and serrated. Posterior anal fin ray may be elongated. Lateral line complete, $5^1/_2$ to $6^1/_2$ rows of scales between it and base of pelvic fin.

Colour in alcohol : Body uniformy silvery with a pinkish tinge. Fins reddish with lighter edges. Dorsal surface black. Young specimen have a silvery band along the side.

Distribution : India : Tripura : Gumti river. North India, along the base of the Himalayas, Nepal, Pakistan, Bangladesh, Burma and Thailand.

Size : It attains 457mm. ($1^1/_2$ feet) in total length.

Remarks : The numerous pores on snout and long dorsal fin rays of male specimens of this species considered to be the secondary sexual characters (Hora, 1933).

Genus *Tor* Gray

Mahaseers

1833-34. *Tor* Gray, *Illustrations of Indian Zoology, Hardwicke,* 2 : 86 (type-species : *Cyrpinus tor* Hamilton Buchanan =*Tor hamiltoni* Gray).

1981. *Tor,* Jayaram, *Handbk. Freshw. Fish. India,* : 123, 124 (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Lips fleshy, continuous at angle of mouth. Posterior lip with or without a median lobe and post labial groove continuous, lip condition variable. Barbels 2 pairs, a pair each of maxillary and rostral. Dorsal fin inserted above pelvic fins, with 12 to 13 rays and a strong, stout, smooth spine. A scaly sheath present at base of dorsal fin. Anal fin with 7 to 8 rays. Caudal fin forked. Lateral line complete with 23 to 28 scales.

Key to the species

Length of head considerably greater than body depth. ..... ***T. putitora***

Length of head shorter or more or less equal to body depth. ..... ***T. tor***

Tor putitora (Hamilton Buchanan)

(Text-fig.. 47)

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

1981. *Tor putitora,* Jayaram, *Handbk. Freshw. Fish. India,* : 124, 125 (distribution and key to species).

Local name : Mahasol.

English name : Golden Mahaseer.

Materials examined : No specimen obtained by me. Recorded by Lipton (1983-84) from upper reaches of Raima rivulet (Gumti reservoir).

Diagnostic features : D. 12(3/9), P. 19, V. 9, A. 7-8(2-3/5), LL. 25-28.

Head length 4.00 to 4.50 and body depth 5.50 to 7.00 in total length. Eye diameter 3.00 to 5.30 in head length. Barbels 2 pairs, almost equal length and as long as the orbit. Dorsal fin inserted midway between tip ofsnout and caudal fin base. Dorsal spine bony, strong, smooth equal to or shorter than body depth. $2^1/_2$ rows of scales between lateral line and base of pelvic fin.

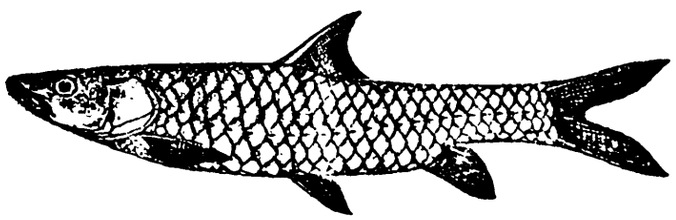


Fig. 47 : *Tor putitora* (Hamilton Buchanan)

Colour in alcohol : Dorsal surface usually greenish, sides light pink with a silvery white abdomen. A broad light greyish blue or purplish lateral band. Fins often greyish green.

Distribution : India : Tripura : South Tripura district. All along the Himalayas, Nepal, Pakistan and Bangladesh.

Size : It attians 2,743mm. (9 feet) in total length and can weigh up to 100 kg.

Remarks : It is a popular game fish of India found to live in slow and shallow streams along

with rivers on the Himalayan foothills. This fish exhibits sexual dimorphism, lips and snouts are swollen during breeding season.

Tor tor (Hamilton Buchanan)

(Text-fig. 48)

1822. *Cyprinus tor* Hamilton Buchanan, *Fish. Ganges,* : 305, 388 (type-locality : the Mahananda river).

1878. *Barbus tor,* Day, *Fish. India,* : 564, pl. 136, fig. 5 and pl. 140, fig. 1; 1889. Day, *Fauna Br. India, Fish,* **1** : 307, fig. 104.

1981. *Tor tor,* Jayaram, *Handbk. Freshw. Fish. India,* : 124, 126 (distribution and key to species).

Local name : Mahasol.

English name : Tor mahaseer.

Materials examined : 1 ex., 104mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party, 25.6.90.

Distribution : India : Foot hills of the Himalayas, Madhya Pradesh, Bihar, North Bengal, Assam and Tripura (South Tripura district). Pakistan, Bangladesh and China.

Size : It attains 1,524mm. (5 feet) in total length.

Remarks : It is also a popular game fish of India.

Genus ***Cirrhinus*** Oken

1817. *Cirrhinus* (Oken), Cuvier, *Regne Animal.,* **2,** ed. 1: 193 (type-species : *Cirrhinus cirrhousus* Bloch).

1981. *Cirrhinus,* Jayaram, *Handbk. Freshw. Fish. India,* : 126 (genus characters and key to species).

Body elongated and compressed with abdomen rounded. Mouth broad, transverse. Upper lip fringed or entire not continuous with the lower lip. Lower jaw sharp with a symphysial knob and without any cartilaginous covering inside the jaw. Dorsal fin inserted anterior to pelvic fins, with 10 to 19 rays and without any osseous ray. Anal fin with 7 to 8 rays. Caudal fin forked. Lateral line complete with 35 to 45 scales.

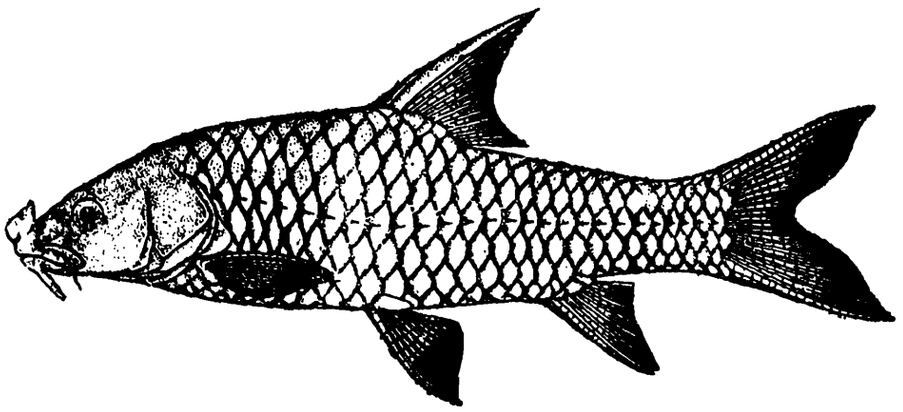


Fig. 48 : *Tor tor* (Hamilton Buchanan)

Diagonostic features : D. 12(3/9), P. 19, V. 9, A. 7-8(2-3/5), LL. 25-27.

Head length 4.00 to 5.00 and body depth 4.30 to 5.50 in total length. Eye diameter 3.00 to 4.00 in head length. Barbels 2 pairs, maxillary slightly longer than rostral but shorter than the orbit. Dorsal fin inserted opposite or slightly ahead of pelvic fin origin. Dorsal spine smooth, bony, shorter than body depth. $2^{1}/_{2}$ rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Dorsal surface greyish green, becoming silvery shot with gold on sides and beneath. Fins usually orange.

Key to the species

Dorsal fin with 8 to 9 branched rays. Lateral line scales 35 to 38. ..... ***C. reba***

Dorsal fin with 12 to 13 branched rays. Lateral line scales 40 to 45. ..... ***C. mrigala***

Cirrhinus mrigala (Hamilton Buchanan)

(Text-fig. 49)

1822. *Cyprinus mrigala* Hamilton Buchanan, *Fish. Ganges,* : 279, 386, pl. 6, fig. 79 (type-locality : ponds and freshwater rivers of the Gangetic provinces).

1877. *Cirrhina mrigala,* Day, *Fish. India, :* 547, pl. 129, fig. 4; 1889. Day, *Fauna Br. India, Fish,* **1** : 278.

1981. *Cirrhinus mrigala,* Jayaram, *Handbk. Freshw. Fish. India, :* 127 (distribution and key to species).

Local name : Mrigala, Mrigal.

English name : Mrigal.

Materials examined : (i) 17 exs., 72-92mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 2 exs., 75-97mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 25.6.90.

Diagnostic features : D. 15-16(3/12-13), P. 15, V. 9, A. 8(3/5), C. 19, LL. 40-45.

Head length 5.00 to 5.25 and body depth 4.00 to 5.50 in total length. Eye diameter 3.50 to 4.00 in head length. Upper lip entire. Barbels 1 pair, rostral. Height of dorsal fin almost equal to body depth, its origin much in advance of pelvic fin origin, nearer to tip of snout than to base of caudal fin. Caudal fin deeply forked. $5^1/_2$ to 6 rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Dorsal surface silvery dark grey, sometimes having a coppery ringe. Pectoral, pelvic and anal fin orange stained with black.

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

Size : It attains 914mm. (3 feet) in total length.

Remarks : It is an excellent fish for stocking tanks and reservoirs all over India and being a popular game it offers good sport on the rod.

Cirrhinus reba (Hamilton Buchanan)

(Text-fig. 50)

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

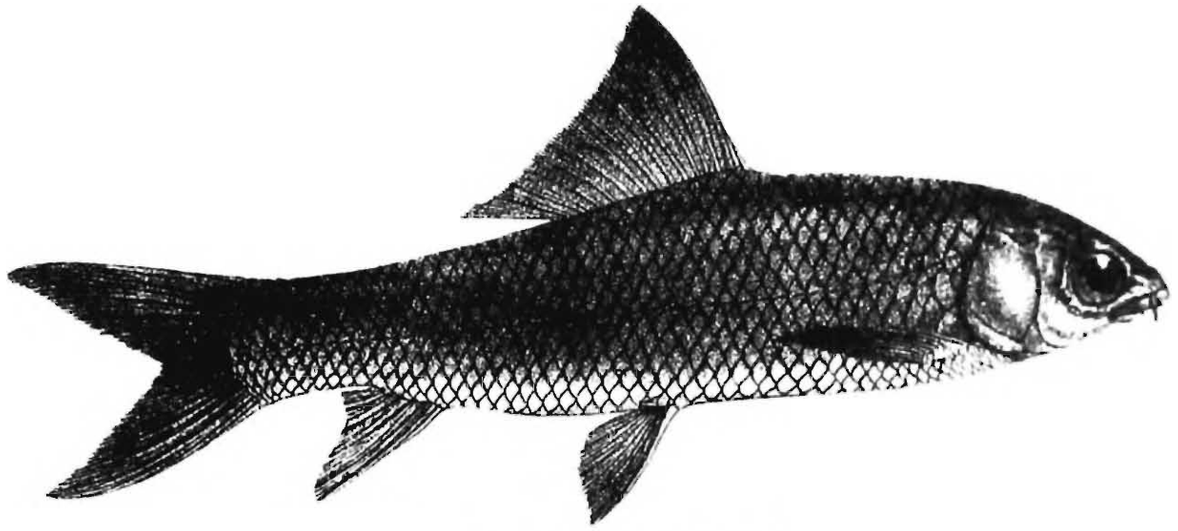


Fig. 49 : *Cirrhinus mrigala* (Hamilton Buchanan)

1877. *Cirrhina reba,* Day *Fish. India,* : 549, pl. 130, fig. 3; 1889, Day, *Fauna Br. India, Fish,* **1** : 279, fig. 96.

1981. Cirrhinus reba, Jayaram, *Handbk. Freshw. Fish. India, :* 127 (distribution and key to species).

Local name : Batta.

English name : Reba.

Materials examined : (i)5 exs., 140-152mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 4 exs., 50-82mm.SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89. (iii) 12 exs., 50-112mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89.

Diagnostic features : D. 10-11(2-3/8-9), P. 16, V. 9, A. 8(3/5), C. 19, LL. 35-38

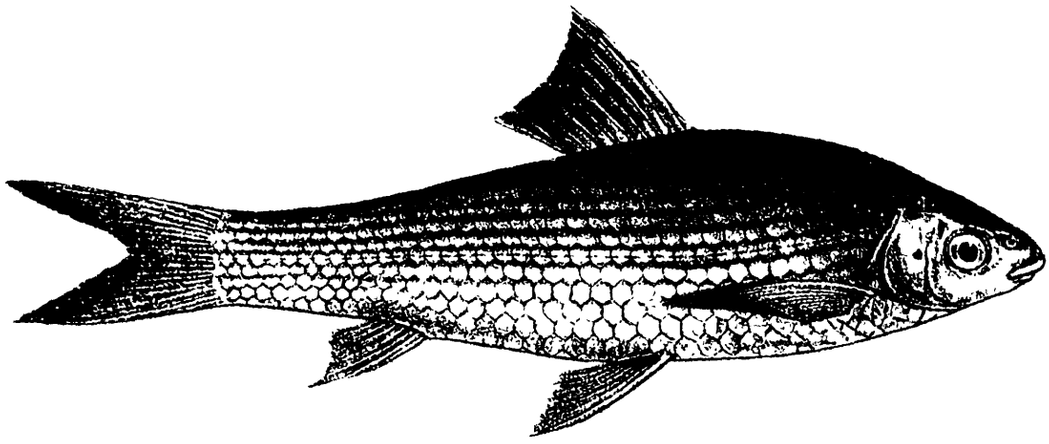


Fig. 50 : *Cirrhinus reba (Hamilton Buchanan)*

Head length 5.50 to 6.50 and body depth 5.00 to 5.50 in total length. Eye diameter 4.00 to 4.25 in head length. Upper lip fringed in young specimens but often entire in adult. A thin cartilaginous layer covering inside of lower jaw. Barbels 1 pair, rostral. Dorsal fin origin anterior to pelvic fin origin, nearer to tip of snout than to caudal fin base. Caudal fin deeply forked. 5 to 6 rows of scales between lateral line and pelvic fin base.

Colour in alcohol : Silvery, scales usually darkest at their edges forming bluish longitudinal bands above lateral line. Young specimens have sometimes a leaden coloured band along the sides or even a black tip to the dorsal fin.

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

Size : It attains 304mm. (1 foot) in total length.

Remarks : It is one of the common fishes of Tripura.

Genus ***Catla*** Valenciennes

1844. *Catla* Valenciennes, *Hist. Nat Poiss.*, **18** : 140 (type-species : *Cyprinus catla* Hamilton Buchanan).

1981. *Catla*, Jayaram, *Handbk. Freshw. Fish. India*, : 131 (genus characters and distribution).

Body deep and compressed with abdomen rounded. Mouth terminal without barbels. Upper lip absent. Lower jaw with a movable articulation at the symphysis, but without a prominent knob. Dorsal fin inserted above tip of pectoral fins, with 17 to 19 rays and no spine. Anal fin with 8 rays. Caudal fin forked. Lateral line complete, with 40 to 43 scales.

Catla catla (Hamilton Buchanan)

(Text-fig. 51)

1822. *Cyprinus catla* Hamilton Buchanan, *Fish. Ganges*, : 287, 387, pl. 13, fig. 81 (type-locality : in the rivers and tanks of Bengal).

1878. *Catla buchanani*, Day, *Fish. India*, : 553, pl. 134, fig. 5; 1889. Day, *Fauna Br. India, Fish*, **1**, : 287, fig. 99.

1981. *Catla catla*, Jayaram, *Handk. Freshw. Fish. India*, : 131 (distribution).

Local name : Catla.

English name : Catla.

Materials examined : (i) 2 exs., 145-150mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 7 exs., 115-210mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 18.8.85. (iii) 2 exs., 130-150mm. SL.; Kumarghat, North Tripura; R. P. Barman and party; 3.7.90.

Diagnostic features : D. 17-19(3-4/14-16), P. 21, V. 9, A. 8(3/5), C. 19, LL. 40-43.

Head length 4.25 to 4.75 and body depth 3.00 to 3.50 in total length. Eye diameter 6.00 to 7.00 in head length. Barbels absent. Dorsal fin inserted

anterior to pelvic fins, nearer to tip of snout than to caudal fin base. Caudal fin forked. $5^1/_2$ to $6^1/_2$

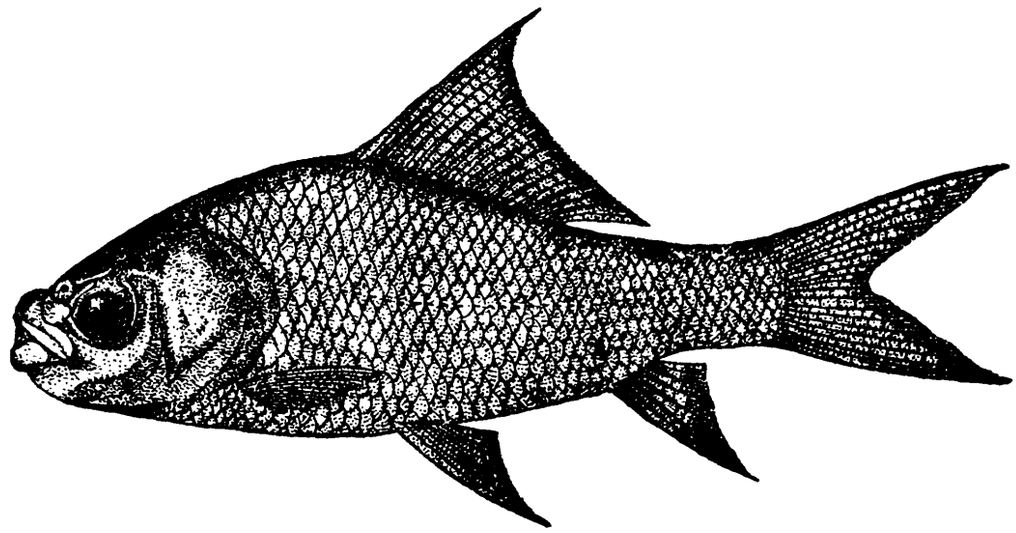


Fig. 51 : *Catla catla* (Hamilton Buchanan)

rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Dorsal surface greyish, silvery on sides and vental surface. Fins dark coloured.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Sri Lanka and Thailand.

Size : It attains 1,828mm. (6 feet) in total length.

Remarks : It is one of the very important major carps of considerable economic importance of India, Pakistan and Bangladesh and an esteemed food fish. It is largely employed for stocking tanks and reservoirs throughout the country.

A specimen of catla weighing 69 kg. was collected from the Gumti reservoir of Tripura in 1987.

Genus ***Ctenopharyngodon*** Steindachner

Grass Carp, White Amur

1866. *Ctenopharyngodon* Steindachner, *Verh. Zool. Bot. Ges. Wien.*, **16** : 782 (type-species : *Ctenopharyngodon laticeps* Steindachner).

1981. *Ctenopharyngodon*, Jayaram, *Handbk. Freshw. Fish. India*, : 131,132 (genus characters and distribution).

Body almost elongated, subcylindrical anteriorly and laterally compressed posteriorly, with abdomen rounded. Mouth terminal, maxilla not extending to front margin of the orbit. Upper jaw slightly longer than lower and protractile. Barbels absent. Dorsal fin origin slightly ahead of pelvic fins, nearer to tip of snout than to base of caudal fin, with 10 rays and without any spine. Anal fin with 10 rays, Caudal fin forked. Lateral line complete with 40 to 45 scales.

Ctenopharyngodon idella (Valenciennes)

(Text-fig. 52)

1841. *Leuciscus idella* Valenciennes, *Hist. Nat. Poiss.*, **17** : 342 (type-locality : China).

1981. *Ctenopharyngodon idella*, Jayaram, *Handbk. Freshw. Fish. India*, : 132 (distribution).

Local name : Grass Carp.

English name : Grass Carp.

Materials examined : 2 exs., 180-195mm. SL.; Udaipur; South Tripura; R. P. Barman and party; 26.6.90.

Diagnostic features : D.10 (3/7), A. 11(3/8), LL.43-45

Head length 4.00 to 4.50 and body depth 3.80 to 4.80 in standard length. Head broad with short rounded snout. Upper jaw slightly longer than lower. Mouth terminal. Barbels absent. Dorsal fin

rounded, inserted slightly anterior to pelvic fins. Pelvic fins not reaching vent. Anal fin rounded. Lateral line running along middle of caudal peduncle. Caudal fin forked.

Colour in alcohol : Body dark grey superiorly and silvery sides and ventral surface. Fins dark. Base of each scale dark brown.

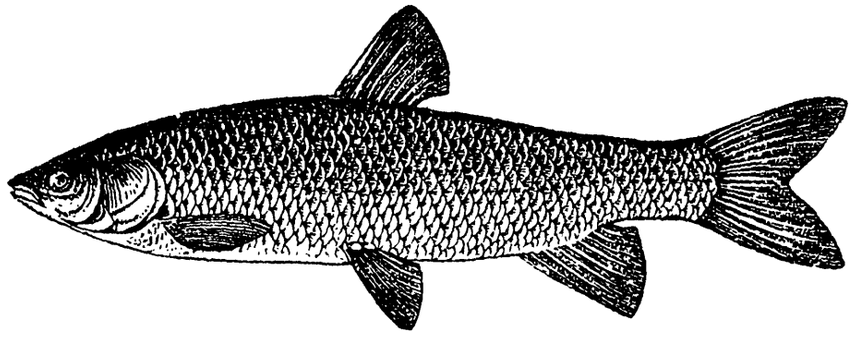


Fig. 52 : *Ctenopharyngodon idella* (Valenciennes)

Distribution : This fish is naturally available in Amur region (Siberia and Manchuria). China, U. S. S. R. lower reaches of River Amur. The ever consignment of grass carp brought to India from Hong Kong, originally broughout to Hong Kong from mainland of China and kept there stunted in ponds before being transplanted to India on 29th December, 1959 and thereafter was distributed to various states of India (Jhingran, 1983).

Size : It attains more than 1200mm. (4 feet) in total length.

Remarks : This fish has been introduced in different parts of Tripura by the State Fisheries department. Though it is a freshwater fish it can tolerate slightly brackish water like silver carp.

Subfamily GARRINAE

Mouth inferior. A suctorial disc on ventral surface of head present or absent. Pectoral fins laterally inserted. Upper and lower lip may or may not be connected.

Key to the genera

Lower lip modified into a circular or elliptical sucking disc. Upper and lower lip continuous. ..... ***Garra***

Lower lip simple without any modification. Upper and lower lip not continuous..... ..... ***Crossocheilus***

Genus ***Crossocheilus*** van Hasselt

1823. *Crossocheilus* van Hasselt, *Algem. Konst. Letterbode*, **2** : 132(type-species : *Crossocheilus oblongus* van Hasselt).

1981. *Crossocheilus*, Jayaram, *Handbk. Freshw. Fish. India*, : 133-134 (genus characters and distribution).

Body almost elongated with abdomen rounded. Mouth inferior. Upper and lower lip not continuous. Lower lip without any suctorial disc. Barbels 1 pair, rostral. Dorsal fin inserted considerably nearer to tip of snout than to base of caudal fin, with 10 to 11 rays and no spine. Anal fin with 7 rays. Caudal fin deeply forked. Lateral line complete, with 38 to 40 scales.

Crossocheilus latius latius (Hamilton Buchanan)

(Text-fig. 53)

1822. *Cyprinus latius* Hamilton Buchanan, *Fish. Ganges* : 345, 393 (type-locality : the Tista River, North Bengal).

1877. *Cirrhina latia*, Day, *Fish. India*, : 548, pl.130, fig. 4; 1889. Day, *Fauna Br. India, Fish*, **1** : 279.

1981. *Crossocheilus latius latius*, Jayaram, *Handbk. Freshw. Fish. India*, : 134 (distribution and key to species).

Local name : Kalabatta.

English name : Latia.

Materials examined : (i) 2 exs., 40-52 mm. SL.; Udaipur, South Tripura; R. P. Barman and

party; 16.8.85. (ii) 1 ex., 33 mm. SL.; Sonamura; West Tripura; R. P. Barman and party; 18.8.85. (iii) 1 ex., 87 mm. SL.; Gumti river, Udaipur, South Tripura; N. C. Ghose; 3.11.89.

It is a highly variable species particularly in head length and body depth. It has much the character of a loach or of a *Garra,* adhering to stones in river beds (Shaw and Shebbeare, 1937).

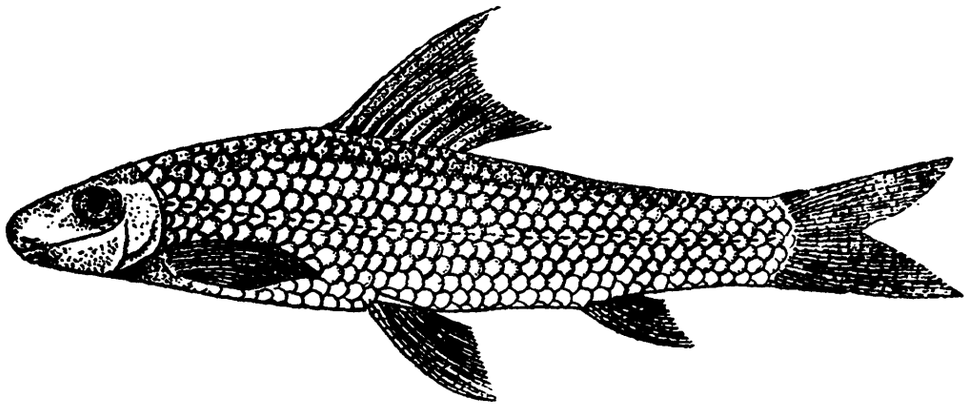


Fig. 53 : *Crossocheilus latius latius* (Hamilton Buchanan)

Diagnostic features : D. 10-11 (3/7-8), P. 15, V. 9, A. 7(2/5), C. 19, LL. 38-40.

Head length 6.00 to 6.50 and body depth 5.50 to 7.00 in total length. Eye diameter 3.50 to 5.00 in head length. Snout overhanging mouth, with a small lateral lobe. Upper lip deeply indented on the edge. Lower lip with a sharp horny covering. Barbels 1 pair, rostral and sometimes another a short maxillary pair. Dorsal fin inserted midway between snout tip caudal fin base in young specimens but nearer to snout tip in adult specimens. Caudal fin deeply forked, upper lobe sometimes longer. $3^1/_2$ to $4^1/_2$ rows of scales between lateral line and base of pelvic fin.

Colour in alcohol : Dorsal surface brownish olive and lighter on sides, with irregular black spots. Dorsal and caudal fins yellowish and other fins orange.

Distribution : India : the Himalayas, Uttar Pradesh, Maharashtra, Punjab, Bihar, West Bengal, Tripura (South & West Tripura districts), Orrissa and Deccan. Pakistan, Nepal and Bangladesh.

Size : It attains 200 mm. (8 inches) in total length.

Remarks : This fish has been recorded for the first time from Tripura by me (Barman, 1988).

Genus ***Garra*** Hamilton Buchanan

1822. *Garra* Hamilton Buchanan, *Fish. Ganges.* : 343, 393 (type-species : *Garra lamta* Hamilton Buchanan).

1981. *Garra,* Jayaram, Handbk. *Freshw. Fish. India.* : 134-135 (genus characters and distribution).

Body elongated, subcylindrical, compressed with abdomen rounded. Mouth inferior, transverse and semicircular. Sometimes a proboscis present. A suctorial disc of semi-cartilaginous pad present on the chin, formed on the lower lip. Barbels 2 pairs or 1 pair. Dorsal fin inserted slightly anterior to pelvic fins, with 9 to 12 rays and without any spine. Anal fin with 6 to 8 rays. Caudal fin slightly emarginate. Lateral line complete with 32 to 40 scales

Garra gotyla gotyla (Gray)

(Text-fig. 54)

1832. *Cyprinus gotyla* Gray, *Ill. Ind. Zool. London,* **1**, pl. 88, Figs. 3, 3a (type-locality : Northern India).

1981. *Garra gotyla gotyla,* Jayaram, *Handbk. Freshw. Fish. India,* : 136, 137 (distribution and key to species).

Local name : Ghor poia.

English name : Stone sucker.

Materials examined : No specimen obtained by me. It was recorded by Datta (1977) from Tripura.

Diagnostic features : D. 10(3/7-8), P. 15, V. 9, A. 7(2/5), C. 17, LL. 32-35.

Head length 3.52 to 4.20 and body depth 3.70 to 5.00 in standard length. Eye diameter 3.00 to 6.28 in head length. Snout with a well-developed



Fig. 54 : *Garra gotyla gotyla* (Gray)

median proboscis and a transverse lobe at the tip. The free extremity of the proboscis, the transverse lobe and the lateral side of head ahead of nostrils are covered with several large snipy tubercles. Barbels 2 pairs, anterior pair equal to or shorter than the orbit and posterior pair much smaller. Dorsal fins inserted anterior to pelvic fins. Caudal fin forked.

Colour in alcohol : Body bluish grey superiorly and pale yellow abdomen.

Distribution : India : Assam, Tripura all along the Himalayas, the Chota-Nagpur plateau and the Vindhya Satpura mountains of the Indian Peninsula, Andhra Pradesh. Nepal, Burma, Pakistan and Bangladesh.

Size : It attains at least 152 mm. (6 inches) in total length.

Remarks : I have recorded this fish for the first time from Andhra Pradesh. (Barman, 1993).

Family PSILORHYNCHIDAE

Body flattened on ventral surface. Head and ventral surface of body without scales. Mouth small, transverse and inferior. Barbels absent. Paired fins horizontally inserted, with outer rays simple; atleast 4 of pectopal and 2 of pelvic fin rays simple. Dorsal fin with 10 to 12 rays. Anal fin with 7 rays. Caudal fin forked, upper lobe longer. Lateral line complete, with 32 to 34 scales.

Genus *Psilorhynchus* McClelland

1839. *Psilorhynchus* McClelland, *Asiat. Res.*, **19** : 300, 428 (type-species : *Cyprinus balitora* Hamilton Buchanan).

1981. *Psilorhynchus*, Jayaram, *Handbk. Freshw. Fish. India*, : 139-140 (genus characters and distribution).

Characters of genus are same as those of family characters.

Key to the species

Body spindle-shaped. Ventral surface behind pectoral fin base with scales. Pectoral fins with 4 simple rays ..... ***P.* succatio**

Body not spindle-shaped. Ventral surface behind pectoral fin base with irregularly distributed scales. Pectoral fins with 5 simple rays. .....***P. balitora***

Psilorhynchus balitora (Hamilton Buchanan)

(Text-fig. 55)

1822. *Cyprinus balitora* Hamilton Buchanan, *Fish. Ganges*, : 348, 394 (type-locality : rivers of north-eastern Bengal).

1877. *Psilorhynchus balitora*, Day, *Fish. India*, : 527, pl. 121, fig. 7 and pl. 122, fig. 3; 1889. Day *Fauna Br. India, Fish*, **1** : 244-245, fig. 86.

1981. *Psilorhunchus balitora*, Jayaram, *Handbk. Freshw. Fish. India*, : 140 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : 3 exs., 46-55 mm. SL.;

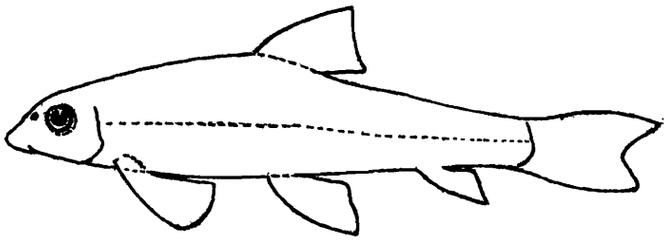


Fig. 55 : *Psilorhynchus balitora* (Hamilton Buchanan)

Amarpur, South Tripura; R. P. Barman and party; 10.8.85.

Diagnostic features : D. 9-10(2/7-8), P. 5/9-10, V. 9, A. 7, C. 18, LL. 34-35.

Head length 5.25 to 5.75 and body depth 5.50 in total length. Eye diameter 3.50 to 4.25 in head length. Margins of lips covered with round hard pores. Dorsal fin inserted ahead of pelvic fins. Caudal fin forked. $2^1/_2$ rows of scales between lateral line and pelvic fin base.

Colour in alcohol : Body reddish brown, with irregular black blotches forming badly-defined bands, in places passing over the back. Three bars on caudal and some black on the anterior half of dorsal fin.

Distribution : India : Assam, Tripura (South Tripura district), North Bengal, Yamuna river, in Delhi. Gomti river, Lucknow. Bangladesh and Burma.

Size : It attains 62 mm. ($2^1/_2$ inches) in total length.

Remarks : P. balitora is found to inhabit in hill streams and rapids. Commercially less important fish due to its small size.

Psilorhynchus sucatio (Hamilton Buchanan)

(Text-fig. 56)

1822. *Cyprinus sucatio* Hamilton Buchanan, *Fish. Ganges,* : 347, 393 (type-locality : rivers of North Bengal).

1981. *Psilorhynchus sucatio,* Jayaram, *Handbk. Freshw. Fish. India,* : 140 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : 5 exs., 50-58 mm. SL; Muhuri river, Belonia, South Tripura; R. P. Barman and party ; 26.10.89.

Diagnostic features : D. 9-10(2/7-8), P. 4/9-10; V. 2/7-8, A. 7(2/5), C. 18, LL. 35-38.

Head length 6.00 to 6.25 and body depth 5.50 in total length. Eye diameter 3.00 to 3.50 in head length. Dorsal fin inserted anterior to pelvic fins. Caudal fin deeply forked, with upper lobe slightly longer.

Colour in alcohol : Body light brown with irregular black blotches above and below the lateral line. Greenish with scattered dots on sides, these dots are close together presenting a cloud-like appearance, whitish below.

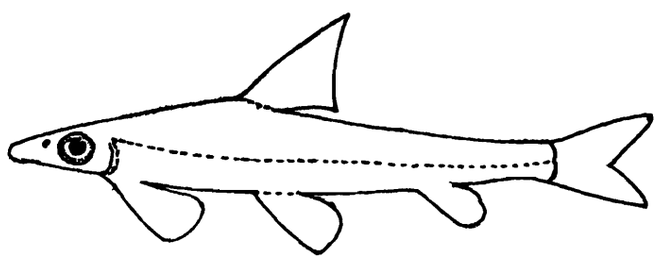


Fig. 56 : *Psilorhynchus sucatio* (Hamilton Buchanan)

Distribution : India : Assam, North Bengal, Tripura (South Tripura district). Bangladesh.

Size : It attains 81 mm. (3 inches) in total length.

Remarks : P. sucatio is being recorded here for the first time from Tripura. It is also a economically less important fish due to its small size.

Family HOMALOPTERIDAE

Head and anterior part of body depressed, ventral surface flattened. Paired fins inserted horizontally and 2 rays of pectoral fins simple (subfamily : Homalopterinae) or paired fins not inserted horizontally and only outer ray of pectoral fin simple (subfamily : Noemacheilinae). Swimbladder in two connected lateral parts (Subfamily : Homalopterinae) or swimbladder reduced to two connected lateral parts and a small posterior part (Subfamily : Noemacheiline).

Genus ***Noemacheilus*** van Hasselt

1823. *Noemacheilus* van Hasselt, *Alg. Konst. Letterbode,* **2** (35) : 133 (type-species : *Noemacheilus fasciatus* van Hasselt).

1987. *Noemacheilus,* Menon, *Fauna of India, Pisces,* **4** *(1)* : 36-219 (revision).

Body elongated and almost cylindrical. No preorbital spine on head. Mouth inferior. Dorsal

fin with 8 to 20 rays and without any spine. Anal fin with 6 to 8 rays. Caudal fin emarginate, truncate or lunate. Lateral line complete or incomplete.

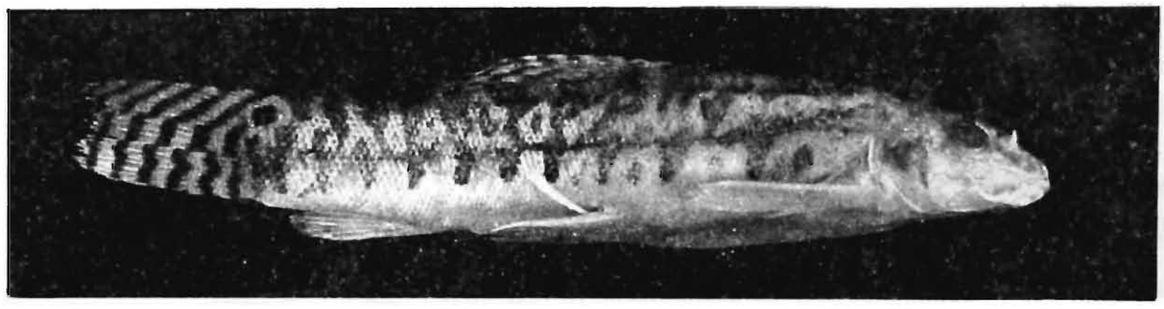


Fig. 57 : *Noemacheilus botia* (Hamilton Buchanan)

Menon (1987) has included this genus under the family Homalopteridae.

Key to the species

1. Caudal fin forked. ..... ***N. scaturigina***

   Caudal fin slightly emarginate. ..... 2.

2. Dorsal fin with 12 to 14 rays. .....***N. botia.***

   Dorsal fin with 9 to 10 rays..***N. spilopterus.***

Noemacheilus botia (Hamilton Buchanan)

(Text-fig. 57)

1822. *Cobitis botia* Hamilton Buchanan, *Fish. Ganges,* : 350, 394 (type-locality : rivers of northern parts of Bengal).

1987. *Noemacheilus botia*, Menon, *Fauna of India, Pisces,* **4** (1) : 141-144 (revision).

Local name : Ranimach.

English name : Striped Loach.

Materials examined : (i) 9 exs., 47–61 mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 3 exs., 52-60 mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 26.6.90.

Diagnostic features : D. 12-14(3/9-11), P. 12, V. 8, A. 8(3/5), C. 18.

Head length 4.50 to 5.50 and body depth 4.75 in total length. Eye diameter 3.75 to 4.00 in head length. Barbels 3 pairs, maxillary pair extending to below hind border of the orbit. Dorsal fin inserted slightly nearer to snout tip than to caudal fin base. Caudal fin slightly emarginate. Lateral line complete.

Colour in alcohol : Body greyish with 10 to 14 short vertical bars on lateral line and a number of irregular blotches above it, sometimes forming bands over back. Dorsal fin orange with rows of black spots and caudal fin with about 7 irregular bars bent at an angle. A black ocellus on the superior part of caudal fin base.

Distribution : India : Throughout Tripura and North India and Andhra Pradesh. Pakistan, Bangladesh, Nepal, Burma and Sri Lanka.

Size : It attains at least 76mm. (3 inches) in total length.

Remarks : I have recorded this species from Andhra Pradesh (Barman, 1993). It is a very common fish found throughout Tripura. Fishery value of this fish is less.

Noemacheilus scaturigina (McClelland)

(Text-fig. 58)

1839. *Cobitis (Schistura) scaturigina* McClelland, *Asiat. Res.*, **19.** : 308, 443, Pl. 53, fig. 6 (from a figure from Hamilton Buchanan collection).

1839. *Schistura zonata* McClelland, *Asiat. Res.*, **19** : 308, 441, pl. 53, fig. 1 (type-locality : Upper Assam).

1878. *Nemachilus zonatus*, Day, *Fish. India,* : 618, pl. 156, fig. 2; 1889. Day, Fauna Br. India, Fish, **1** : 233.

1987. *Noemacheilus scaturigina*, Menon, *Fauna of India, Pisces,* **4** (1) : 86-89 (Synonymy and revision).

Local name : Ranimach.

English name : Loach.

Materials examined : No specimen obtained by me. It was recorded by Datta (1977) from Tripura.

Diagnostic features : D. 11(3/8), P. 10, V. 8, A. 6(1/5), C. 19.

Head length 4.75 to 5.20 and body depth 6.50 to 7.20 in total length. Eye diameter 3.75 to 4.25

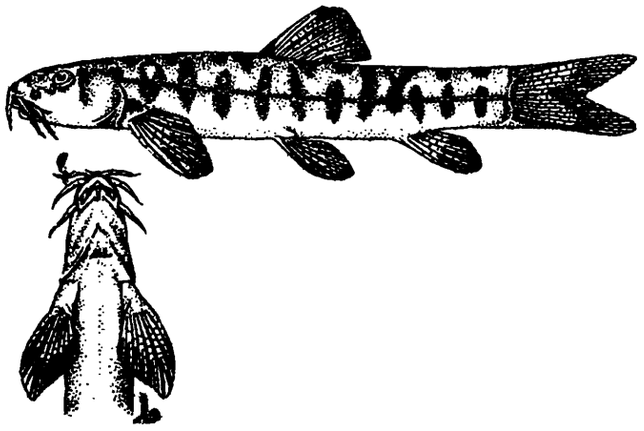


Fig. 58 : *Noemacheilus scaturigina* (McClelland)
a : Lateral view
b : Ventral view of mouth region

in head length. Barbels 3 pairs, all about as long as the orbit. Dorsal fin inserted midway between tip of snout and base of caudal fin. Caudal fin forked, lobes pointed. Lateral line complete.

Colour in alcohol : Body greyish above, olivaceous below with 9 to 12 dark vertical bands. A narrow black bar on base of caudal fin with one or two series of dots forming a V-shaped pattern on the fin itself. A black spot at base of anterior dorsal fin rays.

Distribution : India : Tripura and Eastern sub-Himalayas.

Size : It attains at least 50 mm (2 inches) in total length.

Noemacheilus spilopterus Valenciennes

1844. *Cobits spilopterus* Valenciennes (in Cuvier and Valenciennes), *Hist. nat. Poiss.*, **18** : 27, pl. 522 (type-locality : Assam).

1878. *Nemacheilus spilopterus*, Day, *Fish. India*, : 620, pl. 156, fig. 9; 1889. Day, *Fauna Br. India, Fish*, **1** : 235.

1981. *Noemacheilus spilopterus*, Jayaram, *Handbk. Freshw. Fish. India*, : 157, 170 (distribution and key to species).

Local name : Ranimach.

English name : Loach.

Materials examined : No specimen obtained by me. It was recorded by Datta (1977) from Tripura.

Diagnostic features : D. 9-10(2/7-8), P. 15, V. 7, A. 7(2/5), C. 19.

Head length 5.75 to 6.00 in total length. Eyes situated near the summit of head and in or rather before the middle of its length. Barbels 3 pairs, short. Dorsal fin inserted midway between tip of snout and base of caudal fin. Caudal fin slightly emarginate.

Colour in alcohol : Body greenish yellow, with 11 to 15 irregular bands crossing the back and a black band across the root of caudal fin. A black blotch at base of first three dorsal fin rays, two bands along the fin, another along its base and three on caudal fin.

Distribution : India : Tripura, Assam and the Himalayas.

Family COBITIDAE

Loaches

Body worm-like to fusiform. Mouth subterminal. Lips thick, fleshy and papillated. Pharyngeal teeth in one row. Jaws and palate without teeth. Barbels present. An erectile spine present near the orbit. Vertical fins spineless. Lateral line complete, incomplete or absesnt. Body with cycloid scales when present, usually immersed in mucous, sometimes present on head. Swimbladder entirely or partially enclosed in a bony capsule.

Key to the subfamilies

Two pairs of rostral barbels placed very close to each other. Caudal fin well forked. .... BOTINAE

Only one pair of rostral barbels. Caudal fin rounded or slightly emarginate. ....COBITINAE

Subfamily BOTINAE

An erectile spine originating from the ethmoid bone below or anterior to the orbit present. Two pairs of rostral barbels placed very close to each other. Caudal fin well forked.

Genus ***Botia*** Gray

1831. *Botia* Gray, *Zool. Misc.*, : 8 (type-species : *Botia almorae* Gray).

1981. *Botia*, Jayaram, *Handbk. Freshw. Fish. India* : 175 (genus characters and distribution).

Body oblong, short, moderately deep with abdomen rounded. A bifid suborbital spine below or ahead of the orbit present. Barbels 3 or 4 pairs, 2 pairs rostral, united at their bases. Dorsal fin with 10 to 15 rays. Anal fin with 7 to 8 rays. Caudal fin forked or emarginate. Lateral line present.

Key to the species

Snout very long, its length considerably more than the postorbital part of head..***B. rostrata***

Snout not very long, its length equal to or less than the postorbital part of head.....***B. dario***

Botia dario (Hamilton Buchanan)

(Text-fig. 59)

1822. *Cobitis dario* Hamilton Buchanan, *Fish. Ganges* : 354, 394, Pl. 29, fig. 95 (type-locality : rivers of Bengal).

1878. *Botia dario*, Day, *Fish. India* : 606, pl. 154, fig. 1; 1889. Day, *Fauna Br. India, Fish.* **1** : 216.

Local name : Ranimach.

English name : Loach.

Materials examined : 3 exs., 45-56mm. SL. Udaipur, South Tripura; R. P. Barman and party; 26.6.90.

Diagnostic features : D. 12-13(3/9-10), P. 14, V. 8, A. 7-8 (2/5-6), C. 19.



Fig. 59 : *Botia dario* (Hamilton Buchanan)

Head length 4.50 to 5.00 and body depth 4.50 to 5.00 in total length. Eye diameter 5.00 in head length. Suborbital spine reaching to below the posterior border of the orbit. Barbels 4 pairs. Caudal fin deeply forked.

Colour in alcohol : 7 or 8 bands descend from the back to abdomen. 2 or 3 or even more cross broken dark bands on caudal fin present.

Distribution : India : Assam, Bihar, throughout Tripura, West Bengal, Meghalaya, Uttar Pradesh, Punjab. Bangladesh.

Size : It attains 89mm. ($3^1/_2$ inches) in total length.

Botia rostrata Günther

(Text-fig. 60)

1868. *Botia rostrata* Günther, *Cat. Br. Mus.*, **7** : 367 (type-locality : Bengal).

1981. *Botia (Botia) rostrata*, Jayaram, *Handbk. Freshw. Fish. India*, : 176 (distribution and key to species).

Local name : Ranimach.

English name : Loach.

Materials examined : (i) 1 ex., 55mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 3 exs., 42-47mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 14.8.85. (iii) 1 ex., 68mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 17.8,85.

Diagnostic features : D. 12(3/9), P. 14, V. 8, A. 7(2/5), C. 19.

Head length 5.25 to 5.50 and body depth 5.00 to 5.25 in total length. Eye diameter 7.00 in head

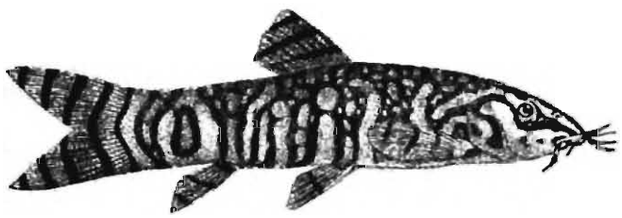


Fig. 60 : *Botia rostrata* (Gunther)

length. Barbels 4 pairs. Dorsal fin inserted ahead of pelvic fins. Caudal fin forked with sharp lobes.

Colour in alcohol : Body with irregular and partly confluent brown cross bands which enclose variously sized round yellowish or brown spots. Pelvic fins with two, the other fins and each lobe of caudal fin with three black cross bands.

Distribution : India : Assam, Meghalaya, throughout Tripura, West Bengal. Bangladesh.

Size : It attains 120mm. (5 inches) in total length.

Remarks : This fish is abundantly found to live throughout Tripura. Hora (1932) remarked that *Botia geto* Hamilton Buchanan is a juvenile form of *Botia rostrata.* Gunther (1868) regarded *Botia geto* as a young form of *Botia dario* (Hamilton Buchanan). *Botia dayi* which Hora (1932) proposed for specimens of *Botia geto* included by Day (1878, 1889) is a synonym of *Botia rostrata* according to Menon (1974).

Subfamily COBITINAE

A spine present under or anterior to the orbit. One pair of rostral barbels present. Caudal fin rounded or slightly emarginate.

