

MISCELLANEOUS PUBLICATION
OCCASIONAL PAPER NO. 64

Records of the Zoological Survey of India

THE FISH FAUNA OF ASSAM AND THE
NEIGHBOURING NORTH-EASTERN
STATES OF INDIA

by
T. K SEN

Issued by the Director
Zoological Survey of India, Calcutta

**RECORDS
OF THE
Zoological Survey of India**

MISCELLANEOUS PUBLICATION

OCCASIONAL PAPER NO. 64

**The Fish Fauna of Assam and the Neighbouring
North-Eastern States of India**

By

T. K. SEN

Zoological Survey of India, Calcutta



Edited by the Director, Zoological Survey of India
1985

© Copyright, Government of India, 1985

Published : July, 1985

PRICE : Inland : Rs. 80.00

Foreign : £ 10.00 \$ 16.00

**Printed in India by Saakhhar Mudran, 4, Deshapran Sasmal Road, Calcutta-33
and Published by the Director, Zoological Survey of India, Calcutta.**

**RECORDS
OF THE
Zoological Survey of India**

MISCELLANEOUS PUBLICATION

OCCASIONAL PAPER

No. 64	1985	Pages 1-216
---------------	-------------	--------------------

CONTENTS

			Page
INTRODUCTION	...	...	1
PHYSICAL FEATURES	...	...	3
ZOOGEOGRAPHY	...	...	3
ACKNOWLEDGEMENTS	...	...	5
LIST OF FISHES OF ASSAM AND THE NEIGHBOURING NORTH-EASTERN STATES OF INDIA	...	...	7
SYSTEMATIC ACCOUNT	...	...	14
REFERENCES	...	...	208

INTRODUCTION

Since the publication of Day's (1878-1889) monumental work on the "*Fishes of India*", a large amount of additional scientific data have accumulated resulting many changes in the names of fishes. Unfortunately most of the publications on Indian fishes since Day's time are widely scattered in literature and are not readily available to students and fishery workers in the different states of India ; the present work is aimed at bringing a consolidated account of the fish fauna of Assam and all the neighbouring north-eastern states *under one cover* and it is hoped that it would prove a very useful faunal revision and reference to systematists and fishery biologists working in the north-eastern region of India in particular and whole India in general.

A perusal of literature shows that Assam and adjoining states have been surveyed by several workers (Chaudhuri, 1912 ; Hora, 1921, 1924, 1936, 1941 ; Menon, M.A.S. 1952 ; Menon, A.G.K. 1954 ; *et al.*, 1962 ; Jayaram, 1963 ; Sehgal, K.L. 1959 ; Srivastav, 1966 ; Dey & Singh, 1967 ; Pillai & Yazdani, 1974 ; Sen, T.K. 1976, 1978 & 1979 ; Talwar *et al.*, 1977 ; Chowdhury & Sen, 1977 ; Singh & Nalbant, 1981) and a great deal of information is already available regarding the fish fauna of Assam and neighbouring states. In the preparation of the present work I have made use of all the information available in literature in addition to incorporating all the information I have been able to collect through my extensive field surveys and continued studies.

Three field-surveys (1975, 1980 and 1982) covering all the important collection centres of the districts of the present state of Assam were made. These districts are connected directly or indirectly by the two principal river systems of Assam, *viz.*, the Brahmaputra R., and its numerous tributaries flowing over the districts of Assam and Barak R., with its two main tributaries, the Surma and Kushiara, flowing over the Cachar district only. Present state of Assam covers altogether a riverine area of 4,500 kms. together with the beels of 1 lac hects., of tanks and ponds 8,500 hects., and swamps 20,000 hects.

The fish collections reveal a wide range of both riverine and torrential forms belonging to 9 orders, 28 families, 86 genera and

187 species in total ; out of which, 53 genera comprising 118 species are riverine and 33 genera comprising 69 species may be stated to be torrential.

Further, it is evident that out of the total 187 species, 43 species are endemic to Assam and neighbouring north-eastern states (single asterisk marked) and 5 species (double asterisk marked) to the present state of Assam.

Eight rare and interesting species recently described new to science from Assam and north-eastern regions viz., *Pillaia indica* (Yazdani, 1972), *Lepidocephalus goalparensis* (Pillai & Yazdani, 1974), *Puntius salynius* (Yazdani and Talukdar, 1975), *Pillaia khajurii* (Talwar *et al.* 1977), *Lepidocephalus dibruensis* (Sen, T. K. 1979), *Mesonoemacheilus reticulofasciatus* (Sing and Bănărescu, 1981) *Physoschistura elongata* (Sen and Nalbant, 1981) and *Danio (Brachydanio) horai* (Barman, 1983) and four new records have been included. This report includes material collected by the author and also by the earlier workers and preserved in the Zoological Survey of India National Zoological Collection. 187 species in all have been dealt with in detail in this regional fauna. Keys, latest scientific names, references, fin-formulae, diagnostic characters, distributions, colour patterns, size-ranges, special remarks etc. along with 108 illustrations drawn by the author have been provided.

This regional fauna further includes 139 species which are also common to other Indian states. Therefore, it is not only covering north-eastern states of India in particular but also other Indian states in general.

Besides 106 text-figures, it includes 2 maps depicting the mighty Brahmaputra and Barak drainage systems flowing over the Assam and adjoining north-eastern states with collection-stations (Map 2) ; and the other (Map 1) northward transgression of the Bay of Bengal during the Eocene, Miocene and Pliocene periods ; one spot photograph (Fig. 3) of the largest ever recorded giant fish *Bagarius bagarius* (Ham.) from Tezpur, weighing 80 kgs., and 225 cm (7.5 ft) in length popularly known as 'Garua' in Assam and 'Bagha-aar' in West Bengal (Sen *et al.* 1970).

The classification of fishes adopted in this work is after Greenwood *et al.* (1966).

PHYSICAL FEATURES

The present state of Assam lies between latitudes $22^{\circ}19'$ and $28^{\circ}16'N$ and longitudes $80^{\circ}42'$ and $97^{\circ}12'E$. It covers a total area of 78,523 km² covering ten districts *viz.*, Goalpara (10,359 km²), Kamrup (9,869 km²), Darrang (8,775 km²), Nowgong (5,561 km²), Sibsagar (8,989 km²), Dibrugarh (7,023.9 km²), N. Lakhimpur (5,646.4 km²), Karbi Anglong (10,332 km²), N. Cachar-Hills (4,890 km²) and Cachar (6,962 km²).

The two principal rivers of Assam are the Brahmaputra and Barak. The Brahmaputra ($88^{\circ}96'E$) is not only the greatest drainage system (Text-fig. 2) of Assam but also covers directly or indirectly as tributaries all the adjoining north-eastern states *viz.*, Meghalaya, Arunachal Pradesh, Nagaland, Mizoram, Manipur etc., between longitudes, 88° and $96^{\circ}E$. It originates near the Manasarovar in the Himalaya and takes eastward course as Tsang Po in Tibet, then turning abruptly to the south in the Central part of Eastern Himalaya known as Siang in Arunachal Pradesh, before it emerges on to the plains of Assam. The important tributaries of Brahmaputra stretching from west to east, include (1) the Tista, (2) the Raidak (3) the Manas (4) the Bhareli (5) the Subansiri (6) the Dibhang and (7) the Lohit. The Assam hill-ranges south of the Brahmaputra river are drained by (1) the Kalang, (2) the Dhansiri, (3) the Dikho (4) the Burhi dihing into the Brahmaputra, whereas the main water partning of the Naga-Hills, below Kairong ($25^{\circ}20'$) is drained into the Irrawaddy through the Chindwin (Hora, 1921).

The Barak river originating out from Manipur flows over the Cachar district of Assam only, where, it is divided into two branches as Surma and Kushiara which after travelling for some distance again joins together and enters ultimately into Bangladesh.

ZOOGEOGRAPHY

It is a well known geological fact that since the latter part of palaeozoic era Peninsular India together with Australia, Madagascar, southern part of Africa, South America and Antartica formed a southern land mass, the Gondwanaland, and North America, Europe, Siberia and China formed a corresponding northern land mass, the Angaraland. A land bridge existed in the Assam region probably upto the Middle Eocene period (Menon and Prashad, 1961) connected

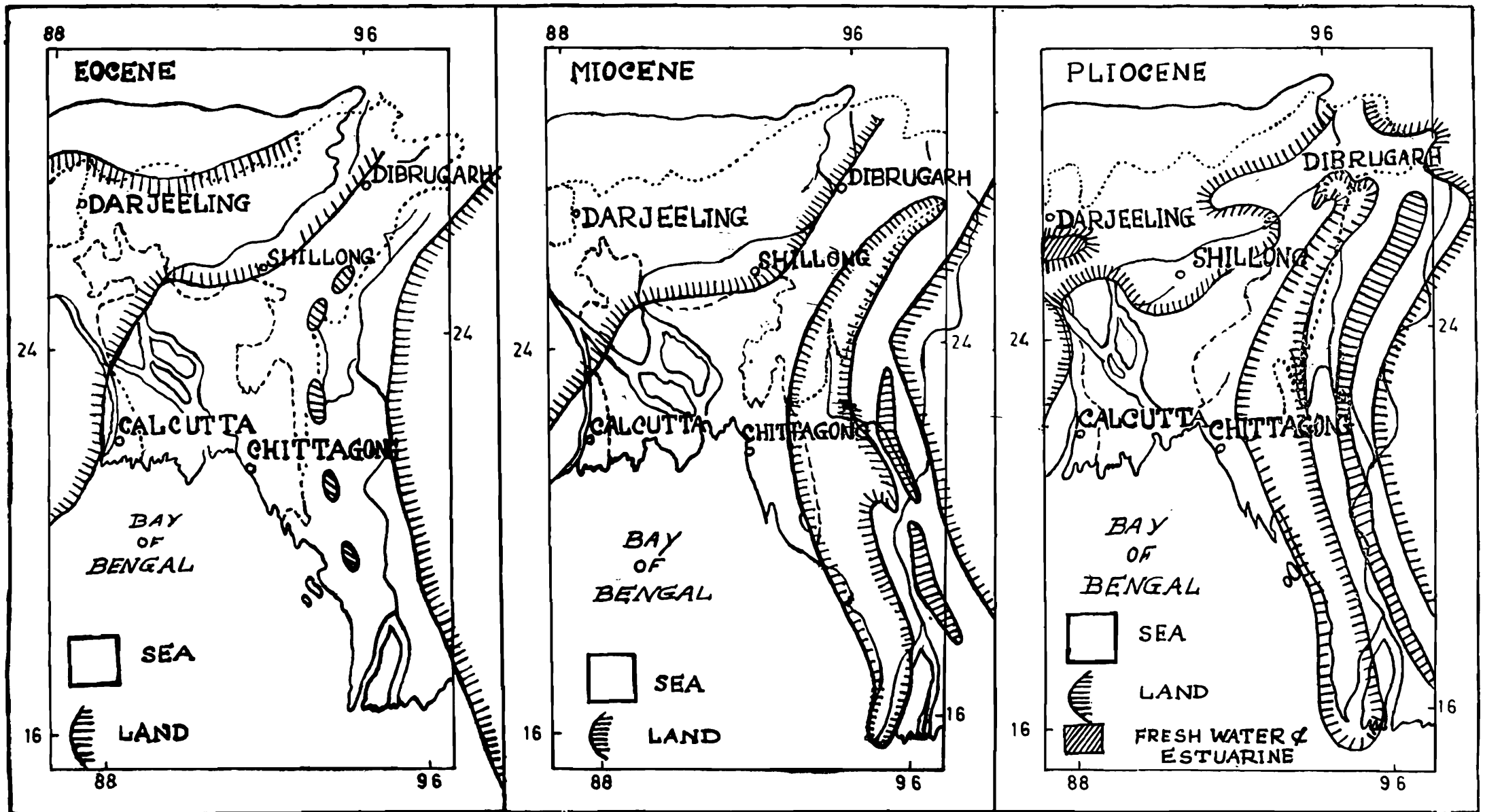


Fig. 1. Map of north-eastern India showing the northward transgression of the Bay of Bengal during the Eocene, Miocene and Pliocene periods. After Krishnan (*Bull. Nat. Inst. Sci. India*, 1, 26-28, 1952).

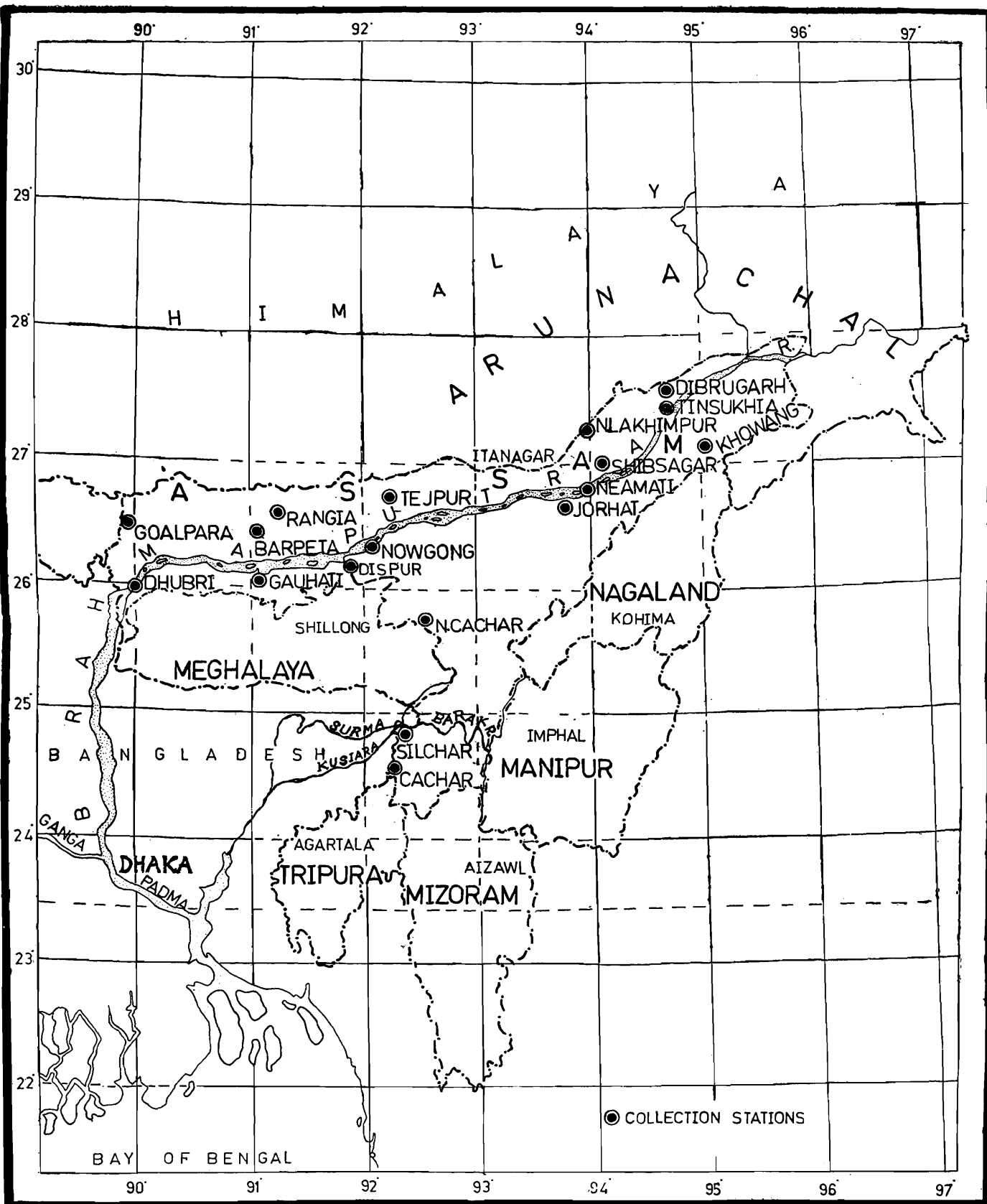


Fig. 2. Map showing the topographic complex of the north-eastern states of India depicting the present political state of Assam with field-collecting stations, the mighty Brahmaputra river system and the adjoining neighbouring states.

the two land masses. From the upper Triassic onwards probably upto the early Eocene, India received several waves of migration of ancient types of fishes like the *Dipnoans*, the *Ganoids*, the *Osteoglossids* and the *Acanthopterygians* (*Anabas*, *Polycanthus*, *Nandus* and *Pristolepsis*) from the north through the present day Assam region (Hora and Menon, 1952). There are no fossil records of freshwater fishes in the Indian Peninsula after the Lower Eocene. The transgression of the Bay of Bengal during the Upper Eocene, Miocene and early Pliocene period and the subsequent submergence of the Assam region cut off the land connection between India and the Far East.

With the major up heaval of the Himalayas during the Miocene and early Pliocene, however, in the Assam region the arm of the sea became shallow and had cut into shallow lagoons and freshwater lakes. Gradually with the further rise of the Himalayas, the shallow area became a marshy land enabling the marsh-loving fishes like *Clarias*, *Heterobagrus*, *Channa*, *Chrysichthys*, *Mystus*, *Rita*, *Bagarius* and *Silurus* to cross over to India (Hora and Menon, *op. cit.*). During the early post-transgression period, i.e. during the pliocene the area occupied by the present day Garo-Rajmahal hills was still under the sea and the route of migration of freshwater fishes was mainly along the Assam region and the base of the Himalayas. Only during the pleistocene the Garo-Rajmahal gap became a dry land facilitating the migration of fishes south-westwards (Hora, 1951).

ACKNOWLEDGEMENTS

I acknowledge my heart felt gratitude to Dr. B. K. Tikader, Director, Zoological Survey of India, Calcutta, for facilities and encouragement, to Dr. K. C. Jayaramkrishnan, Joint Director, for his constant help and guidance, Dr. A. G. K. Menon, Emeritus scientist, for valuable suggestions and for kindly going through the manuscript, to Dr. P. K. Talwar, Superintending Zoologist, for the keen interest shown during my work.

I also wish to record my indebtedness to Mr. M. Ahmed, Director, District Fisheries Superintendents and other field officials, State Fisheries Department, Assam, for the whole hearted help and co-operation they extended to me during my field-surveys.

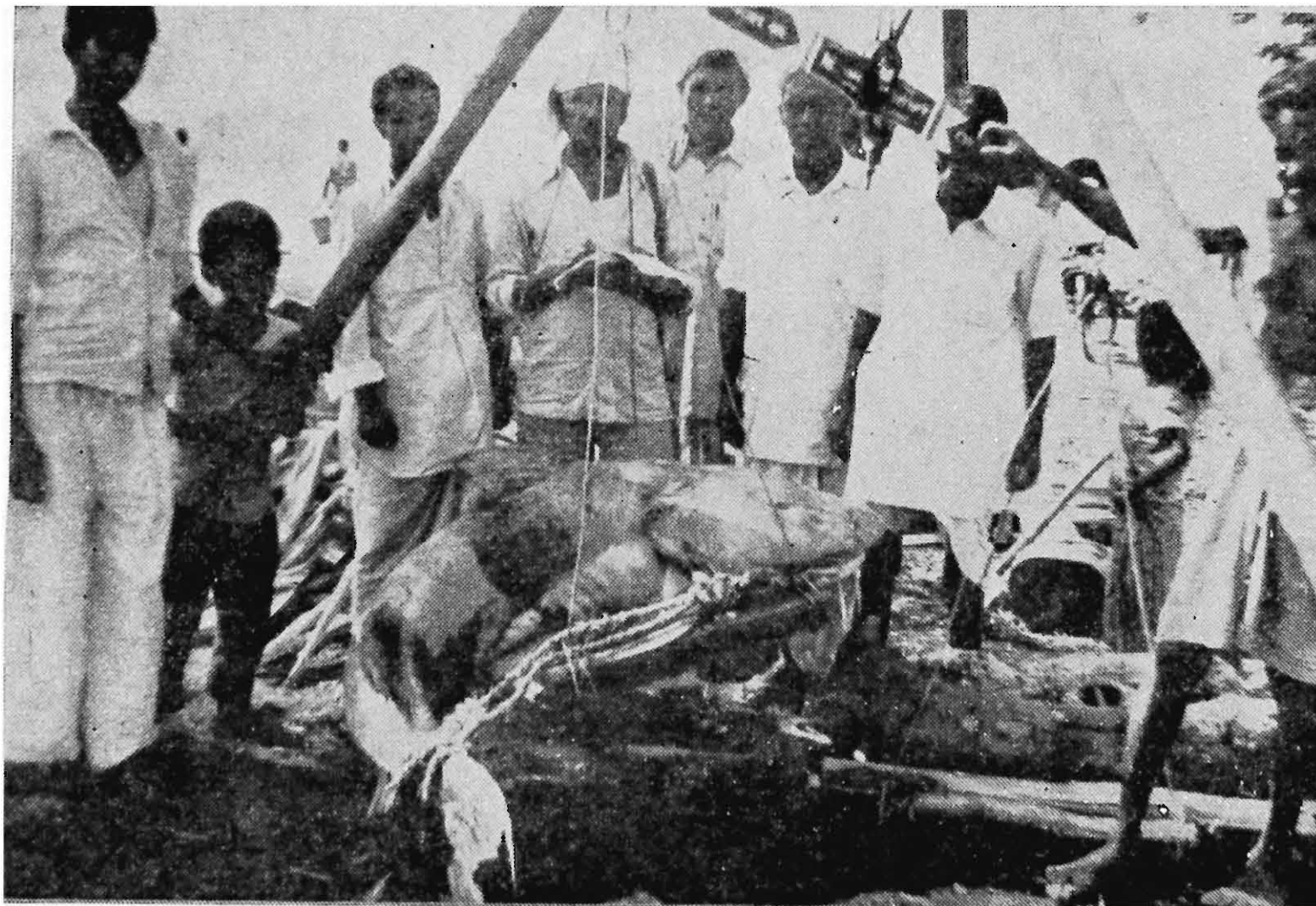


Fig. 3. Photography of the giant *Bagarius bagarius* (Ham.) taken at the Jahajghat fish-landing centre below the Tezpur Circuit House on 27.8.80 weighing 80 kgs. and 225 cm. (7.5 ft.) in total length being the highest official record from Indian waters so far.

