OCCASIONAL PAPER NO 119

Records of the Zoological Survey of India

On a collection of fishes from river Gumati, Tripura, North East India.

R. P. Barman

Zoological Survey of India

ZOOLOGICAL SURVEY OF INDIA

OCCASIONAL PAPER No. 119

THE FISHES OF THE RIVER GUMTI, TRIPURA, NORTH-EASTERN INDIA.

By

R. P. BARMAN

Zoological Survey of India, Calcutta.

Edited by the Director, Zoological Survey of India

1988

Published : November, 1988

PRICE : Inland : Rs. 70.00
Foreign : £ 7·00 or $ 10·00

PRINTED AT THE BANI PRESS, 16, HEMENDRA SEN STREET, CALCUTTA-700 006,
PRODUCED BY THE PUBLICATION DIVISION AND PUBLISHED BY THE
DIRECTOR, ZOOLOGICAL SURVEY OF INDIA, CALCUTTA 700 020

RECORDS

OF THE

ZOOLOGICAL SURVEY OF INDIA

OCCASIONAL PAPER

No. 119 | 1988 | Pages 1—86

CONTENTS

THE FISHES OF THE RIVER GUMTI, TRIPURA, NORTH-EASTERN INDIA.

By

R. P. BARMAN

Zoological Survey of India, Calcutta

INTRODUCTION

The present study is based on a collection of 409 specimens collected from the river Gumti and its tributaries following through four subdivisions viz., Tirthmukh, Amarpur, Udaypur and Sonamura in the month of August, 1985 by a party of the Zoological Survey of India, Calcutta under my leadership. The geographical location of Tripura lying in the sub Himalayan region with its varying physio-geographical characteristics have contributed to the formation of diverse fish fauna. But adequate attention has not been yet paid so far to make a comprehensive survey of the fish resources of this state. Though some scattered works have been done on the fish fauna of this sub Himalayan range of Tripura in recent years. This region deserves more fish faunal survey for the exploration of many unexplorated localities of this state. What we know about the fishes of this region, we owe to the work of Nair, 1971 ; Anon, 1975 ; Datta, 1977 and Lipton, 1983-84. Lipton (1983-84) reported 93 species belonging to 9 orders (written 11 orders), 24 families (written 26 families) under 56 genera (written 55 genera) collected from various surveys during the period 1976-1981 from this state. Out of 93 species 8 species were recorded for the first time from Tripura. In that paper Lipton seems to have overlooked in placing *Batasio batasio* (Hamilton) among the members of the family Sisoridae in stead of the family Bagridae. The classical monumental work of Day (1878 and 1889) though even today remain the most valuable contribution on the fishes of the Indian sub-continent but unfortunately these works did not contain the fish fauna on this sub Himalayan range of Tripura. Therefore, an attempt was made to make a comprehensive survey of the fish faunal resources of this state. Being the main river of Tripura, Gumti and its tributaries were chosen to be surveyed first. A total number of 80 species comprising 57 genera, 25 families and 10 orders were identified and

recorded in this present paper. Out of the 80 species 12 species are being recorded here for the first time from Tripura in addition to the 1 new species have been discovered and described.

The arrangement of classification is followed here is that of Greenwood et al., (1966) and Jayaram (1981). In the specific synonymies, only original reference of the species with its type locality and Jayaram's reference (1981) given in the handbook of "Freshwater fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka" are written. Under each species common names of fishes and locality from where these fishes were collected are given.

BRIEF TOPOGRAPHICAL DESCRIPTION OF TRIPURA

Tripura, one of the north-eastern states of India is surrounded by mainly Bangladesh, Assam and Mizoram. Physiogeographically this state is situated in the eastern part of Indian Union lying between latitudes 22°56′ to 24°32′ N and longitude 91°12′ to 92°21′ E in the sub Himalayan region. 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. These ranges increase in height towards south from the plains of Sylhet (Bangladesh) and towards north from Chittagong (Bangladesh). All these ranges gain height from west to east in this state and passing almost parallel to one another in a northernly direction. Evergreen, semigreen, and moist deciduous forests are found in this state. Bamboo is of common occurrence throughout the state. The state Forest department has raised a secondary plantation of Sal and Teak in different localities of this state.

The drainage systems of Tripura Khowai, Dhalai, Manu, Juri 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 have connections with the Bay of Bengal 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. The river Gumti originating from the hill range, Longtarai passes through four subdivisions of the state, viz., Tirthmukh, Amarpur, Udaypur and Sonamura. This river enters into the territory of Bangladesh in the subdivision Sonamura. For the purpose of pisciculture various dams have been constructed on this river. Several reservoirs connections with this river have been made where a good quantity of fishes of different species are cultivated.

A short account of the collecting localities on the river Gumti are given below :

(i) *Jatanbari* : It is about 115 kms. away from the capital of this state, Agartala lying in the middle of Amarpur and Tirthmukh subdivision. This town is located in the south Tripura district and is connected to the capital by metallic road. Amarpur is situated in the western part of Tripura and is adjacent to the hilly Chittagong (Bangledesh). Gumti reservoir is located here in the river Gumti. Evergreen, semigreen and deciduous forests are scattered througout this locality.

(ii) *Udaypur* : It is the head quarters of the south Tripura district and is connected to the capital by metallic road. A lot of fishes were cellected from Maharani Chowmoni, a village near to the river Gumti. Bamboo is the chief plantation of this area.

(iii) *Sonamura* : It is about 45 kms. south-east of Udaypur. Metallic road connects this subdivision with the capital and other subdivisions. It is in western part of Tripura and adjacent to Comilla (Bangladesh). From this area river Gumti enters into the boundary of Bangladesh.

Systematic list of the fishes of the River Gumti

Order 1. ANGUILLIFORMES

Family 1. OPHICHTHIDAE

Genus 1. **Pisodonophis** Kaup

* 1. **Pisodonophis boro** (Hamilton) 11

Order II. CLUPEIFORMES

Family 2. CLUPEIDAE

Subfamily ALOSINAE

Genus 2. **Hilsa** Regan

2. **Hilsa ilisha** (Hamilton) 12

Genus 3. **Gudusia** Fowler

3. **Gudusia chapra** (Hamilton) 14

Order III. OSTEOGLOSSIFORMES

Family 3. NOTOPTERIDAE

Genus 4. **Notopterus** Lacépède

4. **Notopterus notopterus** (Pallas) 15

---

* New Record

** New species

* New record

* New record

* New record

* New record

SYSTEMATIC ACCOUNT

Key to the Families

1.	Body elongated, more or less cylindrical, eel-like long, drawn out. ...	...	2
	Body not elongated, fusiform, compressed, not eel-like. ...	...	4
2.	Pelvic girdle and pelvic fins absent. ...		Mastacembelidae
	Pelvic girdle and pelvic fins present. ...	...	3
3.	Gill openings wide, membranes of two sides connected beneath isthmus. Caudal fin present. Dorsal and anal fins far away from caudal fin. Scales moderately large. ...		Channidae
	Gill openings small, slit-like or round. Caudal fin absent. Dorsal and anal fins continuous around the caudal externally or discontinuous. Scales absent. ...		Ophichthidae
4.	Bones of upper and lower jaw modified in the form of a beak having a cutting edge and covered with a layer of ivory-substance. Body short, rounded. ...		Tetraodontidae
	Bones of upper and lower jaw normal without any modification. Body fusiform. ...	...	5
5.	Body with scales or rarely without scales but never with osseous plate. Pectoral fin simple without any spine. ...	...	6
	Body without scales, either smooth or covered with osseous plates or with scattered tubercles. Pectoral fins with outer ray modified into osseous spine or thick ray. ...	...	18
6.	Abdominal edge keeled with double or single serration. ...	...	7
	Abdominal edge smooth, rounded. ...	...	8
7.	Lateral line present. Abdomen with double serrations. ...		Notopteridae
	Lateral line absent. Abdomen with single serration. ...		Clupeidae
8.	Pelvic fins inserted in the abdominal region and without any spines. Dorsal and anal fins without spines. Mostly with a single dorsal fin. ...	...	9
	Pelvic fins inserted in the thoracic region and with spines. Dorsal and anal fins with spines. Dorsal fin mostly with two parts, continuous or separate, one spiny, another with rays. ...	...	13

9.	Scales on head and body. Teeth present on jaws. ...	...	10
	No scales on head. No teeth on jaws. ...	...	11
10.	Both jaws produced into a beak. Lateral line present. ...		Belonidae
	Jaws not produced. Lateral line absent. ...		Cyprinodontidae
11.	Paired fins horizontally inserted. Two or more anterior rays of pectoral fins simple. ...		Psilorhynchidae
	Paired fins laterally inserted. Not more than one anterior ray of pectoral fins simple or may be all branched. ...	...	12
12.	Two to four or no barbels. ...		Cyprinidae
	Six to eight barbels. ...		Cobitidae
13.	Maxillary extending beyond the orbit. ...		Nandidae
	Maxillary not extending beyond the orbit. ...	...	14
14.	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. ...	...	15
15.	An accessory respiratory organ in the form of a cavity above the third or upper portion of the first branchial arch present. ...	...	16
	No such accessory respiratory organ present. ...	...	17
16.	First ray of pelvic fin produced into a long filament. ...		Belontidae
	First ray of pelvic fin not produced into a long filament. ...		Anabantidae
17.	Spinous and soft portion of dorsal fin well separated. ...		Mugilidae
	Spinous and soft portion of dorsal fin continuous. ...		Chandidae
18.	Adipose dorsal fin absent. ...	...	19
	Adipose dorsal fin present as a smooth, short or long, high or low fin. ...	...	21
19.	Nasal barbels absent. No accessory respiratory organs present. ...		Siluridae
	Nasal barbels present. Accessory respiratory organs present on gills or in the body cavity....	...	20

20.	Dorsal fin long with 23 to 76 rays. Accessory respiratory organs on gills present. ...	*Clariidae*
	Dorsal fin short, with 6 or 7 rays. Accessory respiratory organs as a tubular air-sac in the body cavity. ...	Heteropneustidae
21.	Nostrils close together with very little interspace between the two.	22
	Nostrils wide apart, separated by some interspace.	23
22.	Lateral line entirely absent. Gill membranes free from isthmus. ...	Amblycipitidae
	Lateral line always present. Gill membranes united with isthmus (exception *Bagrus* Hamilton). ...	Sisoridae
23.	Dorsal spine absent (exception *Ailia* Swainson, Schilbeidae where dorsal fin itself is absent) ...	Olyridae
	Dorsal spine present.	24
24.	Anal fin short with less than 20 rays (8-16) ...	Bagridae
	Anal fin long with more than 20 rays (40-46).	Schilbeidae

SYSTEMATIC ACCOUNT OF THE SPECIES

Class PISCES

Subclass TELEOSTOMI

Order 1 ANGUILLIFORMES

Family 1 OPHICHTHIDAE

Genus 1 **Pisodonophis** Kaup

1. **Pisodonophis boro** (Hamilton)

(Fig. 1)

1822. *Ophisurus boro* Hamilton, *Fish. Ganges,* : 20, pl. 5, fig. 5 (type-locality : estuaries near Calcutta).

1981. *Pisodonophis boro,* Jayaram, *Handbk. Freshw. Fish. India,* 32, 33 fig. 21 (distribution and key to species).

Materials : 2 exs., 162-182 mm. TL. ; Udaypur, South Tripura ; 14.8.85.

Geographical distribution : India : Ganga and its tributaries. Bangladesh, Pakistan, Burma, South Africa, Malaya, Thailand, Formosa, China, Philippines and Melanesia.

Size : This fish attains 914mm. (3 feet) in TL.

Fig. 1. Lateral view of *Pisodonophis boro* (Hamilton).

Remarks : This species ascends tidal rivers. It is being recorded here for the first time from Tripura. The presence of this fish in Tripura may be explained that this species may have migrated from the Bay of Bengal of Bangladesh through the tidal river Fenny which is located in the south-east of Tripura.

Order II CLUPEIFORMES

Family 2 CLUPEIDAE

Subfamily ALOSINAE

Key to genera

Scales larges 37-47 in the lateral series.	...	*Hilsa* Regan
Scales very small 80-120 in lateral series.	...	*Gudusia* Fowler

Genus 2 **Hilsa** Regan

2. **Hilsa ilisha** (Hamilton)

(Fig. 2)

1822. *Clupanodon ilisha* Hamilton, *Fish. Ganges*, : 243, 382, pl. 19. fig. 73 (type-locality : Ganga estuaries).

1981. *Hilsa ilisha*, Jayaram, *Handbk. Freshw. Fish. India.* : 39, 40 (distribution and key to species).

Common name : *Ilish.*

Materials : (i) 2 exs., 185-240mm. TL. ; Udaypur, South Tripura ; 16.8.85. (ii) 1 ex., 160mm. TL. ; Sonamura, West Tripura ; 17.8.85.

Geographical distribution : India : Ganga, Yamuna, Narmada, Tapti, Krishna, Godavari, Cauvery, Pennar rivers. Pakistan. Bangladesh. Burma, Sri Lanka, Iraq. Persian Gulf.

Size : This fish grows to 600mm. (2 feet) in SL.

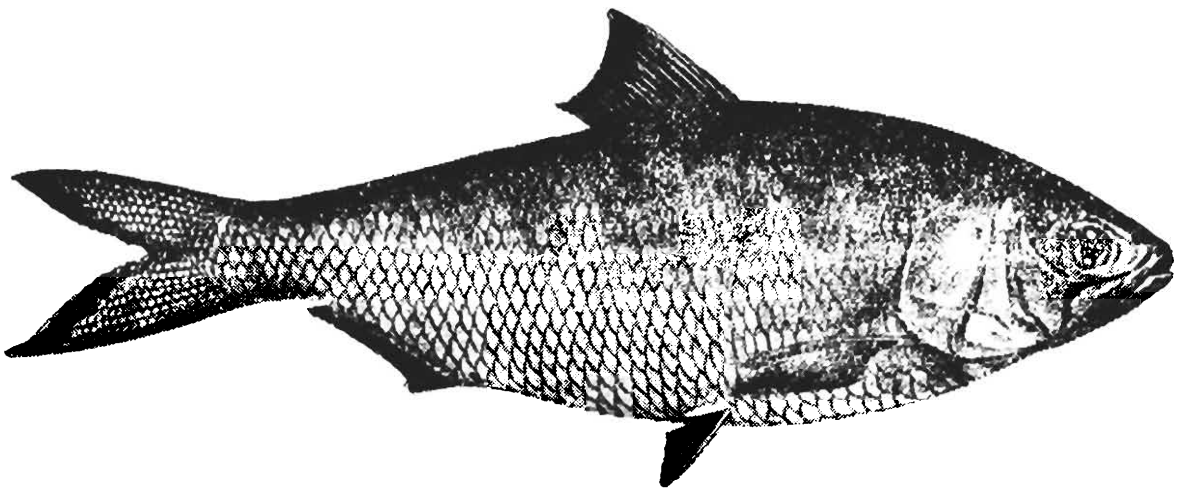

Fig. 2. Lateral view of *Hilsa ilisha* (Hamilton).

Remarks : Marine, pelagic and schooling in coastal waters, euryhaline, anadromous, ascending rivers far as much 1200kms, but generally almost 50 to 100 kms. It breeds in the rivers, in some cases far up (about 400 kms. up the Mahanadi river systems and even to Agra and Delhi or over 1000 kms. up the Ganges) but elsewhere only to about 50 kms. or less (younger fishes may breed in the tidal zone of rivers). In some rivers the migration is restricted by barrages. There are some evidences that *Hilsa* far up the Ganges and other large rivers, although migrating upstream to spawn, are permanent populations that do not descend to the sea. The main breeding season is during the south-west monsson, with a shorter season from January to February or March.

This is the most important of the Indo-Pacific clupeoid fish of considerable fisheries importance all over India particularly to the Bengal. The esteem in which the hilsa is held is reflected in Sanskrit and Bengali literature where this fish is described as *matsyaraja* (king of fishes) and is said that *Illisah jitapiyusah* (hilsa surpasses nectar)- Details of breeding of this fish was worked out by Pillay (1964), Dutt (1966), Islam and Talbot (1968), Mathur (1967). Malhotra et al (1967) worked out on its artificial propagation. Ghosh (1967) and Gopalakrishnan (1969) gave a considerable information on its fisheries aspect.

Genus 3 **Gudusia** Fowler

3. **Gudusia chapra** (Hamilton)

(Fig. 3)

1822. *Clupanodon chapra* Hamilton, *Fish. Ganges*, : 248, 383 (type-locality : upper parts of the Ganges).

1981. *Gudusia chapra*, Jayaram, *Handbk. Freshw. Fish. India*, 40, fig. 25 (distribution and key to species).

Common name : *Koira.*

Materials : (i) 2 exs., 58-63mm. SL. ; Udaypaur, South Tripura ; 14.8.85 and 16.8.85.

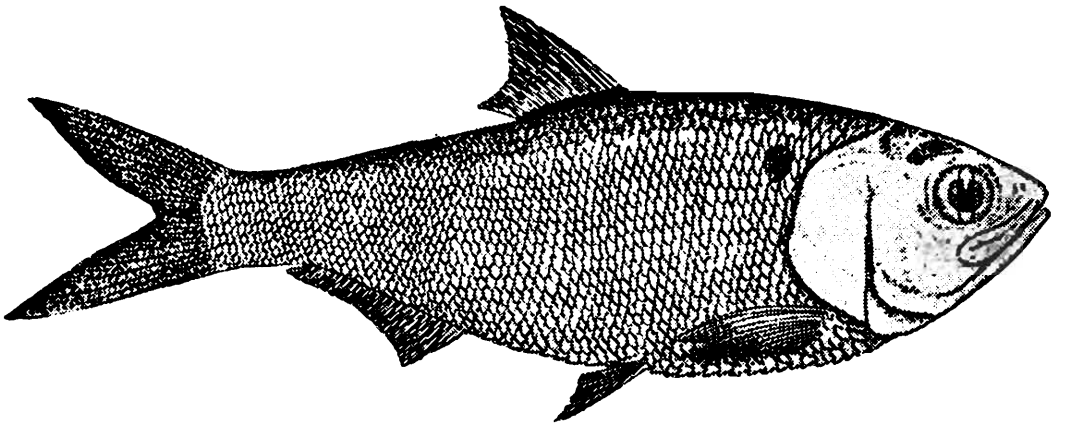

Fig. 3. Lateral view of *Gudusia chapra* (Hamilton).

(ii) 2 exs., 45-54mm. SL. ; Sonamura, West Tripura ; 17.8.85.

Geographical distribution : 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 grows to 203mm. (8 inches) in SL.

Remarks : Generally a shoulder dark spot is present in this species which is lacking in these specimens collected from Tripura. Economically less important fish mostly eaten by the poorer people. Notes on the biology of this species were given by Chaudhuri (1912) and Srivastava (1968).

Order III OSTEOGLOSSIFORMES

Family 3 NOTOPTERIDAE

Genus 4 **Notopterus** Lacépède

4. **Notopterus notopterus** (Pallas)

(Fig. 4)

1769. *Gymnotus notopterus* Pallas, *Specil. zool.*, **7** : 40, pl. 6, fig. 2 (type-locality : ? Indian Ocean).

1981. *Notopterus notopterus*, Jayaram, *Handbk. Freshw. Fish.* India, : 53 (distribu-(tion and key to species).

Common name : *Phouli.*

Materials : (i) 1 ex., 68mm. SL. ; Amarpur, South Tripura ; 8.8.85.

(ii) 2 exs., 63-70mm. SL. ; Udaypur, South Tripura ; 14.8.85.

Geographical distribution : India, Pakistan, Nepal, Bangladesh, Burma, Thailand, Malaya and Indonesia.

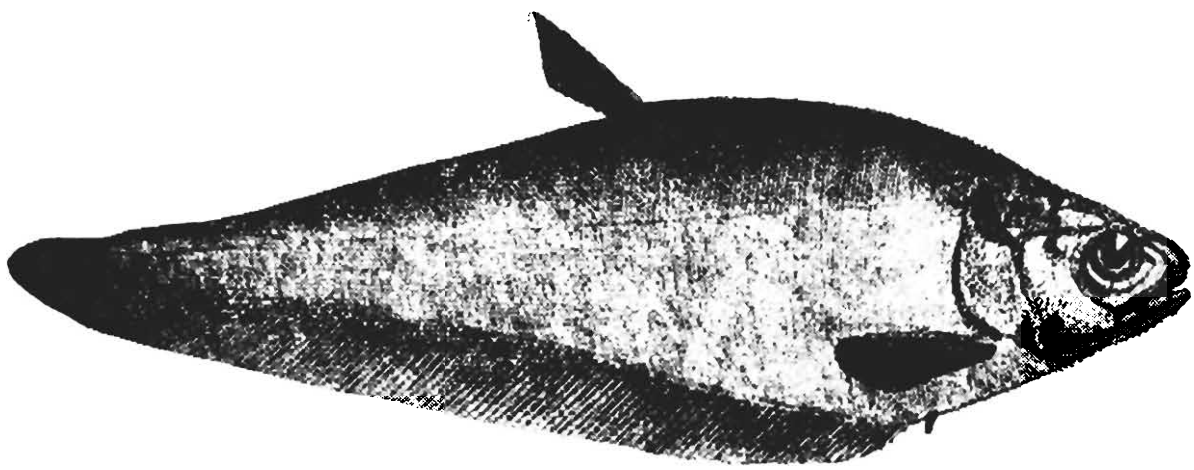

Fig. 4. Lateral view of *Notopterus notopterus* (Pallas).

Size : It grows to 609mm. (2 feet) or more in TL.

Remarks : Usually adult specimens are uniformly grey or bronze or copper coloured. Juveniles may have some vertical bars on the lateral sides of the body.

This is a good tasty fish specially to the Bengal though it contains numerous small bones. It is in demand as food fish.

Order IV CYPRINIFORMES

Family 4 CYPRINIDAE

Key to the subfamilies

1. Abdomen or part of abdomen compressed into a sharp keel-like edge. No barbels. ... Cultrinae

   Abdomen rounded or flat, not compressed. Barbels one or two pairs present or absent. 2

2. Upper lip continuous with the skin of snout. Mouth conspicuously inferior. Lower lip with or without an adhesive disk. ... Garrinae

Upper lip separated from the skin of rostrum by a deep groove. Mouth anterior, subinferior or inferior. Lower lip without an adhesive disk. 3

3. A symphysial knob present in lower jaw (except *Esomus* Swainson). Dorsal fin with 6-17 branched rays without any osseous simple ray. Lateral line when present complete with an abrupt downward curvature anteriorly running in lower half of caudal peduncle. ... Rasborinae

No symphysial knob in lower jaw (except *Cirrhinus* Oken). Dorsal fin with 7 to 30 branched rays with or without an osseous simple ray. Lateral line complete or incomplete running along middle of caudal peduncle. ... Cyprininae

Subfamily (i) CULTRINAE

Key to the genera

A knob at the symphysis of the lower jaw absent. Predorsal scales do not extend to the inter-orbital space. ... *Chela*

A knob at the symphysis of the lower jaw present. Predorsal scales extend to the inter-orbital space. ... *Salmostoma*

Genus 5 **Chela** Hamilton

5. **Chela (Chela) laubuca** Hamilton

(Fig. 5)

1822. *Cyprinus laubuca* Hamilton, *Fish. Ganges*, : 260, 384 (type-locality : ponds in northern parts of Bengal).

1981. *Chela (Chela) laubuca*, Jayaram, *Handbk. Freshw. Fish. India*, : 72, 73, fig. 40 (distribution and key to species).

Common name : *Chapkhowari*.

Materials : 10 exs., 37-60mm. SL. ; Udaypur, South Tripura ; 15.8.85 and 16.8.85.

Geographical distribution : India : Assam, Tripura, Orissa, West Bengal, Madhya Pradesh and Andhra Pradesh. Pakistan. Nepal. Bangladesh. Burma, Sri Lanka, Sumatra and Thailand.

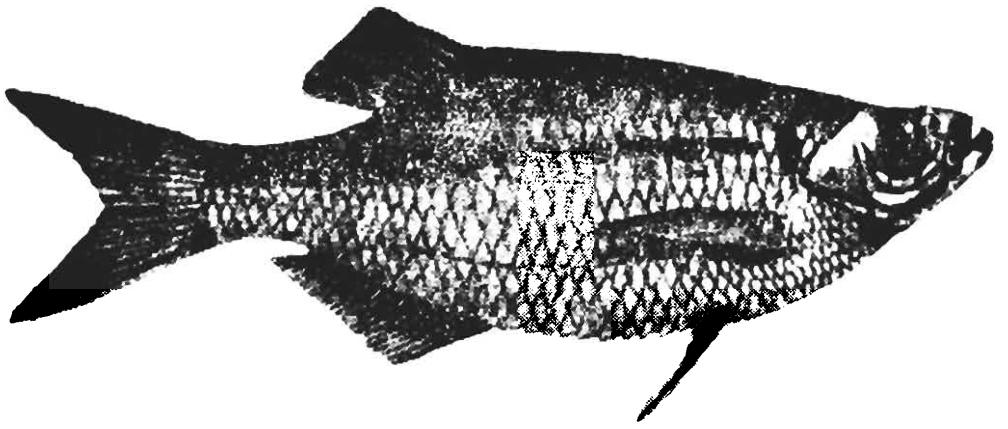

Fig. 5. Lateral view of *Chela (Chela) laubuca* (Hamilton).

Size : It attains 89 mm. ($3\frac{1}{2}$ inches) in TL.

Remarks : This is a larvicidal fish generally found in small streams.

Genus 6 **Salmostoma** Swainson

Key to the species

Number of scales between lateral line and base of pelvic fin 3 or 4. Gill rakers from 24 to 29...	*S. clupeoides*
Number of scales between lateral line and base of pelvic fin from 4 to 6. Gill rakers from 17 to 21. ...	*S. bacaila*

6. **Salmostoma bacaila** (Hamilton)

(Fig. 6)

1822. *Cyprinus bacaila* Hamilton, *Fish. Ganges*, : 265, 384, pl. 8, fig. 76 (type-locality freshwater rivers of all the Gangetic Provinces).

1981. *Salmostoma bacaila*, Jayaram, *Handbk. Freshw. Fish. India*, : 74, 75 (distribution and key to species).

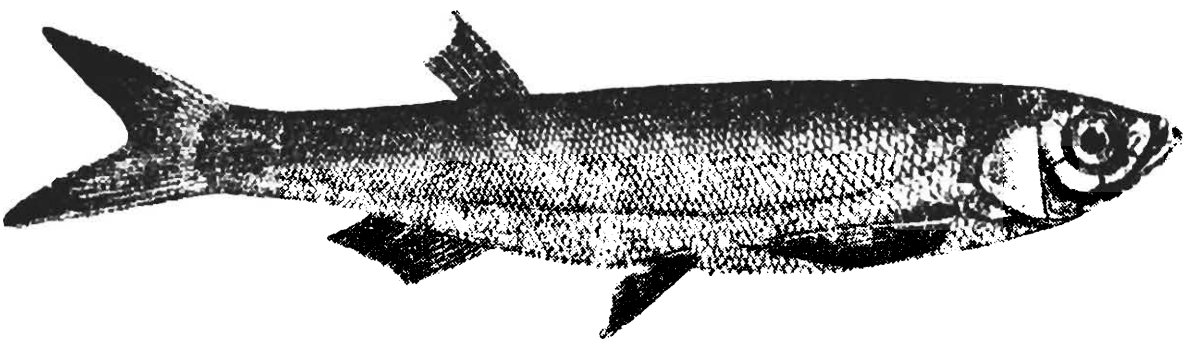

Fig. 6. Lateral view of *Salmostoma bacaila* (Hamilton).

Common name : *Chela.*

Materials : (i) 7 exs., 60-97mm. SL. ; Udaypur, South Tripura ; 14.8.85 to 16.8.85.

(ii) 3 exs., 58-68mm. SL. ; Sonamura, West Tripura ; 17.8.85.

Geographical distribution : India : Ganga, Brahmaputra and Mahanadi river systems. Pakistan. Nepal. Bangladesh.

Size : It attains at least 177mm. (7 inches) in TL.

Remarks : This species resembles *S. clupeoides* from which it is separated chiefly by the number of lateral line scales. Lateral line scales of this species varies from 86 to 110 vs. 80 to 93 in *S. clupeoides.*

7. **Salmostoma clupeoides** (Bloch)

1795. *Cyprinus clupeoides* Bloch, *Naturg. Ausland. Fische*, **12** : 49, pl. 408, fig. 2 (type-locality : Tranquebar, Tamil Nadu).