Key to the genera

Lateral line present. Eyes bulging, fairly large. Snout long, straight, broad anteriorly with soft tubercles. Scales large. ..... ***Somileptes***

Lateral line absent. Eyes not bulging, small. Snout blunt without any tubercles. Scale small. ..... ***Lepidocephalus***

Genus ***Somileptes*** Swainson

1839. *Somileptes* Swainson, *Natural History of Fishes,* **2** : 311 (type-species : *S. bispinosa* Swainson *Cobitis gongota* Hamilton Buchanan).

1981. *Somileptes,* Jayaram, *Handbk. Freshw. Fish. India* : 179-180 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Eyes bulging and superior. A suborbital bifid spine present. Barbels 3 pairs, one pair each of rostral and two maxillary. Dorsal fin with 11 rays and without any spine. Anal fin with 7 rays. Caudal fin entire. Lateral line complete.

Somileptes gongota (Hamilton Buchanan)

(Text-fig. 61)

1822. *Cobitis gongota* Hamilton Buchanan, *Fish. Ganges :* 351, 394 (type-locality : North Bengal rivers towards the Himalayas).

1878. *Somileptes* gongota, Day, *Fish. India* : 608, pl. 155, fig. 2; 1889. Day, *Fauna Br. India, Fish* **1** : 219, fig. 79.

1981. *Somileptes gongota,* Jayaram, *Handbk. Freshw. Fish. India :* 180 (distribution).

Local name : Ghor poia.

English name : Nil.

Materials examined : (i) 2 exs., 71-102mm. SL.; Amarpur, South Tripura; R. P. Barman and



Fig. 61 : *Somileptes gongota* (Hamilton Buchanan)

party; 18.8.85. (ii) 1 ex., 98mm. TL.; Kumarghat, North Tripura; R. P. Barman and party; 21.10.89. (iii) 1 ex., 80mm. TL.; Gumti river, Udaipur, South Tripura; N. C. Ghose; 3.11.89.

Diagnostic features : Head length 5.00 to 5.25 and body depth 6.75 to 7.25 in total length. Eye diameter 5.00 to 6.00 in head length. Snout with its upper edge rather concave, it and the rest of head covered with fine warty tubercles. A small bifid suborbital spine present. Barbels 3 pairs, rather short, extending almost halfway to below the orbit. Dorsal fin inserted slightly behind origin of pelvic fins. Caudal fin entire.

Colour in alcohol : An undulating band along the side of body, giving off vertical bars towards the back or else oblique blotches with light edges descending from the back or placed irregularly on body. Dorsal and caudal fins with transverse rows of blackish dots.

Distribution : India : Assam, Arunachal Pradesh, Meghalaya, Throughout Tripura and north Bengal. Bangladesh.

Size : It attains 106mm. (4.2 inches) in total length.

Remarks : This fish is found to live throughout Tripura. I have recorded this fish from Arunachal Pradesh (in Datta and Barman, 1985). Mukerji (1932) discussed the generic position of this species and showed that *Somileptes* (Swainson) Bleeker is generically distinct from *Cobitis* Linnaeus.

Genus ***Lepidocephalus*** Bleeker

1858. *Lepidocephalus* Bleeker, *Nat. Tijdschr. Ned. Indë*, **15** : 303 (type-species : *Cobitis macrochir* Bleeker).

1981. *Lepidocephalus*, Jayaram, *Handbk. Freshw. Fish. India* : 180 (genus characters and distribution).

Body elongated and moderately compressed. Mouth inferior. Lips fleshy, thick, continuous at angle of mouth; lower lip interrupted in middle. Barbels 3 pairs. A large erectile bifid spine below or in front of the orbit. Dorsal fin with 8 to 9 rays and without any spine. Anal fin with 7 to 8 rays. Caudal fin truncate or slightly emarginate. Scales small. Lateral line absent.

Key to the species

1. 40 rows of scales present between anal fin base and back of body. Pectoral fin with 10 rays. ..... ***L. berdmorei***

   20 to 30 rows of scales present between anal fin base and back of body. Pectoral fin with 7 to 8 rays 2

2. Two intensely dark spots encircled in white rings present on caudal fin. ....***L. annandalei***

   Only one dark spot present on caudal fin base. .....***L. guntea***

Lepidocephalus (Lepidocephalichthys) annandalei Chaudhuri

1912. *Lepidocephalus annandalei* Chaudhuri, *Rec. Indian Mus.*, **7** : 442, pl. 40, figs, 3, 3a, 3b (type-locality : Mahananda and Teesta rivers at Siliguri and Jalpaiguri, West Bengal).

1981. *Lepidocephalus (Lepidocephalichthys) annandalei*, Jayaram, *Handbk. Freshw. Fish. India* : 181, 182 (distribution and key to species).

Local name : Gunte, Gutum.

English name : Loach.

Materials examined : 3 exs., 45–52mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 26.10.89.

Diagnostic features : D. 8(2/6), P. 8, V. 7(2/5), C. 16.

Head length 6.00 and body depth 8.00 in total length. Eye diameter 4.00 in head length. Barbels 3 pairs, very short. Caudal fin furcate type.

Colour in alcohol : Light brown dorsally, sides and abdomen silvery white, minute dark brown specks form a series of about 8 short transverse bars on the back, larger brown dots on sides of head and a distinct triangular black spot on the caudal fin base.

Distribution : India : Assam, Tripura (South Tripura district), Meghalaya and Eastern Himalayas.

Size : It attains 52mm. (2 inches) in total length.

Remarks : This fish is being recorded here for the first time from Tripura.

Lepidocephalus (Lepidocephalichthys) berdmorei Blyth

1860. *Acanthopsis berdmorei* Blyth, *Proc. Asiat. Soc. Beng.*, : 168 (type-locality : Tenasserim, Lower Burma).

1878. *Lepidocephalichthys berdmorei*, Day, *Fish. India* : 610, 103, fig.3; 1889. Day, *Fauna Br. India, Fish*, **1** : 221-222.

1981. *Lepidocephalus (Lepidocephalichthys) berdmorei*, Jayaram, *Handbk. Freshw. Fish. India* : 181, 182 (distribution and key to species).

Local name : Gunte, Gutum.

English name : Loach.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Fenny river, Sabroom, South Tripura.

Diagnostic features : D. 8(2/6), P. 10, V. 8, A. 7-8(2/5-6), C. 17.

Head length 6.00 to 6.25 in total length. Eyes situated just before the middle of head length. Barbels 3 pairs, 2 pairs rostral and 1 pair maxillary extending to below the posterior margin of orbit. Caudal fin slightly emarginate. 40 rows of scales between the anal fin and back of body.

Colour in alcohol : Body of rich yellowish brown, with a dark line along the body composed of spots, upper surface of body covered with fine markings, A black spot at the base of caudal fin. Dorsal and caudal fins lineated with fine spots; some also on the outer part of pectoral, pelvic and anal fins.

Distribution : India : Tripura : South Tripura district. Assam, Manipur, West Bengal.

Size : It attains 90mm, ($3^1/_2$ inches) in total length.

Remarks : Sen (1985) recorded this fish from Assam.

Lepidocephalus (Lepidocephalichthys) guntea (Hamilton Buchanan)

(Text-fig. 62)

1822. *Cobitis guntea* Hamilton Buchanan, *Fish. Ganges :* 353, 394 (type-locality : ponds and freshwater rivers of Bengal).

1878. *Lepidocephalichthys guntea*, Day, *Fish India* : 609, pl.155, fig. 4; 1889. Day, *Fauna Br. India, Fish*, **1** : 220-221, fig. 80.

1981. *Lepidocephalus (Lepidocephalichthys) guntea*, Jayaram, *Handbk. Freshw. Fish. India* : 181, 182 (distribution and key to species).

Local name : Gunte, Gutum.

English name : Loach.

Materials examined : (i) 9 exs., 47-65mm. SL., Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 6 exs., 52-64 mm. SL; Muhuri river, South Tripura; R. P. Barman and party; 26.10.89. (iii) 2 exs., 50-58mm. SL.; Pacherthal, North Tripura; R. P. Barman and party; 22.10.89.

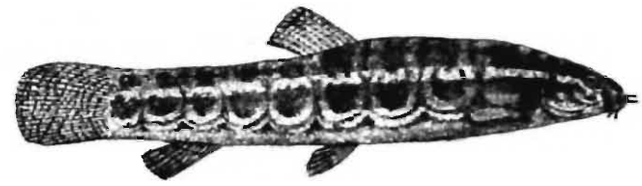


Fig. 62 : *Lepidocephalus guntea* (Hamilton Buchanan)

Diagnostic features : D. 8-9(2/6-7), P. 8, V. 7, A. 7(2/5), C. 16.

Head length 6.50 to 6.75 and body depth 5.75 to 6.50 in total length. Eye diameter 4.00 to 5.00 in head length. Barbels 3 pairs, two pairs rostral and 1 pair maxillary, all longer than the orbit. Caudal fin usually entire. 25 to 30 rows of scales between anal fin base and back of body.

Colour in alcohol : Colouration of this species is highly variable depending on age, size and sex. In young specimens the body is ground sandy yellow colour. A series of 10 dark spots, connected with one another through a dark band along sides of body. These spots also grow in size and tend to fuse with one another forming a continuous lateral band with the growth of fish.

Distribution : Throughout Tripura and India except Karnataka, Kerala and South of Krishna. Nepal, Bangladesh, Pakistan and Burma.

Size : It attains 96mm. (4 inches) in total length.

Order SILURIFORMES

Body without true scales, naked or covered with bony plates. Adipose dorsal fin generally absent. Spines usually present at the front of dorsal and pectoral fins, if present, only single in each fin. The second, third and fourth vertebrae of the Weberian apparatus are fused to a single ossification called a "complex vertebra" Barbels 1 to 4 pairs, whisker-like on upper and lower jaw. Caudal skeleton is variously developed, the number of principal rays differing considerably.

Key to the Families

1. Adipose dorsal fin absent. 2

   Adipose dorsal fin present as a smooth, short or long, high or low fin (exception *Clupisoma garua* (Hamilton Buchanan), Schilbeidae where it may be absent in adult specimens). 5

2. Head squarish in outline, much depressed, head and body with many dermal papillae. Anal fin short, with 7 to 10 rays. ..... CHACIDAE

   Head obtuse, compressed. Head and body without any dermal papillae. Anal fin long, with more than 40 rays. 3

3. Nasal barbels absent. No accessory respiratory organs ..... SILURIDAE

   Nasal barbels present. Accessory respiratory organs present on gills or in body cavity 4

4. Dorsal fin long, with 23 to 76 rays. Accessory respiratory organs on gills present ..... CLARIIDAE

   Dorsal fin short, with 6 to 7 rays. Accessory respiratory organs as tubular air sac in body cavity. ..... HETEROPNEUSTIDAE

5. Nostrils close together, slit-like, separated by nasal barbels, with very little interspace between the two 6

   Nostrils wide apart, separated by some distance. 7

6. Lateral line entirely absent. Gill membranes free from isthmus ..... AMBLYCIPITIDAE

   Lateral line always present. Gill membranes united with isthmus (exception *Bagarius* Hamilton Buchanan). ..... SISORIDAE

7. Dorsal spine absent (exception *Ailia* Swainson, Schilbeidae where dorsal fin itself is absent). ..... OLYRIDAE

   Dorsal spine present 8

8. Anal fin short, with less than 20 rays (8 to 16 rays). Paired fins horizontally inserted. ..... BAGRIDAE

   Anal fin long, with more than 20 rays (24 to 90 rays). Paired fins laterally inserted 9

9. Nasal barbels always present (exception *Silonia* Swainson with 40 to 46 anal fin rays). ..... SCHILBEIDAE

   Nasal barbels absent. (Anal fin with 30 to 34 rays). ..... PANGASIIDAE

Family BAGRIDAE

Bagrid catfishes

Rayed dorsal fin with 6 to 8 rays and a spine. Adipose fin present, highly variable in size. Nostrils widely separated, above angle of mouth, anterior tubular on tip of snout, posterior nearer to orbit than tip of snout and with nasal barbels. Barbels 4 or 3 pairs, usually well developed. Gill openings wide. Paired fins inserted horizontally. Pectoral fins with a strong spine, usually serrated. Anal fin with 8 to 16 rays. Caudal fin forked. Lateral line present, usually complete.

Key to the Genera

1. Barbels 3 pairs. Lateral line with well developed scutes along anterior quarters. ..... ***Rita***

   Barbels 4 pairs. Lateral line simple. ..... 2.

2. Maxillary barbels shorter than head. Pores on ventral surface and sides of head. .... ***Batasio***

   Maxillary barbels much longer than head, extending beyond dorsal fin. No pores on ventral surface and sides of head 3

3. Interneural shield in between occipital process and basal bone of dorsal fin present. ....***Aorichthys***

Interneural shield absent. .....***Mystus***

Genus ***Rita*** Bleeker

1859. *Rita* Bleeker, *Acta. Soc. Sc. Indo-Neerl.*, **4** : 60 (type-species : *Pimelodus rita* Hamilton Buchanan).

1981. *Rita*, Jayaram, *Handbk. Freshw. Fish. India* : 190 (genus characters and distribution).

Head large and depressed, with abdomen rounded. Mouth subterminal, transverse and moderately wide. Eyes subcutaneous and dorsolateral. Teeth villiform. Barbels 3 pairs, the nasal, the maxillary and the mandibular. Nasal barbels minute or small with a valve-like base. Dorsal fin with 6 to 7 rays and a spine. Adipose dorsal fin short and low. Pectoral fins with 7 to 10 rays and a spine serrated along both the margins. Pelvic fins with 7 to 8 rays. Anal fin with 8 to 13 rays. Lateral line with well developed scutes along anterior quarters. Caudal fin forked.

Rita rita (Hamilton Buchanan)

(Text-fig. 63)

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

1877. Rita buchanani. Day, *Fish. India* : 454, pl. 103, fig. 1 (semi-audult), fig. 2 (immature) and pl. 104, fig. 2 (young); 1889. Day, *Fauna Br. India, Fish,* **1** : 165, fig. 66.

1981. *Rita rita*, Jayaram, *Handbk. Freshw. Fish. India* : 190, 191, fig. 82 (distribution and key to species).

Local name : Reta.

English name : Rita.

Materials examined : (i) 1 ex., 70mm. SL; Sonamura, West Tripura ; R. P. Barman and party; 17.8.85. (ii) 2 exs., 75-82mm. SL.; Kumarghat, North Tripura; R. P. Barman and party; 21.10.89. (iii) 1 ex., 85 mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 26.6.90.

Diagnostic features : D. 1/6/0, P. 1/10. V. 8, A. 12-13(4-5/9), C. 10.

Head length 4.00 to 4.30 and body depth 5.50 to 6.00 in total length. Eye diameter 8.00 to

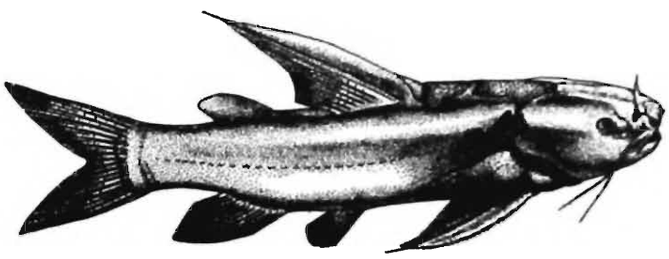


Fig. 63 : *Rita rita* (Hamilton Buchanan)

10.00 in head length. Barbels 3 pairs, nasal short, maxillary and mandibular extending to end of head. Dorsal spine very strong and serrated. Pectoral spine serrated rather shorter than dorsal spine.

Colour in alcohol : Dorsal surface greenish grey becoming lighter below.

Distribution : India : North India, throughout Tripura, Pakistan, Nepal, Bangladesh, Burma and China.

Size : It attains at least 1.219mm. (4 feet) in total length.

Remarks : It is one of the most common fish found to live throughout Tripura. It can survive out of water for some time due to its cutaneous respiration. This fish is esteemed as food but is a foul feeder.

Genus ***Batasio*** Blyth

1860. *Batasio* Blyth, *J. Asiat. Soc. Bengal,* **29** : 149 (type-species : *Pimelodus batasio* Hamilton Buchanan).

1981. *Batasio*, Jayaram, *Handbk. Freshw. Fish. India,* : 191 to 193 (genus characters and distribution).

Body short, compressed with abdomen rounded. Head with pores ventrally and on sides. Mouth inferior. Lips fleshy, fimbriated. Jaws subequal or slightly overhanging. Teeth uniformly villiform in bands on jaws and palate, band on

lower jaw continuous. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular, all usually not extending beyond head. Rayed dorsal fin inserted above three fourth of pectoral fins, with 7 to 8 rays and a spine. Adipose dorsal fin low, of varying length. Pectoral fins with 5 to 9 rays and a spine serrated along inner edge with antrose teeth. Pelvic fins with 6 rays. Anal fin with 12 to 15 rays. Caudal fin forked or deeply emarginate. Lateral line complete.

Batasio batasio (Hamilton Buchanan)

(Text-fig. 64)

1822. *Pimelodus batasio* Hamilton Buchanan, *Fish. Ganges :* 179, 377 (type-locality : River Teesta).

1877. *Gagata batasio,* Day, *Fish. India, :* 493, pl. 99, fig. 5; 1889. Day, *Fauna Br. India, Fish* **1** : 209, 210.

1981. *Batasio batasio,* Jayaram, *Handbk. Freshw. Fish. India* : 193, 194 (distribution and key to species).

Local name : Batasio.

English name : Batasio.

Materials examined : 4 exs., 58-62mm. SL.; Muhuri river, Belonia, South Tripura; R. P. Barman and party; 26.10.89

Diagnostic features : D. 1/7/0, P. 1/8. V. 6, A. 16, C. 20.

Head length 4.66 to 4.68 and body depth 5.38 to 5.76 in total length. Eye diameter 3.75 to 4.00 in head length. Barbels 4 pairs, shorter than head. Dorsal spine strong, entire. Pectoral spine strong and serrated internally. Caudal fin lobed.

Colour in alcohol : Body diaphanous, with longitudinal bands on either sides of lateral line. A black spot present on shoulder.

Distribution : India : Teesta river, North Bengal and Tripura (South Tripura district), Bangladesh.

Size : It attains 78mm. (3 inches) in total length.

Systematic notes : This fish has a striking resemblance wsith *Mystus vittatus* (Bloch). The short sized barbels, not extending beyond the head and continuous bands of teeth on the jaws and palate of this species help in identification.

Genus ***Mystus*** Scopoli

1777. *Mystus* Scopoli, *Introd. Hist. Nat., :* 451 (type-species : *Bagrus halepensis* Heckel = *Silurus pelusius* Solander).

1981. *Mystus,* Jayaram, *Handbk. Freshw. Fish. India :* 195, 196 (genus characters and distribution).

Mouth terminal and transverse. Teeth villiform in jaws and palate, that on latter always uninterrupted. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular pairs. Rayed dorsal fin with 7 rays and a spine. Adipose fin low, of varying length. Pectoral fin with 6 to 10 rays and a strong spine. Pelvic fin with 6 rays.

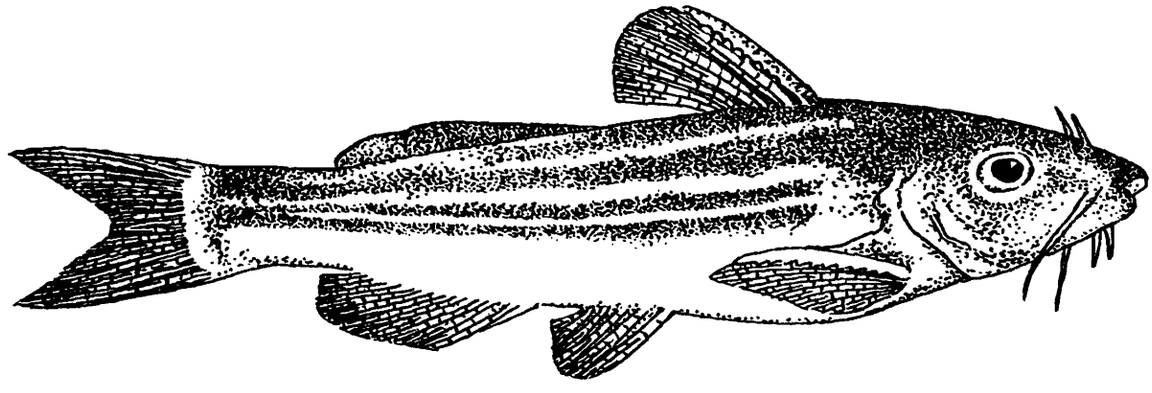


Fig. 64 : *Batasio batasio* (Hamilton Buchanan)

Anal fin with 9 to 16 rays. Caudal fin forked. Lateral line complete. Interneural shield in between basal bone of dorsal fin and occipital process absent.

Key to the Species

1. Adipose dorsal fin commencing almost after rayed dorsal fin. 2

Adipose dorsal fin commencing after some considerable distance from rayed dorsal fin. ..... ***M. vittatus.***

2. Maxillary barbels reach anal fin. Interorbital width less than 3.00 (2.00 to 3.00) in head length. No dark spot at the base of dorsal fin. .....***M. bleekeri***

Maxillary barbels reach caudal fin base or beyond. Interorbital width more than 3.00 (3.00 to 4.00) in head length. A dark spot present at the base of dorsal fin. ....***M. cavasius***

Mystus bleekeri (Day)

(Text-fig. 65)

1877. *Macrones bleekeri* Day, *Fish. India, :* 451, pl. 101, fig. 1; (type-locality : Sind, Jamuna, Upper waters of Ganges, and Burma).

1889. *Macrones bleekeri* Day, *Fauna Br. India Fish.*, **1** : 162.

1981. *Mystus bleekeri*, Jayaram, *Handbk. Freshw. Fish. India :* 196, 199 (distribution and key to species).

Local name : Tengra.

English name : Nil.

Materials examined : (i) 5 exs., 52-68mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 1 ex., 85mm. SL.; Deo river, Kanchanpur, North Tripura; R. P. Barman and party; 22.10.89.

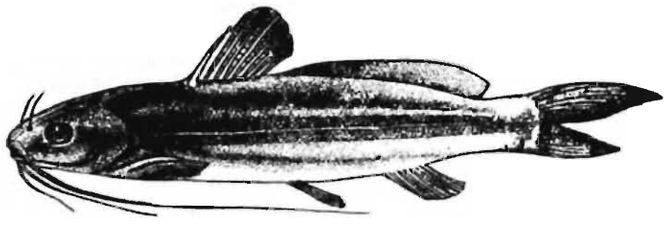


Fig. 65 : *Mystus bleekeri* (Day)

Diagnostic features : D. 1/7-8/0, P. 1/9-10, V. 6, A. 9-10(3/6-7), C. 17.

Head length 5.25 to 5.50 and body depth 5.00 to 5.50 in total length. Eye diameter 4.00 to 4.50 in head length. Median longitudinal groove on head shallow, extending to base of occipital process which is not grooved, twice as long as broad at its base, touching basal bone of dorsal fin. Barbels 4 pairs, maxillary pair reaching anal fin. Rayed dorsal fin almost as high as body depth, with a smooth or finely serrated spine. Pectoral spine serrated, stronger than dorsal spine. Adipose dorsal fin inserted almost just posterior to dorsal fin. Caudal fin forked, with pointed lobes, upper one being longer.

Colour in alcohol : Body brownish grey with two light longitudinal bands, one above and the other below lateral line. Sometimes a dark shoulder spot and a dark band along middle of anal fin present.

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

Size : It attains 135mm. ($5^1/_2$ feet) in total length.

Remarks : This fish is found to live in lakes, tanks and rivers throughout Tripura.

Mystus cavasius (Hamilton Buchanan)

(Text-fig. 66)

1822. *Pimelodus cavasius* Hamilton Buchanan, *Fish. Ganges, :* 203, 379, pl. 11, fig. 67 (type-locality : Gangetic provinces).

1877. *Macrones cavasius*, Day, *Fish. India :* 447, pl. 100, fig. 1; 1889. Day, *Fauna British India, Fish.* **1** : 155.

1981. *Mystus cavasius*, Jayaram, *Handbk. Freshw. Fish. India :* 196, 199 (distribution and key to species).

Local name : Tengra.

English name : Dwarf cat fish.

Materials examined : (i) 3 exs., 43-48mm. SL.; Amarpur, South Tripura; R. P. Barman and party'; 8.8.85. (ii) 3 exs., 45-83mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 15.8.85. (iii) 2 exs., 71-107mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 18.8.85.

Diagnostic features : D. 1/7/0, P. 1/8, V 6, A. 11-13(4/7-9), C. 16.

Head length 6.00 to 6.25 and body depth 5.50 to 6.00 in total length. Eye diameter 3.25 to 3.50 in head length. Median longitudinal groove rather wide, extending to base of occipital process. Occipital process narrow, 3 or 4 times as long as

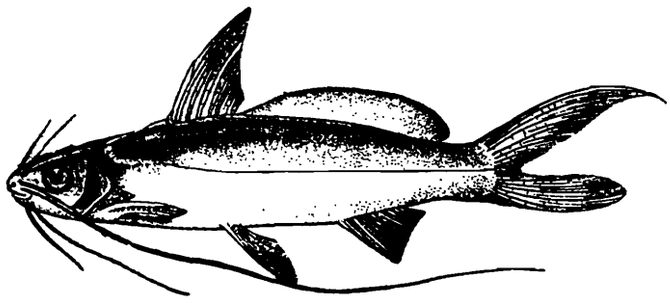


Fig. 66 : *Mystus cavasius* (Hamilton Buchanan)

wide at its base, reaching basal bone of dorsal fin. Barbels 4 pairs, maxillary pair extending beyond caudal fin base. Rayed dorsal fin higher than body depth. with a weak entire or finely serrated spine, almost equal to head excluding snout. Pectoral spine serrated equal to, but stronger than dorsal spine. Adipose dorsal fin inserted just behind rayed dorsal fin. Caudal fin forked, upper lobe longer.

Colour in alcohol : Dorsal surface leaden, becoming yellowish along abdomen and cheeks. Usually a black spot covering basal bone of dorsal fin present.

Distribution : Throughout Tripura and India, Pakistan, Bangladesh, Burma, Thailand, Malayasia, Java, Sumatra, Borneo and China.

Size : It attains almost 457mm. ($1^1/_2$ feet) in total length.

Remarks : Recorded by me for the first time from Tripura (Barman, 1988).

Mystus vittatus (Bloch)

(Text-fig. 67)

1797. *Silurus vittatus* Bloch, *Ichth. Hist. nat.*, **11** : 40, pl. 371, fig. 2 (type-locality : Tranquebar, S. India).

1877. *Macrones vittatus*, Day, *Fish. India*, : 448, pl. 98, fig. 3, and pl. 99, fig. 4; 1889. Day, *Fauna Br. India, Fish.* **1** : 157.

1981. *Mystus vittatus*, Jayaram, *Handbk. Freshw. Fish. India*, : 197, 201 (distribution and key to species).

Local name : Tengra.

English name : Striped dwarf cat-fish.

Materials examined : (i) 2 exs., 30-35mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 17.8.85. (ii) 1 ex., 45mm. SL.; Gumti river. Udaipur, South Tripura; R. P. Barman and party; 26.10.89. (iii) 2 exs.; 33-48 mm. SL.; R.P. Barman and party; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10. 89.

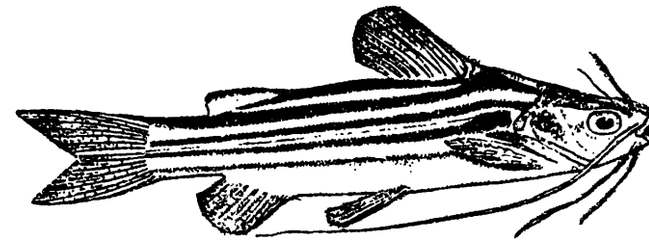


Fig. 67 : *Mystus vittatus* (Bloch)

Diagnostic features : D. 1/7/0, P. 1/9, V. 6, A. 9-12(2-3/7-9), C. 17

Head length 4.50 to 5.00 and body depth 5.00 to 5.25 in total length. Eye diameter 4.00 to 6.00 in head length. Median longitudinal groove reaching to posterior border of the orbit. Occipital process three times as long as wide at its base, reaching basal bone of dorsal fin or with a short interspace. Barbels 4 pairs, maxillary pair reaching pelvic fin base or anal fin origin. Rayed dorsal fin equal to head in young specimens or less than head in adult specimens, with a spine serrated internally. Pectoral fins with a spine denticulated internally. Caudal fin forked, with upper lobe longer.

Colour in alcohol : Body silvery grey or golden with 2 or more light bluish or silvery lateral bands. Fins generally black tipped.

Distribution : Throughout Tripura and India, Nepal, Pakistan, Bangladesh, Burma, Sri Lanka, Thailand and Malaya.

Size : It attains 203mm. (8 inches) in total length.

Remarks : It is one of the common fishes found throughout the state.

Genus *Aorichthys Wu*

1939. *Aorichthys* Wu, *Sinensia*, **10** : 131 (proposed originally as substitute name for *Aoria* Jerdon, 1919 preoccupied in Insecta *Macrones* Dumeril, 1856 preoccupied in Insecta, type-species : *Pimelodus aor* Hamilton Buchanan)

1981. Aorichthys, Jayaram, *Handbk. Freshw. Fish. India,* : 204 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Head depressed. Snout spatulate or rounded. A distinct interneural shield in between basal bone of dorsal fin and occipital process. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular. Maxillary barbels extending beyond dorsal fin. Rayed dorsal fin, with 7 rays and a spine. Adipose fin low and long. Pectoral fins with 9 to 10 rays and a serrated spine. Pelvic fins with 6 rays. Anal fin with 11 to 13 rays. Caudal fin forked. Lateral line complete.

Key to the species

Maxillary barbels extending beyond caudal fin. Snout rounded. Caudal fin with 17 rays. ..... ***A. aor***

Maxillary barbels extending anal fin. Snout spatulate. Caudal fin with 19 to 21 rays..... ..... ***A. seenghala***

Aorichthys aor (Hamilton Buchanan)

(Text fig. 68)

1822. *Pimelodus aor* Hamilton Buchanan, *Fish. Ganges,* : 205, 379, pl. 20, fig. 68 (type-locality : Rivers of Bengal and upper parts of Gangetic estuaries).

1877. *Macrones aor*, Day, *Fish. India,* : 444; 1889. Day, *Fauna Br. India, Fish,* **1** : *149.*

1981. *Aorichthys aor*, Jayaram, *Handbk. Freshw. Fish. India,* : 205 (distribution and key to species).

Local name : Aor.

English name : Long whiskered cat-fish.

Materials examined : (i) 4 exs., 49-112mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 14.8.85.

Diagnostic features : D. 1/7/0, P. 1/9-10, V. 6, A. 11-13(3-4/8-9), C. 17.

Head length 4.50 to 5.00 and body depth 6.50 to 7.50 in total length. Eye diameter 5.00 to 8.00 in head length. Snout depressed and rounded. Width of mouth less than half head length. Barbels 4 pairs, maxillary pair extend to caudal fin base or beyond. Rayed dorsal fin with a weak serrated spine. Pectoral spine stronger than dorsal spine and finely serrated. Caudal fin forked with pointed lobes, 3 or 4 outer rays in the upper lobe being produced.

Colour in alcohol : Dorsal surface bluish leaden becoming white on abdomen. Fins yellowish, stained with dark externally in both dorsal and caudal fins. A black spot on posterior lower end of adipose dorsal fin present.

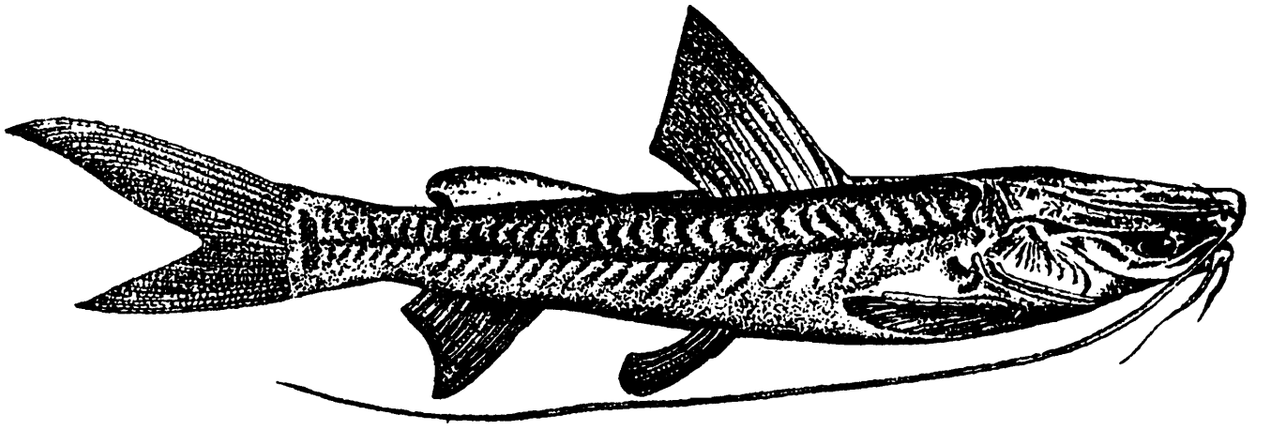


Fig. 68 : *Aor aor* (Hamilton Buchanan)

Distribution : India : Ganga, Jamuna, Brahmaputra, Mahanadi, Narmada, Tapi, Cauvery, Krishna, Godavari river systems. Tripura (South Tripura district), Pakistan. Bangladesh and Burma.

Size : It attains 900mm. (3 feet) in total length.

Remarks : This is predominant cat fish of heavier and larger variety of considerable economic importance. Mostly riverine, good catches are obtained in the major north Indian rivers.

Aorichthys seenghala (Sykes)

(Text-fig. 69)

1839. *Platystoma seenghala* Sykes, *Trans. Zool. Soc. Lond.*, **2** : 371, pl. 65, fig. 2 (type-locality : Mota Mula river, Poona).

1877. *Macrones seenghala*, Day, *Fish. India*, : 444, pl. 99, fig. 1; 1889. Day *Fauna Br. India, Fish.*, **1** : 150.

1981. *Aorichthys seenghala*, Jayaram, *Handbk. Freshw. Fish. India*, : 205 (distribution and Key to species).

Local name : Aor.

English name : Giant river cat-fish.

Materials examined : (i) 1 ex., 65mm. SL.; Amarpur, South Tripura, R. P. Barman and party; 8.8.85. (ii) 3 exs., 85-130mm. SL.; Rudrasagar, Melagarh, West Tripura; 31.10.89.

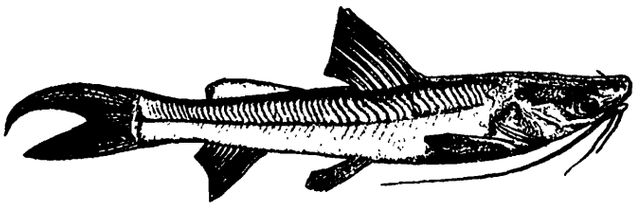


Fig. 69 : *Aorichthys seenghala* (Sykes)

Diagnostic features : D. 1/7/0, P. 10(1/9), V. 6(1/5), A. 11-12(3/8-9), C. 19-21.

Head length 3.70 to 4.50 and body depth 7.50 to 8.00 in total length. Eye diameter 6.00 to 8.00 in head length. Snout spatulate. Width of gape of mouth equal to one third of head length. Barbels 4 pairs, maxillary pair extending to middle or just behind rayed dorsal fin. Dorsal spine weak, rugose and equal to head. Pectoral spine stronger than dorsal spine, anteriorly serrated posteriorly. Caudal fin forked, upper lobe longer with 3 rays slightly produced.

Colour in alcohol : Dorsal surface brownish grey and silvery on sides and abdomen. A rounded black spot on hind end of base of adipose dorsal fin.

Distribution : India : Indus, Ganga, Yamuna, Brahmaputra, Mahanadi, Tapi, Cauvery, Krishna and Godavari river systems. throughout Tripura, Pakistan, Bangladesh and Burma.

Size : It attains at least 914mm. (3 feet) in total length.

Systematic notes : This species is very closely related to *A aor* but it can be separated chiefly by its much shorter maxillary barbels.

Family SILURIDAE

Sheatfishes

Body elongated and compressed. Skin without scales, either smooth or covered with osseous plates or scattered tubercles. Gill openings wide. Rayed dorsal fin with 4 to 5 rays not preceded by a spine. Adipose fin absent. Paired fins laterally inserted. Pectoral fins with a strong spine, sometimes serrated. Anal fin very long, extending from just posterior to anal opening to caudal fin or confluent with it. Pelvic fins small, sometimes absent. Caudal fin deeply forked, lobes rounded or pointed or cut square. Lateral line straight and complete.

The siluroid fishes are popularly known as Cat-fishes, owing to most of them being provided with long barbels around their mouth.

Key to the genera

Cleft of mouth wide, extending beyond the orbits posteriorly. Anal fin with 86 to 89 rays. ..... ***Wallago***

Cleft of mouth not wide, not extending beyond the orbits posteriorly. Anal fin with 52 to 75 rays..... ***Ompok***

Genus ***Ompok*** Lacepede

1803. *Ompok* Lacepede, *Hist. Nat. Poiss.*, **5** : 49 *(type-species : Ompok siluroides* Lacepede).

1822. *Callichrous* Hamilton, *Fish. Ganges* : 19 *(type-species : Silurus bimaculatus* Bloch).

1981. *Ompok*, Jayaram, *Handbk. Freshw. Fish. India*, : 207-209 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Gape of mouth not extending to anterior border of orbit. Barbels 2 pairs, one pair each of maxillary and mandibular. Dorsal fin with 4 to 5 rays and without any spine. Pectoral fins with 11 to 14 rays and a weak spine, serrated or smooth. Pelvic fins with 7 to 10 rays. Anal fin with 52 to 75 rays, extending close to caudal fin, free from it or narrowly connected to it. Caudal fin foked. Lateral line complete.

Key to the species

Maxillary barbels longer than head, extending up to or beyond anal fin..... ***O. bimaculatus***

Maxillary barbels shorter than head, not extending up to anal fin..... ***O. pabda***

Ompok bimaculatus (Bloch)

(Text-fig. 70)

1797. *Silurus bimaculatus* Bloch, *Syst. Ichth.*, **11** : 17, pl. 369 (type-locality : Malabar).

1877. *Callichrous bimaculatus*, Day, *Fish. India*, : 476, pl. 110, figs. 4 and 5; 1889. Day, *Fauna Br. India, Fish*, **1** : 131, fig. 57.

1981. *Ompok bimaculatus*, Jayaram, *Handbk. Freshw. Fish. India* : 208, 209, fig. 102A (distribution and key to species).

Local name : Pabda.

English name : Butter cat-fish.

Materials examined : (i) 1 ex. 117mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 2 exs., 60-64mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 15.8.85. (iii) 4 exs., 85-105mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89.

Diagnostic features : D. 4, P. 13-15(1/12-14), V. 8-9, A. 61-76 (2-3/59-73), C. 17-18.

Head length 5.00 to 7.00 and body depth 4.88 to 5.50 in total length. Eye diameter 4.00 to 5.75 in head length. Barbels 2 pairs, maxillary pair reach the middle of the pectoral or the insertation of anal fin. Dorsal short, without any spine, its origin ahead of pelvic fins, considerably nearer to tip of snout than to base of caudal fin. Pectoral fins with a moderately strong spine, serrated or entire. Anal fin very long, ceases close to, but not continuous with the forked caudal fin.

Colour in alcohol : Silvery shot with purple, a black spot on the superior angle of gill openings. Caudal fin often tipped with black.

Distribution : **Throughout Tripura and India, Pakistan, Nepal, Bengladesh, Burma, Sri Lanka, Thailand, Malaya, Vietnam, East Indies, Sumatra, Java, Borneo and China.**

Size : It attains at least 457mm. ($1^1/_2$ feet) in total length.

Remarks : It is a tasty fish called the "Butter fish" by the Europeans. This is found to live in tanks and ponds along with rivers throughout Tripura.

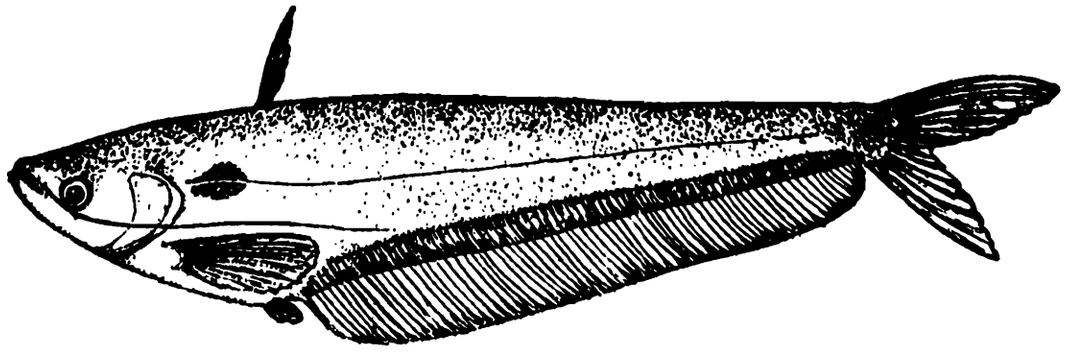


Fig. 70 : *Ompok bimaculatus* (Bloch)

Ompok pabda (Hamilton Buchanan)

(Text-fig. 71)

1822. *Silurus pabda* Hamilton Buchanan, *Fish. Ganges, :* 950, pl. 25, fig. 47 (type-locality : Bengal).

1877. *Callichrous pabda*, Day, *Fish. India, :* 479, pl. 111, figs. 2 and 3; 1889. Day, *Fauna Br. India, Fish.* **1** : 133.

1981. *Ompok pabda*, Jayaram, *Handbk. Freshw. Fish. India, :* 208, 209 (distribution and key to species).

Local name : Pabda.

English name : Butter cat-fish.

Materials examined : 4 exs., 115-130mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85.

Diagnostic features : D. 4-5, P. 12-14 (1/11-13), V. 7-8, A. 52-57 (2-3/50-54), C. 17-19.

Head length 5.00 to 5.25 and body depth 5.00 and 5.25 in total length. Eye diameter 5.00 in

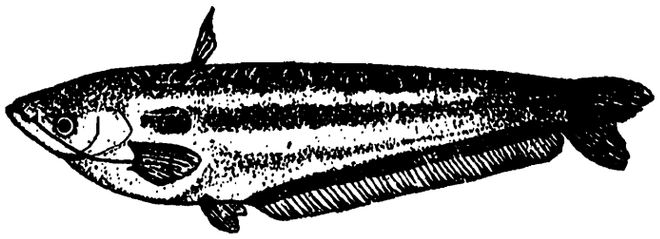


Fig. 71 : *Ompok pabda* (Hamilton Buchanan)

head length. Barbels 2 pairs, maxillary pair shorter than head, extending middle or end of pectoral fins and mandibular pair reach posterior border of orbits. Dorsal fin short, without any spine, inserted in advance of pelvic fins, considerably nearer to tip of snout than to base of caudal fin. Pectoral fin with a spine, may be serrated internally, sometimes rather strongly or feebly or entirely smooth. Anal fin very long, not confluent with caudal fin. Caudal fin forked.

Colour in alcohol : Generally silvery glossed with gold having a dark spot on the superior angle of gill openings. Sometimes another dark spot present close to base of caudal fin.

Distribution : India : Indus, Ganga, Brahmaputra, Krishna and Godavari river systems. Tripura (South Tripura district), Bangladesh. Pakistan and Burma.

Size : It attains 172mm (7 inches) in total length.

Remarks : It is also a very good tasty fish known as "Butter fish"

Systematic notes : O. pabda very closely related to *O. bimaculatus* in appearance. But it can be separated from the latter species by its short maxillary barbels shorter than head, not extending up to anal fin.

Genus ***Wallago*** Bleeker

1851. *Wallago* Bleeker, *Nat. Tijdschr. Ned. Inde,* **2** : 202 (type-species : *Wallago dinema* Bleeker).

1981. *Wallago,* Jayaram, *Handbk. Freshw. Fish. India, :* 209, 210 (genus characters and distribution).

Body elongated and compressed with abdomen rounded. Maxilla extending beyond the orbits posteriorly. Gill openings wide. Barbels 2 pairs, One pair each of maxillary and mandibular. Dorsal fin inserted above half of pectoral fins, with 5 rays and no spine. Pectoral fin with 13 to 15 rays and a weak, smooth spine. Pelvic fin with 8 to 10 rays. Anal fin long with 86 to 93 rays , free from caudal fin. Caudal fin forked. Lateral line complete.

Wallago attu (Schneider)

(Text-fig. 72)

1801. *Silurus attu* Schneider, *Syst. Ichth. Bloch,* : 378, pl. 75 (type-locality : Malabar).

1877. *Wallago attu*, Day, *Fish. India,* 479, pl. 111, fig. 4, 1889. Day, *Fauna Br. India, Fish,* **1** : 126, fig. 54.

1981. *Wallago attu*, Jayaram, *Handbk. Freshw. Fish. India,* : 210 (distribution).

Local name : Boal.

English name : Freshwater Shark.

Materials examined : (i) 3 exs., 185-212mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 1 ex., 145mm. SL.; Gumti

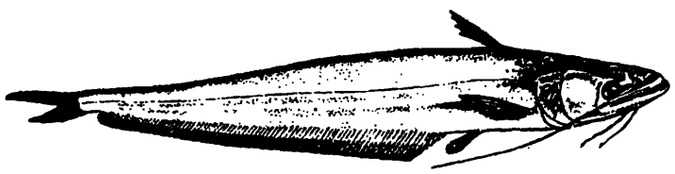


Fig. 72 : *Wallago attu* (Schneider)

river, Udaipur, South Tripura; R. P. Barman and party; 26.6.90.

Diagnostic features : D. 5, P. 14-16 (1/13-15), V. 8-10, A. 86-93 (4/82-89), C. 17

Head length 5.00 to 5.50 and body depth 6.50 in total length. Eye diameter 7.00 to 8.00 in head length. Dorsal profile almost straight. Gape of mouth extending hind border of the orbit. Barbels 2 pairs, maxillary pair twice as long as head and mandibular pair equal to snout. Dorsal fin short, without spine, inserted above or slightly ahead of pelvic fin origin. Pectoral fin spine moderately strong and finely serrated. Anal fin very long not confluent with caudal fin. Caudal fin forked.

Colour in alcohol : Body uniformly silvery grey becoming lighter below. Fins sometimes covered with fine dots.

Distribution : Throughout Tripura and India, Pakistan, Bangladesh, Burma, Sri Lanka, Thailand, Java, Sumatra, Borneo and China.

Size : It attains at least 1,828mm. (6 feet) in total length.

Remarks : *W. attu* is very destructive to all other kinds of fishes as it is predatory by nature, destroying fry and small fishes. The giant size, large mouth and formidable teeth make this fish very powerful to kill and devour almost every kind of fishes. It is called the "Freshwater Shark" Though this fish is offered to the Goddes Kali by the Hindus, it is regarded as unclean by many people and is therefore, generally discarded. It is esteemed as food by people mainly poorer classes.

Family SCHILBEIDAE

Schilbid catfish

Body elongated and compressed. Barbels 2 to 4 pairs, fairly well developed. Dorsal fin present with a short base of 5 to 7 soft rays and a spine present or absent. Adipose dorsal fin generally present, may be absent. Paired fins laterally inserted. Pectoral fins with a strong spine, generally serrated. Anal fin very long with 40 to 46 rays, not confluent with caudal fin. Caudal fin forked. Lateral line usually complete.