LIST OF FISHES OF ASSAM AND THE NEIGHBOURING NORTH-EASTERN
STATES OF INDIA

Order CLUPEIFORMES

Family CLUPEIDAE

1.	<i>Gonialosa manmina</i> (Hamilton)	...	14
2.	<i>Gudusia chapra</i> (Hamilton)	...	15
**3.	<i>Gudusia variegata</i> (Day)	...	16
4.	<i>Hilsa ilisha</i> (Hamilton)	...	17
5.	<i>Ilisha indica</i> (Hamilton)	...	18

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

6.	<i>Notopterus chitala</i> (Hamilton)	...	19
7.	<i>Notopterus notopterus</i> (Pallas)	...	20

Order CYPRINIFORMES

Family CYPRINIDAE

Sub-family ABRAMIDINAE

8.	<i>Chela laubuca</i> (Hamilton)	...	28
9.	<i>Chela cachius</i> (Hamilton)	...	29
10.	<i>Oxygaster gora</i> (Hamilton)	...	30
11.	<i>Salmostoma clupeoides</i> (Bloch)	...	30
12.	<i>Salmostoma bacaila</i> (Hamilton)	...	31
13.	<i>Salmostoma phulo phulo</i> (Hamilton)	...	32

Sub-family RASBORINAE

14.	<i>Barilius bendelisis</i> (Hamilton)	...	33
*15.	<i>Barilius tileo</i> (Hamilton)	...	33
16.	<i>Barilius bola</i> (Hamilton)	...	34
*17.	<i>Barilius guttatus</i> (Day)	...	35
*18.	<i>Barilius shacra</i> (Hamilton)	...	36
19.	<i>Barilius barila</i> (Hamilton)	...	37
20.	<i>Barilius vagra vagra</i> (Hamilton)	...	37
21.	<i>Barilius barna</i> (Hamilton)	...	38
*22.	<i>Barilius dogarsinghi</i> Hora	...	39
23.	<i>Danio (Danio) devario</i> (Hamilton)	...	40
*24.	<i>Danio (Danio) naganensis</i> (Chaudhury)	...	40
25.	<i>Danio (Danio) dangila</i> (Hamilton)	...	41
26.	<i>Danio (Danio) aequipinnatus</i> (McClelland)	...	42

27.	<i>Danio (Brachydanio) rerio</i> (Hamilton)	...	43
*28.	<i>Danio (Brachydanio) horai</i> Barman	...	43
29.	<i>Esomus danricus</i> (Hamilton)	...	44
30.	<i>Rasbora daniconius</i> (Hamilton)	...	45
*31.	<i>Rasbora kobonensis</i> Chaudhuri	...	46
32.	<i>Rasbora elanga</i> (Hamilton)	...	47
33.	<i>Rasbora rasbora</i> (Hamilton)	...	47

Sub-family CYPRININAE

34.	<i>Accrossocheilus hexagonolepis</i> (McClelland)	...	48
35.	<i>Aspidoparia jaya</i> (Hamilton)	...	49
36.	<i>Aspidoparia morar</i> (Hamilton)	...	49
37.	<i>Amblypharyngodon mola</i> (Hamilton)	...	51
38.	<i>Catla catla</i> (Hamilton)	...	52
39.	<i>Chagunius chagunio</i> (Hamilton)	...	53
40.	<i>Cirrhinus reba</i> (Hamilton)	...	54
41.	<i>Cirrhinus mrigala</i> (Hamilton)	...	55
42.	<i>Crossocheilus latius latius</i> (Hamilton)	...	56
43.	<i>Cyprinus carpio</i> (Linnaeus)	...	58
44.	<i>Ctenopharyngodon idellus</i> (C.V.)	...	60
45.	<i>Garra lamta</i> (Hamilton)	...	62
*46.	<i>Garra nasuta</i> (McClelland)	...	63
*47.	<i>Garra rupecula</i> (McClelland)	...	64
48.	<i>Garra gotyla gotyla</i> (Gray)	...	64
*49.	<i>Garra lissorhynchus</i> (McClelland)	...	65
*50.	<i>Garra kempfi</i> Hora	...	66
*51.	<i>Garra naganensis</i> Hora	...	67
52.	<i>Hypophthalmichthys molitrix</i> (C.V.)	...	68
53.	<i>Labeo bata</i> (Hamilton)	...	69
54.	<i>Labeo rohita</i> (Hamilton)	...	70
55.	<i>Labeo boga</i> (Hamilton)	...	71
56.	<i>Labeo calbasu</i> (Hamilton)	...	72
57.	<i>Labeo gonius</i> (Hamilton)	...	73
58.	<i>Labeo dero</i> (Hamilton)	...	74
59.	<i>Labeo pangusia</i> (Hamilton)	...	75
60.	<i>Labeo nandina</i> (Hamilton)	...	75
61.	<i>Osteobrama cotio cotio</i> (Hamilton)	...	76
62.	<i>Puntius clavatus</i> (McClelland)	...	77
63.	<i>Puntius sophore</i> (Hamilton)	...	78

64.	<i>Puntius guganio</i> (Hamilton)	...	79
65.	<i>Puntius sarana sarana</i> (Hamilton)	...	79
66.	<i>Puntius phutunio</i> (Hamilton)	...	80
67.	<i>Puntius conchoni</i> (Hamilton)	...	81
68.	<i>Puntius ticto</i> (Hamilton)	...	82
*69.	<i>Puntius shalynius</i> Yazdani & Talukdar	...	83
70.	<i>Puntius chola</i> (Hamilton)	...	84
71.	<i>Puntius gelius</i> (Hamilton)	...	84
72.	<i>Puntius terio</i> (Hamilton)	...	85
*73.	<i>Schizothorax richardsonii</i> (Gray)	...	86
*74.	<i>Schizothorachthys progastus</i> (McClelland)	...	87
*75.	<i>Schizopygopsis stoliczkae</i> Steindachner	...	87
76.	<i>Semiplotus semiplotus</i> (McClelland)	...	88
77.	<i>Tor tor</i> (Hamilton)	...	89
78.	<i>Tor putitora</i> (Hamilton)	...	91
*79.	<i>Tor progenius</i> (McClelland)	...	92

Family PSILORHYNCHIDAE

80.	<i>Psilorhynchus balitora</i> (Hamilton)	...	94
81.	<i>Psilorhynchus sucatio</i> (Hamilton)	...	95
*82.	<i>Psilorhynchus homaloptera</i> Hora & Mukerjee	...	96

Family HOMALOPTERIDAE

83.	<i>Balitora brucei</i> Gray	...	97
84.	<i>Balitora macualta</i> Gray	...	98

Family COBITIDAE

85.	<i>Acanthopthalmus pangia</i> (Hamilton)	...	103
*86.	<i>Aborichthys kemp</i> Chaudhuri	...	104
87.	<i>Aborichthys elongatus</i> Hora	...	105
*88.	<i>Aborichthys garoensis</i> Hora	...	106
*89.	<i>Acanthopsis choirorhynchus</i> (Bleeker)	...	107
*90.	<i>Botia berdmorei</i> (Blyth)	...	109
91.	<i>Botia dario</i> (Hamilton)	...	109
92.	<i>Botia rostrata</i> Günther	...	110
93.	<i>Lepidocephalus</i> (L.) <i>berdmorei</i> Blyth	...	111
94.	<i>Lepidocephalus</i> (L.) <i>guntea</i> (Hamilton)	...	112
*95.	<i>Lepidocephalus</i> (L.) <i>irrorata</i> Hora	...	112
**96.	<i>Lepidocephalus</i> (L.) <i>dibruensis</i> Sen	...	113
97.	<i>Lepidocephalus</i> (L.) <i>annandalei</i> Chaudhuri	...	114
**98.	<i>Lepidocephalus</i> (L.) <i>goalparensis</i> Pillai & Yazdani	...	115
99.	<i>Noemacheilus corica</i> (Hamilton)	...	116

100.	<i>Noemacheilus beavani</i> Günther	...	117
*101.	<i>Noemacheilus kangjupkhulensis</i> Hora	...	117
*102.	<i>Noemacheilus manipurensis</i> Chaudhuri	...	118
*103.	<i>Noemacheilus zonalternans</i> (Blyth)	...	119
*104.	<i>Noemacheilus prashadi</i> Hora	...	120
*105.	<i>Noemacheilus sikmaiensis</i> Hora	...	121
106.	<i>Noemacheilus multifasciatus</i> Day	...	122
107.	<i>Noemacheilus rupicola rupicola</i> (McClelland)	...	123
108.	<i>Noemacheilus rupicola inglisi</i> Hora	...	124
109.	<i>Noemacheilus zonatus</i> (McClelland)	...	124
110.	<i>Noemacheilus scaturigina</i> (McClelland)	...	125
111.	<i>Mesonoemacheilus herrei</i> Nalbant and Bănărescu	...	126
*112.	<i>Mesonoemacheilus reticulofasciatus</i> Singh & Bănărescu	...	127
*113.	<i>Physoschistura elongata</i> Sen and Nalbant	...	128
114.	<i>Somileptes gongota</i> (Hamilton)	...	129

Order SILURIFORMES

Family BAGRIDAE

115.	<i>Aorichthys aor</i> (Hamilton)	...	132
116.	<i>Aorichthys seenghala</i> (Hamilton)	...	133
117.	<i>Batasio tengana</i> (Hamilton)	...	134
118.	<i>Chandramara chandramara</i> (Hamilton)	..	135
119.	<i>Mystus bleekeri</i> (Day)	...	136
120.	<i>Mystus cavasius</i> (Hamilton)	...	136
*121.	<i>Mystus menoda menoda</i> (Hamilton)	...	137
122.	<i>Mystus vittatus</i> (Bloch)	...	138
123.	<i>Mystus montanus</i> (Jerdon)	...	138
124.	<i>Mystus tengara</i> (Hamilton)	...	140

Family SILURIDAE

125.	<i>Ompok bimaculatus</i> (Bloch)	...	141
126.	<i>Ompok pabda</i> (Hamilton)	...	142
127.	<i>Ompok pabo</i> (Hamilton)	...	143
*128.	<i>Silurus cochinchinensis</i> (Valenciennes)	...	144
129.	<i>Wallago attu</i> (Schneider)	...	145

Genus *Noemacheilus* van Hasselt has been placed under super-family *Cobitoidea*, family *Homalopteridae* and sub-family *Noemacheilinae*. The other genera *Botia*, *Acanthopsis*, *Acanthopthalmus*, *Lepidocephalus*, *Somileptes* etc., under family *Cobitidae* and sub-families *Cobitinae* and *Botiinae* according to the latest revisionary works on Cobitid fishes by Dr. A. G. K. Menon (in press).

Family SCHILBEIDAE

130.	<i>Ailia coila</i> (Hamilton)	...	146
131.	<i>Clupisoma garua</i> (Hamilton)	...	147
132.	<i>Eutropiichthys murius</i> (Hamilton)	...	148
133.	<i>Eutropiichthys vacha</i> (Hamilton)	...	149
134.	<i>Pseudeutropius atherinoides</i> (Bloch)	...	150

Family PANGASIDAE

135.	<i>Pangasius pangasius</i> (Hamilton)	...	151
------	---------------------------------------	-----	-----

Family AMBLYCIPITIDAE

136.	<i>Amblyceps mangois</i> (Hamilton)	...	152
------	-------------------------------------	-----	-----

Family SISORIDAE

137.	<i>Bagarius bagarius</i> (Hamilton)	...	155
138.	<i>Conta conta</i> (Hamilton)	...	156
**139.	<i>Erethistoides montana montana</i> Hora	...	157
140.	<i>Erethistes pussilus</i> Müller & Troschel	...	158
*141.	<i>Exostoma labiatum</i> (McClelland)	...	159
142.	<i>Euchiloglanis hodgarti</i> Hora	...	160
143.	<i>Gagata viridescens</i> (Hamilton)	...	160
144.	<i>Gagata cenia</i> (Hamilton)	...	161
*145.	<i>Glyptothorax cavia</i> (Hamilton)	...	162
*146.	<i>Glyptothorax striatus</i> (McClelland)	...	163
*147.	<i>Glyptothorax trilineatus</i> Blyth	...	163
*148.	<i>Glyptothorax sinense manipurensis</i> Menon	...	164
*149.	<i>Glyptothorax platypogonoides</i> Bleeker	...	165
150.	<i>Hara hara</i> (Hamilton)	...	165
151.	<i>Hara jerdoni</i> Day	...	166
152.	<i>Pseudecheneis sulcatus</i> (McClelland)	...	167

Family CLARIIDAE

153.	<i>Clarias batrachus</i> (Linnaeus)	...	168
------	-------------------------------------	-----	-----

Family HETEROPNEUSTIDAE

154.	<i>Heteropneustes fossilis</i> (Bloch)	...	169
------	--	-----	-----

Family CHACIDAE

155.	<i>Chaca chaca</i> (Hamilton)	...	171
------	-------------------------------	-----	-----

Family OLYRIDAE

**156.	<i>Olyra laticeps</i> McClelland	...	173
157.	<i>Olyra longicaudata</i> McClelland	...	173
158.	<i>Olyra kempi</i> Chaudhuri	..	174
*159.	<i>Olyra horai</i> (Prashad & Mukerji)	...	175

Order ATHERINIFORMES

Family CYPRINODONTIDAE

160.	<i>Aplocheilus panchax</i> (Hamilton)	...	176
------	---------------------------------------	-----	-----

Family BELONIDAE

161.	<i>Xenentodon cancila</i> (Hamilton)	...	177
------	--------------------------------------	-----	-----

Order CHANNIFORMES

Family CHANNIDAE

162.	<i>Channa orientalis</i> (Hamilton)	...	179
163.	<i>Channa barca</i> (Hamilton)	...	180
164.	<i>Channa marulius</i> (Hamilton)	...	181
165.	<i>Channa punctata</i> (Bloch)	...	182
166.	<i>Channa striatus</i> (Bloch)	...	182
*167.	<i>Channa stewartii</i> (Playfair)	...	183

Oorder SYMBRANCHIFORMES

Family SYMBRANCHIDAE

168.	<i>Monopterus cuchia</i> (Hamilton)	..	185
*169.	<i>Monopterus hodgarti</i> (Chaudhuri)	...	186

Order PERCIFORMES

Family CHANDIDAE

170.	<i>Chanda nama</i> Hamilton	...	187
171.	<i>Chanda ranga</i> Hamilton	...	188

Family CICHLIDAE

† 172.	<i>Tilapia mossambica</i> (Peters)	...	189
--------	------------------------------------	-----	-----

Family NANDIDAE

173.	<i>Badis badis</i> (Hamilton)	...	192
174.	<i>Nandus nandus</i> (Hamilton)	...	193

† *Oreochromis mossambica* (Trewavas, 1983)

Family MUGILIDAE

175. *Sicamugil cascasia* (Hamilton) ... 194

Family GOBIIDA

176. *Glossogobius giuris* (Hamilton) ... 195

Family ANABANTIDAE

177. *Anabas testudineus* Bloch ... 197
 178. *Colisa sota* (Hamilton) ... 198
 179. *Colisa lalia* (Hamilton) ... 198
 180. *Colisa fasciata* (Schneider) ... 199
 181. *Ctenops nobilis* McClelland ... 200

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

182. *Mastacembelus armatus armatus* Lacépède ... 202
 183. *Mastacembelus pancalus* (Hamilton) ... 202
 184. *Macrogathus aculeatus* (Bloch) ... 203

Family PILLAIIDAE

- *185. *Pillaia indica* Yazdani ... 205
 *186. *Pillaia khajuriae* Talwar, Yazdani & Kundu ... 206

Order TETRAODONTIFORMES

Family TETRAODONTIDAE

187. *Tetraodon cutcutia* Hamilton ... 207

* Endemic to Assam and adjoining N. E. Indian states.

** Endemic to present state of Assam.

SYSTEMATIC ACCOUNT
Order CLUPEIFORMES
Family CLUPEIDAE

Abdomen serrated or keeled or both (except in genus *Dussumieria*), upper jaw not prominent, maxillaries not elongated, cleft of mouth normal, silvery fish without barbels, deep forked caudal. Four genera and five species.

Key to the genera of family Clupeidae

- | | |
|---|--------------------------|
| 1. Anal fin long with more than 30 rays, pelvic fin with 6 to 7 rays, lower jaw strongly prognathus | <i>Ilisha</i> Richardson |
| — Anal fin short with less than 30 rays, pelvic fin with 7—9 rays | 2 |
| 2. Lower jaw with dentary flared outwards, mouth inferior, last dorsal fin often filamentous | <i>Goniolosa</i> Regan |
| — Lower jaw normal, dentary not flared outwards, mouth terminal, last dorsal fin ray not filamentous | 3 |
| 3. Scales large, 40—50 in lateral line ... | <i>Hilsa</i> Regan |
| — Scales very small, 80—110 in lateral line ... | <i>Gudusia</i> Fowler |

Key to the species of genus Gudusia

- | | |
|--|---------------------------|
| 1. Preventral and post ventral scutes 18 and 10 respectively, a row of 18 colour bars across the back | <i>G. variegata</i> (Day) |
| — Preventral and post ventral scutes 18—19 and 9—10 respectively, no colour bars across the back | <i>G. chapra</i> (Ham.) |

Genus *Gonialosa* Regan, 1917

1917. *Gonialosa* Regan, *Ann. Mag. nat. Hist.*, 19 (8), p. 315 (type, *Chatoessus modestus* Day, Orthotypic).

1. *Gonialosa manmina* (Hamilton)

1822. *Clupanodon manmina* Hamilton, *Fish. Ganges*, pp. 247, 383 (type locality—most of the freshwater branches of the Ganges).

1976. *Gonialosa manmina*, Misra, *Fauna India* (pisces), Vol. II, p. 96.

Local name : Koroti/Karati

D. 14—15 ; p. 15 ; V. 8 ; A. 22—24 ; L. 1.58—65.

Diagnostic characters : Length of head 4.6 to 5 in total length, maxilla short not reaching eye orbit, ventral profile more convex than

dorsal profile, dorsal origin nearer to snout end than to base of caudal, 17 strong scutes between throat and base of pelvics and 13 behind it, lateral transverse scales 21—25.

Colour : Silvery glossed with gold, bluish-green back and usually a black shoulder spot, fins yellowish, dorsal and caudal with dark outer edges.

Size : Attains 279 mm. in length ; my own collection from Tezpur and Dibrugarh ranges from 90 to 180 mm. in length.

Distribution : Streams and affluents of the Ganges, Jamuna, Brahmaputra and Mahanadi rivers spreading all over India through the tanks and estuaries of major Indian rivers, except in the Deccan, Southern and Western India ; Pakistan, Bangladesh, Sri Lanka.

Remarks : Found in abundance in lower Assam regions during rainy season, economically less important due to bones and smaller size.

Genus *Gudusia* Fowler, 1911

1911. *Gudusia* Fowler, *Proc. Acad. nat. Sci. Philad.*, 63, p. 207 (type, *Glupanodon chapra* Ham., Orthotypic).

2. *Gudusia chapra* (Hamilton)

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

1976. *Gudusia chapra*, Misra, *Fauna India* (Pisces), Vol. II, p. 61.