1981. *Salmostoma clupeoides*, Jayaram, *Handbk. Freshw. Fish. India*, : 74, 75 (distribution and key to species).

Common name : *Chela.*

Materials : (i) 1 ex., 90mm, SL. ; Amarpur, South Tripura ; 10.8.85.

(ii) 4 exs., 75-130mm. Sl. ; Sonamura, West Tripura ; 17.8.85.

Geographical distribution : India : Narmada, Tapti, Krishna, Godavari and Cauvery river systems. Burma.

Size : It grows to 152 mm. (6 inches) in TL.

Remarks : This species is being recorded here for the first time from Tripura. It is a very good eating fish. Sen (1985) recorded this species from Assam.

Subfamily (ii) RASBORINAE

Key to the genera

1. Maxillary barbels very long extending up to anal fin. No symphysial knob on lower jaw.... *Esomus*

   Maxillary barbels short or absent. A symphysial knob present on lower jaw. 2

2. Lower jaw extending below up to middle of the orbit. Body with vertical bands. ... *Barilius*

   Lower jaw not extending beyond anterior margin of the orbit. 3

3.	Upper lip absent. Lateral line incomplete. ...	*Amblypharyngodon*
	Upper lip present. Lateral line complete.	4
4.	Anal fin with 7 or 8 rays. Lower jaw with three internal prominences—one central in position and other two on each side of jaw. ...	*Rasbora*
	Anal fin with 13—20 rays. Lower jaw only with one prominence which is central in position. ...	*Danio*

Genus 7 **Esomus** Swainson

8. **Esomus danricus** (Hamilton)

(Fig. 7)

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

1981. *Esomus danricus*, Jayaram, *Handbk. Freshw. Fish. India*, : 78 (distribution and key to species).

Common name : Nil.

Materials : (i) 6 exs., 35-45mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

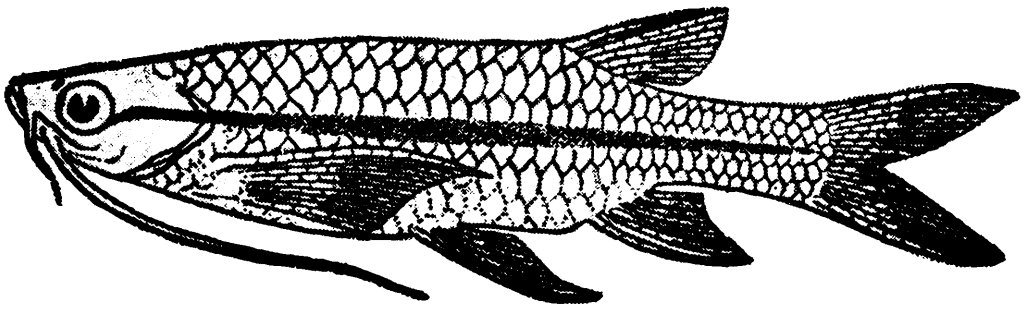

Fig. 7. Lateral view of *Esomus danricus* (Hamilton).

(ii) 7 exs., 33-42mm. SL. ; Udaypur, South Tripura ; 16.8.85.

Geographical distribution : India : Throughout North and North-eastern India, West Bengal, Bihar, Madhya Pradesh, Orissa, Tamil Nadu, Andhra Pradesh, Gujarat. Pakistan. Nepal. Bangladesh. Burma. Sri Lanka. Malaya and Thailand.

Size : It grows at least 127mm. (5 inches) in TL.

Remarks : Lateral line of this species extending up to 4 or 5 anterior scales. It is a larvicidal fish which is popularly called "Flying Barb". I have recorded this species from Mizoram (Barman, in press). Its economic importance is less because of its small size.

Genus 8 **Danio** Hamilton

Key to species

1. A preorbital spinous process on the anterior rim of the orbit present. ... *D. aequipinnatus*

   No preorbital spinous process on the anterior rim of the orbit. 2

2. Lateral line scales 45 to 52. Dorsal fin rays 18 to 22. Barbels absent or very short. ... *D. devario*

— Lateral line scales 36 to 42. Dorsal fin rays 11 to 14. Barbels well developed, both pairs much longer than the orbit. ... *D. dangila*

9. **Danio aequipinnatus** (McClelland)

(Fig. 8)

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

1981. *Danio aequipinnatus* Jayaram, *Handbk. Freshw. Fish. India*, : 79-81, fig. 42 (distribution and key to species).

Common name : *Chebli.*

Materials : 6 exs., 44-60mm. SL. ; Amarpur, South Tripura ; 8.8.1985.

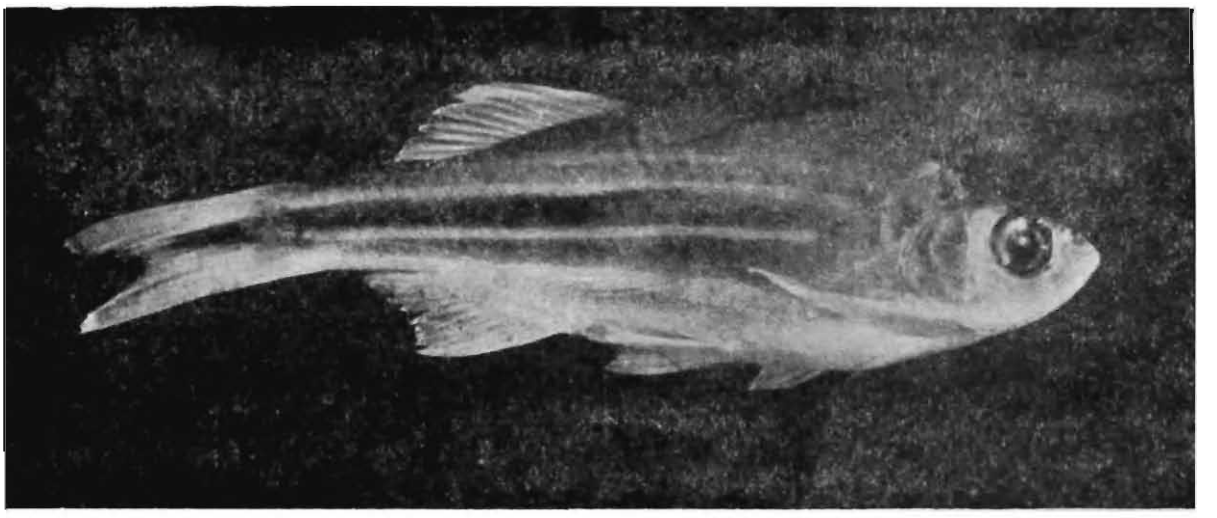

Fig. 8. Lateral view of *Danio aequipinnatus* (McClelland).

Geographical Distribution ; Throughout India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, Thailand and China.

Size : It attains 152 mm. (6 inches) in TL.

Remarks : It is a highly variable species with a wide range of distribution. Three species of the genus *Danio* viz. *D. strigillifer* Myers, *D. malabaricus* Jerdon and *D. browni* Regan were synonymised with this species by Mukerji (1934) and Hora and Nair (1941).

This species is provided with a backwardly directed spinous process on the anterior rim of the orbit. The preorbital spinous structure was first pointed out by Vinciguerra (1889-90) and this was later confirmed by Myers (in Herre and Myers, 1937) in this species. The preorbital structure was also pointed out by me (Barman, 1984 and 1985) in this species. This species is usually found in clear waters and hill-streams up to an elevation of about 300 meters.

10. **Danio dangila** (Hamilton)

(Fig. 9)

1822. *Cyprinus dangila* Hamilton, *Fish. Ganges*, : 321, 309 (type-locality : mountain streams of Monghyr, Bihar).

1981. *Danio dangila*, Jayaram, *Handbk. Freshw. Fish. India*, : 80, 81 (distribution and key to species).

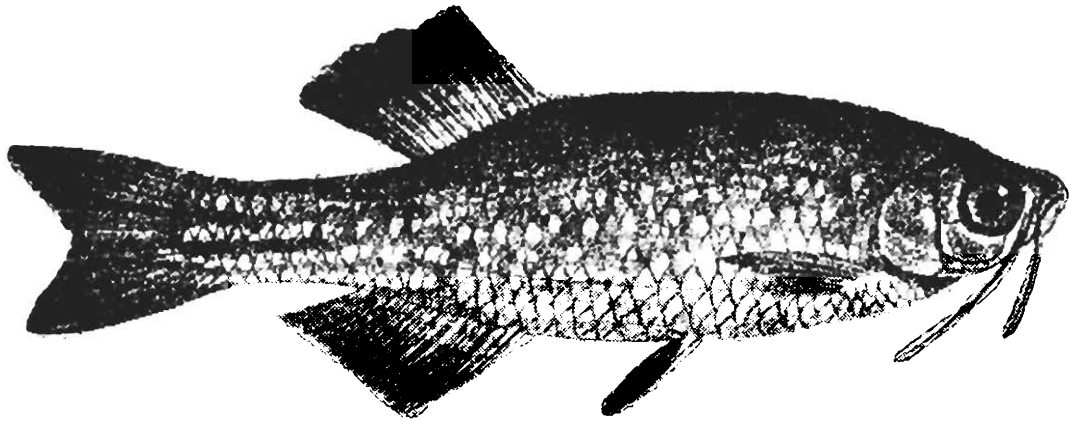

Fig. 9. Lateral view of *Danio dangila* (Hamilton).

Common name : *Nipati.*

Materials : 2 exs., 30-53mm. SL., Amarpur, South Tripura ; 8.8.85.

Geographical distribution : India : Assam, Meghalaya, Arunachal Pradesh, Nagaland, Manipur, West Bengal, Bihar, Madhya Pradesh and Uttar Pradesh. Bangladesh. Nepal and Burma.

Size : It attains 83mm. (3.2 inches) in SL.

Remarks : *D. dangila* is the only species among the members of the genus *Danio* Hamilton, having both pairs of barbels well developed, much longer than the orbit. It can also be easily identified by its conspicuous lateral colour bands which breaks up anteriorly to form a mottled pattern.

11. **Danio devario** (Hamilton)

(Fig. 10)

1822. *Cyprinus devario* Hamilton, *Fish. Ganges,* : 341, 393, pl. 6, fig, 94 (type-locality : rivers and ponds of Bengal).

1981. *Danio devario,* Jayaram, *Handbk. Freshw. Fish. India,* : 80 (distribution and key to species).

Common name : *Nipati.*

Material : 1 ex., 51 mm. SL. ; Udaypur, South Tripura ; 14.8.85.

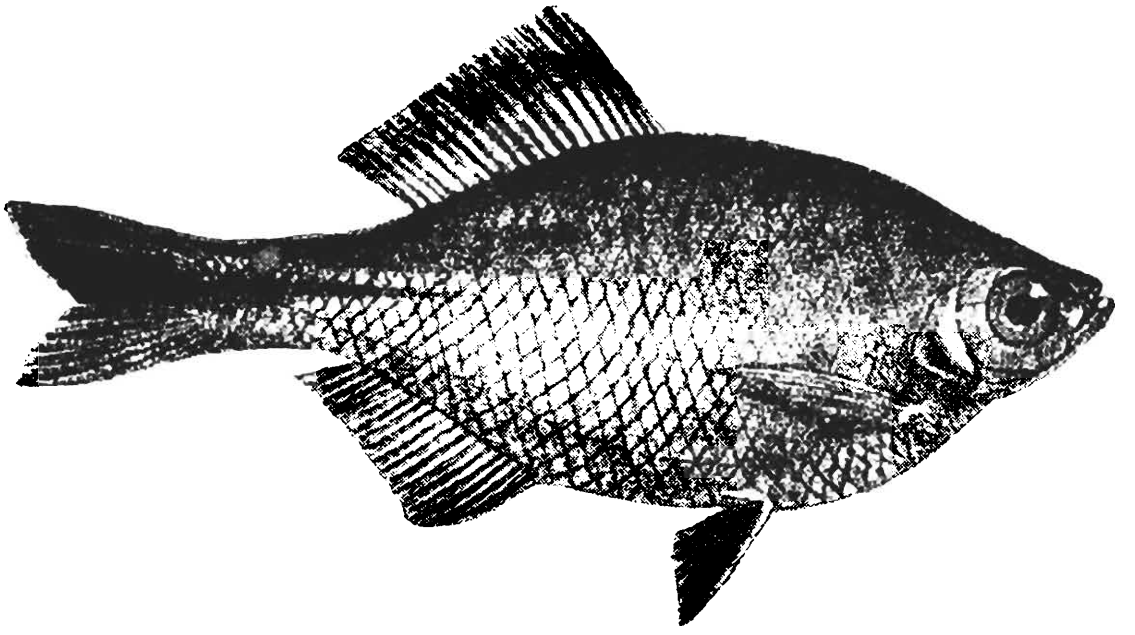

Fig. 10. Lateral view of *Danio devario* (Hamilton).

Geographical distribution : India : North India, Krishna, Godavari and Cauvery river systems, Deccan. Bangladesh. Nepal and Pakistan.

Size : It attains 102 mm. (4 inches) in TL.

Remarks : Hora and Mukerji (1934) gave a synopsis of the Indian and Burmese species then know to *Danio* and *Brachydanio.* In this paper they gave an erroneous scale counts in the lateral line of this species. It may be pointed out that their lateral line scale counts of 33-38 of this species seems to be an error. Jayaram (1981) also gave lateral line scale counts of 35-38 in this species in the key to the species. I have already pointed out in my revisionary studies of this genus *Danio* Hamilton that lateral line scale connts varies from 45 to 52 in this species (Barman, 1984).

The only specimen of this species collected from Tripura is provided with a lateral line covering with 48 scales.

Genus 9 **Rasbora** Bleeker

12. **Rasbora daniconius daniconius** (Hamilton)

(Fig. 11)

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

1981. *Rasbora daniconius daniconius,* Jayaram, *Handbk. Freshw. Fish. India,* : 84, 85, fig. 43 (distribution and key to species).

Common Name : *Darkina.*

Materials : (i) 5 exs., 51-75 mm. SL. ; Amarpur, South Tripura ; 8.8.85.

(ii) 10 exs., 46-58 mm. SL. ; Sonamura, West Tripura ; 17.8.85.

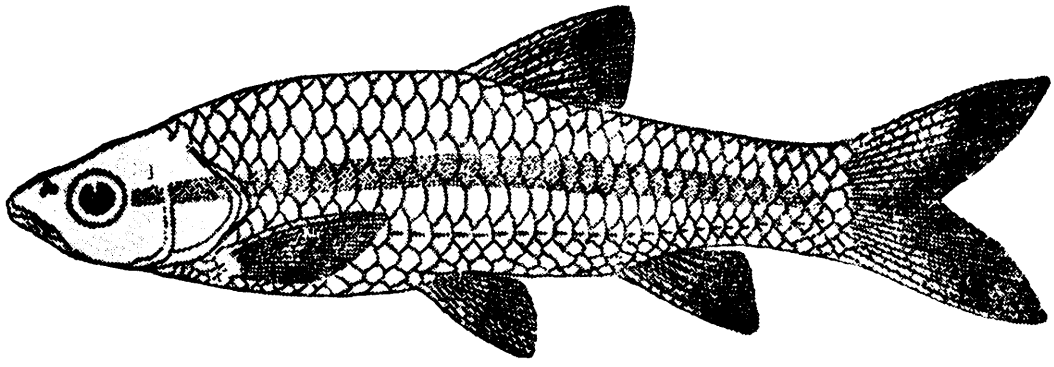

Fig. 11. Lateral view of *Rasbora doniconius daniconius* (Hamilton).

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma and Malaya.

Size : It attains about 203 mm. (8 inches) in TL.

Remarks : This is a very common species occurring in the rivers and stagnant waters throughout Tripura.

Genus 10 **Amblypharyngodon** Bleeker

13. **Amblypharyngodon mola** (Hamilton)

(Fig. 12)

1822. *Cyprinus mola* Hamilton, *Fish. Ganges,* : 334, 392, pl. 38, fig. 92 (type-locality : ponds and freshwater rivers in every part of the Gangetic Provinces).

1981. *Amblypharyngodon mola,* Jayaram, *Handbk. Freshw. Fish. India,* : 86 (distribution and key to species).

Common Name : *Mowka.*

Materials : (i) 25 exs., 43-60 mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

(ii) 5 exs., 36-50 mm. SL. ; Udaypur, South Tripura ; 15.8.85.

(iii) 6 exs., 46-66 mm. SL. ; Sonamura, West Tripura ; 17.8.85.

Geographical distribution : India : Throughout India except Malabar coast. Nepal. Bangladesh. Burma. Pakistan.

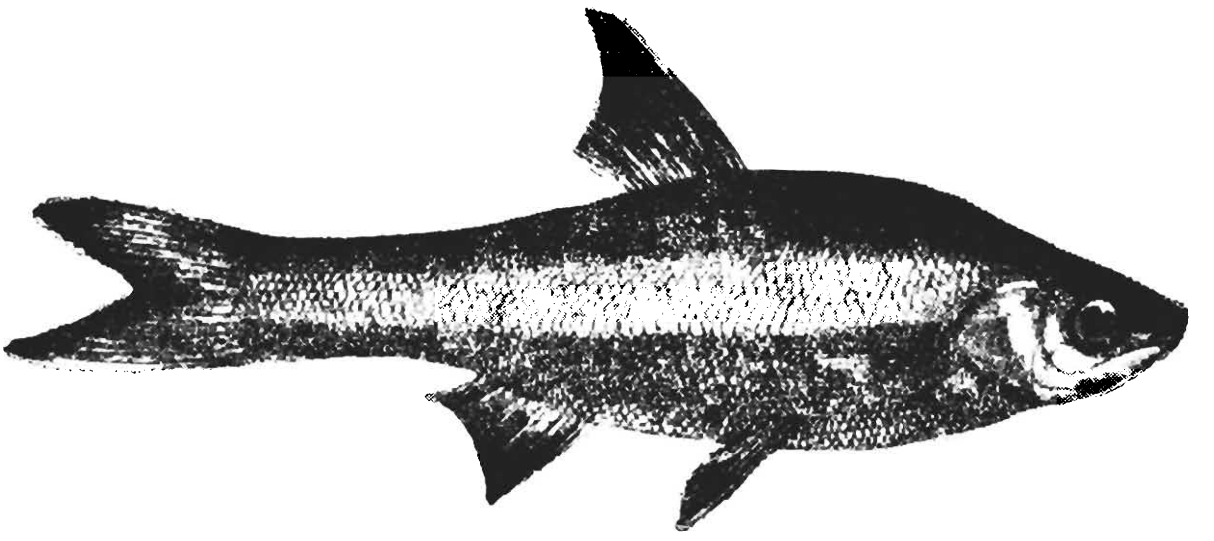

Fig. 12. Lateral view of *Amblypharyngodon mola* (Hamilton).

Size : It attains 75 mm. ($2\frac{1}{2}$ inches) in TL.

Remarks : This species is a common fish found in swampy paddy fields and ponds in Tripura. Lateral line of these specimens of Tripura pierces up to 7 or 8 anterior scales. Anal fin rays count show an increased number 9-10 (iii, 6-7) vs. normal 7 (ii, 5).

Genus 11 **Barilius** Hamilton

Key to species

1.	Lateral line scales 60-75.	2
	Lateral line scales 34-42.	3
2.	Body with 12 vertical bars. Lateral line scales 60-70. Two pairs of well developed barbels, either equal to or longer than the orbit....	*B. shacra*
	Body with two rows of spots. Lateral line scales 70-75. Two pairs of very short barbels....	*B. tileo*

3.	Body depth 3.32-3.68 and head length 3.68-3.90 in standard length. Body with 9-11 lateral vertical bands. ...	*B. barna*
	Body depth 4.33-4.58 and head length 4.54-4.76 in standard length. Body with a light darkish longitudinal band extending from behind the head to the base of caudal fin. ...	*B. nelsoni*

14. **Barilius barna** (Hamilton)

(Fig. 13)

1822. *Cyprinus barna* Hamilton, *Fish. Ganges*, : 268, 384 (type-locality : Yamuna and Brahmaputra).

1981. *Barilius barna*, Jayaram, *Handbk. Freshw. Fish. India*, : 88, 90 (distribution and key to species).

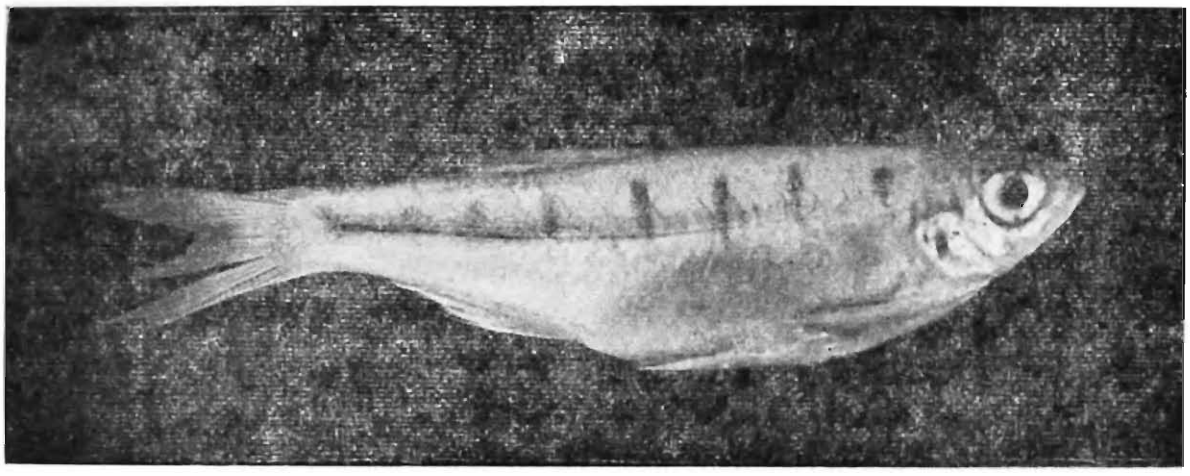

Fig. 13. Lateral view of *Barilius barna* (Hamilton).

Common name : *Joia*, *Bhola* and *Ghal*.

Materials : 10 exs., 40-55mm. SL. ; Udaypur, South Tripura ; 14.8.85.

Geographical distribution : India : Ganga, Brahmaputra and Mahanadi river systems. Bangladesh. Nepal and Burma.

Size : Largest recorded specimen 125 mm. (5 inches) in TL.

Remarks : Day (1878) recorded this species without barbels. The present study shows that this species is provided with both pairs of barbels although these are very short.

15. **Barilius nelsoni** Barman

(Fig. 14)

Barilius nelsoni Barman, *J. Bombay nat. Hist. Soc.*, : (in press) (type-locality : Gumti river, Udaypur, South Tripura district, North-eastern India).

Common name : Nil.

Materials : 9 exs., 42-62mm. SL. ; Udaypur, South Tripura ; 15.8.85.

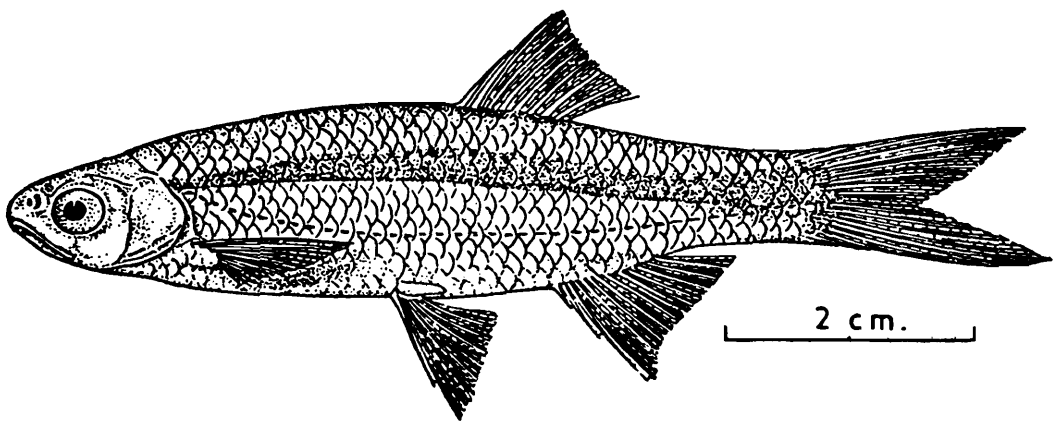

Fig. 14. Lateral view of *Barilius nelsoni* Barman.

Geographical distribution : India : Tripura.

Size : Largest recorded specimen 62 mm. (2½ inches) in SL.

Remarks : Reference may be made to Barman (in Press) for a detailed description of this species which is closely related to *Barilius evezardi* Day and *Barilius radiolatus* Günther.

16. **Barilius shacra** (Hamilton)

(Fig. 15)

1822. *Cyprinus shacra* Hamilton, *Fish. Ganges*, : 271, 385 (type-locality : Kosi river).

1981. *Barilius shacra*, Jayaram, *Handbk. Freshw. Fish. India*, : 89 (distribution and key to species).

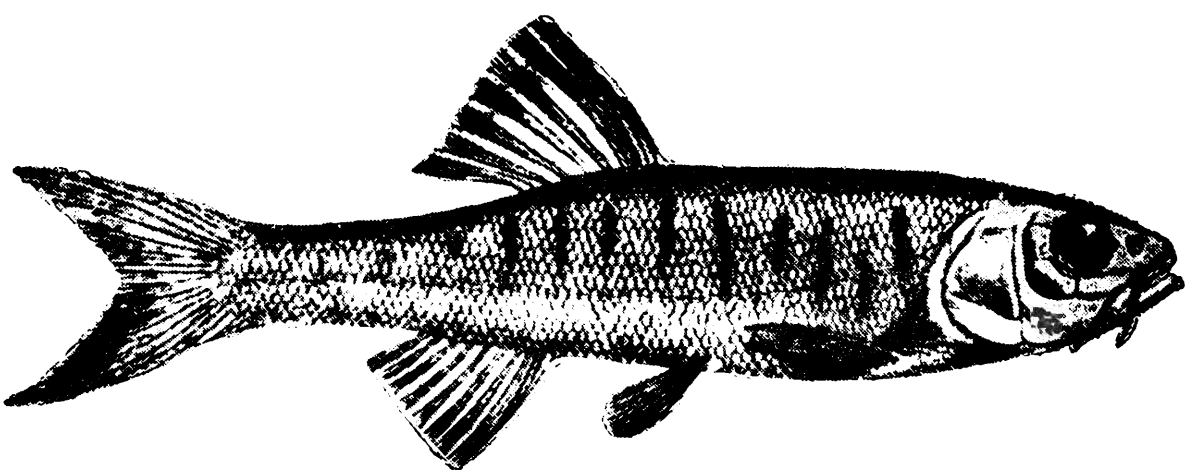

Fig. 15. Lateral view of *Barilius shacra* (Hamilton).

Common name : Koksha.

Material : No specimen obtained by me. This species was recorded by Lipton (1983-84).

Geographical distribution : India : Ganga, Yamuna, Brahmaputra river systems. Pakistan. Nepal. Bangladesh.

Size : Largest recorded specimen 125mm. (5 inches) in TL.

17. **Barilius tileo** (Hamilton)

(Fig. 16)

1822. *Cyprinus tileo* Hamilton, *Fish. Ganges*, : 276, 385 (type-locality : Kosi river).

1981. *Barilus tileo*, Jayaram, *Handbk. Freshw. Fish. India*, : 89, 90 (distribution and key to species).

Common name : *Boola.*

Materials : 3 exs., 70-95 mm. SL. ; Amarpur, South Tripura ; 8.8.85.