Key to the subfamilies

Dorsal fin absent..... ***Ailinae***

Dorsal fin present ..... ***Schilbeinae***

Subfamily AILINAE

Dorsal fin and spine absent. Adipose dorsal fin very small. Teeth on vomer minute. Anal fin very long.

Genus *Ailia* Gray

1831. *Ailia* Gray, *Ill. Indian Zool.*, **1** : 85 (type-species : *Ailia bengalensis* Gray).

1871. *Ailiichthys* Day, *Proc. Zool. Soc. Lond.*, : 712 (type-species : *A. punctata* Day).

1981. *Ailia*, Jayaram, *Handbk. Freshw. Fish. India*, : 212, 213 (genus characters and distribution).

Body elongated and compressed. Snout overhanging. Mouth terminal. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular, all almost equal length and longer than head. Rayed dorsal fin absent. Adipose dorsal fin small. Pectoral fins with 13 to 16 rays and a spine, smooth or serrated. Pelvic fins with 6 rays, may be vestigial or absent. Anal fin with 58 to 90 rays, not united with caudal fin. Caudal fin forked. Lateral line complete.

Ailia coila (Hamilton Buchanan)

(Text-fig. 73)

1822. *Malapterurus coila* Hamilton Buchanan, *Fish. Ganges*, : 158, 375 (type-locality : Freshwater rivers of Bengal).

1877. *Ailia coila*, Day, *Fish. India* : 488, pl. 114, fig. 4; 1889. Day, *Fauna Br. India, Fish.* **1** : 134.

1981. *Ailia coila*, Jayaram, *Freshw: Fish. India* : 213-214 (distribution and key to species).

Local name : Kadali.

English name : Ailia.

Materials examined : (i) 5 exs., 90-215mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 16.8.85. (ii) 1 ex., 80mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

Diagnostic features : D. O, P. I/14, V. 6, A. 59-75, C. 19.

Head length 6.00 to 7.00 and body depth 5.25 to 6.00 in total length. Eye diameter 3.50 to 3.75 in head length. Snout pointed. Mouth inferior, cleft extending below to middle of orbit. Upper jaw longer. Barbels 4 pairs, extending to middle of the standard length. Dorsal fin absent. A small posterior adipose dorsal fin present. Pectoral spine finely serrated internally extending beyond pelvic fins, almost to anal fin origin. Anal fin very long. Caudal fin deeply forked, upper lobe longer.

Colour in alcohol : Body silvery, smooth. Some of the fins tipped grey.

Distribution : India : Tripura : South Tripura district and up to the Krishna river systems. Pakistan, Nepal and Bangladesh.

Size : It attains 305mm. (1 foot) in total length.

Remarks : This fish is considered excellent eating and much esteemed as food fish. In Tripura this fish is particularly found in the river Gumti.

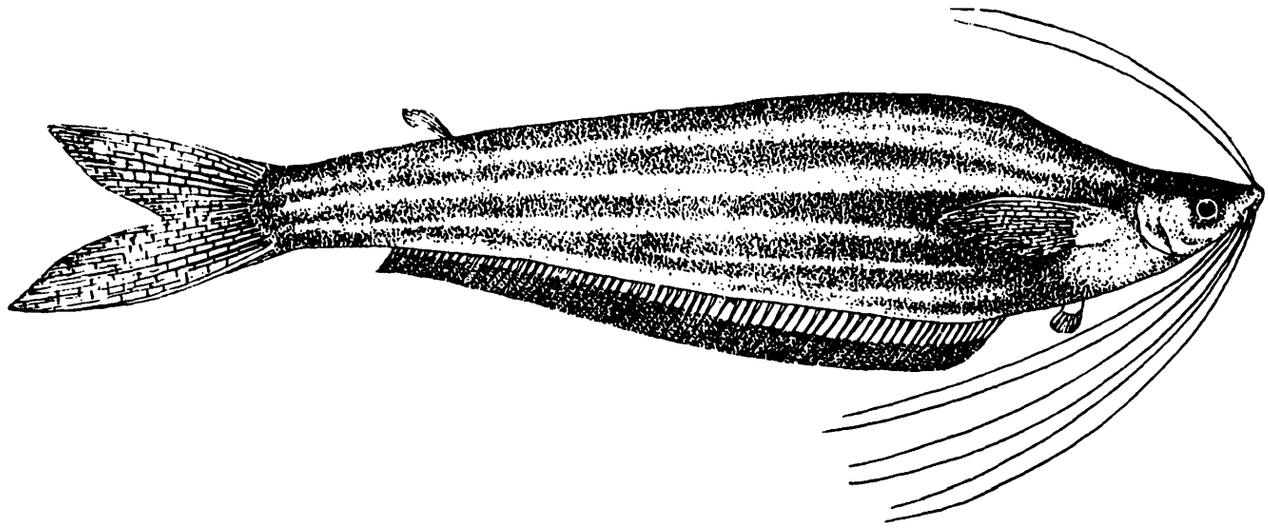


Fig. 73 : *Ailia coila* (Hamilton Buchanan)

Subfamily SCHILBEINAE

Dorsal fin and spine present. Adipose dorsal fin vestigial, small, may be absent. Teeth on vomer large. Anal fin moderate length.

Key to the Genera

1. Two pairs of barbels, one of maxillary, small, in a groove; one of mandibular, either of the pair may become vestigial or absent. ..... ***Silonia***

   Four pairs of barbels 2

2. Cleft of mouth oblique, extending up to middle of the orbit. ..... ***Eutropiichthys***

   Cleft of mouth not oblique, extending up to anterior margin of the orbit or even shorter. 3

3. Teeth on palate in bands, not separated in middle. Posterior nostrils wide..... ***Clupisoma***

Teeth on palate in two separate patches, which may be connected by a linear series. Posterior nostrils narrow. ..... ***Pseudeutropius***

Genus ***Pseudeutropius*** Bleeker

1862. *Pseudeutropius* Bleeker, *Versl. Akad. Amsterdam*, **14** : 398 (type-species : *P. brachypopterus* Bleeker).

1981. *Pseudeutropius*, Jayaram, *Handbk. Freshw. Fish. India*, : 216-217 (genus characters and distribution).

Body elongated and compressed, part of abdomen somewhat keeled. Mouth subinferior, moderately wide. Teeth villiform, in narrow bands on jaws and palate; those on latter in 2 small widely separated patches, sometimes connected by a linear series. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular. Rayed dorsal fin with 5 to 6 rays and a spine. Adipose dorsal fin short. Pectoral fins with 7 to 9 rays and a spine serrated along both margins. Pelvic fins with 6 rays. Anal fin with 33 to 46 rays, not confluent with candal fin. Caudal fin forked. Lateral line complete.

Pseudeutropius atherinoides (Bloch)

(Text-fig. 74)

1794. *Silurus atherinoides* Bloch, *Naturges. Ausland. Fische*, **8** : 48, pl. 371, fig. 1 (type-locality : Tranquebar).

1877. *Pseudeutropius atherinoides*, Day, *Fish. India*, : 473, pl. 109, fig. 2; 1889. Day, *Fauna Br. India, Fish.* **1** : 141.

1981. *Pseudeutropius atherinoides*, Jayaram, *Handbk. Freshw. Fish. India* : 217 (distribution and key to species).

Local name : Patasi, Doya.

English name : Nil.

Materials examined : 2 exs., 45-50mm. SL.; Udaipur, South Tripura, R. P. Barman and party; 16.8.85. (ii) 2 exs., 55-56mm. SL.; Muhuri river, Belonia, South Tripura; R. P. Barman and party; 26.10.89.

Diagnostic features : D. 1/5-6/0, P. 1/7, V. 6, A. 33-41(3/30-38), C. 17.

Head length 5.00 to 5.50 and body depth 4.50 to 5.50 in total length. Eye diameter 2.50 to 3.00 in head length. Snout length 2.50 to 3.25 in head length. Mouth terminal, upper jaw slightly longer. Teeth on palate in two separate crescentic bands. Barbels 4 pairs, one pair nasal, slightly longer than head; one pair maxillary extending base of anal fin and two pairs mandibular, rather longer than head. Dorsal spine anteriorly rugose, finely serrated posteriorly. Pectoral spine rather longer and stronger than that of dorsal spine with about ten denticulations internally. Caudal fin deeply forked, upper lobe slightly longer.

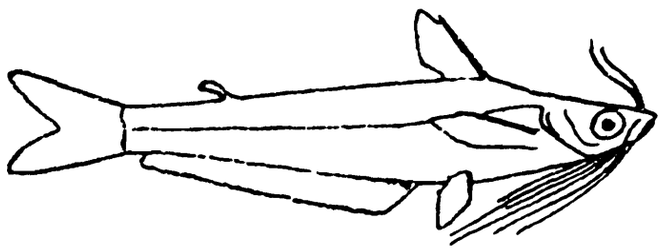


Fig. 74 : *Pseudeutropius atherinoides* (Bloch)

Colour in alcohol : Body silvery, dorsal surface greenish with three or four longitudinal bands on sides formed by black dots. A pale golden stripe along lateral line ending in a rounded black spot at base of caudal fin. Generally a black spot at nape and ahead of dorsal fin base present.

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

Size : It attains 150mm. (6 inches) in total length.

Remarks : This fish is considered less value of commercial importance, despite its wide distribution throughout India. However, for its bright colour and small size this fish attract the attention of aquarists.

Genus ***Clupisoma*** Swainson

1839. *Clupisoma* Swainson, *Nat. Fish. Animal.*, **2** : 306 (type-species : *Silurus garua* Hamilton Buchanan).

1981. *Clupisoma*, Jayaram, *Handbk. Freshw. Fish. India* 219 (genus characters and distribution).

Body elongated, compressed almost herring-shaped; whole of abdominal margin with the portion between pelvic fins and anal opening keeled. Cleft of mouth extending to anterior border of orbit. Teeth on palate in bands, not separated in middle. Barbels 4 pairs, one pair each of maxillary, nasal and two of mandibular. Rayed dorsal fin with 7 rays and a spine. A small adipose dorsal fin may be present or absent. Pectoral fins with 11 to 12 rays and a spine serrated or smooth. Pelvic fins with 6 rays. Anal fin with 29 to 44 rays. Caudal fin deeply forked. Lateral line complete.

Key to the species

Abdominal margin rounded. Maxillary barbels not extending beyond base of pectoral fin. Pectoral fins reaching pelvic fins. Anal fin with 41 to 43 rays ..... ***C. montana***

Abdominal margin keeled between pelvic fins and vent. Maxillary barbels extending beyond base of pectoral fins, up to base of pelvic fins. Pectoral fins not reaching pelvic fins. Anal fin with 29 to 36 rays .....***C. garua***

Clupisoma garua (Hamilton Buchanan)

(Text-fig. 75)

1822. *Silurus garua* Hamilton Buchanan, *Fish. Ganges,* : 156, 375, Pl. 21, fig. 50 (type-locality : Freshwater rivers of Gangetic provinces).

1877. *Pseudeutropius garua,* Day, *Fish. India,* : 474, pl. 109. fig. 6; 1889. Day, *Fauna Br. India, Fish,* **1** : 141-142.

1981. *Clupisoma garua,* Jayaram, *Handbk. Freshw. Fish. India,* : 219, 222, fig. 111 (distribution and key to species).

Local name : Gaoura.

English name : Gaura.

Materials examined : (i) 2 exs., 42-44mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 17.8.85. (ii) 1 ex., 130mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

Diagnostic features : D. 1/7, P. 1/11, V. 6, A. 29-36(3/26-33), C. 17.

Head length 5.50 to 6.50 and body depth 5.50 to 7.00 in total length. Eye diameter 3.50 to 4.00

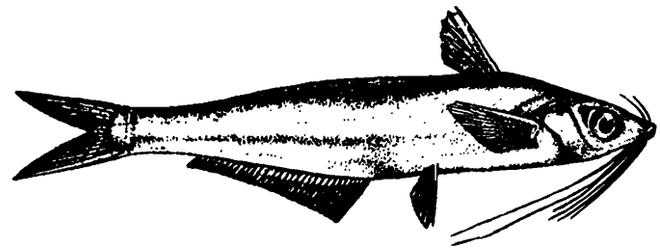


Fig. 75 : *Clupisoma garua* (Hamilton Buchanan)

in head length. Upper jaw longer. Barbels 4 pairs, nasal one third to one half as long as head, the maxillary extend to middle or end of pelvic fins, the two mandibular pairs are about as long as head. Dorsal spine rather slender, rugose anteriorly and feebly serrated posteriorly. Pectoral spine stronger and denticulated internally. Adipose dorsal fin usually only exists in the immature and becomes almost imperceptible in the adult specimens. Caudal fin deeply forked, lower lobe longer.

Colour in alcohol : Body silvery, fins stained with grey.

Distribution : India : Throughout Tripura and North India, not recorded South of Mahanadi. Pakistan. Nepal and Bangladesh.

Size : It attains 850mm. (2 feet 8 inches) in total length.

Remarks : C. garua is a common fish in Tripura. It is considered good eating and is preferred specially by the poorer people.

Clupisoma montana Hora

(Text-fig. 76)

1937. *Clupisoma montana* Hora, *J. Bombay nat. Hist. Soc.,* 39 (4): 673 (type-locality : Teesta river below Darjeeling).

1981. *Clupisoma montana,* Jayaram, *Handbk. Freshw. Fish. India,* : 220-221, fig. 113C (distribution and key to species).

Local name : Goura.

English name : Garua.

Materials examined : 2 exs., 67-90mm. SL.; Udaipur, South Tripura, R. P. Barman and party; 16.8.85.

Diagnostic features : D. 1/6-7, P. 1/12, V. 6, A. 41-43(3/38-40), C. 17.

Head length 5.00 and body depth 4.50 to 4.80 in standard length. Eye diameter 4.70 to 4.80 in head length. Snout bluntly pointed, length 2.40 to 3.10 in head length. Mouth inferior, upper jaw longer. Barbels 4 pairs, maxillary barbels extending beyond pectoral fin base, outer and inner mandibular barbels shorter than head, nasal barbels extend beyond anterior border of orbit. Dorsal spine smooth externally and serrated internally. Pectoral spine smooth externally, finely serrated internally. Caudal fin deeply forked with subequal lobes.

Colour in alcohol : Body silvery grey above becoming lighter below.

Distribution : India : Tripura : South Tripura district, Teesta river below Darjeeling, North Bengal, Yumuna and Sone river, Uttar Pradesh. Nepal.

Size : It attains 240mm. ($1^1/_2$ feet) in total length.

Remarks : C. montana was recorded for the first time from Tripura by me (Barman, 1988). It is a fish of limited fishey value.

Genus ***Eutropiichthys*** Bleeker

1862. *Eutropiichthys* Bleeker, *Versl. Akad. Amsterdam,* 14 : 398 (type-species : ***Pimelodus vacha*** Hamilton Buchanan).

1981. *Eutropiichthys*, Jayaram, *Handbk. Freshw. Fish. India,* : 222-223 (genus characters and distribution).

Body elongated, compressed, almost Indian trout shaped. Mouth subterminal, ascending wide, extending up to middle of orbit. Barbels 4 pairs, one pair each of maxillary, nasal and two of mandibular. Rayed dorsal fin with 7 rays and a spine. Adipose dorsal fin short. Pectoral fin with 10 to 16 rays and a smooth spine. Pelvic fins with 6 rays. Anal fin with 38 to 54 rays. Caudal fin deeply forked. Lateral line complete.

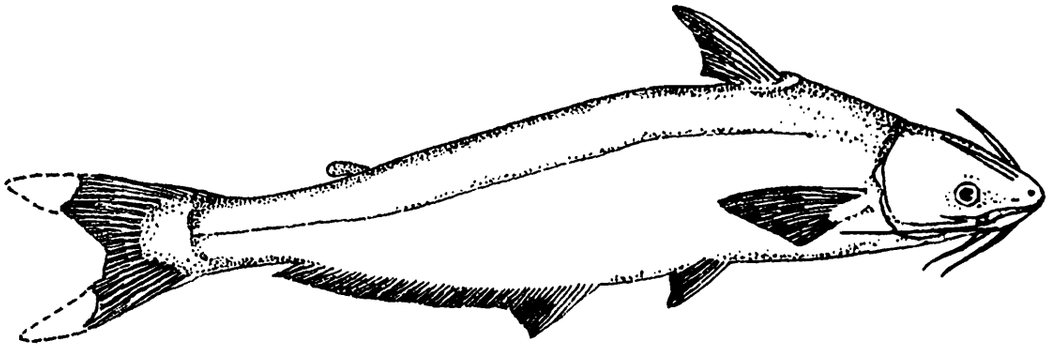


Fig. 76 : *Clupisoma montana* Hora

Key to the species

Teeth on palate in a band wider than premaxillary band. Nasal barbels reach posterior border of head or slightly beyond. ..... ***E. vacha***

Teeth on palate in a band narrower than premaxillary band or just equal to it. Nasal barbels reach a short distance behind posterior border of orbit. ..... ***E. murius***.

Eutropiichthys murius (Hamilton Buchanan)

(Text-fig. 77)

1822. *Pimelodus murius* Hamilton Buchanan, *Fish. Ganges,* : 195, 378 (type-locality : Mahananda river).

1877. *Pseudeutropius murius*, Day, *Fish India,* : 472, pl. 108, fig. 6; 1889, Day, *Fauna Br. India, Fish.* 1 : 139-140.

1981. *Eutropiichthys murius*, Jayaram, *Handbk. Freshw. Fish. India*, : 224 (distribution and key to species).

Local name : Muribacha.

English name : Vacha.

Materials examined : (i) 3 exs., 155-160mm. SL., Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 1 ex.; 85mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

Diagnostic features : D. 1/7/0, P. 1/10, V. 6, A. 38-43(3/35-40), C. 17.

Head length 5.50 to 6.00 and body depth 5.50 to 6.00 in total length. Eye diameter 3.00 to 3.75 in head length. Teeth on palate in a band narrower

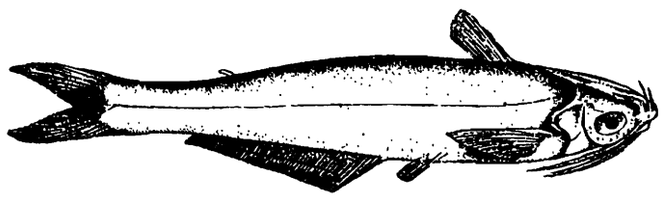


Fig. 77 : *Eutropiichthys murius* (Hamilton Buchanan)

than premaxillary band or just equal to it. Barbels 4 pairs, nasal reach to a short distance behind hind border of the orbit, the maxillary to base of pectoral fins, the two mandibular pairs are a little longer than head. Dorsal spine weak, very finely serrated in front, more coarsely behind. Pectoral spine weak, rough externally, serrated internally. Caudal fin deeply forked.

Colour in alcohol : Body silvery, lightest along the sides and below. Dorsal, pectoral and caudal fins darkest at their margins.

Distribution : Throughout Tripura and India, Pakistan, and Bangladesh. The Southern limit in India is the Mahanadi river systems (Jayaram, 1977).

Size : It attains 200mm. (8 inches) in total length.

Remarks : It is one of the commerically important fishes of Tripura. It is abundantly available in the river Gumti.

Eutropiichthys vacha (Hamilton Buchanan)

(Text-fig. 78)

1822. *Pimelodus vacha* Hamilton Buchanan, *Fish. Ganges*, : 196, 378, pl. 19, fig.4 (type-locality : larger freshwater rivers of the Gangetic provinces).

1877. *Eutropiichthys vacha*, Day, *Fish. India*, : 490, pl. 114, fig. 6; 1889. Day, *Fauna Br. India, Fish.* **1** : 128

1981. *Eutropiichthys vacha*, Jayaram, *Handbk. Freshw. Fish. India*, : 224 (distribution and key to species).

Local name : Bacha.

English name : Vacha.

Materials examined : 2 ex., 130-145mm. SL.; Amarpur, South Tripura, R. P. Barman and party 10.8.85.

Diagnostic features : D. 1/7/0, P. 1/13-16, V. 6, A. 3-4/41-47, C. 17.

Head length 5.50 to 5.75 and body depth 5.00 to 5.50 in total length. Eye diameter 3.50 to 3.75 in head length. Teeth on palate in a band wider than premaxillary band. Barbels 4 pairs, the nasal pair reaching to hind border of head or even slightly further, maxillary ones to end of preopercle or they may be even as long as head,

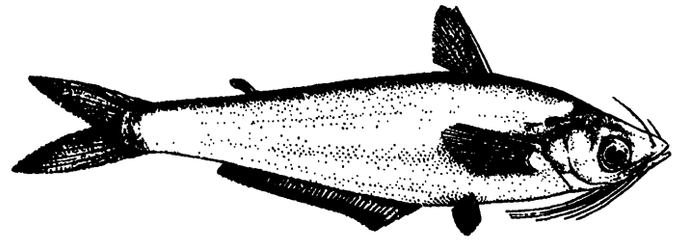


Fig. 78 : *Eutropiichthys vacha* (Hamilton Buchanan)

the mandibular ones are rather shorter. Dorsal spine thin, serrated posteriorly. Pectoral spine rough externally, serrated internally. Caudal fin forked.

Colour in alcohol : Body silvery, greyish along the back. Pectoral and caudal fins generally edged with black.

Distribution : India : Throughout Tripura. North India up to Mahanadi. Nepal, Pakistan, Bangladesh, Burma and Thailand.

Size : It attains 304mm. (1 foot) in total length.

Remarks : It is also one of the commercially important fishes of Tripura. It is a smooth skined good eating fish. It is a voracious eater feeding on small fishes and aquatic insects.

Genus ***Silonia*** Swainson

1839. *Silonia* Swainson, *Nat. Hist. Fish. Animal.*, **2** : 305 (type-species : *Pimelodus silondia* Hamilton Buchanan).

1840. *Silundia* Valenciennes, *Hist. nat. poiss.*, **15** : 49 (type-species : *Pimelodus silondia* Hamilton Buchanan).

1952. *Silonia*, Silas, *Proc. nat. Inst. Sci. India* **18** *(5)* : 433 (*Silonopangasius* Hora synonymised).

1981. *Silonia*, Jayaram, *Handbk. Freshw. Fish. India*, : 224 (distribution and key to species).

Body elongated, compressed with abdomen rounded. Mouth anterior, wide, obliquely directed upwards. Teeth large, caniniform on jaws, villiform on palate; jaw teeth project outside mouth. Barbels 2 pairs, one of maxillary and one of mandibular; either of the pair may become vestigial or absent. Rayed dorsal fin with 7 rays and a spine. Adipose dorsal fin short. Pectoral fins with 11 to 13 rays and a serrated spine. Pelvic fins with 6 rays. Anal fin with 40 to 48 rays. Caudal fin deeply forked. Lateral line complete.

Silonia silondia (Hamilton Buchanan)

(Text-fig. 79)

1822. *Pimelodus silondia* Hamilton Buchanan, *Fish Ganges*, : 160, 375, pl. 7, fig. 50 (type-locality : Gangetic provinces).

1877. *Silundia gangetica* Day, *Fish. India*, : 488, pl. 114, fig. 3; 1889. Day, *Fauna Br. India, Fish*, **1** : 145, fig. 62.

1981. *Silonia silondia*, Jayaram, *Handbk. Freshw. Fish. India*, : 225 (distribution and key to species).

Local name : Shilong, Silon.

English name : Nil.

Materials examined : 1 ex., 85mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

Diagnostic features : D. I/7/0, P. I/11-13, V. 6, A. 40-48(4/36-44), C. 17.

Head length 5.00 to 5.80 and body depth 4.70 to 7.40 in total length. Eye diameter 3.10 to 4.40 in head length. Barbels 2 pairs, one pair each of maxillary and mandibular, either of the pair may become vestigial or absent. Teeth in jaws villiform and in crescentic band across the palate. Dorsal spine anteriorly smooth or rugose and posteriorly finely serrated in its upper portion. Pectoral spine serrated internally. Caudal fin deeply forked.

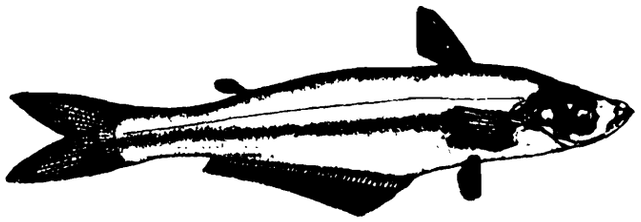


Fig. 79 : *Silonia silondia* (Hamilton Buchanan)

Colour in alcohol : Bluish along the back becoming silvery on sides. Fins stained with grey.

Distribution : India : North India, Tripura (South Tripura district). Bangladesh, Nepal and Pakistan.

Size : It attains 900mm. (3 feet) in total length.

Remarks : S. silondia is considered good eating as it prefers well oxygenated streams and clear deep waters. It is riverine fish but may occur in tanks and reservoirs as well. It is a gregarious fish moving in shoals.

Family PANGASIIDAE

Body elongated and compressed with abdomen rounded. Head blunt and exceptionally granulated

Teeth small, villiform in bands on jaws in four patches on palate. Barbels 2 pairs, one each of maxillary and mandibular. Rayed dorsal fin with 6 to 7 rays and a spine. Adipose dorsal fin short. Pectoral fins with 9 to 12 rays and a serrated spine. Pelvic fins with 6 rays. Anal fin with 30 to 34 rays. Caudal fin forked. Lateral line complete.

Genus ***Pangasius*** Valenciennes

1840. *Pangasius* Valenciennes, (in Cuvier and Valenciennes) *Hist. Nat. Poiss.*, **15** : 45 (type-species : *Pimelodus pangasius* Hamilton Buchanan).

1981. *Pangasius*, Jayaram, *Handbk.. Freshw. Fish. India*, : 226-227 (genus characters and distribution).

For genus characters see those of the characters of the family.

Pangasius pangasius (Hamilton Buchanan)

(Text-fig. 80)

1822. *Pimelodus pangasius* Hamilton Buchanan, *Fish. Ganges*, : 163, 376, pl. 33, fig. 52 (type-locality : estuaries of Bengal).

1877. *Pangasius buchanani*, Day, *Fish. India*, : 470, pl. 108, fig. 5; 1889. Day, *Fauna Br. India, Fish*, **1** : 142, fig. 61.

1981. *Pangasius pangasius*, Jayaram, *Handbk. Freshw. Fish. India*, : 227 (distribution).

Local name : Pangash.

English name : Pangash.

Materials examined : 1 ex., 175mm. SL.; Kailashar, North Tripura; R. P. Barman and party; 21.10.89.

Diagnostic features : D. 8-9(2/6-7), P. 13-14 (1/12-13), V. 6, A. 30-34(4-5/26-29), C. 19.

Head length 4.50 to 6.00 and body depth 5.00 to 6.50 in total length. Eye diameter 3.00 to 5.00 in head length. Snout obtusely rounded, length 2.20 to 3.30 in head length. Mouth inferior, upper jaw slightly longer. Palatine teeth in a crescentic row, vomerine patches separate from or almost confluent with those on palate. Barbels 2 pairs, one each of maxillary and mandibular, maxillary pair extending to base of pectoral fin. Dorsal spine serrated. Pectoral spine serrated. Caudal fin deeply forked, upper lobe slightly longer. Lateral line complete.

Colour in alcohol : Body silvery, darkest above, shot with purple on sides. Cheeks and upper surface of head shot with gold.

Distribution : Throughout Tripura and India, Pakistan, Bangladesh, Burma, Thailand, Malaya, Vietnam and Indonesia.

Size : It attains 1219mm. (4 feet) in total length.

Remarks : P. pangasius is being recorded here for the first time from Tripura. It is a foul feeder and descends tidal rivers and estuaries.

Family AMBLYCIPITIDAE

Body elongated, subcylindrical and compressed, abdomen rounded. Nostrils close together separated by nasal barbel. Barbels 4 pairs, moderately developed. A fold of skin above and anterior to pectoral fin base and immediately behind gill openings present. Rayed dorsal fin inserted above half or first quarter of pectoral fin with 5 to 6 rays and a weak spine. Adipose dorsal fin not confluent with either rayed dorsal

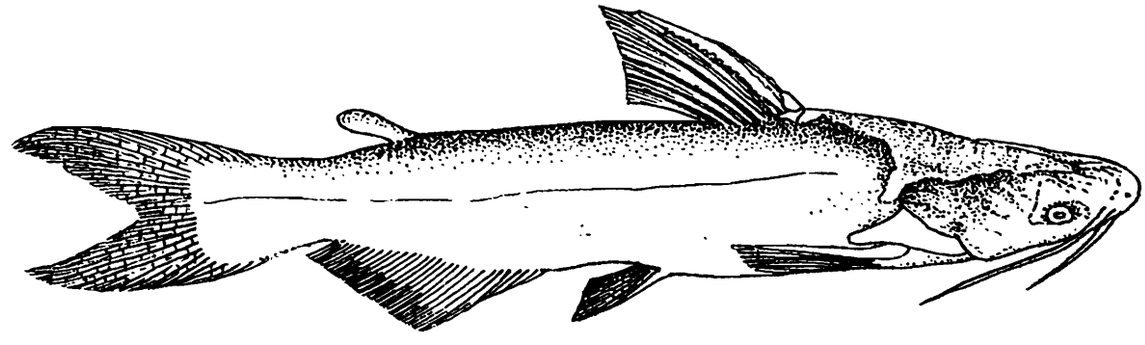


Fig. 80 : *Pangasius pangasius* (Hamilton Buchanan)

fin or caudal fin. Pectoral fins with 7 rays and a smooth weak spine. Pelvic fins with 6 rays. Anal fin with 8 to 11 rays. Caudal fin truncate or emarginate. Lateral line absent.

Genus ***Amblyceps*** Blyth

1858. *Amblyceps* Blyth, *Proc. Asiat. Soc. Bengal,* **27** : 282 (type-species : *Pimelodus mangois* Hamilton Buchanan).

1981. *Amblyceps*, Jayaram, *Handbk. Freshw. Fish. India*, : 227-228 (genus characters and distribution).

Characters of genus are same of those of the family characters.

Amblyceps mangois (Hamilton Buchanan)

(Text-fig. 81)

1822. *Pimelodus mangois* Hamilton Buchanan, *Fish. Ganges*, : 199, 379 (type-locality : North Bihar).

1877. *Amblyceps mangois*, Day, *Fish. India*, : 490, pl. 102, fig. 6 and pl. 117, fig. 1; 1889. Day, *Fauna Br. India, Fish*, **1** : 123-124, fig. 52.

1981. *Amblyceps mangois*, *Jayaram, Handbk. Freshw. Fish. India*, : 228 (distribution).

Local name : Nil.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from the river Gumti, Tripura.

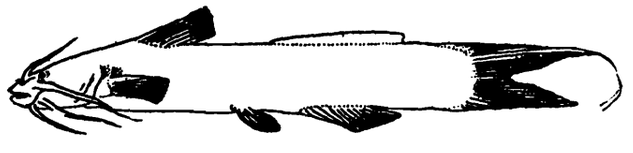


Fig. 81 : *Amblyceps mangois* (Hamilton Buchanan)

Diagnostic features : D. 1/5-6/0, P. 1/7, V. 6, A. 8-11(2-3/6-8), C. 19.

Head length 6.25 and body depth 7.00 to 9.00 in total length. Eyes small, situated in the anterior two fifths of head. Mouth wide, lower jaw somewhat longer. Barbels 4 pairs, nasal as long as head and equalling the internal mandibular pair, maxillary reach end of pectoral spine while outer mandibular are not quite so long. Dorsal fin inserted on half or first quarter of pectoral fin. Adipose dorsal fin low, length of its base equalling that of rayed dorsal fin. Caudal fin forked, its upper lobe longer. Lateral line absent.

Colour in alcohol : Body olive-brown, lightest below. In some specimens a dark line commences opposite the opercles and soon subdivides-one branch running to centre of base of caudal fin and the other to base of anal fin.

Distribution : India : Tripura : South Tripura district along the foot-hills of the Himalayas from Kangra valley in Punjab to Assam, Krishna river systems, South India. Pakistan, Nepal, Bangladesh, Burma, Thailand and Loas.

Size : It attains 125mm. (5 inches) in total length.

Remarks : Lipton (1983-84) remarked it is a rare species of fish in Tripura. My present study also confirm the above contention.

Family SISORIDAE

Sucker catfishes

Body short or elongated, with head and anterior part of body depressed and tail compressed or entire body compressed. An adhesive apparatus on thorax may be present or absent. Nostrils close together, slit-like, separated by nasal barbels. Barbels 4 pairs, generally well developed, in some genera thick, fleshy with broad bases. Rayed dorsal fin base short, with or without a spine. Adipose dorsal fin present and generally large. Paired fins inserted horizontally, may or may not be plaited. Pectoral fins with or without a spine, denticulated either on inner or outer margin, or on both. Anal fin short, not confluent with caudal fin. Caudal fin emarginate, deeply forked, truncate or rounded. Lateral line complete. Generally small forms occurring in mountain rapids.

Key to the Genera

1. An adhesive apparatus on ventral surface of body present, distinct and well developed .... ***Glyptothorax.***

An adhesive apparatus on ventral suface of body absent, if present faintly developed and indistinct.....2

2. Serrations along outer margin of pectoral spine divergent or a combination of retrose and antrose teeth. .....***Erethistoides***

Serrations along outer margin of pectoral spine either absent or when present weak in one direction only. 3

3. Caudal fin rays prolonged. Body with bony plates. .....***Bagarius***

Caudal fin rays not prolonged. Body smooth, without bony plates. 4

4. Maxillary barbels with stiff base, lying in a groove anteriorly. 5

Maxillary barbels without any stiff base and groove anteriorly. 6

5. Mandibular pair of barbels inserted on a transverse line at different levels. Gill membranes free from isthmus or only slightly adherent to it. Ventral surface of head flat and broad. .....***Nangra***

Mandibular pair of barbels inserted on a transverse line at the same level. Gill membranes broadly united with isthmus. Ventral surface of head compressed and narrow .....***Gagata***

6. Barbels annulated. Body plain. .....***Hara***

Barbels not annulated. Body with tubercles along sides of body. .....***Laguvia***

Genus ***Bagarius*** Bleeker

1853. *Bagarius* Bleeker, *Verh. Bat. Gen.*, **25** : 121 (typespecies : *Pimelodus bagarius* Hamilton Buchanan).

1981. *Bagarius*, Jayaram, *Handbk. Freshw. Fish India*, : 237-238 (genus characters and distribution).

Body elongated, flattened up to pelvic fins. Head depressed, its upper surface osseous, naked and rugose. Mouth ventral, wide and crescentic. 4 pairs of barbels, maxillary barbels with broad bases. Rayed dorsal fin with 6 rays and a smooth spine with an elongated soft termination of varying length. Pectoral fins with 13 rays and a spine serrated along inner edge and also with a soft prolongation. Pelvic fins with 6 rays. Anal fin with 12 to 15 rays. Caudal fin deeply forked, upper lobe longer and both lobes produced into soft filamentous prolongations.

Bagarius bagarius (Hamilton Buchanan)

(Text-fig. 82)

1822. *Pimelodus bagarius* Hamilton Buchanan, *Fish. Ganges*, : 186, 378, pl.7, fig. 62 (type-locality : the Ganges and its tributaries).

1877. *Bagarius yarrellii*, Day, *Fish. India*, : 495, pl. 115, fig.3; 1889. Day, *Fauna Br. India, Fish.* **1** : 194, fig. 71.

1981. *Bagarius bagarius*, Jayaram, *Handbk. Freshw. Fish. India*, : 238 (distribution).

Local name : Bhagmach.

English name : Bagarius, Goonch.

Materials examined : 2 exs., 230-245mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85.

Diagnostic features : D. 1/6/0, P. 1/12, V. 1/5, A. 12-15 (3/9-12), C. 17.

Head length 3.75 and body depth 5.00 in total length (without prolonged caudal fin ray). Eye diameter 7.70 to 11.20 in head length. Barbels 4 pairs, maxillary barbels with broad bases. Rayed dorsal fin inserted above base of pectoral fins. dorsal spine smooth with an elongated soft termination of varying length. Pectoral spine, serrated, stronger than and equal to dorsal spine. Caudal fin deeply forked, its upper lobe prolonged and both lobes produced into soft filamentous prolongations.

Colour in alcohol : Body scarbrous, greyish yellow with large irregular brown and black markings and cross bands. Fins with black bases and generally with a dark band.

Distribution : Throughout Tripura and India, Pakistan, Bangladesh, Nepal, Burma, Thailand, Malaya, Vietnam, East Indies and Tonkin.

Size : It attains 1,828mm. (6 feet) in total length and can weigh up to 110 kg.

1981. *Gagata cenia*, Jayaram, *Handbk. Freshw. Fish. India* : 239, fig. 129 (distribution and key to species).

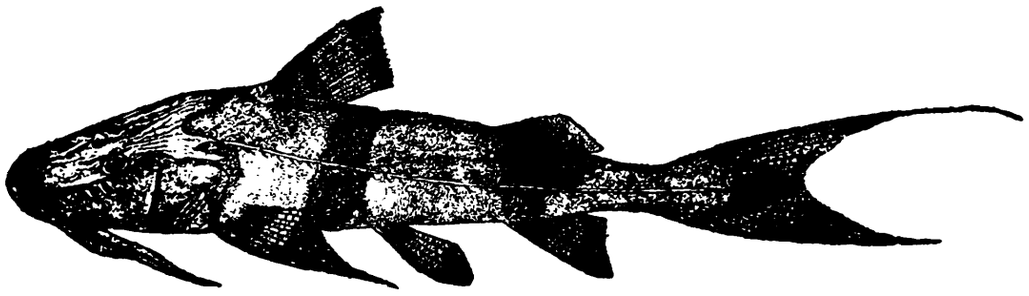


Fig. 82 : *Bagarius bagarius* (Hamilton Buchanan)

Remarks : B. garius is primarily an inhabitant of rapids and rocky ponds. It is known as the "Goonch" and is a favourite of anglers. It is one of the largest known freshwater fishes and is also called, "the freshwater shark" partly on account of its voracity and partly because its underhung mouth and general ugliness.

This species has been rendered vulnerable by overharvesting.

Genus ***Gagata*** Bleeker

1858. *Gagata* Bleeker, *Ichthyol. Ind. Prodr.*, **1** : 204 (type-species : *Gagata typus* Bleeker = *Pimelodus gagata* Hamilton Buchanan).

1981. *Gagata*, Jayaram, *Handbk. Freshw. Fish. India*, : 238-239 (genus characters and distribution).

Body short and compressed. Head compressed and narrow. Gill membranes broadly united with isthmus. Barbels 4 pairs, mandibular barbels inserted on a transverse line at the same level. Rayed dorsal fin with not more than 6 rays and a spine. Pectoral fins with 7 to 9 rays and a serrated spine. Pelvic fins with 6 rays. Anal fin with 11 to 16 rays. Caudal fin deeply forked. Lateral line complete, may be with pores in anterior half.

Gagata cenia (Hamilton Buchanan)

(Text-fig. 83)

1822. *Pimelodus cenia* Hamilton Buchanan, *Fish. Ganges*, 174, 376, pl. 131, fig. 67 (Type-locality : Northern Bengal).

1877. *Gagata cenia*, Day, *Fish. India :* 492, pl. 115, figs. 4 and 5; 1889. Day, *Fauna Br. India, Fish.* **1** : 208-209, fig. 75.

Local name: Jungla.

English name : Gagata, Dwarf blotched catfish.

Materials examined : (i) 1 ex., 65mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 2 exs., 29-38mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 18.8.85.

Diagnostic features : D. 1/6/0, P. 1/9, V. 6, A. 14-16(3-4/11-12), C. 19.

Head length 4.50 to 5.00 and body depth 5.00 to 7.00 in total length. Eye diameter 4.00 to 4.50 in head length. Snout somewhat compressed, overhanging mouth. Barbels 4 pairs, nasal pair very short, maxillary pair extend to base of pectoral spine or a little more, 2 mandibular pairs arise on a transverse line at the same level across the chin. Dorsal fin higher than body depth, its first 2 rays the longest, spine moderately strong. Pectoral spine stronger, denticulated internally, serrated externally in its outer fourth. Caudal fin deeply forked.

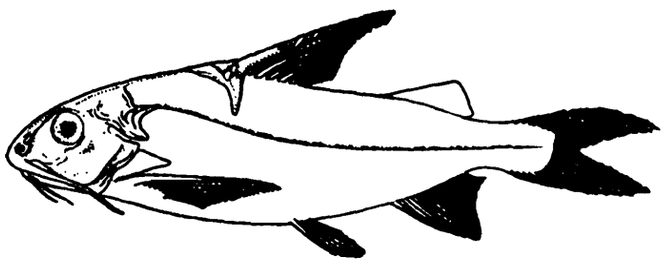


Fig. 83 : *Gagata cenia* (Hamilton Buchanan)

Colour in alcohol : Body dull grey, the outer two thirds of pectoral, the outer halves of both

dorsals, pelvics and anal fins black. Caudal fin whitish. The young specimens are yellowish-bronge colour, becoming silvery on abdomen. They have 3 dark bands over the head and 4 more over the back, descending as low as the lateral line. Caudal fin with a semilunar black band or a black blotch on each lobe. A dark mark across the dorsal fin.

Distribution : India : Assam, Tripura, (South & West Tripura district), West Bengal, Bihar, Orissa, Punjab, Delhi, Uttar Pradesh. Bangladesh. Pakistan. Nepal and Burma.

Size : It attains 300mm. (1 foot) in total length.

Remarks : This fish was recorded by me for the first time from Tripura (Barman, 1988).

Genus *Nangra* Day

1877. *Nangra* Day, *Fish. India*, : 493 (type-species : *Pimelodus nangra* Hamilton Buchanan).

1941. *Nangra*, Hora and Law, *Rec. Indian Mus.*, **43** : 9 (as a synonym of *Gagata* Bleeker).

1972. *Nangra*, Jayaram, *J. zool. Soc. India*, **23** (2) : 171 (genus resurrection from the synonymy of *Gagata*).

Body short and compressed with abdomen rounded. Gill membranes confluent with each other and also with isthmus. Barbels 4 pairs, mandibular pair of barbels inserted on a transverse line at different angles. A pair of finger-like processes in between inner mandibular pair may be present. Rayed dorsal fin with 6 to 10 rays and a spine. Adipose dorsal fin short. Pectoral fins with 8 to 9 rays and a serrated spine. Pelvic fins with 6 rays. Anal fin with 11 to 13 rays. Caudal fin forked. Lateral line complete, may be with pores on anterior half.

Nangra viridescens (Hamilton Buchanan)

(Text-fig. 84)

1822. *Pimelodus viridescens* Hamilton Buchanan, *Fish. Ganges*, : 173, 376, pl.10, fig. 56 (type-locality : rivers of the northern parts of Bengal).

1877. *Nangra punctata* Day, *Fish. India*, : 494, pl. 115, fig. 8 (type-locality : Sone river at Birbhoom).

1877. *Nangra viridescens* Day, *Fish. India*, : 494, pl. 115, fig. 7.

1889. *Nangra punctata* Day, *Fauna Br, India, Fish*, **1** : 212, fig. 76.

1889. *Nangra viridescens* Day, *Fauna Br. India, Fish*, **1** : 212.

1981. *Nangra viridescens*, Jayaram, *Handbk. Freshw. Fish. India*, : 241 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : (i) 3 exs., 55-60 mm. SL.; Deo river, Kanchanpur, North Tripura; R. P. Barman and party ; 22. 10.89. (ii) 8 exs., 44-65mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; (iii) 1 ex., 50mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89

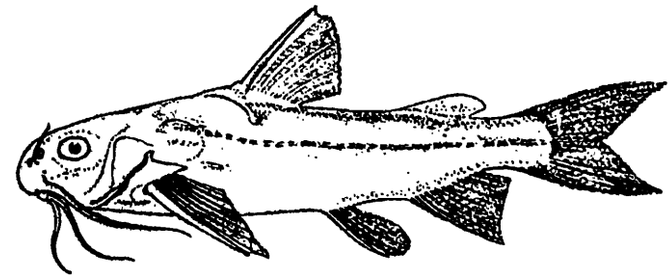


Fig. 84 :*Nangra viridescens* (Hamilton Buchanan)

Diagnostic features : D. 1/6/0, P. 1/8, V. 1/5, A. 3-4/8, C. 18-21.

Head length 4.20 to 4.50 and body depth 5.80 to 6.30 in total length. Head covered with minute spine-like structures. Snout broad, rounded, 2.80 to 3.00 in head length, overhanging mouth. Eye diameter 3.50 to 4.10 in head length. Barbels 4 pairs, maxillary pair with stiff basal portions, reaching hind border of the orbit, outer and inner mandibular pairs much shorter, their bases wide apart, the inner in advance of outer, the nasal pair very short. Rayed dorsal fin with a small, strong entire spine. Pectoral fin with a strong spine, smooth externally and strongly denticulated internally. Caudal fin deeply forked, lobes subequal.

Colour in alcohol : Body glossy greenish brown on the back, with two very light green bands, passing one from the base of each dorsal fin to middle of depth of body. A dark band on dorsal fin and spots on either lobe of caudal fin.

Distribution : India : Throughout Tripura the Yamuna, West Bengal, Assam, Bihar, Maharashtra, Andhra Pradesh and the Cauvery river systems. Bangladesh and Nepal.

Size : It attains 85mm. ($4^1/_2$ inches) in total length.

Remarks : This fish is found to live throughout Tripura. It is being recorded here for the first time from this state.

Genus ***Erethistoides*** Hora

1950. *Erethistoides* Hora, *Rec. Indian Mus.*, **47** : 190 (type-species : *Erethistoides montana* Hora).

1981. *Erethistoides*, Jayaram, *Handbk. Freshw. Fish India.* : 243-244 (genus characters and distribution).

Body elongated and greatly depressed, covered with small backwardly directed spines on dorsal surface. Snout projecting like a broad hood in front of mouth. Barbels 4 pairs, one pair each of maxillary, nasal and two of mandibular. Gill membranes fused with each other, and also with isthmus; portion of gill opening in front and somewhat inner to base of pectoral spine modified into a spout-like formation. Rayed dorsal fin with 5 rays and a spine. Adipose dorsal fin short and low. Pectoral fins with 6 rays and a spine strongly serrated along outer margin with teeth directed towards tip of spine in distal half; spine tips produced into a filiform process, along with similar structure of some outer rays. Pelvic fins with 6 rays. Anal fin with 9 rays. Caudal fin emarginate, lower portion greatly produced but not filiform. Lateral line complete.

Erethistoides montana montana Hora

1950. *Erethistoides montana* Hora, *Rec. Indian Mus.*, **47** : 191 (type-locality : Tangla, Darrang district, Assam).

1981. *Erethistoides montana montana*, Jayaram, *Handbk. Freshw. Fish. India.* : 244 (distribution).

Local name : Nil.

English name : Nil.

Materials examined : 1 ex., 60mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85.

Diagnostic features : D. 1/5/0, P. 1/6, V. 1/5, A. 9, C. 13.

Head length 3.20 to 3.30 and body depth 6.10 to 6.30 in standard length. Head ventrally flattened, broadly pointed anteriorly. Snout depressed, 1.80 to 2.00 in head length. Eye diameter 11.50 in head length. Mouth inferior, upper jaw longer. Barbels 4 pairs, maxillary pair with broad bases, reaching first third of pectoral fins, outer mandibulars extend to gill openings, inner mandibulars short and the nasal pair small. Rayed dorsal fin with a strong spine finely serrated externally, denticulated internally. Adipose dorsal fin base equal to rayed dorsal fin base. Pectoral fin with a strong flattened spine, externally serrated and internally denticulated; external denticulations directed forwards in the proximal half and directed backwards in the distal half. Caudal fin forked, lower lobe longer.

Colour in alcohol : Body dusky above, dirty white below. A dark band over nape and three similar cross bands on body, one below first dorsal, second below adipose dorsal and the third on caudal fin base. Dorsal and caudal fins banded distally.