Local name : Koroti/Karati

D. 14—16 ; P. 13 ; V 8 ; A, 21—24 ; C. 17 ; L. 1.80—1.10.

Diagnostic characters : Length of head 4.3 to 4.5 in total length, eyes with broad adipose lids, ventral profile more convex than dorsal profile, dorsal origin nearer to caudal base than to snout end, lateral transverse scales 33—35, post ventral and pre ventral scutes 9 to 10 and 18 to 19 respectively.

Colour : Silvery with or without a dark shoulder spot, sometime found with golden tinge at side and bluish black on the back.

Size : Largest recorded specimen 203 mm. in length ; specimens in my collections from Pandu range from 40 to 152 mm. in length.

Distribution : India : freshwaters of Assam, West Bengal, Bihar Orissa, upper parts of the Ganges, Bombay as far south as the Krishna river, absent in Malabar and Madras ; Pakistan, Bangladesh, Penang.

Remarks : A typical freshwater clupeoid fish.

3. *Gudusia variegata* (Day)

1869. *Clupea variegata* Day, *Proc. Zool. Soc. Lond.*, p. 623 (type-locality : Irrawaddi river and its branches)
1976. *Gudusia variegata*, Misra, *Fauna India* (Pisces), Vol. II, p. 63.

Local name : Koroti/Karati

D. 3/12—15 ; P. 17 ; V 8 ; A.3/21—26 ; C 17 ; L. 1.90.

Diagnostic characters : Length of head 4.4 to 4.6 in total length, eyes with broad adipose lid, dorsal origin nearer to snout end than to caudal base, caudal deeply forked, ventral profile more convex than dorsal profile, lower jaw less prominent, anal fin longer, scales small and smooth, preventral and post ventral scutes 18 and 10 respectively, lateral transverse scales 35, abdomen keeled and serrated.

Colour : Silvery glossed with gold and bronze, a row of 18 bars (less in juveniles) across back below dorsal profile, a black humeral blotch, dorsal with a black basal band distinct in the posterior half. Instead of 18 bars, only 9 distinctly formed bars are found and rest of the bars fused to a thick posterior black band which may be due to juvenile stage.

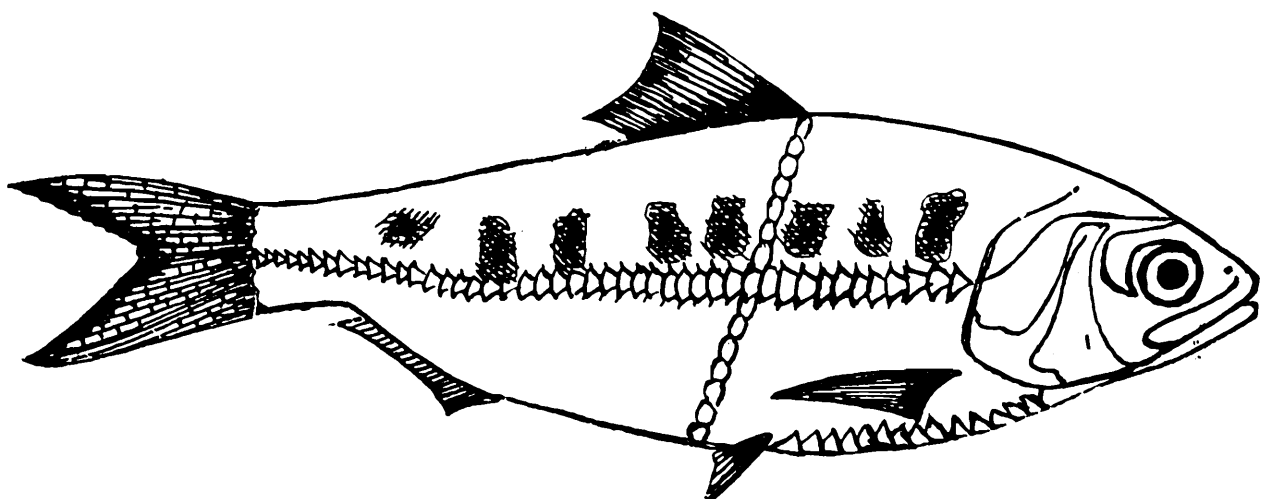


Fig. 4. *Gudusia variegata* (Day)

Size : Largest specimen recorded 178 mm. in length : 3 specimens in my collections ranging from 94 to 105 mm. in length collected from Mariani, 20 km. from Jorhat, Assam.

Distribution : India : Assam ; Burma. *G. godanahiai* Srivastava from Gorakhpur, U.P. is considered to be a synonym of *G. variegata* by Talwar and Whitehead (1971).

Remarks : This species is recorded for the first time from Indian waters (Assam). It has been so far known to be a Burmese form-migrated to Assam through the Brahmaputra drainage system and therefore extends its known range of distribution from Burma to Assam. An endemic species to present state of Assam.

Genus *Hilsa* Regan, 1917

1917. *Hilsa* Regan, *Ann. Mag. nat. Hist.*, 19 (8), p. 303 (type, *Paralosa durbanensis* Reg.)

4. *Hilsa ilisha* (Hamilton)

1822. *Clupanodon ilisa* Hamilton, *Fish Ganges*, p. 243, pl. 19 fig. 73 (type-locality : Ganges estuaries, Patna, Goalpara, Calcutta, Dacca).

1976. *Macrura ilisha*, Misra, *Fauna India* (Pisces) Vol. II, p. 54.

Local name : Ilish/Eee-lish/Ee-liha.

D. 18—19 ; P. 15 ; V 9 ; A. 19—22 ; C. 19 ; L. 1.46—49.

Diagnostic characters : Length of head 4.2 to 4.5 in total length, lower edge of operculum more than twice in height of operculum, eyes with broad adipose eye-lids, maxilla reaches a little beyond the posterior border of eye, dorsal and ventral surfaces equally convex, dorsal origin nearer to snout end than to caudal base, lateral transverse scales 17 to 20, post ventral scutes 14—15.

Colour : Silvery, shot with gold and purple. I collected one younger specimen (295 cm.) with bronze colour along the back and with a row of vertical black bands on the upper half of body.

Size : Attains 457 mm. in length.

Distribution : India : Ganges at Calcutta, Kanpur, Allahabad, Benaras, Buxar, Patna, Monghyr, West Bengal, Orissa, Vizagapatnam, Coromondal, Malabar, Cochin and Bombay coasts, Cauvery river, Tanjore ; Bangladesh, Pakistan, Burma, Sri Lanka, Iraq, Persian Gulf, China.

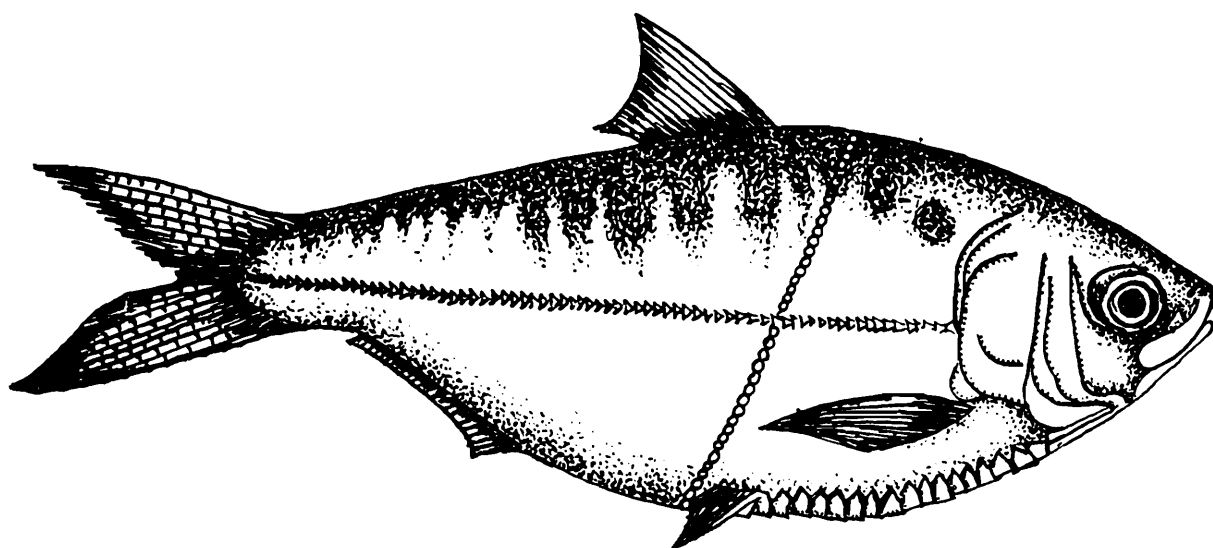


Fig. 5. *Hilsa ilisha* (Ham.)

Remarks : I have retained its existing scientific name as such being a very popular and well-known Indian clupeoid fish of considerable economic importance all over India. It has been recently revised as '*Hilsa (Tenuulosa) ilisha*' (Whitehead, 1972) and '*Macrura ilisha*' (Misra, 1976). It migrates to Assam either from Burma or Bangladesh coasts during monsoon spates for food and breeding purposes—an anadromous fish.

Genus *Ilisha* Richardson, 1846

1846. *Ilisha* (Gray) Richardson, *Ichth. China, Japan*, p. 306 (type, *Ilisha abnormis* Richardson = *Alsosa elongata* Bennett).

5. *Ilisha indica* (Swainson)

1839. *Platygaster indicus* Swainson, *Nat. Hist. Animals.*, 2, p. 294 (type-locality : Vizagapatnam).

Local name : Sa-lo/Cha-lo

D. 17 ; P. 15 ; V 7 ; A. 39—40 ; L. 1.44 ; C. 17.

Diagnostic characters : Length of head 4.3 to 4.7 in total length, ventral profile more convex than dorsal profile, dorsal commences nearer to snout end than to caudal base, abdominal scutes 25 to 26, post ventral scutes 7 to 8, ventral fin small.

Colour : Greenish on the back, pearly reflections shot with purple and gold on the sides and below ; dorsal fin often tipped with black.

Size : Attains 250 mm. in length ; my collection from Brahmaputra river at Gauhati range from 160 to 185 mm. in length.

Distribution : India, Pakistan, Bangladesh, Burma, Sri Lanka, Malaya Peninsula, Malaya Archipelago, China, Philippines, Thailand, Indonesia and East coast of Africa.

Remarks : Migrated to Assam from Bangladesh or Burma coasts. Not liked by local people for its disturbing thin bones, mostly taken by the poor.

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

Head scaly, anal united with caudal, oblong body, no barbels, rudimentary ventrals, tail prolonged and tapering, lateral line present, abdominal edge serrated anterior to ventral fin, single dorsal fin. One genus and two species.

Genus *Notopterus* Lacépède

Snout obtuse, concave, cleft of mouth lateral, preopercle and some other bones of head serrated, dorsal fin present, rudimentary ventral fins, branchiostegals 3 to 9, small scales.

Key to the species of genus Notopterus

1. Scales on cheeks not much larger than on body, maxilla extends far beyond the hind edge of orbit, upper profile of head deeply curved ... *Notopterus chitala* (Ham.)
- Scales on cheeks much larger than on body, maxilla does not extend beyond hind edge of orbit, dorsal profile deeply convex ... *Notopterus notopterus* (Pallas)

Genus *Notopterus* Lacépède, 1800

1800. *Notopterus* Lacépède, *Hist. Nat. Poiss.*, 2, p. 183 (type, *Gymnotus notopterus* Pallas).

6. *Notopterus chitala* (Hamilton)

1822. *Mystus chitala* Hamilton, *Fish Ganges*, pp. 236, 382 (type-locality : larger freshwater rivers of Bengal).
1974. *Notopterus chitala*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1). *J. Indl. Fish Soc. India*, p. 7.

Local name : Chital/Cital/See-taal

D. 9—10 (1-2/7-9) ; P. 16 ; V 6 ; A. 110—125 (135); C. 12—14 ; L. 1.180

Diagnostic characters : Length of head 4.6 in total length, upper profile of head deeply curved or concave, snout prominent, small cycloid scales on body, opercles, some fins and head region ; rudimentary ventral fins, head scales not much larger than those on the body, anal and caudal confluent, nearly straight lateral line, lower edge of opercle very finely serrated, 51 serrations anterior to ventral fin.

Colour : Silvery sides, coppery back with about 15 transverse silvery bars, fins with grayish spots, two prominent dark spots on the caudal region.

Size : Attains 121.9 cm. in length.

Distribution : India : Assam, West Bengal, Orissa, U. P., Bihar ; Pakistan, Bangladesh, Burma, Thailand, Malay and Indonesia.

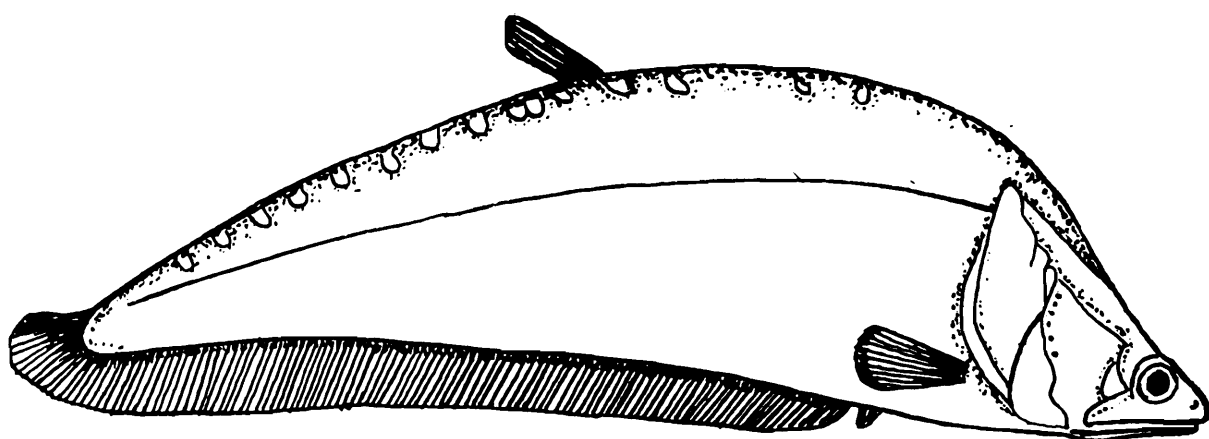


Fig. 6. *Notopterus chitala* (Ham.)

Remarks : Not very much popular in Assam because of its numerous thin bones on the upper part (back) of body. However, it is very much popular in West Bengal specially for the abdominal part (*petee*) due to its rich oil content and flavour more particularly with the former East Bengal people contradictory to Day's views 'The belly is uncommonly rich and well flavoured ; but the back contains numerous small bones, and a strong prejudice exists against using this fish as food, owing to its being supposed to live on human carcasses'

7. *Notopterus notopterus* (Pallas)

1769. *Gymnotus notopterus* Pallas, *Specil. Zool.*, 7, p. 40, pl. 6, fig. 2 (type-locality : Ponds and rivers of Bengal).
1974. *Notopterus notopterus*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub (1), *J. Indl. Fish Soc. India*, p. 7.

1 *Local name* : Kandoolee

D. 7—8 (1-2/6-7) ; P. 17 ; V 5—6 ; A. 100—110 ; C. 19 ; L. 1.225.

Diagnostic characters : Length of head 4.1 to 5.5 in total length, dorsal profile not much convex as that of ventral, maxilla reaches to mid orbit, preorbital serrated, dorsal small, situated midway between snout end and caudal fin end, far behind the pelvic origin ; anal and caudal united, rudimentary pelvic fins, scales on the opercle larger than those on body, lateral line straight, an external row of strong teeth in either jaw.

Colour : Silvery sides with bluish-gray back, golden yellow tinge on head, fine grayish spots all over the body, golden eyes.

Size : Grows to 609 mm. in length.

Distribution : India : freshwater ponds, rivers and brackish waters of Assam, West Bengal, Punjab, U. P., Chilka Lake, Orissa, Madras, Deccan, Malabar, Poona ; Pakistan, Bangladesh, Burma, Malaya Peninsula, Malay Archipelago, Thailand.

Remarks : Found to live in ponds, tanks, canals and rivers ; a good-eating fish especially when alive.

Order CYPRINIFORMES

Family CYPRINIDAE

Body oblong or elongated, branchiostegals three, abdomen usually rounded, margin of upper jaw formed by three premaxillaries, opercles in four plates, mouth toothless, a single rayed dorsal fin, head scaleless (except *Leptobotia* Blkr. from China), body scaled or scaleless, never covered by osseous plates ; air vessel constricted to two anterior and posterior chambers, two to four barbels. Twenty six genera and seventy two species.

Key to the genera of family Cyprinidae

1. Abdomen or part of abdomen sharp edged :
 dorsal fin in the posterior half of body ... 2
- Abdomen not sharp edged, rounded or flat :
 dorsal fin not in the posterior half of body ... 3
2. Pelvic origin nearer to pectoral base than to
 anal base : outer pelvic rays produced ... *Chela* Ham.
- Pelvic origin nearer to anal base than to
 pectoral base : outer pelvic rays not produced *Oxygaster* V. Hass.

3. An anal sheath of enlarged title like scales :
 L. l. scales more than 98 ... 4
 — Anal sheeth absent ... 5
4. Lower lip suctorial ... *Schizothorax* Heck.
 — Lower lip without suctorial disc, upper lip
 separated from skin of the snout by a deep
 groove ... 6
5. Upper and lower lips continuous, upper lip
 continuous with skin of snout and not
 seperated by a groove, lower lip with sucto-
 rial disc ... *Garra* Ham.
 — Upper and lower lips not continuous : lower
 lip without suctorial disc ... *Crossocheilus* V. Hass.
6. Maxillary barbels very long, reaching beyond
 pelvic base : no symphysial knob in the lower
 jaw ... *Esmous* Swa.
 — Maxillary barbels short or absent : symphy-
 sial knob present in lower jaw ... 7
7. Suborbital ring of bones distinctly broad and
 prominent, cleft of mouth of.en extending
 beyond anterior margin of eye ... *Barilius* Ham.
 — Suborbital ring of bones not broad and
 prominent, cleft of mouth not extending
 beyond anterior margin of eye ... 8
8. Dorsal with 12—16 rays : anal with 13—20
 rays ... *Danio* Ham.
 — Dorsal with 9 rays : anal with 7—8 rays ... 9
9. Caudal fin emarginate or forked, lateral line
 with 26—44 scales ... *Rasbora* Blkr.
 — Caudal fin deeply forked, lateral line com-
 plete with 42—112 scales ... 10
10. Anal with 14—22 rays, dorsal with 9 or 10
 rays ; a symphysial knob rudimentarily
 present ... *Salmostoma* Swa.
 — Anal with 8 rays, dorsal with 13 rays ; rows
 of horny tubercles on sides and below the
 eyes ... 11
11. Lateral line complete with 22—32 scales ; a
 scaly appendage present before each pelvic
 fin ... *Acrossocheilus* Osh.
 — Lateral line complete with 35—45 scales ;
 no scaly appendage before pelvic fin ... 12
12. Dorsal short with 8—15 rays, mouth promi-
 nent and moderately sharp with symmetrical
 head, eyes placed on the middle, barbels 2,
 only the short rostrals ... *Cirrhinus* Oken

- Dorsal broad with 18—20 rays (with 3 spines) 13
- 13. Mouth small protrusible, head asymmetri-
cally tapered, eyes placed high on the head... *Cyprinus* L.
- Mouth not protrusible, snout not horizon-
tally divided by a deep groove ... 14
- 14. Dorsal with 11—26 rays, anal with 7—8
rays, lateral scales 36—85, barbels present,
mouth narrow with snout truncated or
rounded ... *Labeo* C.
- Dorsal with 3/7, anal with 3/8, ... 15
- 15. Lateral line scales 43—45, dorsal and anal
fins roundish, broad and short round head,
no barbels ... *Ctenopharyngodon* Val.
- Lateral line scales 110 (28—33)/(16—28) 124 ;
dorsal 3/7, anal 2—3/12—14 and ventral
1/7. ... 16
- 16. Pointed head, abdomen keeled up to vent ;
small eyes and scales, snout bluntly rounded .. *Hypophthalmus* Val.
- Head compressed with flat sides, abdomen
not keeled, superior large eyes, large scales .. 17
- 17. Last anal rays elongated in males, normal
in females ; snout and cheeks profusely
tuberculated in males and females, lateral
line scales 44—48 .. *Chagunius* Smith
- Last anal rays normal in males and females,
snout alone tuberculated in some and more
often not tuberculated, lateral line with
20—47 scales ... 18
- 18. Scales small, moderate or large ; lower lip
without a continuous transverse fold, lateral
line complete or incomplete ... *Puntius* Ham.
- Large scales, lower lip with a continuous
transverse fold, complete lateral line with
23—28 scales ... 19
- 19. Dorsal with a strong, smooth and stout spine
with 12—13 rays ; 4 barbels ... *Tor* Gray
- Dorsal without spine with 9 rays, no
barbels ... 20
- 20. Lateral line incomplete with 55—75 scales ;
upper lip absent ... *Amblypharyngodon* Blkr.
- Lateral line complete with 40—43 large
scales ... 21
- 21. Head broad and large, mouth wide, eyes
large, dorsal with 17—19 rays ... *Catla* V.
- Head and mouth small ... 22

22. Lateral line greatly curved with 38—60 scales, lower jaw without any lip or knob, snout without pores, dorsal with 9 or 10 rays *Aspidoparia* Heck.
- Lateral line complete with 27—34 scales, lower jaw with a knob at the symphysis with a thin cartilaginous covering, a row of about six open pores passing across the snout towards orbit, dorsal fin long with 24—28 rays *Semiplotus* Blkr.