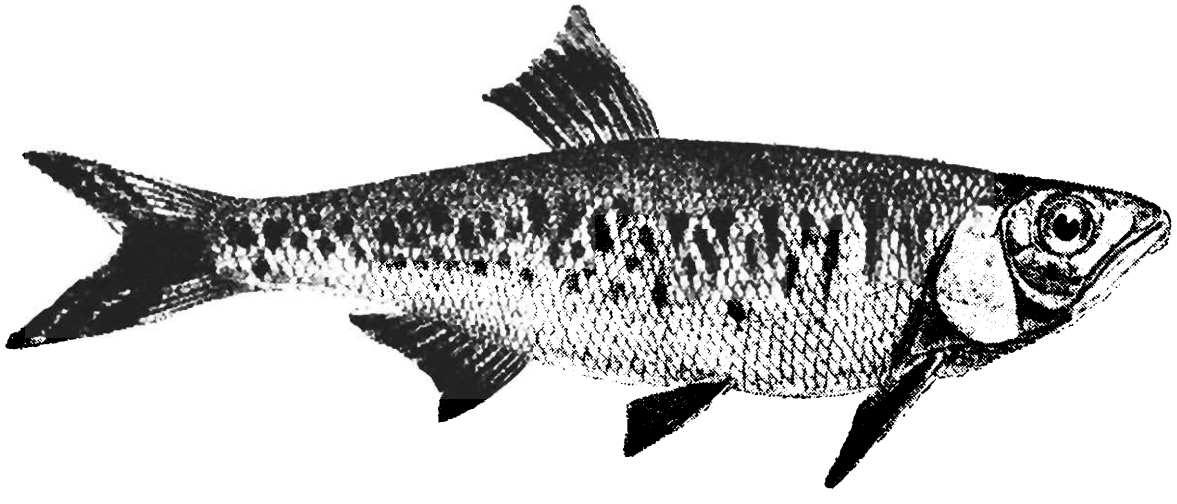

Fig. 16. Lateral view of *Barilius tileo* (Hamilton).

Geographical distribution : India : Assam, Tripura, West Bengal. Pakistan. Nepal. Bangladesh.

Size : It attains 152mm. (6 inches) in TL.

Remarks : These specimens of this species from Tripura show a marked increased in the number of dorsal and anal fin rays count. Dorsal fin rays 12 (iii, 9) vs. normal 9 (ii, 7) and anal fin rays 15 (iii, 12) vs. normal 13 (iii, 10). Number of predorsal scales less 25 vs. normal 30. Both anterior and posterior pairs of barbels present.

Subfamily (iii) CYPRININAE

Key to the genera

1. Anal fin with anterior rays osseous, third spine serrated. ... *Cyprinus*
   Anal fin with anterior rays not osseous. 2
2. Dorsal fin inserted posterior to pelvic fin in inter-space between pelvic and anal fins. ... *Osteobrama*
   Dorsal fin inserted above pelvic fin or slightly anterior to it. 3
3. A knob or a horny tubercle present at the symphysis of lower jaw. ... *Cirrhinus*
   No such symphysial knob. 4
4. Upper lip absent. Scales large (40-43 along the lateral line). ... *Catla*
   Upper lip present. 5
5. Lower lip with an uninterrupted posterior groove, continuous around the corner of mouth. ... *Tor*
   Lower lip with posterior groove interrupted in middle when a groove is present or without any groove. 6
6. Snout with median and lateral lobes. Snout and cheeks beset with horny tubercles in both sexes. Anal fin rays elongated in males, normal in females. ... *Chagunius*
   Snout entire without any lobes. Cheeks free from tubercles. Snout rarely tuberculated. Anal fin rays not elongated. 7
7. 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 entire mouth. ... *Puntius*

Genus 12 **Cyprinus** Linnaeus

18. **Cyprinus carpio carpio** Linnaeus

1758. *Cyprinus carpio* Linnaeus, *Syst. Nat.* Ed. 10, 1 : 525 (type-locality : Europe).

1981. *Cyprinus carpio carpio*, Jayaram, *Handbk. Freshw. Fish. India*, : 94 (distribution).

Common name : *Common carp.*

Materials : 2 exs., 182-210mm. TL. ; Amarpur, South Tripura ; 8.8.85.

Geographical distribution : Throughout China, Korea, Japan, Taiwan, Europe and America. Introduced into India in 1939.

Size : A record growth of 10 kg. body weight of a 30 months old carp reported from the Barang Fish Firm in Orissa.

Remarks : This common European Carp is not a native of India. It has been introduced in the lakes of the Nilgiri mountain ranges from China and South-east Asia. It was first introduced into Ceylon and later into south India, where this fish has been suitably acclimatised. At present this common carp of Asia enjoys a global distribution particularly in the tropical and temperate regions successfully adjusted to a variety of habitats and environments.

Genus 13 : **Puntius** Hamilton

Key to the species

1.	Barbels absent.	2
	Barbels present, one pair. Predorsal scales 10-12. A dark spot from 23rd to 25th scales of lateral line at the base of caudal fin present. Another one dark spot along the base of anterior dorsal fin rays present. ...	*P. chola*
2.	Lateral line incomplete, generally extending up to anterior 18 scales. Dorsal spine serrated, strong. Body depth 2.40-2.50 in total length....	*P. conchonius*
	Lateral line complete. Dorsal spine smooth. A circular dark blotch at the root of caudal fin present. ...	*P. sophore*

19. **Puntius chola** (Hamilton)

(Fig. 17)

1822. *Cyprinus chola* Hamilton, *Fish. Ganges,* : 312, 389 (type-locality : north-eastern parts of Bengal).

1981. *Puntius chola*, Jayaram, *Handbk. Freshw. Fish. India,* : 100, 107 (distribution and key to species).

Common name : *Titu puti.*

Materials : (i) 4 exs., 47-58mm. SL. : Amarpur, South Tripura ; 8.8.85.

(ii) 12 exs., 51-63mm. SL. ; Udaypur, South Tripura ; 14.8.85 and 16.8.85.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Burma and Sri Lanka.

Size : Largest recorded specimen 125mm. (5 inches) in TL.

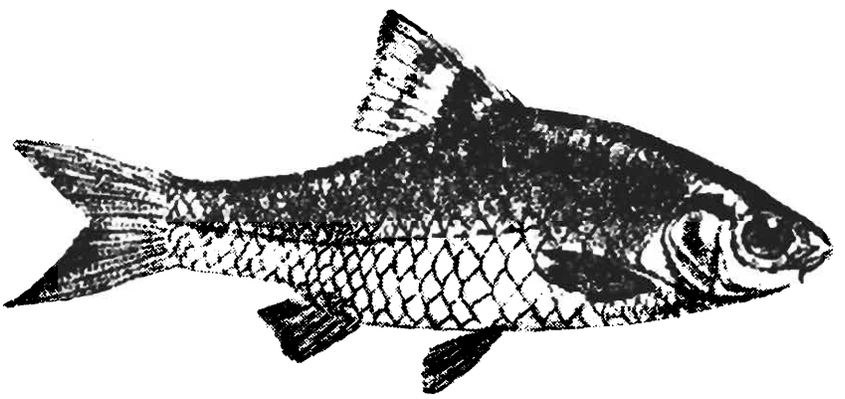

Fig. 17. Lateral view of *Puntius chola* (Hamilton).

Remarks : Specimens of this species all provided with two dark spots, one at the base of anterior dorsal fin ray and another one at the base of caudal fin on the 21st to 23rd scales in the lateral line. Chaudhuri (1911) recorded this species from Yunnan, China. This fish is very common in all waterlogged areas throughout Tripura. Menon (1974) synonymized *Barbus tetrarupagus* Day with this species.

20. **Puntius conchonius** (Hamilton)

(Fig. 18)

1822. *Cyprinus conchonius* Hamilton, *Fish. Ganges,* : 317, 389 (type-locality : ponds of north-east of Bengal and in the rivers Kosi and Ami).

1981. *Puntius conchonius,* Jayaram, *Handbk. Freshw. Fish. India,* : 100, 109, fig. 51 (distribution and key to species).

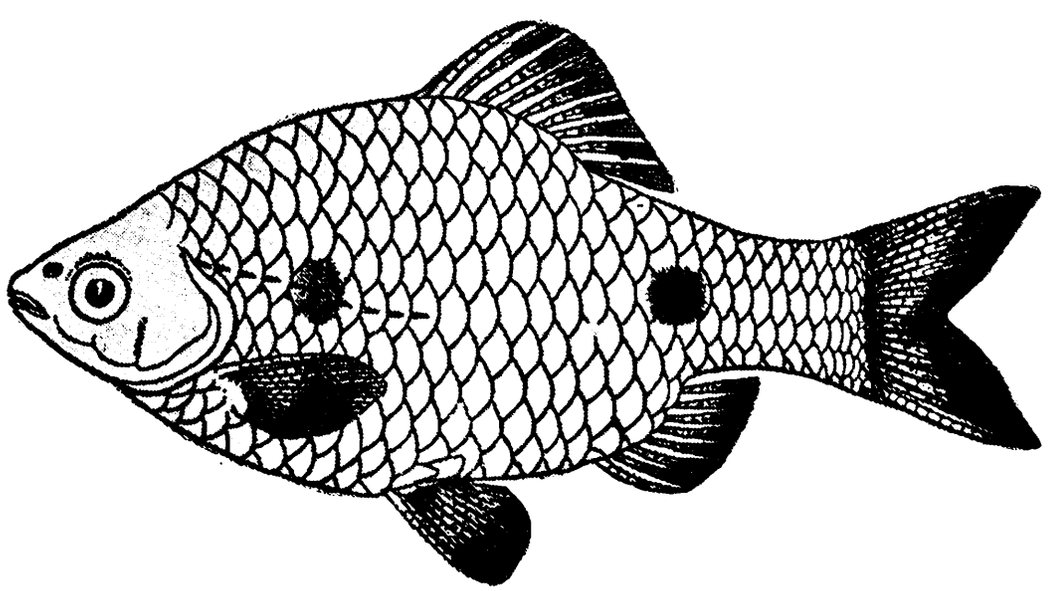

Fig. 18. Lateral view of *Puntius conchonius* (Hamilton).

Common name : *Kanchan Puti.*

Materials : (i) 8 exs., 41-68mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

(ii) 1 ex. 41mm. SL. ; Sonamura, West Tripura ; 18.8.85.

Geographical distribution : India : Ganga, Brahmaputra, Mahanadi river system in Uttar Pradesh, Bihar, West Bengal, Orissa and Cauvery river system, South India. Pakistan. Nepal. Bangladesh.

Size : It attains at least 127mm. (5 inches) in TL.

Remarks : This species is also very common in waterlogged areas throughout Tripura.

21. **Puntius sophore** (Hamilton)

(Fig. 19)

1822. *Cyprinus sophore* Hamilton, *Fish. Ganges,* : 310, 389 (type-locality : ponds of Bengal).

1981. *Puntius sophore,* Jayaram, *Handbk. Freshw. Fish. India,* : 102, 110 (distribution and key to species).

Common name : *Sar puti.*

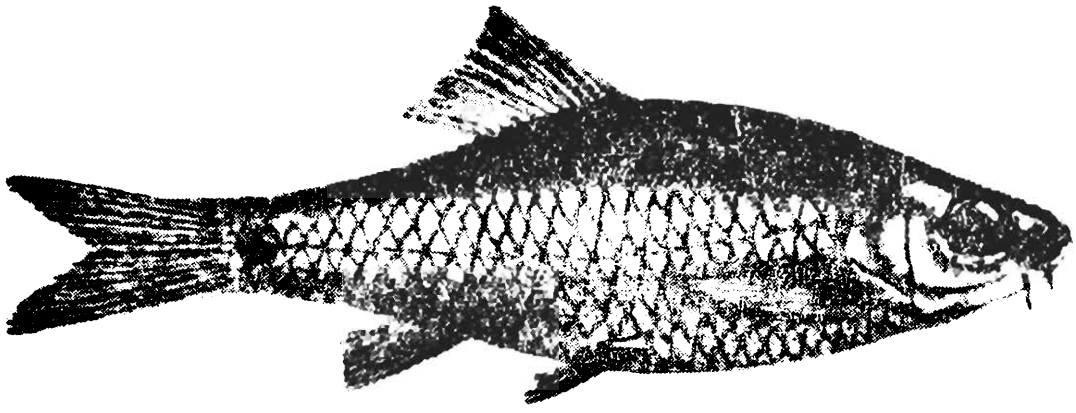

Fig. 19. Lateral view of *Puntius sophore* (Hamilton).

Materials : (i) 17 exs., 36-65mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

(ii) 4 exs., 43-50mm. SL. ; Udaypur, South Tripura ; 14.8.85 and 16.8.85.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Burma and Yunnan, China.

Size : It grows at least 127mm. (5 inches) in TL.

Remarks : This is another common species found in streams, ponds and waterlogged areas throughout Tripura. It is a voracious eater of floating organisms and aquatic plants (Innes, 1944).

Barbus stigma (Valenciennes), *Barbus carletoni* Fowler and *Barbus annandalei* Fowler are synonyms of this species (Chaudhuri, 1916 and Menon, 1974).

Genus 14 **Osteobrama** Heckel

22. **Osteobrama cotio cotio** (Hamilton)

(Fig. 20)

1822. *Cyprinus cotio* Hamilton, *Fish. Ganges.*, : 339, pl. 39, fig. 93 (type-locatity : ponds and ditches of Bengal).

1981. *Osteobrama cotio cotio*, Jayaram, *Handbk. Freshw. Fish.* India, : 113 (distribution and key to species).

Common name : *Gila khani.*

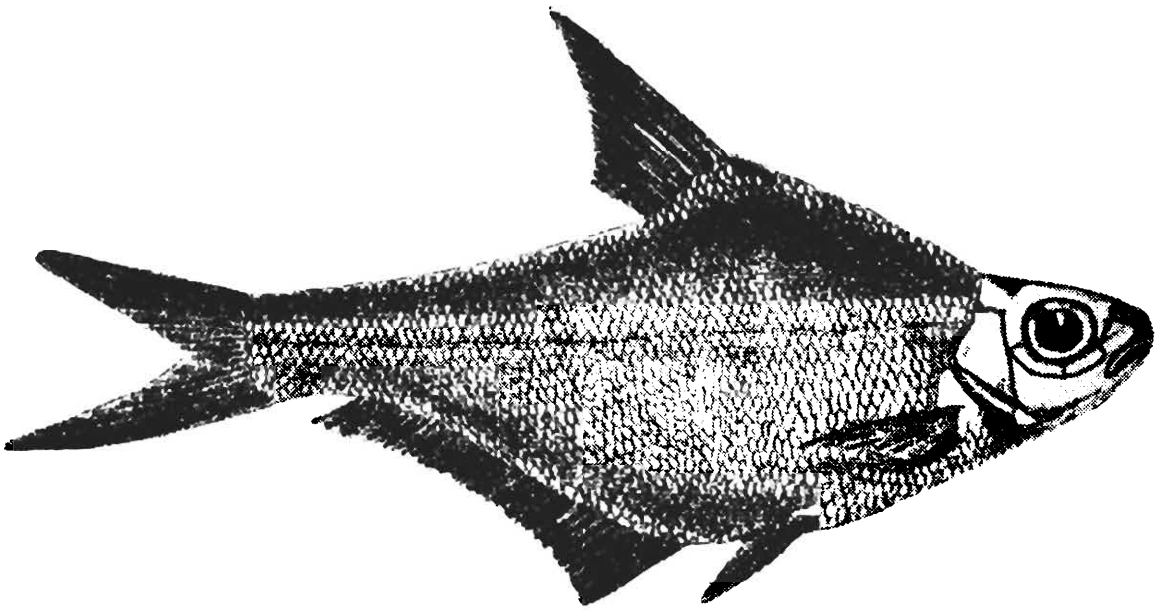

Fig. 20. Lateral view of *Osteobrama cotio cotio* (Hamilton).

Materials : 4 exs., 46-70mm. SL. ; Udaypur, South Tripura ; 15.8. 85 and 16.8.85.

Geographical distribution : India : Generally found in North India, Andhra Pradesh. Nepal. Bangladesh and Pakistan.

Size : Largest recorded specimen 152 mm. (6 inches) in TL.

Remarks : It is a very common species found almost all the districts of Tripura.

Genus 15 **Labeo** Cuvier

Key to the species

1. One pair of barbels. Dorsal fin rays not more than 13. ... *L. bata*

   Two pairs of barbels. Dorsal fin rays more than 13. 2

2.	Lateral line scales 40-44. Scales between lateral line and base of pelvic fin 5½-6½. ...	... 3
	Lateral line scales 71-84. Scales between lateral line and base of pelvic fin 9-13. ...	*L. gonius*
3.	Dorsal fin rays 15-16. Scales between lateral line and base pelvic fin 6-6½. Head length 4.50-5.00 in total length. Bluish or brownish above and silvery below. ...	*L. rohita*
	Dorsal fin rays 16-18. Scales between lateral line and base of pelvic fin 5½-6. Head length 5.00-6.00 in total length. Blackish becoming lighter below. ...	*L. calbasu*

23. **Labeo bata** (Hamilton)

(Fig. 21)

1822. *Cyprinus bata* Hamilton, *Fish. Ganges,* : 283, 386 (type-locality : rivers and ponds of Bengal).

1981. *Labeo bata,* Jayaram, *Handbk. Freshw. Fish. India,* : 177, 119 (distribution and key to species).

Common name : *Bhangna.*

Materials : 3 exs., 155-172mm. SL. ; Amarpur, South Tripura ; 10.8.85.

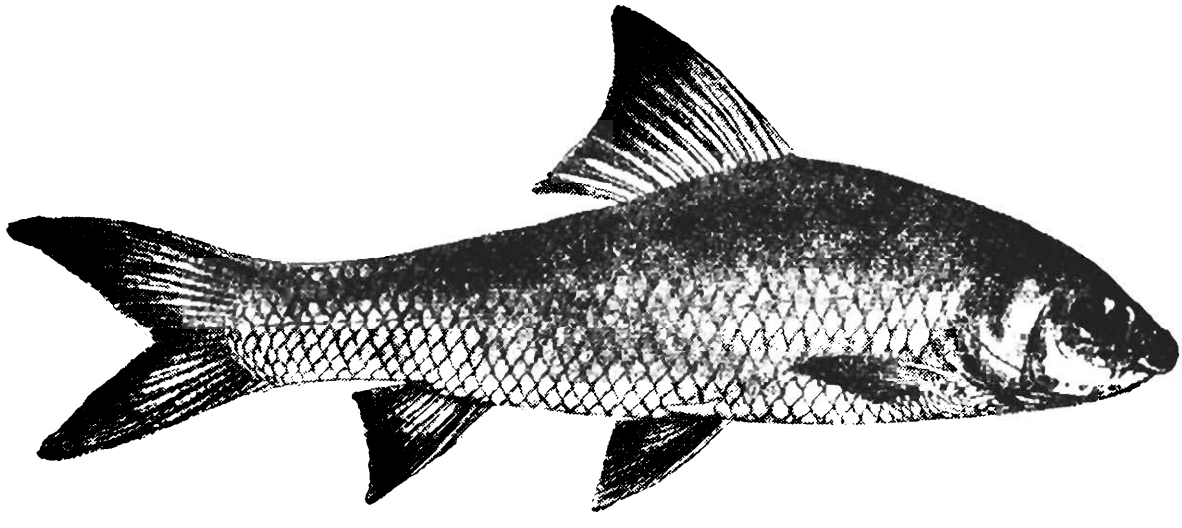

Fig. 21. Laterial view of *Labeo bata* (Hamilton).

Geographical distribution : Throughout India, Bangladesh, Nepal.

Size : This species grows up to 609mm. (2 feet) in TL.

Remarks : This species is extensively used for stocking tanks. It is a good eating minor carp of commercial importance.

24. **Labeo calbasu** (Hamilton)

(Fig. 22)

1822. *Cyprinus calbasu* Hamilton, *Fish. Ganges*, : 297, 387 pl. 2, fig. 83 (type-locality : rivers and ponds of Bengal and in the western provinces).

1981. *Labeo calbasu*, Jayaram, *Handbk. Freshw. Fish. India*, : 117, 121 (distribution and key to species).

Common name : *Kalibasu.*

Materials : 2 exs., 40-75mm. SL. ; Udaypur, South Tripura ; 16.8. 85.

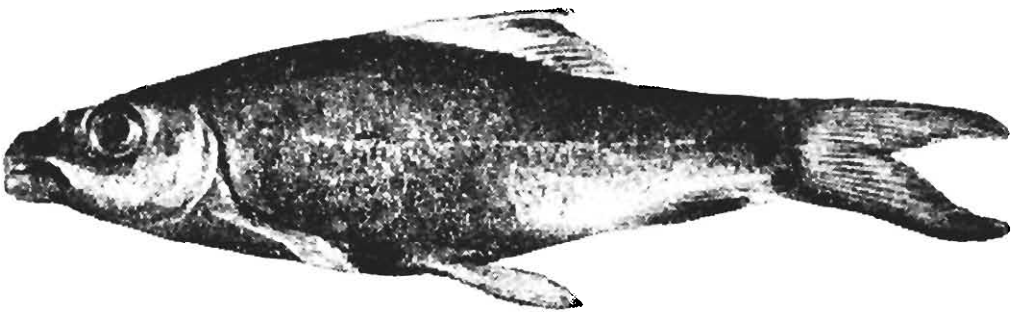

Fig. 22. Lateral view of *Labeo calbasu* (Hamilton).

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Burma, Thailand and Yunnan, China.

Size : Largest recorded specimen 914mm. (3 feet) in TL.

Remarks : It is one of the important food and game fish of India specially in West Bengal and north-eastern states of India. This fish is used largely in stocking tanks.

25. **Labeo gonius** (Hamilton)

(Fig. 23)

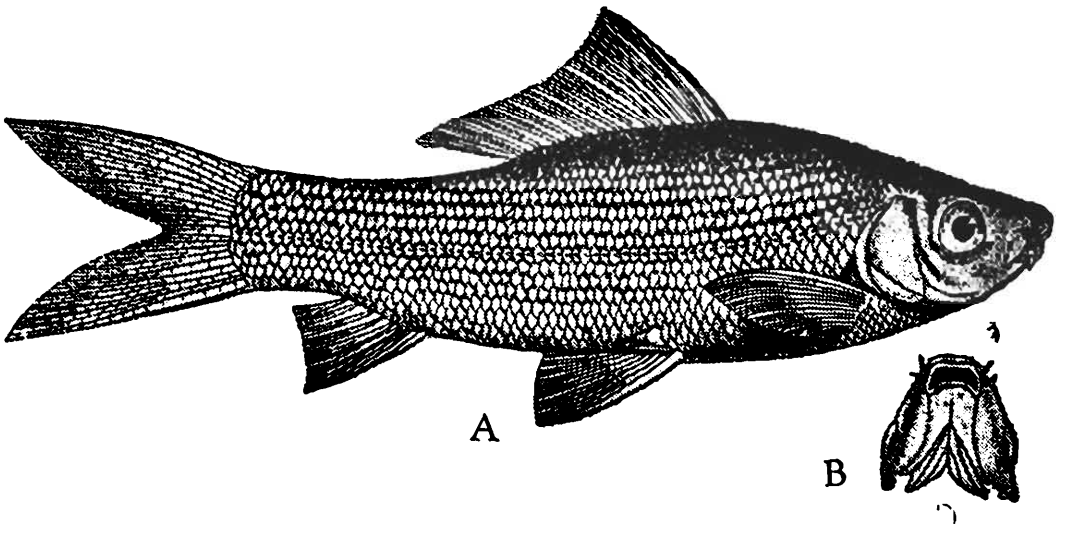

Fig. 23. A. Lateral view of *Labeo gonius* (Hamilton).
B. Ventral view of mouth region.

1822. *Cyprinus gonius* Hamilton, *Fish. Ganges,* : 292, 387 (type-locality : freshwater rivers and ponds of Bengal).

1981. *Labeo gonius,* Jayaram, *Handbk. Freshw. Fish. India,* : 118, 120 (distribution and key to species).

Common name : *Gonya.*

Materials : No specimen obtained by me. This species was recorded by Lipton (1983-84).

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh and Burma.

Size : Largest recorded specimen 1,524mm. (5 feet) in TL.

26. **Labeo rohita** (Hamilton)

(Fig. 24)

1822. *Cyprinus rohita* Hamilton, *Fish. Ganges,* : 301, 383, pl. 36, fig. 85 (type-locality : freshwater rivers of the Gangetic Provinces).

1981. *Labeo rohita,* Jayaram, *Handbk. Freshw. Fish. India,* : 118, 120 (distribution and key to species).

Common name : *Rui, Rohu.*

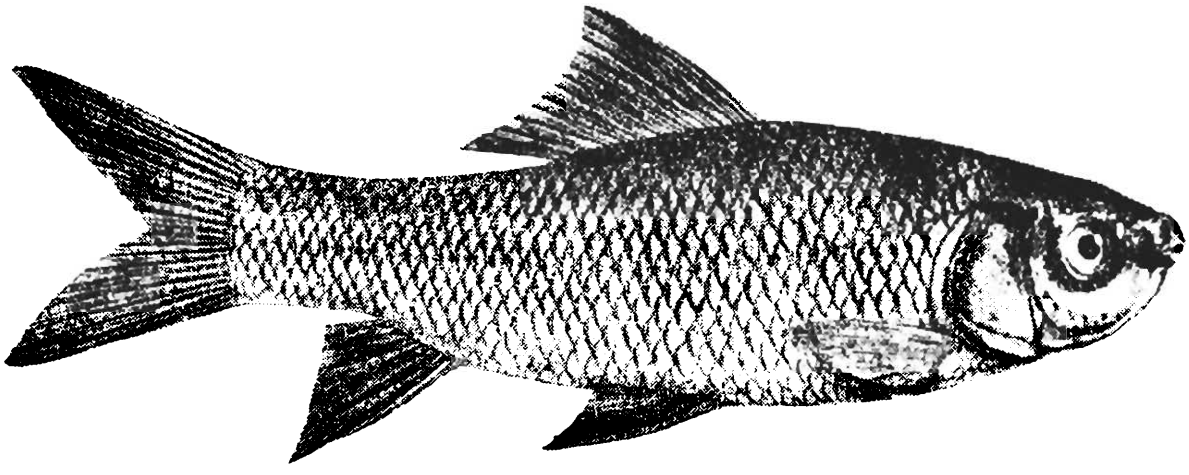

Fig. 24. Lateral view of *Labeo rohita* (Hamilton).

Materials : 8 exs., 135-210mm. SL. ; Amarpur, South Tripura ; 10.8.85.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh and Burma.

Size : This fish grows to 914 mm. (3 feet) in TL.

Remarks : It is one of the most economically important fish of India and north-eastern states of India. It is widely cultured and used in stocking tanks, all over India. It is riverine in nature but can be cultivated in tanks, bheries, canals and beels.

Genus 16 **Chagunius** H. M. Smith

27. **Chagunius chagunio** (Hamilton)

(Fig. 25)

1822. *Cyprinus chagunio* Hamilton, *Fish. Ganges,* : 295, 385 (type-locality : Yamuna and the northern rivers of Bihar and Bengal).

1981. *Chagunius chagunio*, Jayaram, *Handbk. Freshw. Fish. India,* : 123 (distribution).

Common name : *Puti.*

Material : No specimen collected by me. It was recorded by Lipton (1983-84).

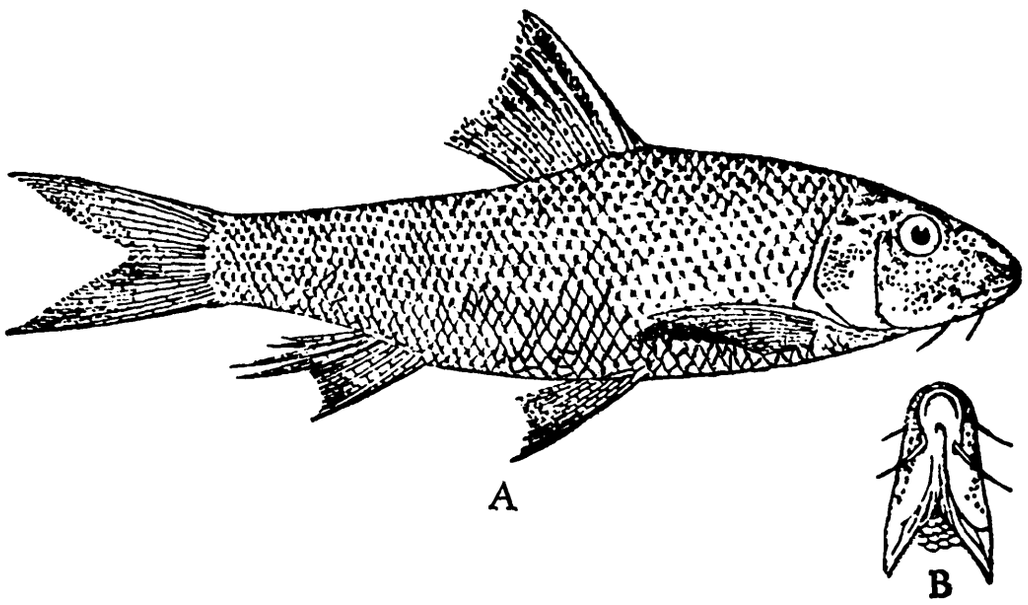

Fig. 25. A. Lateral view of *Chagunius Chagunio* (Himilton)
B. Ventral view of the mouth region

Geographical distribution : India : North India along the base of the Himalayas. Nepal. Pakistan. Bangladesh. Burma and Thailand.