Distribution : India : Assam and Tripura (South Tripura district)

Size : It attains 60mm. ($2^1/_2$ inches) in total length.

Remarks : This fish was recorded by me for the first time from Tripura (Barman, 1988).

Genus ***Hara*** Blyth

1860. *Hara* Blyth, *J. Asiat. Soc. Beng.*, **29** : 151 (type-species : *Pimelodus hara* Hamilton Buchanan).

1981. *Hara*, Jayaram, *Handbk. Freshw. Fish. India.* : 245 (genus description and distribution).

Body somewhat elongated, flattened ventrally. Head depressed and ventrally flattened. Mouth inferior, upper jaw longer. Occipital process, cleithral process, scapular process all prominent and naked. Humeral process prominent on ventral side. 4 pairs of barbels, all annulated, one pair each of maxillary, nasal and two of mandibular; maxillary pair with broad cutaneous flaps at their bases. Rayed dorsal fin with 5 to 6 rays and a spine. Adipose dorsal fin short and high. Pectoral fins with 5 to 6 rays and a spine serrated along both edges, serrations along outer edge retrose, along inner edge antrose. Pelvic fins with 6 rays. Anal fin with 8 to 10 rays. Caudal fin emarginate, semicircular, with lower lobe slightly longer. Lateral line complete.

Hara hara (Hamilton Buchanan)

(Text-fig. 85)

1822. *Pimelodus hara* Hamilton Buchanan, *Fish. Ganges.* : 190, 378 (type-locality : Kosi river).

1877. *Erethistes hara*, Day, *Fish. India*, : 452, pl.102, fig. 1 and 2; 1889. Day, *Fauna Br. India, Fish*, **1** : 204-205, fig. 74.

1981. *Hara hara*, Jayaram, *Handbk. Freshw. Fish. India*, : 245-246 (distribution and key to species).

Local name : Gagot.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Fenny river, South Tripura.

Diagnostic features : D. 1/6/0, P. 1/6, V. 6, A. 10-11 (3/7-8), C. 15.

Head length 4.00 to 4.50 and body depth 4.50 to 5.00 in total length. Eye diameter 9.00 to 10.00 in head length. Barbels 4 pairs, maxillary pair reach gill openings, outer and inner mandibular pairs shorter and nasal pair reach to anterior border of the orbit. Rayed dorsal fin with a strong spine, serrated internally. Adipose dorsal fin base length four sevenths of that of rayed dorsal fin. Pectoral spine strong and flattened denticulated internally and serrated externally. Caudal fin forked.

Colour in alcohol : Body yellowish brown, banded or blotched darker. Fins with black bands or markings. All the barbels annulated with black.

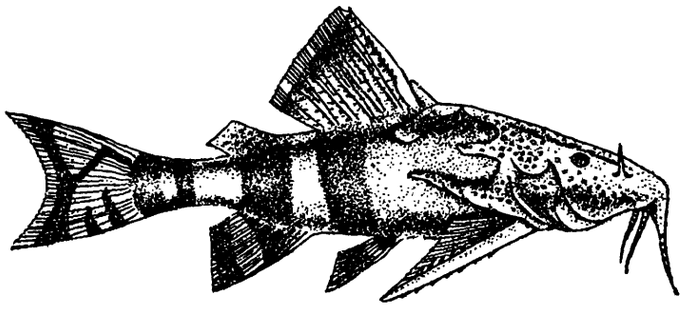


Fig. 85 : *Hara hara* (Hamilton Buchanan)

Distribution : India : Uttar Pradesh, North Bengal, Assam, Tripura (South Tripura district), Orissa, Nepal and Bangladesh.

Size : It attains 140mm. ($5^1/_2$ inches) in total length.

Genus *Laguvia* Hora

1921. *Laguvia* Hora, *Rec. Indian Mus.*, **22** : 739 (type-species : *Pimelodus asperus* McClelland).

1981. *Laguvia*, Jayaram, *Handbk. Freshw. Fish. India*, : 249-250 (genus characters and distribution).

Body short and elongated. Ventral surface of body corrugated or with joint V-shaped groove forming an inconspicuous adhesive apparatus, but not so well developed or prominent as in *Glyptothorax*. Barbels 4 pairs, one each of maxillary, nasal and two of mandibular; maxillary barbels with broad bases. Barbels may be annulated. Rayed dorsal fin with 5 to 6 rays and a spine. Adipose dorsal fin short. Pectoral fins with 6 to 8 rays and a spine serrated along inner edge with antrose teeth. Pelvic fins with 6 rays. Anal fin with 9 to 10 rays. Caudal fin truncate or slightly emarginate, its free protion of posterior border semilunar. Lateral line complete.

Laguvia ribeiroi ribeiroi Hora

(Text-fig. 86)

1921 *Laguvia ribeiroi* Hora, *Rec. Indian Mus.*, **22** : 741, pl. 29, fig. 3 (type-locality : Khoila river, a tributary of the Tista at Jalpaiguri in the Darjeeling district, North Bengal).

1954. *Glyptothorax ribeiroi* Menon, *Rec. Indian Mus.*, **52** : 40 (Khoila R., Mosal R., Kamala R., Kosi R., Nepal, Duars and Terai; Rihand R.).

1981. *Laguvia ribeiroi ribeiroi*, Jayaram, *Handbk. Freshw. Fish. India.* : 250 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Manu river, North Tripura.

Diagnostic features : D. 2/5-6/0, P. 1/7, V. 1/5, A. 1/8, C. 17.

Head length 4.20 and body depth 5.40 in total length. Eye diameter 7.50 in head length. Mouth inferior. Barbels 4 pairs, maxillary barbels with broad bases and dark annulations, reaching

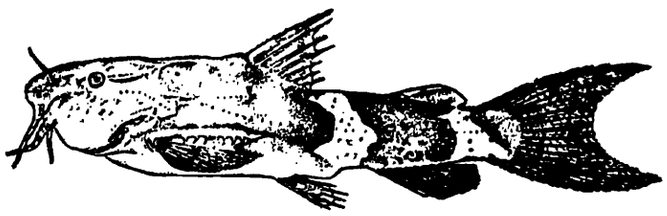


Fig. 86 : *Laguvia ribeiroi ribeiroi* Hora

pectoral fin base, outer and inner mandibulars shorter with dark annulations, the nasals not reaching anterior border of the orbit. A poorly developed V-shaped thoracic apparatus present. Rayed dorsal fin with a strong spine, serrated externally and denticulated posteriorly at its upper portion. Pectoral fin with a strong flat spine, serrated externally, denticulated externally with 8 curved spines. Caudal fin forked or semicircular, with pointed lobes, lower slightly longer.

Colour in alcohol : Skin mostly smooth, number of bony tubercles behind gill openings in a horizontal line. Head scapular and cubito-humeral process corrugated. Dark grey above becoming dull below speckled with black dots. 2 broad yellowish transverse bands on body, the anterior one between rayed and adipose dorsal fins, the posterior one below.

Distribution : India : Tripura : North Tripura district; Hoshangabad district, Madhya Pradesh; Uttar Pradesh, Rihand river, Bihar, West Bengal. Nepal and Bangladesh.

Size : It attains 31. 3mm. (1.2 inches) in total length.

Genus ***Glyptothorax*** Blyth

1860. *Glyptothorax* Blyth, *J. Asiat. Soc. Beng.*, **29** : 154 (type-species : *Glyptothorax trilineatus* Blyth).

1981. *Glyptothorax*, Jayaram, *Handbk. Freshw. Fish. India.* : 252-253 (genus characters and distribution).

Body elongated, with smooth or rough with granules or tubercles. Abdomen slightly flat or rounded. Mouth inferior, transverse and narrow. Ventral surface of body provided with an adhesive apparatus with or without a central pit or depression on thorax. Barbels 4 pairs, one pair each of maxillary, nasal and two of mandibular; maxillary pair with broad bases. Rayed dorsal fin with 5 to 7 rays and a spine. Adipose dorsal fin short and high. Pectoral fins with 6 to 11 rays and a spine, strong, broad, serrated with antrose teeth along inner edge. Pelvic fins with 6 rays. Anal fin with 7 to 14 rays. Caudal fin deeply forked. Lateral line complete.

Key to the species

1. Thoracic adhesive apparatus with a distinct central pit. ..... ***G. cavia***

   Thoracic adhesive apparatus without a central pit. 2

2. Body rough with granulations or tubercles. .. .. ***G. telchitta telchita***

   Body smooth. ..... ***G. conirostrae conirostrae***

Glyptothorax cavia (Hamilton Buchanan)

(Text-fig. 87)

1822. *Pimelodus cavia* Hamilton Buchanan, *Fish. Ganges.*, 188, 378 (type-locality : northern rivers of Bengal).

1877. *Euglyptosternum lineatum*, Day *Fish. India.* : 500, pl. 116, fig. 7; 1889. Day, *Fauna Br. India. Fish. India.* **1** : 202-203, fig. 73.

1981. *Glyptothorax cavia*, Jayaram, *Handbk. Freshw. Fish. India.* : 253, 259 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Khowai river, West Tripura.

Diagnostic features : D. 1/6/0, P. 1/8, V. 6, A. 3/6, C. 17.

Head length 3.50 to 3.70 and body depth 5.40 to 6.60 in standard length. Eye diameter 10.00 to 13.50 in head length. Mouth inferior. Upper jaw longer. Barbels 4 pairs, nasal pair very short, maxillary pair equal to head length and two mandibular pairs short. Dorsal spine blunt, rough, but not serrated on anterior surface. Adipose fin small and rough. Pectoral spine serrated on both edges. Caudal fin forked, lower lobe longer.

Colour in alcohol : Lurid and back is variegated with brown dots, collected into cloud-like marks, while the sides have a gloss like silver, changing into the hue of copper. Abdomen is of dirty livid appearance. Across the tail are two transverse bars and on tail-fin a third, all of which have fewer dots than the adjacent parts.

Distribution : India : North Bengal, Assam, Tripura (West Tripura district). Bangladesh. Nepal. Burma. Pakistan.

Size : It attains 150mm. (6 inches) in total length.

Glyptothorax conirostrae conirostrae (Steindachner)

1867. *Glyptosternum conirostrae* Steindachner, *S. B. K. Acad. Wiss. Wien.* **55** (1) : 532, pl. 5, fig. 2 (type-locality : Simla).

1877. *Glyptosternum conirostre*, Day, *Fish. India* : 497, pl.116, fig. 5; 1889 Day, *Fauna Br. India, Fish*, **1** : 198.

1981. *Glyptothorax conirostrae conirostrae*, Jayaram, *Handbk. Freshw. Fish. India*, : 253, 260 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : 2 exs., 78-79mm. SL.; Amarpur, South Tripura; R. P. Barman and party, 8.8.85.

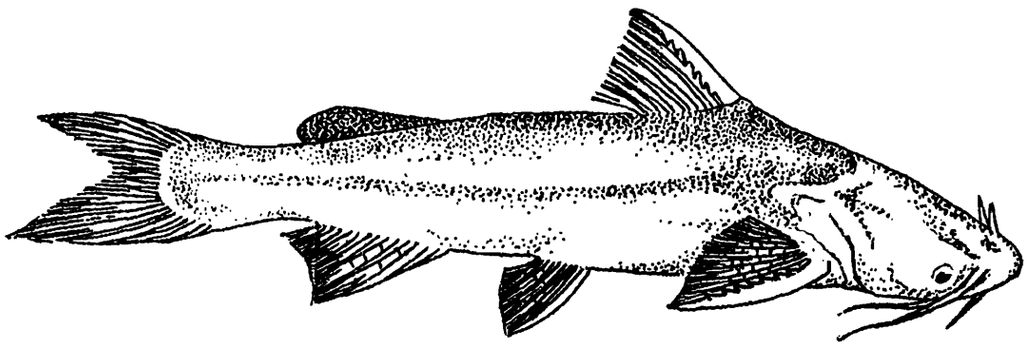


Fig. 87 : *Glyptothorax cavia* (Hamilton Buchanan)

Diagnostic features : D. 1/6/0, P. 1/9, V. 6, A. 11-12(2/9-10), C. 17.

Head length 5.25 and body depth 5.50 in total length. Eye diameter 15.00 in head length. Mouth inferior, upper jaw longer. Barbels 4 pairs, maxillary have broad bases and extend to middle of pectoral fins, the nasal with wide fringe reach the hinder margin of orbit, outer mandibular extend to gill openings and the inner mandibulars short. Rayed dorsal fin with a weak entire spine. Adipose dorsal fin base almost equal to rayed dorsal fin base. Pectoral fin with a broad spine with 13 internal denticulations, serrated externally. Caudal fin forked, lobes subequal.

Colour in alcohol : Body brownish, fins yellowish stained black.

Distribution : India : Tripura : South Tripura district; The Yamuna, near Simla, the Mahananda river Siliguri, North Bengal. China.

Size : It attains 133mm. (6 inches) in total length.

Remarks : This fish was recorded by me for the first time from Tripura (Barman, 1988)

Glyptothorax telchitta telchitta (Hamilton Buchanan)

(Text-fig. 88)

1822. *Pimelodus telchitta* Hamilton Buchanan, *Fish. Ganges.* : 185, 378 (type-locality : Freshwater rivers of Bengal and Bihar).

1877. *Glyptosternum telchitta*, Day, *Fish. India.* : 498, pl. 116, fig. 2; 1889. Day, *Fauna Br. India, Fish.* **1** : 199.

1981. *Glyptothorax telchitta telchitta*, Jayaram, *Handbk. Freshw. Fish. India.* : 254, 260 (distribution and key to species).

Local name : Nil.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Khowai river, West Tripura.

Diagnostic features : D. 1/6/0, P. 1/8, V. 6, A. 11(2/9), C. 17.

Head length 5.50 to 5.75 and body depth 7.50 to 8.00 in total length. Eye diameter 10.00 to

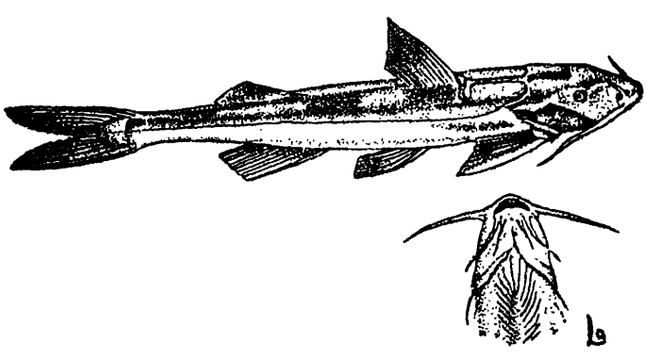


Fig. 88 : *Glyptothorax telchitta telchitta* (Hamilton Buchanan)
a : Lateral view
b : Ventral View of mouth region

11.70 in head length. Mouth inferior, upper jaw longer. Barbels 4 pairs, maxillary barbels with broad bases, reaching to rather posterior margin of orbit, the nasals very short, the outer mandibular pair reach the gill openings and the inner mandibular pair shorter. Rayed dorsal fin with a spine, entire on both margins. Adipose dorsal fin base equal to rayed dorsal fin base or half that of the interspace between the two fins. Pectoral fins with a strong, broad spine, denticulated internally. Caudal fin forked. Thoracic adhesive apparatus rather large, its plaits almost longitudinal.

Colour in alcohol : Body blackish brown. Fins with black bands. Caudal fin blackish, with a yellow margin.

Distribution : India : Vindhya range of mountains, Uttar Pradesh, Bihar, North Bengal and Tripura (West Tripura district). Nepal, Bangladesh and Pakistan.

Size : It attains 152mm. (6 inches) in total length.

Family CLARIIDAE

Air breathing Catfishes

Body elongated and compressed. Gill openings wide. Nostrils widely separated, anterior tubular, situated near tip of snout, posterior slit-like and with nasal barbels. Barbels 4 pairs, well developed. Dorsal fin very long, separated or continuous with caudal fin. Adipose dorsal fin absent. Paired fin inserted horizontally. Pectoral fins with a strong spine, may be serrated. Anal fin long, not continuous with caudal fin. Caudal fin rounded. Lateral line complete.

Genus ***Clarias*** Scopoli

1777. *Clarias* Scopoli, *Introductio ad historiam Naturalam.* : 445 (type-species : *Clarias oromis* Gunther).

1981. *Clarias*, Jayaram, *Handbk. Freshw. Fish. India.* : 269, 270 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Head greatly depressed, covered with osseous plates dorsally and laterally forming a cask covering a diverticulum of the gill cavity. Barbels 4 pairs, one pair each of maxillary, nasal and two of mandibular. An accessory respiratory dendritic branchial organ attached to second to fourth branchial arches. Dorsal fin with 62 to 77 rays and without any spine. Pectoral fins with 7 to 11 soft rays and a strong serrated spine. Anal fin with 45 to 63 rays. Caudal fin rounded. Lateral line complete.

Clarias batrachus (Linnaeus)

(Text-fig. 89)

1758. *Silurus batrachus* Linnaeus, *Syst. Nat.*, ed. 10, **1** : 305 (type-locality : Asia, Africa).

1877. *Clarias magur*, Day, *Fish. India*, : 485, pl. 112, figs. 5 and 5A; 1889. Day, *Fauna Br. India, Fish*, **1** : 115, figs. 48, 49.

1981. *Clarias batrachus*, Jayaram, *Handbk. Freshw. Fish. India*, : 270 (ditribution and key to species).

Local name : Magur.

English name : Air breathing catfish.

Materials examined : (i) 3 exs., 96-114mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 2 exs., 105-125mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 18.8.85. (iii) 2 exs., 110-115mm. SL.; Kumarghat, North Tripura; R. P. Barman and party; 3.7.90.

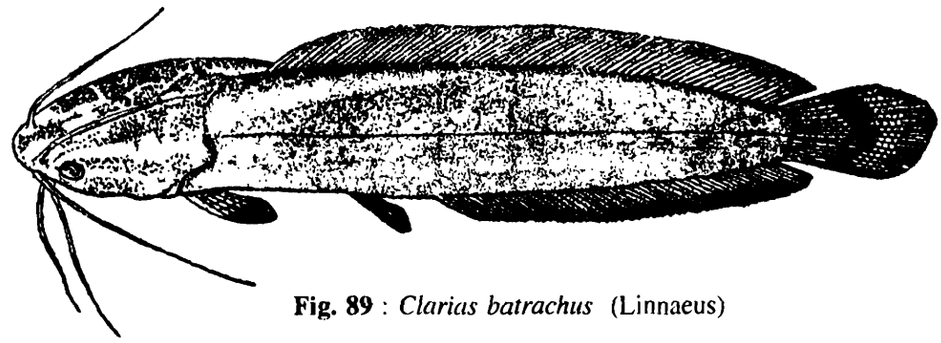


Fig. 89 : *Clarias batrachus* (Linnaeus)

Diagnostic features : D. 62-76, P. 1/7-11, V. 6, A. 45-63, C. 14-17.

Head length 5.50 to 6.25 and body depth 6.50 to 7.50 in total length. Eye diameter 8.00 to 10.00 in head length. Barbels 4 pairs, maxillary pair extending up to middle of pectoral fins. Dorsal fin long extending from occipital to and not continuous with caudal fin. Pectoral spine serrated, covered with skin. Lateral line complete. Caudal fin rounded.

Colour in alcohol : Body dingy green or dark brownish above and lighter below. Vertical fins generally with reddish borders.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma, Thailand, China, Vietnam, Malacca, Philippines, Java, Bali, Lombok, Sumatra, Singapore and Borneo.

Size : It attains 457mm. ($1^1/_2$ feet) in total length.

Remarks : It is one of the most common catfishes of India, Pakistan and Bangladesh. It is a high priced fish for its believed rejuvenating vogor.

Family HETEROPNEUSTIDAE

(Saccobranchidae)

Airsac Catfishes

Body elongated and compressed. Gill openings wide. Nostrils widely separated, anterior produced into a short tube, on tip of snout, posterior slit-like behind nasal barbels. Barbels 4 pairs, well developed. Rayed dorsal fin short and no spine. Adipose fin absent or represented by a low ridge. Paired fins horizontally inserted. Pectoral fins with a strong serrated spine. Anal fin long, just reaching or confluent with caudal fin. Caudal fin almost rounded. Lateral line complete. A long air sac, serving as a lung extends posteriorly from gill chamber.

Genus ***Heteropneustes*** Miiller

1840. *Heteropneustes* Miiller, *Arch. Anat. Physiol.*, : 115 (type-species : *Silurus fossilis* Bloch).

1840. *Saccobranchus* Valenciennes, *Hist. Nat. Poiss.*, **15** : 399 (type-species : *Silurus singio* Hamilton Buchanan).

1981. *Heteropneustes*, Jayaram, *Handbk. Freshw. Fish. India*, : 273 (genus characters and distribution).

Body elongated, compressed with abdomen rounded. Head greatly depressed, covered with thin skin. Barbels 4 pairs, one pair each of maxillary, nasal and two of mandibular. Rayed dorsal fin with 6 to 8 rays and without any spine, inserted above tip of pectoral fins. Adipose fin

absent or represented by a low ridge. Pectoral fins with 7 to 8 soft rays and a strong serrated spine. Pelvic fins with 6 rays. Anal fin with 60 to 79 rays, almost reaching caudal fin. Caudal fin almost rounded. Lateral line complete.

Heteropneustes fossilis (Bloch)

(Text-fig. 90)

1794. *Silurus fossilis* Bloch, *Naturg. Ausland. Fische*, **8** : 46, pl. 370, fig. 2 (type-locality : Tranquebar).

1877. *Saccobranchus fossilis*, Day, *Fish. India.* : 486, pl. 114, fig. 1; 1889. Day, *Fauna Br. India, Fish.* **1** : 125, fig. 53.

1981. *Heteropneustes fossilis*, Jayaram, *Handbk. Freshw. Fish. India*, : 273, 274 (distribution and key to species).

Local name : Shing.

English name : Stinging catfish.

Materials examined : (i) 4 exs., 120-155mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 3 exs., 135-170 mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 17.8.85. (iii) 2 exs., 140-160mm. SL.; Manu river, North Tripura; R. P. Barman and party; 4.7.90.

Diagnostic features : D. 6-7, P. 1/7-8, V. 6, A. 60-69, C. 19.

Head length 5.50 to 7.00 and body depth 5.00 to 8.00 in total length. Eye diameter 10.25 in head length. Barbels 4 pairs, maxillary pair extending up to pelvic fin base. Rayed dorsal fin short, inserted above tip of pectoral fins and without any spine. Pectoral spine serrated. Anal fin long, not united with caudal fin. Caudal fin almost rounded. Lateral line complete.

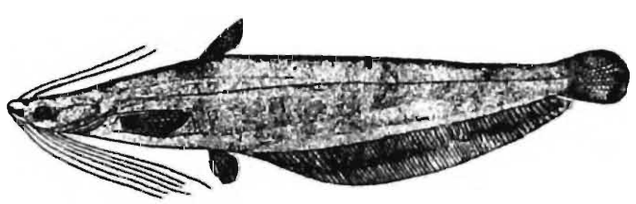


Fig. 90 : *Heteropneustes fossilis* (Bloch)

Colour in alcohol : Body leaden, sometimes with two longitudial yellowish bands. Young specimens reddish brown.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, Thailand, China and Vietnam.

Size : It attains 304mm (1 foot) in total length.

Remarks : It is one of the most common siluroid fishes found throughout India, Pakistan and Bangladesh. It is esteemed for its invigorating qualities and the tanks are usually stocked with these fishes during rainy season.

Family CHACIDAE

Robust large sized ugly fishes with head and body ahead of anal fin depressed but strongly compressed and sharply tapering behind. Nostrils widely separated, anterior pair tubular, situated along front margin of snout, posterior pair with or without a short tentacle. Barbels 3 pairs (4 pairs, if posterior nostril is provided with tentacle). Rayed dorsal fin with 3 to 4 rays and with a pungent spine. Adipose dorsal fin smooth, confluent with caudal fin. Pectoral fin with 4 to 5 rays and with a strong serrated spine. Pelvic fins with 6 rays. Anal fin with 7 to 10 rays. Caudal fin rounded with a long procurrent dorsal and a shorter ventral part. Lateral line complete, marked by a prominent papillated and tuberculated ridge.

Genus ***Chaca*** Gray

1831. *Chaca* Gray, *Zool. Misc.*, : 9 (type-species : *Platystacus chaca* Hamilton Buchanan).

1981. *Chaca*, Jayaram, *Handbk. Freshw. Fish. India*, : 274, 275 (genus characters and distribution).

Characters of genus are same as those of the family characters.

Chaca chaca (Hamilton Buchanan)

(Text-fig. 91)

1822. *Platystacus chaca* Hamilton Buchanan, *Fish. Ganges.* : 140, 374, pl. 28, fig. 43 (type-locality : rivers and ponds of the north eastern parts of Bengal).

1877. *Chaca lophioides*, Day, *Fish. India*, : 481, pl. 112, fig. 2; 1889. Day, *Fauna Br. India, Fish*, **1** : 111, 112, fig. 46.

1981. *Chaca chaca*, Jayaram, *Handbk. Freshw. Fish. India*, : 275 (distribution).

Local name : Kutkutya.

English name : Chaca.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Tripura.

Diagnostic features : D. 1/3-4/19-25; P. 1/5, V. 6, A. 8-10/8-12, C. 11.

Length of head 3.00 and body depth 6.00 in total length. Eye small, diameter 17.00 in head

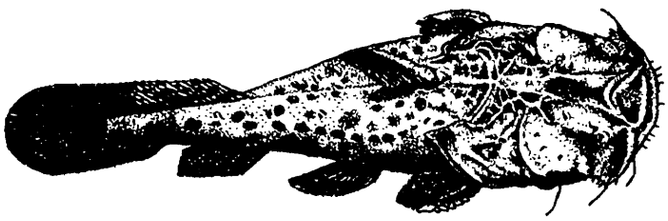


Fig. 91 : *Chaca chaca* (Hamilton Buchanan)

length. Mouth very wide. Maxillary, outer and inner mandibular pairs of barbels very short. Dorsal spines slightly serrated on both margins. Pectoral spines serrated internally. A few tentacles along lateral line.

Colour in alcohol : Body brownish marbled darker.

Distribution : India : Throughout Tripura, Assam, Bihar, West Bengal. Bangladesh. Burma. Banka. Malacca. Borneo. Sumatra.

Size : It attains 203mm. (8 inches) in total length.

Remarks : It is found in small rivers and rivulets throughout Tripura (Lipton, 1983-84).

Family OLYRIDAE

Body loach-like, elongated small fishes with body flattened anterior to pelvic fins and compressed behind. Nostrals widely separated, anterior tubular, nearer to snout than to orbit, posterior with nasal barbels. Barbels 4 pairs, usually well developed. Gill openings wide, extending to far forwards; functional part greatly restricted by flaps of skin along lower edges. Rayed dorsal fin short and without any spine. Adipose fin long, low, smooth, not confluent with either rayed dorsal or caudal fin. Paired fins inserted horizontally. Pectoral fins with a sharp, serrated spine and 4 to 7 rays. Pelvic fins with 6 rays. Anal fin with 16 to 23 rays, fins rays increasing in length posteriorly. Caudal fin long, lanceolate or forked, filiform, upper part better developed than lower. Lateral line complete.

Genus ***Olyra*** McClelland

1842. *Olyra* McClelland, *Calcutta J. nat. Hist.*, **2** : 588 (type-species : *Olyra longicaudata* McClelland).

1981. *Olyra*, Jayaram, *Handbk. Freshw. Fish. India*, : 275, 276 (genus characters and distribution).

For characters of genus, see those of the family characters.

Key to the Species

Body depth 9.00 to 11.00 in standard length. Anal fin rays 18 to 23.....***O. longicaudata***

Body depth 11.00 to 12.00 in standard length. Anal fin rays 17 to 18. .....***O. kempi***

Olyra kempi Chaudhuri

(Text-fig. 92)

1912. *Olyra kempi* Chaudhuri, *Rec. Indian Mus.*, **7** : 443, pl. 41, fig. 4 (type-locality : Mangaldai, Assam).

1981. *Olyra kempi*, Jayaram, *Handbk. Freshw. Fish. India*, : 276 (distribution and key to species).

Local name : Bhotsinghi.

English name : Nil.

Material examined : 3 exs., 60-65mm. SL.; Amarpur, South Tripura; R. P. Barman and party ; 8.8.95.

Diagnostic features : D. 7/0, P. 1/4-6, V. 6, A. 17-18, C. 15-16.

Head length 7.50 and body depth 12.00 in total length. Eye diameter 4.50 to 5.00 in head

length. Barbels 4 pairs, maxillary extending to pectoral fin end, the remainder short. Dorsal fin inserted nearer to adipose dorsal fin than to tip of snout. Adipose dorsal fin base equal to rayed dorsal fin base. Pectoral spine provided with about 15 serrations on both margins. Anal fin rays subequal, origin a snout length before adipose dorsal fin origin, nearer to pelvic fins origin than to caudal fin base. Caudal fin forked, with upper lobe elongated.

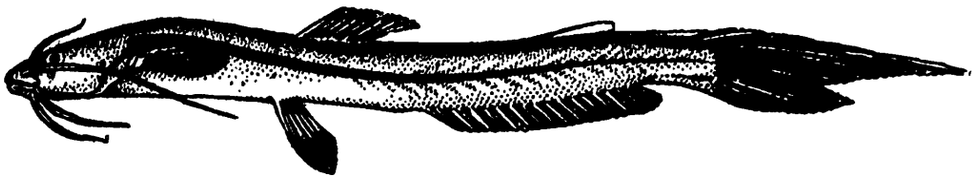


Fig. 92 : *Olyra kempi* (Chaudhuri)

Colour in alcohol : Body brown with 3 longitudinal bands. 2 pale brown bands on each side of lateral line and one dark brown band along the lateral line.

Distribution : India : Tripura : South Tripura district. Assam and West Bengal.

Size : It attains 75mm. (3 inches) in total length.

Remarks : This fish has been recorded by me for the first time from Tripura (Barman, 1988). It appears to me it is one of the rare fishes of Tripura.

Olyra longicaudata McClelland

1842. *Olyra longicaudata* McClelland, *J. nat. Hist. Calcutta*, **2** : 588, pl. 21, fig. 1 (type-locality : Khasi Hills).

1877. *Olyra longicaudata*, Day, *Fish. India*; : 475, 1889. Day, *Fauna Br. India, Fish*, **1** : 121.

1981. *Olyra longicaudata*. Jayaram, *Handbk. Freshw. Fish. India*, : 276 (distribution and key to species).

Local name : Bhotsinghi.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Tripura.

Diagnostic features : D. 7/0, P. 1/4, V. 5, A. 18-23, C. 12.

Head length 7.00 and body depth 14.00 in total length. Eye diameter 10.00 in head. Barbels 4 pairs, maxillary pair reaching the base of pectoral fins, the remainder short. Rayed dorsal fin as high as the body, the adipose very low. Pectoral spine strong and serrated, the fin being as long as the pelvic fins, the latter arises below the commencement of the dorsal fin and nearer to vent than to gill opeing. Anal fin scarcely so high as the body above it. Caudal fin lanceolate, its upper rays being prolonged.

Colour in alcohol : Almost similar to the colour pattern of *O. kempi* Chaudhri.

Distribution : India : Tripura : North Tripura district. Base of Darjeeling Himalayas, West Bengal, Assam. Burma.

Size : It attains 73mm. (3 inches) in total length.

Remarks : Lipton (1983-84) collected this species from Manu river, North Tripura and considered it as a rare species of fish of Tripura.

Order ATHERINIFORMES

Body short, compressed or elongated with scales. Head with scales. Upper jaw protractile in many species. Fin spines present or absent. A single spineless dorsal fin. Pelvic fins abdominal, subabdominal or thoracic. Lateral line absent. Swimbladder physoclistic. Teeth present in both jaws, also in superior and inferior pharyngeal bones.

Key to the Families

Jaws produced into a long and pointed beak-like structure. Lateral line present on free portion of tail with or without a keel. .... BELONIDAE

Jaws not produced into a beak-like structure. Lateral line absent. ...CYPRINODONTIDAE

Family BELONIDAE

Garfishes, Neddlefishes

Body elongated, rather slender with both upper and lower jaws extended into a long beak-like structure. Teeth on jaws and palate without teeth in Indian species. Head and body with small cycloid scales. Dorsal and anal fins posterior in position. No spines in fins. Dorsal fin generally with 10 to 26 rays and anal fin with 14 to 23 rays. Lateral line low down.

Key to the Genera

Dorsal fin inserted behind anal fin origin..... .....***Strongylura***

Dorsal fin inserted opposite to anal fin origin. .....***Xenentodon***

Genus ***Strongylura*** van Hasselt

1823. *Strongylura* van Hasselt, *Alg. Konst. Letterbode*, **2 :** 130 (type-species : *Strongylura caudimaculata* van Hasselt = *Belone strongylura* van Hasselt).

1981. *Strongylura*, Jayaram, *Handbk. Freshw. Fish. India*, : 290-291 (genus characters and distribution).

Body elongated, subcylindrical, compressed with abdomen rounded. Head and snout pointed. Cleft of mouth extending up to anterior margin of the orbit. Both jaws prolonged into a beak-like structure. A shallow median groove along head, superciliary region scarcely striated. Dorsal fin inserted behind anal fin origin, with 12 to 15 rays and without any spine. Anal fin with first 4 rays ahead of dorsal fin, with 15 to 18 rays. Caudal fin rounded. Scales small. Lateral line double.

Strongylura strongylura (van Hasselt)

1823. *Belone strongylura* van Hasselt, *Algem. Konst. Letterbode*, **1** : 130 (type-locality : Batavia, Java).

1877. *Belone strongylura*, Day, *Fish. India*, : 512, pl.118, fig.6; 1889. Day, *Fauna Br. India, Fish*, **1** : 421-422.

1981. *Strongylura strongylura*, Jayaram, *Handbk. Freshw. Fish. India*, : 291 (distribution).

Local name : Kakhya, Kankle.

English name : Freshwater garfish.

Materials examined : No specimen obtained by me. It was recorded by Bhattacharya (1988) from the Gumti reservoir, Tirthamukh, South Tripura.

Diagnostic features : D. 13-15, P. 11, V. 6, A. 16-18, C. 15.

Head length 2.60 to 3.00 and body depth 13 to 14 in total length. Eye diameter 3.50 in postorbital length of head. A shallow, median groove on upper surface of head. Superciliary region scarcely striated. Dorsal fin inserted posterior to anal fin origin, hind rays not extending to caudal fin base. First 4 rays of anal fin in advance of dorsal fin, which is highest in front, with upper margin concave, its posterior rays do not extend nearly to root of caudal fin. Anal fin of the same shape of dorsal fin. Caudal fin rounded. Lateral line not keeled, free portion of tail compressed, deeper than wide, 11 rows of scales between lateral line and dorsal fin base.

Colour in alcohol : Bluish green, with minute brown dots, becoming silvery on sides and white below. A deep blue longitudinal band bordered below by another broader one of silver, along hind half of sides.

Distribution : Tripura : South Tripura district. Persian Gulf, India, Pakistan, Sri Lanka, Thailand, East Indies, Philippines, Australia and South China.

Size : It attains 609mm, (2 feet) in total length.

Remarks : It is primarily a marine fish but ascends tidal rivers and lakes. It is one of the migratory fishes of Tripura, migrated from Bangladesh. Jayaram (1981) recorded this fish as a "freshwater visiting species of India"

Genus ***Xenentodon*** Regan

1911. *Xenentodon* Regon, *Ann. Mag. nat. Hist.*, (8) **7** : 332 (type-species : *Belone cancila* Hanilton Buchanan).

1981. *Xenentodon*, Jayaram, *Handbk. Freshw. Fish. India*, : 291 (genus characters and distribution).

Body elongated, subcylindrical or compressed with abdomen rounded. Snout sharply pointed. Both jaws prolonged into a beak-like structure. A deep longitudinal groove along upper surface of head present. Dorsal fin usually inserted above anal fin, with 15 to 18 rays and without any spine. Anterior dorsal rays vary in elevation, sometimes forming a lobe to the fin and no finlets. Anal fin with 15 to 19 rays. Caudal fin truncate or forked. Lateral line double.

Xenentodon cancila (Hamilton Buchanan)

(Text-fig. 93)

1822. *Esox cancila* Hamilton Buchanan, *Fish. Ganges*, : 213, 380, pl. 27, fig. 70 (type-locality : Gangetic provinces).

1877. *Belone cancila*, Day, *Fish. India*, : 511, pl. 118, fig. 5; 1889. Day, *Fauna Br. India, Fish*, **1** : 420, fig. 136.

1981. *Xenentodon cancila*, Jayaram, *Handbk. Freshw. Fish. India*. : 292 (distribution).

Local name : Kakhya, Kankle.

English name : Freshwater garfish.

Materials examined : (i) 5 exs., 82-105mm. SL. Udaipur, South Tripura; R. P. Barman and party; 16.8.85 (ii) 1 ex., 80mm. SL. Sonamura, West Tripura; R. P. Barman and party; 17.8.85.



Fig. 93 : *Xenentodon cancila* (Hamilton Buchanan)

Diagnostic features : D. 15-18 (2-3/13-15), P. 11, V. 6, A. 16-18(2-3/14-16), C. 15.

Head length 2.60 to 2.75 and body depth 8.00 to 12.00 in total length. Eye diameter 3.00 to 3.20 from hind margin of opercle. Both jaws produced into a beak-like structure. A deep median, longitudinal groove on upper surface of head. Dorsal fin inserted opposite to anal fin, nearer to base of caudal fin. Pelvic fins inserted nearer to base of caudal fin than to posterior border of orbit. Lateral line not keeled. 20 to 30 rows of scales between leateral line and base of dorsal fin. Caudal fin truncate.

Colour in alcohol : Dorsal surface greenish grey and lighter below with ventral surface whitish. A dark edged silvery stripe from opposite the orbit to middle of caudal fin base. Generally 4 to 5 lateral blothces between pectoral and anal fin bases.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, Thailand, Malaya, Borneo and Sumatra.

Size : It attains 304mm. (1 foot) in total length.

Remarks : It is a very common fish found particularly in the river Gumti. This fish is esteemed as a good food fish in the state.

Family CYPRINODONTIDAE

Killifishes

Body moderately elongated and compressed small fishes. Head and body with scales. Barbels absent. Typically members of this family have a flattened head. Mouth opens upward, an adaptation for feeding at the surface. A single soft-rayed spineless dorsal fin inserted in the posterior half of the body. Pelvic fin bases (when fins are present) relatively far apart. Lateral line absent.

These killifishes are also known as topminnows and toothed carp. Many species are employed for mosquito control measure.

Genus ***Aplocheilus*** McClelland

1939. *Aplocheilus* McClelland, *Asiat. Res.*, **19** : 301 (type-species : Aplocheilus chrysostigmus McClelland).

1981. *Aplocheilus*, Jayaram, *Handbk. Freshw. Fish. India*. : 294, 295 (genus characters and distribution).

Fishes almost elongated and compressed body with abdomen rounded. Upper surface of head and nape broad and compressed. Mouth terminal, moderately wide, cleft not extending to anterior margin of the orbit. Upper jaw protractile. Barbels absent. Dorsal fin inserted above or behind hind

margin of anal fin, with 7 to 11 rays and without any spine. Pelvic fins relatively far apart. Anal fin with 15 to 18 rays. Caudal fin rounded. Scales cycloid, 27 to 34 in lateral series. Lateral line absent.

Aplocheilus panchax (Hamilton Buchanan)

(Text-fig. 94)

1822. *Esox panchax* Hamilton Buchanan, *Fish. Ganges*, : 211, 380, pl. 3, fig. 69 (type-locality : ditches and ponds of Bengal).

1877. *Haplocheilus panchax*, Day, *Fish. India*, : 523, pl. 121, fig. 3; 1889. Day, *Fauna Br. India*, **1** : 417.

1981. *Aplocheilus panchax*, Jayaram, *Hndbk. Freshw. Fish. India*, : 295 (distribution and key to species).

Local name : Techokko.

English name : Lesser top minnow, Panchx minnow.

Materials examined : (i) 2 exs., 27-34mm. SL.; Udaipur, South Tripura, R. P. Barman and party; 15.8.85. (ii) 4 exs., 28-33mm. SL., Manu river, Kailashar, North Tripura; R. P. Barman and party; 21.10.89. (iii) 4 exs., 50-55mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89.



Fig. 94 : *Aplocheilus panchax* (Hamilton Buchanan)

Diagnostic features : D. 7-11, P. 15, V. 6, A. 15-17, C. 13, LL 31-34.

Head length 4.00 to 4.30 and body depth 4.75 to 5.00 in total length. Eye diameter 3.30 in head length. Lower jaw longer and maxilla extending to below first third of the orbit. Dorsal fin inserted above last anal fin rays. Pelvic fins small without any elongated ray. Caudal fin rounded.

Colour in alcohol : Dorsal surface greenish and dull white below. Fins yellow. Lower third of dorsal fin with a larger black spot. Dorsal, caudal and anal fin edged with orange. A white occipital spot present.

Distribution : India : Assam, throughout Tripura, West Bengal, Bihar, Uttar Pradesh, Punjab, Orissa, Andhra Pradesh; Madhya Pradesh, Gujarat and Andamans. Bangladesh, Pakistan. Burma, Sri Lanka. Thailand to Malaya Archipelago.

Size : It attains 89mm. ($3^1/_2$ inches) in total length.

Remarks : It is a very common fish found to live throughout Tripura and it is an important indigenous larvivorous fish of India.

Order CHANNIFORMES

Body elongated with cycloid scales. Head with plate-like scales. Gill opeings wide. Suprabranchial accessory respiratory organ well developed, enabling these fishes to respire for a long time out of water. Teeth on jaws and palate. A single long dorsal fin and a similar long anal fin present, without any spine. Pelvic fins thoracic or absent. Lateral line abruptly curved or almost interrupted.

Family CHANNIDAE

Murrels

Body elongated with large cycloid scales. Head with plate-like scales. Cephalic pits present. Teeth on jaws, vomer and palate. Suprabranchial organ for air breathing present. A single long dorsal fin and a similar anal fin present, both fins spineless and free from caudal fin. Dorsal fin with 29 to 55 rays, inserted almost above pectoral fin and anal fin with 21 to 36 rays. Pelvic fins generally present, with 6 rays. Lateral line abruptly curved or almost interrupted with 37 to 110 scales. Caudal fin rounded.

Genus ***Channa*** Scopoli

Snakeheaded fishes

1777. *Channa* Scopoli, *Introd. Hist.*, : 459 (type-species : *Channa orientalis* Bloch and Schneider).

1793. *Ophiocephalus* Bloch, *Naturg. Ausland. Fische*, 7 : 137 (type-species : *Ophicephalus punctatus* Bloch).

1981. *Channa*, Jayaram, *Handbk. Freshw. Fish. India*, : 305, 306 (genus characters and distribution).

Genus characters are similar to those of the family.

Key to the species

1. 4 to 5 rows of scales between the orbit and angle of preopercle. 12 to 13 predorsal scales. 2

   9 to 10 rows of scales between the orbit and angle of preopercle. 3

2. Pelvic fins less than half length of pectoral fins. Pectoral fins spotted. .....***C. orientalis***

   Pelvic fins more than half length of pectoral fins. Pectoral fins plain. .....***C. punctatus***

3. Predorsal scales 18 to 20. Lateral line with peninsula of darker colour extending into yellow. .....***C. striatus***

   Predorsal scales 15 to 16. No such colour markings on lateral line. 4

4. A black white-edged ocellus on basal portion of caudal fin present. .....***C. marulius***

   No such ocellus on basal portion of caudal fin. .....***C. barca***

Channa barca (Hamilton Buchanan)

(Text-fig. 95)

1822. *Ophiocephalus barca* Hamilton Buchanan, *Fish. Ganges*, : 67, 367, pl. 135, fig. 20 (type-locality : R. Brahmaputra near Goalpara, Assam).

1876. *Ophiocephalus barca*, Day, *Fish. India*, : 365, pl. 77, fig. 2; 1889. Day, *Fauna Br. India, Fish.* **1** : 361-362, fig. 118.

1981. *Channa barca*, Jayaram, *Handbk. Freshw. Fish. India*, : 306, 307 (distribution and key to species).

Local name : Changa, Bora-chang.

English name : Nil.

Materials examined : 3 exs., 50-60mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 14.8.85.

Diagnostic features : D. 47-52, P. 16, A. 34-36, C. 19, LL. 60-65.

Head length 4.00 to 4.50 and body depth 5.50 to 7.50 in total length. Eye diameter 7.00 to 7.50 in head length. Dorsal fin inserted above posterior margin of opercle. Caudal fin rounded. 15 rows of scales between snout and base of dorsal fin. 9 rows of scales between orbit and preopercle.

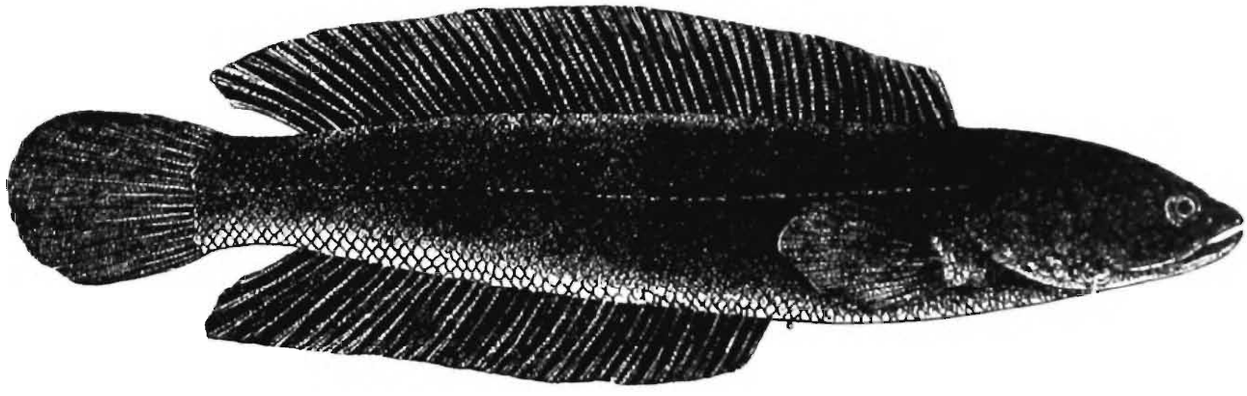


Fig. 95 : *Channa barca* (Hamilton Buchanan)

Colour in alcohol : Dorsal surface dark violet, becoming dull white shot with purple beneath. The whole body covered with large black blotches, also some on dorsal, caudal and anal fins, each of which has a red edge. Pectoral fins reddish, with numerous black spots.

Distribution : India : Assam, Meghalaya, Tripura (South Tripura district) and West Bengal. Bangladesh and Pakistan.

Size : It attains 900mm. (3 feet) in total length (Day, 1889).

Remarks : It is one of the rare species of fish and very difficult of collect. I have recorded this fish from Tripura (Barman, 1988).

Channa marulius (Hamilton Buchanan)

(Text-fig. 96)

1822. *Ophiocephalus marulius* Hamilton Buchanan, Fish. India. : 65, 367, pl. 17, fig. 19 (type-locality : ponds and freshwater rivers of Bengal).

1876. *Ophiocephalus marulius*, Day, *Fish. India*, : 363, pl. 76, fig. 4; 1889. *Day, Fauna Br. India, Fish*, **2** : 360.

1981. *Channa marulius*, Jayaram, *Handbk. Freshw. Fish. India*, : 306, 307 (distribution and key to species).

Local name : Gajal.

English name : Giant snake head murrel.

Materials examined : 2 exs., 167-193mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 26.10.90.