Key to the species of the genus Chela

1. Lateral line scales 34—37 *C. laubuca* (Ham.)
- Lateral line scales 55—65 *C. atpar* (Ham.)

Key to the species of genus Oxygaster

1. Lateral line scales above 111 (140—160) *O. gora* (Ham.)
- Lateral line scales below 111 (80—110) *O. clupeoides* (Bl.)
(= *Salmostoma*)

Key to the species of genus Salmostoma

1. L. tr. scales 17—19/6 *S. bacaila* (Ham.)
- L. tr. scales 12—15/6 *S. phulo phulo* (Ham.)

Key to the species of genus Barilius

- | | | | |
|--|-----|-----|-----------------------------|
| 1. Barbel present | ... | ... | 2 |
| — Barbel absent | ... | ... | 8 |
| 2. Four barbels | ... | ... | 3 |
| — Two barbeles | ... | ... | 5 |
| 3. Lateral line scales 60—70 ; 12 vertical bars | ... | ... | <i>B. shacra</i> (Ham.) |
| — Lateral line scales 40—44 | ... | ... | 4 |
| 4. Anal short with 9—10 rays ; short descending bars (distinct in juvenile forms) ; each scale with a black spot | ... | ... | <i>B. bendelisis</i> (Ham.) |
| — Anal long with 13-15 rays ; no black spot on scale | .. | ... | <i>B. vagra</i> (Ham.) |
| 5. Lateral line scale 44—48 | ... | ... | <i>B. guttatus</i> (Day) |
| — Lateral line scale 43—46 | ... | ... | 6 |
| 6. Body with 14—15 vertical blue bars | ... | ... | <i>B. barila</i> (Ham.) |
| — Body with 9 vertical blue bars | ... | ... | 7 |
| 7. 38—39 lateral line scales | ... | ... | <i>B. dogarsinghi</i> Hora |
| — 36—42 lateral line scales | ... | ... | 8 |
| 8. Body with 9—11 vertical bars | ... | ... | <i>B. barna</i> (Ham.) |
| — Body with two or more rows of spots or blotches ; lateral line scales 70—94 | ... | ... | 9 |

- | | | |
|----------------------------------|-----|------------------------|
| 9. Lateral line scales 70—75 ... | ... | <i>B. telio</i> (Ham.) |
| — Lateral line scales 88—94 ... | ... | <i>B. bola</i> (Ham.) |

Key to Subgenera of genus Danio

- | | | |
|--|-----|--------------------|
| 1. Dorsal fin with 12—16 branched rays, lateral line complete ... | ... | <i>Danio</i> |
| — Dorsal fin with 7 branched rays, lateral line incomplete or absent ... | ... | <i>Brachydanio</i> |

Key to species of genus Danio

- | | | | |
|--|-----|-------------------------------------|---|
| 1. Barbels absent ... | ... | <i>D. (D) devario</i> (Ham.) | 2 |
| — Barbels present ... | ... | | |
| 2. Barbels well developed, both rostral and maxillary pairs much longer than eye diameter, lateral line scales 38, anal rays 17—18 ... | ... | <i>D. (D) dangila</i> (Ham.) | |
| — Barbels not well developed, both rostrals and maxillary pairs shorter than eye diameter ... | ... | | 3 |
| 3. Lateral line scales 38—40, anal rays 40—42 ... | ... | <i>D. (D) naganensis</i> Chaudhuri | |
| — Lateral line scales 32—36; anal fin rays 14—18 ... | ... | | 4 |
| 4. Caudal not forked deeply, several well marked and uniform lateral bands ... | ... | <i>D. (D) aequipinnatus</i> (McCl.) | |
| — Caudal deeply forked, four metallic blue lines along the sides and forming three bands on the caudal fin ... | ... | | 5 |
| 5. Anal fin with 15—16 rays, lateral line scales 26—28 ... | ... | <i>D. (B) rerio</i> Ham. | |
| — Anal fin with 12—13 rays, 28—30 scales in a longitudinal row (L. 1. absent), caudal truncate or slightly emarginate ... | ... | <i>D. (B) horai</i> Barman | |

Key to the species of genus Rasbora

- | | | | |
|---|-----|--------------------------------|---|
| 1. Barbels present, L. 1. scales 40—44, 2 barbels | | <i>R. elanga</i> (Ham.) | |
| — Barbels absent, L. 1. scales 26—44, black stripes present ... | ... | | 2 |
| 2. L. 1. scales 31—34, a black lateral stripe ... | ... | <i>R. daniconius</i> (Ham.) | |
| — L. 1. scales 26—30, black bands present or absent ... | ... | | 3 |
| 3. L. 1. scales 30, two black bands, predorsal scales 13 ... | ... | <i>R. kobonensis</i> Chaudhuri | |
| — L. 1. scales 26—29, no black lateral stripe ... | ... | <i>R. rasbora</i> (Ham.) | |

Key to the species of genus Aspidoparia

1. L. 1. scales 38—42, upper jaw longer and overlapping the lower, cheek covered by a broad suborbital ring of bones ... *A. morar* (Ham.)
- L. 1. scales 52—60, mouth considerably overhung by the snout, only about half of the cheek covered by suborbital ring of bones *A. jaya* (Ham.)

Key to the species of genus Cirrhinus

1. L. 1. scales 40—45, thin lips, a pair of small rostral barbels, dorsal rays 15—16 ... *C. mrigala* (Ham.)
- L. 1. scales 35—45, dorsal rays 10 ... *C. reba* (Ham.)

Key to the species of genus Garra

1. L. 1. scales 39 ... 2
- L. 1. scales 32—36 ... 3
2. Vent situated almost midway between anterior origin of anal and pelvic fins ... *G. Kempfi* Hora
- Vent not situated midway between anterior origin of anal and pelvic fin ... *G. naganensis* Hora
3. Proboscis on snout present, L. 1. scales 34 ... 4
- Proboscis on snout absent, L. 1. scales 30—36 ... 5
4. Proboscis trilobed ... *G. nasuta* (McCl.)
- Proboscis a single projection without lateral lobes ... *G. gotyla gotyla* (Gray)
5. Tip of snout marked off by a transverse groove, a dark lateral band bordered above and below by light pale stripes especially in the posterior region, L. 1. scales 30—36 ... *G. lamta* (Ham.)
- Tip of snout not marked off by a deep transverse groove. A pale lateral band without any lateral stripes, L. 1. scales 32—35 ... 6
6. Back and post-pelvic regions with scales 35 ... *G. lissorhynchus* (McCl.)
- Back and post pelvic regions naked, L. 1. scales 32—34 ... *G. rupecula* (McCl.)

Key to the species of genus Labeo

1. Lower lip separated from isthmus by a post labial groove, branched dorsal rays 12—18... 2
- Lower lip not separated from isthmus by a post labial groove, branched dorsal rays 8—10 ... 5
2. Lateral line scales 71—84 ... *L. gonius* (Ham.)
- Lateral line scales 40—44 ... 3

- | | | |
|---|---|---------------------------|
| 3. Branched dorsal rays 12—15, no cartilaginous layer on the inner side of both jaws ... | 4 | |
| — Branched dorsal rays 12—13, lateral line scales 40—42, bluish or brownish above and silvery below ... | | <i>L. rohita</i> (Ham.) |
| 4. Lateral line scales 40—44, blackish becoming lighter below ... | | <i>L. calbasu</i> (Ham.) |
| — Lateral line scales 37—44, L. tr. scales 6.5—8/6-9, a tubercle inside lower jaw above symphysis ... | 5 | |
| 5. No horny covering inside lower jaw ... | | <i>L. bata</i> (Ham.) |
| — A thin horny covering inside upper jaw ... | 6 | |
| 6. Snout grooved, lateral line scales 41—44 ... | | <i>L. dero</i> (Ham.) |
| — Snout not grooved, lateral line scales 37—39, a thin layer of cartilage to inner surface of lower lip ... | 7 | |
| 7. Lateral line scales 37—39 ... | | <i>L. boga</i> (Ham.) |
| — Lateral line scales 40—42, snout without groove and very much obtuse ... | 8 | |
| 8. Frontal area beset with pores, caudal deeply forked, very distinct lateral lobes, lips not fringed ... | | <i>L. pangusia</i> (Ham.) |
| — No frontal pores, no lateral lobes, thick fringed lips with a prominent inner fold below and above, lateral line scales 42—44 ... | | <i>L. nandina</i> (Ham.) |

Key to the species of genus Puntius

- | | | |
|---|---|--------------------------------|
| 1. Barbels present ... | 2 | |
| — Barbels absent ... | 5 | |
| 2. Two pairs of barbels, L. 1. complete ... | 3 | |
| — Single pair of barbels ... | 4 | |
| 3. L. 1. scales 28—34 height of body 3.5—3.6 in T. L. ... | | <i>P. sarana sarana</i> (Ham.) |
| — L. 1. scales 42, pores on snout ... | | <i>P. clevatus</i> (McCl.) |
| 4. L. 1. scales 23—24, height of body 4.5—5 in T. L. ... | | <i>P. amphibia</i> (Val.) |
| — L. 1. scales 26—28, predorsal scales 10—12 ... | | <i>P. chola</i> (Ham.) |
| 5. L. 1. scales 29—31 ... | | <i>P. phutunio</i> (Ham.) |
| — L. 1. scales not more than 28 ... | 6 | |
| 6. Longest third dorsal ray serrated, lateral line scales 20—30 ... | 7 | |
| — Dorsal ray osseous and strong ... | 8 | |
| 7. L. 1. scales 20—23, L. tr. 6—7 ... | | <i>P. shalynius</i> Y & T. |
| — L. 1. scales 24—28, a large round black spot on the middle above the anal fin ... | | <i>P. conchoniis</i> (Ham.) |

8. Pectoral fin rays 12, upper jaws longer L. 1. scales 29—31 ... *P. guganio* (Ham.)
- Pectoral fin rays 15, upper jaw slightly longer or not, L. 1. scales 20—26 ... 9
9. A silvery band along the sides, a black band over the base of anal fin, L. 1. scales 23—24 *P. gelius* (Ham.)
- No such bands ... 10
10. H. L. 5 in T. L., L. 1. scales 22—26, a black spot on the side of the tail before the caudal fin base ... *P. ticto* (Ham.)
- H. L. 4—4.5, L. 1. scales 20—26 ... 11
11. A black blotch at the base of dorsal fin, H.L., 4.5 in T. L., L. 1. scales 23—26 ... *P. sophore* (Ham.)
- A large black blotch in the middle of the side over the posterior extremity of the anal fin ... *P. terio* (Ham.)

Key to the species of genus *Tor*

1. Length of head greater than depth of body ... 2
- Length of head shorter than depth of body, lateral line scales 22—17 ... *T. tor* (Ham.)
2. Lateral line scales 25—28 ... *T. putitora* (Ham.)
- Lateral line scales 26, length of head equal to depth of body, tip of snout fleshy and produced into a semicircular flap, a black streak behind gill opening ... *T. progeneius* (McCl)

Genus *Chela* Hamilton, 1822

1822. *Chela* Hamilton, *Fish Ganges*, p. 383 (Type - *Cyprinus cachi* Ham., designated by Bleeker in 1862).

8. *Chela laubuca* (Ham.)

1822. *Cyprinus laubuca* Hamilton, *Fish. Ganges*, pp. 260, 380 (type-locality : ponds of northern parts of Bengal).
1974. *Chela laubuca*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes* ; Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 8.

Local name : Laupotia/Lauputi/Herbaggi

D. 10—11 (2/9 - 9) ; P. 13 ; V. 7 ; A. 19—23 (2/17—21) ; C. 19 ; L. 1 34—37.

Diagnostic characters : Length of head 5 to 6 in total length, upturned mouth with dorsal head profile curved upwards, cleft of mouth very much oblique, lateral line curved downwards, pectoral reaching anal fin, $3\frac{1}{2}$ rows of scales between lateral line and base of ventral fin, abdominal edge cutting from pectoral to anal fin.

Colour : Silvery with golden vertical stripes when alive, two black marks, one at the base of caudal and the other at the base of pectoral.

Size : Largest recorded specimen 89 mm. in length ; 9 specimens collected from Pahugarh beel, Jorhat, range from 40 to 52 mm. in length.

Distributions : India : Assam, West Bengal, Orissa, M. P. ; Bangladesh, Burma, Pakistan, Sri Lanka, Sumatra, Thailand.

Remarks : A larvivorous fish found in ditches, ponds, canals, beels etc.

9. *Chela cadius* (Ham.)

1822. *Cyprinus cadius* Hamilton, *Fish Ganges*, pp. 258, 384 (type-locality : rivers of northern Bengal).

1974. *Chela cadius*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes ; Spl. Pub. (1) : J. Indl. Fish Soc. India*.

Local name : Lauputi

D. 9 (2/7) ; P. 10 ; V 5—6 ; A. 22—24(2—3/18—21) ; L. 1.55—65.

Diagnostic characters : Length of head 5.5 to 6 in total length, ventral with an elongated outer ray extending to the middle or even end of anal fin, pectoral fin elongated, 4-rows of scales between lateral line and pelvic base, caudal forked.

Colour : Silvery with a brownish lateral band, dorsal and caudal fins yellowish.

Size. Largest recorded specimen 102 mm. ; specimens collected from Tezpur range from 71 to 85 mm. in length.

Distribution : India : freshwaters of Assam, West Bengal, Orissa, M. P., Madras, Karnataka ; Pakistan, Bangladesh.

Remarks : A larvicidal fish, found in ditches, ponds, and river sides and can tolerate saline conditions ; feed mostly on mosquito larvae.

Genus *Oxygaster* van Hasselt, 1823

1823. *Oxygaster* van Hasselt, *Alg. Konst. Letterbode*, 2, p. 132 (type - *Oxygaster anomalura* Van Hasselt).

10. *Oxygaster gora* (Ham.)*

1822. *Cyprinus gora*, Hamilton, *Fish Ganges*, pp. 268, 384 (type - locality : Ganges and its tributaries).
 1974. *Oxygaster gora* Menon, *A Check-list of the Himalayan and Indo-Gangetic plains fishes* ; Spl. Pub. (1) ; J. Indl. Fish Soc. India., p. 8.

Local name : Sel-Kona/Chele-Kana

D. 9—10 (2—3/7) ; P. 15 ; V. 8 ; A. 15—16 (2/13—14) ; C. 19 ; L. 1.140—160.

Diagnostic charaters : Length of head 5 to 5.2 in total length, keeled portion of the ventral profile commences posterior to ventral fin, suborbital ring of bones broader than eye diameter but covering only 2/3rd portion of cheek, scales extended upto nostrils on the head.

Colour : Silvery

Size : Largest recorded specimen 228 mm. in length ; varying lengths found in the field from 110 to 155 mm.

Distribution : India : freshwaters of Assam, West Bengal, Punjab, U. P., Bihar ; Pakistan, Bangladesh.

Remarks : Bigger sizes are preferred as food locally.

Genus *Salmostoma* Swainson, 1839

1839. *Salmostoma* Swainson, *Nat. Hist.* 2, p. 184 (type - *Cyprinus bacaila* Hamilton).

11. *Salmostoma clupeoides* (Bloch)

1795. *Cyprinus clupeoides* Bloch, *Naturg. Ausland. Fische*, 12, p. 49 pl. 408 (type-locality : Tranquebar).
 1962. *Oxygaster clupeoides*, Mishra. *An Aid to Commercial Fishes, Rec. Indian Mus.*, 57 (1—4), p. 140.
 1981. *Salmastoma clupeoides*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., pp. 73 to 74.

Local name : Sel-Kona

D. 9 (2/7) ; P. 13 ; V. 9 ; A. 13—15 (2/11—13) ; C. 19 ; L. 1.80—93.

Diagnostic characters : Length of head 5.5 to 5.7 in total length, snout equals to eye diameter, a knob at the symphysis of the lower jaw,

*Synonymised as *Securicula gora* (vide, Jayaram, 1981, P. 73).

keeled portion of ventral profile commences opposite to pectoral fin, suborbital ring of bones almost covering cheek, 2-rows of scales between lateral line and pelvic base.

Colour : Silvery.

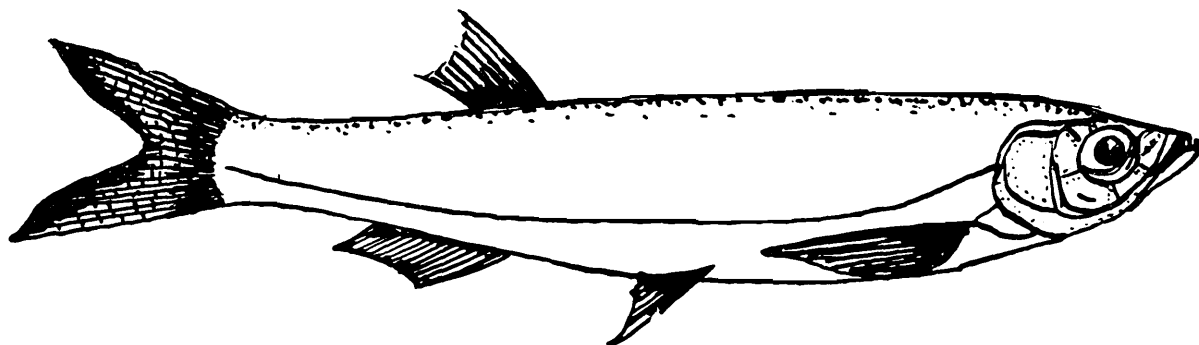


Fig. 7 *Salmostoma clupeoides* (Bloch)

Size : Largest recorded specimen 152 mm. in length ; 2 specimens collected from Kasharighat, Gauhati, range from 70 to 80 mm. in length.

Distribution : India : freshwaters of M. P., Assam, Baroda, Deccan, Madras, Cutch and Karnataka ; Burma.

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

12. *Salmostoma bacaila* (Ham.)

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

1974. *Salmostoma bacaila*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) ; *J. Indl. Fish Soc. India*, p. 9.

Local name : Sel-ko-na

D. 9 (2/7) ; P. 13 ; V. 9 ; (2/11—13) ; C. 19 ; L. 1.86—110.
A. 13—15

Diagnostic characters : Length of head 5.2 to 6 in total length, keeled portion of ventral profile commences opposite to pectoral fin, suborbital ring of bones broad, nearly covering cheeks, pectoral nearly reaching ventral, scales extend forward on the head nearly opposite to the posterior margin of the orbit, small sized scales.

Colour : Uniform silvery.

Size : Grows atleast 177 mm., specimens collected from Gauhati, Pandu, Tezpur (Jahajghat) and Tinsukhia range from 70 to 80 mm. in length.

Distribution : Northern India (Ganges, Brahmaputra and Indus) and Orissa (Mahanadi) ; Burma.

Remarks : Found to live in rivers, canals, beels and tanks.

13. *Salmostoma phulo phulo* (Ham)

1822. *Cyprinus phulo* Hamilton, *Fish Ganges*, p. 262 (type-locality : rivers and ponds of N.E. parts of Bengal).

1974. *Salmostoma phulo phulo*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish Soc. India*, p. 9.

Local name : Sel-Konah

D. 9 (2/7) ; P. 13 ; V 9 ; A. 18—19 (2—3/16—18) ; C. 19 ; L. 1.87.

Diagnostic characters : Length of head 5.5 in total length, lateral line curves gently downwards, a bright silvery lateral band, abdominal profile cutting behind the base of the pectoral fin, third suborbital bone nearly as deep as the uncovered portion of the cheek below it.

Colour : Silvery with a bright silvery lateral band.

Size : Attains 125 mm. in length ; specimens collected from Pandu, Tezpur, Jorhat range from 66 to 95 mm. in length.

Distribution : India : Assam, West Bengal, Orissa, M. P., Deccan ; Bangladesh.

Remarks : Found in rivers, ponds, ditches, canals etc.