Size : Largest recorded specimen 457 mm (1½ feet) In TL.

Remarks : Male specimen of this species is provided with sunken pores on the snout and long dorsal rays. These features are considered secondary sexual characters (Hora, 1933).

Genus 17 **Tor** Gray

Key to the species

Length of head considerably greater than body depth. ...	*T. putitora*
Length of head considerably shorter or more or less equal to body depth. ...	*T. tor*

28. **Tor putitora** (Hamilton)

(Fig. 26)

1822. *Cyprinus putitora* Hamilton, *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).

Common name : Nil.

Material : No specimen collected by me. This species is recorded by Lipton (1983-84).

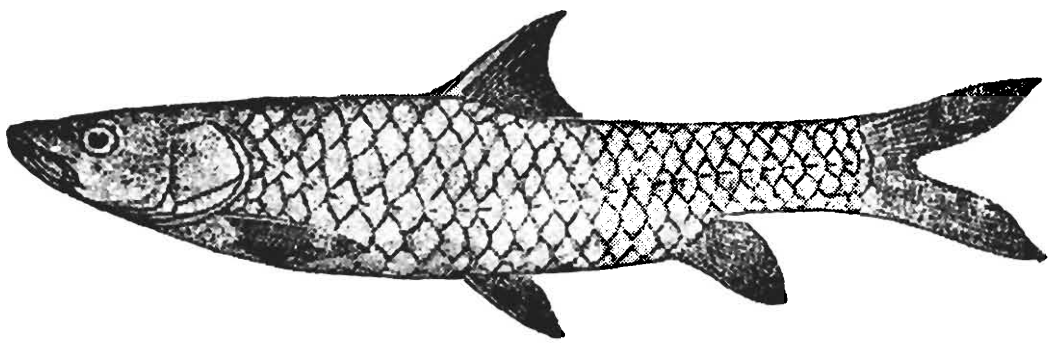

Fig. 26. Lateral view of *Tor putitora* (Hamilton).

Geographical distribution : India : all along the Himalayas. Nepal. Bangladesh and Pakistan.

Size : Largest recorded specimen 2,743 mm. (9 feet) in TL.

Remarks : It is a popular game fish of India found in slow and shallow streams. This fish breeds three times in a year, January-February, May-June and July-August-September. It exhibits sexual dimorphism, lips and snouts are greatly swollen during breeding seasons.

29. **Tor tor** (Hamilton)

(Fig. 27)

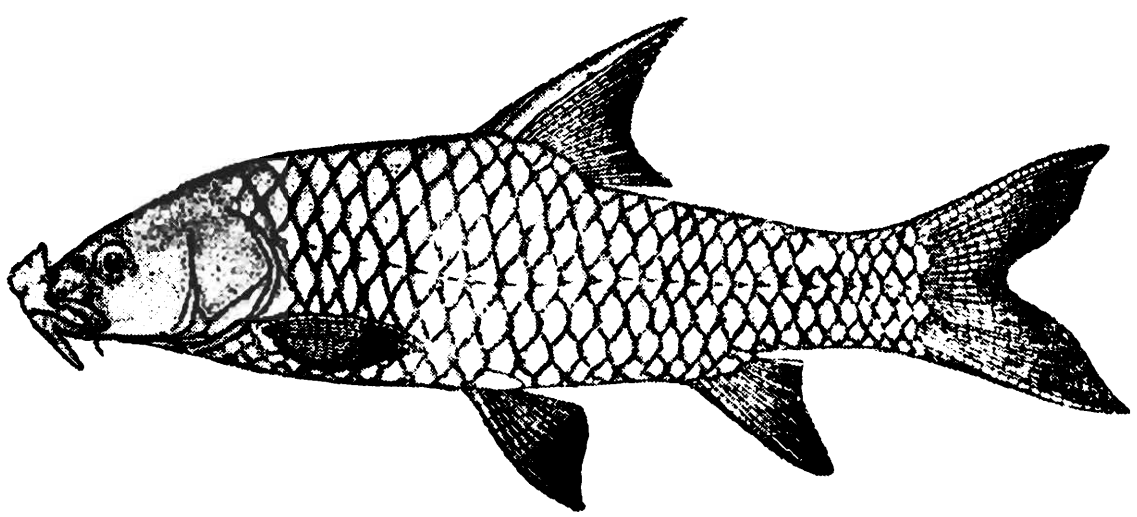

Fig. 27. Lateral view of *Tor tor* (Hamilton).

1822. *Cyprinus tor* Hamilton. *Fish. Ganges,*; 305, 388 (type-locality : Mahananda river).

1981. *Tor tor*, Jayaram, *Handbk. Freshw. Fish. India,* : 124, 126 (distribution and key to species).

Common name : *Mahasol.*

Materials : No specimen obtained by me. It was recorded by Lipton (1983-84).

Geographical distribution : India : Foot hills of the Himalays. Madhya Pradesh, Bihar, North Bengal and Assam. Pakistan and Bangaldesh.

Size : Largest recorded specimen 1,524 mm. (5 feet) in TL.

Remarks : It is also a popular game fish.

Genus 18 **Cirrhinus** Oken

Key to the species

Dorsal fin with 8 branched rays. Lateral line scales 35-38. Head length 6.00-6.50 in total length. ...	*C. reba*
Dorsal fin with 12-13 branched rays. Lateral line scales 40-45. Head length 5.00-5.25 in total length. ...	*C. mrigala*

30. **Cirrhinus mrigala** (Hamilton)

(Fig. 28)

1822. *Cyprinus mrigala* Hamilton, *Fish. Ganges,*: 279, 386, pl. 6, fig. 79 (type-locality : ponds and freshwater rivers of the Gangetic provinces).

1981. *Cirrhinus mrigala*, Jayaram, *Handbk. Freshw. Fish. India,* : 127 (distribution and key to species).

Common name : *Mrigal.*

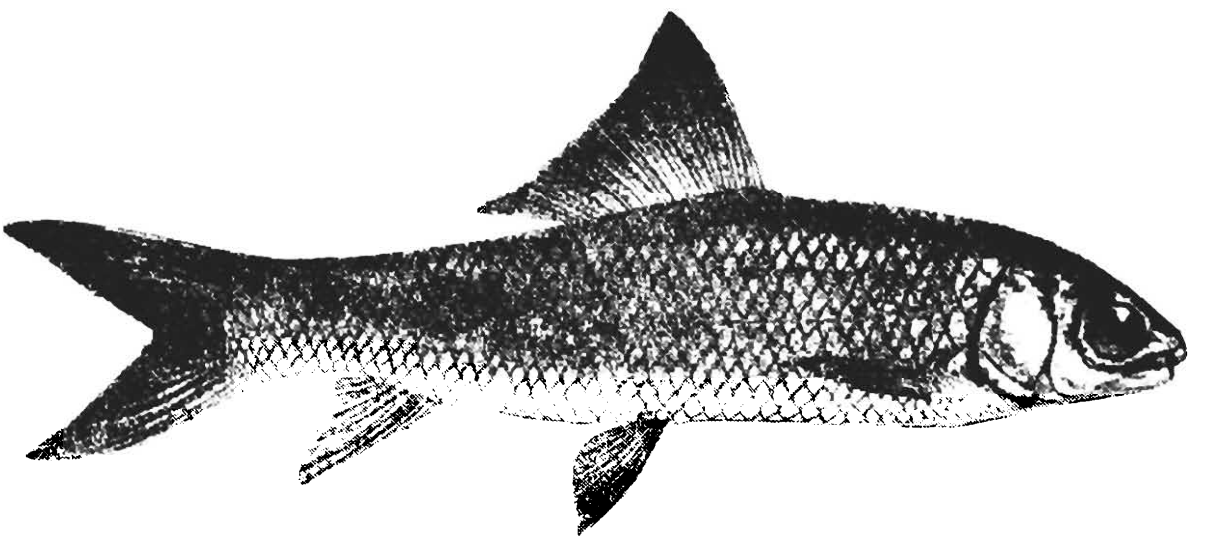

Fig. 28. *Cirrhinus mrigala* (Hamilton).

Materials : 17 exs., 72-92 mm. SL. ; Amarpur, South Tripura ; 10.8.85.

Geographical distribution : India : Throughout North India, Tamil Nadu, Andhra Pradesh, Maharashtra, Gujarat, Rajasthan. Pakistan. Nepal. Bangladesh and Burma.

Size : It grows to 914 mm. (3 feet) in TL. Sen (1985) recorded this fish 1,066 mm. from Assam in TL.

Remarks : It is an excellent species for stocking tanks and gives good sport on the rod.

31. **Cirrhinus reba** (Hamilton)
(Fig. 29)

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

1981. *Cirrhinus reba*, Jayaram, *Handbk. Fish. India*, : 127 (distribution and key to species).

Common name : *Rewah.*

Materials : 5 exs., 140-152 mm. SL. ; Amarpur, South Tripura ; 10.8.85.

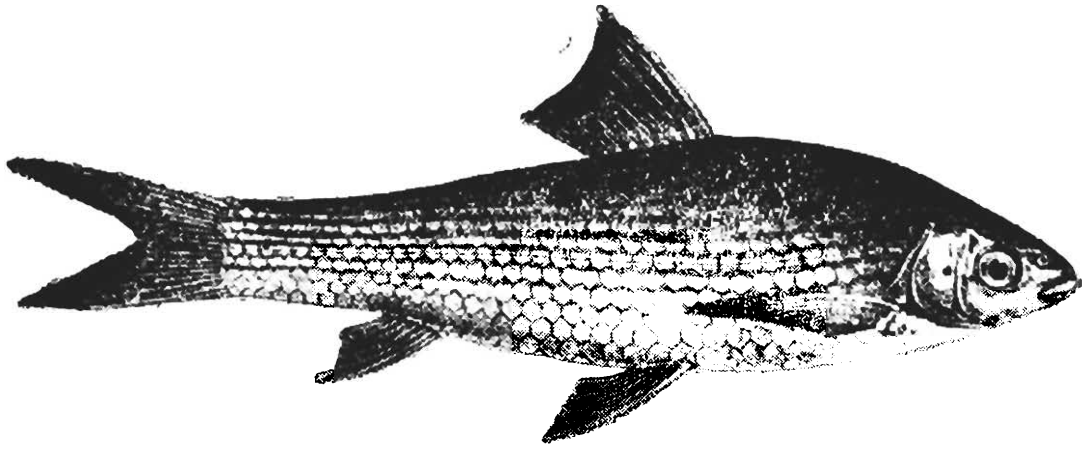

Fig. 29. Lateral view of *Cirrhinus reba* (Hamilton).

Geographical distribution : Throughout India, Pakistan, Nepal and Bangladesh.

Size : Largest recorded speciman 304 mm. (1 foot) in TL.

Genus 19 **Catla** Valenciennes

32. **Catla catla** (Hamilton)
(Fig. 30)

1822. *Cyprinus catla* Hamilton, *Fish. Ganges*, : 287, 387, pl. 13, fig. 81 (type-locality : in the rivers and tanks of Bengal).

1981. *Catla catla*, Jayaram, *Handbk. Freshw. Fish. India*, : 131 (distribution and genus description).

Common name : *Catla, Katal.*

Materials : (i) 2 exs., 145-150 mm. SL. ; Amarpur, South Tripura ; 10.8.85.

(ii) 7 exs. 115-210mm. SL. ; Sonamura, West Tripura ; 18.8.85.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Sri Lanka and Thailand.

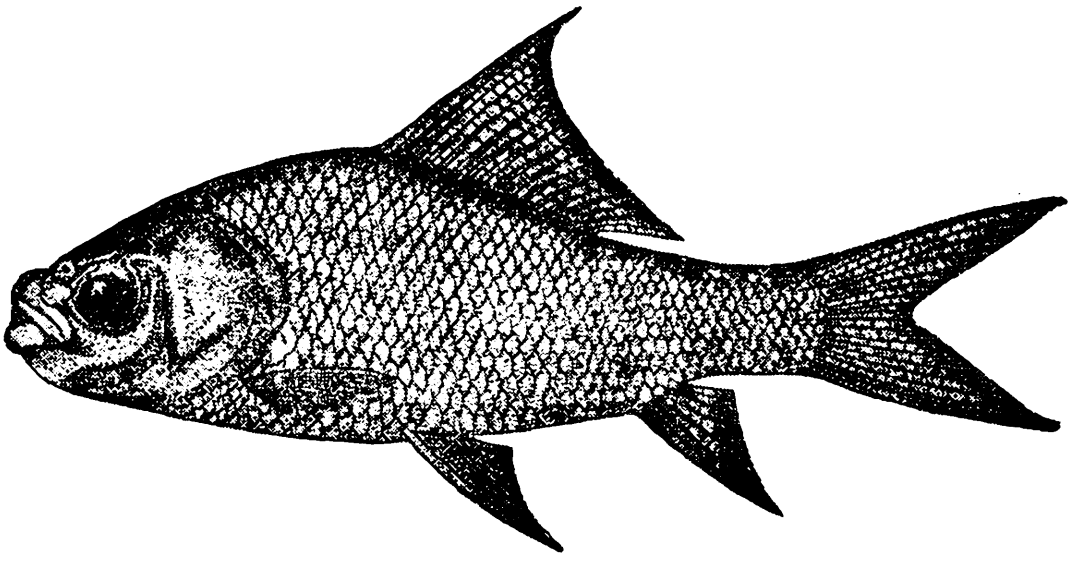

Fig. 30. Lateral view of *Catla catla* (Hamilton).

Size : It grows to 1,828mm. (6 feet) in TL.

Remarks : Economically it is a very important fish of India and an esteemed food fish. It is a plankton and surface feeder. It is widely used in pond culture throughout India specially in Bengal.

Subfamily (iv) GARRINAE

Genus 20 **Crossocheilus** van Hasselt

33. **Crossocheilus latius latius** (Hamilton)

(Fig. 31)

1822. *Cyprinus latius* Hamilton, *Fish. Ganges*, : 345, 393 (type-locality : the Tista).

1981. *Crossocheilus latius latius*, Jayaram, *Handbk. Freshw. India*, : 133, 134, fig. 66 (distribution and key to species).

Common name : Nil.

Materials : (i) 2 exs., 40-52mm. SL. ; Udaypur, South Tripura ; 16.8.85.

(ii) 1 ex., 33mm. SL. ; Sonamura, West Tripura ; 18.8.85.

Geographical distribution : India : Ganga, Brahmaputra river systems, Maharashtra. Pakistan. Nepal and Bangladesh.

Size : This fish grows to 152mm. (6 inches) in TL.

Remarks : This is a very variable species specially in respect of the head length and body depth. In behavioural aspect this species is very similar to that of the members of the genus *Garra* Hamilton

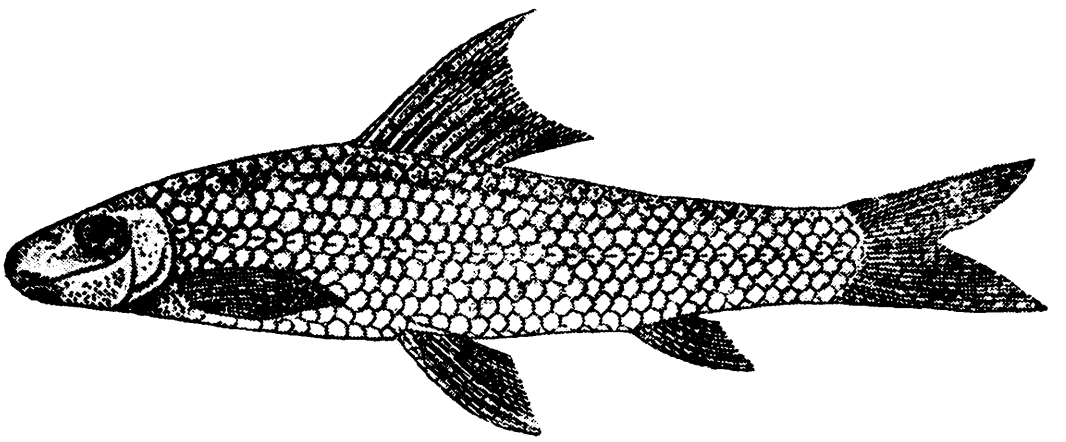

Fig. 31. Lateral view of *Crossocheilus latius latius* (Hamilton).

adhering to stones in stream bed (Shaw and Shebbeare, 1937). The fishery value of this fish is less, generally this species is only of local importance and mainly eaten by the poor people.

This species is being recorded here for the first time from Tripura.

Family 5. PSILORHYNCHIDAE

Genus 21 **Psilorhynchus** McClelland

34. **Psilorhynchus balitora** (Hamilton)

(Fig. 32)

1822. *Cyprinus balitora* Hamilton, *Fish. Ganges,* : 348, 394 (type-locality : rivers of north-eastern Bengal).

1981. *Psilorhynchus balitora,* Jayaram, *Handbk. Freshw. Fish. India,* : 140 (distribution and key to species).

Common name : Nil.

Materials : 3 exs., 46-55mm. SL. ; Amarpur, South Tripura ; 10.8.85.

Geographical distribution : India : Assam, Yamuna river in Delhi, Gomti river, Lucknow, Uttar Pradesh, North Bengal. Bangladesh and Burma.

Size : Largest recorded specimen 62mm. ($2\frac{1}{2}$ inches) in TL.

Remarks : Fishery value of this fish is less important due to its small size. Usually this species is of local importance and mostly eaten by the poorer people. It is found to live in the hill streams and rapids.

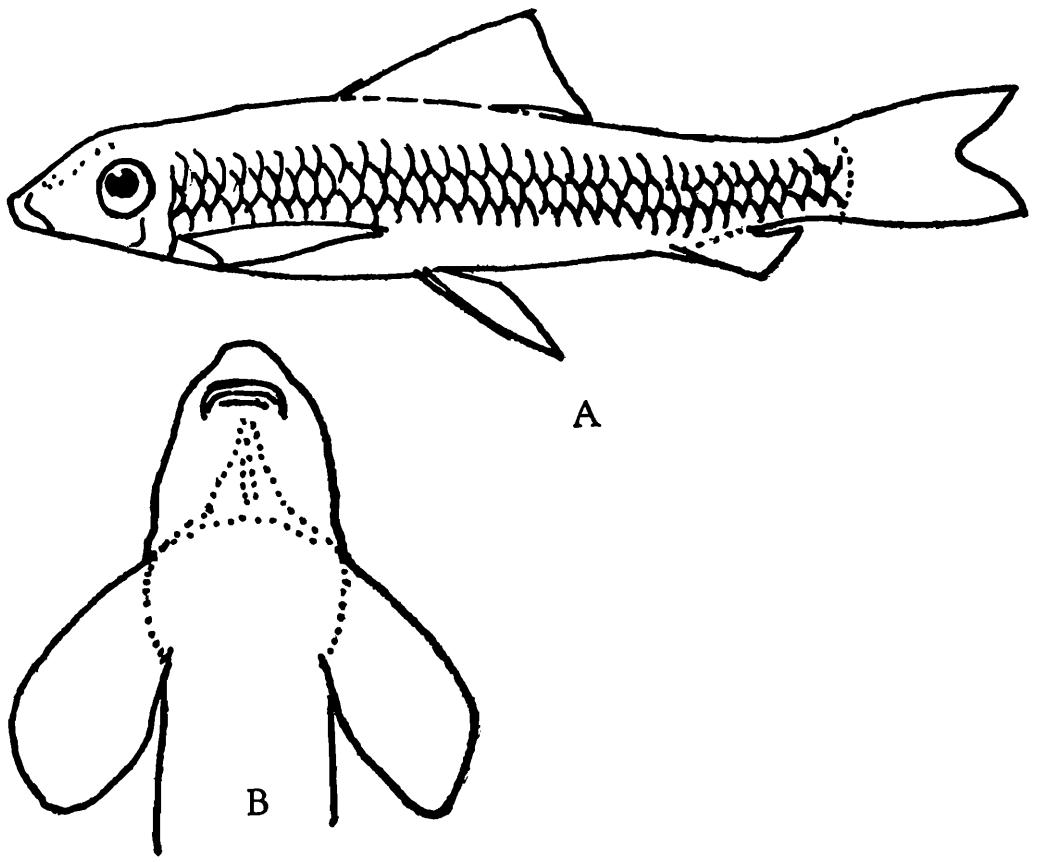

Fig. 32. A. Lateral view of *Psilorhynchus balitora* (Himilton)
B. Ventral view of the mouth region.

Family 6. COBITIDAE

Key to the subfamilies

1.	No spine under or before the orbit. ...	Noemacheilinae
	An erectile spine arising from the ethmoid bone and hidden in a groove under or before each orbit.	2
2.	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 (i) NOEMACHEILINAE

Genus 22 **Noemacheilus** van Hasselt

35. **Noemacheilus botia** (Hamilton)

(Fig. 33)

1822. *Cobitis botia* Hamilton, *Fish. Ganges,* : 350, 394 (type-locality : the rivers of north-eastern parts of Bengal).

1981. *Noemacheilus botia botia*, Jayaram, *Handbk. Freshw. Fish.* India : 153, 170 (distribution and key to species).

Common name : Nil.

Materials : 9 exs., 47-61mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

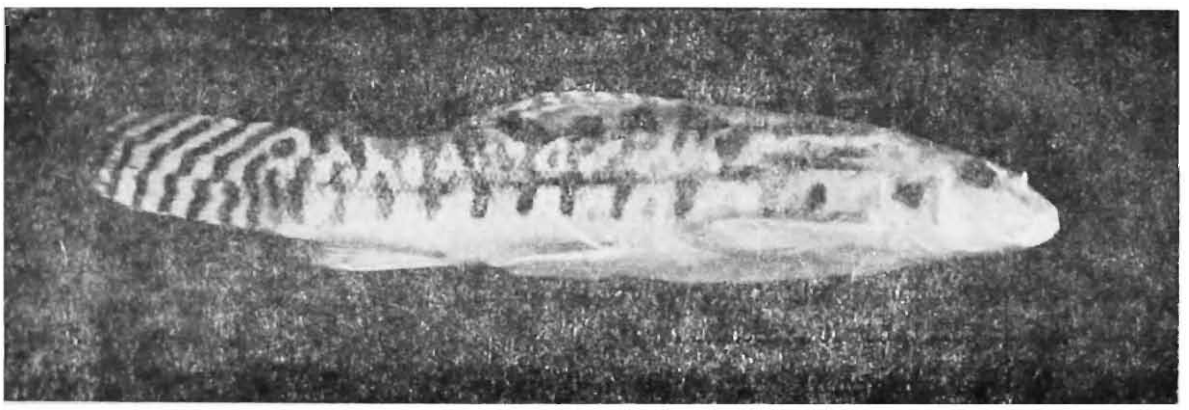

Fig. 33. Lateral view of *Noemacheilus boita* (Hamilton).

Geographical distribution : India : Throughout North India. Pakistan. Nepal. Bangladesh. Burma and Sri Lanka.

Size : Largest recorded specimen 76mm. (3 inches) in TL.

Remarks : Fishery value of this fish is very less. It is of local importance only and mostly eaten by the poor people. Hora and Misra (1938) considered *N. sinuatus* Day aud *N. aureus* Day are synonyms of this species. Menon (1974) considered *N. mackenziei* Chaudhuri as a synonym of this species.

Subfamily (ii) BOTINAE

Genus 23 **Botia** Gray

36. **Botia (Botia) rostrata** Günther

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).

Common name : Nil.

Materials : (i) 1 ex., 55mm. SL. ; Amarpur, South Tripura ; 10.8.85.

(ii) 3 exs., 42-47mm. SL. ; Udaypur, South Tripura ; 14.8.85.

(iii) 1 ex. 68mm. SL. ; Sonamura, West Tripura ; 17.8.85.

Geographical distribution : India : Assam, Meghalaya, West Bengal. Bangladesh.

Size : Largest recorded specimen 120mm. (5 inches) in TL.

Remarks ; This species is abundantly found throughout Tripura. Hora (1932) remarked that *Botia geto* Hamilton is a juvenile form of *Botia rostrata*. Günther (1868) regarded *Botia geto* as a young form of *Botia dario* (Hamilton). *Botia dayi* which Hora (1932) proposed for specimens of *Botia geto* included by Day (1878, 1889) is a synonym of *Botia rostrata* accor ding to Menon (1974).

Subfamily (iii) : COBITINAE

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. Scales small. ...	*Lepidocephalus*

Genus 24 **Somileptes** Swainson

37. **Somileptes gongota** (Hamilton)

(Fig. 34)

1822. *Cobitis gongota* Hamilton, *Fish. Ganges*, : 351, 394 (type-locality : North Bengal rivers towards the Himalayas).

1981. *Somileptes gongota*, Jayaram, *Handbk. Freshw. Fish. India*, : 179, 180, fig. 73 (distribution and key to species).

Common name : Nil.

Materials : 2 exs., 71-102 mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

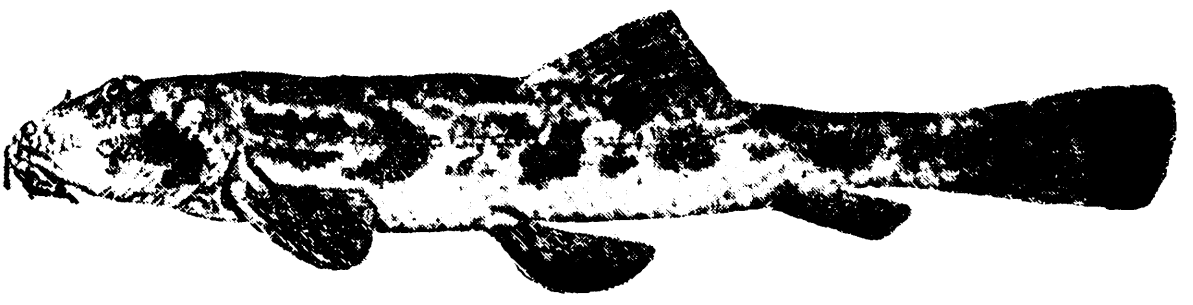

Fig. 34. Lateral view of *Somileptes gongota* (Hamilton).

Geographical distribution : India : Assam, Arunachal Pradesh, Meghalaya, Tripura and North Bengal. Bangladesh.

Size : Largest recorded specimen 106 mm. (4.2 inches) in TL.

Remarks : Day (1878) gave the distribution of this species "Assam, Bheer Bhoom and Khasi Hills". Shaw and Shebbeare (1937) recorded this species from North Bengrl. Lipton (1983-84) recorded this species from Tripura. I have recorded this species 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 25 **Lepidocephalus** Bleeker

38. **Lepidocephalus (Lepidocephalichthys) guntea** (Hamilton)

(Fig. 35)

1822. *Cobitis guntea* Hamilton, *Fish. Ganges*, : 353, 394 (type-locality : ponds and freshwater rivers of Bengal).

1981. *Lepidocephalus* (*Lepidocephalichthys*) *guntea*, Jayaram, *Handbk. Freshw. Fish. India*, : 181, 182 (distribution and key to species).

Common name : Nil.

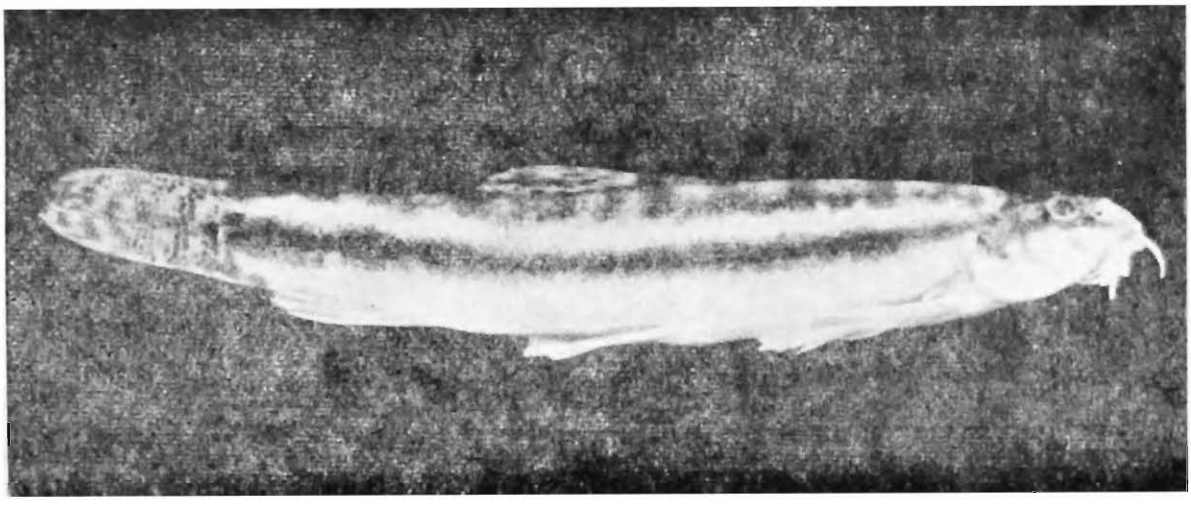

Fig. 35. Lateral view of *Lepidocephalus* (*Lepidocephalichthys*) *guntea* (Hamilton).