Diagnostic features : D. 45-55, P. 18, V. 6, A. 28-36, C. 14, LL. 60-70.

Head length 4.00 to 5.00 and body depth 7.00 to 7.50 in total length. Eye diameter 5.00 to 7.00 in head length. 10 rows of scales between orbit and preopercle. 16 predorsal scales.

Colour in alcohol : Dorsal surface generally greyish green becoming lighter below. Young specimens with a brilliant, orange lateral band and adult specimen with 5 to 6 cloudy bands below lateral line. A prominent black circular spot at the superior angle of the base of caudal fin.

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

Size : It attains 1,219mm. (4 feet) in total length.

Remarks : This fish is generally found to live in large lakes and rivers and attains a larger size compared to other species under the genus.

Channa orientalis Schneider

(Text-fig. 97)

1801. *Channa orientalis* Schneider, *Syst. Ichth. Bloch.*, : 496, pl. 90, fig. 2 (type-locality : India).

1822. *Ophiocephalus gachua* Hamilton Buchanan, *Fish. Ganges*, : 68, 367, pl. 21, fig. 21 (type-locality : ponds and ditches of Bengal).

1876. *Channa orientalis*, Day, *Fish. India*, : 368, pl. 78, fig. 2; 1889. Day, *Fauna Br. India, Fish*, **2** : 365.

1981. *Channa orientalis*, Jayaram, *Handbk. Freshw. Fish. India*, : 306, 307 (distribution and key to species).

Local name : Cheng.

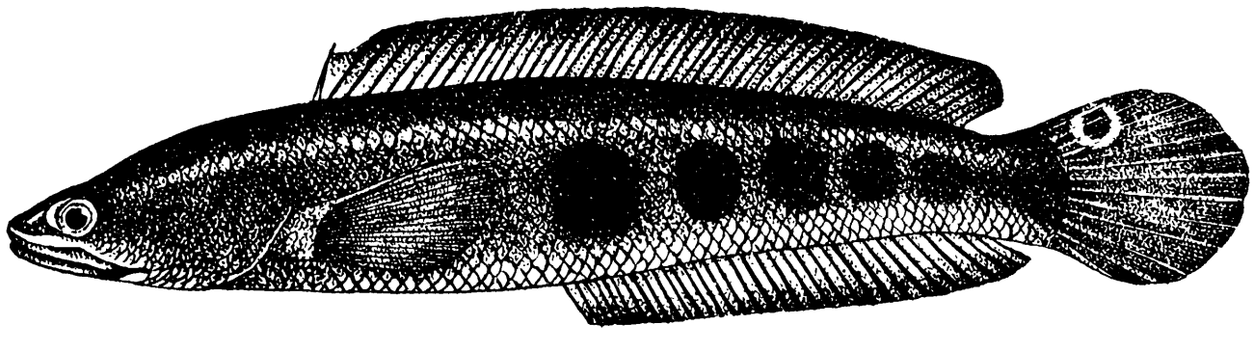


Fig. 96 : *Channa marulius* (Hamilton Buchanan)

English name : Brown snake-head.

Materials examined : 2 exs., 58-100mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85

Diagnostic features : D. 32-37, P. 14, V. 6, A. 21-23, C. 12-14, LL. 40-45.

Head length 3.50 to 4.50 and body depth 6.50 to 8.00 in total length. Eye diameter 5.00 to 6.00 in head length. Dorsal fin inserted just posterior to pectoral fin origin. 4 to 6 rows of scales between orbit and preopercle. Predorsal scales 12 to 13. Pelvic fins less than half length of pectoral fins.

Colour in alcohol : Dorsal surface dirty greenish becoming dull white or brown on sides and beneath. Some darkish spots on body and fins. Pectoral fins with vertical bars on its rays.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma and Sri Lanka.

Size : It attains at least 203mm. (8 inches) in total length.

Remarks : It is the smallest species belonging to the genus. Menon (1974) synonymised *Channa gachua* with this species. An abnormal specimen of this species has been described by me (Barman, 1991 b).

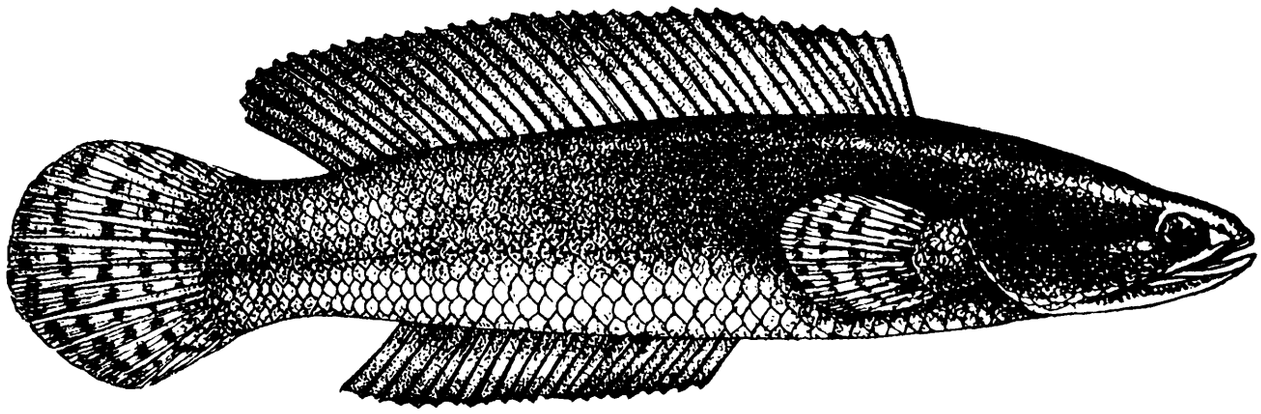


Fig. 97 : *Channa orientalis* Schneider

Channa punctatus (Bloch)

(Text-fig. 98)

1793. *Ophiocephalus punctatus* Bloch, *Naturg. Ausland. Fische*, **7** : 139, pl. 358 (type-locality : Malabar).

1876. *Ophiocephalus punctatus* Day, *Fish. India.* : 367, pl. 78, fig. 1; 1889. Day, *Fauna Br. India. Fish.* **2** : 364.

1981. *Channa punctatus* Jayaram, *Handbk. Freshw. Fish. India.* : 306, 307 (distribution and key to species).

Local name : Taki, Lata.

English name : Green snake-head.

Materials examined : (i) 4 exs., 64-95mm. SL.; Amarpur, South Tripura; R. P. Barman and party 8.8.85 (ii) 2 exs., 62-74mm. SL.; Udaipur, South Tripura; R. P. Barman and party: 16.8.85.

Diagnostic features : D. 29-32, P. 17, V 6, A. 21-23, LL. 37-40.

Head length 3.30 to 3.60 and body depth 5.50 to 7.00 in total length. Eye diameter 7.00 to 8.50 in head length. 5 rows of scales between orbit and angle of preopercle. 12 predorsal scales.

Colour in alcohol : Dorsal surface greenish

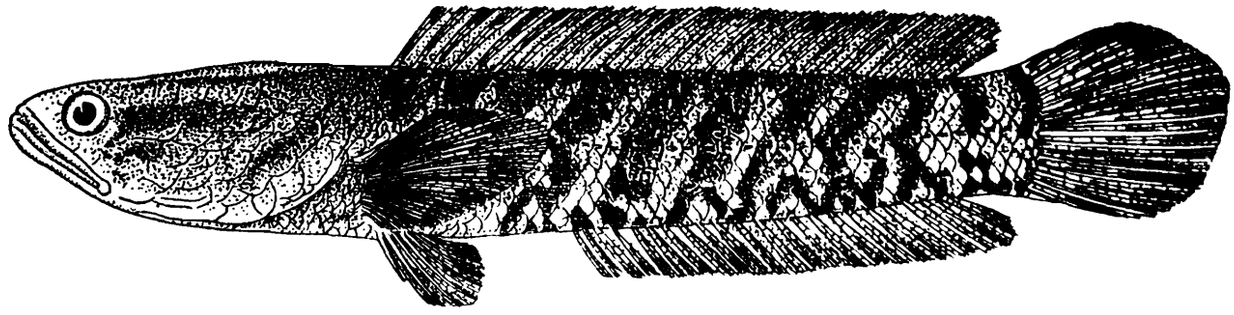


Fig. 98 : *Channa punctatus* (Bloch)

grey becoming yellow below. A dark stripe along with side of head and several short cross bands from back to middle of body. Fins spotted.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, Malaya, China Tahiti and Polynesia.

Size : It attains 304mm. (1 foot) in total length.

Remarks : It is a very common fish found to live in tanks, beels, canals, paddy-fields, ditches and nullahas throughout the state. It also thrives well in muddy and swampy localities.

Channa striatus (Bloch)

(Text fig. 99)

1793. *Ophiocephalus striatus* Bloch, *Naturg. Ausland. Fische*, **2** : 141, pl. 359 (type-locality : Malabar).

1876. *Ophiocephalus striatus*, Day, *Fish. India*, : 366; 1889. Day, *Fauna Br. India, Fish*, **2** : 363.

1981. *Channa striatus*, Jayaram, *Handbk. Freshw. Fish. India*, : 307 (distribution and key to species).

Local name : Shol, Chena.

English name : Striped snake-head.

Materials examined : 3 exs., 90-132mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 26.6.90.

Diagnostic features : D. 37-45, P. 17, V 6, A. 23-26, C. 13, LL. 50-57.

Head length 3.25 to 4.00 and body depth 6.00 to 8.00 in total length. Eye diameter 6.00 to 7.00 in head length. 9 rows of scales between orbit and angle of preopercle. 18 to 20 predorsal scales.

Colour in alcohol : Dorsal surface dark greyish or blackish becoming dirty-white or yellowish white below. Gray or black lateral bands sides to abdomen. Young specimens have sometimes a large black ocellus at the end of base of dorsal fin.

Distribution : Throughout Tripura and India, Pakistan, Bangladesh, Sri Lanka, Burma, China, Philippines, Malaya archipelago and Thailand.

Size : It attains 914mm. (3 feet) in total length.

Remarks : These fishes take a bait very readily, especially a frog and are said to rise to a salmon-fry.

Order SYNBRANCHIFORMES

Body eel-like and compressed. Scales absent, if present, with small scales, arranged in a longitudinal rows. Margin of upper jaw formed by the premaxillaries, the maxillaries being internal and parallel to them. Teeth on jaws and palate. Gill membranes united and gill openings in the form of a single transverse opening. Accessory respiratory organs may be present. Vertical fins rudimentary in the form of mere folds of skin. Paired fins ansent. Lateral line present.

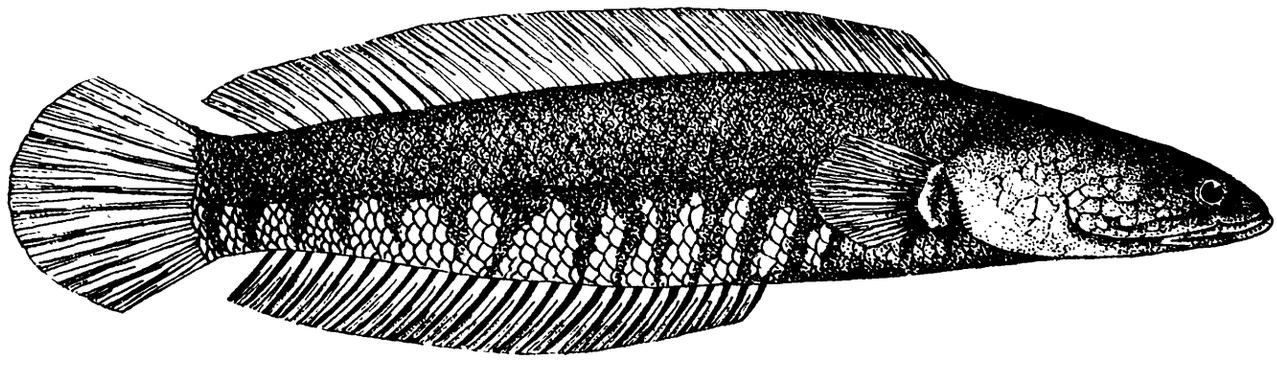


Fig. 99 : *Channa striatus* (Bloch)

Family SYNBRANCHIDAE

Body elongated and eel-like. Scales if present,

minute. Gill membranes united and attached to isthmus. Gill opening confluent into a single slit, which is situated on the abdominal surface. Dorsal and anal fins vestigial or reduced to a rayless mere folds of skin. Caudal fin reduced or absent. Pectoral and pelvic fins absent. An accessory respiratory apparatus may be present.

Genus ***Monopterus*** Lacepede

1800. *Monopterus* Lacepede, *Hist. Nat. Poiss.*, **2** : 138 (type-species : *Muraena alta* Zuiew).

1841. Amphipnous Muller, Abh. Akad. Wiss. Berlin, : 544 (type-species :*Unibranchipertura cuchia* Hamilton Buchanan).

1981. *Monopterus*, Jayaram, *Handbk. Freshw. Fish. India*, : 309, 310 (genus characters and distribution).

Body elongated, eel-like and compressed. Abdomen rounded. Gill openings triangular or crescentic without lateral folds and internally attached to isthums. Dorsal and anal fins in the form of mere folds or ridges of skin. Dorsal ridge commneces behind vent or anal fin. Jaws and palate with bands of villiform teeth. Caudal fin bluntly rounded. A respiratory air-sac exists on the neck behind the head and communicates with the gill cavity. Scales uniformly distributed. Lateral line well developed.

Monopterus cuchia (Hamilton Buchanan)

(Text-fig. 100)

1822. *Unibranchipertura cuchia* Hamilton Buchanan, *Fish. Ganges*, : 16, 363, pl.16, fig. 4 (type-locality : rivers and ponds of S. E. parts of Bengal).

1878. *Amphipnous cuchia*, Day, *Fish. India*, : 656, pl. 167, fig.1; 1889. Day, *Fauna Br. India, Fish*, **1** : 69, fig. 27.

1981. *Monopterus cuchia*, Jayaram, *Handbk. Freshw. Fish. India*, : 310 (distribution and key to species).

Local name : Kuchia

English name : Freshwater eel, Cuchia

Materials examined : 1 ex., 340mm. TL.; Melagarh, West Tripura; R. P. Barman and party; 31.10.89

Diagnostic features : Head length 6.00 to 8.00 in the distance between snout and vent. Length of tail 4.00 to 4.50 in the total length. Eye diameter 2.00 to 3.00 in snout length, in anterior one fourth or one fifth of head length. Upper jaw slightly longer, lips fleshy. Palatine teeth in single, well developed row. Rudimentary dorsal fin inserted slightly anterior to vent. Paired fins absent. Scales distinct, longitudinally arranged. Gill openings inferior, membranes adherent to isthmus.

Colour in alcohol : Greenish or chestnut brown becoming lighter beneath or sometimes flesh cloured. Numerous black spots over the body.

Distribution : India: Tripura : West Tripura. North and north eastern India. Pakistan. Nepal. Burma and Bangladesh.

Size : It attains at least 609mm. (2 feet) in total length.

Remarks : Natives reject it as food and imagine that its bite is fatal to cattle, although less powerful on the human kind-a supposition highly improbable (Hamilton Buchanan, 1822).

Order PERCIFORMES

Body with usually ctenoid scales. Fins generally with spines. Dorsal fin two in number, the first one being spiny. Pectoral fins inserted high on the sides. Pelvic fins thoracic or jugular, with one spine and five rays, sometimes fewer. Caudal fin never more than 17 principal rays, often fewer. Head and cheeks with muciferous canals and pores. Lateral line, when present continuous (exception *Chanda* Hamilton Buchanan). Bones of head generally with numerous pungent spines.

Key to the families

1. Pelvic fins united with a membrane or frenum across their base, forming a sucking disc. ....

.....GOBIIDAE.

Pelvic fins may be close but not united as above, may be apart.....2



Fig. 100 : *Monopterus cuchia* (Hamilton Buchanan)

2. An accessory respiratory organ in the from of a cavity above the third or upper portion of the first branchial arch present. 3

   No such respiratory organ present. 5

3. First ray of pelvic fins produced into a long filament. Pelvic fins inserted behind or posterior to pectoral fins. 4

   First rays of pelvic fins not produced into a long filament. Pelvic fins inserted below base of pectoral fins. .....ANABANTIDAE

4. Anal fin longer than dorsal fin. ....BELONTIDAE

   Anal fin shorter than or equal to dorsal fin. .....OSPHRONEMIDAE

5. Anal fin with 2 spines only. ....SCIAENIDAE

   Anal fin with 3 to 15 spines. 6

6. Spinous and soft part of dorsal fin well separated. .....MUGILIIDAE

   Spinous and soft part of dorsal fin continuous. 7

7. A forwardly directed recumbent spine before dorsal fin present. .....CHANDIDAE

   No recumbent spine before dorsal fin present. 8

8. Maxilla extending anterior margin of orbit. Two nostrils on each side of head ....NANDIDAE

   Maxill not extending anterior margin of orbit. Single nostril on each side of head ....CICHLIDAE

Family CHANDIDAE

Glass fishes

Body short, elevated, oblong, compressed and slightly translucent. Scales small, deciduous cycloid on head and body. Lower limb of preopercle with a double serrated margins and opercle with a poorly developed spine. Teeth on jaws and palate, the upper outer row sometimes enlarged and canine-like. Dorsal fin with two continuous, a spinous and a soft part. Anal fin with spines. A forwardly directed recumbent spine ahead of dorsal fin present. Lateral line complete, interrupted or absent.

Genus ***Chanda*** Hamilton Buchanan

1822. *Chanda* Hamilton Buchanan, *Fish. Ganges.* : 103, 270 (type-species : *Chanda nalua* Hamilton Buchanan).

1981. *Chanda,* Jayaram, *Handbk. Freshw. Fish. India.* : 317, 318 (genus characters and distribution).

Body short, compressed almost diaphanous. Abdomen rounded. Lower limb of preopercle provided with a double serrated edge and operculum without a prominent spine. Two dorsal fins continuous, the first dorsal fin with 7 spines and the second dorsal fin with 1 spine and 9 to 17 rays. A forwardly directed recumbent spine anterior to dorsal fin present. Anal fin with 3 spines and 9 to 17 rays. Caudal fin forked. Lateral line complete, incomplete, interrupted or absent. Scales small, cycloid, frequently deciduous.

Key to the species

1. Lateral line indistinct, discontinous or absent. Generally a dark blotch on dorsal fin's upper edge present. .....***C. nama***

   Lateral line distinct. No such colour blotch on dorsal fin. 2

2. A dark shoulder spot present. .....***C. ranga***

   No such shoulder spot present. A golden spot on occiput. .....***C. baculis***

Chanda baculis Hamilton Buchanan

1822. *Chanda* baculis Hamilton Buchanan, *Fish. Ganges.* : 112, 371 (type-locality : N. E. parts of Bengal).

1875. *Ambassis baculis*, Day, *Fish. India.* : 51, pl. 15, fig. 1; 1889. Day, *Fauna Br. India. Fish.* **1** : 485.

1981. *Chanda baculis*. Jayaram, *Handbk. Freshw. Fish. India.* : 318 (distribution and key ot species).

Local name : Chanda.

English name : Glassy perchlet.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from West Tripura.

Diagnostic features : D. 7/1/13, P. 12, V. 1/5, A. 3/13, C. 17.

Head length 4.00 and body depth 3.00 in total length. Eye diameter 3.00 in head length. Lower jaw rather shorter than upper. Preorbital strongly serrated along its lower edge and having a sharp spine directed towards the orbit at its anterior-superior angle, followed by several more along its upper edge. Generally the whole upper edge of the orbit is serrated. Vertical margin of preopercle entire, the whole lower edge of the horizontal limb strongly serrated and a few serrations near the angle on the upper edge, sub and interopercles entire. Second spine of the dorsal fin is highest. Third anal spine slightly the longest. Lateral line complete.

Colour in alcohol : Body yellowish olive, a golden spot on the occiput, black along the top of the first dorsal fin. Second dorsal fin and anal fin darkest externally, front of each anal fin ray blackish. Caudal fin dark along its base and also with blackish tips to each lobe.

Distribution : India : Tripura : West Tripura district. Orissa, West Bengal, Uttar Pradesh, Bihar up to Punjab. Pakistan. Bangladesh. Burma and Thailand.

Size : It attains 100mm. (4 inches) in total length.

Systematic notes : C. baculis principally differs from *C. nama* in its form being higher, the lower jaw shorter and not crooked to one side in vertical margin of preopercle being strongly serrated and in possessing no canine or enlarged teeth in the jaws.

Chanda nama Hamilton Buchanan

(Text-fig. 101)

1822. *Chanda nama* Hamilton Buchanan, *Fish. Ganges.* : 109, 371 (type-locality : ponds throughout Bengal).

1875. *Ambassis nama*, Day, *Fish. India*, : 50, pl. 14, fig. 5; 1889. Day, *Fauna Br. India, Fish*, **1** : 484, fig. 149.

1981. *Chanda nama*, Jayaram, *Handbk. Freshw. Fish India*, : 317, 318 fig. 178 (distribution and key to species).

Local name : Chanda.

English name : Glassy perchlet.

Materials examined : (i) 3 exs., 36-42mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 16.8.85. (ii) 11 exs., 37-52mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 18.8.85.

Diagnostic features : D. 7/1/13-17, P. 13, V. 6, A. 3/14-17, C. 17.

Head length 4.00 to 4.50 and body depth 2.75 to 3.66 in total length. Eye diameter 3.00 to 3.75

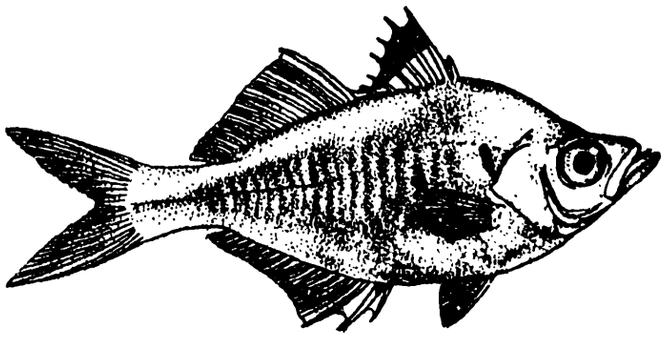


Fig. 101 : *Chanda nama* Hamilton Buchanan

in head length. Lower jaw longer than upper. Preorbital slightly serrated. Vertical border of preopercle entire except near angle. Sub-and interopercles entire. 2 or 3 large crooked canines on either side of lower jaw. Lateral line indistinct, complete.

Colour in alcohol : Body yellowish olive, covered all over with minute dots. Fins orange, upper half of first dorsal fin deep black and a dark upper edge to second dorsal fin Caudal fin dark with a light outer margin and anal fin with a black mark over bases of spines.

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

Size : It attains to about 100mm. (4 inches) in total length.

Remarks : This is a very common fish found to live throughout the state. It shows a considerable local variations which have caused its being described under more than one name.

Chanda ranga Hamilton Buchanan

(Text-fig. 102)

1822. *Chanda ranga* Hamilton Buchanan, *Fish. Ganges*, : 113, 371, pl. 16, fig. 38 (type-locality : freshwater of all parts of the Gangetic provinces).

1875. *Ambassis ranga*, Day, *Fish. India*, : 51, pl.14, fig.6; 1889. Day, *Fauna Br. India, Fish*, **1** : 485.

1981. *Chanda ranga*, Jayaram, *Handbk. Freshw. Fish. India*, : 318 (distribution and key to species).

Local name : Chanda.

English name : Indian glass fish.

Materials examined : (i) 5 exs., 48-55mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 4 exs., 42-47mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 15.8.85.

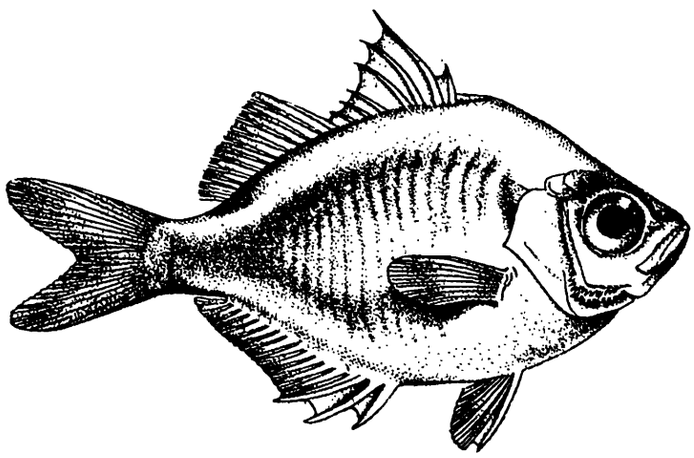


Fig. 102 : *Chanda ranga* Hamilton Buchanan

Diagnostic features : D. 7/1/13-15, P. 11, V. 6, A. 3/14-16, C. 17.

Head length 3.25 to 4.00 and body depth 2.25 to 2.50 in total length. Eye diameter 2.50 in head length. Vertical limb of preopercle entire or finely serrated. Sub-and interopercle entire. Preorbital serrated. Caudal fin emarginate.

Colour in alcohol : Body olive, with a dark mark composed of spots on shoulder being the remains of a band present in young stage. The margins of vertical fins usually grey.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma, Malaya and Thailand.

Size : It attains 102mm. (4 inches) in total length.

Systematic notes : Both *C. nama* and *C. ranga* closely related each other specially in their young stages. However, they can be separated from each other having 2 or 3 canines in lower jaw of *C. nama* which are absent in *C. ranga*. Moreover, body depth deeper in *C. ranga* than *C. nama*.

It is also a very common fish found to live throughout the state.

Family SCIAENIDAE

Croakers, Jew fishes

Body elongated. Head and body covered with ctenoid or cycloid scales. Head with well developed muciferous system of canals and pores. Barbels present in a few genera. Dorsal fin long, almost completely divided by a notch, anterior part with 6 to 10 flexible spines and posterior part with 1 spine and 21 to 45 soft rays. Anal fin with 2 spines and 7 to 13 soft rays. Caudal fin rounded or truncate. Lateral line present. Swim-bladder present with or without elongated appendages.

Genus *Johnius* Bloch

1739. *Johnius* Bloch, *Naturges, Ausland. Fische*, **7** : 132 (type-species : *Johnius carutta* Bloch).

1984. *Johnius*, Talwar and Kacker, *Commercial Sea Fishes of India*, : 644 (genus descriptions).

Mouth terminal or inferior. Barbels on chin present or absent. Villiform teeth in lower jaw, outer row in upper jaw enlarged, but not differentiated as canines. Two dorsal fins continuous, first dorsal with 10 spines and second dorsal with 26 to 28 rays and a feeble spine. Anal fin with 2 spines and 7 rays. Caudal fin wedge shaped. Lateral line curved with 48 to 51 scales.

Swim-bladder hammer-shaped, bearing 12 to 20 pairs of arborescent appendages, the first appendage of each side arising from front of swim-bladder and branching in head.

Johnius coitor (Hamilton Buchanan)

(Text-fig. 103)

1822. *Bola coitor* Hamilton Buchanan, *Fish. Ganges*, : 75, 368, pl. 27, fig. 24 (type-locality : River Ganges).

1876. *Sciaena coitor*, Day, Fish. India, : 187, pl. 44, fig. 3; 1889. Day, Fauna *Br. India, Fish*, **2** : 115-116, fig. 49.

1981. *Johnius coitor*, Jayaram, *Handbk. Freshw. Fish. India*, : 327 (distribution).

Local name : Nil.

English name : Nil.

Materials examined : 1 ex., 140mm. SL.; Gumti river, Udaipur, South Tripura; N. C. Ghosh; 3.11.89.

Diagnostic features : D. 10/1-2/26-29, A. 2/7, LL. 48-51.

Head length 4.25 to 4.75 and body depth 4.50 to 4.75 in total length. Eye diameter 4.00 to 5.50 head in length. Upper jaw somewhat longer.

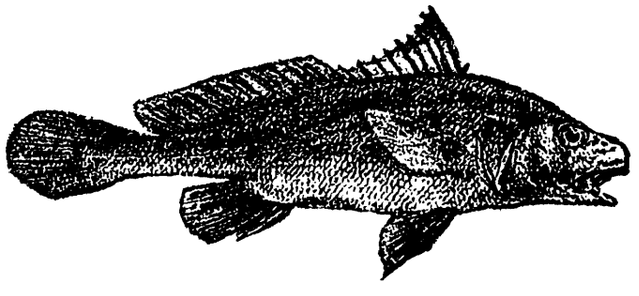


Fig. 103 : *Johnius coitor* (Hamilton Buchanan)

Swim-bladder hammer-shaped anteriorly and laterally expanded in front of a strongylation (hammer-headed); posterior end tapering to a narrow tube extending to base of anal spine, with 11 to 13 pairs of arborescent appendages.

Colour in alcohol : Body silvery, shot with gold and purple, upper half of first dorsal blackish. Soft dorsal, caudal and anal fins dark externally. Anal fin has darkish basal band.

Distribution : Tripura : South Tripura district and throughout the larger rivers of India and Burma. Bangladesh and South China sea

Size : It attains 300mm. (1 foot) in total length.

Remarks : J. coitor has been recorded for the first time from Tripura as well as from rest of the north-eastern states of India by me (Barman, 1992).

Family Nandidae

Leaf fishes

Body oblong and compressed, with ctenoid scales. Head usually large and covered with scales. Mouth generally large and highly protrusible. Teeth on jaws and palate. Operculum armed with a spine. Dorsal fin continuous with a spinous and a soft portion. Pelvic fins thoracic, without scaly axillary process. Anal fin with 3 spines. Caudal fin rounded. Lateral line interrupted or absent.

Key to the genera

Cleft of mouth not extending to anterior margin of the orbit. Lateral line scales 26 to 33. .... ***Badis***

Cleft of mouth extending posterior margin of the orbit. Lateral line scales 46 to 57. .... ***Nandus***

Genus ***Badis*** Bleeker

1853. *Badis* Bleeker, *Verh. Bat. Genootsch.*, **25** : 106 (type-species : *Labrus badis* Hamilton Buchanan = *Badis buchanani* Bleeker).

1981. *Badis*, Jayaram, *Handbk. Freshw. Fish. India*, : 334, 335 (genus descriptions and distribution).

Mouth protractile. Opercle with one sharp spine and other bones of head armed. Villiform teeth on jaws, vomer and palatines, absent from the tongue. A single dorsal fin, the spinous part of much greater extent than the soft. Anal fin with 3 spines, its rayed portion similar to that of the dorsal fin. Cleft of mouth not extending to front border of the orbit. Lateral line interrupted

or absent, with 26 to 33 ctenoid scales when present.

Badis badis (Hamilton Buchanan)

(Text-fig. 104)

1822. *Labrus badis* Hamilton Buchanan, *Fish. Ganges*, : 70, 368, pl. 25, fig. 23 (type-locality : Gangetic provinces).

1875. *Badis buchanani*, Day, *Fish. India*, : 128, pl. 31, fig. 6; 1889. Day, *Fauna Br. India, Fish.* **2** : 81, fig. 38.

Local name : Bot-koi.

English name : Badis.

Materials examined : (i) 2 exs., 58-65mm. TL.; Deo river, Kanchanpur, North Tripura; R. P. Barman and party; 22.10.89. (ii) 2 exs., 45-48mm. TL.; Muhuri river, Belonia, South Tripura; R. P. Barman and party; 27.10.89. (iii) 5 exs., 35-50mm. TL.; Rudrasagar, West Tripura; R. P. Barman and party; 31.10.89.

Diagnostic features : D. 16-18/7-10, P. 12, A. 3/6-8, C. 16, LL. 26-33.

Head length 4.50 to 5.00 and body depth 2.75 to 4.50 in total length. Eye diameter 3.00 to 3.75 in head length. Scales ctenoid, extending over the body and head. Dorsal spines somewhat slender, the soft portion of the fin rather elevated and pointed. Lateral line interrupted below posterior extremity of dorsal fin.

Colour in alcohol : Body is variegated with alternate belts of black and green but in grown up specimens, especially if captured in dirty water, these bands are black and dirty red. On each shoulder there is usually a bluish black spot, another is often present on the opercle and a third at base of caudal fin.

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

Size : It attains at least 90mm. ($3^1/_2$ inches) in total length.

Remarks : B. badis is being recorded here for the first time from Tripura. It is found to live throughout the state.

Genus *Nandus* Valenciennes

1831. *Nandus* Valenciennes, *Hist. nat. Poiss.*, **7** : 481 (type-species : *Nandus marmoratus* Cuvier).

1981. *Nandus*, Jayaram, *Handbk. Freshw. Fish. India*, : 335-335 (genus characters and distribution).

Body oblong, compressed with abdomen rounded. Mouth terminal, very protractile, maxilla extending to below hind margin of the orbit. Opercle with a spine, preopercle, preorbit, sub- and inter-opercles serrated or almost entire. Dorsal fin 12 to 14 spines and 11 to 13 rays, spinous portion longer than soft part. Anal fin with 3 spines and 7 to 9 rays. Caudal fin square shaped. Lateral line interrupted at about 36th scale, 46 to 57 scales along lateral series.

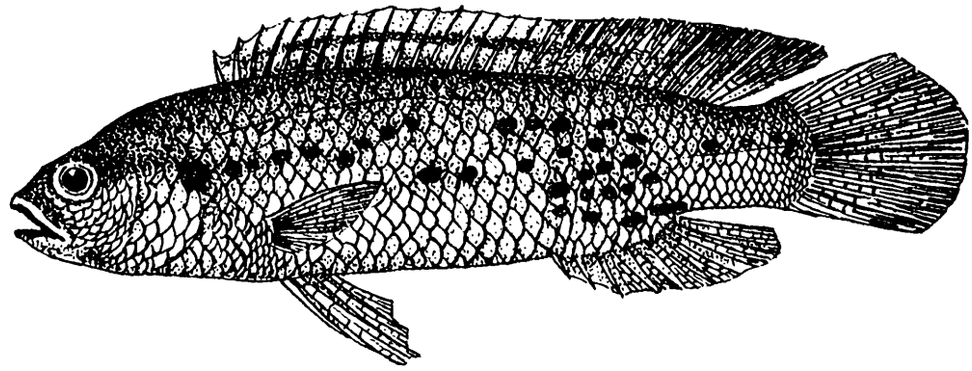


Fig. 104 : *Badis badis* (Hamilton Buchanan)

Nandus nandus (Hamilton Buchanan)

(Text-fig. 105)

1822. *Coius nandus* Hamilton Buchanan, *Fish. Ganges*, : 96, pl. 30, fig. 32 (type-locality : ponds of Gangetic provinces).

1875. *Nandus marmoratus*, Day, *Fish. India*, : 129, pl. 32, fig. 1; 1889. Day, *Fauna Br. India, Fish*, **2** : 82-83, fig. 39.

1981. *Nandus nandus*, Jayaram, *Handbk. Freshw. Fish. India*, : 335, 336, fig. 185 (distribution and key to species).

Local name : Nadosh.

English name : Nandus.

Materials examined : (i) 4 exs., 43-55mm. SL.; Gumti river, Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 1 ex., 75mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89. (iii) 2 exs., 52-60mm. SL.; Kumarghat, North Tripura; R. P. Barman and party; 21.10.89.

Diagnostic features : D. 12-14/11-13, A. 3/7-9, LL. 46-57.

Head length 3.00 and body depth 3.00 to 3.30 in total length. Eye diameter 5.00 to 6.00 in head length. Mouth highly protractile, maxilla extending beyond the posterior border of the orbit. A single notched dorsal fin, spinous part longer than soft part. Caudal fin rounded or cut square. Lateral line interrupted.

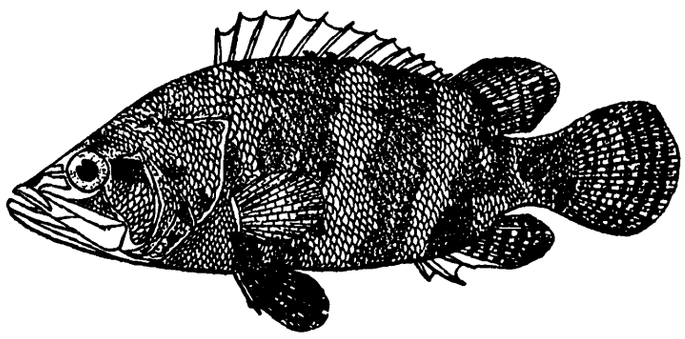


Fig. 105 : *Nandus nandus* (Hamilton Buchanan)

Colour in alcohol : Greenish brown with brassy reflections, 3 broad patchy marbled bands over body and a fourth one across free portion of tail. Narrow bands of spots across soft parts of dorsal, anal and caudal fin present.

Distribution : Throughout Tripura and India, Bangladesh, Nepal, Pakistan, Burma, Malaya and Thailand.

Size : It attains 177mm. (7 inches) in total length.

Remarks : N. nandus is a very common fish found to live throughout Tripura. It is a piscivorous fish preying upon small carps in paddy fields and ditches.

Family CICHLIDAE

Body oblong, elevated and compressed. Head and body with slightly ctenoid scales. Dorsal fin single with a spinous and a soft parts united. Usually 7 to 25 spines and 5 to 30 soft rays in the dorsal fin. Anal fin with 3 (in majority of species) to 15 spines and 4 to 15 soft rays. Lateral line interrupted, usually with 20 to 50 scales in the lateral line but the number may exceed 100.

Genus ***Oreochromis*** Gunther

1889. *Oreochromis* Gunther, *Proc. zool. Soc. Lond.*, : 70 (type-species : *Oreochromis hunteri* Gunther).

1849. *Tilapia* A. Smith, *Ill. Zool. S. Afr. Fish.* (type-species : *Chromis nilotica* Valenciennes).

1983. *Oreochromis*, Trewavas, *Br. Mus. nat. Hist.* No. **878** : 1 (raised from *Tilapia* A. Smith).

Body almost elongated with abdomen rounded. Mouth terminal, maxilla extending to below anterior border of the orbit. Dorsal fin inserted above base of pectoral fin, with 15 to 16 spines and 10 to 12 soft rays. Spinous portion longer than soft portion which may be prolonged with a filamentous tip. Anal fin with 3 spines (rarely 4). Caudal fin rounded, may be truncate in the young specimens. Lateral line incomplete, interrupted, upper one with 18 to 21 and lower one with 10 to 15 cycloid scales.

Oreochromis mossambica (Peters)

(Text. fig. 106)

1852. *Tilapia mossambica* Peters, *Monatsb. Akad. Wiss. Berlin*, : 681 (type-locality : rivers on east coast of Africa from Algoa Bay in South Africa to West Shebeli river in Somaliland).

1983. *Oreochromis mossambica*, Trewavas, *Br. Mus. nat. Hist.* No. **878** : 1 (placed this species under the genus *Oreochromis* Gunther).

Local name : Tilapia.

English name : Tilapia.

Materials examined : 1 ex., 50mm. SL.; Muhuri river, Belonia, South Tripura; R. P. Barman and party; 26.10.89.

Diagnostic features : D. 15-16/11-12, P. 12-13, V. 1/5, A. 3/10, C. 17, LL. 28-36.

Head length 4.00 and body depth 3.25 in total length. Eye diameter 5.00 in head length. Lower jaw slightly longer. Dorsal inserted above base of pectoral fin, spinous part longer than soft part which may be prolonged with a filamentous tip. Lateral line incomplete, interrupted. Caudal fin subtruncate.

Colour in alcohol : Body greenish to golden. Each scale with a dark centre. Vertical fins blackish with indistinct white spots. Young specimens with an ovate black spot behind base of last dorsal spine.

Distribution : It is a native freshwater fish from Southern Africa that has been introduced throughout India, Pakistan and Sri Lanka, East Africa to Natal.

Size : It attains 230mm. (9 inches) in total length.

Remarks : Trewavas (1983) placed this species under the genus *Oreochromis* Gunther, in stead of its well known popular genus *Tilapia* A. Smith, 1849. Nelson (1983) is in favour of retaining its popular genus *Tilapia* as per the opinion of Robins *et al* (1980) in recognising *T. mossambica* under the genus *Tilapia*. I have followed Trewavas (1983) in this present study.

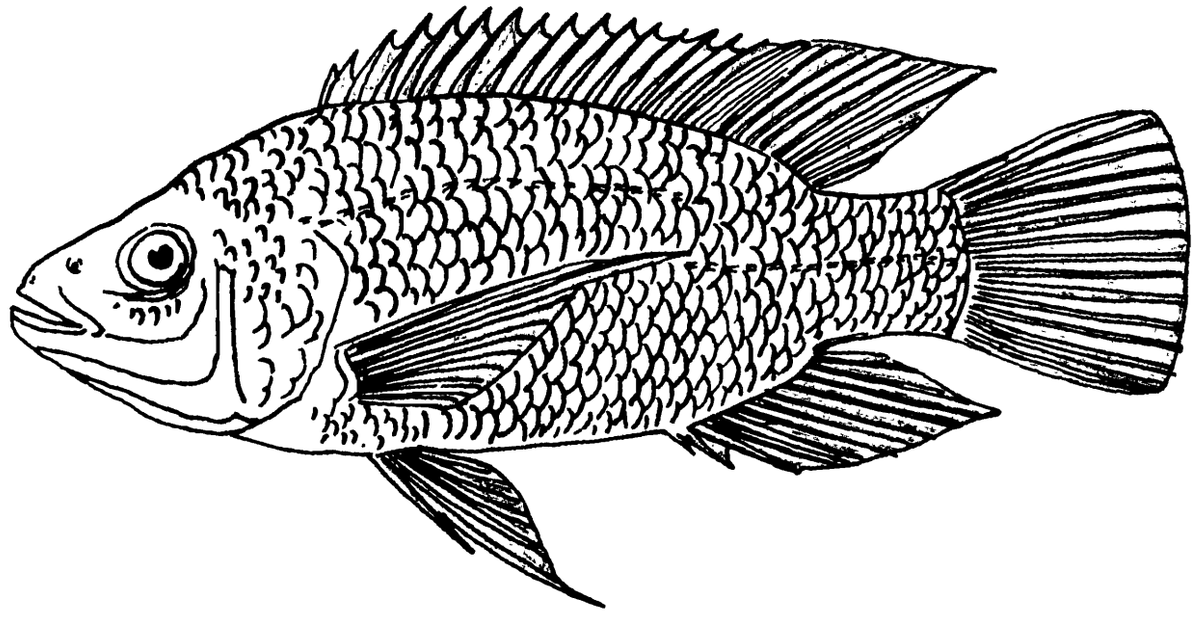


Fig. 106 : *Oreochromis massambica* (Peters)

Family MUGILIDAE

Mullets

Body oblong to elongated, silvery fishes. Head and body with scales. Eyes with or without adipose eyelids. Opercles with or without a spine. Gill openings wide. Two dorsal fins short, well separated, first with 4 spines. Lateral line absent.

These fishes are distributed throughout the seas of India, some ascending tidal rivers or being found in estuaries. The young specimens usually enter large rivers and are found in watercourses intersecting paddyfields and in inundated localities.

Key to the genera

Opercle with a spine. Eyes large, lateral in position. Scales 36 to 39 along lateral series. ..... ***Sicamugil***

Opercle without a spine. Eyes comparatively shorter, bulging, dorso-lateral in position. Scales 48 to 52 along lateral series..... .....***Rhinomugil.***

Genus ***Sicamugil*** Fowler

1939. *Sicamugil* Fowler, *Notul. Nat. Acad. Philad.*, **17** : 9 (type-species : *Mugil hamiltonii* Day).

1981. *Sicamugil*, Jayaram, *Handbk. Freshw. Fish. India*, : 344 to 345 (genus characters and distribution).

Mouth protrusible. Eyes large, lateral, anterior in position. Snout obtuse. Adipose eyelids absent. Distinct teeth on jaws and palate absent. Opercle with a strong spine. A symphysial knob present on lower jaw. Caudal fin forked. Scales 36 to 39 along lateral series.

Sicamugil cascasia (Hamilton Buchanan)

(Text-fig. 107)

1822. *Mugil cascasia* Hamilton Buchanan, *Fish, Ganges.* : 217, 380 (type-locality : northern rivers of Bengal).

1876. *Mugil cascasia*, Day, *Fish. India*, : 355, pl. 75, fig. 6; 1889. Day, *Fauna Br. India, Fish*, **2** : 351.

1981. *Sicamugil cascasia*, Jayaram, *Handbk. Freshw. Fish. India*, : 344 to 345, fig. 190 (distribution and key to species).

Local name : Nadir bata, Parshey.

English name : Yellow tail mullet.

Materials examined : (i) 2 exs., 52-54mm. SL.; Udaipur, South Tripura; R. P. Barman and party; 16.8.85. (ii) 1 ex., 60mm. SL.; Rudrasagar, Mèlagarh, West Tripura; R. P. Barman and party; 5.7.1990.

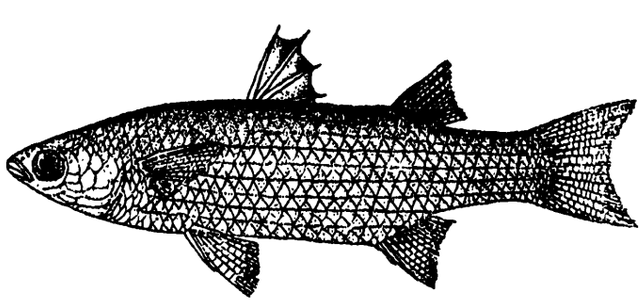


Fig. 107 : *Sicamugil cascasia* (Hamilton Buchanan)

Diagnostic features : D. 4/1/8, A. 3/8-9, LL. 36-39.

Head length 4.50 and body depth 4.50 to 5.25 in total length. Eye diameter 3.50 to 4.00 in head length. Preorbital serrated along lower margin with three denticulations at posterior extremity. Opercle with a strong spine. First dorsal fin originates above 7th scale of lateral line and second above 24th of lateral line. Second dorsal fin inserted above anal fin. Caudal fin lunate.

Colour in alcohol : Yellowish olive along top of head, greyish on back and upper third of side, with many fine black dots; silvery white in lower two thirds.

Distribution : India : Tripura: South & West Tripura districts. Upper reaches of Ganga, Yamuna, Brahmaputra river systems, Pakistan, Burma, Bangladesh and Sri Lanka.

Size : It attains 102mm. (4 inches) in total length.

Remarks : I have recorded this fish for the first time from the river Gumti, Tripura (Barman, 1988).

Genus ***Rhinomugil*** Gill

1863. *Rhinomugil* Gill, *Proc. Acad. nat. Sci. Philad.*, **15** : 169 (type-species : *Mugil corsula* Hamilton Buchanan).

1981. *Rhinomugil*, Jayaram, *Handbk. Freshw. Fish. India.*, : 345-345 (genus characters and distribution).

Mouth distinctly ventral and protrusible. Eyes bulging, dorso-lateral and anterior in position. Snout flat, short, overhanging. Adipose eyelids absent. Lips thin, upper lip not forming tip of snout or part of dorsal profile, but distinctly ventral, overhung by snout. Symphysial knob present on lower jaw. Teeth indistinct. Opercle without any spine. Caudal fin emarginate. Scales 48 to 52 along lateral series.

Rhinomugil corsula (Hamilton Buchanan)

(Text-fig. 108)

1822. *Mugil corsula* Hamilton Buchanan, *Fish. Ganges.* : 221, 381, pl. 9, fig. 97 (type-locality : rivers of Gangetic provinces in the southern parts of Bengal).

1876. *Mugil corsula*, Day, *Fish. India*, : 354, pl. 71, fig. 6; 1889, Day, *Fauna Br. India. Fish.* **2** : 349.

1981. *Rhinomugil corsula*, Jayaram, *Handbk. Freshw. Fish. India*, : 446 (distribution).

Local name : Nadir bata, Corsula, Kannua.

English name : Corsula mullet.