Subfamily : RASBORINAE

Genus *Barilius* Hamilton, 1822

1822. *Barilius* Hamilton, *Fish Ganges*, p. 384 (type - *Cyprinus barila* Hamilton).

14. **Barilius bendelisis** (Ham.)

1807. *Cyprinus bendelisis* Hamilton, *Journey in Mysore*, 3, p. 345 pl. 32 (type-locality : rivers of Mysore).
 1974. *Barilius bendelisis*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish Soc. India, p. II.

Local name : Korang

9 (2/7) ; P. 15 ; V. 9 ; A. 9—10 (2—3/ 7—8) ; C. 18 ; L. 1.40—43.

Diagnostic characters : Length of head 4.6 to 5.2 in total length, each scale with a basal black spot, flattened shape, adult male with strong and large pectoral fin, double dots along lateral line, open pores on the snout and lower jaw in the adults or even in young ones ; sometimes pores on preorbital, axillary process broad, 4 short barbels, forked caudal.

Colour : Silvery shot with purple, slaty descending bars from back to lateral line and very distinct in young ones, in adults these bars fade and sometimes lost ; fins tinged with orange, each scale with a basal black spot.

Size : Largest recoded specimen 153 mm. in length, specimens collected from Dihing river, 60 km. from Dibrugharh, range from 71 to 115 mm. in length.

Distribution : India : Assam, West Bengal, Punjab, Simla, U. P., Bihar, M. P., South India ; Pakistan, Bangladesh, Nepal, Sri Lanka.

Remarks : Live in clear gravelly hill-stream rivers among pebbles and rock boulders.

15. **Barilius tileo** (Ham.)

1822. *Cyprinus tileo*, Hamilton, *Fish Ganges*, p. 276 (type-locality : Kosi river).
 1974. *Barilius tileo*, Menon, *A check-list of Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 13.

Local name : Tilei / Sel-leu / Boolla / Sund-u-a-rie

D. 9 (2/7) ; P. 14 ; V. 9 ; A. 13 (3/10), C. 20 ; L. 1.70—75.

Dignostic characters : Length of head 4.7 to 5.2 in total length, abdominal profile more convex than the dorsal, snout pointed and head

compressed, suborbital ring of bones broad, axillary process well developed with a soft scaled prolongation, rudimentary barbels, caudal deeply forked, 2-rows of spots on the sides.

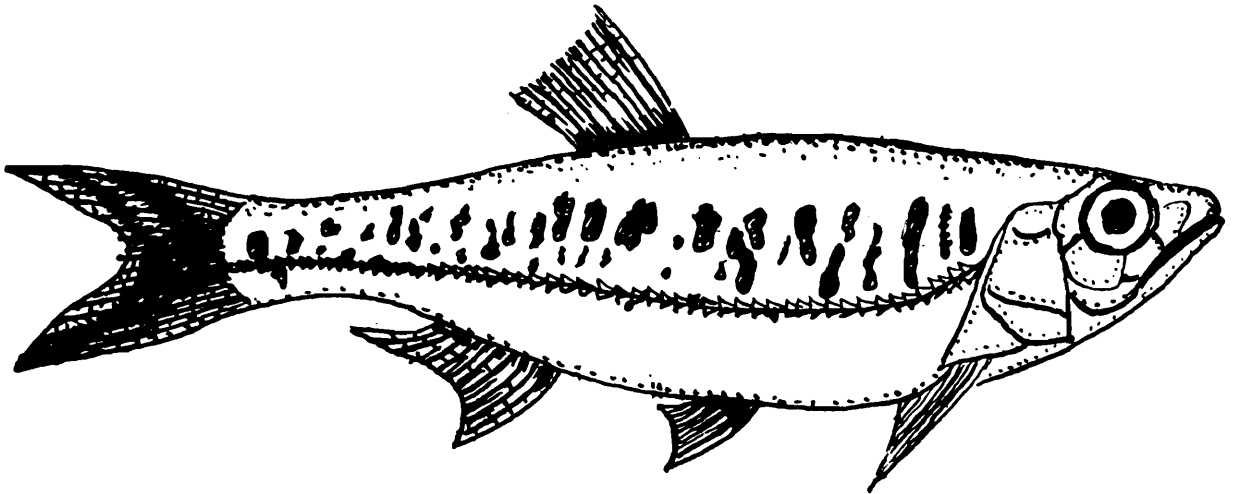


Fig. 8. *Barilius tileo* (Ham.)

Colour : Bluish black on the back and silvery at sides, 2-rows (sometimes more) of blue blotches or spots arranged vertically on the sides, dorsal and caudal fins dark grey tinged with light pinkish edge, other fins slightly yellowish.

Size : Largest recorded specimen 125 to 152 mm. in length ; specimens collected from Dihing river, 60 km. from Dibrugarh, range from 98 to 127 mm. in length.

Distribution : India : Assam, Eastern Himalayas ; Burma.

Remarks : Found to live in hill-streams and rivers with pebbly or stony bottoms.

16. *Barilius bola* (Ham.)

1822. *Cyprinus bola* Hamilton, *Fish Ganges*, pp. 274, 385. (type-locality : R. Brahmaputra).

1974. *Barilius bola*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Soc. India*, p. 12.

Local name : Korang

D. 10—11 (3/7—8) ; P. 13 ; V. 9 ; A. 3 (3/10) ; C. 19 ; L. 1.88—94.

Diagnostic characters : Length of head 4.5 to 4.6 in total length, predorsal scales 40, a knob above symphysis of the lower jaw, deep mouth cleft, head compressed and snout pointed, suborbital ring of bones broad. no barbels, two or more vertical rows of bluish blotches along sides.

Colour : Silvery with two or more vertical rows of bluish blotches along the sides, caudal orange with grayish black tinge, pectoral, pelvic and anal orange more or less similar to those of trout.

Size : Largest recorded specimen 304 mm. in length, 240 mm. being the total length of a specimen collected from Tezpur

Distribution : India : Assam, West Bengal, Punjab, U. P., Bihar, Orissa ; Pakistan, Bangladesh, Burma.

Remarks : It is a game fish and very much popular in Assam. Sometimes it is mistaken for trout by the foreign tourists due to its somewhat similar colour. Found to live in torrential hill-stream rivers. Specimens of this species found in Sibsagar and Cachar regions (road side fish-markets) range from 130 to 250 mm. in total length.

17. *Barilius guttatus* (Day)

1869. *Opsarius guttatus* Day, *Proc. Zool. Soc. Lond.*, p. 620. (type-locality : R. Irrawaddy from Prome to Mandalaya).

1974. *Barilius guttatus*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) ; *J. Indl. Fish Soc. India*, p. 14.

D. 9 (2/7) ; P. 15 ; V 9 ; A. (3/11) ; C. 17 ; L. 1.44—48.

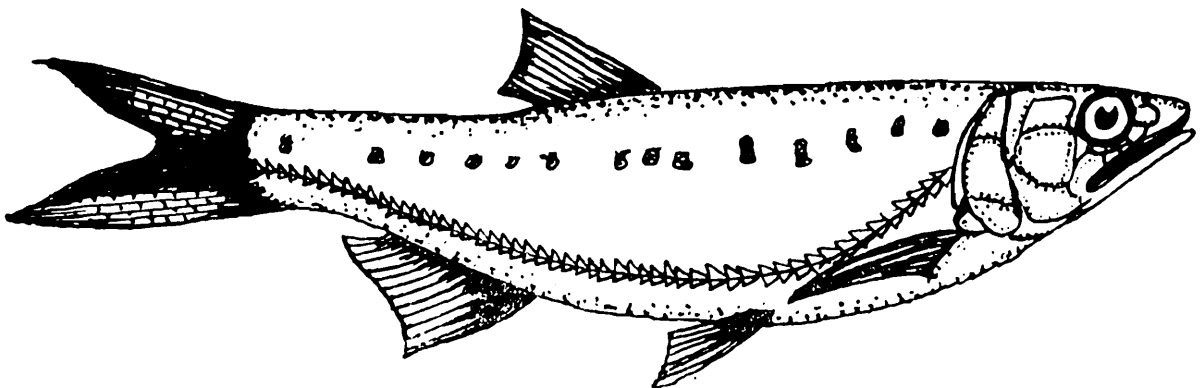


Fig. 9. *Barilius guttatus* (Day)

Diagnostic characters : Length of head 4.5 to 4.6 in total length, a well developed knob above the symphysis of lower jaw, broad sub-orbitals, 2-rows of scales between lateral line and ventral fin.

Colour : Silvery, tinged with purple ; 1 or 2 rows of blue spots along the sides, lower lobe of caudal fin orange coloured, dark band on upper half of lower lobe.

Size : Largest recorded specimen 177 mm. in length.

Distribution : India : Manipur ; Burma.

18 *Barilius shacra* (Ham.)

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

1974. *Barilius shacra*, Menon, *A check-list of Indo-Gangetic and Himalayan plains fishes*, Spl. Pub. (1), J. Indl. Fish Soc. India, p. 13

D. 9 (2/7) P. 15 ; V 8 ; A. 10 (2/8) ; C. 19 ; L. 1.60--70.

Diagnostic characters : Length of head 5 to 5.2 in total length, six outer pectoral rays strong more specially in the adult forms, pre-dorsal scales 25, 2 pairs of barbels, axillary process extends behind the origin of pectoral fin, caudal deeply forked, 10--12 incomplete colour bars.

Colour : Back side olive, pinkish silvery on the rest part of body, 10--12 colour bars descend from back to lateral line, a dark bar on dorsal fin.

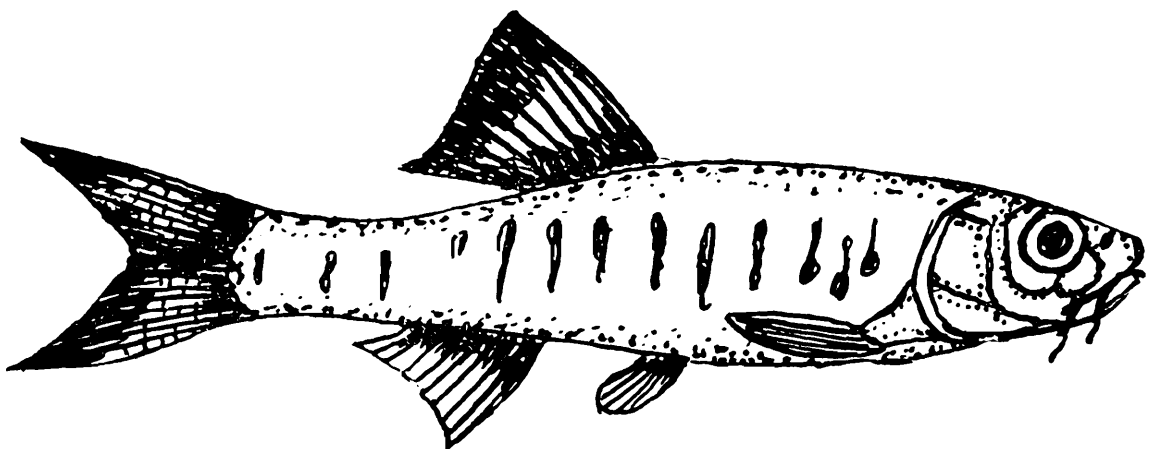


Fig. 10. *Barilius shacra* (Ham.)

Size : Largest recorded specimen 125 mm. in length ; specimens collected from Gauhati, Jorhat and Khowang (Dibrugarh) range from 78 to 105 mm. in length.

Distribution : India : Assam and Eastern Himalayas.

Remarks : Somewhat looks like *B. vagra* but easily distinguished by its much smaller scales ; found to live in clear gravelly streams.

19. *Barilius barila* (Hamilton)

1822. *Cyprinus barila* Hamilton, *Fish Ganges*, pp. 267, 394 (type-locality : N. Bengal).

1974. *Barilius barila*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub (1) ; *J. Indl. Fish Soc. India*, p. 10.

Local name : Korang

D. 9 (2/7) ; P. 13 ; V. 9 ; A. 13—14 (3/10—12) ; C. 19 L. 1.45—56.

Diagnostic characters : Length of head 5 to 5.5 in total length, 14 to 25 vertical blue bars, a pair of short rostral barbels, third suborbital bone wide and nearly touching the pre opercular ridge, lower caudal lobe longer.

Colour : Silvery, with 14—15 bluish bars on sides.

Size : Largest recorded specimen 102 mm. in length ; specimens collected from Baralia river at Rangia range from 75 to 86 mm. in length.

Distribution : India : Northern India and Orissa ; Nepal.

Remarks : Found to live in small tributaries of Brahmaputra all over Assam ; they are found in shallow waters, generally ranging from 90 to 100 cm. depth (Baralia R.).

20. *Barilius vagra vagra* (Hamilton)

1822. *Cyprinus vagra* Hamilton *Fish Ganges*, pp. 269, 385 (type-locality : Ganges at Patna).

1974. *Barilius vagra*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) ; *J. Indl. Fish Soc. India*, p. 14.

Local name : Korang/Mon-eo-ree

D. 9 (2/7) ; V 9 ; A. 13—15 (2—3/11.12) ; C. 19 ; L. 1.42—44.

Diagnostic characters : Length of head 5 to 5.5 in total length, lower jaw slightly longer, third suborbital bone about twice as broad as the uncovered part of cheek below it, 2-pairs of barbels, upper jaw sometimes a little notched, lower jaw covered with large pores in the adult forms, axillary process very short.

Colour : Silvery, with 10 to 14 bluish bars descending from back, fins yellowish, caudal edges grayish.

Size : Largest recorded specimen 127 mm. in length ; specimens collected from Dihing river, 60 km. from Dibrugarh, range from 106 to 110 mm. in length.

Distribution : India : Northern India (Indus, Ganga, Yamuna and Brahmaputra) ; Nepal, Bangladesh, Sri Lanka, Pakistan.

Remarks : Found to live in small hill-stream rivers with beds with pebbles, rock-boulders and sands.

21. *Barilius barna* (Hamilton)

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

1974. *Barilius barna*, Menon *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) ; *J. Indl. Fish Soc. India*, p. 10.

Local name : Balisundree/oz-o-la

D. 9 (2/7) ; P. 15 ; V 9 ; A. 13—14 (3/10—11) ; C. 19 ; L. 1 39—42.

Diagnostic characters : Length of head 4 to 5 in total length, no barbels, predorsal scales 16, pores on jaws and snout in adult forms, axillary process reaches to the base of the pectoral, dorsal fin in between the eye and base of caudal, $2\frac{1}{2}$ rows of scales between lateral line and ventral fin base.

Colour : Dull green with 9 to 11 vertical dark bands on the body, back grayish in young ones with silvery sides shot with gold and 7—9 deep blue narrow vertical bands.

Size : Largest recorded specimen 125 mm. in length ; specimens collected from Jiavarli R., Tezpur range from 82—88 mm. in length.

Distribution : India : Assam, the Ganges and its tributaries, West Bengal, Orissa ; Burma.

Remarks : Live in small hill-stream rivers and tributaries of Brahmaputra.

22. *Barilius dogarsinghi* Hora

1921. *Barilius dogarsinghi* Hora, *Rec. Ind. Mus.*, **22**, p. 191, fig. 3 (type-locality : Etok stream near Chanderkhong and Sikmai stream near Palél, Manipur).
1974. *Barilius dogarsinghi*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish Soc. India*, p. 13.

Local name : Nga-wa (Manipuri)

D. 9 ; P. 12 ; V. 9 ; A. 10 ; L. 1.38—39.

Diagnostic characters : Length of head 5 to 5.3 in total length, mandibular knob absent, depth of body high, 9 blue lateral bands, rounded dorsal and pectoral fins, lower lobe of caudal longer, 7—8 rows of scales from dorsal fin base to lateral line, predorsal scales 20, ventral profile deeply arched and convex throughout.

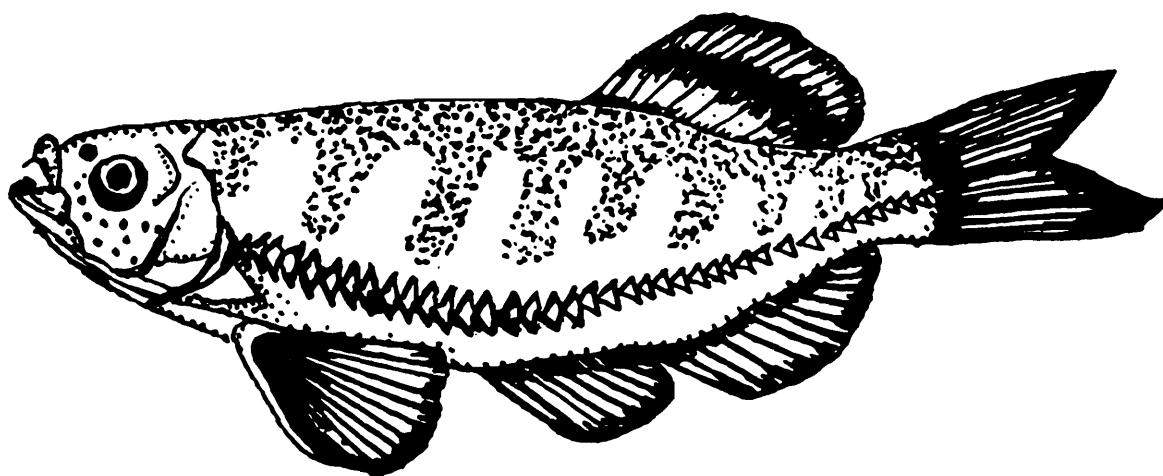


Fig. 11. *Barilius dogarsinghi* Hora

Colour : Dorsal side of head and body blackish with 9 blue bands ; sides, undersurface of head, the anals and ventrals white, dorsal with a deep black band across the middle.

Size : Largest recorded specimen 85 mm. in length from Manipur.

Distribution : Manipur.

Genus **Danio** Hamilton, 1822

1822. *Danio* Hamilton, *Fish Ganges*, pp. 321, 390 (type-*Cyprinus dangila* Ham.).

23. **Danio (Danio) devario** (Ham.)

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

1974. *Danio (Danio) devario*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish Soc. India*, p. 17.

Local name : Lauputi/Duhrie

D. 18—19 (3/15—16) ; P. 13 ; V. 8 ; A. 18—19 (3/15—16) ; C. 19 ; L. 1.41—48.

Diagnostic characters : Length of head 5 to 5.2 in total length, no barbels, lower jaw longer, third suborbital bone broad, dorsal commences midway between the anterior margin of orbit and the base of the caudal which is slightly in advance of the anal, lunated caudal, predorsal scales 16.

Colour : Greenish above and silvery at sides, three horizontal bluish lines divided by yellow bands extending backwards to caudal, sometimes a bluish iridescent band roughly along the lateral line, front part reticulated at its centre by steel blue lines.

Size : Largest recorded specimen 102 mm. in length ; specimens collected from Brahmaputra at Gauhati, Tezpur and Dibrugarh range from 57—85 mm. in length.

Distribution : India : Assam, West Bengal, Eastern Himalayas, Punjab, U. P., Bihar, Orissa, M. P., Deccan, Ahmedabad ; Bangladesh, Pakistan.

Remarks ; An aquarium fish fancied by its attractive colour pattern.

24. **Danio (Danio) naganensis** Chaudhuri

1912. *Danio naganensis* Chaudhuri, *Rec. Ind. Mus.*, 7, p. 441, pl. 40, fig. 1 (type-locality : Lungting river, Naga-hills, Assam).

1974. *Danio (Danio) naganensis*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) ; *J. Indl. Fish Soc. India*, p. 17.

D. 10 ; A. 2/12 , P. 13 ; V 8 ; L. 1.40—42.

Diagnostic Characters : Length of head 4.4—4.3 in total length, two pairs of barbels, predorsal scales 20, $8\frac{1}{2}$ scales above and $3\frac{1}{2}$ scales below the lateral line in transverse series, $2\frac{1}{2}$ scales between lateral line and ventral fin base, a black mark on the upper corner of the gill-cleft.

Colour : Upper half of the side greenish brown, lower half of the side and fins dull white, a black mark on the back of head, a black spot behind the upper corner of the gill-cleft, a steel-grey horizontal band on the side superimposed by two silvery bands just above it.