Materials : (i) 9 exs., 47-65 mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

(ii) 1 ex. 48 mm. SL. ; Udaypur, South Tripura ; 15.8.85

Geographical distribution : India : Throughout except Karnataka, Kerala and south of Krishna. Nepal. Bangladesh. Pakistan and Burma,

Size : Largest recorded specimen 96 mm. (4 inches) in TL.

Remarks : Colouration of this species is highly variable depending, on age, size and sex. In young specimens the body is ground colour

sandy yellow. A series of about 10 dark spots, connected with one another through a dark band along lateral 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 the fish. In extreme cases, this band is very prominent and bright in colour without any indication of presence of spots.

Fishery value of this fish is less being eaten by the poor people only. Tilak and Husain (1981) discussed the systematics of this fish.

Order V SILURIFORMES

Family 7 BAGRIDAE

Key to the genera

1. Pelvic fin with 7 or 8 rays. Lateral line with well developed scutes along anterior quarters. Three pairs of barbels. ... *Rita*

   Pelvic fin with 6 rays. Lateral line simple without any scutes. Four pairs of barbels. 2

2. Maxillary barbels reach beyond dorsal fin. No pores on ventral surface and sides of head. Teeth on lower jaw in a laterally prolonged deeply curved band, separated in middle. 3

   Maxillary barbels reaching not beyond dorsal fin. Pores on ventral surface and sides of head. Teeth on lower jaw laterally prolonged, but only slightly, band not separated in middle. ... *Batasio*

3. Interneural shield in between basal bone of dorsal fin and occipital process present. ... *Aorichthys*

   Interneural shield absent. ... *Mystus*

Genus 26 **Rita** Bleekar

39. **Rita rita** (Hamilton)

(Fig. 36)

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

1981. *Rita rita,* Jayaram, *Handbk. Freshw. Fish. India,* : 190, 191, fig. 82 (distribution and key to species).

Common name : *Reta.*

Material : 1 ex., 70 mm. SL., ; Sonamura, West Tripura ; 17.8.85.

Geographical distribution : India : North India. Pakistan. Nepal. Bangladesh. Burma. Yunnan, China.

Size : It attains at least 1,219 mm. (4 feet) in TL.

Remarks : It is one of the large sized cat fish sold in the markets, esteemed as food fish by poor people. This fish can survive out of the water for some time due to its cutaneous respiration.

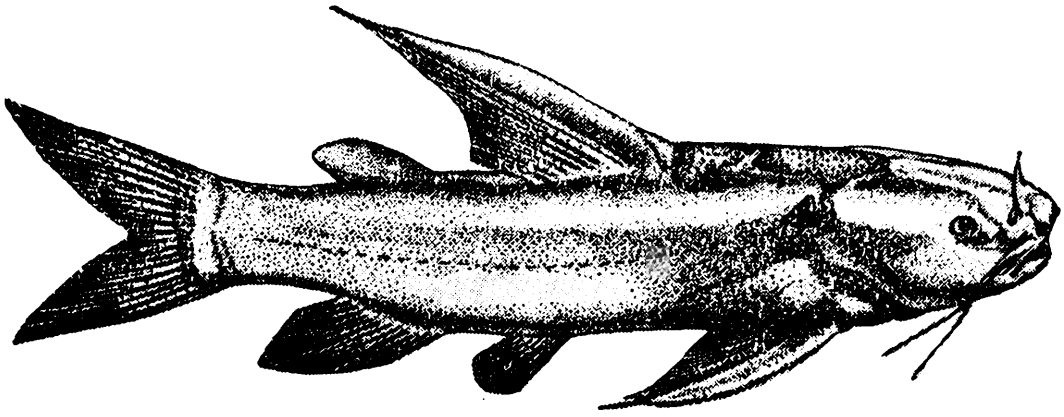

Fig. 36. Lateral view of *Rita rita* (Hamilton).

Genus 27 **Batasio** Blyth

40. **Batasio batasio** (Hamilton)

(Fig. 37)

1822. *Pimelodus batasio* Hamilton, *Fish. Ganges*, : 179, 377 (type-locality : Teesta river).

1981. *Batasio batasio*, Jayaram, *Handbk. Freshw. Fish. India*, : 193, 194 (distribution and key to species).

Common name : *Bojori.*

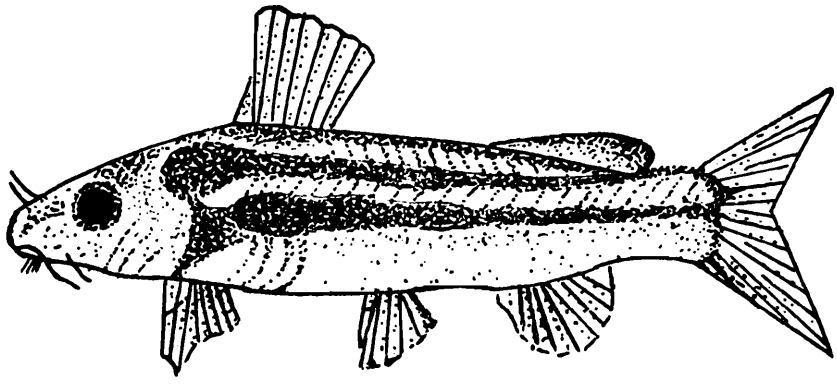

Fig. 37. Lateral view of *Batasio batasio* (Hamilton).

Material : No specimen obtained by me. Lipton (1983-84) recorded this species from the River Gumti, Tripura.

Geographical distribution : India : North Bengal (West Bengal), Tripura, Bangladesh.

Size : Largest recorded specimen 100 mm. (4 inches) in TL.

Remarks : This species has a striking similarity with *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. The economic importance of this species is limited.

Genus 28 **Mystus** Scopoli

Key to the species

1. Adipose dorsal fin commencing almost after rayed dorsal fin. 2

   Adipose dorsal fin commencing after some considerable distance. ... *M. vittatus*

2. Maxillary barbels reach anal fin. Interorbital width less than 3.00 (2.00-3.00) in head length. No dark spot at the base of dorsal fin. ... *M. bleekeri*

   Maxillary barbels reach caudal fin base or beyond. Inter-orbital width more than 3.00 (3.00-4.00) in head length. A dark spot at the base of dorsal fin. ... *M. cavasius*

41. **Mystus bleekeri** (Day)
(Fig. 38)

1846. *Bagrus keletius* (nec. Valenciennes) Bleeker, *Nat. Geneesk Arch. Ned. Indi*, (2) **3** : 135 (type-locality : Bengal).

1981. *Mystus bleekeri*, Jayaram, *Handbk. Freshw. Fish. India*, : 196, 199, fig. 92 B (distribution and key to species).

Common name : *Tengra.*

Materials : 5 exs., 52-68 mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

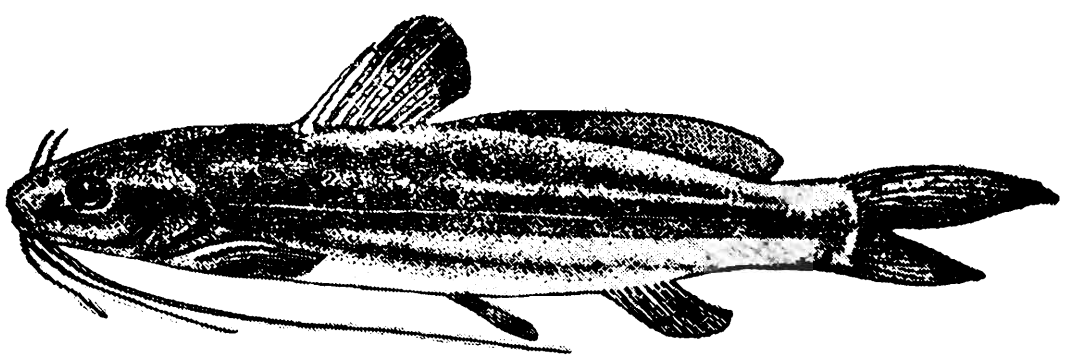

Fig. 38. Lateral view of *Mystus bleekeri* (Day).

Geographical distribution : India : Generally found in north India, the southern most limit being the Mahanadi head-waters, recorded by Hora (1940) where it is rare. Usually found up to West Bengal. Pakistan. Nepal. Bangladesh. Burma and Malaya.

Size : Largest recorded specimen 135 mm. (5½ inches) in TL.

Remarks : This fish is found in lakes, tanks and rivers throughout Tripura.

42. **Mystus cavasius** (Hamilton)

(Fig. 39)

1822. *Pimelodus cavasius* Hamilton, *Fish. Ganges,* : 203, 379, pl. 11, fig. 6 (type-locality : larger freshwater rivers of the Gangetic provinces).

1981. *Mystus cavasius,* Jayaram, *Handbk. Freshw. Fish. India,* : 196, 199 (distribution and key to species).

Common name : *Tengra.*

Materials : (i) 3 exs., 43-48mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

(ii) 3 exs., 45-83mm. SL. ; Udaypur, South Tripura ; 15.8.85 and 16.8.85.

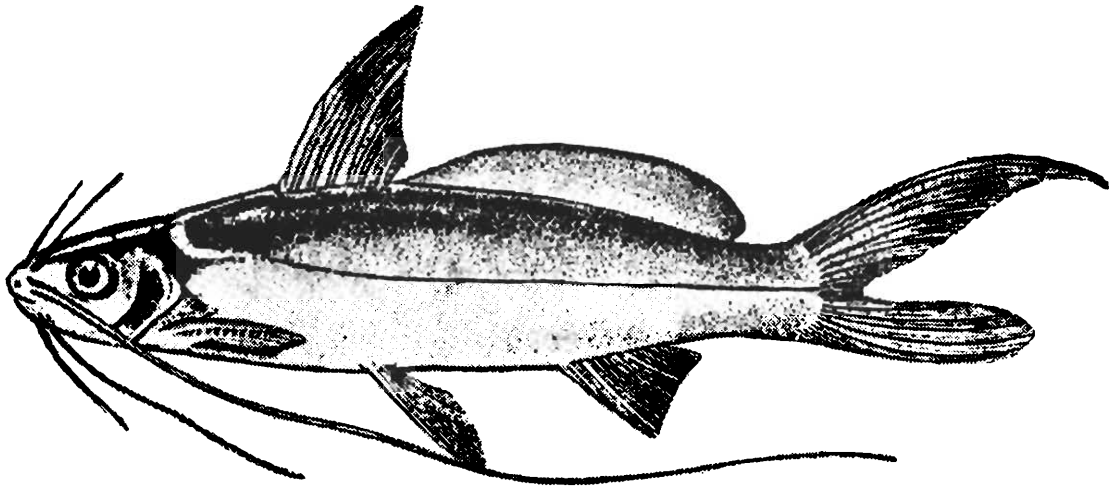

Fig. 39. Lateral view of *Mystus cavasius* (Hamilton).

(iii) 2 exs., 71-107mm. SL. ; Sonamura, West Tripura ; 18.8.85.

Geographical distribution : India, Pakistan, Bangladesh, Burma, Thailand, Malasia, Java, Sumatra, Borneo and China.

Size : It grows 457mm. (1½ feet) in TL.

Remarks : This is a highly variable species specially in regard to the length of maxillary barbels. Generally in the young specimens the maxillary barbels do not extend beyond anal fin while in adult specimen maxillary barbels reach base of caudal fin or even beyond it. It inhabits lakes and rivers at a distance from the sea. This fish is

esteemed as food by many people. The pectoral spines cause painful wounds (Raj, 1919).

The species is being recorded here for the first time from Tripura.

43. **Mystus vittatus** (Bloch)

(Fig. 40)

1797. *Silurus vittatus* Bloch, *Ichthyol. Hist. Nat.*, **11** : 40, pl. 371, fig. 2 (type-locality : Tranquebar, Tamil Nadu).

1981. *Mystus vittatus*, Jayaram, *Handbk. Freshw. Fish. India*, : 197, 201, fig. 94 A (distribution and key to species).

Common name : *Tengra.*

Materials : 2 exs., 30-35mm. SL. ; Sonamura, West Tripura ; 17.8.85.

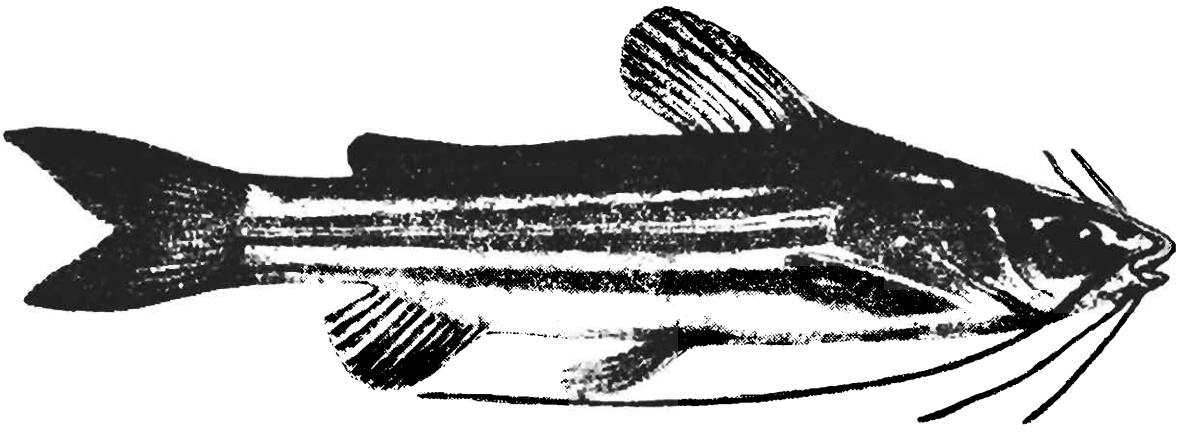

Fig. 40. Lateral view of *Mystus vittatus* (Bloch).

Geographical distribution : Throughout India, Pakistan, Nepal, Sri Lanka, Burma, Malaya and Thailand.

Size : This species grows 203 mm. (8 inches) in TL.

Remarks : This is a widely distributed small sized cat fish found in ponds, tanks, lakes, rivers and other aquatic bodies. This fish is called the "fidder-fish" in Karnataka because of its curious habit of making a noise resembling the buzzing of a bee when irritated.

Genus 29 **Aorichthys** Wu

Key to the species

Snout spatulate. Width of gape of mouth one third of the head length. Caudal fin with 19-21 rays. ...	*A. seenghala*
Snout rounded. Width of gape of mouth less than half of head length. Caudal fin with 17 rays. ...	*A. aor*

44. **Aorichthys aor** (Hamilton)

(Fig. 41)

1822. *Pimelodus aor* Hamilton, *Fish. Ganges,* : 205, 379, pl. 20, fig. 68 (type-locality : rivers of Bengal and upper parts of Gangetic estuaries).

1981. *Aorichthys aor,* Jayaram, *Handbk. Freshw. Fish. India,* : 205, fig. 98 (distribution and key to species).

Common name : *Aor*

Materials : 4 exs., 49-112mm. SL. ; Udaypur, South Tripura ; 14. 8.85 and 15.8.85.

Geographical distribution : India : Ganga, Yamuna, Brahmaputra, Mahanadi, Narmada, Tapti, Cauvery river systems. Pakistan. Bangladesh and Burma.

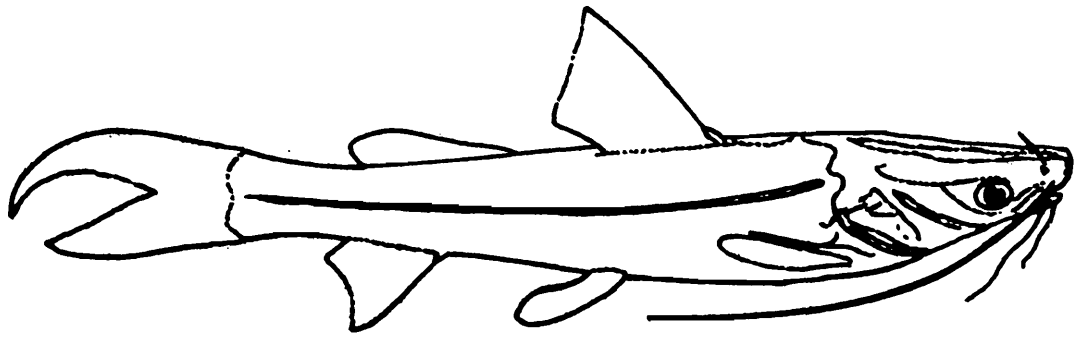

Fig. 41. Lateral view of *Aorichthys aor* (Hamilton)

Size : Largest recorded specimen 2 metres in TL.

Remarks : This is a predominant cat fish of the heavier and larger variety of considerable fishery value. Mostly riverine, good catches are obtained in the major north Indian rivers and are sold, distributed by road and rail to important cities. The breeding period of the fish is before the commencement of the monsoon rains (Jayaram, 1977a)

A. aor and *A. seenghala* are known to build nests among pebbles in the bed of the river during April and May. Generally a parent fish with young are found in each nest, but no eggs are seen (Raj, 1949).

45. **Aorichthys seenghala** (Sykes)

(Fig. 42)

1839. *Platystoma seenghala* Sykes, *Trans. zool. Soc. Lond.,* 2 : 371, pl. 65, fig. 2 (type-locality : Mota Mola river at Poona).

1981. *Aorichthys seenghala,* Jayaram, *Handbk. Freshw. Fish. India,* : 205, 206, fig. 99 A (distribution and key to species).

Common Name : *Aor.*

Material : 1 ex. 65 mm. SL., Amarpur, South Tripura ; 8. 8. 55.

Geographical distribution : India : Ganga, Yamuna, Krishna, Godavari and Cauvery river systems. Pakistan and Bangladesh.

Size : Largest recorded specimen 1.5 metres.

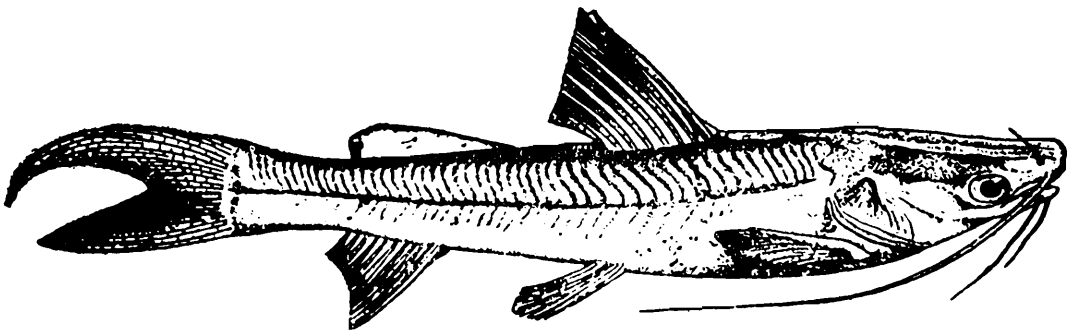

Fig. 42. Lateral view of *Aorichthys seenghala* (Sykes).

Remarks : This is also one of the usually caught larger and heavier cat fishes of India and Pakistan. It inhabits the larger river and is caught extensively, fetching attractive price for the fishermen. The fish breeds before the commencement of the monsoon rains. This species, however, is less abundant than *A. aor.*

As in the case of *A. aor*, this species also builds nests among pebbles in the bed of the river during April and May. Nests of this species are larger in size and are in deeper waters (Raj, 1940).

Family 8 SILURIDAE

Key to the genera

Gape of mouth wide, extending beyond the orbit posteriorly. ...	*Wallago*
Gape of mouth not wide, not extending beyond the orbit posteriorly. ...	*Ompok*

Genus 30 **Ompok** Lacépède

Key to the species

Maxillary barbels longer than head, extending up to or beyond anal fin. ...	*O. bimaculatus*
Maxillary baroels shorter than head, not extending up to anal fin. ...	*O. pabda*

46. **Ompok bimaculatus** (Bloch)

(Fig. 43)

1797. *Silurus bimaculatus* Bloch, *Syst. Ichth.*, **11** : 17, pl. 369 (type-locality : Malabar).

1981. *Ompok bimaculatus*, Jayaram, *Handbk. Freshw. Fish. India*, : 208, 209, fig. 102 A (distribution and key to species).

Common Name : *Pabda.*

Materials : (i) 1 ex. 117 mm. SL. ; Amarpur, South Tripura ; 10.8.85.

(ii) 2 exs., 60-64 mm. SL. ; Udaypur, South Tripura ; 15.8.85 and 16.8.85.

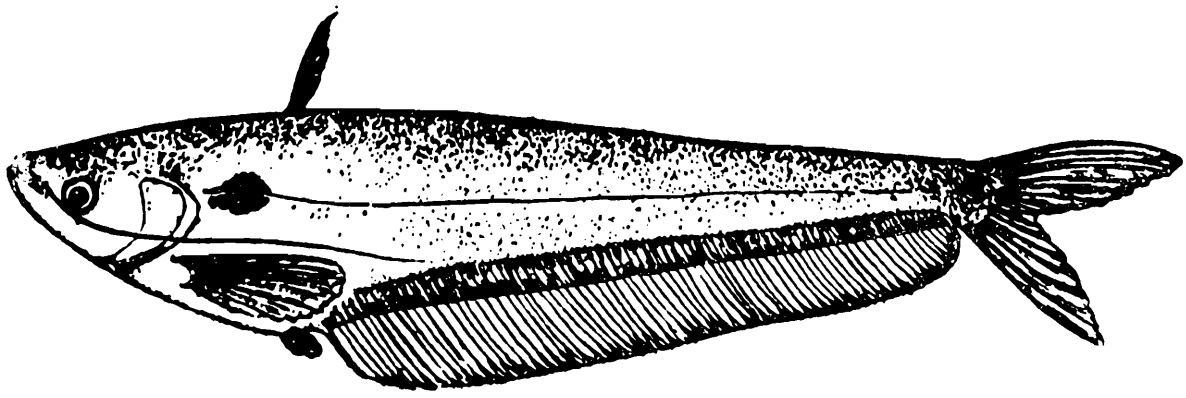

Fig. 43. Lateral view of *Ompok bimaculatus* (Bloch).

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, Thailand, Malaya, Vietnam, East Indies and Yunnan, China.

Size : It attains at least 304 mm. (1 foot) in TL.

Remarks : It is a good eating fish, called the "Butter fish" by the Europeans. Inhabits rivers, tanks and ponds.

47. **Ompok pabda** (Hamilton)

(Fig. 44)

1822. *Silurus pabda* Hamilton, *Fish. Ganges*, : 950, pl. 25, fig. 47 (type-locality : Bengal).

1981. *Ompok pabda*, Jayaram, *Handbk. Freshw. Fish. India*, : 209 (distribution and key to species).

Common Name : 4 exs., 115-130 mm. SL. ; Amarpur, South Tripura ; 10.8.85.

Geographical distribution : India : Indus, Ganga and Brahmaputra river systems. Pakistan, Bangladesh and Burma.

Size : Largest recorded specimen 172 mm. (7 inches) in TL.

Remarks : It is an esteemed food fish generally known for its taste as "Butter fish".

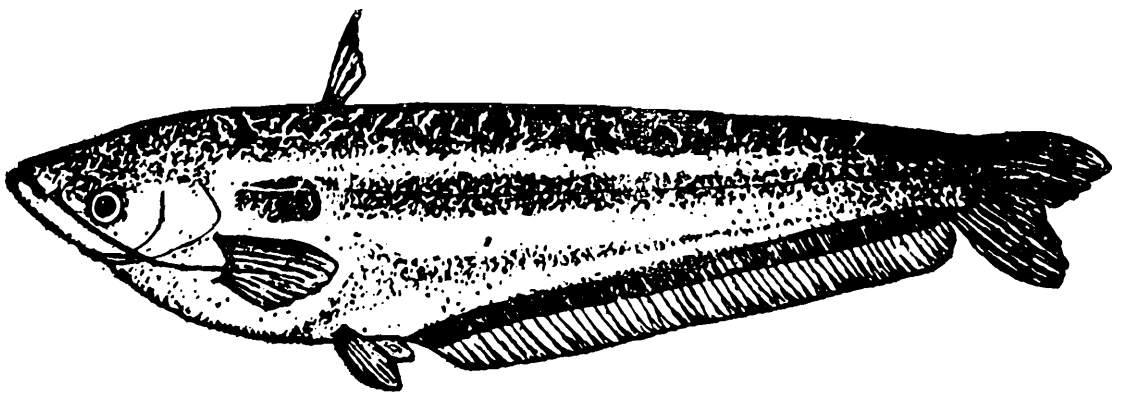

Fig. 44. Lateral view of *Ompok pabda* (Hamilton).

Genus 31 **Wallago** Bleeker

48. **Wallago attu** (Schneider)

(Fig. 45)

1801. *Silurus attu* Schneider, *Syst. Ichth. Bloch*, : 338, pl. 75 (type-locality : Malabar).

1981. *Wallago attu*, Jayaram, *Handbk. Freshw. Fish. India*, : 209, 210 (distribution and key to species).

Common name : *Boal*

Materials : 3 exs., 185-212mm. SL. ; Amarpur, South Tripura ; 10.8.85.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Sri Lanka, Thailand, Malaya, Vietnam, East Indies and Yunnan, China.

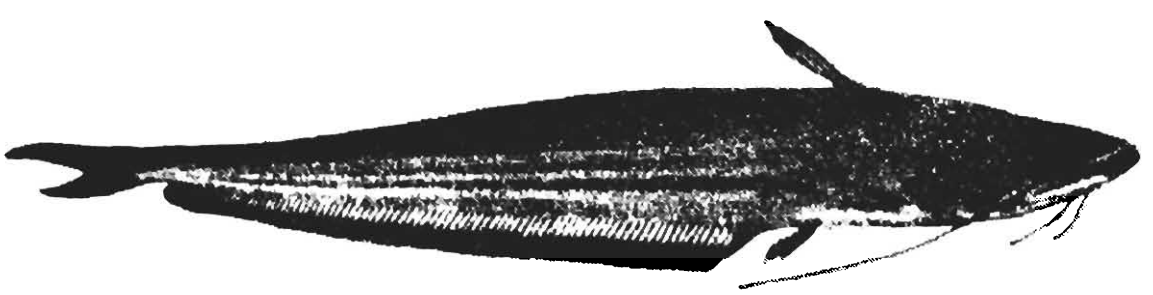

Fig. 45. Lateral view of *Wallago attu* (Schneider).

Size : Largest recorded specimen 1,828mm. (6 feet) in TL.

Remarks : This is one of the large sized voracious predatory siluroid fishes occurring in rivers and tanks, often found in tidal rivers. It is very destructive to all other kinds of fishes as it is predatory by nature,

destroying fry and small fishes. It feeds both on animal and vegetable matter. The giant size, large mouth and formidable teeth make this fish powerful to kill and devour almost every kind of fishes. It is known as fresh water shark. It is esteemed as food by people chiefly poorer classes.

Family 9 SCHILBEIDAE

Key to the subfamilies

Dorsal fin absent.	...	Ailinae
Dosrsal fin present.	...	Schilbeinae

Subfamily (i) AILINAE

Genus 32 **Ailia** Gray

49. **Ailia coila** (Hamilton)

(Fig. 46)

1822. *Malapterurus coila* Hamilton, *Fish. Ganges,* : 158, 375 (type-locality : fresh-water rivers of Bengal).

1981. *Ailia coila,* Jayaram, *Handbk. Freshw. Fish. India,* : 212-214, fig. 104 (distribution and key to species).

Common name : Kadali

Materials : 5 exs., 90-215mm. SL. ; Udaypur, South Tripura ; 16.8.85.