Materials examined : (i) 4 exs., 50-65mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 18.8.85. (ii) 1 ex., 110mm. SL.; Deo river, Kumarghat, North Tripura; R. P. Barman and party; 22.10.89. (iii) 1 ex., 115mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 25.6.90.

Diagnostic features : D. 4/1/7-8, A. 3/9, LL. 48-52.

Head length 4.50 to 4.75 and body depth 6.00 to 6.50 in total length. Eye diameter 7.00 in head length. Preorbital not notched and serrated. Opercle without spine. Dorsal profile almost straight, upper jaw longer and overhung by snout. First dorsal fin originates above 16th and second dorsal fin commences above 34th of lateral line. Caudal fin slightly emarginate.

Colour in alcohol : Dorsal surface dull brown becoming lighter below. Dorsal and caudal fins stained grey. Eyes golden.

Distribution : India : Punjab, Uttar Pradesh, West Bengal, Orissa, Gujarat, Tamil Nadu (introduced), Andhra Pradesh (introduced) and throughout Tripura. Pakistan. Nepal. Bangladesh and Burma.

Size : It attains 457mm. (18 inches) in total length.

Remarks : This fish is found in both the estuaries and freshwaters far above the tidal influence. They swim with their eyes just above the surface of water, giving the appearance of a number of tadpoles.

I have recorded this fish for the first time from Tripura (Barman, 1988).

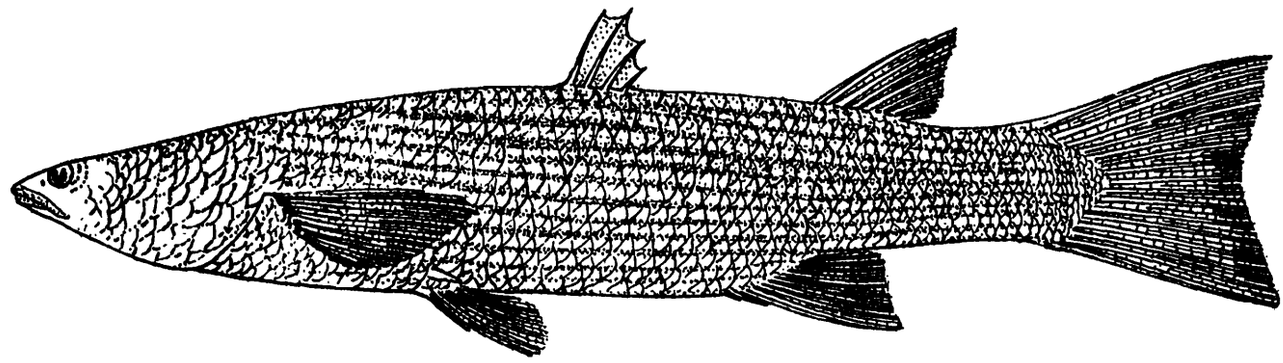


Fig. 108 : *Rhinomugil corsula* (Hamilton Buchanan)

Family GOBIIDAE

Gobies

Body generally elongated. Head generally with mucous canals and open pores. Two dorsal fins united with each other or separated narrowly by a notch or well separated, with 2 to 8 soft flexible spines and or soft rays. First dorsal fin may be absent. The second or soft-rayed dorsal fin and the anal fin mirror each other in size and shape. The bases of their pelvic fins, when well developed, united generally forming an adhesive or sucking disc with which they hold onto the bottom. Anal fin short or long or continuous with caudal fin. Lateral line absent, exposed pit organs present. Scales cycloid or ctenoid (rarely absent).

Key to the subfamily

Teeth on lower jaw in a single row. ..... APOCRYPTINAE

Teeth on lower jaw in more than one row.. ..... GOBIINAE

Subfamily GOBIINAE

No scales between and before the orbit on head. Teeth simple, top of teeth not incised. Second dorsal fin longer than first and comparatively much more elongated than other subfamilies.

Genus : ***Glossogobius*** Gill

1860. *Glossogobius* Gill, *Proc. Acad. nat. Sci. Philad.*, (1859) : 146 (type-species : *Gobius platycephalus* Richardson).

1981. *Glossogobius* Jayaram, *Handbk. Freshw. Fish. India*, : 357-358 (genus characters and distribution).

Two dorsal fins, separated by a short interspace, first dorsal with 6 flexible spines and second dorsal with 1 spine and 6 to 10 soft rays, not elongated. Pelvic fins united, forming a sucking disc. Anal fin with 1 spine and 8 to 9 soft rays. Caudal fin oblong to rounded. Scales ctenoid on body and cycloid on head, 28 to 36 scales along lateral series.

Glossogobius giuris (Hamilton Buchanan)

(Text-fig. 109)

1822. *Gobius giuris* Hamilton Buchanan, *Fish. Ganges*, : 51, 366, pl. 33, fig. 15 (type-locality : ponds and freshwater rivers of Gangetic provinces).

1876. *Gobius giuris*, Day, *Fish. India*, : 294, pl. 67, fig. 1; 1889. Day, *Fauna Br. India, Fish.* 2 : 266.

1981. *Glossogobius giuris*, Jayaram, *Handbk. Freshw. Fish. India*, : 358 (distribution and key to species).

Local name : Belay or Bhalia.

English name : Bar-eyed goby.

Materials examined : (i) 1 ex., 120mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 10.8.85. (ii) 1 ex., 70mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 18.8.85. (iii) 1 ex., 73mm. SL.; Deo river, Kumarghat, North Tripura; R. P. Barman and party; 22.10.89.

Diagnostic features : D. 6/1/8-9, P. 20, V. 1/5, A. 1/8-9, C. 17, LL. 30-34.

Head length 3.50 to 4.25 and body depth 5.00 to 6.50 in total length. Eye diameter 6.00 to 8.00 in head length. Snout pointed. Lower jaw longer. The maxilla extends to below anterior border of the orbit. Two dorsal fins separated by a short interspace, first dorsal fin inserted above half or three-fourth of pectoral fins. Pelvic fins united, oblong. Caudal fin oblong to rounded.

Colour in alcohol : Dorsal surface olive to dusky green and lighter below. Body with two alternately rows of 4 to 6 blotches. Sometimes a dark blotch on first dorsal fin.

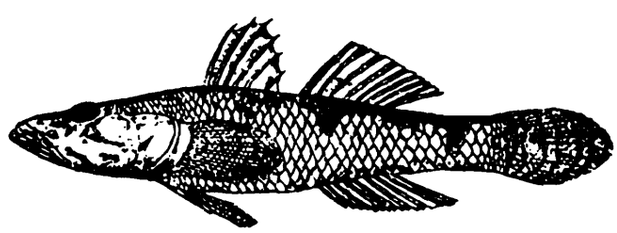


Fig. 109 : *Glossogobius giuris* (Hamilton Buchanan)

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, East and South coasts of Africa, Mauritius, Malaya, Thailand, China, Japan, Philippines, Melanesia, Polynesia and Australia.

Size : It attains up to 304mm. (1 foot) in total length.

Remarks : It is a very common fish found to live in rivers, tanks, canals, lakes and beels throughout Tripura. It is also one of the important economical fishes which has much fishery value.

Subfamily APOCRYPTINAE

Scales above and on sides of head. Teeth in upper jaw in one row, in lower subhorizontal. An erect canine present on each side of symphysis in lower jaw. Second dorsal fin elongated.

Genus *Apocryptes* Valenciennes

1837. *Apocryptes* Valenciennes, In Cuvier and Valenciennes, *Hist. Nat. Poiss.*, **12** : 142 (type-species : *Gobius pectinirostris* Gmelin).

1981. *Apocryptes*, Jayaram, *Handbk. Freshw. Fish India.* : 366-367 (genus characters and distribution).

Body elongated. Teeth conical in a single fixed row in either side, with generally a pair of canines in the lower jaw and above the symphysis. Two dorsal fins separated by a short interspace or slightly united, first dorsal with 5 to 6 flexible spines and second dorsal fin with 21 to 22 rays. Pectoral fins with free silk-like rays. Pelvic fins united, forming a disc and only attached by their bases. Anal fin with 21 to 23 rays. Caudal fin lanceolate. About 100 cycloid scales along lateral series.

Apocryptes bato (Hamilton Buchanan)

(Text-fig. 110)

1822. *Gobius bato* Hamilton Buchanan, *Fish. Ganges.* : 40, 365, pl. 37, fig. 10 (type-locality : Orissa and lower Bengal within tidal reach).

1981. *Apocryptes bato*, Jayaram, *Handbk. Freshw. Fish. India.* : 367 (distribution).

Local name : Cheeng.

English name : Nil.

Materials examined : No specimen obtained by me. It was recorded by Lipton (1983-84) from Tripura.

Diagnostic features : D. 5/21-22, P. 23, V. 1/5, A. 23, C. 13.

Head length 6.00 to 6.50 and body depth 7.00 in total length. Eye diameter 5.50 to 6.00 in head length, placed rather high up. Cleft of mouth almost horizontal, extends to below the first third or middle of the orbit. Teeth about 24 on either side of both jaws, all of which are notched at their extremities, those in the mandible horizontal; two moderately sized posterior canines in lower jaw. Dorsal and anal fins of about the same height and two-third of that of the body. Caudal fin lanceolate.

Colour in alcohol : Greenish white with about 12 ill defined narrow bands, descending from the back towards the abdomen. Scales with brown points. Fins white but also with minute dots. A dark band at base of pectoral fin.

Distribution : India : Orissa, Lower Bengal and Tripura. Bangladesh and Burma.

Size : It attains 165mm. ($6^1/_2$ inches) in total length.

Remarks : Jayaram (1981) has recorded this fish as species visiting freshwater.

Family ANABANTIDAE

Climbing perches

Body compressed, somewhat elongated. Head and body covered with ctenoid scales. Suprabranchial organ well developed. A long dorsal fin with spinous and soft rays. Anal fin with spines and soft rays. A cavity above the third or the upper portion of the first branchial arch contains an elaborate apparatus consisting of thin laminae of bones, which are covered over by a vascular mucous membranes for respiratory purposes, enabling these fishes to respire out the water for a considerable period. Lateral line interrupted.

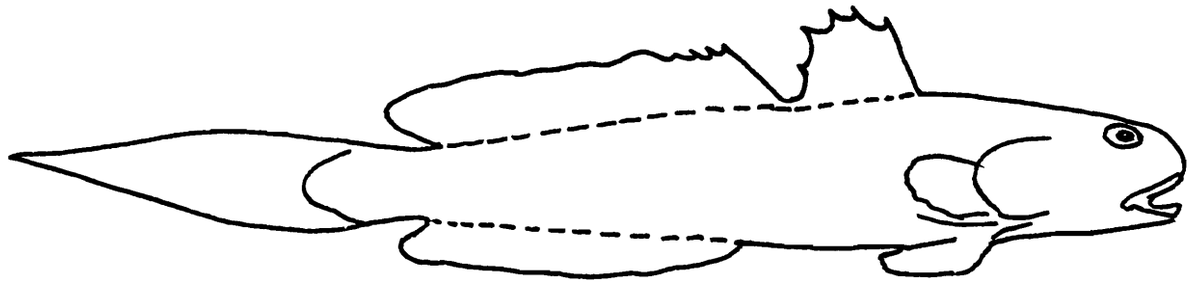


Fig. 110 : *Apocryptes bato* (Hamilton Buchanan)

Genus ***Anabas*** Cuvier

1817. *Anabas* Cuvier, *Le Regne Animal.*, **2** : 339 (type-species : *Perca scandens* Daldorf).

1981. *Anabas*, Jayaram, *Handbk. Freshw. Fish. India.* : 378, 379 (genus characters and distribution).

Body oblong with abdomen rounded. Opercles and preorbital bones serrated. Single dorsal fin, inserted above pectoral fin base, with 17 to 18 spines and 8 to 10 rays. Anal fin with 8 to 10 spines and 9 to 11 soft rays. Caudal fin rounded. Lateral line interrupted, with 21 to 29 scales.

Anabas testudineus (Bloch)

(Text-fig. 111)

1792. *Anthias testudineus* Bloch, *Naturg. Ausland. Fische*, **6** : 121, pl. 322 (type-locality : Japan, East Indies).

1877. *Anabas scandens*, Day, *Fish. India.* : 370, pl. 78, fig. 3; 1889. Day, *Fauna Br. India, Fish*, **2** : 367.

1981. *Anabas testudineus*, Jayaram, *Handbk. Freshw. Fish. India*, : 379 (distribution and key to species).

Local name : Koi.

English name : Climbing perch.

Materials examined : (i) 5 exs., 38-54mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 2 exs., 45-60mm. SL.; Kumarghat, North Tripura; R. P. Barman and party; 3.7.90.

Diagnostic features : D. 17-18/8-10, P. 14-15, V. 1/5, A .9-10/9-11, C. 17, LL. 21-29.

Head length 3.50 to 4.00 and body depth 3.50 to 4.00 in total length. Eye diameter 4.50 to 5.00 in head length. Dorsal fin inserted above, slightly anterior or posterior to pectoral fin origin. Height of soft dorsal fin longer than spinous part of dorsal fin. Bases of soft dorsal, soft anal and caudal fin scaly. A single dorsal fin longer than anal fin, spinous part much longer than soft part. Lateral line interrupted. Caudal fin rounded.

Colour in alcohol : Dorsal surface light to dark green and greenish yellow to orange below. Body with 4 wide cross bands in juvenile specimens. A black spot on caudal fin base invariably present in juveniles but generally fades with the growth of the fish.

Distribution : Throughout Tripura and India, Pakistan, Bangladesh, Burma, Sri Lanka, Malaya, Malaya Archipelago, Thailand, Vietnam, China, Philippines, Polynesia and Singapore.

Size : It attains at least 203mm. (8 inches) in total length.

Remarks : This is a very popular food fish for its taste all over India especially in Bengal, Assam and Tripura. It is found throughout the state to live in canals, ditches, lakes, ponds and swamps, although it is available in other freshwater areas like streams.

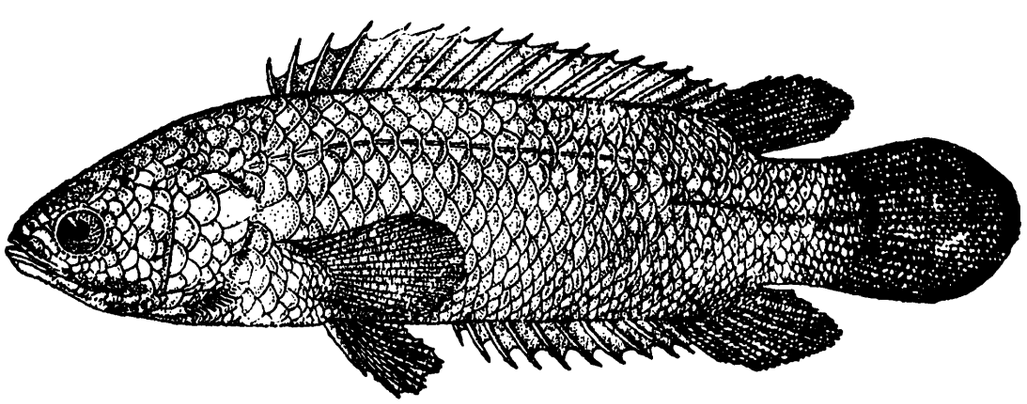


Fig. 111 : *Anabas testudineus* (Bloch)

Family BELONTIDAE

Body short, compressed, anteriorly depressed to a slight extent. Head and body covered with ctenoid scales. A suprabranchial cavity present. A single dorsal fin with spines and soft rays. First ray of pelvic fins modified into a filiform ray or with few rays. Pelvic fins inserted behind

base of pectoral fins. Anal fin with spines. Lateral line vestigial, rudimentary or absent.

Genus ***Colisa*** Cuvier

1831. *Colisa* Cuvier. *Hist. Nat. Poiss.*, **7** : 359 (type-species : *Colisa vulgaris* Cuvier).

1981. *Colisa*, Jayaram, *Handbk. Freshw. Fish. India*, : 383 (genus characters and distribution).

Body elevated and compressed. Mouth upturned, terminal, cleft small and jaws slightly protractile. A suprabranchial organ present. A single dorsal fin inserted above from near pectoral fin base, with 15 to 18 spines and 7 to 13 rays. Anal fin with 15 to 20 spines and 11 to 19 rays. Pelvic fins in the form of a single elongated, filiform ray. Caudal fin slightly emarginate or truncate. Lateral line when present interrupted, with 27 to 31 scales.

Key to the species

Body with a single black longitudinal band from eye to lower half of tail along either sides. ..... ***C. sota***

Body with many oblique bands from back to belly. ..... ***C. fasciata***

Colisa fasciata (Schneider)

(Text-fig. 112)

1801. *Trichogaster fasciatus* Schneider, *Syst. Ichth.* Bloch, : 164, pl. 36 (type-locality : Tranquebar).

1877. *Trichogaster fasciatus*, Day, *Fish. India*, : 374, pl. 78, fig. 6; 1889. Day, *Fauna Br. India, Fish*, **2** : 372, fig. 123.

1981. *Colisa fasciata*, Jayaram, *Handbk. Freshw. Fish. India*, : 383, 384 (distribution and key to species).

Local name : Khalisha.

English name : Banded colisa.

Materials examined : (i) 4 exs., 52-70mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 4 exs., 25-30mm. SL.; Pacherthal, North Tripura; R. P. Barman and party; 22.10.89. (iii) 2 exs., 25-40mm. SL.; Gumti river, Udaipur, South Tripura; R. P. Barman and party; 26.10.89. (iv) 3 exs., 25-35mm. SL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89

Diagnostic features : D. 15-17/9-13, P. 10, V. 1, A. 15-18/14-19, C. 15, LL. 29-31

Head length 3.75 to 4.25 and body depth 2.75 to 3.25 in total length. Eye diameter 3.25 to 3.50

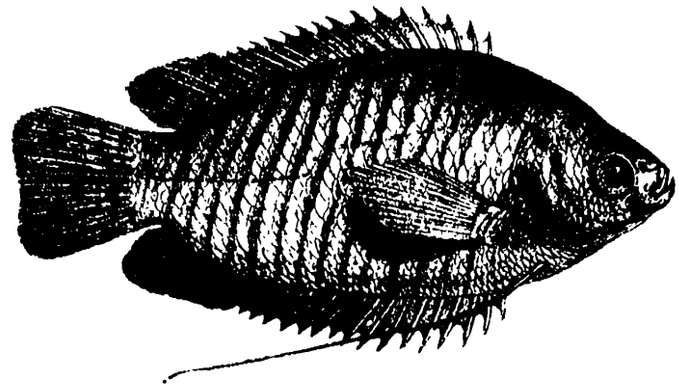


Fig. 112 : *Colisa fasciata* (Schneider)

in head length. Lower limb of preopercle serrated. Last dorsal spine longest. Soft parts of dorsal and anal fins produced to a varying degree. Caudal fin notched or cut square.

Colour in alcohol : Dorsal surface greenish or bluish becoming dirty white below. Body with 14 or more orange coloured vertical bands descend obliquely downwards from back to belly and bordered by blue bands. Dorsal and caudal fins spotted with orange. Young specimens with a black spot at caudal fin base.

Distribution : India : Throughout Tripura. North India and Coromondal coast as far as the river Krishna. Pakistan. Nepal. Bangladesh and Burma.

Size : It attains 125mm. (5 inches) in total length.

Remarks : It is a very common fish found throughout Tripura.

Colisa sota (Hamilton Buchanan)

(Text-fig. 113)

1822. *Trichopodus sota* Hamilton Buchanan, *Fish. Ganges*, : 120, 378 (type-locality : not known).

1822. *Trichopodus chuna* Hamilton Buchanan, *Fish Ganges*, : 121, 372 (type-species : River Brahmaputra, Dibrugarh, upper Assam to Hooghly at Calcutta).

1877. *Trichopodus chuna*, Day, *Fish. India*, : 373, pl. 79, fig. 3; 1889. Day, *Fauna Br. India, Fish*, **2** : 371-372.

1981. *Colisa sota*, Jayaram, *Handbk. Freshw. Fish. India*, : 384 (distribution and key to species).

Local name : Chuna Khalisha.

English name : Nil.

Materials examined : 1 ex., 30mm. SL.; Deo river, Kanchanpur, North Tripura; R. P. Barman and party; 22.10.89.

Diagnostic features : D. 17-18/7-8, P. 9, V. 1, A. 17-20/11-15, C. 15, LL. 27-29.

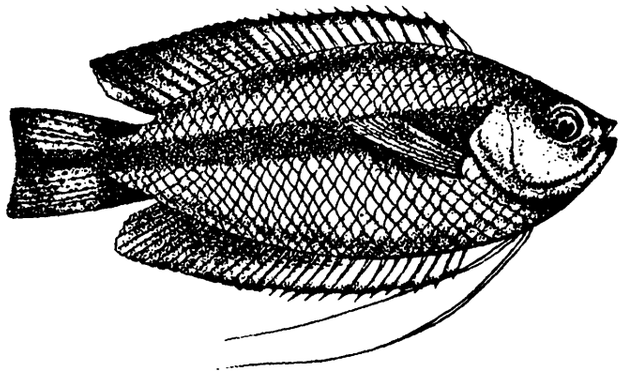


Fig. 113 : *Colisa sota* (Hamilton Buchanan)

Length of head 3.50 to 4.00 and body depth 2.50 to 2.75 in total length. Eye diameter 2.75 to 3.00 in head length. Last dorsal spine longest. Caudal fin slightly emarginate. Lateral line present.

Colour in alcohol : Body dull greenish, lighter along abdomen. A dark, sometimes black band from eye along side to lower half of tail. A dark band in upper third of dorsal and another along the base of that fin. Anal fin banded similarly to dorsal, a dark band along base of soft portion. Caudal fin sometimes with a black spot at its base.

Distribution : India : Gangetic provinces, Assam and Tripura (North Tripura district). Bangladesh.

Size : It attains 48mm. (1.8 inches) in total length.

Remarks : This species appears to be a rare fish in Tripura due to the fact that it is not generally found in the state. Menon (1974) is of opinion that *Colisa chuna* (Hamilton Buchanan) is a junior synonym of *C. sota*

Family OSPHRONEMIDAE

Goramies

Body moderately elevated, compressed with abdomen rounded. Head and body with ctenoid scales. Mouth small, oblique, terminal and protractile. A suprabranchial organ present. A single dorsal fin inserted above tip of pectoral fins, with 11 to 14 spines and 11 to 12 rays; spinous portion longer than soft portion. Outer ray of pelvic fin much elongated, extending beyond caudal fin. Anal fin with 9 to 12 spines and 19 to 21 rays. Caudal fin rounded. Lateral line complete and straight, with 30 to 33 scales.

Genus ***Osphronemus*** Lacepede

1802. *Osphronemus* Lacepede, *Hist. Nat. Poiss.*, **3** : 116 (type-species : *O. gouramy* Lacepede).

1981. *Osphronemus* Jayaram, *Handbk. Freshw. Fish. India*, : 384, 385 (genus characters and distribution).

Genus characters are similar to those of characters of the family.

Osphronemus goramy Lacepede

(Text-fig. 114)

1802. *Osphronemus goramy* Lacepede, *Hist. Nat. Poiss.*, **3** : 116, 117, pl. 8, fig. 2 (type-locality : Mauritius).

1877. *Osphronemus olfax*, Day, *Fish. India*, : 372, pl. 79, fig. 6; 1889. Day, *Fauna Br. India, Fish*, **2** : 369.

1981. *Osphronemus gormay*, Jayaram, *Handbk. Freshw. Fish. India*, : 385 (distribution).

Local name : Nil.

English name : Gouramy.

Materials examined : No specimen obtained by me. It was recorded by Datta (1977) from Tripura.

Diagnostic features : D. 11-14/11-12, A. 9-12/19-21, LL. 30-33.

Head length 4.00 and body depth 3.30 in total length. Eye diameter 4.00 in head length.

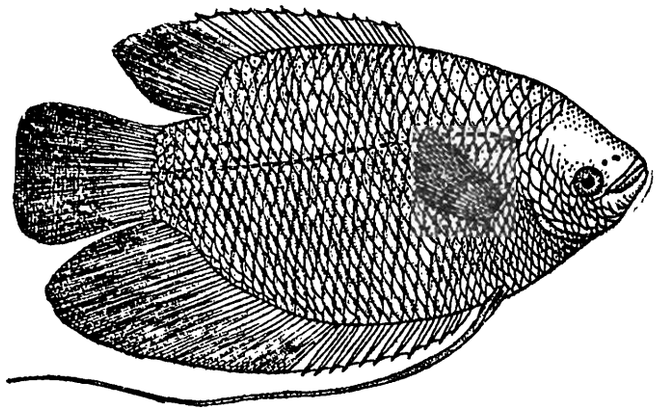


Fig. 114 : *Osphronemus goramy* (Lacepede)

Operculum without any spine, preorbital serrated. A single dorsal fin, shorter than anal fin, spinous part longer than soft part. Outer rays of pelvic fins much elongated, reaching beyond caudal fin. Caudal fin rounded.

Colour in alcohol : Greenish brown becoming lighter below. 8 cross bands on body in the young specimens.

Distribution : Throughout India, Pakistan, Sri Lanka, Mauritius, Seychelles, Malaya, Malaya Archipelago, Thailand, China, Philippines (introduced) and Australia (introduced).

Size : It attains at least 609mm. (2 feet) in total length.

Remarks : It is one of the exotic fishes from Melanesia, introduced into different parts of India and Pakistan. In Tripura this fish was introduced by the State Fisheries Department but it could not be flurished well.

Order MASTACEMBELIFORMES

Body elongated, eel-like and compressed, with minute scales. Gill-openings, non-confluent as two lateral slits. Dorsal and anal fins long preceded by 7 to 40 detached depressible dorsal spines and 1 to 3 anal spines. Pelvic fins absent. Caudal fin short either confluent with dorsal and anal fins or narrowly separated.

Family MASTACEMBELIDAE

Spiny eels

Body eel-shaped and elongated, with minute scales. Snout elongated and supported by a cartilaginous rod. Dorsal fin with 7 to 40 detached depressible spines and anal fin with 1 to 3 spines. Pelvic fins and pelvic girdle absent. Caudal fin homocercal, short either confluent with dorsal and anal fin or narrowly separated.

Key to the genera

Preorbital spine present. Snout conical without any prolongation of the upper jaw and not transversely striated ventrally. ***Mastacembelus***

Preorbital spine absent. Snout with a concave prolongation of the upper jaw consisting of a paired series of toothed bony plates and transversely striated ventrally. ***Macrognathus***

Genus *Macrognathus* Lacepede

1800. *Macrognathus* Lacepede, *Hist. Nat. Poiss.*, **2** : 283 (type-species : *Ophidium aculeatum* Bloch).

1981. *Macrognathus*, Jayaram, *Handbk. Freshw. Fish. India*, : 387, 388 (genus characters and distribution).

Body elongated and eel-like. A long fleshy snout, concave below and transversely striated. Preorbital spine absent. Dorsal fin inserted far behind pectoral fin tip, with 14 to 22 detached depressible spines and 42 to 58 soft rays. Anal fin with 3 spines and 42 to 58 soft rays. Dorsal and anal fins not confluent with caudal fin. Scales small and cycloid. Lateral line present.

Macrognathus aculeatus (Bloch)

(Text-fig. 115)

1795. *Ophidium aculeatum* Bloch, *Naturg. Ausland. Fische*, Pl. 159. fig. 2 (type-locality : not mentioned).

1877. *Rhynchobdella aculeatus*, Day, *Fish. India, :* 338, pl. 72, fig. 1; 1889, Day, *Fauna Br. India, Fish,* **2** : 331.

1981. *Macrognathus aculeatus*, Jayaram, *Handbk. Freshw. Fish India, :* 387, 389, fig. 199 (distribution and key to species).

Local name : Goichi.

English name : Lesser spiny eel.

Materials examined : (i) 3 exs., 87-114mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 17.8.85. (ii) 2 exs., 95-115mm. TL.; Kumarghat, North Tripura; R. P. Barman and party; 21.10.89. (iii) 1 ex., 125mm. TL., Gumti river, Udaipur, South Tripura; R. P. Barman and party; 29.10.89.

Diagnostic features : D. 16-20/44-54, P. 23, A. 2-3/44-52, C. 15.

Head length 5.00 to 6.00 and body depth 8.00 to 10.00 in total length. Eye one diameter apart. Snout with a trilobed extrimity, the inferior surface concave, transversely striated. Preorbital spine

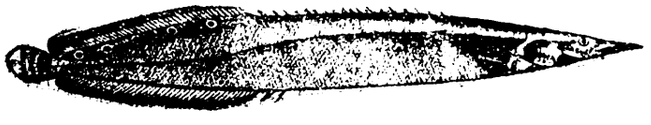


Fig. 115 : *Macrognathus aculeatus* (Bloch)

absent. A single long dorsal fin consisting of spines, which increase in length behind. Second preanal spine longest and strongest. Caudal fin rounded.

Colour in alcohol : Brownish or greenish, marbled superiorly, and yellowish below. A light band above lateral line. A series (sometimes absent) of from 3 to 9 large white or buff-edged ocelli along base of soft dorsal fin. Caudal fin with 6 to 8 vertical down bars.

Distribution : Throughout Tripura and India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, Malaya Archipelago, Thailand, vietnam and China.

Size : It attains 380mm. (15 inches) in total length.

Remarks : It is a very common fish found in rivers and waterlogged areas throughout Tripura.

Genus ***Mastacembelus*** Scopoli

1777. *Mastacembelus* Scopoli, *Introd. Hist. Nat., :* 458 (type-species : *Ophidium mastacembelus* Solandar).

1981. *Mastacembelus*, Jayaram, *Handbk. Freshw.* Fish. *India, :* 388 (genus characters and distribution).

Body elongated and eel-like. A long fleshy appendage to the snout, which is not transversely striated below. Preorbital spine present. Dorsal fin with 24 to 39 detached, depressible spines and 50 to 90 soft rays. Anal fin with 3 spines and 31 to 98 soft rays. Dorsal and anal fins may or may not be confluent with caudal fin. Scales small, cycloid. Lateral line present.

Key to the Species

Caudal fin confluent with vertical fins and with 17 to 21 rays. Dorsal fin with more than 100 spines and soft rays. ..... ***M. armatus armatus***

Caudal fin not confluent with vertical fins and with 11 to 16 rays. Dorsal fin with not exceeding 100 spines and soft rays. ..... ***M. pancalus***

Mastacembelus armatus armatus Lacepede

(Text-fig. 116)

1800. *Macrognathus armatus* Lacepede, *Hist. nat. poiss.*, **2** : 283, 286 (type-locality : not mentioned).

1877. *Mastacembelus armatus*, Day, *Fish. India*, 340, pl. 73, fig. 2; 1889, Day *Fauna Br. India, Fish,* **2** : 334.

1981. Mastacembelus armatus armatus, Jayaram, *Handbk. Freshw. Fish. India, :* 388, 389 (distribution and Key to species).

Local name : Baim.

English name : Spiny eel

Materials examined : (i) 4 exs., 140-165mm. SL.; Amarpur, South Tripura; R. P. Barman and party; 8.8.85. (ii) 2 exs., 105-120mm. SL.; Kanchanpur, North Tripura; R. P. Barman and party; 22.10.89. (iii) 1ex., 120mm. SL.;

Rudrasagar, West Tripura; R. P. Barman and party; 5.7.90.

Diagnostic features: D. 32-39/74-90, P. 23, A. 3/75-88, C. 17-21.

Head length 6.50 to 7.50 and body depth 11.00 10 12.00 in total length. Eye one diameter apart. Snout trilobed at its anterior extrimity. A preorbital spine present. Angle of preopercle with 2 or 3 strong denticulations. Dorsal fin spines commences over middle of pectoral fin, the posterior longest. Vertical fins confluent.

Colour in alcohol : Dorsal surface brownish and lighter below. Sometimes a row of black spots occurs along base of soft dorsal fin and short black bands over back under dorsal spines. Pectoral fin usually spotted, dorsal and anal fins often banded or spotted.

Distribution : Throughout Tripura and India, Pakistan, Bangladesh, Nepal, Sri Lanka, Burma Thailand, Vietnam, Tonkin, Hainan Island, South China, Malaya, Sumatra and Java.

Size : It grows at least 609mm. (2 feet) in total length.

Remarks : It is a very common fish found throughout Tripura. It is also a good eating fish generally known for its oily taste and a larger size compared to other species belonging to this genus.

Mastacembelus pancalus (Hamilton Buchanan)

(Text-fig. 117)

1822. *Macrognathus pancalus* Hamilton Buchanan, *Fish. Ganges,* : 30,364(type-locality: the tanks of the Gangetic Provinces).

1877. *Mastacembelus pancalus,* Day, Fish. India, : 340, pl. 72, fig. 4; 1889, Day, *Fauna Br. India, Fish,* **2** : 333.

1981. *Mastacembelus pancalus,* Jayaram, *Handbk. Freshw. Fish. India,* : 389 (distribution and key to species).

Local name : Baim.

English name : Spiny eel.

Materials examined : (i)1ex., 95mm. SL.; Amarpur, South Tripura; R. P. Barman and party;



Fig. 116 : *Mastacembelus armatus armatus* Lacepede

10.8.85. (ii) 5 exs., 65-98mm.SL; Udaipur, South Tripura; R. P. Barman and party; 14.8.85. (iii) 1 ex., 85mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 17.8.85. (iv) 1 ex., 95mm. SL.; Kumarghat, North Tripura; R. P. Barman and party; 21.10.89.

Diagnostic features : D. 24-26/30-42, P. 19, A. 3/31-45, C. 11-16.

Head length 5.00 to 5.50 and body depth 6.50 to 7.00 in total length. Eye one diameter apart. Snout trilobed at its extrimity. A preorbital spine present. Strong denticulation at angle of preopercle and 3 to 5 teeth along the lower border. Dorsal fin spines short, increasing in length posteriorly, commence over middle of pectoral fin. Caudal fin not united with dorsal and anal fins. Second preanal spine longest and strongest.



Fig. 117 : *Mastacembelus pancalus* (Hamilton Buchanan)

Colour in alcohol : Dorsal surface greenish olive and yellowish below. Scales with yellowish white spots. Usually hind portion of body vertically striped.

Distribution : Throughout Tripura and India, Pakistan and Bangladesh.

Size : It attains at least 177mm. (7 inches) in total length.

Remarks : It is also a very common species found to live in streams, ponds and waterlogged areas along with rivers throughout tripura.

Order TETRAODONTIFORMES

Body rounded or broad, inflatable, globular in inflated condition. Gill openings small. Mouth small with strong teeth. Teeth coalesced, forming a beak with jaws, each jaw with a median suture. A few have scales (not true scales); others have bony plates, spines or a leathery skin. Pelvic fins, if present, thoracic or reduced to spines, occasionally with a single soft ray. Either two dorsal fins, the first spinous, the second soft or the first dorsal fin absent or reduced to a thread-like filament. Anal fin opposite to second dorsal fin. Lateral line present or absent, sometimes multiple.

Family TETRAODONTIDAE
Puffers

Gill openings narrow immediately anterior to pectoral fins, Body more or less short. Bones of upper and lower jaw modified in the form of a beak having a cutting edge and covered with a layer of ivory-like substance. A single dorsal and anal fin without spines, belonging to the caudal portion of the vertebral column. Pectoral fins present. Pelvic fins absent. A portion of oesophagus dilatable and capable of being distended with air. Lateral line absent.

Genus ***Tetraodon*** Linnaeus

1758. *Tetraodon* Linnaeus, *Systema Naturae*, Ed. **10** : 332 (type-species : *Tetraodon lineatus* Linnaeus).

1981. *Tetraodon*, Jayaram, *Handbk. Freshw. Fish. India*, : 393, 394 (genus characters and distribution).

Body short and rounded. Both jaws with a median suture. Body wholly or partially covered with fine dermal spines or spines may be absent. Dorsal and anal fins with few rays. Pelvic fins absent. Caudal fin emarginate or truncate or rounded.

Tetraodon cutcutia Hamilton Buchanan
(Text-fig. 118)

1822. *Tetraodon cutcutia* Hamilton Buchanan, *Fish. Ganges*, : 8, 362, pl. 18, fig. 3 (type-locality : R. Ganges).

1878. *Tetraodon cutcutia*, Day, *Fish. India.* : 703, pl. 182, fig. 5; 1889, Day, *Fauna Br. India, Fish*, **2** : 493.

1981. *Tetraodon cutcutia*, Jayaram, *Handbk. Freshw. Fish. India*, : 394 (distribution and key to species).

Local name : Tepa, Gangatope.

English name : Ocellatted bow fish.

Materials examined : (i) 3 exs., 15-38 mm. SL.; Sonamura, West Tripura; R. P. Barman and party; 18.8.85. (ii) 1 exs, 53mm. TL., Kumarghat, North Tripura; R. P. Barman and party; 21.10.89.(iii) 6 exs., 30-60mm. TL.; Rudrasagar, Melagarh, West Tripura; R. P. Barman and party; 31.10.89.

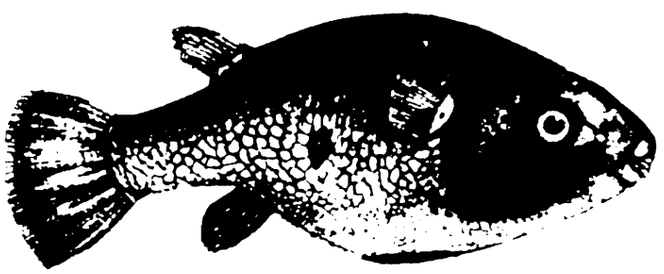


Fig. 118 : *Tetraodon cutcutia* (Hamilton Buchanan)

Diagnostic features : D. 10-11, P. 21, A. 10, C. 7.

Caudal fin 6 in total length. Interorbital space flat and broad. Nostril a single orifice situateed in a very short simple tube. All fins rounded. Spines entirely absent. Pelvic fins absent.

Colour in alcohol : Dorsal surface greenish yellow and white on abdomen. A light band from eye to eye. A large black ocellus, surrounded by a light edge, on side. The whole back marked with dark greenish reticulations enclosing lighter spaces. Fins greyish. Caudal fin tipped with carmine. A red spot on throat present.

Distribution : India: Assam, West Bengal, Tripura and Orissa, Bangladesh.

Size : It attains 90mm. ($3^1/_2$ inches) in total length.

Remarks : It is a common fish found to live particularly in the Rudrasagar and the river Gumti, Tripura. When taken out from the water this fish often distend the oesophagus enormously with air forming a globular structure except the short tail portion. This fish has been banned for consuming following reports of occasional death caused due to eating this fish.

SUMMARY

The present work is an attempt to give a consolidated account of all the so far known fishes of Tripura. This account includes the fishes collected by me through my three field-surveys (1985, 1989 and 1990) covering all the important fish landing centres of all the districts of Tripura and the fishes recorded by earlier workers like Nair (1971), Datta (1977), Lipton (1983-84) and Bhattacharya (1988) from this state. The fish collection shows a wide range of both riverine and torrential forms along with some freshwater visiting marine or in other words migratory forms from the Bay of Bengal through the river Gumti of Tripura. The main rivers of this state are Khowai, Dhalai, Manu, Juri and Langai flowing towards the north and those flowing west are Gumti, Muhuri and Fenny. All these rivers flow into the river Meghna in Bangladesh and therefore remains no scope for the development of riverine fishes. All the so far known fishes of Tripura belongs to 129 species under 78 genera, 33 families and 11 orders. 26 species of fishes form the new state record, viz., *Anguilla bengalensis bengalensis* (Gray and Hardwicke), *Pisodonophis boro* (Hamilton Buchanan), *Nematolosa nasus* (Hamilton Buchanan), *Chela (Chela) cachius* (Hamilton Buchanan), *Salmostoma clupeoides* (Bloch), *Hypophthalmichtys molitrix* (Valenciennes), *Aspidoparia morar* (Hamilton Buchanan), *Puntius gelius* (Hamilton Buchanan), *Ctenopharyngodon idella* (Valenciennes), *Crossochelius latius latius* (Hamilton Buchanan), *Psilorhynchus sucatio* (Hamilton Buchanan), *Lepidocephalus annandalei* Chaudhuri, *Mystus cavasius* (Hamilton Buchanan), *Clupisoma montana* Hora, *Pangasius pangasius* (Hamilton Buchanan), *Gagata cenia* (Hamilton Buchanan), *Nangra viridescens* (Hamilton Buchanan), *Erethistoides montana montana* Hora, *Glyptothorax conirostrae* conirostrae (Steindachner), *Olyra kempi* Chaudhuri, *Channa barca* (Hamilton Buchanan), *Johnius coitor* (Hamilton Buchanan), *Badis badis* (Hamilton Buchanan), *Oreochromis mossambica* (Peters), *Sicamugil cascasia* (Hamilton Buchanan) and *Rhinomugil corsula* (Hamilton Buchanan), in addition to these new state records one new species, viz., *Barilius nelsoni* Barman have been discovered and described.

The arrangement of classification is followed here is that of Greenwood et al. (1966), Rosen and Patterson (1969) and Jayaram (1981). In the systematic account of species, relevant generic and specific synonymies have been provided and the scientific names of the species standardised and stabilised according to the rules of International Commission of Zoological Nomenclature. In order to facilitate easy reference, names of fishes as found in Day's Fishes of India (1875-78) and Fauna of British India, Fish series (1889) and Jayaram's (1981) the freshwater fishes of India are given in the specific synonymies in addition to the first reference with its type-locality, local name, English name, materials examined, diagnostic features, colour in alcohol, distribution, size and whereever necessary remarks on taxonomic characters or other relevant informations are provided in this work. The synonymy under each species is not intended to furnish a complete catalogue of all the published references to that species. All those papers which give changes in names are included.

The readers of this work should keep in mind that this study on the fishes of Tripura is not something all completed and finished, merely a begaining in this course. It is my sincere hope that some who are interested in this field will be stimulated towards a lifetime of endeavour in the field of systematic studies of fishes of India. The challenges and the rewards are great.

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WETLAND FAUNAL RESOURCES

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INTRODUCTION

Realising the importance of the natural habitats and their fauna, the Ministry of Environment and Forests constituted an Expert Group in 1983 for compiling information on the ecological status of wetlands in the country and the directory of wetlands of India was published in 1990. According to this survey, about 4.1 million hectares are covered by wetlands of different categories. These wetlands face various forms of environmental problems. Perceptions on wetland conservation have gradually changed over the years fom passive wetland protection to active wetland management that incorporates the wise use of wetland resources. The use of wetlands for tourism, fuelwood and fodder collection and fishing and grazing is no longer perceived as a threat, if carried out in a regulated manner. It is also found that, judicious human exploitation of wetland resources are beneficial to wetlands.

Although, the importance of wetlands has long been recognised in the country, most of the earlier works from North-East were confined only to limnological studies (Kant and Kachroo, 1977; Khan and Zutshi, 1980; Khan and Alfred, 1995 and Thapa and Alfred, 1995). Not much studies have been conducted on the faunal resources of aquatic ecosystem of Tripura. Because of the lacuana in the knowledge of faunal resources and ecology of wetlands as a whole of the Tripura state, the present studies were conducted as a part of Zoological Survey of India's programme on State Fauna.

Tripura, one of the north-eastern states of India is surrounded by Bangladesh, Assam and Mizoram. Physiogeographically this state is situated in the eastern part of India lying between latitudes 22°56' to 24°32' N and Longitude 90°12' to 92°21'E in the sub-Himalayan region. There are evergreen, semi-evergreen, deciduous and secondary forest types having a strong affinity to Myanmar and Malaysia. The forests of Tripura harbour animal species of significance which include elephant, tiger, gaur, serow, lesser cats, hornbills etc., as well as a wide spread occurrence of phayre's leaf monkey-its stronghold in India. Five major ranges of hills, viz., Jampai, Sakhantlang, Longtarai, Atharamura and Baramura running from north-west to south-east and alternating with marshy valleys are spread over the state. The state of Tripura (10,490 km^2) is the southern most tip of forest in north-east India and being lowlying is most tropical in nature. The drainage systems of Tripura are Khowai, Dhalai, Manu, Jari and Longai rivers in the northern direction, Gumti and Howda rivers in the east; in the south-east Fenny and Muhuri rivers which are tidal rivers. These tidal rivers mix with the Bay of Bengal flowing through Bangladesh. The Gumti is the largest river of this state flowing from the eastern side of the state towards the western side of Tripura. This river enters into the territory of Bangladesh in the sub-division Sonamura. For the purpose of pisci culture and irrigation, various dams have been constructed on this river and several of these reservoirs have been connected with this river. However, throughout the rest of the region there are innumerable small water storage reservoirs and irrigation ponds, known as tanks which constitute the only significant bodies of standing water.

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DESCRIPTION OF THE STUDY AREA

It is estimated that there are about 5,408 hectares of wetlands (freshwater) in the Tripura state, excluding areas under paddy cultivation and other smaller water storage tanks. For the purpose of the present study the Tripura state may be divided into three different areas, North, South and West (Fig. 1). The natural wetlands such as Harijala, Khaurabil and Rudrasagar and a man-made wetland called Gomti reservoir are the major resources of water. Moreover, like any other hill state, Tripura also comprises of big and small streams, stream side pools, a few lakes (man-made reservoirs), roadside ponds and artificial fish ponds (Table 1).

The climate of the state is typically tropical monsoon type with heavy rainfall (7000-7500 $mm^{-1}y$). The atmospheric temperature varies between 35-40°C during summer and 10-15°C during winter. The relative humidity ranges between 70-85% throughout the year except during winter.

WEST TRIPURA

Station 1 : SONAMURA

It is situated at about 45 km south-east of Udaipur. This town is very near to Bangladesh. Studies were conducted and samples were collected from a man-made lake called Rudra Sagar (area = 5.3 sq. km. and 3.5 to 4.0 m depth) (Plate 1). The littoral region of this lake is completely filled with aquatic weeds. Both, resident and migratory birds, were observed. This lake is mainly used for recreational purpose. There is a fort called "Melaghar" at the northern side of the lake which people visit by boat (Tripura tourism). This lake is also used for pisciculture and irrigation purposes. Other than this lake there are numerous smaller ponds and rainwater pools and ricefields in this town (Table 1).

Station 2 : SEPAHIJOLLA

Studies were conducted and samples were collected from Sepahijolla wildlife sanctuary wetland area. Other than a variety of wildlife present in the sanctuary, it has a wetland of 13 sq. km and harbours a variety of aquatic macrophytes and migratory birds (Plate 2). This wetland is also used for recreational purpose. Tripura tourism provides small boats on hourly basis.

Station 3 : TELLIAMURA

Telliamura Forest Division has 980.68 sq. km of forest area and is a small town situated 60 km away from Agartala. This area has many small private owned fish ponds, both temporary and perennial. Khowai river passes through this town and is mainly used for irrigation purpose. Studies were conducted and samples collected from many of these small water bodies.

NORTHERN TRIPURA

Station 4 : MANU

This is a hilly area where many small depressions filled with water for irrigation and fish culture purposes were studied. Many of these small depressions are temporary in nature and one of the man made lakes called Jammirsara lake consists mainly of tadpoles of *Rana sp.* and a variety of macrophytes. Samples were collected from roadside ponds and ditches with reddish brown water.

SOUTH TRIPURA

Station 5 : RAJNAGAR

Trishna wildlife sanctuary is situated in this area. This sanctuary has two big wetlands. The total area of the sanctuary is 173 sq. km. One of the wetlands known as 3 NO. lake is situated inside the sanctuary and has a variety of aquatic vegetation and is visited by many local and migratory aquatic birds. The area of this lake is approximately 0.5 sq. km and is rain fed. The No. 2 lake is shallow and the marshy areas are used for rice cultivation by local people.