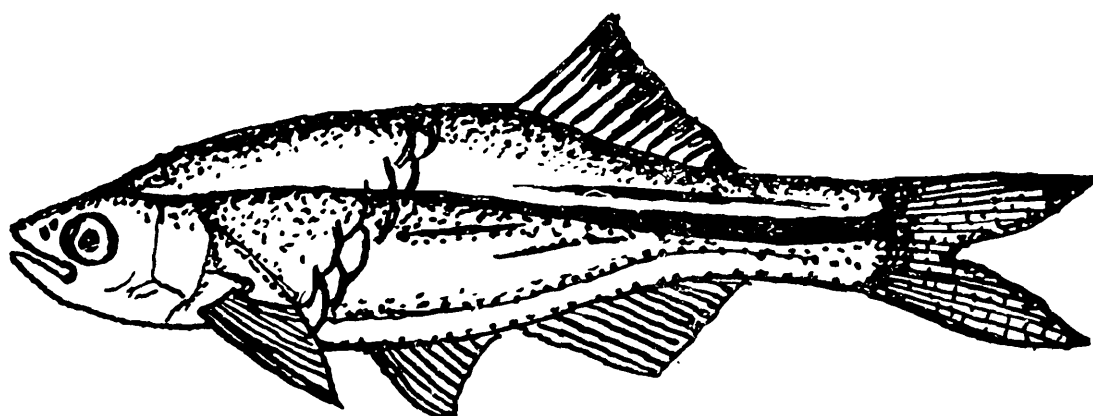


Fig. 12. *Danio (Danio) naganensis* Chaudhuri

Size : Largest recorded specimen 62 mm. in length.

Distribution : India : Lungting river, Naga-hills, Nagaland.

Remarks : Live in clear streams. Colour pattern slightly change during breeding season, one of the silver lines just above the steel grey band becoming faint.

25. *Danio (Danio) dangila* (Ham.)

1822. *Cyprinus dangila* Hamilton, *Fish Ganges*, pp. 321, 390 (type-locality : mountain streams of Monghyr).

974. *Danio (Danio) dangila*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) ; J. Indl. Fish Soc. India, p. 16.

Local name : Lauputi

D. 11—13 ; P. 13 ; V 7—8 ; A. 16—18 ; C. 20 ; L. 1—38.

Diagnostic characters : Length of head 5 in total length, barbels 2 pairs, a black spot behind the gills, rostral barbels a little shorter than the head, maxillary pair slightly longer.

Colour : Silvery with 3 parallel longitudinal blue lines running through the mid body to half way along the tail, the as usual opercular black spots found to be very much fading and tinged with blue and gold in 4 specimens collected by the author from Ganeshghat at Tezpur.

Size : Largest recorded specimen 150 mm. in length ; specimens collected from Tezpur range from 52—75 mm. in length.

Distribution : India : Assam, West Bengal, Bihar, U. P. ; Bangladesh, Burma.

Remarks : Live in clear shallow water and hill-streams.

26. *Danio (Danio) aequipinnatus* (McClelland)

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

1974. *Danio (Danio) aequipinnatus*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) J. Indl. Fish Soc. India, p. 15.

D. 12—14 (2/10—12) ; P. 17 ; V 8 ; A. 14—16 (2/12—14) ; C. 19 ; L. 1. 32—34.

Diagnostic characters : Length of head 5 times in total length, 2 pairs of barbels, cleft of mouth oblique, a blunt knob at the symphysis of lower jaw, dorsal origin midway between centre of eyes and base of caudal fin, 2 pairs of barbels.

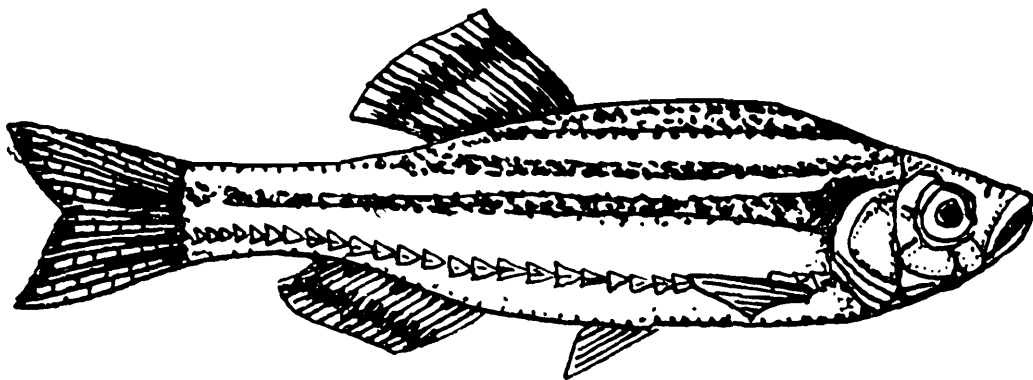


Fig. 13. *Danio (Danio) aequipinnatus* (McCil.)

Colour : Silvery white with blue and orange iridescent horizontal bands, yellowish fins, a wide bluish lateral band extending from centre of eye to caudal fin base, intermediate base colour yellow, bluish bands on dorsal and anal fins.

Size : Largest recorded specimen 152 mm. in length ; largest specimen collected and examined from Tezpur 105 mm. in length.

Distribution : India : throughout India ; Sri Lanka, Bangladesh, Burma, Thailand.

Remarks : An ideal aquarium fish of attractive colour, commonly found in clear waters and hill-streams upto an elevation of about 300 meters.

27. *Danio (Brachydanio) rerio* (Ham.)

1822. *Cyprinus rerio* Hamilton, *Fish Ganges*, p. 323 (type-locality—Kosi river).

1974. *Danio (Brachydanio) rerio*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish Soc. India, p. 16.

Local name : Lauputi

D. 9 (2/7) ; P. 13 ; V 8 ; A. 15—16 (2 | 3/12—13) ; C. 9 ; L. 1. 26—28.

Diagnostic characters : Length of head 5 to 5.2 in total length, 2 pairs of barbels, dorsal commences opposite to the anal, caudal deeply forked.

Colour : 4 metallic blue horizontal lines on the sides separated by 3 silvery narrow stripes, dorsal with blue edging and anal with 3 longitudinal blue bands.

Size : Largest recorded specimen 50 mm. in length ; specimens collected from Majoli river, Jorhat range from 41—47 mm. in length.

Distribution : India : throughout India ; Bangladesh, Burma.

Remarks : They are found all over Assam in the Brahmaputra drainage, shallow-streams and ditches. A popular aquarium fish fancied by its attractive colour.

28. *Danio (Brachydanio) horai* Barman

1983. *Danio (Brachydanio) horai* Barman, *Curr. Sci.*, 52 (4) : 177—178.

Local name : Lauputi

D. 2/7 ; A. 2/12—13 ; P. 12 ; V 7 ; C. 20.

Diagnostic characters : Head length 3.62 and body depth 3.53 in standard length, eye diameter 3.84 in head length, mouth obliquely directed upward, lower jaw longer than upper jaw, no barbels, lateral line totally absent, longitudinal row of scales 28—30, transverse row of scales 7, predorsal scales 14, circumpeduncle scales 8, caudal fin truncate or slightly emarginate, shorter than head ; least height of caudal peduncle 1.49 in its length.

Colour : A light dark line extending from mid-region of body to base of caudal fin, fins are devoid of any colour markings.

Size : Attains 28.0 mm. in length (S. L.).

Distribution : India : Arunachal Pradesh.

Genus **Esomus** Swainson, 1839

1839. *Esomus* Swainson, *Nat. Hist. Fish.*, 2, p. 285 (type, *Esomus vittatus* Swainson = *Cyprinus danrica* Hamilton).

29. **Esomus danricus** (Ham.)

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

1974. *Esomus danricus*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish Soc. India*, p. 18.

Local name : Darikana

D. 8 (2/6) ; P. 15 ; V 9 ; A. 8 (3/5) ; L. 1. 30—34.

Diagnostic characters : Length of head 5.2 to 5.5 in total length, two pairs of barbels, maxillary one reaches to the base of pelvics or sometimes upto caudal fin base ; mouth obliquely upwards, suborbital bones broad, dorsal origin nearer to caudal fin than to pectoral base, 2 rows of scales between lateral line and pelvic base, predorsal scales 18.

Colour : Silvery, a broad black lateral band, sometimes absent ; pale olive above.

Size : Largest recorded specimen 127 mm. in length ; specimens collected from Gauhati range from 62 to 86 mm. in length.

Distribution : India : Assam, West Bengal, Punjab, U. P., Bihar, M. P., Orissa, Madras, Ahmedabad ; Bangladesh, Pakistan, Burma, Sri Lanka, Malaya, Thailand and Malaya Archipelago.

Remarks : It is a larvicidal fish found in road-side canals, ditches, pools, streams and ponds.

Genus *Rasbora* Bleeker, 1859

1859. *Rasbora* Bleeker, *Nat. Tijdschr. Ned. Ind.*, 20, p. 435 (type *Cyprinus rasbora* Ham.).

30. *Rasbora daniconius* (Ham.)

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

1974. *Rasbora daniconius*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) *J. Indl. Fish Soc. India*, p. 19.

Local name : Darikana/Doh-ni-ko-nah.

D. 9 (2/7) ; P. 15 ; V 9 ; A. 7 (2/5) ; C. 19 ; L. 1 30—34.

Diagnostic characters : Length of head 4.5 to 5 in total length, no barbels, dorsal profile more convex than ventral profile, a lateral blue-black stripe, predorsal scale 14, origin of dorsal fin nearer to caudal fin base.

Colour : Greenish yellow back with silvery sides, a bluish lateral stripe edged with golden yellow, fins pale orange, caudal lobes tinged with black.

Size : Largest recorded specimen 203 mm., specimens collected from Rangia, Dibrugarh, Gauhati and Jorhat range from 63 to 89 mm. in length.

Distribution : India : throughout India ; Pakistan, Bangladesh, Burma, Sri Lanka, Malaya.

Remarks : Sometimes the lateral blue-stripe exists only at its caudal region, in young ones this stripe is bright silvery ; lives in

streams, pools, ponds and canals, also found to live in paddy-fields during monsoon.

31. *Rasbora kobonensis* Chaudhuri

1913. *Rasbora kobonensis* Chaudhuri, *Rec. Ind. Mus.*, 8, p. 251, pl. 7, fig 2, 2a, 2b (type-locality : Kobo, Abor Hills, Assam).
1974. *Rasbora kobonensis*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish Soc. India*, p. 20.

Local name : Darikana

D. 9 (2/7) ; A. 7 (2/5) ; L. 1.30(19+11).

Diagnostic characters : Length of head 4 in total length, incomplete lateral line, predorsal scales 13, 2 black bands passing through the middle and dorsal sides of the body, upper profile slightly convex, interorbital space 2.2 times in H. L., prominent lower jaw, pointed pectoral, caudal deeply forked, the scales are with numerous radiating striae.

Colour : Brown coloured body with a broad black band running from eye to the base of caudal through the middle of body, this band becomes 2-parallel lines in middle of caudal fin ; another black band running from occiput to the roof of the caudal, merging of scales spotted with blackdots.

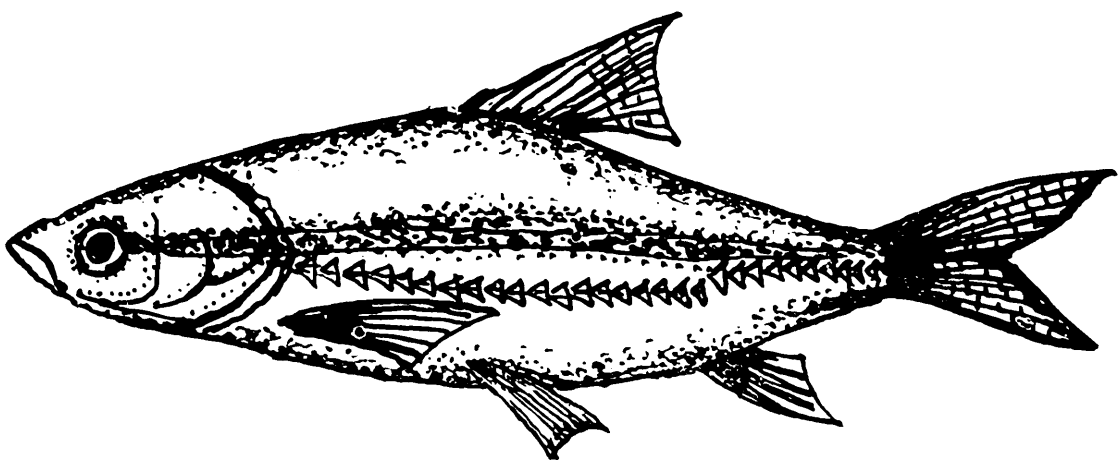


Fig. 14. *Rasbora kobonensis* Chaudhuri

Size : Largest recorded specimen 47 mm. in length.

Distribution : Abor-Hills, Assam and Meghalaya.

Remarks : Lateral line incomplete and terminates in front of the anal fin.

32. *Rasbora elanga* (Ham.)

1822. *Cyprinus elanga* Hamilton, *Fish Ganges*, pp. 281, 386 (type-locality : river and ponds of Bengal).
1947. *Rasbora elanga*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 19.

Local name : Elang

D. 9 (2/7) ; P. 15 ; V 1—9 ; A. 7 (2/5) ; C. 19 ; L. 1. 40—44.

Diagnostic characters : Length of head 5 to 5.7 in total length, one pair of short rostral barbel, lower jaw with one central and two lateral prominences with corresponding fitting emarginations in the upper jaw, abdomen rounded, caudal forked.

Colour : Silvery with leaden tinge along the upper portion of the side.

Size : Largest recorded specimen 203 mm. in length.

Distribution : India : Assam, West Bengal, Bihar ; Western Burma, Bangladesh.

33. *Rasbora rasbora* (Hamilton)

1822. *Cyprinus rasbora* Hamilton, *Fish Ganges*. pp. 329, 391, pl. 2, fig. 90 (type-locality : ponds of Bengal)
1974. *Rasbora rasbora*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) J. Indl. Fish Soc. India, p. 20.

Local name : Darikana

D. 9 (2/7) ; P. 15 ; V 9 ; A. 7 (2/5) ; C. 19 ; L. 1. 31—34.

Diagnostic characters : Length of head 4.5 to 5 in total length, prominences and emarginations on the lower and upper jaws, a black-band from eye to the caudal fin base, dorsal nearer to caudal fin base.

Colour : A black band passes from centre of eye to caudal fin base, sometimes a blotch or spot at the side of the caudal fin base ; in young ones a bright silvery band edged with yellow passes along the sides.

Size : Largest recorded specimen 203 mm. in length.

Distribution : India : Assam, West Bengal ; Bangladesh, Pakistan, Burma, Thailand, Malaya.

Sub-family : CYPRININAE

Genus **Acrossocheilus** Oshima, 1919

1919. *Acrossocheilus* Oshima, *Ann. Carnegii, Mus.*, **12**, p. 206 (type-*Gymnostomus formosanus* Regan. Orthotypic).

34. *Acrossocheilus hexagonolepis* (McCll.)

1839. *Barbus hexagonolepis* McClelland, *Asiat. Res.* **19**, pp. 270, 336 pl. 41, fig. 3 (type-locality : Upper Assam).

1974. *Acrossocheilus hexagonolepis*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 20.

Local name : Pakiranga/Bokar/Boolooh/Katli

D. 12 (3/9) ; P. 17 ; V 9 ; A.7 (2/5) ; C. 19 ; L. 1 28—31.

Diagnostic characters : Length of head 5 to 5.5 in total length, interrupted groove behind the lower lip, dorsal spine strong, as long as head excluding the snout ; upper jaw longer, sometimes sides of snout and cheeks with horny tubercles or pores, 2 pairs of barbels, dorsal opposite to the pelvic fin, predorsal scales 10—11

Colour : Olive green superiorly, silvery white below, a golden yellow lateral band above lateral line.

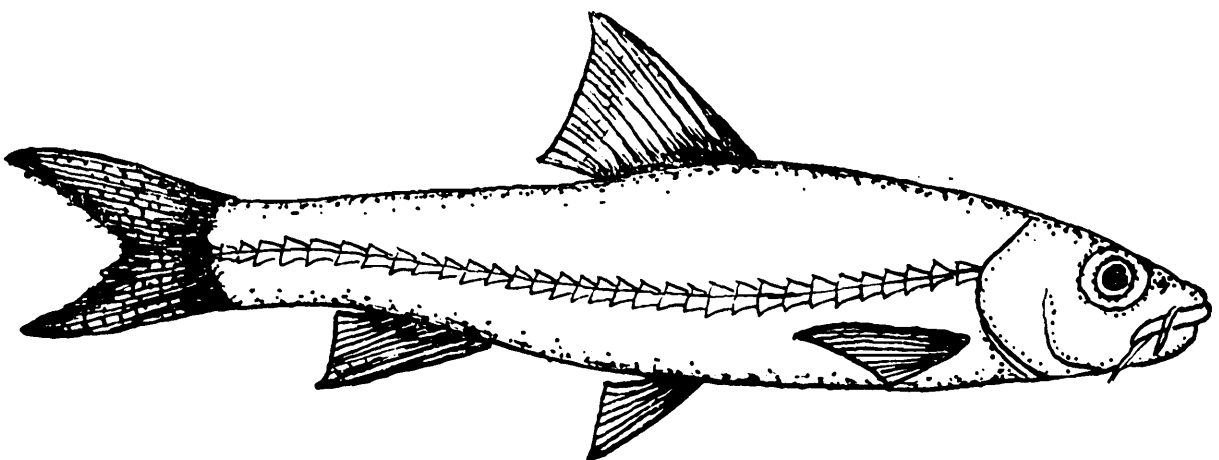


Fig. 15. *Acrossocheilus hexagonolepis* (McCll.)

Size : Largest recorded specimen 609 mm., specimens collected from Jorhat (Majoli R.), Gauhati (Brahmaputra R.) and Tezpur (Ganeshghat, Jahajghat etc.) range from 70—190 mm. in length.

Distribution : India : Assam, Eastern Himalayas, West Bengal (Darjeeling) ; Nepal, Bangladesh, Pakistan, Burma, Malaya, Thailand, Malay Archipelago.

Remarks : A commercially important fish found in clear streams and rivers.

Genus *Aspidoparia* Heckel, 1843

1843. *Aspidoparia* Heckel, in *Russeger's Reisen*, 3 (2), p, 288, type-*A. Sardina*=*A. morar* (Ham.)

35. *Aspidoparia jaya* (Ham.)

1842. *Cyprinus jaya* Hamilton, *Fish. Ganges*, pp. 333, 392 (type-locality : N. Bihar).
1974. *Aspidoparia jaya*, Menon, *A check-list of the Himalayan and Indo-Gangetic plain fishes*, Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 22.

Local name : Mou-ah/chola

D. 9 (2/7) ; P. 15 ; V 8 ; A. 9 (2/7); C. 21 ; L. 1. 52—60.

Diagnostic characters : Length of head 5.2 to 5.5 in total length, no barbels, prominently overhung mouth, only about half of the cheek covered by the suborbital ring of bones.

Colour : Dark back with silvery sides.

Size : Largest recorded specimen 102 mm. in length.

Distribution : India : Assam, Gangetic provinces, West Bengal ; Nepal, Bangladesh.

Remarks : Live in clear rivers and streams. *A jaya* can be distinguished from *A. morar* by the increased number of lateral line scales.

36. *Aspidoparia morar* (Ham.)

1822. *Cyprinus morar* Hamilton, *Fish. Ganges*, pp. 264, 384, pl. 31 fig. 75 (type-locality : Yamuna and Tista rivers).
1974. *Aspidoparia morar*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish. Soc. India, p. 22.

Local name : Bariala/Boreela/Mou-ah.

D 9—10 (2/7—8) ; P. 15 ; V 8 ; A. 10—12 (2/8—10) ; C. 19 ;
L. 1 38—42.

Diagnostic characters : Length of head 5 to 5.7 in total length, cheeks covered by a broad suborbital ring of bones, upper jaw overhanging the lower jaw, obtuse snout, dorsal fin origin in between the hind margin of eye and caudal fin base, predorsal 20, no barbels, deeply forked caudal.

Colour : Brownish back with silvery sides divided by a burnished streak.

Size : Largest recorded specimen 177 mm. in length ; specimens collected from various parts of Assam range from 80—140 mm. in length.

Distribution : India : throughout Northern India except the western coast and localities south of Krishna river ; Pakistan, Bangladesh, Burma and Thailand.