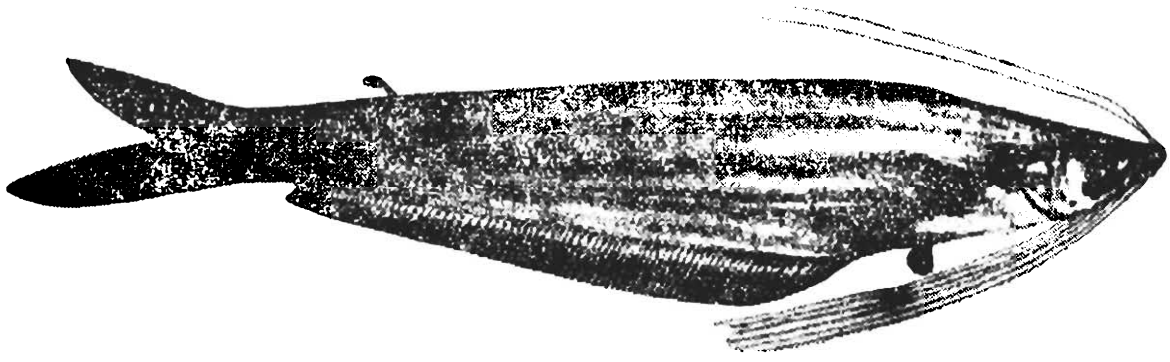

Fig. 46. Lateral view of *Ailia coila* (Hamilton).

Geographical distribution : India : up to Krishna river system. Pakistan. Nepal and Bangladesh.

Size : Largest recorded specimen 250mm. (10 inches) in TL.

Remarks : This is considered excellent eating and much esteemed as food fish. It is a surface or mid-water fish and lives in shoals in large rivers.

Subfamily (ii) SCHILBEINAE

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 only 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 he connected by a linear series. Posterior nostrils narrow. ... *Pseudeutropius*

Genus 33 **Pseudeutropius** Bleeker

50. **Pseudeutropius atherinoides** (Bloch)

(Fig. 47)

1797. *Silurus atherinoides* Bloch, *Naturges. ausland Fische*, 8 : 48, pl. 371, fig. 1 (type-locality : Tranquebar, Tamil Nadu).

1981. *Pseudeutropius atherinoides*, Jayaram, *Handbk. Freshw. Fish. India*, : 217, fig. 110 A, B (distribution and key to species).

Common name : Nil.

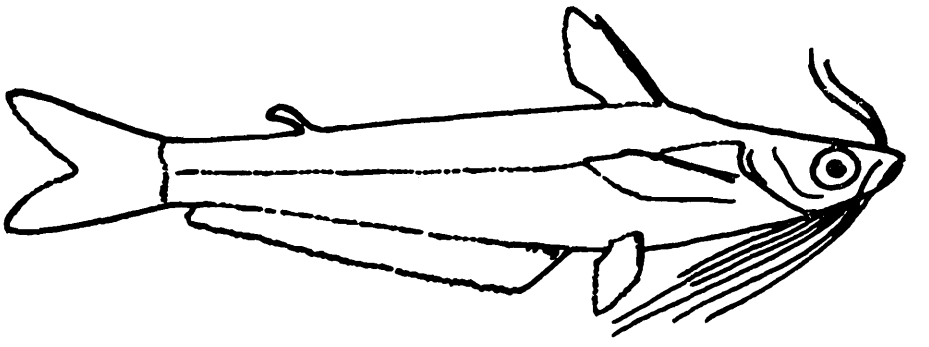

Fig. 47. Lateral view of *Pseudeutropius atherinedies* (Bloch)

Materials : 2 exs., 45-50mm. SL.; Udaypur, South Tripura; 16.8.85.

Geographical distribution : India : Throughout except Assam and Kerala. Pakistan. Nepal. Bangladesh and Burma.

Size : Largest recorded specimen 150mm. (6 inches) in TL.

Remarks : This fish is considered to be an inferior kind of economic value as a food fish, despite its wide distribution. However, its bright colour and small size attract the attention of aquarists (Jayaram, 1977b).

Genus 34 **Clupisoma** Swainson

Key to the species

Abdominal edge rounded. Maxillary barbels not extending beyond base of pectoral fin. Pectorals reaching pelvic fin. Anal fin with 41-43 rays. ...	*C. montana*
Abdominal edge keeled between pelvic fin and vent. Maxillary barbels extending beyond pectoral fin base, up to pelvic fin base. Pectorals not reaching pelvic fin. Anal fin with 29-36 rays. ...	*C. garua*

51. **Clupisoma garua** (Hamilton)

(Fig. 48)

1822. *Silurus garua* Hamilton, *Fish. Ganges*, : 156, 375, pl. 21, fig. 50 (type-locality : freshwater rivers of the Gangetic provinces).

1981. *Clupisoma garua*, Jayaram, *Handbk. Freshw. Fish. India*, : 219, 222, fig. 111 (distribution and key to species).

Common name : Nil.

Materials : 2 exs., 42-44mm. SL. ; Sonamura, West Tripura ; 17.8.85.

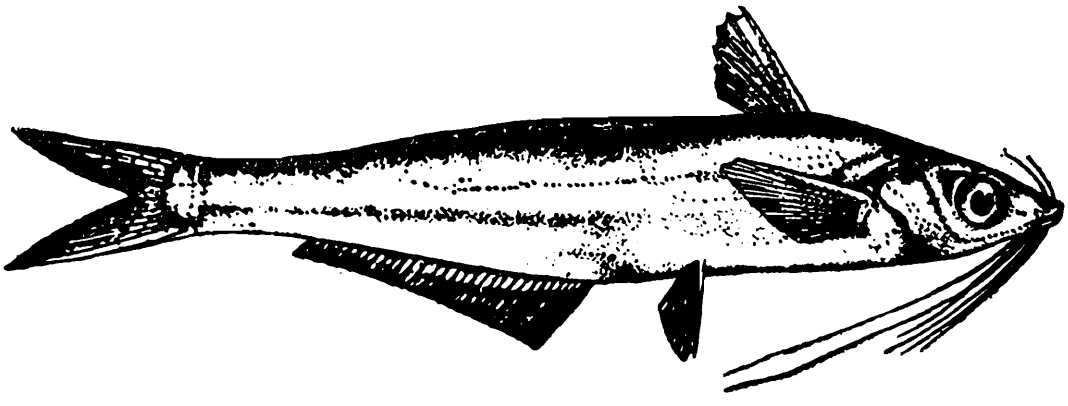

Fig. 48. Lateral view of *Clupisoma garua* (Hamilton).

Geographical distribution : India : Throughout north India, not recorded south of Mahanadi. Pakistan. Nepal and Bangladesh.

Size : Largest recorded specimen 850mm. (2 feet 8 inches) in TL.

Remarks : This is a common species generally favoured by the poorer people. It is considered good eating and is preferred in Punjab and other areas where it is considered a delicacy.

52. **Clupisoma montana** Hora

(Fig. 49)

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).

Common name : Nil.

Materials : 2 exs., 67-90mm. SL. ; Udaypur, South Tripura ; 16.8.85.

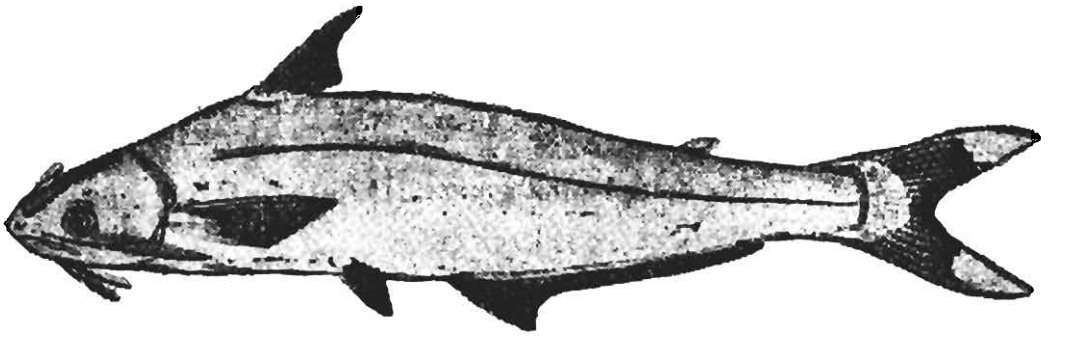

Fig. 49. Lateral view of *Clupisoma montana* Hora

Geographical distribution : India : Teesta river below Darjeeling, North Bengal, Yamuna and Sone river, Uttar Pradesh. Nepal.

Size : Largest recorded specimen 240mm. (1½ feet) in TL.

Remarks : Hora (1937) discovered and described this species from Teesta river below Darjeeling, North Bengal. Motwani and David (1958) recorded this speecies from Jamuna and Sone rivers.

The present record of this species form the first record from Tripura. A fish of limited fishery value.

Genus 35 **Eutropiichthys** Bleeker

Key to the species

Teeth on palate in a band wider than premaxillary band. Nasal barbels reach posterior margin 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 margin of the orbit. ...	*E. murius*

53. **Eutropiichthys murius** (Hamilton)

(Fig. 50)

1822. *Pimelodus murius* Hamilton, *Fish. Ganges*, : 195, 378 (type-locality : Mahananda river).

1981. *Eutropiichthys murius*, Jayaram, *Handbk. Freshw. Fish. India*, : 224 (distribution and key to species).

Common Name : *Muribacha.*

Materials : 3 exs., 155-160 mm. SL. ; Amarpur, South Tripura ; 10.8.85.

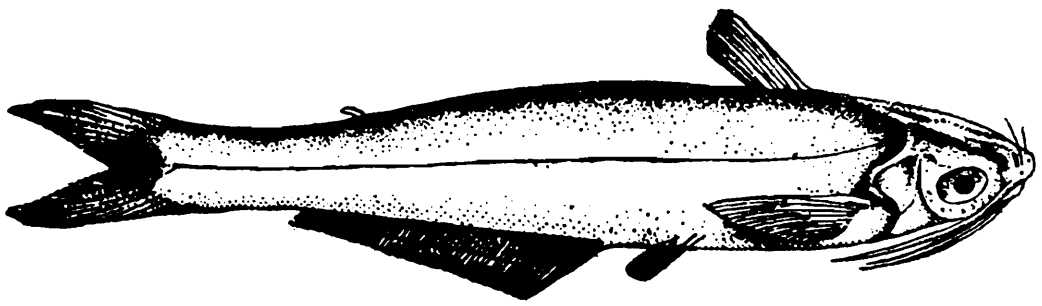

Fig. 50. Lateral view of *Eutropiichthys murius* (Hamilton)

Geographical distribution : India, Pakistan, and Bangladesh. The southern limit in India is the Mahanadi river system (Jayaram, 1977b).

Size : Largest recorded specimen 200mm. (8 inches) in TL.

54. **Eutropiichthys vacha** (Hamilton)

(Fig. 51)

1822. *Pimelodus vacha* Hamilton, *Fish. Ganges*, : 196, 378, pl. 19, fig. 4 (type-locality : larger freshwater rivers of the Gangetic provinces).

1981. *Eutropiichthy vacha*, Jayaram, *Handbk. Freshw. Fish.* India, : 224 (distribution and key to species).

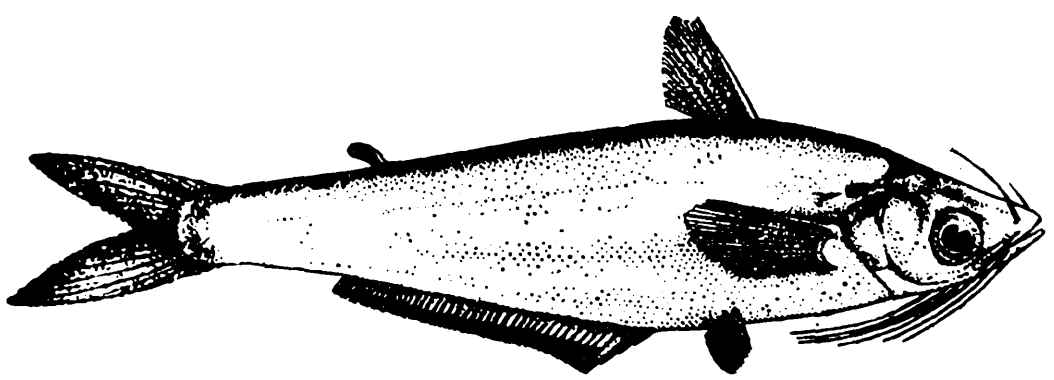

Fig. 51. Lateral view of *Eutropiichys vacha* (Hamilton).

Common name : *Bacha.*

Materials : 2 exs., 130-145 mm. SL. ; Amarpur, South Tripura ; 10.8.85.

Geographical distribution : India : North India up to Mahanadi. Nepal. Pakistan. Bangladesh. Burma and Thailand.

Size : Largest recorded specimen 304mm. (1 foot) in TL.

Remarks : A smooth skined good eating fish. It is a voracious eater feeding on small fishes and aquatic insects.

Genus 36 **Silonia** Swainson

55. **Silonia silondia** (Hamilton)

(Fig. 52)

1822. *Pimelodus silondia* Hamilton, *Fish. Ganges*, : 160, 375. pl. 7, fig. 50 (type-locality : Gangetic provinces).

1981. *Silonia silondia*, Jayaram, *Handbk. Freshw. Fish. India*, : 225 (distribution and key to species).

Common name : *Shilong, Silon.*

Material : No material was collected by me. It was recorded by Lipton (1983-84) from the river Gumti, Tripura.

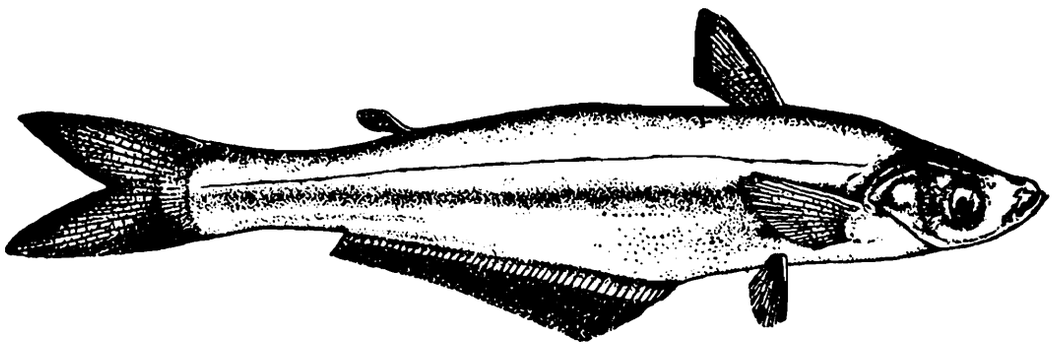

Fig. 52. Lateral view of *Silonia silondia* (Hamilton).

Geographical distribution : India : North India. Bangladesh. Nepal and Pakistan.

Size : Largest recorded specimen 900mm. (3 feet) in TL.

Remarks : This is a very common food fish occurring in the Gangetic estuary. It is a riverine fish but inhabits tanks and reservoirs as well. This is a gregarious species moving in shoals. Its breeding period during the monsoon months. It is considered good eating as it prefers strong, well oxygenated streams and clear deep waters.

Family 10 AMBLYCIPITIDAE

Genus 37 **Amblyceps** Blyth

56. **Amblyceps mangois** (Hamilton)

(Fig. 53)

1822. *Pimelodus mangois* Hamilton, *Fish. Ganges,* : 199, 379 (type-locality : North Bihar).

1981. *Amblyceps mangois,* Jayaram, *Handbk. Freshw. Fish. India,* : 228 (distribution).

Common name : Nil.

Material : No specimen was collected by me. This species was recorded by Lipton (1983-84) from the river Gumti, Tripura.

Geographical distribution : India : along the foot-hills of the Himalayas from Kangra valley in Panjab to Assam, Krishna river system, South India. Pakistan, Nepal, Bangladesh, Burma, Thiland and Laos.

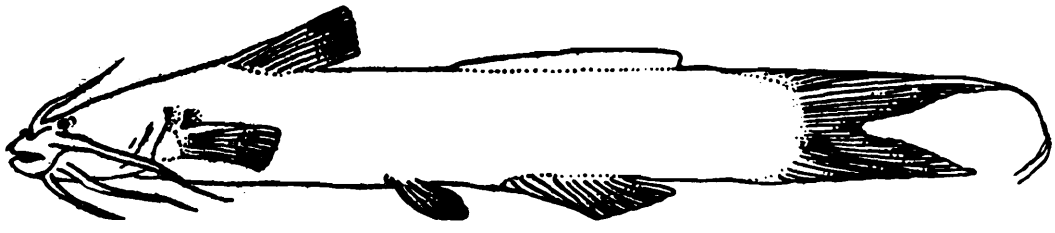

Fig. 53. Lateral view of *Amblyceps mangois* (Hamilton).

Size : Largest recorded specimen 125mm. (5 inches) in TL.

Remarks : This is an inhabitant of pebbly beds in swift currents at base of hills, it is capable of sustaining viscissitudes of water current and velocity. It is only of local importance and their small size does not fetch a good price. It bites viciously and can live out of water for some time.

It is the only species known so far under the genus.

Family 11 SISORIDAE

Key to the genera

1. An adhesive apparatus on ventral surface of body present, distinct and well developed. ... *Glyptothorax*

   An adhesive apparatus on ventral surface of body absent, if present faintly developed, indistinct. 2

2. Serrations along outer margin of pectoral spine divergent or combination of retrorse and antrorse teeth. ... *Erethistoides*

   Serrations along outer margin of pectoral spine either absent or when present . weak, in one direction only. 3

3.	Caudal fin rays not prolonged. Body smooth, without body plates. ...	*Gagata*
	Caudal fin rays prolonged. Body with bony plates. ...	*Bagarius*

Genus 38 **Bagarius** Bleeker

57. **Bagarius bagarius** (Hamilton)

(Fig. 54)

1822. *Pimelodus bagarius* Hamilton, *Fish. Ganges,* : 186, 378, pl. 7, fig. 62 (type-locality : the Ganges).

1981. *Bagarius bagarius,* Jayaram, *Handbk. Freshw. Fish. India,* : 238 (distribution).

Common name : *Bhaghar.*

Materials : 2 exs., 230-245mm. SL. ; Amarpur, South Tripura ; 10.8.85.

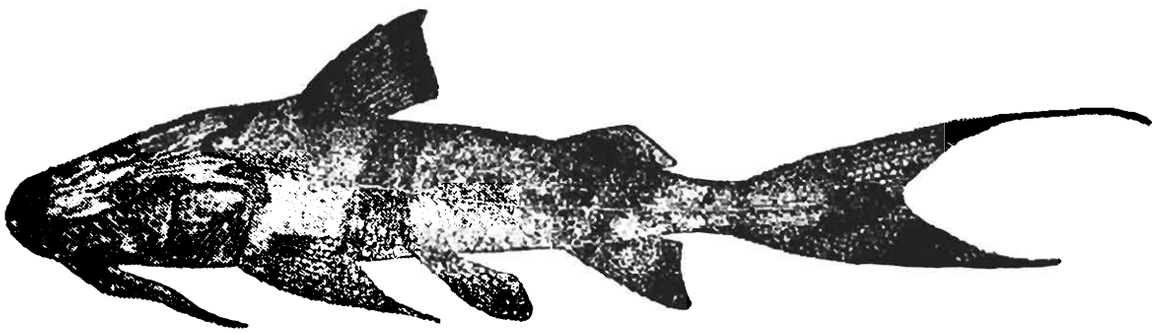

Fig. 54. Lateral view of *Bagarius bagarius* (Hamilton).

Geographical distribution : India, Pakistan, Nepal, Bangladesh, Burma, Thailand, Malaya, East Indies and Tonkin.

Size : Largest recorded specimen 225 cm. (7½ feet) in TL.

Remarks : This fish is known as the 'Goonch' and is a favourite of anglers. One of the largest known fresh water fish, and also called the fresh water shark, it is very voracious, feeding on small fishes, frogs, shrimps. It is mainly an inhabitant of rapids and rocky ponds. Breeding season is prior to the commencement of the monsoon rains.

Genus 39 **Gagata** Bleeker

58. **Gagata cenia** (Hamilton)

(Fig. 55)

1822. *Pimelodus cenia* Hamilton, *Fish. Ganges,* : 174, 376, pl. 131, fig. 67 (type-locality : Northern Bengal).

1981. *Cagata cenia,* Jayaram, *Handbk. Freshw. Fish. India,* : 239, fig. 129 (distribution and key to species).

Common name : Nil.

Materials : (i) 1 ex., 65mm. SL. ; Amarpur, South Tripura ; 8.8.85.

(ii) 2 exs., 29-38mm. SL. ; Sonamura, West Tripura ; 18.8.85.

Geographical distribution : India : Assam, West Bengal, Bihar, Orissa, Punjab, Delhi, Uttar Pradesh. Bangladesh. Pakistan. Nepal and Burma.

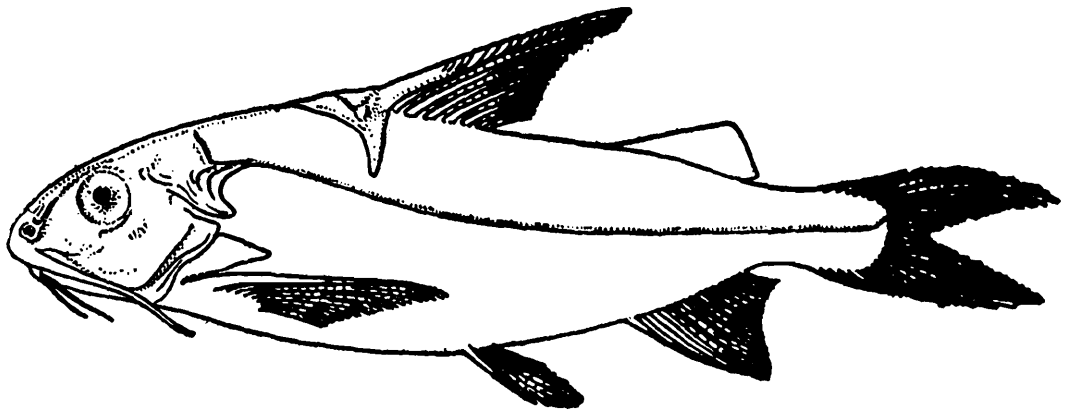

Fig. 55. Lateral view of *Gagata cenia* (Hamilton).

Size : Largest recorded specimen 150mm. (6 inches) in TL.

Remarks : This species is being recorded here for the first time from Tripura.

Genus 40 **Erethistoides** Hora

59. **Erethistoides montana montana** Hora

1950. *Erethistoides montana montana* Hora, *Rec. Indian Mus.*, **47** : 191 (type-locality : Tangla, Darrang district, Assam).

1981. *Erethistoides montana montana*, Jayaram, *Handbk. Freshw. Fish. India*, : 244 (dsstribution).

Common name : Nil.

Materials : 1 ex., 60mm. SL. ; Amarpur, South Tripura ; 8.8.85.

Geographical distribution : India : Tangla, Darrang district, Assam.

Size : The only specimen recorded from Tripura is 60mm. ($2\frac{1}{2}$ inches) in TL.

Remarks : The species is being recorded here for the first time from Tripura.

Genus 41 **Glyptothorax** Blyth

60. **Glyptothorax conirostre conirostre** (Steindachner)

1867. *Glyptosternum conirostre* Steindacher, *S. B. K. Acad. Wiss. Wien.*, **55** (1) : 532, pl. 5, fig. 2 : pl. 6, fig. 2 (type-locality : Simla).

1981. *Glyptothorax conirostrae conirostrae*, Jayaram, *Handbk. Freshw. Fish. India*,: 253, 260 (distribution and key to species).

Common name : Nil.

Materials : 2 exs., 78-79mm. SL. ; Amarpur, South Tripura ; 8.8.85.

Geographical distribution : India : Kangra valley, Punjab, Mahanadi river, Siliguri, North Bengal. China.

Size : Largest recorded specimen 105mm. (4 inches) in TL.

Remarks : This species is being recorded here for the first time from Tripura. It has no fishery value.

Family 12 CLARIIDAE

Genus 42 **Clarias** Scopoli

61. **Clarias batrachus** (Linnaeus)

(Fig. 56)

1758. *Silurus batrachus* Linnaeus, *Syst. Nat.*, **1**, ed. 10, : 305 (type-locality : Asia ; Africa).

1981. *Clarias batrachus*, Jayaram, *Handbk. Freshw. Fish. India*, : 270, fig. 154 (distribution and key to species).

Common name : *Magur.*

Materials : (i) 3 exs., 96-114mm. SL. ; Amarpur, South Tripura ; 8.8.85.

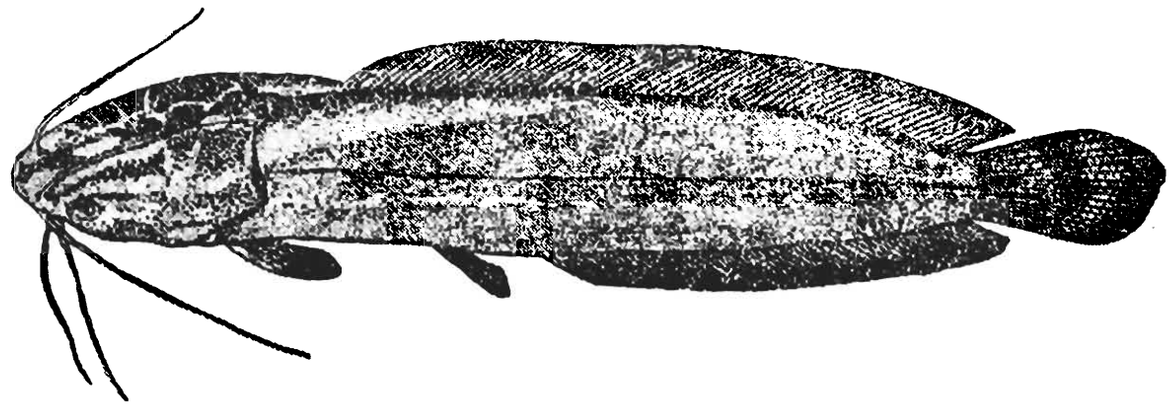

Fig. 56. Lateral view of *Clarias batrachus* (Linnaeus).

(ii) 2 exs., 105-125mm. SL. ; Sonamura, West Tripura ; 18.8.85.

Geographical distribution : India, Pakistan, Nepal, Sri Lanka, Bangladesh, Thailand, Malaya, Malacca, Philippines, Java, Bali, Lombok, Sumatra, Singapore and Borneo.

Size : It grows 457mm. (1½ feet) in TL.

Remarks : This is one of the most predominent cat fishes of India and Pakistan occurring in fresh, brackish and marshy or muddy waters (dried up beels, canals, tanks, bherries etc.). It is a high priced fish for its believed rejuvenating vigor.

The barbels of this fish appear to be the chief organs of perception as experiments carried out in the aquarium have proved this fish is practically blind to objects beyond the reaeh of its barbels.

Family 13 HETEROPNEUSTIDAE

Genus 43 **Heteropneustes** Müller

62. **Heteropneustes fossilis** (Bloch)

(Fig. 57)

1794. *Silurus fossilis* Bloch, *Naturg. Ausland. Fische,* 8 : 46, pl. 370, fig. 2 (type-locality : Tranquebar, Tamil Nadu).

1981. *Heteropneustes fossilis,* Jayaram, *Handbk. Freshw. Fish. India,* : 273, 274, fig. 156 (distribution and key to species).

Common Name : *Shingi.*

Materials : (i) 4 exs., 120-155 mm. SL. ; Amarpur, South Tripura ; 8.8.85.

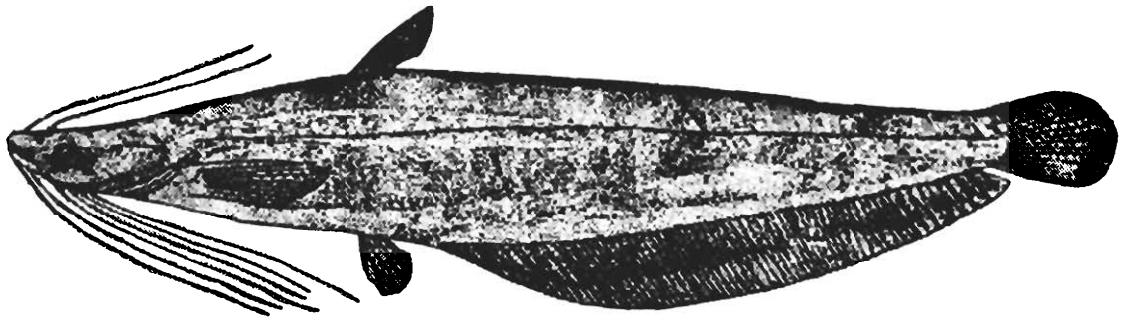

Fig. 57. Lateral view of *Heteropneustes fossilis* (Bloch).