Station 6 : UDAIPUR

This town is the headquarters of the South Tripura district and has many wetlands such as



Plate 1 : Rudrasagar lake at Sonnamura, West Tripura district



Plate 2 : Sepahijolla wetland with the group of cotton teal at flight



Plate 3 : Dhanisagar wetland at Udaipur and the luxriant grown of *Neulumbo nucifera*

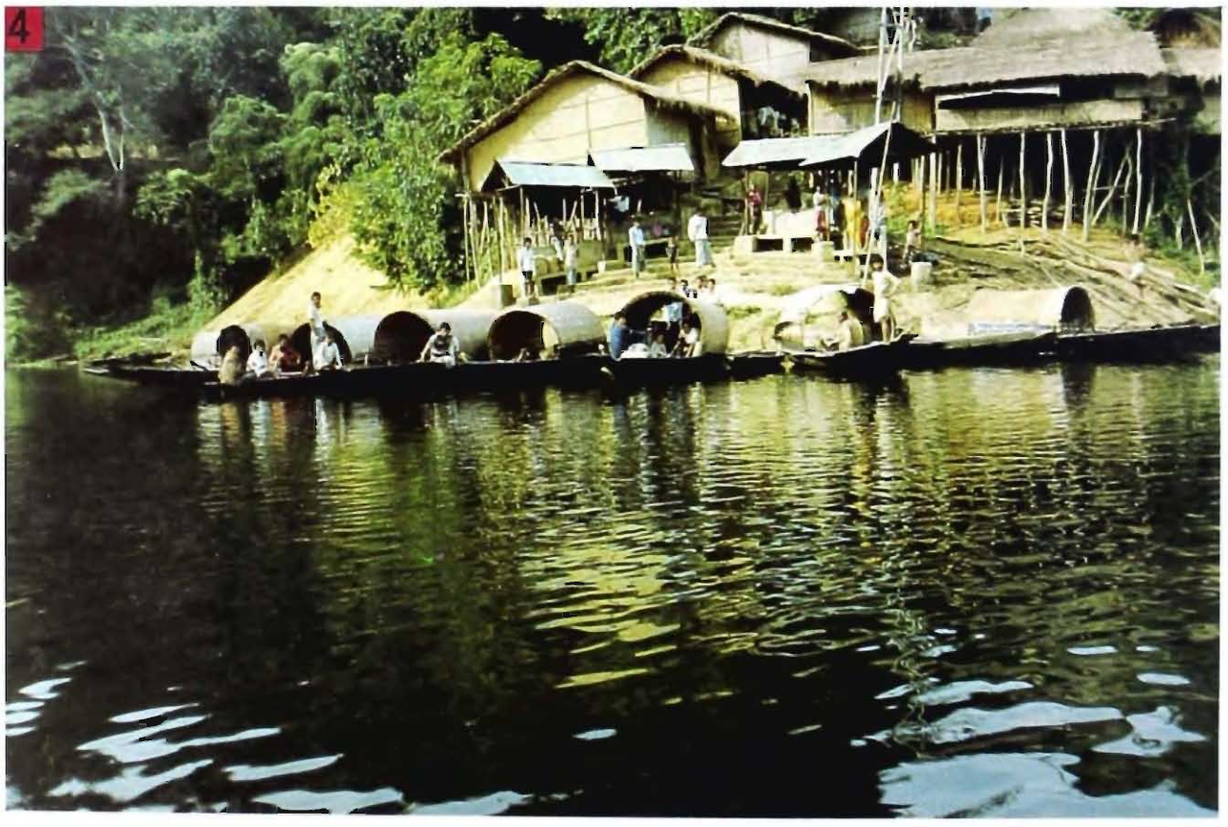


Plate 4 : Gomti reservoir at Jothanbari and the country boats used for transport.

Suksagar, Dhanisagar, Amarsagar and Jagannath-dighy. Dhanisagar lake is a very promising wetland in which lotus and other aquatic macrophytes cover the whole area (2.5 sq. km.) (Plate 3). Many aquatic migratory birds were observed in this wetland. The lotus flower, *Nelumbo nucifera,* is being commercially exploited from this wetland. The other exploitable aquatic macrophytes are presented in Table 2.

Station 7 : AMARPUR

This town has a big man-made depression called Phaticksagar lake which is mainly used for fishing and drinking water purposes. This is one of the largest lakes (3.5 sq. km) of Tripura having thick submerged aquatic vegetation which in turn harbours many species of invertebrates and vertebrates. Many temporary ponds, small and big in size, were also studied from this area.

Station 8 : JOTHANBARI

This town lies between Amarpur and Thirthmukh sub-divisions. This area is adjacent to the hilly Chittagong region (Bangladesh). Gomti reservoir is located here and is very large in size, covering an area of 500 sq. km. This wetland harbours many aquatic macrophytes and is also visited by many migratory birds. Fishing and transport are the main uses of this wetland (Plate 4).

MATERIALS AND METHODS

Physico-chemical Parameters

Physico-chemical parameters such as temperature, pH, transparency, colour, dissolved oxygen and conductivity were studied on the surface water of a few important wetlands of Tripura using an ELICO portable water analyser.

Aquatic Macrophytes

Qualitative samples were collected for identification of aquatic macrophytes. Most of the samples were identified using Subramanyam (1962) and Biswas and Calder (1954). The exploitation of these macrophytes for domestic purposes were assessed by the information collected from the local people as well as from the local markets.

Zooplankton

A general sample of plankton was collected using a plankton net with 30 cm diameter and 70μ mesh size.

An intensive collection of zooplankton was made among the aquatic macrophytes by gently agitating the water and the vegetation and the net was moved horizontally for one meter distance. The samples were preserved in 5% formalin with sugar for further studies. Temporary glycerine slides were made for branchiopod crustacean identification. The manuals of Goulden (1967), Alfred *et al* (1973), Smirnov (1971, 1976) Idris (1983), Michael and Sharma (1988) and Battish (1992) were consulted for identification of all the crustacean and rotier zooplankton from Tripura state.

Insects, Decapods and Molluscs

Insect samples were collected using a plankton net (coarse mesh) with a circular mouth of 30 cm diameter. The fauna were collected usually in shallow water among vegetation and in open water areas. The net was dragged close to bottom, excessive stirring of the mud was avoided. This sampling technique gave a qualitative sample of shallow water invertebrates living on the substratum, among vegetation and in the water column, a situation similar to marshes or ricefields. The samples were fixed and preserved in 5% formalin solution with sugar. For identification of the fauna Distant (1902-1918) Vazirani (1984) and Subba Rao (1988) were referred.

Vertebrate Fauna

Fishes and amphibian samples were collected randomly from some of the important wetland areas. Collection of fishes were also obtained from local fishermen during fishing as well as from previous reports. The different habitats of

wetlands utilised by birds and their population during the study period were also recorded. The list of aquatic and wetland dependent vertebrates were prepared by both personal observation as well as from previous records available (Ali, 1979; Jayaraman, 1981; Daniel, 1983; Tikader, 1983; Tikader and Sharma, 1985; Barman, 1988).

The eight sampling stations have been compared by means of the Sorensen index of similarity. This was calculated for each combination of stations according to the following equation (Sorensen, 1948); S = 2c/a + b x 100, where 'c' is the number of species common to both associations, 'a' the number of species in one association, and 'b' the number of species in the other association. The results of calculating the Sorensen indices for 28 pairs of stations and different fauna collected are shown in Appendices 1-12. The greatest possible combinations of pairs of stations for different fauna are given in Figs. 2, 4 and 5.

Koch (1957) has devised an Index of Biotal Dispersity (IBD) which can be used to assess, how widely dispersed species are, between a number of stations. IBD = T-S/S (n-1) x 100, where 'T' is the arithmetical sum of species living in each of 'n' compared associations and 'S' is the total list of species in 'n' compared associations. The IBD for the different fauna collected have been applied.

RESULTS AND DISCUSSION

1. *Physico-Chemical Parameters*

Limnological studies on these wetlands were conducted during the biologically mature season of 1992 ie. during November, the beginning of winter. Tripura receives monsoon rain between June and October. From November onwards the ecosystem stabilizes its peak populations and the suspended organic matter settles down. Most of the wetlands of Tripura are temporary in nature, dry up during summer (32 out of 52 wetlands studied) (Fig. 1) and are eutrophic due to mixing of domestic sewage or agricultural run off. Paddy cultivation is the major activity observed in this region. Many of the marshes are converted into rice fields (eg. Trishna wild life sanctuary lakes, Rajnagar; Suksagar lake in Udaipur) and most of the water bodies are used for irrigation or fish culture purposes.

Twenty percent of the waterbodies studied were less than one meter in depth. The maximum depth of water column was found in Gumti reservoir. Rudrasagar lake and Sepahijolla lake, Trishna wildlife sanctuary lake No. 3, Danisagar lake and Phatick sagar lake are some of the wetlands which are more than 200 cm deep.

The hydrogen ion concentration of water is always associated with the presence or absence of macrophyte cover. It is important to note that almost 50% of the wetlands are infested with *Eichhornia* and 25% with *Microcystis* bloom (20 out of 53 wetlands). This condition naturally increases the pH of the water above 7.5 which creates many more interrelated problems such as hyper or hypoxy levels depending on the density of their population. The abundance of *Eichhornia* also leads to the elimination of natural and native species of macrophytes upon which organisms depend. It is important to note that a few of the waterbodies are completely covered with this exotic toxic species (Table 1.)

2. *Aquatic Macrophytes*

About 60 species of aquatic macrophytes were recorded in the present study among which many of them are commercially exploited by the locals. *Nelumbo nucifera* is sold in the market for religious purposes. *Trapa bispinosa* is cultivated in the wetlands and is used as food material. *Typa elephantina* is harvested in large quantities and is sold in the market for roofing and other domestic purposes. Many of these aquatic macrophytes are harvested for fodder, medicinal, firewood, composting and ornamental purposes (Table 2).

3. *Phytoplankton*

Microcystis aeruginosa is a major blue-green algae found in most of the waterbodies and it

torms the climax population. This algae reduces the occurrence of other native phytoplankton due to its quick proliferation capacity and bloom the area within a short span of time. It is also reported that *Microcystis* releases an endopoison which will reduce the reproductive capacity of plankton (Stangenbers, 1968; Gentile 1971). Two species of *Oscillatoria* were found in most polluted water bodies where the domestic sewage is the main source of pollution. *Spirogyra* also predominates in a few water bodies combined with macrophytes. *Volvox* is found in large numbers where the aquatic macrophytes are abundant.

4. *Zooplankton*

The list of zooplankton collected from the wetlands of Tripura are presented in Table 3. Among all the stations, Station 1, Sonamura, has 28 species of Cladocera; 10 species of Copepoda; 7 species of Ostracoda and 13 species of Rotifera.

The zooplankton richness in other stations such as Rajnagar, Amarpur and Udaipur was less than Sonamura. Rotifer dominates in Station No. 3, Teliamura (16 species; Total 29) (Table 3) due to smaller sized waterbodies, less macrophytes and more fish predation. Although the wetlands of Rajnagar, Amarpur and Udaipur were filled with macrophytes, the less number of zooplankton occurrence may be due to the perennial nature of the waterbody. When Sonamura was compared with other stations, the similarity index of Cladocera is similar to all different stations except Udaipur and Sepahijolla (Fig. 2). Likewise, Copepoda and Ostracoda show similar indices except Rotifera where the similarity index is very high in Jothanbari and very low in Sepahijolla and Manu (Fig. 2).

When the Koch indices for all eight stations are calculated, the resulting IBD for Cladocera is 30, Copepoda 38, Ostracoda 15 and Rotifiera 21 (Fig. 3). Among the zooplankton, copepods were found to be most widely dispersed and ostracods, the least.

In the present study it is observed that the species diversity of Cladocera is directly proportionate to the presence or absence of aquatic macrophytes. This finding is supported by the suggestions of Synerholm (1974), Whiteside and Harmsworth (1967) and Quade (1969) that the distribution of Cladocera is controlled by habitats and aquatic macrophytes rather than the lake types. Except Freyer (1968) no one has stressed the importance of the relationship between aquatic macrophytes and feeding habit, morphology and distribution of Cladocera. This is probably true in the case of Cladocera distribution in Tripura, where the wetlands such as Rudrasagar lake, Gomti reservoir, Suksagar, Dhanisagar and Phaticksagar lakes, are almost eutrophic and have wider variety of aquatic macrophytes and Cladocera species.

5. *Other Invertebrates*

5.1 Decapoda

A total of eight species of decapod crustacea, both Macrura and Brachura, have been recorded from Tripura (Table 4). Stations Sonamura and Rajnagar have maximum number of species. Sorensen similarity index (Fig. 4) shows that stations such as Telliamura and Manu are similar in their diversity of decapods whereas Jothanbari, Amarpur and Sepahijolla are different when compared to Sonamura. The dispersity index (Fig. 3) for Decapoda (33.93) is almost equal to Coleoptera (31.93) and slightly greater than zooplankton except copepods (37.8).

5.2 Hemiptera

The species diversity of hemipterans also varies with the presence or absence of macrophytes as found in zooplankton. Wetlands with high density of macrophytes such as Rudrasagar lake in Sonamura, No. 3 lake in Trishna wildlife sanctuary, wetlands of Udaipur, Amarpur and Jothanbari have more number of hemipterans than Telliamura and Manu (Fig. 4). Among the 17 species of hemipterans recorded in the present study, belostomids and noteonectids were found to occur more in number than Nepidae and Ranatridae (Table 4). The similarity index of the diversity of species of hemiptera in all the

eight stations are shown in Fig. 4. Except Jothanbari, Manu and Amarpur, all the other stations are almost similar when compared to the station Sonamura. The hemipterans show a very high rate (47.90) of dispersity (Koch, IBD index) in the wetlands of Tripura (Fig. 3)

5.3 Coleoptera

Among the 17 species of Coleoptera recorded in the present study, Amarpur has the highest diversity of species (11) and Manu the least (3) (Table 4). The more number of Coleoptera species in the Amarpur wetlands may be due to the availability of macrophytes. It has been found in the present study that the presence of *Eichhornia* supports in harbouring more Coleoptera as found in some of the Indonesian Lakes (Green *et al.*, 1976). The similarity index of the diversity of species in different stations also shows variation (Fig. 4).

5.4 Mollusca

Mollusca are one of the most conspicuous wetland fauna found attached to the macrophytes or at the bottom mud. There are about 15 species of molluscs found in the study among which 14 are gastropods (Table 4). They are more abundant in wetlands with macrophytes such as *Ipomea, Eichhornia, Otellia* and *Hydrilla* (Fig. 4). The similarity index of the diversity of species in different stations are dissimilar as shown in Fig. 6. The IBD is very high (48.57) as that of Hemiptera (Fig. 3).

6. Vertebrates

6.1 Fishes

Eighty five species of fishes belonging to 22 families have been recorded in the present study (Table 5). A variety of fishing methods are used in the wetlands of Tripura. Angling is a common method in all waterbodies. Men fishing with rod and line is a common sight in the wetlands in this region. Gill nets are used in all the wetlands for catching *Sarotherodon* in most of the *Eichhornia* infested wetlands. Cast nets and dipnets are used for fishing under the edges of the floating vegetation. Fish traps with a funnel-shaped entrance valve are also used in Tripura. Among all the eight stations, Udaipur (42) and Amarpur (30), have maximum number of fish species whereas, Manu, Telliamura and Sepahijolla have the least number of fishes. Though Sonamura has 19 species of fishes, when compared to other stations, the similarity index shows a dissimilar pattern except Sepahijolla and Manu (Fig. 5). The family Cyprinidae has the maximum number of species (32) of fishes as found in the present study. The biotal dispersity shows that the fishes have the least index (5.38) (IBD) when compared to other fauna (Fig. 3).

6.2 Amphibia and Reptilia

Six species of Amphibia belonging to three different families were found in the Tripura wetlands (Table 6), among which *Rana cyanophylyctis* and *R. tigrina* were found to be more common in this region. Both Sepahijolla and Rajnagar have the maximum number of amphibians, and Manu the least. The Sorensen similarity index for amphibians (Fig. 5) shows that Amarpur has the maximum index value and Manu the least, whereas Rajnagar and Udaipur show almost similar index values. The IBD for amphibians is higher (40.78) than all other vertebrates (Fig. 3).

Six species of reptiles belonging to three different families were found in and around Tripura wetlands (Table 6), among which *Enhydris enhydris* was found to occur in four different stations. Both Rajnagar and Jothanbari have more number of species (4 each) of reptiles and the similarity index shows that Jothanbari has the maximum value. Three groups of stations such as Sepahijolla and Tliamura, Manu and Udaipur and Rajnagar and Amarpur show similarity in their index values (Fig. 5). The IBD for reptiles (21.43) is higher than fishes (5.38) but less than amphibians (40.78) and birds (36.80) (Fig. 3).

6.3 Birds

Thirtythree species of birds belonging to 10 families visiting the Tripura wetlands are listed

in Table 7. Among the eight stations studied, Rajnagar (Trishna wildlife sanctuary wetlands) and Sonamura (Rudrasagar lake) have more number of species than the others. In these two stations, migratory birds such as Common Teal, Garganey teal and Soveller were found in large numbers. In Sepahijolla wetland, about 300 common Teals were seen at one time flight. When similarity index of all the eight stations were calculated, Jothanbari stands separate, Udaipur and Amarpur were found to be similar and others slightly varying from each other. Cormorants were observed only in large waterbodies such as Rudrasagar lake, Trishna wildlife sanctuary lakes and in Gomti reservoir. Many of these water birds were found to occur mostly in waterbodies with aquatic macrophytes. It is also reported that these aquatic birds feed on the aquatic macrophytes such as *Ipomoea, Lemna* and other submerged weeds. In Sepahijolla, Common Teal population was found to roost on the open water during day time. Though most of the species found in the study were seen in almost all the habitats, some show particular preference to certain habitats. To evaluate the habitat preference of the aquatic birds, the habitats were classified into ten major types and the occurrence of each species in each habitat was recorded (Table 8).

A brief description of the different habitats examined and the birds seen in each habitat are reported below :

a) **Littoral region :** During the study period, this was comparatively the most preferred area for aquatic and semiaquatic birds (85%) in Tripura wetlands. This region was very shallow and the water column was less than 100 cm. This habitat was used mainly for feeding.

b) **Littoral vegetation :** The area between waterline and the open water had been considered as a separate habitat. In most of the wetlands it was a narrow strip occupied mainly by grass and other macrophytes. Most of the birds which are available in the littoral region without vegetation were also present in this area. This habitat was also used mainly for feeding.

c) **Submerged vegetation :** This was yet another feeding ground for a particular group of birds such as White Ibis, Grey lag Goose, Wistling Teal, Pintail, Shoveller and Coot. Both Pheasontailed and Bronzewinged Jacana were found in this habitat where the submerged vegetation were on the surface of the water column. About 33% of the birds were observed in this area.

d) **Marshy area with grass :** In this type of habitat, the grass grows very thick along with *Ipomoea.* Sixty seven percent of the birds prefer this habitat and this type of habitat was found in Udaipur wetlands (Table 8). This area of the wetland was used mainly for paddy cultivation. At the time of paddy cultivation these weeds were removed and every year a fresh growth of these macrophytes could be seen growing in the same marshy area. Due to the over growth of grass, the birds were well protected from the predators.

e) **Typha plants :** Only a group of birds preferred this area (30%) especially for perching, fishing and resting. Mostly the *Typha* plants are harvested just after the winter season and most of the time this area was vacant. Egrets were observed in this area.

f) **Floating vegetation :** In some of the wetlands, the floating vegetation such as *Ipomoea, Nymphoides, Eichhornia* and a few other macrophytes grew profusely and formed floating islands but in others they grew extensively but were not isolated and in some other wetlands they grew sparsely among other vegetation such as *Hydrilla, Najas* and *Chara* species. Twelve species (44%) were seen in this habitat.

g) **Decaying vegetation :** In a few of the wetlands (Rudrasagar and Phatick sagar lakes) the grass and other macrophytes were observed decaying due to the decrease of

water level. Only 12 species of birds preferred this area. The water level was less in this region and the decaying vegetation formed a thick mass. The darter was found where the water was more open with less decaying vegetation.

h) **Open water :** This area was comparatively deeper in the wetland. Most of the migratory birds were seen in this area and in this region only submerged vegetation was noticed. Forty percent of the birds preferred this habitat (Table 8).

i) **Trees :** The dykes and its trees formed a separate habitat which was preferred by many land birds, semiaquatic birds and a few aquatic birds. The prominent tree on the dyke was *Acacia arabica*. Darter, little cormorant, median egret, painted stork and coots were the common species noted in this habitat. Altogether, only 16 species were observed in this habitat. Nests of herons were noted on the *Acacia* trees of Udaipur.

SUMMARY

Due to the paucity of the knowledge on the faunal resources of wetlands of Tripura, the present study has been conducted as a part of the zoological Survey of India's programme on State Fauna, to fill in the gap to some extent. A total of 53 wetlands have been surveyed including small fish ponds, temporary ponds, man-made tanks, small streams, stream side pools, roadside ponds, fish ponds and big water bodies under eight different stations in three districts. Though the Tripura State is of tropical monsoon type, almost 50% of the wetlands are (32 out of 53) temporary in nature. Most of the wetlands are infested either with *Eichhornia* or *Microcystis* (22 out of 53) indicating the polluted nature of the ecosystem. Since most of the rice-fields are converted marshes, the agricultural run-off increases the nutrient level of the adjacent aquatic ecosystem which inturn triggers the *Eichhornia* and *Microcystis* bloom. Many wetlands are used for harvesting *Trapa, Ipomea, Typha, Lemna, Scirpus* and *Marsilea* for edible, medicinal and commercial purposes. A total of 42 aquatic and semi aquatic macrophytes have been recorded. These macrophytes harbour many aquatic fauna such as Cladocera (49 species), Copepoda (17 species), Ostracoda (14 species), Rotifera (29 species), Decapoda (8 species), and insects such as Hemiptera (17 species) Coleoptera (17 species) as well as Mollusca (15 species). Aquatic vertebrates such as fishes (77 species), Amphibians (6 species) Reptiles (6 species) and Birds (33 species) were also found to be associated with the wetlands of Tripura State. An Attempt has been made to compare all the eight stations belonging to three districts of Tripura to study the similarity using the Sorensen index. The indices for different fauna varies with different stations due to the richness of species and also due to many abiotic and biotic factors which are not studied in particular in this survey. However, a more interesting nature of the dispersity of different species have been obtained by using Koch (1957) index to assess the wide dispersity of the different groups of fauna in Tripura State. The results show that among the zooplankton, Copepods are the most widely dispersed, and Ostrocods the least. Likewise, among macro invertebrates, Hemiptera and Mollusca have a higher value of dispersity (47.90 and 48.57 respectively) than the Decopoda (33.93) and Coleoptera (31.93). The vertebrates show a mixed type of IBD (Index for biotal dispersity). Amphibians have the highest index value (40.78) and the Fishes the least (5.38). Reptiles (21.43) and Birds (36.80) rate inbetween the amphibians and fishes. The degree of dispersity may vary with different fauna due to many environmental factors. However, in general, the water quality and quantity, presence or absence of macrophytes, trophic nature of the ecosystem and other environmental factors determine the presence or absence of a particular fauna. For example, in the present study, most of the aquatic birds prefer the littoral region (23 out of 27 species observed) and littoral vegetation (21 out of 27 species observed) to the open water (11 out of 27 species observed).

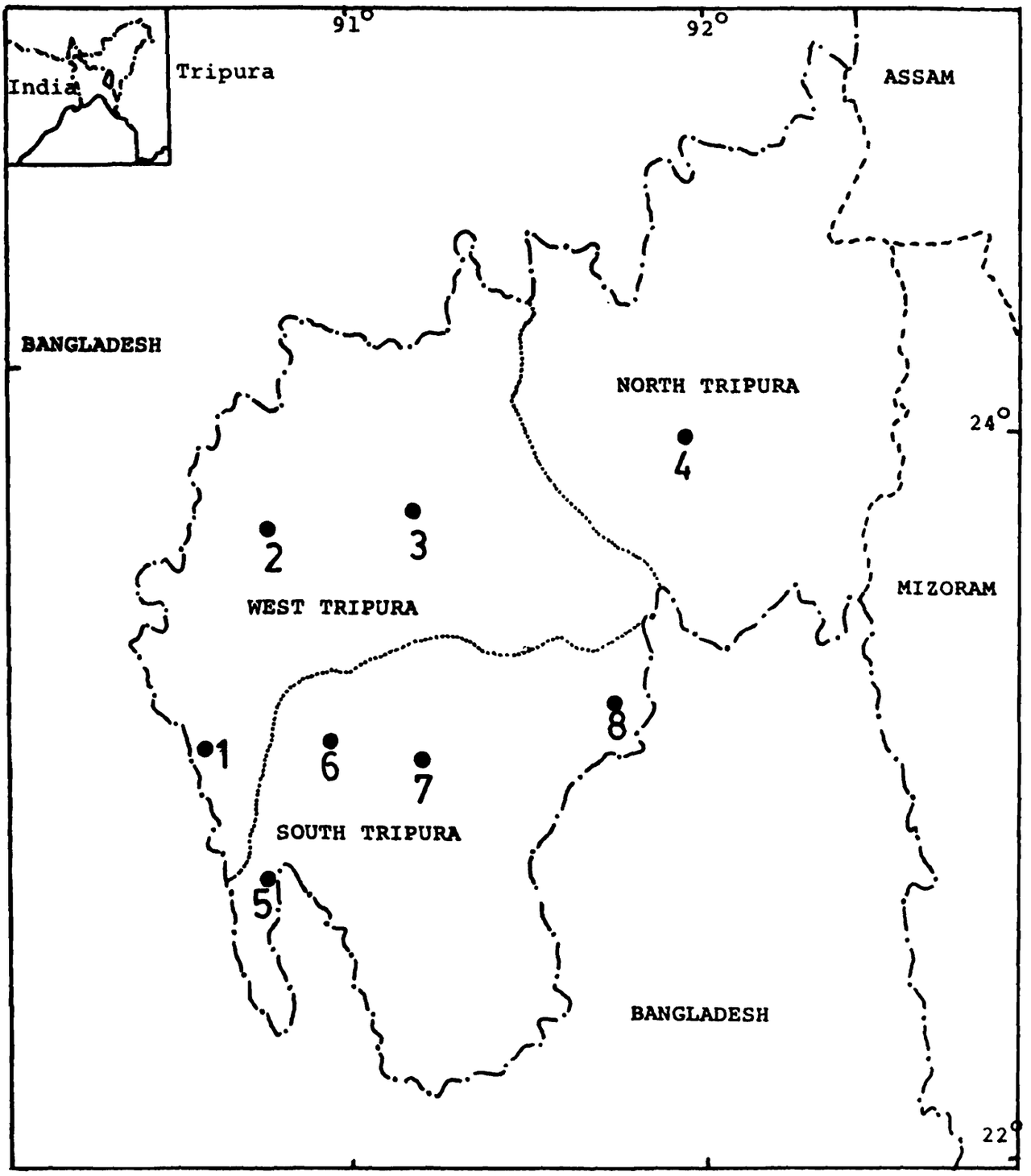


Fig. 1 : Map showing the location of Tripura State, three districts and eight stations surveyed. 1-Sonamura; 2-Sepahijolla; 3-Telliamura; 4-Manu; 5-Rajnagar; 6-Udaipur; 7- Amarpur; 8-Jothanbari.

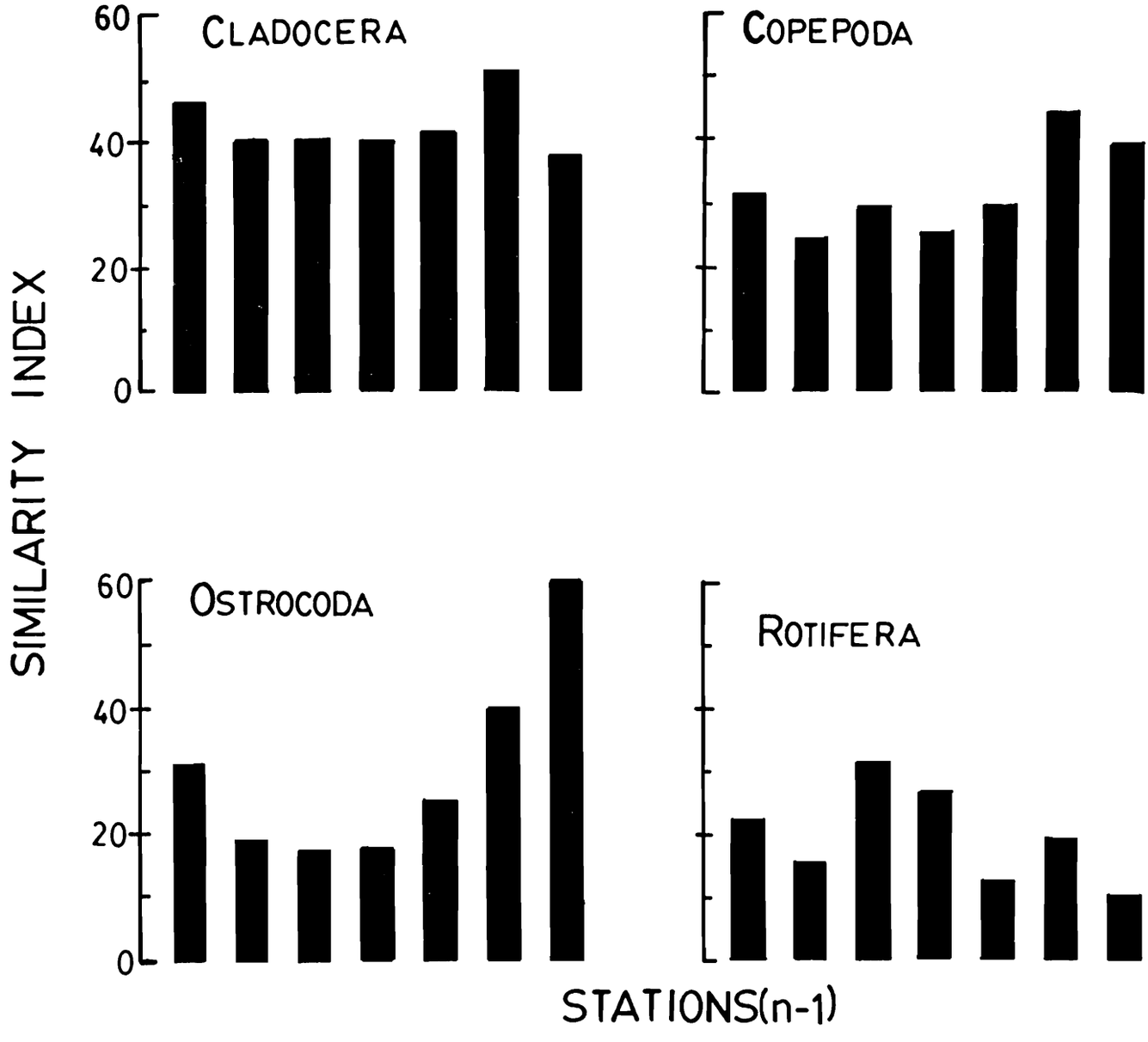


Fig. 2 : Sorensen index of similarity for Cladocera, Copepoda, Ostracoda and Rotifera compared with Sonamura and other seven stations.

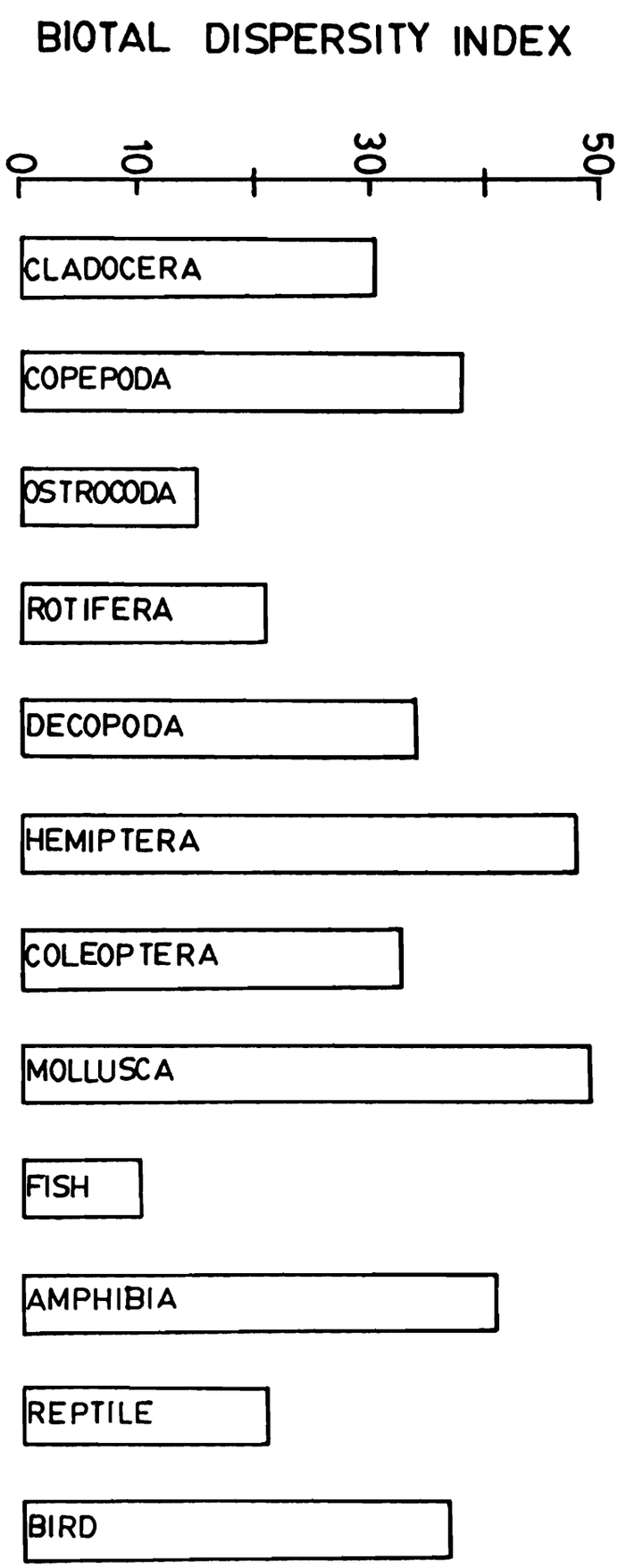


Fig. 3 : Koch index of biotal dispersity in all eitht stations for Cladocera, Copepoda, Ostracoda, Rotifera, Decapoda, Hemiptera, Coleoptera, Mollusca, Fish, Amphibia, Reptilia and Birds.

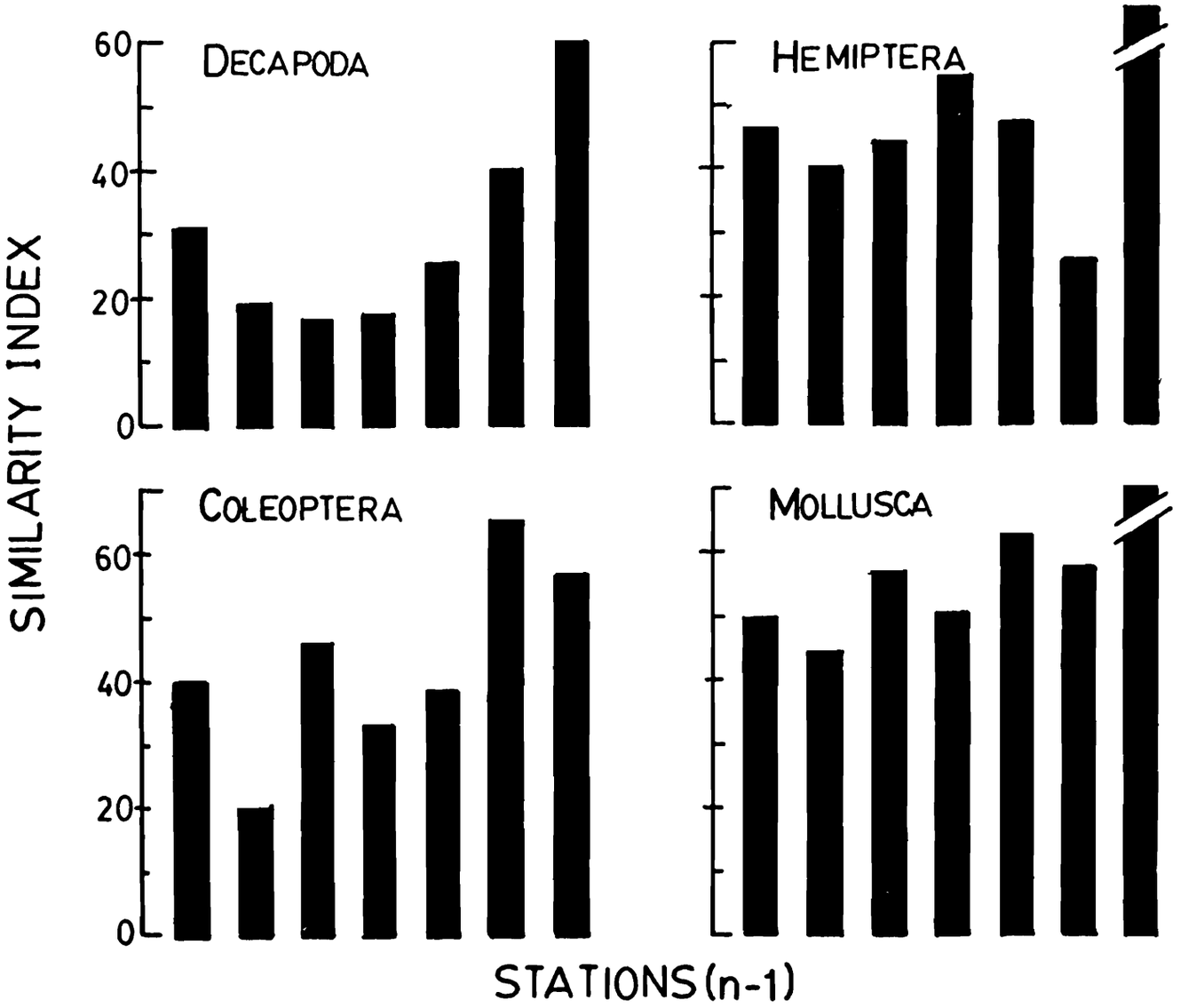


Fig. 4 : Sorensen index of similarity for Decapoda, Hemiptera, Coleoptera and Mollusca compared with Sonamura and other seven stations.

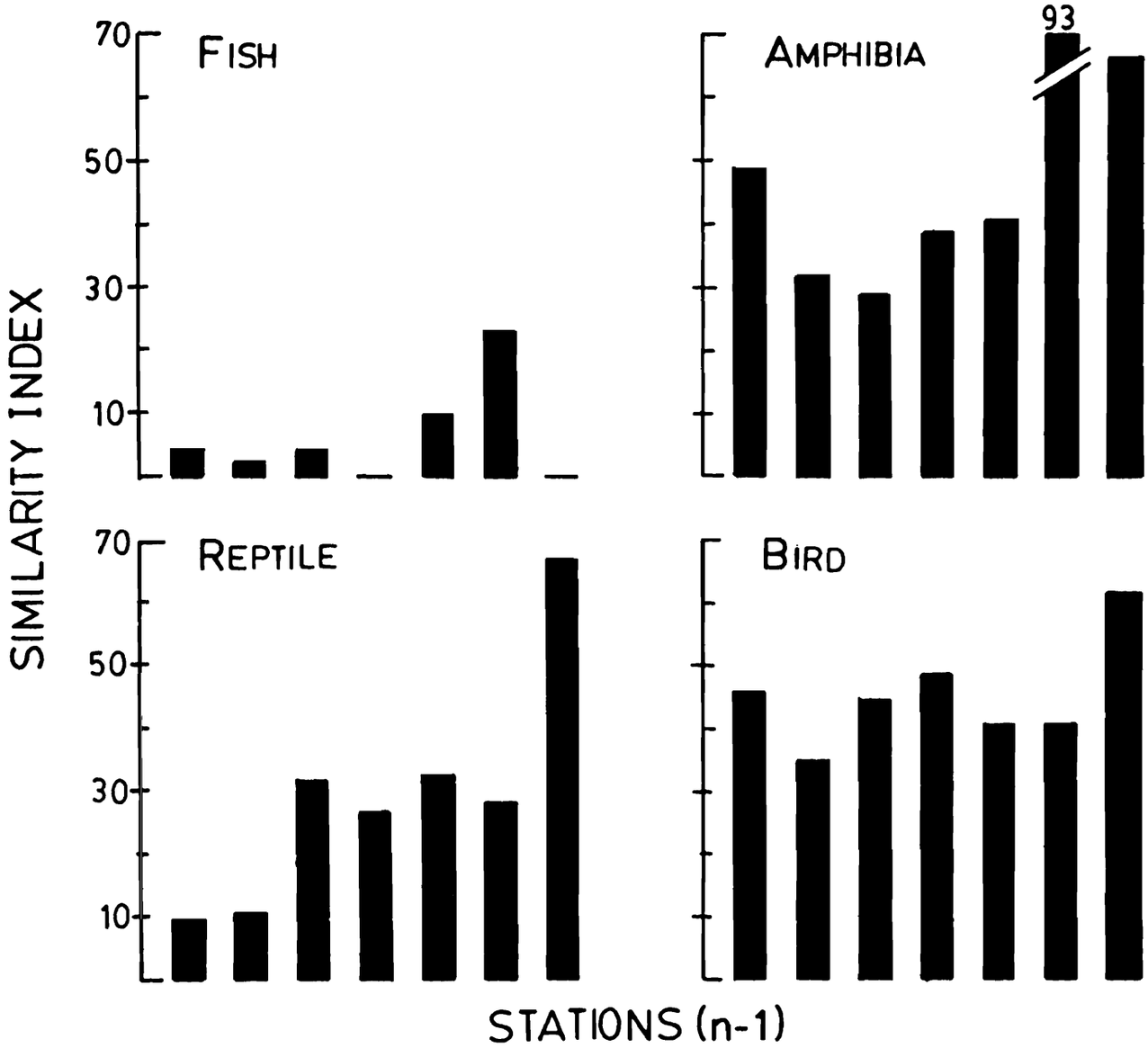


Fig. 5 : Sorensen index of similarity for fish, amphibians, reptiles and birds compared with Sonamura and other seven stations.

Table 1 : Physico-chemical parameters and biological nature of wetlands of Tripura surveyed

Sl. No.	Name of Wetland	Nature	Eutrophi-cation	Macrophyte cover	pH	Depth (cm)	Colour	Remarks
WEST TRIPURA : SONAMURA : STATION 1								
1	Indiranagar Pond	Temporary	Domestic sewage	100%	7.2	200	Reddish brown	*Eichhornia* cover
2	Gramtali Weedy pond	Temporary	Agricultural run off	40%	7.6	120	Clear	*Ottelia* sp.
3	Pond with bund (R. P.)	Temporary	Agricultural run off	100%	7.3	90	Clear	*Eichhornia* & Spirogyra cover
4	Battali weed pond	Temporary	Domestic sewage	100%	7.8	75	Reddish brown	Trapa cultivation
5	Battali weed pond	Temporary	Agricultural run off	60%	7.2	80	Clear	*Eichhornia* cover
6	Rudra Sagar lake	Perennial	Agricultural run off	20% (Littoral)	8.1	100	Clear	Migratory birds, re-creation fishing and irrigation
7	Rudra Sagar lake (Open water)	"	"	Floating weeds	7.6	400	Clear	Floating mounds of various macrophytes
8	Rudra Sagar lake (Open water)	"	"	20% (Littoral)	8.6	120	Reddish brown	*Eichhornia* cover, decay of all other macrophytes
SEPAHIJOLLA : STATION 2								
9	Sepahijolla Sanctuary wetlands	Perennial	Senile	10% (Littoral)	7.6	600	Clear	Recreation, Migra-tory and local birds

Sl. No.	Name of Wetland	Nature	Eutrophi-cation	Macrophyte cover	pH	Depth (cm)	Colour	Remarks
TELLIAMURA : STATION 3								
10	Kollahati lake I	Perennial	Domestic sewage	10% (Littoral)	7.00	120	Reddish brown	Private, fishing purpose
11	Kollahati lake II	Temporary	Domestic sewage	100%	8.0	200	Green	*Eichhornia* and Microcystis bloom, Fishery purpose
12	Kollahati RB pond	Temporary	Reddish brown, domestic sewage	—	7.2	120	Reddish brown	Algal cover
13	North Gokulnagar pond 1	Temporary	Domestic and agricultural run off	15%	7.6	150	Green	Fishing purposes
14	North Gokulnagar pond 2	"	"	10%	7.8	100	Green	"
15	North Gokulnagar pond 3	"	"	25%	7.2	160	Green	"
16	Boranucholk pond	"	Domestic sewage	—	7.3	60	Green	Fishing purposes
17	Boranucholk fish pond	"	"	—	6.8	50	Black	Decay of dead plants
18	Boranucholk polluted pond	"	"	—	6.8	120	Clear	Washing and bathing
19	Boranucholk fish pond	"	Domestic and agricultural run off	60%	7.2	100	Reddish brown	*Eichhornia* cover, reddish brown water

Sl. No.	Name of Wetland	Nature	Eutrophi-cation	Macrophyte cover	pH	Depth (cm)	Colour	Remarks
20	Khowai river	Perennial	Agricultural run off	—	7.2	120	Clear	Washing and bathing irrigation purposes
NORTH TRIPURA : MANU : STATION 4								
21	Manu Forest Dept. pond	Perennial	Agricultural and domestic sewage	—	7.6	600	Green	*Microcystis* bloom, fishery purposes
22	Reddish brown pond	Temporary	"	30%	7.2	250	Reddish brown	*Eichhornia* cover fishery purposes
23	Fish pond near G. H.	"	Agricultural run off	70%	7.8	120	Green	Algal bloom with a few lillies
24	Roadside pond	"	—	100%	7.2	70	Reddish brown	Dug for road making
25	Roadside stream pond	"	—	30%	7.6	140	Clear	Clear water with submerged weeds
26	Roadside weedy pond	Temporary	—	50%	7.2	160	Reddish brown	Submerged weeds
27	Reddish brown pond	"	—	—	7.1	120	"	—
28	Roadside fish pond	"	Agricultural run off	—	7.3	140	Green	Private, fishery purpose
29	Jammirsara lake	Perennial	Agricultural run off	—	7.2	300	Reddish brown	Reddish brown water breeding grounds for frogs

Sl. No.	Name of Wetland	Nature	Eutrophi-cation	Macrophyte cover	pH	Depth (cm)	Colour	Remarks
SOUTH TRIPURA : RAJNAGAR : STATION 5								
30	Trishna wildlife sanctuary 3 No. lake	Perennial	—	10%	7.8	800	Clear	Migratory birds, submerged weeds and *Eichhornia* cover
31	Trishna wildlife sanctuary 3 No. lake (N)	"	—	20%	7.2	160	Clear	Submerged weeds and migratory birds
32	TWS temporary pond	Temporary	Agricultural run off	40%	7.2	120	Reddish brown	Decay of dead weeds and *Eichhornia* cover
33	TWS small puddle	Temporary	—	—	7.2	120	Clear	Running water
34	TWS 3 No. 1 lake pond	Temporary	—	—	8.2	160	Green	Submerged weeds
35	TWS RB pond	"	—	—	7.2	140	Reddish brown	Decay of dead weeds *Spirogrya* bloom
36	TWS ricefields	"	Agricultural run off	—	7.6	60	Clear	Marsh area, submerged weeds
37	TWS ricefields	"	"	—	7.8	40	Clear	Marsh, submerged macrophytes
38	TWS 2 No. lake	Temporary	Agricultural run off	—	7.8	120	Clear	Rice cultivation, submerged weeds
39	Upendranagar tank	Perennial	Domestic and agricultural run off	—	8.6	300	Green	*Microcystis* bloom

Sl. No.	Name of Wetland	Nature	Eutrophi-cation	Macrophyte cover	pH	Depth (cm)	Colour	Remarks
UDAIPUR : STATION 6								
40	Suksagar ricefields	Temporary	Agricultural run off	100%	7.3	120	Clear	*Eichhornia* cover rice cultivation and migratory birds
41	Dhanisagar lake	Perennial	"	100%	7.8	300	Clear	*Eichhornia*, Lemna, Lotus and Lilly cover
42	Jagannath Dighi	"	Domestic sewage	20%	8.6	300	Green	*Microcystis* bloom, *Eichhornia* cover and Typha growth, Fishing washing and bathing
43	Amarsagar lake	"	Agricultural run off	50%	7.9	200	Clear	*Eichhornia* cover, *Microcystis* bloom, Fishery purpose
44	Suksagar rice field	Perennial	Agricultural run off	30%	7.6	160	Clear	*Eichhornia* cover, floating and sub-merged weeds
AMARPUR : STATION 7								
45	Phatick Sagar lake	Perennial	Domestic and agricultural run off	20%	7.9	300	Green	Littoral weeds turbid water, fishery, duckery and recreation
46	Roadside weed pond	Temporary	"	100%	7.4	120	Black	Floating weed cover

Sl. No.	Name of Wetland	Nature	Eutrophi-cation	Macrophyte cover	pH	Depth (cm)	Colour	Remarks
47	Roadside weed pond	" Sewage	Domestic	75%	7.8	120	Black	*Eichhornia* cover with muddy water
48	Amarpur Jothanbari road side pond	Perennial	Domestic and agricultural run off	—	7.2	120	Reddish brown	Submerged weed and turbid water
49	River Gomati	Perennial	Domestic and agricultural run off	—	7.2	120	Clear	Weeds present on the banks
JOTHANBARI : STATION 8								
51	Gomati reservoir	Perennial	Agricultural run off	—	7.4	1500 to 2000	Green	*Eichhornia* cover, green water, fishing transport, recreation and migratory birds
52	Gomati reservoir	Perennial	Agricultural run off	—	7.4	"	Green	*Microcystis* bloom, decay of macrophyte
53	Gomati reservoir at Karaichara	"	—	30%	7.8	100	Clear	*Eichhornia* cover, submerged weeds, running water

Table 2 : The occurrence of different species of aquatic macrophytes in the wetlands of Tripura and their uses

Sl. No.	Name of the species	Remarks
1.	*Euryale ferox* Salisb.	
2.	*Nelumbo nucifera* Gaertn.	Decoration religious purposes
3.	*Sesbania paludosa* Prain	
4.	*Neptunia oleracea* Lour.	Roadside ponds
5.	*Trapa bispinosa* Roxb.	Food, cultivation for commercial purpose
6.	*Trapa natans* Lin.	Food, commercial
7.	*Oenanthe bengaleusis* Benth.	
8.	*Enhydra fluctuans* Lour.	Medicinal
9.	*Limnanthemum cristatum* Griseb.	
10.	*Limnanthemum indicum* Thwaites	
11.	*Hydrolea zeylanica* Vahl.	
12.	*Ipomea aquatica* Forsk	Human food, medicinal and food for birds
13.	*Limnophila roxburghii* G. Don.	
14.	*Limnophila diffusa* Benth	
15.	*Bythophyton indicum* Hk. .f	
16.	*Utiricularia stellaris* Linn.	
17.	*Utricularia bifida* Linn.	
18.	*Cardanthera triflora* Ham.	
19.	*Asteracantha longifolia* Nees	
20.	*Polygonum orientale* Linn.	
21.	*Polygonum maritimus* Linn.	
22.	*Ceratophyllum demersum* Linn.	
23.	*Hydrilla verticillata* Casp.	Food for birds
24.	*Vallisneria spiralis* Linn.	Food for birds
25.	*Ottelia alismoides* Pers	
26.	*Boottia cordata* Wall	
27.	*Hydrocharis cellulosa* Buch-Hum	
28.	*Eichhormia crassipes* (mart) solmn.	Weed pest
29.	*Typha elephantina* Roxb.	Thatching, commercial, Food for elephant
30.	*Typha angustata* Bory & Chaub	Human consumption, Food for birds, Nest for birds, roosting site.
31.	*Pistia stratiotes* Linn.	