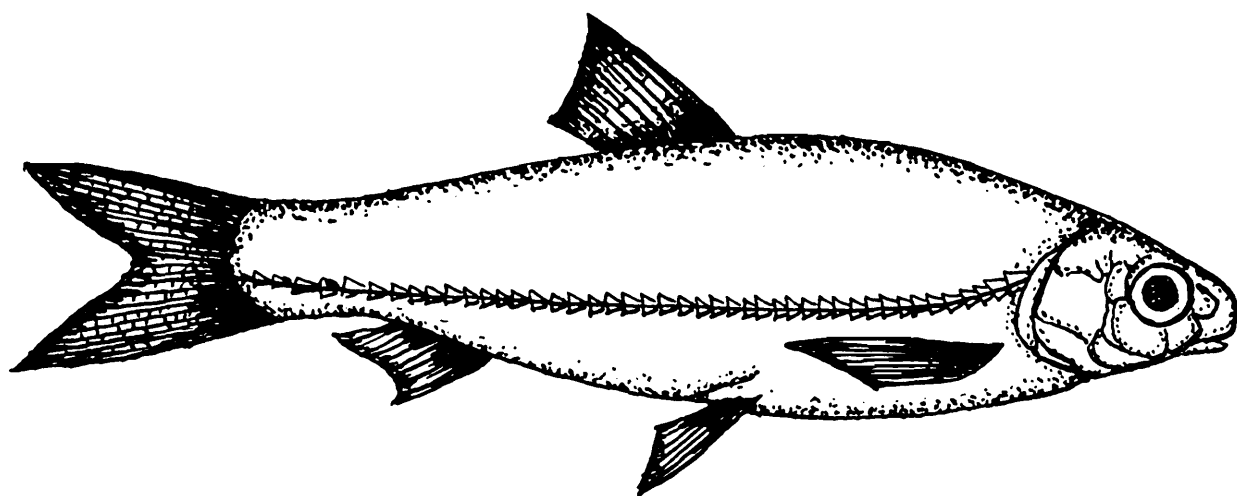


Fig. 16. *Aspidoparia morar* (Ham.)

Remarks : Found in plenty all over Assam particularly in Goalpara, Kamrup and Darrang districts (Brahmaputra and its tributaries being the main sources).

Genus *Amblypharyngodon* Bleeker, 1860

1860. *Amblypharyngodon* Bleeker, *Ichth. Arch. Ind. Prodr.*, 2, p. 409 (type-*Cyprinus mola* Ham.)

37. *Amblypharyngodon mola* (Ham.)

1822. *Cyprinus mola* Hamilton, *Fish. Ganges*, pp. 334, 392, pl. 38, Fig. 92 (type-locality : ponds and freshwaters of the Gangetic provinces).
1974. *Amblypharyngodon mola*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish. Soc. India, p. 21.

Local name : Moah/Moa

D. 2/7 ; V 9 ; A. 2/5 ; C. 19 ; L. 1.65—75.

Diagnostic characters : Length of head 5 in total length, incomplete lateral line ceases after 15 scales, no barbels, a greyish silvery longitudinal band, 9—10 rows of scales between lateral line and pelvic base.

Colour : Silvery body with a deep greyish silvery longitudinal band in the middle of the body, dorsal, caudal and the whole of the body covered with minute black dots.

Size : Largest recorded specimen 75 mm. in length ; specimens collected from different localities in upper Assam range from 20 to 65 mm. and from lower Assam between 42 to 70 mm. in length.

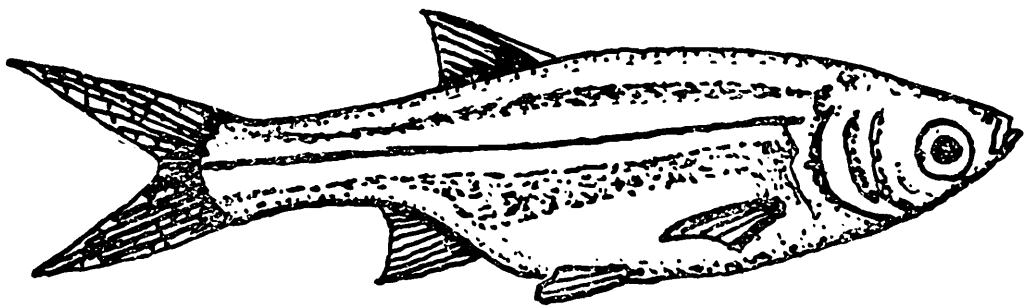


Fig. 17. *Amblypharyngodon mola* (Ham.)

Distribution : India : all over India except the Malabar coast ; Bangladesh, Pakistan, Burma.

Remarks : Found in plenty all over Assam in ponds, canals, beels, streams, road-side nullahs and paddy-fields especially during monsoon months.

Genus *Catla* Valenciennes, 1844

1844. *Catla* Valenciennes, *Hist. Nat. Poiss*, 17, p. 411, (type, *Catla buechanani* Valenciennes).

38. *Catla catla* (Hamilton)

1822. *Cyprinus catla* Hamilton, *Fish. Ganges*, pp. 287, 318, 387, pl. 13 fig. 8. (type-locality : rivers and tanks of Bengal).
1974. *Catla catla*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) ; *J. Indl. Fish. Soc. India*, p. 23.

Local name : Bhakua/Dhekerah

D. 3—4/14—16 ; P. 21 ; V 9 ; A. 3/5 ; C. 19 ; L. 1. 38—43.

Diagnostic characters : Length of head 4.2 to 4.7 in total length, no barbels, big head, wide mouth, big eyes, lower jaw prominent with lip doubled outwards below, depth of body remarkably high, eye-diameter 6—7 in H. L., dorsal profile more convex than ventral side, caudal deeply forked, prominent big scales.

Colour : Silvery body with dark grey above and whitish on the belly or greyish dull. It has been studied in the field that where the depth, concentration of aquatic weeds, silt contents, temperature etc., of the habitat are high, greyish dull white is the belly colour with more deeper dark-greyish back and scales unlike the open riverine ones.

Size : Largest recorded specimen 182.8 cm. in length (6 ft.) ; maximum length recorded by the author at the Gauhati Fancybazar (Brahmaputra R.) 121.8 cm. (4 ft.).

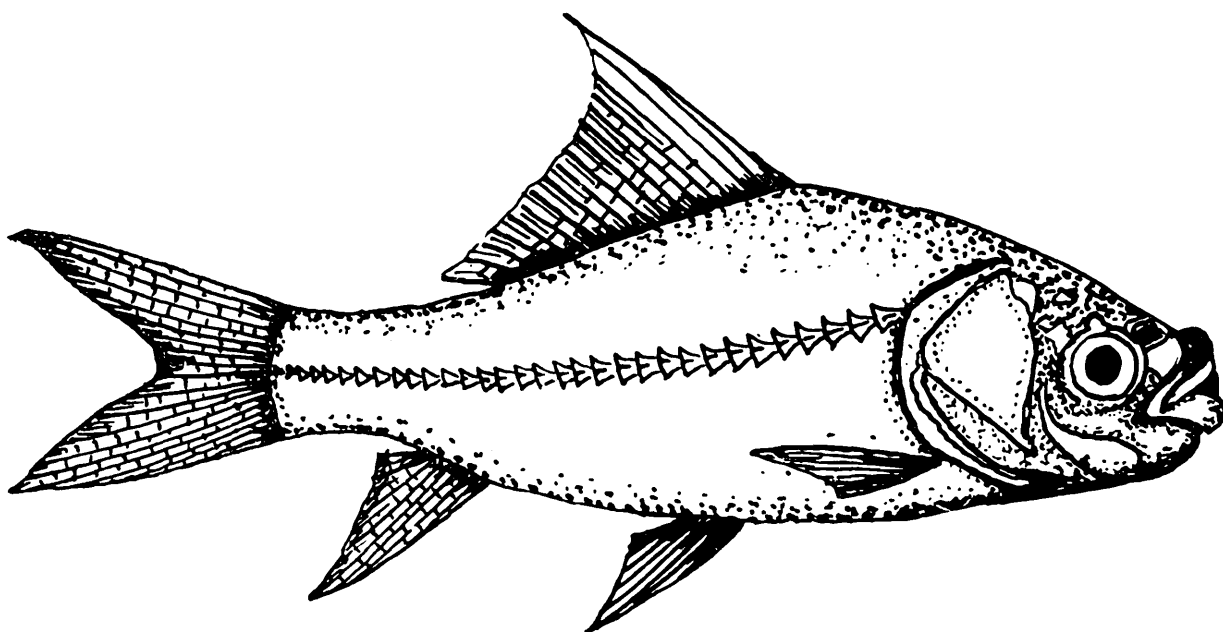


Fig. 18 *Catla catla* (Ham.)

Distribution : India : throughout N. India as far south to the Krishna river (though in recent years it has been introduced in S. India mainly in river cauvery for stocking tanks) ; Bangladesh, Pakistan Burma, Sri Lanka.

Remarks : It is a major popular carp of India and an esteemed food fish. It is extensively employed in pond culture by the fisheries departments all over India more particularly in West Bengal. It is a plankton and surface feeder. It is reported that growth of *Catla* in Kulgarhi reservoir, 85 km from Rewa, M. P., near Kulgarhi village, greatly suffered due to the introduction of Silver carps into it (Karamchandani and Misra, 1980). It has also been observed that if both are reared in the same tank, growth of either seems to be affected adversely (Alikunhi & Sukumaran, 1964). This is due to the fact that both are dwellers of the same water strata of the ponds (Chakraborty, 1972) and naturally both compete for food (Singh, 1972).

Genus **Chagunius** Smith, 1838

1838. *Chagunius* Smith, *Proc. Biol. Sci. Washington*, **51**, p. 157 (type-*Cyprinus chagunio* Hamilton).

39. **Chagunius chagunio** (Hamilton)

1822. *Cyprinus chagunio* Hamilton, *Fish. Ganges*. pp. 295, 385, (type-locality : Yamuna and the Northern rivers of Bihar and Bengal).
1974. *Chagunius chagunio*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, *Spl. Pub.* (1); *Indl. Fish. Soc. India*, p. 23.

Local name : Keintah Putthi/Pootee Keintah

D. 11 (3/8) ; P. 15 ; V 9 ; A. 8 (3/5) ; C. 19 ; L. 1. 44 – 47, L. tr. 11/9.

Diagnostic characters : Length of head 4.5 to 5 in total length, suborbital region, cheeks and anterior superior margin of orbit covered with numerous pores ; slightly inferior upwardly directed mouth, two pairs of barbels, dorsal between snout tip and caudal base with strong horny and serrated dorsal spine, predorsal scales 15.

Colour : Silvery with pinkish tinge, a black spot at the base of each scale on the upper part of the body, yellowish fins, dorsal and caudal fins with reddish black tinge.

Size : Largest recorded specimen 457 mm. in length. I collected 3 specimens ranging from 90—160 mm. in length from a small North Cachar hill-stream river at Langting.

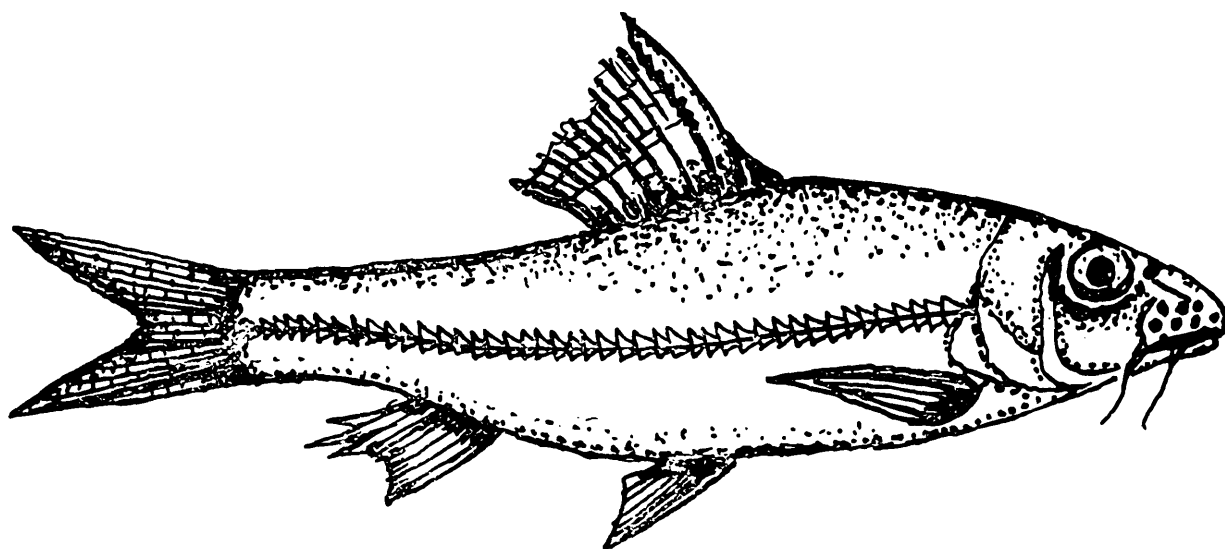


Fig. 19. *Chagunius chagunio* (Ham.)

Distribution : India : Assam, all along the Himalayas ; Burma, Thailand.

Remarks : Sunken pores on the snout and long dorsal rays are strongly marked in males are regarded as secondary sexual characters according to S. L. Hora¹. Upper profile in front of dorsal distinctly arched ; lives in clear streams and rivers along the foot-hills.

Genus *Cirrhinus* Oken, 1817

1817. *Cirrhinus* (Oken), Cuvier, *Regne Animal*, 2, ed. 1, p. 139 (type-*Cyprinus cirrhosus* Bleeker).

40. *Cirrhinus reba* (Hamilton)

1822. *Cyprinus reba* Hamilton, *Fish. Ganges*, pp. 280, 386, (type-locality : rivers and ponds of Bengal and Bihar).
 1981. *Cirrhinus reba*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., p. 127.

Local name : Rashim/Lachim/Lasseem

D. 2—3/8—9 ; P. 16 ; V 9 ; A. 3/5 ; C. 19 ; L. 1. 35—38.

¹ 1933. Further notes on Hamilton-Buchanan's *Cyprinus chagunio*. *J. Asiat. Soc.*, Calcutta, (N. S.), 27 (1), p. 137.

Diagnostic characters : Length of head 6 to 6.5 in total length upper lip fringed in the young, often entire in the adults ; a thin cartilaginous layer covering lower jaw, a pair of short rostral barbels only, origin of dorsal fin nearer to snout, hexagonal scales.

Size : Largest recorded specimen 304 mm. in length. My minimum and maximum collection lengths range between 70 mm. to 195 mm. recorded at Neamatighat, Jorhat.

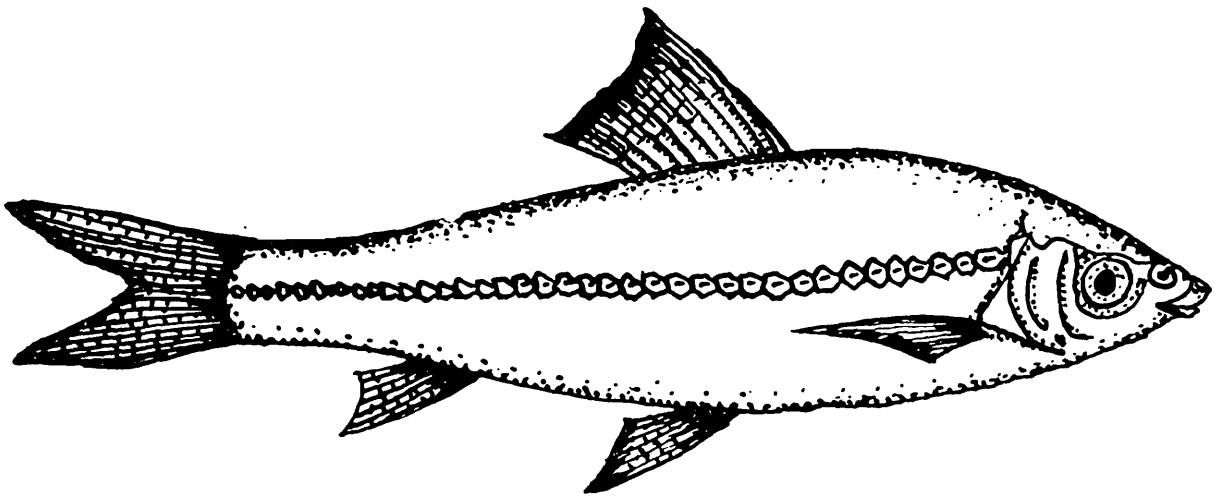


Fig. 20. *Cirrhinus reba* (Ham.)

Colour : Silvery, scales with dark edges forming longitudinal bands above lateral line, young sometime with a leaden lateral band, pelvic and anal fins tipped with orange

Distribution : India, Bangladesh, Pakistan, Burma, Thailand.

Remarks : Live in clear rivers and tanks ; a good eating fish.

41 *Cirrhinus mrigala* (Hamilton)

1822. *Cyprinus mrigala* Hamilton, *Fish. Ganges*, pp. 279, 389, pl. 6 fig. 79 (type-locality : ponds and freshwater rivers of the Gangetic provinces).
 1981. *Cirrhinus mrigala*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., p. 127.

Local name : Mriga/Mirika

D. 2/12—13 ; P. 15 ; V 9 ; A. 3/5 ; L. 1. 40—45.

Diagnostic characters : Length of head 5 to 5.2 in total length, entire upper lip, one pair of barbels, small rostral barbels in fold of lip, width of body less than the length of body, dorsal profile more

convex than the ventral, dorsal origin nearer to snout than to caudal fin base, large scales, caudal sharply forked.

Size : Largest recorded specimen 914 mm. in length ; but I recorded maximum length of 1,066 mm. ($3\frac{1}{2}$ ft.) at Tezpur evening fish market from Brahmaputra river.

Colour : Dark grey with coppery tinge along the back with big and bright golden scales on the sides and silvery white on the belly, fins orange stained with black, golden eyes.

Distribution : India, Bangladesh, Pakistan, Burma.

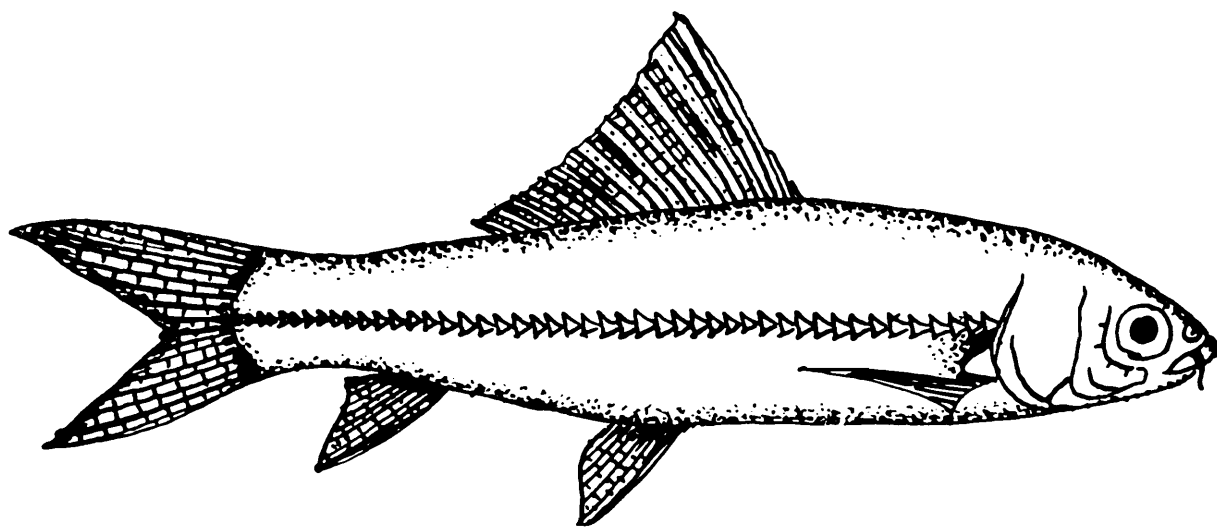


Fig. 21. *Cirrhinus mrigala* (Ham.)

Remarks : It is a popular commercial carp and a noted species largely used for stocking tanks and ponds all over India more so in West Bengal ; being a popular game fish, it offers very good sports on the rod.

Genus *Crossocheilus* Van Hasselt, 1823

1823. *Crossocheilus* van Hasselt, *Algem. Konst. Letterbode*, 2, p. 132 (type - *Crossocheilus oblongus* V.).

42. *Crossocheilus latius latius* (Hamilton)

1822. *Cyprinus latius* Hamilton, *Fish. Ganges*, pp. 345, 393 (type locality - river Tista).
 1974. *Crossocheilus latius latius*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 25.

Local name : Lurali

D. 3/7—8 ; P. 15 ; V 9 ; A. 2/5 ; C. 19 ; L. 1. 38—40.

Diagnostic characters : Length of head 6 to 6.5 in total length, lower lip with a sharp horny covering, two pairs of barbels, dorsal fin slightly nearer to snout in adult forms and in the middle between snout end and caudal fin base in young ones, distance between vent and caudal fin base 3.5 times in T. L., rostral pair half the length of the maxillary.

Size : Largest recorded specimen 152 mm. in length (Misra, 1959) ; 127 mm. being the maximum length recorded by me from Langting hills, North Cachar.