(ii) 3 exs., 135-170 mm. SL., Sonamura, West Tripura, 17.8.85.

Geographical distribution : India, Pakistan, Nepal, Sri Lanka, Bangladesh, Theiland and Laos.

Size : It grows 304 mm. (1 foot) or more in TL.

Remarks : This is one of the most common siluroid fishes found throughout India and Pakistan inhabiting in confined waters both in fresh water and slightly brackish water, such as ponds, tanks, lakes, bheels and marshys. It comes to surface of water for respiration at intervals of 3 to 5 minutes. The frequency of its visit to surface water

varies at different times of the day and depends upon meterological conditions to a great extent. During heavy shower it rises to surface after much longer intervals, whereas on a hot, calm and sultry day it remains swimming or floating near surface. It lives in large shoals in suitable localities and is extensively fished on account of the reported invigorating qualities of its flesh. The fish is generally avoided by some from middle of February to middle April, as it is believed that it spread small-pox. The reason may be that during this period the skin is covered with small raised rounded patches. The respite gives the fishery a closed season and a recovery.

Family 14 OLYRIDAE

Gemus 44 **Olyra** McClelland

63. **Olyra kempi** Chaudhuri

(Fig. 58)

1912. *Olyra kempi* Chaudhuri, *Rec. Indian Mus.*, **7** : 443, pl. 41, fig. 4 (type-locality : locality : Mangaldai, Assam).

1981. *Olyra kempi*, Jayaram, *Handbk. Freshw. Fish. India*, : 276 (distribution and key to species).

Common Name : *Bhotsinghi.*

Materials : 3 exs., 60-65 mm. SL. ; Amarpur, South Tripura ; 8.8.85.

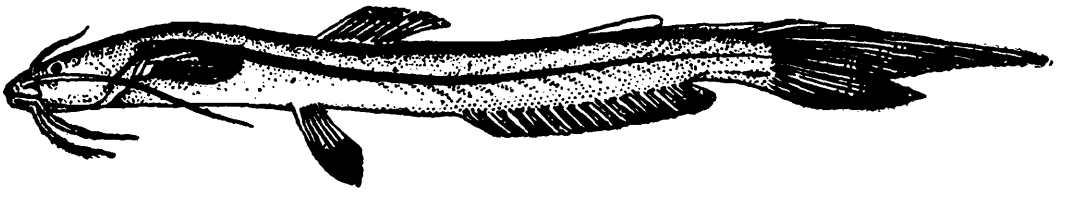

Fig. 58. Lateral view of *Olyra kempi* Chaudhuri

Geographical distribution : India : Mangaldai, Assam.

Size : Largest recorded specimen 104 mm. (4 inches) in TL.

Remarks : This species is being recorded here for the first time from Tripura. The fish has got no fishery value.

Order VI ATHERINIFORMES

Family 15 BELONIDIAE

Genus 45 **Xenentodon** Regan

64. **Xenentodon cancila** (Hamilton)

(Fig. 59)

1822. *Esox cancila* Hamilton, *Fish. Ganges,* : 213, 380, pl. 27, fig. 70 (type-locality : Gangetic provinces).

1981. *Xenentodon cancila,* Jayaram, *Handbk. Freshw. Fish. India,* : 291, 292, fig. 164 (genus description and distribution).

Common Name : *Kankle, Kakhya.*

Materials : (i) 5 exs., 82-105 mm. SL. ; Udaypur, South Tripura ; 16.8.85.

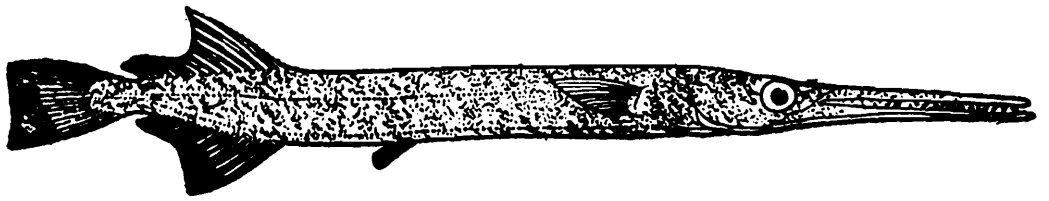

Fig. 59. Lateral view of *Xenentodon cancila* (Hamilton).

(ii) 1 ex., 80 mm. SL. ; Sonamura, West Tripura, 17.8.85.

Geographical distribution : India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma, Thailand, Malaya Archipelago, Borneo and Sumatra.

Size : Largest recorded specimen 304 mm. (1 foot) in TL.

Remarks : It occurs in rivers, canals, lakes and beels. Commercially not so important fish.

Family 16 CYPRINODONTIDAE

Genus 46 **Aplocheilus** McClelland

65. **Aplocheilus panchax** (Hamilton)

(Fig. 60)

1822. *Esox panchax* Hamilton, *Fish. Ganges,* : 211, 380, pl. 3, fig. 69 (type-locality : ditches and ponds of Bengal).

1981. *Aplocheilus panchax,* Jayaram, *Handbk. Freshw. Fish. India,* : 295, fig. 167 (distribution and key to species).

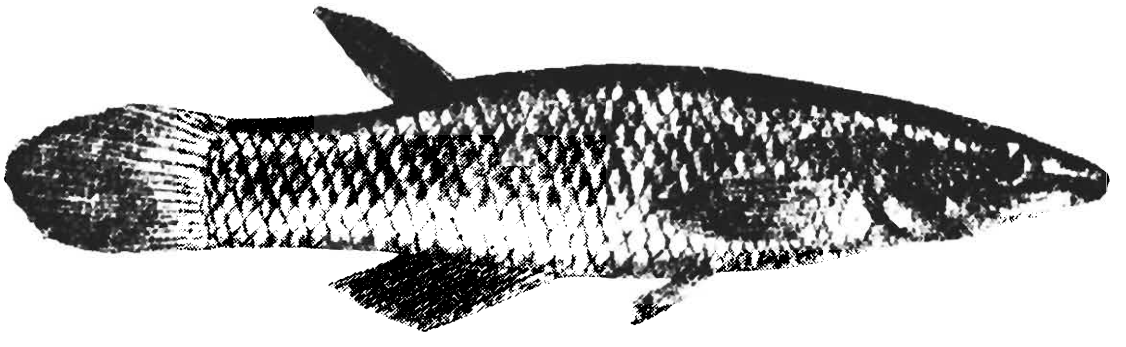

Fig. 60. Lateral view of *Aplocheilus panchax* (Hamilton).

Common Name : Nil.

Materials : 2 exs., 27-34mm. SL. ; Udaypur, South Tripura, 15.8.85 and 16.8.85.

Geographical distribution : India : Assam, Tripura, West Bengal, Orissa, Uttar Pradesh, Madhya Pradesh, Punjab, Andamans. Pakistan. Bangladesh, Burma, Sri Lanka, Malaya and Thailand.

Size : It grows 89mm. ($3\frac{1}{2}$ inches) in TL.

Remarks : This fish is one of the most important indigenous larvivorous species. Many workers viz., Aitkins (1901), Alcock (1911, 1920), Brahmachari (1909), Chaudhuri (1909, 1911), Covell (1935), Gravely (1937), Hora (1927), Hora and Nair (1938), Job (1940), John, (1940), MacDonald (1914), Southwell (1920), Thomson (1927) and Wilson (1914) testified to the great utility of this fish for malaria control.

Order VII CHANNIFORMES

Family 17 CHANNIDAE

Genus 47 **Channa** Scopoli

Key to the species

1.	Four or five scales between the orbit and angle of preopercle. Lateral line scales 37-45.	2
	Nine to seventeen scales between the orbit and angle of preopercle. Lateral line scales 60-65. ...	*C. barca*
2.	Pelvic fin less than half length of pectoral fin. Pectoral fins spotted. Lateral line scales 40-45 and dorsal fin rays 32-37. ...	*C. orientalis*
	Pelvic fin more than half length of pectoral fin. Pectoral fins plain. Lateral line scales 37-40 and dorsal fin rays 29-32. ...	*C. punctatus*

66. **Channa barca** (Hamilton)

1822. *Ophiocephalus barca* Hamilton, *Fish. Ganges*, : 67, 367, pl. 135, fig. 20 (type-locality : R. Brahmaputra near Goalpara, Assam).

1981. *Channa barca*, Jayaram, *Handbk. Freshw. Fish. India*, : 306, 307 (distribution and key to species).

Common name : Nil.

Material : 3 exs., 50-60 mm. ; Udaypur, South Tripura, 14.8.85.

Geographical distribution : India : Assam, Meghalaya, West Bengal. Bangladesh and Pakistan.

Size : Largest recorded specimen 329 mm. (1 foot 1.2 inches) in TL.

Remarks : This is one of the rare species and very difficult to collect. According to Hamilton (1822) "It inhabits perpendicular banks, inholes dug like those of the Martin (Hirundo). In these it lurks, watching for its prey, with its head out." Commercially, this fish is less important, consumed by poorer sections of people.

This species is being recorded here for the first time from Tripura.

67. **Channa orientalis** (Schneider)

(Fig. 61)

1801. *Ophiocephalus orientalis* Schneider, *Syst. Ichth. Bloch.*, : 496, pl. 90, fig. 2 (type-locality : India).

1981. *Channa orientalis*, Jayaram, *Handbk. Freshw. Fish. India*, : 306, 307 (distribution and key to species).

Common Name : *Cheng*.

Materials : 2 exs., 58-100 mm. SL. ; Amarpur, South Tripura ; 10.8.85.

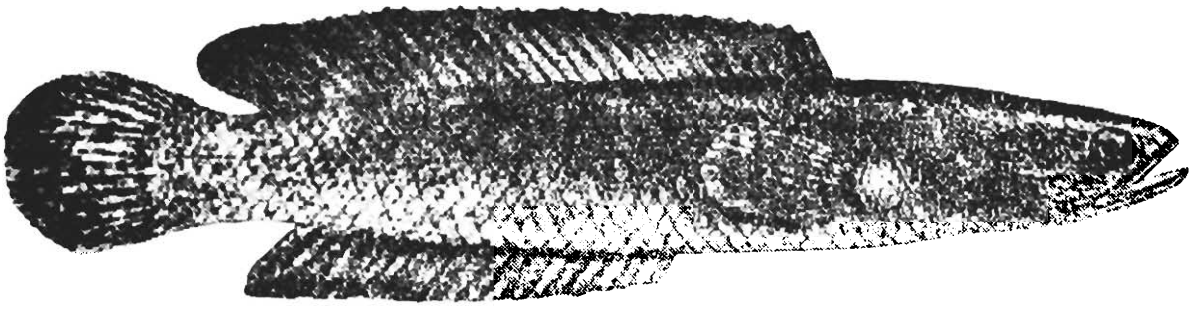

Fig 61. Lateral view of *Channa orientalis* (Schneider).

Geographical distribution : Throughout India, Nepal, Bangladesh, Pakistan, Sri Lanka and Burma.

Size : Largest recorded specimen 203 mm. (8 inches) in TL.

Remarks : Menon (1974) synonymized *Channa gachua* (Hamilton) with this species. It is found to live in beels, tanks, canals, road-side ditches, marshy water bodies and paddy-fields. Commercially this fish is less important.

68. **Channa punctatus**:(Bloch)

(Fig. 62)

1793. *Ophiocephalus punctatus* Bloch, *Naturg. Ausland. Fische*, **7** : 139, pl. 358 (type-locality : Malabar coast).

1981. *Channa punctatus*, Jayaram, *Handbk. Freshw. Fish. India*, : 306, 307, fig. 172 (distribution and key to species).

Common Name : *Taki, Lata.*

Materials : (i) 4 exs., 64-95 mm. SL. ; Amarpur, South Tripura ; 8.8.85.

(ii) 2 exs., 62-74 mm. SL. ; Udaypur, South Tripura ; 16.8.85.

Geographical distribution : Throughout India, Nepal, Bangladesh, Pakistan, Sri Lanka, Burma, Malaya, Thailand, China and Polynesia.

Fig. 62. Lateral view of *Channa punctatus* (Bloch).

Size : Largest recorded specimen 304 mm. (1 foot) in TL.

Remarks : This is a very common fish occurring in tanks, beels, canals, paddy-fields, ditches and nullahas and thrives well in muddy and swampy localities.

Order VIII PERCIFORMES

Family 18 CHANDIDAE

Genus 48 **Chanda** Hamilton

Key to the species

Lateral line indistinct, discontinuous or absent. The upper edge of dorsal fin generally with a dark blotch. ...	*C. nama*
Lateral line distinct. No such colour blotch on dorsal fin. ...	*C. ranga*

69. **Chanda nama** Hamilton

(Fig. 63)

1822. *Chanda nama* Hamilton, *Fish. Ganges,* : 109, 371 (type-locality : ponds throughout Bengal).

1981. *Chanda nama,* Jayaram, *Handbk. Freshw. Fish. India,* : 317, 318, fig. 178 (distribution and key to species).

Common Name : *Chanda.*

Materials : (i) 3 exs., 36-42 mm. SL. ; Udaypur, South Tripura ; 16.8.85.

(ii) 11 exs., 37-52 mm. SL. ; Sonamura, West Tripura ; 18.8.86.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh and Burma.

Size : It grows 76mm. (3 inches) in TL.

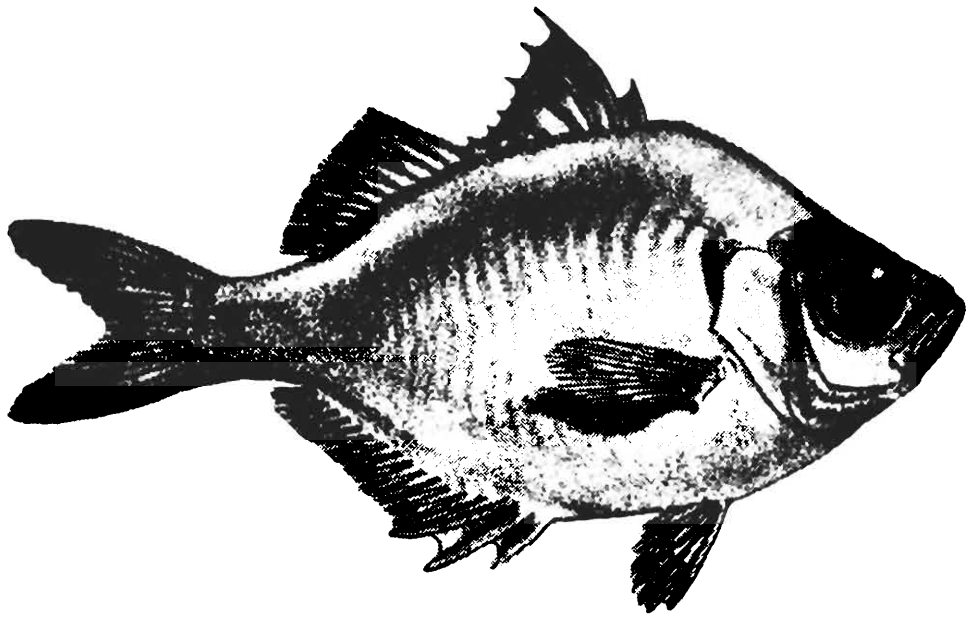

Fig. 63. Lateral view of *Chanda name* Himilton.

Remarks : The genus *Chanda* is now restricted to its type species *Chanda nama* according to the opinion 1121 of the International Commission on Zoological Nomenclature (Talwar, 1971).

70. **Chanda ranga** Hamilton

(Fig. 64)

1822. *Chanda ranga* Hamilton, *Fish. Ganges,* : 113, 371, pl. 16, fig. 38 (type-locality : freshwaters of all parts of the Gangetic provinces).

1981. *Chanda ranga,* Jayaram, *Handbk. Freshw. Fish. India,* : 318 (distribution and key to species).

Common name : ***Chanda.***

Materials : (i) 5 exs., 48-55mm. SL. ; Amarpur, South Tripura ; 8.8.85 and 10.8.85.

(ii) 4 exs., 42-47mm. SL. ; Udaypur, South Tripura ; 15.8.85 and 16.8.85.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Burma, Malaya and Thailand.

Size : It attains 102mm. (4 inches) in TL.

Remarks : *C. nama* and *C. ranga* resemble each other specially in juvenile stage. However, they differ by the presence of 2-3 large canine teeth in the lower jaw of *C. nama* vs. absent in *C. ranga* and body depth comparatively deeper in *C. ranga* than *C. nama*.

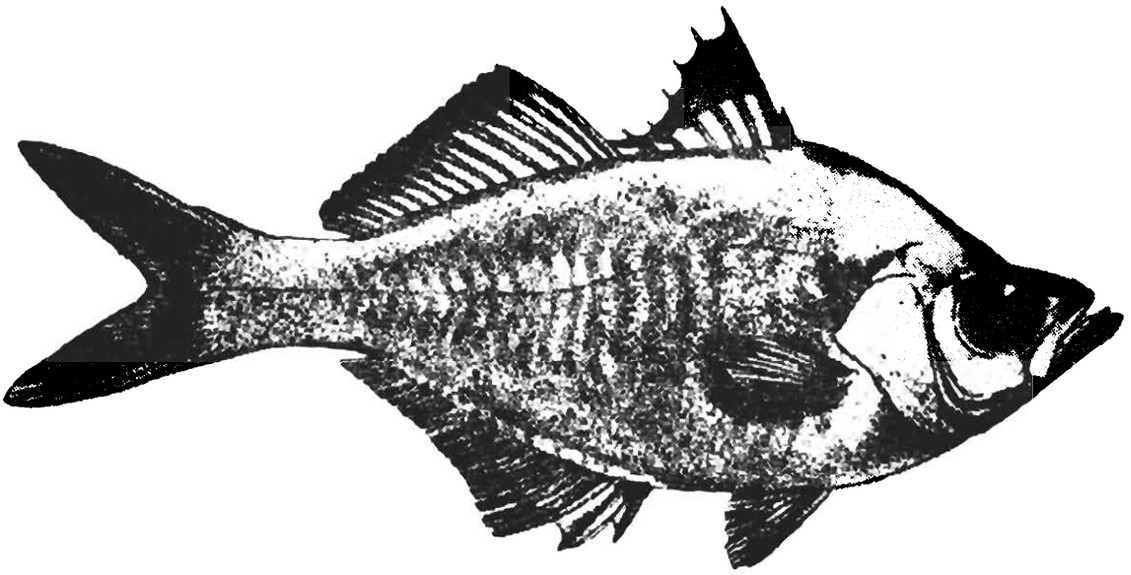

Fig. 64. Lateral view of *Chanda ranga* Hamilton.

Family 19 NANDIDAE

Genus 49 **Nandus** Valenciennes

71. **Nandus nandus** (Hamilton)

(Fig. 65)

1822. *Coius nandus* Hamilton, *Fish. Ganges*, : 96, pl. 30, fig. 32 (type-locality : ponds of Gangetic provinces).

1981. *Nandus nandus*, Jayaram, *Handbk. Freshw. Fish. India*, : 335, 336, fig. 185 (distribution and key to species).

Common name : Nandus.

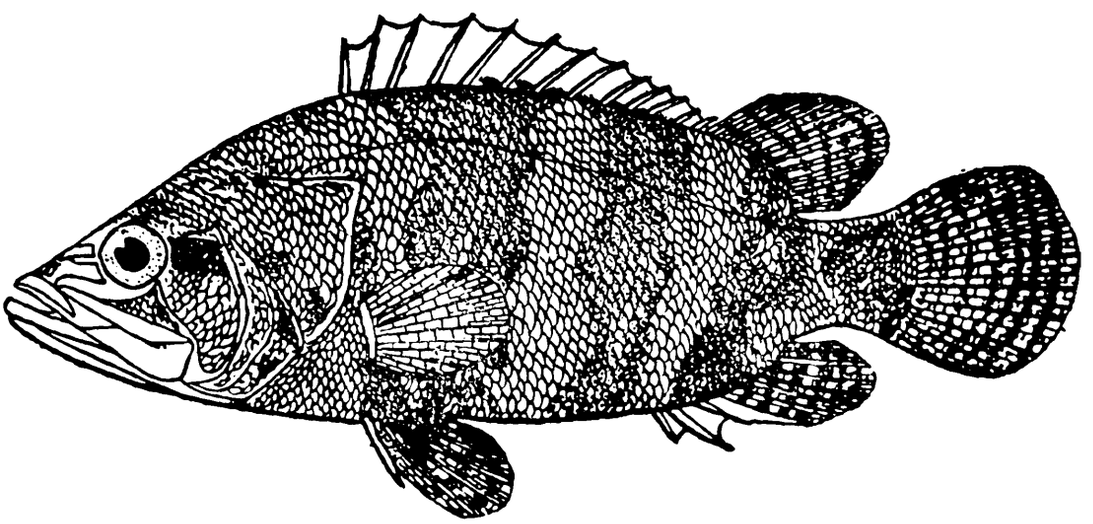

Fig. 65. Lateral view of *Nandus nandus* (Hamilton).

Materials : 4 exs., 43-55mm. SL. ; Amarpur, South Tripura ; 8.8.85. and 10.8.85.

Geographical distribution : Throughout India, Bangladesh, Nepal, Pakistan, Burma, Malaya and Thailand.

Size : It attains 177mm. (7 inches) in TL.

Remarks : It is a piscivorous fish preying upon small carps in paddy fields and ditches.

Family 20 MUGILIDAE

Key to the genera

Opercle with a strong spine. Eye large, lateral in position. Scales 36-39 along lateral series.···	*Sicamugil*
Opercle without a spine. Eyes comparatively shorter, bulging, dorso-lateral in position. Scales 48-52 along lateral series. ···	*Rhinomugil*

Genus 50 **Sicamugil** Fowler

72. **Sicamugil cascasia** (Hamilton)

(Fig. 66)

1822. *Mugil cascasia* Hamilton, *Fish. Ganges*, : 217, 380 (type-locality : northern rivers of Bengal).

1981. *Sicamugil cascasia*, Jayaram, *Handbk. Freshw. Fish. India*, : 344, 345, fig. 190 (distribution and key to species).

Common name : Nil.

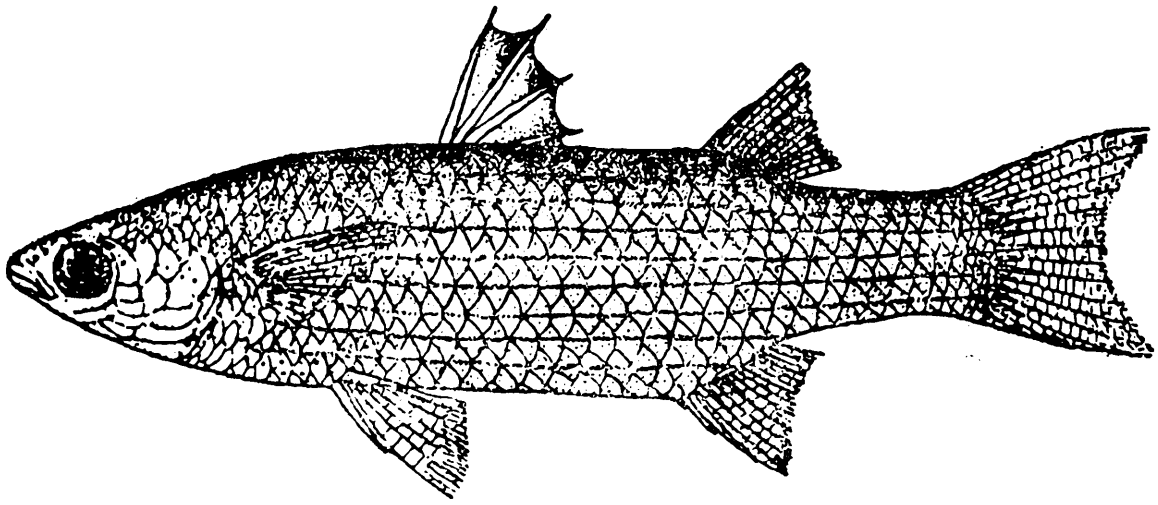

Fig. 66. Lateral view of *Sicamugil cascasia* (Hamilton).

Materials : 2 exs., 52-54mm. SL. ; Udaypur, South Tripura, 16.8.85.

Geographical distribution : India : Upper reaches of Ganga, Yamuna, Brahmaputra river systems. Pakistan. Burma. Bangladesh and Sri Lanka.

Size : It attains 102mm. (4 inches) in TL.

Remarks : This is the only fresh water species under the family. This species is being recorded here for the first time from Tripura.

Genus 51 **Rhinomugil** Gill

73. **Rhinomugil corsula** (Hamilton)

(Fig. 67)

1822. *Mugil corsula* Hamilton, *Fish. Ganges,* : 221, 381, pl. 9, fig. 97 (type-locality : rivers of the Gangetic provinces and in the southern parts of Bengal).

1981. *Rhinomugil corsula,* Jayaram, *Handbk. Freshw. Fish. India,* : 345, 346, fig. 191 (distribution and key to species).

Common name : Nil.

Materials : 4 exs., 50-65mm. SL. ; Sonamura, West Tripura ; 18.8.85.

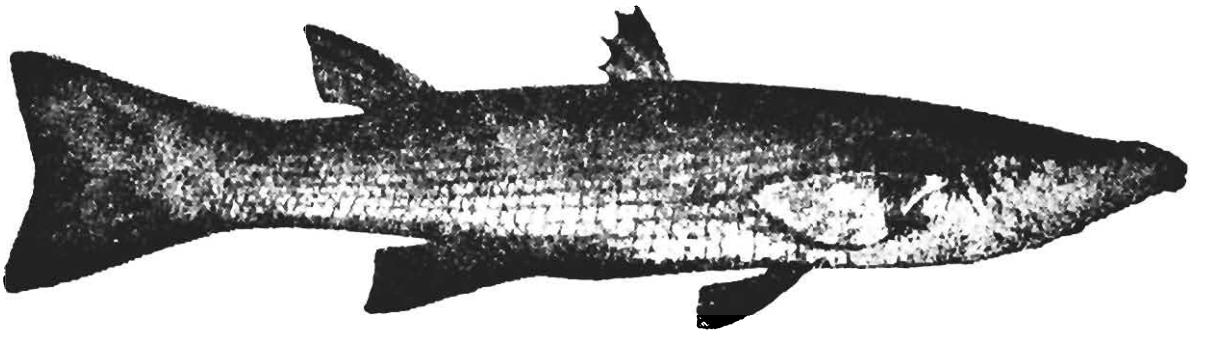

Fig. 67. Lateral view of *Rhinomugil corsula* (Hamilton).

Geographical distribution : India : Ganga, Cauvery river systems (Menon and Jayaram, 1977), Nepal. Bangladesh. Pakistan and Burma.

Size : Largest recorded specimen 457mm.(1½ foot) in TL.

Remarks : This is the only species known under the genus *Rhinomugil* occurring in estuaries and fresh waters far above the tidal influence.

This species is being recorded here for the first time from Tripura.

Family 21 GOBIIDAE

Genus 52 **Glossogobius** Gill

74. **Glossogobius giuris** (Hamilton)

(Fig. 68)

1822. *Gobius giuris* Hamilton, *Fish. Ganges,* : 51, 366, pl. 33, fig. 51 (type-locality : ponds and fresh water rivers of Gangetic provinces).

1981. *Glossogobius giuris* Jayaram, *Handbk. Freshw. Fish. India,* : 357, 358, fig. 193 (distribution and key to species).

Common name : *Bhalia* or *Belay*.

Materials : (i) 1 ex., 120mm. SL. ; Amarpur, South Tripura ; 10.8.85.

(ii) 1 ex., 70mm. SL. ; Sonamur, West Tripura, 18.8.85.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh, Sri Lanka and Burma. It has a wide range of distribution from East coast of Africa to Japan, Australia and south Pacific.