Sl. No.	Name of the species	Remarks
32.	*Lemna paucicostata* Hegelm	Human consumption, Food for birds, Purify water (antipollutant)
33.	*Lemna minor* Linn.	Human consumption, Food for birds, Purify water (antipollutant)
34.	*Wolffia arrhiza* wimn.	
35.	*Sagittaria sineusis* Linn.	
36.	*Potamogeton indicus* Roxb.	
37.	*Najas indica* (wild) Chan	
38.	*Najas minor* Pers (Allioni)	
39.	*Scirpus grossus* Linn.	Edible (Tuber), medicinal
40.	*Salvinia natans* Hoffin	
41.	*Azolla pinnata* R. Br.	
42.	*Marsilea quadrifoliata* Linn.	Edible, medicinal

Table 3 : Occurrence of different groups of zooplankton at eight stations (refer Table 1) from Tripura State (+ present; – absent)

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	ARTHROPODA								
	Crustacea								
	Cladocera								
	Family SIDIDAE								
1.	*Diaphanosoma excisum* Sars	+	–	+	+	–	+	–	–
2.	*Diaphanosoma sarsi* Richard	+	–	–	–	–	+	+	–
3.	*Pseudosida bidentata* Herrick	+	–	–	–	–	+	+	+
4.	*Latonopsis australis* Sars	+	–	–	–	–	–	–	+
5.	*Sida crystallina* (O. F. Muller)	–	+	–	–	+	–	–	–
	Family DAPHNIIDAE								
6.	*Ceriodaphnia cornuta* Sars	+	+	+	+	+	+	+	+
7.	*Scapholeberis kingi* Sars	+	+	+	–	–	+	–	–
8.	*Simocephalus acutirostratus* (King)	+	–	–	–	–	–	–	–
9.	*Simocephalus serrulatus* (Koch)	–	–	–	–	+	–	–	+

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
10.	*Simocephalus exspinosus* (Koch)	–	–	–	–	–	+	–	+
11.	*Simocephalus vetulus* (O. F. Muller)	–	–	–	+	+	+	–	+
12.	*Daphnia lumholtzi* Sars	–	–	–	–	–	–	–	+
	Family MOINIDAE								
13.	*Moinodaphnia macleayi* (King)	+	–	–	+	–	+	–	–
14.	*Moina micrura* Kurz	–	–	+	+	+	–	+	+
	Family BOSMINIDAE								
15.	*Bosminopsis deitersi* Richard	–	+	–	–	–	–	–	+
16.	*Bosmina longirostris* (O.F. Muller)	–	–	–	–	–	–	–	+
	Family MACROTHRICIDAE								
17.	*Macrothrix spinosa* King	+	+	–	+	+	+	+	+
18.	*Echinisca triserialis* Brady	+	–	+	+	+	+	+	–
19.	*Echinisca c. monodi* Gauthier	–	–	–	–	–	–	–	+
20.	*Ilyocryptus spinifer* (Brady)	+	–	+	–	+	–	+	–
	Family CHYDORIDAE								
21.	*Pleuroxus denticulatus* Birge	–	–	–	–	–	+	+	–
22.	*Alonella excisa* (Fischer)	+	+	+	–	+	+	+	–
23.	*Disparalona rostrata* (Koch)	–	–	+	+	+	–	–	–
24.	*Chydorus sphaericus* (O.F. Muller)	–	–	–	+	–	–	–	–
25.	*Chydorus ventricosus* Daday	–	+	–	–	+	–	+	–
26.	*Chydorus barroisi* Richard	+	+	–	–	+	+	+	+
27.	*Chydorus faviformis* Birge	–	–	–	–	+	–	+	+
28.	*Chydorus reticulatus* Daday	–	–	–	–	+	–	+	–
29.	*Chydorus pubescens* Sars	+	+	–	–	+	+	+	+
30.	*Dunhevedia crassa* King	+	–	–	–	–	–	+	–
31.	*Dunhevedia serrata* Daday	+	–	–	–	–	+	+	–
32.	*Dadaya macrops* (Daday)	+	+	–	–	–	+	–	–
33.	*Pseudochydorus globosus* (Baird)	+	–	–	–	–	–	–	–
34.	*Leydigia acanthocercoides* (Fischer)	–	–	–	–	–	–	+	–
35.	*Acroperus harpae* (Baird)	–	–	–	–	–	–	–	+

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
36.	*Camptocercus australis* Sars	+	–	–	–	–	–	+	–
37.	*Euryalona orientalis* (Daday)	–	–	–	–	–	+	+	–
38.	*Notoalona globulosa* (Daday)	+	–	–	+	+	+	–	–
39.	*Alona rectangula* Sars	–	–	–	–	+	–	–	–
40.	*Alona guttata* Sars	–	–	–	+	–	–	–	–
41.	*Alona pulchella* King	–	+	+	–	+	+	–	–
42.	*Alona davidi* Richard	+	–	–	–	+	+	–	–
43.	*Alona costata* Sars	+	–	–	+	+	–	+	–
44.	*Alona monacantha* Sars	+	+	–	–	–	+	–	–
45.	*Alona intermedia* Sars	+	–	–	–	+	+	–	+
46.	*Alona verrucosa* Sars	+	–	–	–	+	+	–	+
47.	*Alona karua* (King)	+	–	–	+	+	+	+	–
48.	*Alona kwangsiensis* Chiang	+	–	–	–	–	–	+	–
49.	*Oxyurella sinhalensis* (Daday)	+	+	–	–	–	+	+	+
	Total number of species	**28**	**13**	**9**	**13**	**23**	**25**	**23**	**19**
	COPEPODA								
	Calanoida								
	Family DIAPTOMIDAE								
1.	*Heliodiaptomus cinctus* (Gurney)	+	+	–	–	+	–	–	+
2.	*Heliodiaptomus contortus* (Gurney)	–	–	–	+	–	–	+	–
3.	*Heliodiaptomus viduus* (Gurney)	+	+	+	–	+	+	–	+
4.	*Arctodiaptomus similis* (Baird)	+	+	–	–	–	+	+	–
5.	*Arctodiaptomus kieferi* Reddish	–	+	–	–	+	–	–	+
6.	*Megadiaptomus herber* Brehm	+	–	–	–	+	+	+	–
7.	*Neodiaptomus strigilipes* Gurney	+	–	–	–	+	–	–	+
8.	*Paradiaptomus greeni* (Gurney)	–	–	+	+	–	–	–	–
9.	*Phyllodiaptomus annae* (Apstein)	+	+	+	–	+	+	+	+
10.	*Tropodiaptomus hebereri* (Kiefer)	+	+	–	–	+	+	+	+
	Family CYCLOPOIDEA								
11.	*Eucyclops serrulatus* (Fischer)	–	+	–	–	+	–	–	–

Sl. No.	Name of species	Stations							
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
12.	*Paracyclops fimbriatus* (Fischer)	–	–	–	+	–	–	–	–
13.	*Tropocyclops prasinus* (Fischer)	+	–	–	–	+	+	+	+
14.	*Mesocyclops hyalinus* (Rehberg)	+	–	+	+	–	+	+	–
15.	*Mesocyclops leuckarti* (Claus)	+	+	–	+	+	+	+	+
16.	*Thermocycylops maheenisis* Lindberg	+	–	–	–	+	–	+	–
17.	*Microcyclops oithonoides* (Sars)	–	–	+	+	–	–	–	–
	Total number of species	**11**	**8**	**5**	**6**	**11**	**8**	**8**	**8**
	OSTRACODA								
	Podocopida								
	Family CYPRIDIDAE								
1.	*Cypris subglobosa* Sowerby	+	+	–	–	–	–	–	+
2.	*Strandesia elongata* Hartman	–	–	–	+	–	–	–	–
3.	*Strandesia indica* Hartman	+	–	–	–	+	–	–	+
4.	*Strandesia labiata* Hartman	–	+	–	–	+	–	–	–
5.	*Hemicypris pyxidata* (Moniez)	+	+	+	–	–	+	–	–
6.	*Hemicypris falcatus* Victor & Fernando	+	–	–	–	–	+	+	–
7.	*Cypretta fontinalis* Harman	–	–	+	–	–	–	–	–
8.	*Stenocypris major* (Baird)	+	–	–	–	+	+	+	+
9.	*Stenocypris derupta* Vavra	–	+	–	–	+	–	+	–
10.	*Stenocypris hislopi* Ferguson	+	–	–	–	+	+	–	–
11.	*Stenocypris malcolmsoni* (Brady)	+	–	–	–	–	–	+	–
12.	*Stenocypris sewelli* Klie	–	–	+	–	–	–	–	–
13.	*Chrissia halyi* (Ferguson)	–	–	–	–	+	–	–	–
14.	*Cypridopsis horai* Klie	–	–	+	+	–	–	–	–
	Total number of species	**7**	**4**	**4**	**2**	**6**	**4**	**4**	**3**
	ROTIFERA								
	Ploimida								
	Family BRANCHIONIDAE								
1.	*Anuraeopsis coelata* (De Beauchamp)	+	–	–	+	–	–	+	+

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
2.	*Anuraeopsis fisca* Gosse	+	–	+	+	–	+	–	–
3.	*Branchionus angularis* Gosse	–	–	+	–	–	–	–	–
4.	*Branchionus bidentata* Anderson	+	–	–	+	–	–	–	–
5.	*Branchionus budapestinesis* Daday	+	–	+	+	–	–	–	–
6.	*Branchionus calyciflorus* Passas	+	+	+	+	–	–	–	–
7.	*Branchionus guadridentatus* Hermann	–	+	+	–	–	–	–	–
8.	*Branchionus caudatus* Barrois & Daday	–	–	–	+	–	–	–	+
9.	*Branchionus falcatus* Zacharias	–	–	+	–	–	–	–	–
10.	*Branchionus plicatilis* Muller	–	–	+	–	–	–	–	–
11.	*Platyias quadricornis* Ehrenberg	–	+	+	+	–	+	+	+
12.	*Keratella tropica* (Apstein)	–	–	+	+	–	–	–	–
13.	*Keratella procurva* (Thorpe)	+	–	–	+	–	–	+	–
	Family EUCHLANIDAE								
14.	*Euchlanis triquetra* Ehrenberg	–	–	+	–	–	–	+	–
15.	*Dipleuchlanis propatula* Gosse	–	+	–	–	+	–	–	+
16.	*Tripleuchlanis plicata* Lavander	–	–	–	–	+	–	–	–
	Family COLURELLIDAE								
17.	*Lepadella acuminata* Ehrenberg	–	–	+	–	–	–	–	–
18.	*Lepadella ehrenbergi* (Perty)	+	–	–	+	–	–	–	–
	Family LECANIDAE								
19.	*Lecane curvicornis* Murray	+	–	+	–	–	–	–	–
20.	*Lecane flexilis* Gosse	–	–	+	–	–	–	–	–
21.	*Lecane unguitata* Fedeev	+	–	+	–	–	–	–	–
22.	*Lecane stenroosi* Meissner	+	–	–	–	+	–	–	–
	Family NOTOMMATIDAE								
23.	*Scaridium longicaudum* (Muller)	–	+	–	–	+	–	–	+
24.	*Cephalodella mucronata* Harding & Mayers	+	–	+	+	–	–	–	–
25.	*Trichocera rattus* Muller	–	+	–	–	+	–	–	–

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	Family SYNCHAETIDAE								
26.	*Polyarthra vulgaris* Carlin	–	–	–	+	–	–	–	–
	Family ASPLANCHNIDAE								
27.	*Asplanchna brightwelli* Gosse	+	–	+	–	–	+	+	–
	Family FILINIIDAE								
28.	*Filinia longiseta* (Ehrenberg)	+	–	–	–	–	–	–	+
29.	*Filinia pejleri* Hutchinson	–	+	–	–	+	+	–	–
	Total number of species	**14**	**7**	**15**	**12**	**6**	**3**	**5**	**6**

Table 4 : Occurrence of Decapoda, Hemiptera, Coleoptera and Mollusca at eight stations (please refer Table I) from Tripura state (+ present ; – absent)

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	CRUSTACEA : DECAPODA								
	Macrura								
	Family PALAEMONIDAE								
1.	*Macrobrachium lamarrii* (Edwards)	–	+	–	–	+	–	+	–
2.	*Macrobranchium dayanum* (Edwards)	+	–	–	–	–	+	–	–
3.	*Macrobrachium rosenbergi* (De Man)	+	–	+	+	–	–	–	+
	Family ATYIDAE								
4.	*Caridina nilotica* var.	–	+	–	–	+	–	–	–
5.	*Caridina singalensis* Ortmann	+	–	–	–	+	+	+	+
	Brachyura								
	Family POTAMONIDAE								
6.	*Paratelphuse rugosa* (Kingsley)	+	–	–	–	+	–	–	–
7.	*Paratelphuse hydrodromus* Herbst	–	+	–	+	–	+	+	+
8.	*Sartoriana spingera* Wood Mason	+	–	–	+	+	–	–	+
	Total number of species	**5**	**3**	**1**	**3**	**5**	**3**	**3**	**4**

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	INSECTA HEMIPTERA								
	Family BELOSTOMIDAE								
1.	*Diplonychus annulatus* (Fabr.)	+	+	+	–	+	+	+	–
2.	*Diplonychus molestum* (Dufour)	–	+	+	+	–	+	+	–
3.	*Lethocercus indicus* (Lep. & Serc.)	+	–	–	–	–	+	+	–
	Family CORIXIDAE								
4.	*Corixa pronotoria* Distant	–	+	+	+	–	+	+	–
5.	*Micronecta scutellaris* (Stal.)	+	–	–	–	+	+	–	+
6.	*Micronecta quadristrigata* Bredd.	+	–	–	–	–	+	–	+
	Family HYDROMETRIDAE								
7.	*Limnogonus nitidus* (Mayr)	+	–	–	+	+	–	–	+
8.	*Naboandelus signatus* Distant	–	–	–	+	+	–	+	+
9.	*Rhagadotarsus kreepalini* Breddin	+	–	–	–	+	–	–	+
	Family GERRIDAE								
10.	*Hydrometra greeni* Kirk	+	–	–	–	+	–	–	+
	Family NEPIDAE								
11.	*Laccotrephes griseus* (Guer)	+	–	–	–	+	–	+	+
	Family RANATRIDAE								
12.	*Ranatra elongata* Fabr.	+	+	+	–	–	+	–	–
13.	*Ranatra filiformis* Fabr.	–	–	+	–	+	–	–	+
14.	*Ranatra sordidula* Dahrn.	+	–	–	–	+	–	+	–
	Family NOTONECTIDAE								
15.	*Anisops sardea* Herrih shaffe	+	–	+	–	+	+	+	+
16.	*Anisops batilliformis* Land	+	–	–	–	+	–	–	+
17.	*Enithares abbreviata* (Kirby)	+	–	–	–	+	+	+	+
	Total number of species	**13**	**4**	**6**	**4**	**12**	**9**	**9**	**11**
	COLEOPTERA								
	Family DYSTISCIDAE								
1.	*Eretes sticticus* L.	–	+	–	–	–	–	–	+
2.	*Cybister confuscus* Sharp	+	–	+	+	–	–	+	–

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
3.	*Hyphydrus indicus* sharp	–	–	–	–	+	–	–	+
4.	*Laccophilus* sp.	–	–	+	+	–	–	–	–
5.	*Hydrovatus* sp.	–	+	–	–	+	–	+	–
6.	*Canthydrus laetabilis* Walk	–	–	+	–	–	+	+	–
7.	*Hydrocoptus subvittatus* Motsch	–	–	–	–	–	+	–	–
	Family GYRINIDAE								
8.	*Dineutes indicus* Aube	+	+	–	–	+	+	+	+
9.	*Dineutes spinosus* (Feb.)	–	–	–	–	–	+	+	–
10.	*Dineutes unidentatus*	+	–	–	–	+	–	–	+
11.	*Gyrinus convexiusculus* Macl.	–	+	–	–	+	–	–	+
12.	*Orectochilus productus* Reg.	+	+	–	–	+	+	+	+
	Family HYDROPHILIDAE								
13.	*Berosus* (enoplurus) *indicus Mots.*	–	+	+	–	–	–	+	–
14.	*Heliochares (H.) Anchonalis* Sharp	+	–	–	–	+	+	+	+
15.	*Regimbartia attenuata* Fabr.	+	–	–	–	+	+	+	–
16.	*Sternolophus rufipes* Fabr.	+	–	–	–	–	+	+	–
	Family HALIPLIDAE								
17.	*Haliplus (L).* arrowi *Guignot*	–	–	–	+	+	–	+	–
	Total number of species	**7**	**6**	**4**	**3**	**9**	**8**	**11**	**7**
	MOLLUSCA GASTROPODA								
	Family VIVIPARIDAE								
1.	*Bellamya bengalensis* (Lamarck)	+	–	–	+	–	+	+	+
2.	*Bellamya dissimilis* (Muller)	+	–	–	–	+	+	–	+
	Family PILIDAE								
3.	*Pila globosa* (Swainson)	+	+	–	–	+	+	+	+
	Family THIARIDAE								
4.	*Thiaria granifera* (Lamark)	–	+	+	+	–	+	+	+
5.	*Thiaria tuberculata* (Muller)	–	+	–	–	+	+	+	–
	Family BITHYNIDAE								
6.	*Gabbia orcula* Frauenfeld	–	+	–	–	+	–	–	–
7.	*Digoniostoma ceremeopoma* (Benson)	+	+	–	–	+	+	+	+
8.	*Digoniostoma pulchella* (Benson)	–	–	–	–	–	–	–	+

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	Family PLANORBIDAE								
9.	*Indoplanorbis exustus* (Deshayes)	+	–	+	+	+	+	+	+
10.	*Gyraulus convexiusculus* (Hutton)	+	–	+	–	+	+	+	+
11.	*Gyraulus labiatus*	+	–	–	–	+	+	+	+
	Family LYMNAEIDAE								
12.	*Lymnaea luteola* Lamarck	+	–	–	+	+	–	+	+
13.	*Lymnaea acuminata* Lamarck	+	–	–	–	–	+	–	+
	Family VERONICELLIDAE								
14.	*Laevicaulis alte* (Ferussac)	–	+	–	–	+	–	–	–
	BIVALVIA								
	Family UNIONIDAE								
15.	*Lamellidens marginalis* (Lamark)	–	+	–	–	+	–	–	+
	Total number of species	**9**	**7**	**3**	**4**	**11**	**10**	**9**	**12**

Table 5 : Occurrence of fishes at eight stations (refer Table I) from Tripura state (+ present ; – absent)

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	FISHES								
	Anguilliforms								
	Family OPHICHTHIDAE								
1.	*Pisodonophis boro* (Hamilton)	–	–	–	–	–	+	–	–
	Family ANGUILLIDAE								
2.	*Anguilla bengalensis* (Gray & Hard)	–	–	–	+	–	–	–	+
	Clupeiformes								
	Family CLUPEIDAE								
3.	*Gudusia chapra* (Hamilton)	–	–	–	–	–	+	–	–
	Osteoglossiformes								
	Family NOTOPTERIDAE								
4.	*Notopterus notopterus* (Pallas)	–	–	–	–	–	–	+	–

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
5.	*Notopterus chitala* (Hamilton)	+	–	–	–	–	–	–	–
	Cypriniformes								
	Family CYPRINIDAE								
6.	*Chela laubuca* (Hamilton)	–	–	–	–	–	+	–	–
7.	*Salmostoma bacaila* (Hamilton)	–	–	–	–	–	+	–	–
8.	*Salmostoma clupeoides* (Bloch)	+	–	–	–	–	–	–	–
9.	*Esomus danricus* (Hamilton)	–	–	–	–	–	–	+	–
10.	*Danio dngila* (Hamilton)	–	–	–	–	–	–	+	–
11.	*Danio aequipinnatus* (Mecclelland)	–	–	–	–	–	–	+	–
12.	*Danio devario* (Hamilton)	–	–	–	–	–	+	–	–
13.	*Rosbora daniconius* (Hamilton)	+	–	–	–	–	+	–	–
14.	*Amblypharyngodon mola* (Hamilton)	+	–	–	–	–	+	+	–
15.	*Barilius barna* (Hamilton)	–	–	–	–	–	+	–	–
16.	*Barilius nelsoni* Barman	–	–	–	–	–	+	–	–
17.	*Barilius shacra* (Hamilton)	–	–	+	–	–	–	–	–
18.	*Barilius b. tileo* (Hamilton)	–	–	+	–	–	–	–	–
19.	*Puntius chola* (Hamilton)	–	–	–	–	–	+	+	–
20.	*Puntius conchonius* (Hamilton)	+	–	–	–	–	–	+	–
21.	*Puntius sarana* (Hamilton)	–	–	–	–	–	+	–	–
22.	*Puntius ticto* (Hamilton)	–	–	–	–	+	–	–	+
23.	*Osteobrama cotio cotio* (Hamilton)	–	–	–	–	–	+	–	–
24.	*Labeo calbasu* (Hamilton)	–	–	–	–	–	+	–	–
25.	*Labeo gonius* (Hamilton)	–	–	–	–	–	+	–	–
26.	*Chagunius chagunio* (Hamilton)	–	–	–	–	+	–	–	–
27.	*Tor putitota* (Hamilton)	–	–	–	–	–	–	–	+
28.	*Tor tor* (Hamilton)	–	–	–	–	+	–	–	–
29.	*Cirrhinus mrigala* (Hamilton)	–	–	–	–	–	–	+	–
30.	*Cirrhinus reba* (Hamilton)	–	–	–	–	+	–	–	–
31.	*Catla catla* (Hamilton)	+	–	–	–	+	–	+	+
32.	*Crossocheilus latius* (Hamilton)	+	–	–	–	–	+	–	–
33.	*Psilorhynchus balitora* (Hamilton)	–	–	–	–	–	–	+	–

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
34.	*Noemacheilus botia* (Hamilton)	–	–	–	–	–	–	+	–
35.	*Botia B. rostrata* Gaunther	+	–	–	–	–	+	–	–
36.	*Somileptes gongota* (Hamilton)	–	–	–	–	+	–	+	–
37.	*Lepidocephalus (L) quntea* (Ham.)	–	–	–	–	–	+	+	–
	Siluriformes								
	Family BAGRIDAE								
38.	*Rita rita* (Hamilton)	+	–	–	–	–	–	–	–
39.	*Batasio batasio* (Hamilton)	–	–	–	–	–	–	–	+
40.	*Mystus bleekeri* (Day)	–	–	–	–	–	–	+	–
41.	*Mystus cavasius* (Hamilton)	–	–	–	–	–	+	+	–
42.	*Mystus vittatus* (Bloch)	+	–	–	–	–	–	–	–
43.	*Aorichthys seenghala* (Sykes)	–	–	–	–	–	–	–	+
	Family SILURIDAE								
44.	*Ompok bimaculatus* (Bloch)	–	–	–	–	–	+	+	–
45.	*Ompok pabda* (Hamilton)	–	–	–	–	–	–	+	–
46.	*Wallago attu* (Schneider)	–	–	–	–	–	–	+	–
	Family SCHILBEIDAE								
47.	*Ailia coila* (Hamilton)	–	–	–	–	–	+	–	–
48.	*Pseudeutropius atherinoides* (Bloch)	–	–	–	–	–	+	–	–
49.	*Clupisoma garua* (Hamilton)	+	–	–	–	–	–	–	–
50.	*Clupisoma montana* Hora	–	–	–	–	–	+	–	–
51.	*Eutropiichthys vacha* (Hamilton)	–	–	–	–	–	–	+	–
52.	*Eutropiichthys murius* (Hamilton)	–	–	–	–	–	–	+	–
53.	*Silonia silondia* (Hamilton)	–	–	–	–	–	–	–	+
	Family AMBLYCIPITIDAE								
54.	*Amblyceps mangois* (Hamilton)	–	–	–	–	–	–	–	+
55.	*Bagarius bagarius* (Hamilton)	–	–	–	–	–	–	+	–
56.	*Gagata cenia* (Hamilton)	+	–	–	–	–	–	+	–
57.	*Erethistoides montana* (Hora)	–	–	–	–	–	–	+	–
58.	*Glyptothorax conirostre* (Steinda)	–	–	–	–	–	–	+	–

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	Family CLARIIDAE								
59.	*Clarias batrachus* (Linnaeus)	–	–	–	–	–	–	+	–
	Family HETEROPNEUSTIDAE								
60.	*Heteropneustes fossilis* (Block)	–	–	–	–	–	–	+	–
61.	*Olyra kempi* Chaudhuri	–	–	–	–	+	–	+	–
	Atheriniformes								
	Family BELONIDAE								
62.	*Xenentodon-cancila* (Hamilton)	+	–	–	–	–	+	–	–
	Family CYPRINODONTIDAE								
63.	*Aplocheilus panchax* (Hamilton)	–	–	–	–	–	+	–	–
64.	*Oryzias melanostigma* (Mc C-elland)	–	–	–	–	+	–	–	+
	Family CHANDIDAE								
65.	*Channa barca* (Hamilton)	–	–	–	+	–	–	–	–
66.	*Channa marulius* (Hamilton)	–	–	–	–	+	–	–	–
67.	*Channa punctatus* (Bloch)	–	–	–	–	–	–	+	–
68.	*Channa orientalis* (Schneider)	–	+	–	–	–	–	+	–
	Perciformes								
69.	*Chanda nama* (Hamilton)	+	–	–	+	–	+	–	–
70.	*Chanda ranga* (Hamilton)	–	–	–	–	–	+	+	–
	Family NANDIDAE								
71.	*Nandus nandus* (Hamilton)	–	–	–	–	–	–	+	–
	Family GOBIIDAE								
72.	*Glossogobius giuris* (Hamilton)	+	–	–	–	–	–	+	–
	Family ANABANTIDAE								
73.	*Anabas testudineus* (Bloch)	–	–	–	–	–	–	+	–
	Family BELONTIDAE								
74.	*Colisa fasciata* (Schenider)	–	–	–	–	–	–	+	–
	Family MASTACEMBELIDAE								
75.	*Mastacembelus armatus lacepede* (H)	–	–	–	–	–	–	+	–
76.	*Macrognathus puncalus* (Hamilton)	+	–	–	–	–	+	+	–
77.	*Macrognathus aculeatus* (Bloch)	+	–	–	–	–	–	–	–
	Total number of species	**17**	**1**	**2**	**2**	**9**	**28**	**35**	**9**

Table 6 : Occurrence of amphibians and reptiles at eight stations from Tripura State (+ present; – absent)

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	AMPHIBIA								
	Family BUFONIDAE								
1.	*Bufo melanostictus* Schneider	–	–	+	+	–	–	–	–
	Family RANIDAE								
2.	*Rana cyanophylyctis* Schneider	+	+	–	–	+	+	+	+
3.	*Rana tigrina* Daudin	+	+	–	–	+	–	+	+
4.	*Rana hexadactyla* Lesson	–	–	–	–	+	+	–	–
5.	*Rana limnocharis* Weighmann	–	+	–	–	–	–	–	+
	Family MICROHYLIDAE								
6.	*Microhyla ornata* (Dum. & Bib)	+	–	+	–	+	+	+	–
	Total number of species	**3**	**3**	**2**	**1**	**4**	**3**	**3**	**3**
	REPTILIA								
	Family TRIONYCHIDAE								
1.	*Lissemys punctata punctata* (Lacep)	–	+	–	–	+	–	–	+
2.	*Trinyx gangeticus* (Cuvier)	–	–	–	–	–	–	–	+
	Family VARANIDAE								
3.	*Varanus bengalensis* (Daudin)	+	–	–	–	–	–	–	–
4.	*Varanus flavescens* (Grey)	–	+	–	–	+	–	–	–
	Family COLUBRIDAE								
5.	*Enhydris enhydris* (Schneider)	–	+	–	–	+	+	–	+
6.	*Xenochrophis piscator* (Schneider)	+	–	–	–	+	+	–	+
	Total number of species	**2**	**3**	**0**	**0**	**4**	**2**	**0**	**4**

Table 7 : Occurrence of aquatic and semi-aquatic birds at eight station from Tripura State (+ present; – absent)

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
	BIRDS								
	Family PODICIPITIDAE								
1.	*Podiceps ruficollis* capensis Sal.	+	–	–	–	+	–	–	+
	Family PHALACROCORACIDAE								
2.	*Phalacrocorax niger* (Vieillot)	+	–	–	+	+	+	+	+
3.	*Phalacrocorax fuscicollis* Stephens	+	–	–	–	+	–	–	+
4.	*Phalacrocorax carbo* sinensis (Shaw)	+	–	–	–	+	–	–	+
5.	*Anhinga rufa melanogaster* Pennant	+	–	–	–	+	+	+	+
	Family ARDEIDAE								
6.	*Ardea purpurea manilensis* Meyen	+	+	+	–	+	+	+	+
7.	*Ardea cinerea rectirostris* Gould	+	–	–	–	+	–	–	+
8.	*Ardea striatus chloriceps* (Bonap)	+	–	–	–	+	–	+	–
9.	*Ardeola grayii grayii* (Sykes)	+	+	+	+	–	+	+	–
10.	*Bybulcus ibis coromandus* (Boddaert)	+	+	+	+	+	+	+	–
11.	*Ardea alba modesta* (JE Grey)	+	–	–	+	–	–	–	+
12.	*Egretta g. garzetta* (Linnaeus)	+	+	–	–	+	+	+	+
13.	*Egretta i. intermedia* (Wagler)	+	–	–	+	–	–	–	–
	Family CICONIIDAE								
14.	*Mycteria leucocephala* (Pennant)	+	–	–	–	+	–	–	–
15.	*Anastomus oscitans* (Boddaert)	–	–	–	–	–	+	–	+
	Family THRESKIORNITHIDAE								
16.	*Threskiornis aethiopica melanocephala* (Latham)	–	+	–	–	+	–	–	–
	Family ANATIDAE								
17.	*Anser anser rubrirostris* (Swinhoe)	+	–	–	–	+	–	–	+
18.	*Dendrocygna javanica* (Horsfiels)	–	+	–	–	+	–	–	–
19.	*Anas acuta* Linn.	+	–	–	–	+	+	+	+
20.	*Anas crecca crecca* Linn	–	+	–	–	+	–	–	–

Sl. No.	Name of species	Stations							
		1	2	3	4	5	6	7	8
21.	*Anas penelope* Linn	+	–	–	–	+	–	–	–
22.	*Anas clypeata* Linn	+	+	–	–	+	–	–	–
23.	*Aythya ferina* (Linnaeus)	+	–	–	–	+	–	–	–
24.	*Nettapus c. coromandelianus* (Gme)	–	+	–	–	+	–	–	–
	Family RALLIDAE								
25.	*Gallinula chloropus indica* Blyth	+	–	–	–	+	+	+	–
26.	*Fulica atra atra* Linn.	+	–	–	–	+	–	–	+
27.	*Amaurornis P. chinensis* (Bodd)	–	–	–	–	+	+	–	–
	Family FACANIDAE								
28.	*Hydrophasianus chirurgus* (Scopoli)	+	–	–	–	–	+	+	–
29.	*Metopidius indicus* (Latham)	–	–	–	–	+	+	+	–
	Family ALCEDINIDAE								
30.	*Ceryle leucomekanura* Reichen	–	+	+	+	–	–	–	+
31.	*Alcedo atthis bengalensis* Gmelin	+	–	+	–	+	+	+	+
32.	*Halcyon S. perpulchra* Madarasz	–	+	–	–	+	–	+	–
	Family ACCIPITRIDAE								
33.	*Haliastur indus* (Boddaert)	+	–	–	+	+	–	–	+
	Total number of species	**24**	**11**	**5**	**7**	**27**	**13**	**13**	**16**

Table 8 : Habitat utilisation of aquatic birds in the wetlands of Tripura

Sl. No.	Name of species	Different habitats								
		1	2	3	4	5	6	7	8	9
1.	*Podiceps ruficollis capensis* (Dabchick)	+	–	–	+	–	–	–	–	+
2.	*Phalacrocorax carbo sinensis* (Large cormorant)	+	–	–	+	–	+	–	–	+
3.	*Phalacrocorax niger* (Little cormorant)	+	+	–	–	–	+	–	+	+
4.	*Anhinga rufa melanogaster* (Darter)	+	–	–	+	–	–	+	+	+
5.	*Ardea cinerea rectirostris* (Grey Heron)	+	+	–	+	+	–	+	–	+
6.	*Ardea purpura manilensis* (Purple Heron)	+	–	–	+	+	–	+	–	+
7.	*Ardea alba modesta* (Large Egret)	+	+	–	+	+	–	+	–	+
8.	*Ardeola striatus chloriceps* (Green Heron)	+	+	–	+	+	–	+	–	+
9.	*Ardeola grayii grayii* (Pond Heron)	+	+	–	+	+	+	+	–	+
10.	*Bubulcus ibis coromandus* (Cattle Egret)	+	+	–	+	+	–	+	–	+
11.	*Egretta intermedia intermedia* (Median Egret)	+	+	–	+	+	–	+	–	+
12.	*Egretta garzetta garzetta* (Little Egret)	+	–	–	+	–	–	–	–	+
13.	*Mycteria leucocephala* (Painted Stork)	+	+	–	+	–	–	+	–	+
14.	*Threskiornis aethiopica melanocephala* (W. Ibis)	+	+	+	+	–	+	–	–	+
15.	*Anastomus oscitans* (Open bill Stork)	+	–	–	–	–	–	+	–	+
16.	*Anser anser rubrirostris* (Eastern Grey lag Goose)	–	+	+	–	–	+	–	+	–
17.	*Anas javanica* (Lesser Whistling teal)	–	+	+	–	–	+	–	+	–
18.	*Anas acuta* (Pintail)	–	+	+	–	–	+	–	+	–
19.	*Anas crecca crecca* (Common teal)	+	+	–	–	–	+	–	+	–

Sl. No.	Name of species	Different habitats								
		1	2	3	4	5	6	7	8	9
20.	*Anas penelope* (Wigeon)	–	+	–	+	–	–	–	+	–
21.	*Anas clypeata* (Shoveller)	+	+	+	–	–	–	–	+	–
22.	*Aythya ferina* (Pochard)	+	+	+	–	–	–	–	+	–
23.	*Nettapus coromandelianus* (Cotton teal)	+	+	–	–	–	–	–	+	–
24.	*Gallinula chloropus indica* (Indian (Moorhen)	+	+	–	+	–	+	+	–	–
25.	*Fulica atra atra* (Coot)	+	+	+	+	+	+	+	–	+
26.	*Hydrophasianus chirugus* (Pheasantailed Jacana)	+	+	+	+	–	+	–	–	–
27.	*Metopidius indicus* (Bronzewinged Jacana)	+	+	+	+	–	+	–	–	–

1. Littoral region; 2. Littoral vegetation; 3. Submerged vegetation; 4. Marshy area with grass; 5. Typha plants; 6. Floating vegetation; 7. Decaying vegetation; 8. Open water; 9. On trees.

Appendix-1

Sorensen indices for the cladoceran fauna in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Telliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	43.90	32.40	39.02	50.98	75.47	62.74	38.29
Sepahijolla	43.90	–	36.36	15.38	44.44	52.63	33.33	37.50
Telliamura	32.40	36.36	–	45.45	50.00	35.29	31.25	14.28
Manu	39.02	15.38	45.45	–	50.00	42.10	33.33	25.00
Rajnagar	50.98	44.44	50.00	50.00	–	54.16	56.52	47.61
Udaipur	75.47	52.63	35.29	42.10	54.16	–	54.16	45.45
Amarpur	62.74	33.33	31.25	33.33	56.52	54.16	–	38.09
Jothanbari	38.29	37.50	14.28	25.00	47.61	45.45	38.09	–

Appendix-2

Sorensen indices for Copepoda in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	66.66	40.0	25.0	45.0	47.0	44.4	38.8
Sepahijolla	66.6	–	15.4	7.1	33.3	33.3	25.0	43.8
Telliamura	40.0	15.4	–	27.3	13.3	25.0	15.4	15.4
Manu	25.0	7.1	27.3	–	6.3	15.4	21.4	7.1
Rajnagar	45.0	33.3	13.3	6.3	–	35.3	33.3	38.8
Udaipur	47.0	33.3	25.0	15.4	35.3	–	46.7	33.3
Amarpur	44.4	25.0	15.4	21.4	33.3	46.7	–	25.0
Jothanbari	38.8	43.8	15.4	7.1	38.8	33.3	25.0	–

Appendix-3

Sorensen indices for Ostracoda in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	36.4	18.1	0	46.2	72.7	54.6	60.0
Sepahijolla	36.4	–	25.0	0	40.0	25.0	25.0	28.6
Telliamura	18.1	25.0	–	33.3	0	25.0	0	0
Manu	0	0	33.3	–	0	0	0	0
Rajnagar	46.2	40.0	0	0	–	66.7	66.7	22.2
Udaipur	72.7	25.0	25.0	0	66.7	–	25.0	28.9
Amarpur	54.6	25.0	0	0	66.7	25.0	–	28.9
Jothanbari	60.0	28.6	0	0	22.2	28.9	28.9	–

Appendix-4

Sorensen indices for Rotifera in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	9.5	24.1	33.3	10.0	11.8	16.7	10.0
Sepahijolla	9.5	–	12.5	21.1	26.7	33.3	15.4	20.0
Telliamura	24.1	12.5	–	44.4	0	30.0	29.0	8.9
Manu	33.3	21.1	44.4	–	0	26.7	37.5	33.3
Rajnagar	10.0	26.7	0	0	–	18.2	0	28.6
Udaipur	11.8	33.3	30.0	26.7	18.2	–	44.4	18.2
Amarpur	16.7	15.4	29.0	37.5	0	44.4	–	33.3
Jothanbari	10.0	20.0	8.9	33.3	28.6	18.2	33.3	–

Appendix-5

Sorensen indices for Decapoda in eight stations of Tripura wetlands.

	Sonamura	**Sepahi jolla**	**Talliamura**	**Manu**	**Rajnagar**	**Udaipur**	**Amarpur**	**Jothan bari**
Sonamura	–	0	33.3	50.0	60.0	75.0	25.0	66.7
Sepahijolla	0	–	0	33.3	50.0	33.3	66.7	28.6
Telliamura	33.3	0	–	50.0	0	0	0	40.0
Manu	50.0	33.3	50.0	–	25.0	33.3	33.3	85.7
Rajnagar	60.0	50.0	0	25.0	–	25.0	50.0	66.7
Udaipur	75.0	33.3	0	33.3	25.0	–	66.7	57.1
Amarpur	25.0	66.7	0	33.3	50.0	66.7	–	57.1
Jothanbari	66.7	28.6	40.0	85.7	66.7	57.1	57.1	–

Appendix-6

Sorensen indices for Hemiptera in eight stations of Tripura wetlands.

	Sonamura	**Sepahi jolla**	**Talliamura**	**Manu**	**Rajnagar**	**Udaipur**	**Amarpur**	**Jothan bari**
Sonamura	–	23.5	31.6	11.8	80.0	60.9	52.2	75.0
Sepahijolla	23.5	–	80.0	50.0	12.5	57.1	57.1	0
Telliamura	31.6	80.0	–	80.0	33.3	62.5	50.0	23.5
Manu	11.8	50.0	80.0	–	25.0	28.6	42.9	26.7
Rajnagar	80.0	12.5	33.3	25.0	–	36.4	54.5	87.0
Udaipur	60.9	57.1	62.5	28.6	36.4	–	38.1	38.1
Amarpur	52.2	57.1	50.0	42.9	54.5	38.1	–	38.1
Jothanbari	75.0	0	23.5	26.7	87.0	38.1	38.1	–

Appendix-7

Sorensen indices for Coleoptera in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	30.8	18.2	20.0	62.5	66.7	66.7	57.1
Sepahijolla	30.8	–	20.0	0	53.3	28.9	47.1	61.5
Telliamura	18.2	20.0	–	57.1	0	16.7	40.0	0
Manu	20.0	0	57.1	–	16.7	0	71.4	0
Rajnagar	62.5	53.3	0	16.7	–	47.1	60.0	70.6
Udaipur	66.7	28.9	16.7	0	47.1	–	73.7	40.0
Amarpur	66.7	47.1	40.0	71.4	60.0	73.7	–	33.3
Jothanbari	57.1	61.5	0	0	70.6	40.0	33.3	–

Appendix-8

Sorensen indices for Mollusca in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	25.0	33.3	46.2	66.7	100.0	77.8	85.7
Sepahijolla	25.0	–	20.0	18.2	63.2	47.1	50.0	38.1
Telliamura	33.3	20.0	–	57.1	26.7	46.2	37.5	40.0
Manu	46.2	18.2	57.1	–	25.0	42.9	61.5	50.0
Rajnagar	66.7	63.2	26.7	25.0	–	63 6	66.7	66.7
Udaipur	100	47.1	46.2	42.9	63.6	–	84.2	81.8
Amarpur	77.8	50.0	37.5	61.5	66.7	84.2	–	76.2
Jothanbari	85.7	38.1	40.0	50.0	66.7	81.8	76.2	–

Appendix-9

Sorensen indices for Pisces in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	0	0	100.0	0	24.5	23.0	0
Sepahijolla	0	–	0	0	0	0	4.7	0
Telliamura	0	0	–	0	0	0	0	0
Manu	10.0	0	0	–	0	6.5	0	0
Rajnagar	0	0	0	0	–	5.7	4.3	8.7
Udaipur	24.5	0	0	6.5	5.7	–	22.2	0
Amarpur	23.0	4.7	0	0	4.3	22.2	–	3.3
Jothanbari	0	0	0	0	8.7	0	3.3	–

Appendix-10

Sorensen indices for Amphibia in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	57.1	40.0	0	85.7	66.7	100	66.7
Sepahijolla	57.1	–	0	0	50.0	28.6	57.1	85.7
Telliamura	40.0	0	–	66.7	33.3	40.0	40.0	0
Manu	0	0	66.7	–	0	0	0	0
Rajnagar	85.7	50.0	33.3	0	–	85.7	85.7	57.1
Udaipur	66.7	28.6	40.0	0	85.7	–	66.7	33.3
Amarpur	100	57.1	40.0	0	85.7	66.7	–	66.7
Jothanbari	66.7	85.7	0	0	57.1	33.3	66.7	–

Appendix-11

Sorensen indices for Reptiles in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	0	0	0	66.2	100	0	66.7
Sepahijolla	0	–	0	0	85.7	40.0	0	57.1
Telliamura	0	0	–	0	0	0	0	0
Manu	0	0	0	–	0	0	0	0
Rajnagar	66.2	85.7	0	0	–	66.7	0	75.0
Udaipur	100	40.0	0	0	66.7	–	0	66.7
Amarpur	0	0	0	0	0	0	–	0
Jothanbari	66.7	57.1	0	0	75.0	66.7	0	–

Appendix-12

Sorensen indices for Birds in eight stations of Tripura wetlands.

	Sonamura	Sepahi jolla	Talliamura	Manu	Rajnagar	Udaipur	Amarpur	Jothan bari
Sonamura	–	28.6	27.6	40.0	76.9	54.1	59.5	61.5
Sepahijolla	28.6	–	50.0	35.3	46.2	33.3	41.7	20.7
Telliamura	27.6	50.0	–	54.5	18.18	44.4	44.4	26.1
Manu	40.0	35.3	54.5	–	17.6	31.6	31.6	41.7
Rajnagar	76.9	46.2	18.2	17.6	–	48.8	53.7	60.9
Udaipur	54.1	33.3	44.4	31.6	48.8	–	84.6	45.2
Amarpur	59.5	41.7	44.4	31.6	53.7	84.6	–	38.7
Jothanbari	61.5	20.7	26.1	41.7	60.9	45.2	38.7	–

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