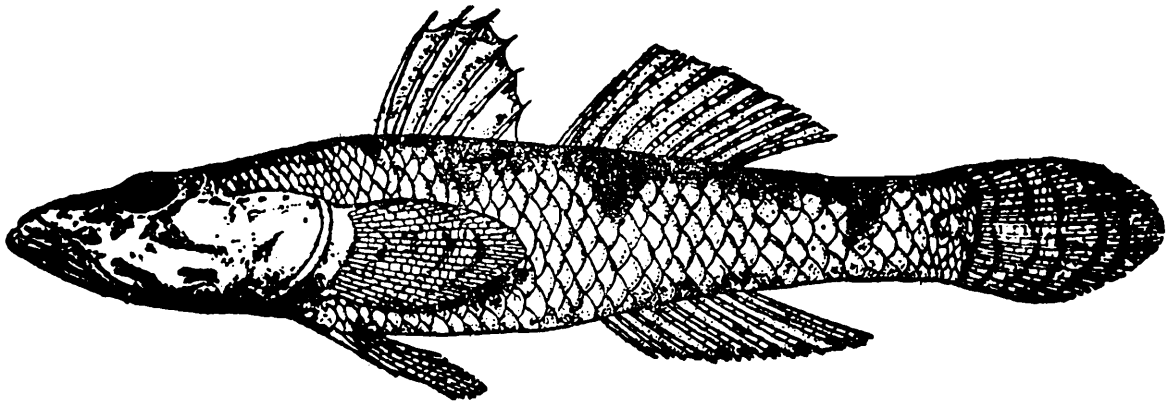

Fig. 68. Lateral view of *Glossogobius giuris* (Hamilton).

Size : Largest recorded specimen 304 mm. (1 foot) in TL.

Remarks : The species is found in rivers, tanks, canals, lakes, beels. This fish has much fishery value.

Family 22 ANABANTIDAE

Genus 53 **Anabas** Cuvier

75. **Anabas testudineus** (Bloch)

(Fig. 69)

1792. *Anthias testudineus* Bloch, *Naturg. Ausland. Fische*, **6** : 121, pl. 322 (type-locality : Japan, East Indies).

1981. *Anabas testudineus*, Jayaram, *Handbk. Freshw. Fish. India*, : 379 (distribution and key to epecies).

Common name : *Koi*.

Materials : 5 exs., 38-54 mm. SL. ; Amarpur, South Tripura ; 8.8.85.

Geographical distribution : Throughout India, Pakistan, Bangladesh, Sri Lanka, Burma, Malaya Archipelago, Singapure, Philippines, Thailand, Indo-chins and China.

Size : This fish attains 203 mm. (8 inches) in TL.

Remarks : This is a very popular food fish for its taste all over India particularly Bengal and Assam. This species is abundantly found in the market immediately after the rainy season caught from beels and marshy areas.

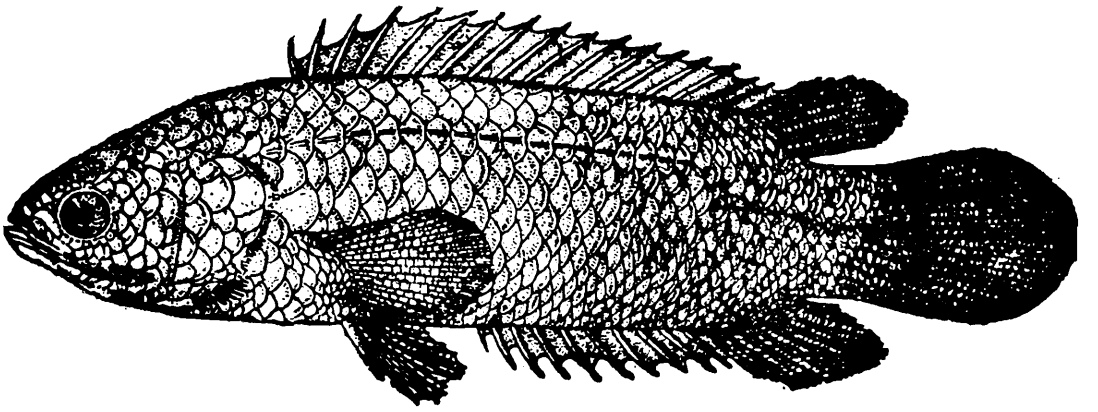

Fig. 69. Lateral view of *Anabas testudineus* (Bloch).

Family 23 BELONTIDAE

Genus 54 **Colisa** Cuvier

76. **Colisa fasciata** (Schneider)

(Fig. 70)

1801. *Trichogaster fasciatus* Schneider, *Syst. Ichth. Bloch.* : 164, pl. 36:(type-locality : Tranquebar, Tamil Nadu).

1981. *Colisa fasciata*, Jayaram, *Handbk. Freshw, Fish. India*, : 383, 384 (distribution and key to species).

Common name : *Kholisha.*

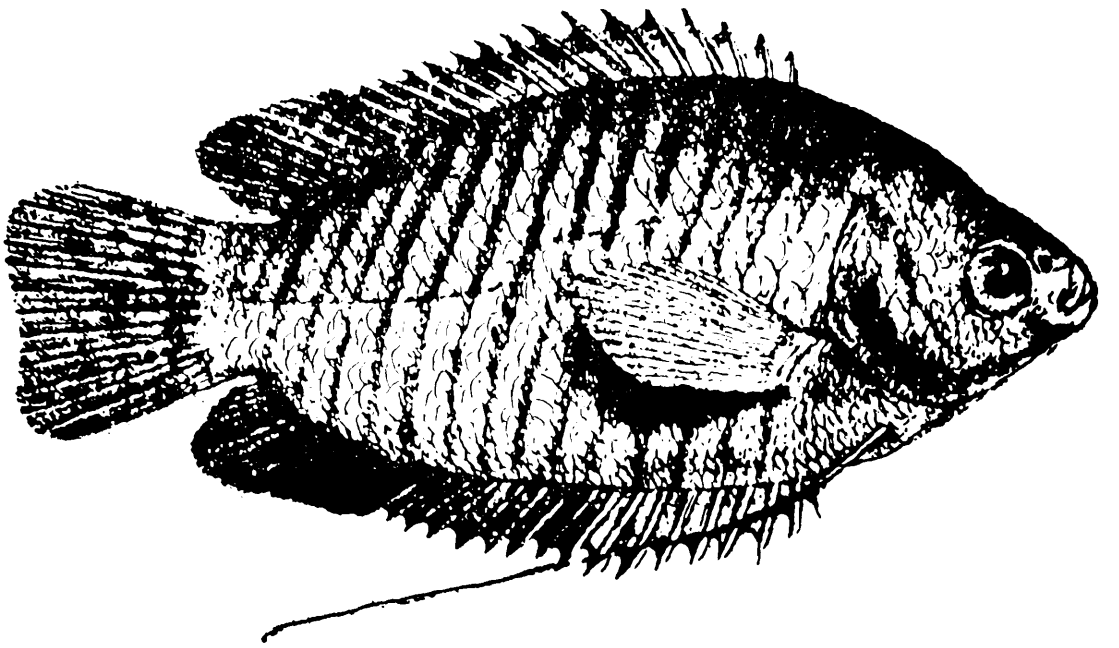

Fig. 70. Lateral view of *Colisa fasciata* (Schneider).

Materials : 4 exs., 52—70 mm. SL. ; Amarpur, South Tripura, 8.8.85.

Geographical distribution : India : North India, Tamil Nadu, Andhra Pradesh. Nepal. Bangladesh. Pakistan and Burma.

Size : It attains 126 mm. (5 inches) in TL.

Remarks : This fish is found abundantly in beels, marshy areas than lakes, ponds and rivers. It is a hardy fish with wide distribution and rapid growth. It is an aquarium fish for its beautiful coloured vertical bands. This fish is generally eaten by the poorer people. Hora and Mukerji (1938) regarded this species as larvivorous fish.

Order IX MASTACEMBELIFORMES

Family 24 MASTACEMBELIDAE

Key to the genera

Snout very long with a concave prolongation of the upper jaw consisting of a paired series of toothed bony plates and snout transversely striated ventrally. No preorbital spine. ...	*Macrognathus*
Snout long, conical without any prolongation of the upper jaw and snout not transversely striated ventrally. A preobital spine present....	*Mastacembelus*

Genus 55 : **Macrognathus** Lacépède

77. **Macrognathus aculeatus** (Bloch)

(Fig. 71)

1795. *Ophidium aculeatum* Bloch, *Naturg. Ausland. Fische*, pl. 159, fig. 2 (type-locality : East Indies).

1981. *Macrognathus aculeatus*, Jayaram, *Handbk. Freshw. Fish. India*, : 387, 389, fig. 199 (distribution and key to species).

Common name : *Goichi*.

Fig. 71. Lateral view of *Macrognathus aculeatus* (Bloch).

Materials : 3 exs., 87—114 mm. SL. ; Sonamura, West Tripura ; 17.8.85.

Geographical distribution : Throughout India, Pakistan, Nepal, Bangladesh. Sri Lanka, Burma, Malaya, Thailand, Vietnam and China.

Size : Largest recorded specimen 380 mm. (1 foot 3 inches) in TL.

Remarks : This fish lives in rivers and waterlogged areas.

Genus 56 **Mastacembelus** Scopoli

Key to the species

Dorsal spine and soft rays not exceeding 100. Caudal fin rays 11-16.	...	*M. pancalus*
Dorsal spines and soft rays more than 100. Caudal fin rays 17-21.	...	*M. armatus armatus*

78. **Mastacembelus armatus armatus** Lacépède

(Fig. 72)

1800. *Macrognathus armatus* Lacépède, *Hist. nat. Poiss.*, **2** : 283, 286 (type-locality : not mentioned).

1981. *Mastacembelus armatus armatus*, Jayaram, *Handbk. Freshw. Fish, India*, : 388, 389 (distribution and key to species).

Common name : *Baim.*

Materials : 4 exs., 140—165 mm. SL. ; Amarpur, South Tripura, 8.8.85.

Fig. 72. Lateral view of *Mastacembelus armatus armatus* Lacépède

Geographical distribution : India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma, Thailand, Vietnam, Tonkin, Hainan Island. South China. Malaya, Sumatra and Java.

Size : Largest recorded specimen 600 mm. (2 feet) in TL.

Remarks : This is a good eating fish usually known for its oily taste and large size compared to other members of the genus. This is a hardy fish and can withstand extreme drought by keeping itself buried inside the mud and silt months together till the onset of the monsoon rains.

79. **Mastacembelus pancalus** (Hamilton)
(Fig. 73)

1822. *Macrognathus pancalus* Hamilton, *Fish. Ganges,* : 30, 364 (type-locality : tanks of the Gangetic provinces).

1981. *Mastacembelus pancalus,* Jayaram, *Handbk. Freshw. Fish. India* : 389 (distribution and key to species).

Common name : *Baim.*

Material : (i) 1 ex., 95 mm. SL. ; Amarpur, South Tripura, 10.8.85.

(ii) 5 exs., 65—98 mm. SL. ; Udaypur, South Tripura ; 14.8.85.

(iii) 1 ex., 85 mm. SL. ; Sonamura, West Tripura, 17.8.85.

Fig. 73. Lateral view of *Mastacembelus pancalus* (Hamilton).

Geographical distribution : Throughout India, Pakistan and Bangladesh.

Size : It attains 177 mm (7 inches) in TL.

Remarks : This species is found in streams, ponds and water logged localities.

Order X TETRAODONTIFORMES

Family 25 TATRAODONTIDAE

Genus 57 **Tetraodon** Linnaeus

80. **Tetraodon cutcutia** (Hamilton)
(Fig. 74)

1822. *Tetraodon cutcutia* Hamilton, *Fish. Ganges,* : 8, 362, pl. 18, fig. 3 (type-locality : R. Ganges).

1981. *Tetraodon cutcutia,* Jayaram, *Handbk. Freshw. Fish. India,* : 394 (distribution and key to species).

Common name : *Tepa, Gangatope.*

Material : 3 exs., 15—38 mm. SL. ; Sonamura, West Tripura, 18.8.85.

Geographical distribution : India : Assam, West Bengal, Tripura and Orissa. Bangladesh.

Size : Largest recorded specimen 90 mm. ($3\frac{1}{2}$ inches) in TL.

Remarks : When taken out from the water this fish usually distend the oesophagus enormously with air forming a sherical except the short tail portion. Under the water this fish continuously vibrate the pectoral fin even when stationary and appear to swim with the pectoral fins and dorsal fin, often holding the tail on one side.

This fish has been banned for consuming in West Bengal following reports of occasional death caused due to eating this fish.

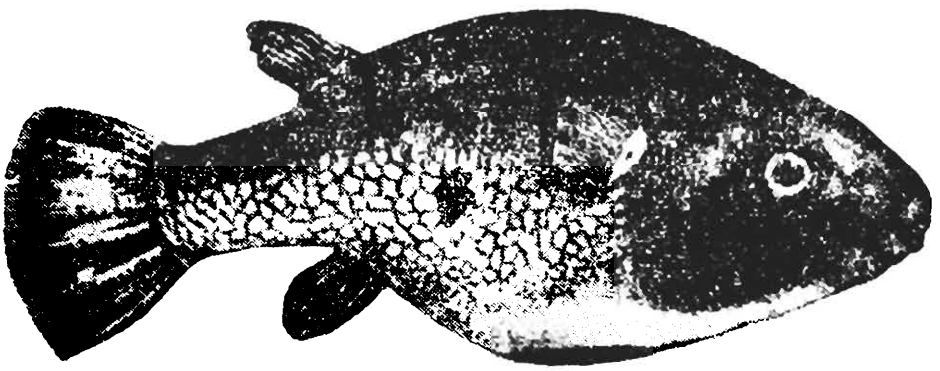

Fig. 74. Lateral view of *Tetraodon cutcutia* (Hamilton).

DISCUSSION

The fish fauna of the River Gumti, the largest river of the sub Himalayan region of Tripura has been studied in detail. Altogether 80 species belonging to 57 genera, 25 families and 10 orders have been recorded and classified in this paper. Among all these fishes, 12 fishes viz., *Pisodonophis boro* (Hamilton), *Salmostoma clupeoides* (Bloch), *Crossocheilus latius latius* (Hamilton), *Mystus cavasius* (Hamilton), *Clupisoma montana* Hora, *Gagata cenia* (Hamilton), *Erethistoides montana montana* Hora, *Glyptothorax conirostre conirostre* (Steindachner), *Olyra kempi* Chaudhuri, *Channa barca* (Hamilton), *Sicamugil cascasia* (Hamilton) and *Rhinomugil corsula* (Hamilton) have been recorded for the first time from Tripura in this paper. Besides these 1 new species viz. *Barilius nelsoni* Barman has been recorded in this paper.

Most of the species collected from the River Gumti, Tripura are found to be common to that of the Indo-Gangetic drainage and south-east Asian fish fauna. Taxonomic notes on some of the fishes of this region have also been provided in this paper. The presence of these fishes in the sub Himalayan region of Tripura shows additional information on the existing knowledge of the fish fauna of the north-eastern Himalayan region. This is of special importance in the fish geography of the north-eastern India as well as that of Indo-Malayan Archipelago.

SUMMARY

The fishes collected from the river Gumti, Tripura during the month of August, 1985 shows the presence of 80 species of fishes belonging to 10 orders, 25 families and 57 genera. Out of 80 species 12 species form the new record and 1 new species have been discovered and described.

ACKNOWLEDGEMENTS

The author is thankful to the Director, Zoological Survey of India, Calcutta for the necessary help and working facilities. He is also thankful to Drs. K. C. Jayaram, Emeritus Scientist and to P. K. Talwar, Deputy Director, Zoological Survey of India for encouragement and valuable suggestions. Thanks are also due to Mr. J. L. Kar, I. A. S., Director of Fisheries, Govt. of Tripura, Agartala and to Deputy Director of Fisheries, West Tripura ; Mr. N. L. DasGupta, Superintendant of Fisheries (GRP), Jatanbari, South Tripura ; the Superintendant of Fisheries (South), Udaypur, South Tripura and other staff members of the concerned District Fisheries offices for their whole hearted help and co-operation they extended to me during the course of my faunistic survey for the collection of freshwater fishes from Tripura. Last but not least the author also wishes to record his thankfulness to Mr. P. Banerjee, Laboratory Assistant and Mr. N. L. Khandal, Collection Tender who accompany me during my field survey.

REFERENCES

AITKINS, E. H. 1901. Notes on Anopheles or Malaria mosquito *J. Bombay nat. Hist. Soc.*, **13** : 695.

ALCOCK, A. 1911. Entomology for Medical officers, : 55-58. London.

ALCOCK, A. 1920. Entomology for Medical officers. 2nd. edition, : 70-72. London.

ANON, P. V. 1975. Tripura District Gazeteer (ed. Menon), : 504.

BARMAN, R. P. 1984. Biosystematic studies of the Cyprinid fishes of the genus *Danio* Hamilton from the Indian region with a discussion of the subfamily Rasborinae Ph. D. thesis. University of Calcutta (unpublished).

BARMAN, R. P. 1985. On the type specimen of *Danio annandalei* Chaudhuri, 1908 with a redescription of the species (Pisces : Cyprinidae). *J. Bombay nat. Hist. Soc.*, **82** (1) : 170-174.

BARMAN, R. P. (In press). On a small collection of fish from Mizoram. *ibid.*

BARMAN, R. P. (In press). *Barilius nelsoni*, a new cyprinid fish (Pisces : Cyprinidae) from Tripura, North-eastern India. *ibid.*

BRAHMACHARI, B. B. 1909. Campaign against Malarial fever at Cossipore-Chitpore Municipality. *Cat. Med. J.*, **3** : 318.

CHAUDHURI, B. L. 1909. Mosquito-larvae-eating propensity of the genus *Haplocheilus*. *J. Proc. Asiat. Soc. Beng.*, **5** : 36-37,

CHAUDHURI, B. L. 1911. Contribution to the fauna of Yunnan based on collections made by J. Coggin Brown, 1909-1910, Part II, Fishes. *Rec. Indian Mus.*, **6** : 13-24.

CHAUDHURI, B. L. 1912. Descriptions of some new species of freshwater fishes from North India. *Rec. Indian Mus.*, **7** : 437-444.

CHAUDHURI, B. L. 1916. Fauna of Chilka Lake. *Rec. Indian Mus.*, **5** : 405-439.

COVELL, G. 1935. Anti-Mosquito measures with special reference to India. *Health Bulletin* No. 11. Malaria Bureau No. 3, 4th Ed. Delhi.

DATTA, A. K. 1977. On a collection of fishes from Tripura state. *Newsl. zool. Surv. India*, **3** (1) : 24-26.

DATTA, A. K. AND BARMAN, R. P. 1985. Fauna of Namdapha : Arunachal Pradesh. Part-Pisces. *Rec. zool. Surv. India*, **82** (1-4) : 275-284.

DAY, F. 1878. The Fishes of India ; being a natural history of the fishes known to inhabit the seas and freshwaters of India, Burma and Ceylon. Text and atlas in 4 parts. London, XX—778, 195 pls.

DAY, F. 1889. The Fauna of British India including Ceylon and Burma. Fishes, **1** : 1-548. London, Taylor and Francis.

DUTT, S. 1966. The Indian shad, *Hilsa ilisha* (Hamilton) in the sea. *Curr. Sci.*, **35** (13) : 329-330.

GHOSH, A. N. 1967. Observations on the hilsa fishery of the River Jamuna during the years 1955-1956 at Allahabad. *J. zool. Soc. India*, **17** : 135-149.

GOPALAKRISHNAN, V. 1969. Observations on the present status of hilsa fisheries in the Hooghly—Matla estuarine system (West Bengal : India). *Proc. Indian Sci. Congr.* Bombay (Powai) 56th session, pl. 3 : 539-540.

GRAVELY, F. H. 1937. Mosquito destroying fishes. *Curr. Sci.*, **5** : 482-483.

GREENWOOD, P. H., ROSEN, D. E., WEITZMAN, S. H. AND MYERS, G. S. 1966. Phyletic studies of teleostean fishes with a provisional classification of living forms. *Bull. Amer. Mus. nat. Hist.*, **131** : 339-456. pls. 21-23.

GÜNTHER, A. 1868. Catalogue of the fishes in the British Museum, 7 : i-xx. 1-512. Taylor and Francis. London.

HAMILTON, F. 1822. An account of the fishes found in the river Ganges and its branches. Edinburg and London, vii+405. 39 pls.

HERRE, A. W. C. T. AND MYERS, G. S. 1937. A contribution to the Ichthyology of Malaya Peninsula. *Bull. Raffies Mus.*, **13** : 5-75.

HORA, S. L. 1927. The use of fishes for the control of mosquitoes. *Indian Med. Gaz.*, Calcutta **61** : 1-6.

HORA, S. L. 1932. Notes on fishes in the Indian Museum. XIX. On a new loach of the genus *Botia*, with remarks on *B. dario* (Hamilton) *Rec. Indian Mus.*, **34** (4) : 571-573.

HORA. S. L. 1933. Further notes on Hamilton-Buchanan's *Cyprinus chagunio*. *J. Asiat. Soc.*, **27** (1) : 137.

HORA, S. L. 1937. The game fishes of India. III. Garua Bachcha or Gaurchcha *Clupisoma garua* (Hamilton) and allied species. *J. Bombay nat. Hist. Soc.*, **39** (4) : 659-678. 1 pl.

HORA, S. L. 1940. On a collection of fish from the headwaters of the Mahanadi river. Raipur district, C. P. *Rec. Indian Mus.*, **42** (2) : 365-374.

HORA, S. L. AND MISRA, K. S. 1938. Fish of Deolali, III. On two new species and notes on some other forms. *J. Bombay nat. Hist. Soc.*, **40** (1) : 20-38, 3 pls.

HORA, S. L. AND MUKERJI, D. D. 1934. Notes on fishes in the Indian Museum. XXII. On a collection of fish from the S. Shan States. and Pegu Yomas, Burma. *Rec. Indian Mus.*, **36** (1) : 123-139.

HORA, S. L. AND MUKERJI, D. D. 1938. Table for identification of Indian freshwater fishes, with description of certain families and observations on the relative utility of the probably larvivorous fishes of India. *Health Bnlletin* No. 12. Malaria Bureau No. 4. ed. 3 : 1-47, Delhi.

HORA, S. L. AND NAIR, K. K. 1938. Observations on nutrition of *Panchax panchax* (Hamilton). *Proc. nat. Inst. Sci. India*, **4** (2) : 245-251.

HORA, S. L. AND NAIR, K. K. 1941. Notes on fishes in the Indian Museum. XLI. New record of freshwater fish from Travancore. *Rec. Indian Mus.*, **43** : 387-383.

INNES, W. T. 1944. Exotic aquarium fishes. Innes Publishing Company. Philadelphia, U. S. A.

ISLAM, B. N. AND TALBOT, G. B. 1968. Fluvial migration, spawnig and fecundity of Indus River hilsa, *Hilsa ilisha*. *Trans. Am. Fish. Soc.*, **97** : 350-355.

JAYARAM, K. C. 1977a. Aid to identification of siluroid fishes of India, Burma, Sri Lanka, Pakistan and Bangladesh. I. Bagridae. *Rec. zool. Surv. India, Occ. Paper* No. **8** : 1-41.

JAYARAM, K. C. 1977b. Aid to the identification of the siluroid fishes of India, Burma, Sri Lanka, Pakistan and Bangladesh. 2. Siluridae, Schilbeidae, Pangasidae, Amblycipitidae, Akysidae. *Rec. zool. Surv. India. Occ. Paper* No. **10** : 1-32.

JAYARAM, K. C. 1981. The Freshwater Fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka. A handbook. Govt. of India, i-xii,+ 1-475.

JOB, T. J. 1940. On the breeding and development of Indian 'Mosquito-fish' of the genera *Aplocheilus* McClelland and *Oryzias* Jordon and Snyder. *Rec. Indian Mus.*, **42** : 51-79.

JOHN, C. C. 1940. Observations on the utility of *A. lineatus* (C. V.) for mosquito control. *J. Mal. Inst. Indian*, **3** : 67-80.

LIPTON, A. P. 1983-84. Fish fauna of Tripura. *Matsya*, **9** & **10** : 110-118.

MACDONALD, W. R. 1914. Note on the use of Larvicidal fish in combating malaria fever. *Proc. Third All India Sanitary Conference*, **4** : 75-77.

MALHOTRA, J. C., MATHUR, P. K., KAMAL, M. Y., CHANDRA, R. AND DESAL, V. R. 1969. Successful artificial propagation of *Hilsa ilisha* (Hamilton) near Allahabad. *Curr. Sci.*, **38** (18) : 429-430.

MATHUR, P. K. 1967. Studies on the maturity and spawning of the hilsa. *Hilsa ilisha* (Hamilton) in the stretches of the Ganga. *Indian J. Fish.* **11** (A) : 423-448.

MENON, A. G. K. 1974. A check list of the fishes of the Himalayan and the Indo-Gangetic plains. *Spl. publ.* No. 1, *Indian Fisheries Soc.* India, Barrackpore, 136 pp.

MENON, A. G. K. AND JAYARAM, K. C. 1977. The Freshwater grey mullet *Rhinomugil corsula* (Hamilton) as a fishery resource in the Cauvery river system, S. India. *Sci. and Cult.*, **43** (7) : 302-304.

MOTWANI, M. P. AND DAVID, A. 1958. Fishes of the river Sone with observations on the zoogeographical significance. *J. zool. Soc. India*, **9** (1) : 1-7.

MUKERJI, D. D. 1932. On a rare Eastern Himalayan and Assamese Loach *Somileptes gongota* (Hamilton) with special reference to its generic position. *Rec. Indian Mus.*, **34** (2) : 125-129.

MUKERJI, 1934. Report on Burmese fishes collected by Col. R. W. Burton from the tributary streams of Mali Hka river of the Myitkyina district (Upper Burma) Part 2. *J. Bombay nat. Hist. Soc.*, **37** (1) : 38-80.

NAIR, P. V. 1971. A preliminary list of the fishes of Tripura. *Proc. 45th Indian Sci. Cong.*, pl. 3 : 367.

PILLAY, S. R. 1964. Maturation and spawning of the hilsa, *Hilsa ilisha* (Hamilton) of the Saurashtra coast. *Proc. natn. Inst. Sci. India*, **30B** (1) : 8-14.

RAJ, B. S. 1916. Notes on the freshwater fishes of Madras. *Rec. Indian Mus.*, **12** : 249-294.

RAJ, B. S. 1940. The extraordinary breeding habits of the catfish *Aoria* (*Macrones*) *aor* (Hamilton) and *A.* (*Macrones*) *seenghala* (Sykes). *Proc. 27th Indian Sci. Congr.* Madras, pl. 3, : 156.

Sen, T. K. 1986. The Fish fauna of Assam and the neighbouring north-eastern states of India. *Rec. zool. Surv. India, Occ. Paper* No. 64 : 1-216.

SHAW, G. E. AND SHEBBEARE, E. O. 1937. The Fishes of northern Bengal. *JL. R. Asiat. Soc. Beng. Sci.*, **3** : 1-137, 6 pls. 130 text-figs.

SOUTHWELL, T. 1920. Fish and Mosquito larvae in Bengal, Bihar and Orissa, India. *Ann. Trop. Med.* and *Parasit.*, Liverpool, **14** : 181-186.

SRIVASTAVA, G. J. 1968. Fishes of eastern Uttar Pradesh, Vishwavidyalaya Prakashan, Vanarasi, India, i-xxii, 1-163.

TALWAR, P. K. 1971. *Chanda* Hamilton Buchanan, 1822 (Pisces : Centropomidae) ; proposed use of the plenary powers to designate *Chanda nama* Hamilton Buchanan, 1822, as the type species. *Bull. zool. Nomencl.*, **28** (3 & 4) : 104-105.

THOMSON, H. S. 1927. Tank fishing in India. 2nd edition, : 78, London.

TILAK, R. AND HUSAIN, A. 1981. On the systematics of the Indian fishes of the genus *Lepidocephalus* Bleeker with a key to the species of the genus and genera of the subfamily Botinae and Cobitinae (Cobitidae : Cypriniformes). *Occ. Papers zool. Surv. India*, No. **32** : 1-42.

VINCIEGUERRA, D. 1889-90. Viaggio di Leonardo Fea in Birmaniae regioni vicine. XXIV. Pesci. *Ann. Mus. Civ. Storia Nat. Genova*, Ser. 2, **9** : 129-362, pls. 7-11,

WILSON, H. C. 1914. A note on the Treatment of Swamps, Streams bed, Ponds, Wells and Pools with a view to destruction of Mosquito Larvae. *Ind. J. Mad. Res.*, **1** : 691-701.