Colour : Brownish olive or greyish above, lighter shades on sides, silvery beneath with irregular black spots.

Distribution : India : all along the Eastern Himalayas and the northern portion of Assam, West Bengal, U. P., Bihar : Bangladesh, Burma.

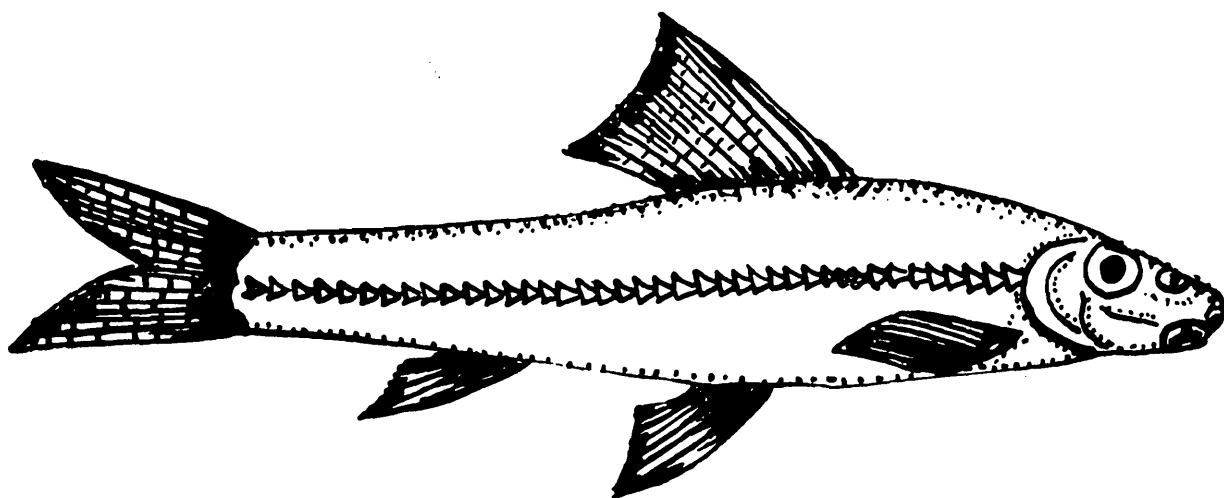


Fig. 22. *Crossocheilus latius latius* (Ham.)

Remarks : In behavioral aspects it is very similar to that of the *Garra* adhering to stones in stream beds (Shaw and Shebbeare, 1937) ; *C. latius latius* can be easily distinguished from *Garra annandalei* by the following characters :

	<i>C. latius latius</i>	<i>G. annandalei</i>
Head length	6 to 6.5	5 to 5.7
Height of body	6.7	5—6
Vent to caudal fin base	3.5	4.5
Height of caudal peduncle	12	8.5
	(in T. L.)	(in T. L.)

Genus *Cyprinus* Linnaeus, 1758

1758. *Cyprinus* Linnaeus, *Systema Naturae*, Ed. 10, 1, p. 320.

43. *Cyprinus carpio* (Linnaeus)

1970. *Cyprinus carpio*, J. Holcik & J. Mihalik, *Freshwater Fishes* (The Hamlyn Publishing Group, London).
1975. *Cyprinus carpio*, Jhingran, *Fish & Fisheries of India*, Delhi : Hindustan Publishing Corporation, pp. 678-689.

Local name : Common Carp.

D. 3—4/18—20 or 15—22 ; P. 1/15—16 ; V. 2/8—9 ; A. 3/5 ;
C. 17—19 ; L. 1. 30—40 ; L. tr. 5—6/5—6

Diagnostic characters : Length of head 4.5 in total length, low and elongated body with a continuous dorsal line, considerable variations observed within the cultured varieties in which the back rises abruptly beyond the head which is relatively small and a symmetrically tapered, a small protrusible mouth provided with strong lips and four barbels, no teeth, eyes are placed relatively high on the head, first branchial arch bears 21—29 gill-rakers, fins regular and symmetrically arranged, dorsal fin nearer to snout, scales arranged in regular rows.

Size : A record growth of 10 kg body weight of a 30-month old carp reported from the Barang Fish Farm in Orissa. My own field record in Assam being a very fine and large specimen collected from the Tinsukhia Fish Farm, 48 km. approximately from Dibrugarh on 5.12.1975 weighing 4 kgs. and 550 mm. in length.

Colour : Golden-yellow sides with dark back and white belly with dark and pink tinged fins. In the original common carp and *C. carpio* var. *communis*, scales are with dark bases or spots.

Distribution : The original wild common carp occurs only in the Danube river in Europe. Others believe its original home is China. It is now being cultured all over the Europe, U. S. S. R., China, Japan, India, Indonesia, Thailand, Malayasia. At present common carp enjoys a global distribution particularly in the tropical and temperate regions suitably acclimatized to a variety of habitats and environments (Alikunhi, 1966). In Assam all the varieties of common carp viz., *C. C. communis* (Scale carp), *C. C. specularis* (Mirror carp) and *C. C. nudus* (Leather carp) have been acclimatized quite comfort-

Distinguishing characters of the three varieties of common carp

<i>Name</i>	<i>Body shape/description</i>	<i>Scales/lateral line</i>	<i>Fins</i>
<i>Cyprinus carpio</i> L. (original wild common carp)	Low, elongated, dorsal line forms a continuous line, head relatively small and tapered asymmetrically, a small protrusible mouth with strong lips, four barbels, no teeth, eyes placed relatively high on head, of body	The body covered with regularly arranged rows of scales, L. 1. scales 30-40, L. tr. 5-6/5-6	Regular and symmetrically placed fins, large dorsal with 3-4/18-20 soft rays as a rule but can vary, pectoral with 1/15-16 soft rays, anal with 3/5 soft rays, caudal with 17-19 soft rays.
<i>Cyprinus carpio</i> var. <i>communis</i> L. (Scale carp)	Dorsal line rises steeply beyond the head which is comparatively small in relation to its height, body covered with regular rows of scales, deeper form, can live in higher altitudes and in rougher conditions	Lateral line may be irregular, L. 1. scales 33-35, black spots at the bases of scales	Regular & symmetrical fins, dorsal fin with 3/20 soft rays, caudal fin with 21 rays.
<i>Cyprinus carpio</i> var. <i>specularis</i> Laceped (Mirror carp)	Body shape more or less like the scale carp, prefer to live at lower altitudes where they grow fastly.	Body not uniformly covered with scales-covering only some parts of body in irregular patterns or individually & situated near the head, tail and back rarely above lateral line, L. 1. scales irregularly arranged & numbering 36.	Dorsal fin with 18-20 soft rays.
<i>Cyprinus carpio</i> var. <i>nudus</i> Bloch (Leather Carp)	Body profile more or less like the scale carp, prefer to live in lower altitudes and grow more quickly.	Entirely devoid of scales except one row below the dorsal fin or near the caudal fin or other fins, no lateral line - replaced by a furrow.	Can be distinguished from all other forms by its very soft rays-dorsal with 5 to 20, pelvic 6 to 8.

ably and were first introduced in Shillong in 1954. The Bangkok strains were first introduced in 1959 in the plain districts and subsequently to the high altitude districts of Assam (Ahmed, 1978).

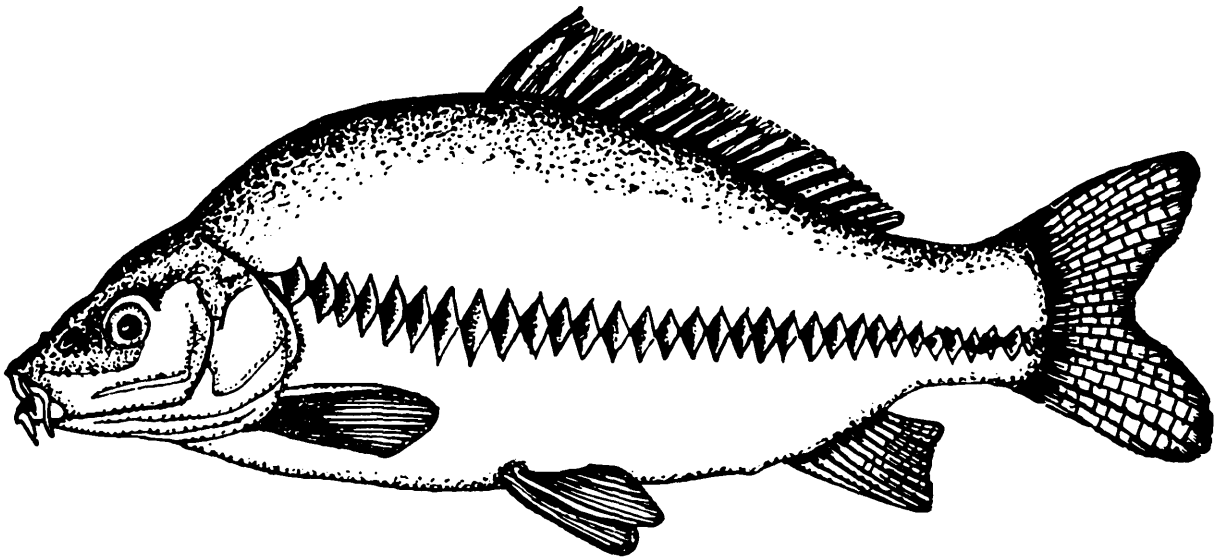


Fig. 23. *Cyprinus carpio* (L.)

Remarks : This carp is a thermophilic, gregarious fish dwelling mostly at the bottom of ponds. It thrives best in well warmed waters at lower elevations, it can also adapt to extreme conditions, which however, may impair its growth. It does not stay at the bottom only but also sometimes rises to the surface, where it basks on warm, sunny days. It is very shy and cautious. It attains sexual maturity in the 3rd or 4th years, earlier in warmer climates (Holcik & Mihalik 1970). This fish is voraciously omnivorous, grows very fast and also prone to artificial feeds. It is non-predatory when cultured with other Indian major carps and mainly competes for food with 'mrigal' and 'kalbasu' (Jhingran, 1975). Its rapid growth, moderately tasty flesh, good reproductive ability and modest requirements have made it a very popular fish for culture all over India.

Genus : *Ctenopharyngodon* Steindachner, 1866

1866. *Ctenopharyngodon* Steindachner, *Verh. Zool. Bot. Ges. Wien*, 16, p. 782. (type, *Ctenopharyngodon laticeps* Steindachner, by original designation).

44. *Ctenopharyngodon idellus* (Valenciennes)

1974. *Ctenopharyngodon idellus*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 7.

1975. *Ctenopharyngodon idella*, Jhingran, *Fish and Fisheries of India*, Delhi : Hindustan Publishing Corporation, pp. 708-717.

Local name : Grass Carp.

D.3/7 ; A. 3/8 ; L. 1. 43/ [(6.5—7)/5] 45.

Diagnostic characters : Length of head 4 to 4.5 in total length, elongated body, broad head, with short round snout ; no barbel, round dorsal, upper jaw slightly longer than the lower one, sub-terminal mouth, pelvic fins not reaching vent, anal fin rounded.

Size : Largest recorded specimen 120 mm. in length weighing 32 kgs.

Colour : Dark grey back, silvery sides and belly, dark fins with brownish dark tinge at the base of each scale.

Distribution : Grass carp or popularly known as 'White Amur' in U. S. S. R., is the original inhabitant of the rivers of China and lower parts of Amur river in U.S.S.R. Now it is introduced and cultured in many parts of the world viz., India, Japan, Vietnam, Thailand, Malaysia, Sri Lanka, Taiwan, Nepal, Burma, Hongkong, Philippines, Singapore, Israel, Hungary, Rumania, Poland, China, U.S.S.R., U.S.A. and Australia. In India, first consignment was brought from Hongkong in December, 1959 by C.I.F.R.I., Pond culture Division, Cuttack, Orissa for rearing. These were 382 nos., 5.5 cm. in average length, 1.5 gm. in average weight and 5½ months old at the time of introduction (Alikunhi and Sukumaran, 1962). In due course they were successfully bred by hypophysation at Cuttack in 1962 and thereafter fry of grass carps were distributed to various states of India (Jhingran, 1975).

Remarks : In Assam grass carps are well established specially in the Fish farms run by the State Fisheries Department at Gauhati, Tezpur, Jorhat, Dibrugarh and Tinsukhiya, 'though their response to induced breeding has not yet been very encouraging' (Ahmed, 1978). The grass carp though a freshwater fish, can tolerate, to some extent, brackish water like the silver carp. In Europe, it can tolerate the temperature range 0°—4°C. It is now regarded as one of the popular major carps of India (Alikunhi, 1964).

Genus *Garra* Hamilton, 1822

1822. *Garra* Hamilton, *Fish. Ganges*, pp. 343, 393 (type *Cyprinus lamta* Hamilton).
1842. *Discognathus* Heckel, *Ichth. in Russegger's Reisen in Europe and Africa*, 1, p. 1071 (type *D. variabilis* Heckel, haplotypic).

45. *Garra lamta* (Hamilton)

1822. *Cyprinus (Garra) lamta* Hamilton (in part), *Fish. Ganges*, pp. 343, 393 (type-locality : Tinau river, Nepal).
1922. *Garra lamta*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish. Soc. India, p. 28.

D. 11 (3—2/8—9) ; P. 15 , V 9 ; A. 7 (2—5) ; C. 17 ; L. 1. 30—36.

Diagnostic characters : Length of head 4.7 in total length, fusiform body, laterally placed eyes slightly below the dorsal profile of head almost invisible from below, in males the eyes are in the posterior half and in females in the middle of head ; short knob like median probosis in front of the nostrils in the males but smooth snout without probosis in females, tubercles present on the sides of snout, two pairs of barbels longer in males, dorsal fin origin nearer to snout than to the base of caudal fin base which is deeply emarginate, a scaly appendage present near the base of the pelvic fin in the females, mental disc distinct.

Size : Largest recorded specimen 203 mm. in length.

Colour : Transparent looking when live, afterwards a black longitudinal streak appears along the lateral line and a whitish band above it running from behind the eye to the caudal fin base ; in alcohol the upper surface becomes greenish and belly yellowish white, a prominent black spot near the upper margin of the gill opening and a black blotch near the base of the caudal fin.

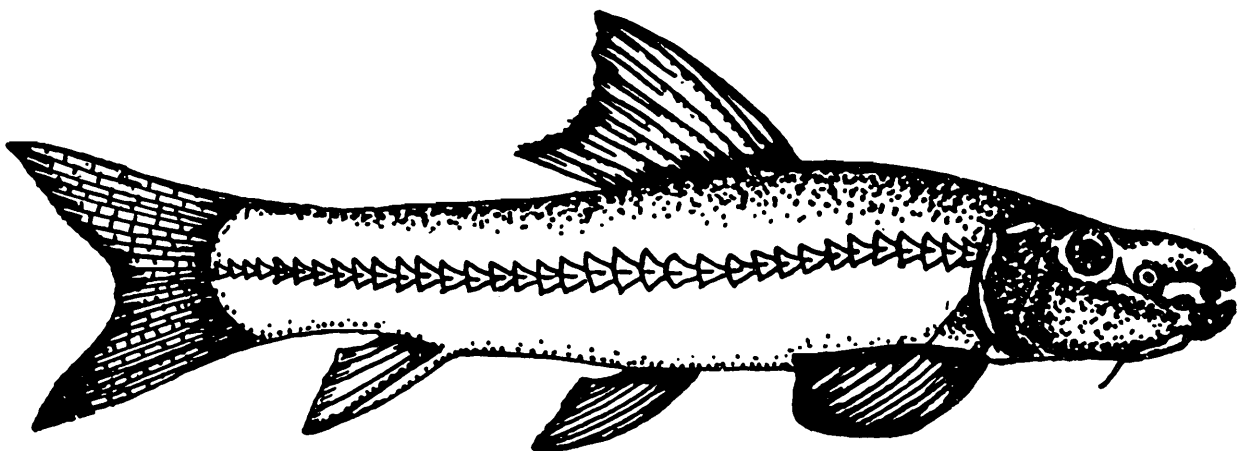


Fig. 24. *Garra lamta* (Ham.)

Distribution : India : Kumaon Himalayas, Darjeeling, Assam, Sikkim and Nepal (Hora, 1921).

Remarks : A typical hill-stream fish.

46. *Garra nasuta* (McClelland)

1921. *Garra nasuta*, Hora, *Rec. Indian Mus.*, 22, p. 665, pl. XXIV, fig. 4.
1938. *Platycara nasuta* McClelland, *J. Asiat. Soc. Beng.*, 7 (2), p. 947, pl. 55, figs. 2, 2a, 2b, (type-locality : Khasi Hills, Assam).
1974. *Garra nasuta*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1); *J. Indl. Fish. Soc. India*, p. 29.

D. 2/8—9 ; A. 215 ; P. 14 ; V 8 ; L. 1 34.

Diagnostic characters : Length of head 5.7 in total length, dorso-laterally placed eyes invisible from below, a short, broad and indistinct probosis on the snout, almost circular mental disc and coextensive with the width of the head, 8 longitudinal series of scales between bases of dorsal and pelvic fins, dorsal origin nearer to snout than to the caudal fin base, unequal caudal fin lobes, 2 pairs of barbels shorter than eye-diameter, head is fairly long and bluntly pointed.

Size : Maximum reported length by Dr. S. L. Hora from Abor Hills 136 mm.

Colour : Uniformly dark brown all over the body and head, dirty white ventrally, black spots at the bases of dorsal fin rays and blackish membranes between the rays.

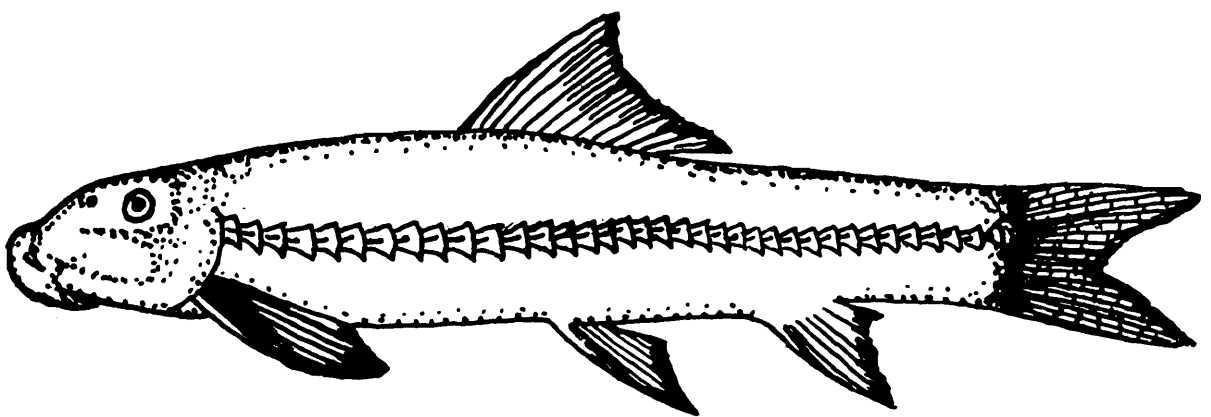


Fig. 25. *Garra nasuta* (McCl.)

Distribution : India : Abor Hills, Assam ; Khasi Hills, Meghalaya ; Mishmi Hills, Arunachal Pradesh ; Manipur Valley : Burma.

Remarks : Live in hill-stream rivers.

47. *Garra rupecula* (McClelland)

1839. *Gonorrhynchus rupeculus* McClelland, *Asiat. Res.*, 19, pp. 281-343, pl. 53, figs. 4, 5 (type-locality : Mishmi Hills, Assam).
 1921. *Garra rupecula*, Hora, *Rec. Indian Mus.*, 22, p. 674.
 1974. *Garra rupecula*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*; Spl. Pub. (1): J. Indl. Fish. Soc. India, p. 30.

D. 9—11 (2—3/7—8); P. 10; V. 8; A. 7 (2/5); C. 18; L. 1
 32—34.

Diagnostic characters : Length of head 4.5 to 5 in total length, very small sized, depressed body and head with almost straight profile, 2 pairs of minute barbels, well developed labial folds and mental disc, rows of open pores on the snout, pectorals horizontal and rounded, pelvic fins extend much beyond the anus, 9 series of longitudinal scales between the bases of dorsal and ventral fins, ventral surface naked.

Size : This one is the smallest known species of the genus. Maximum recorded length from Manipur valley being 34.4 mm.

Colour : Dark back and sides, white below, a wavy band on the middle of the caudal fin, fins white, a deep black bar across the base of the caudal.

Distribution : India : Assam, Manipur, Mishmi Hills in Arunachal Pradesh.

Remarks : Highly adapted to the swift running streams and falls.

48. *Garra gotyla gotyla* (Gray)

1632. *Cyprinus gotyla* Gray. *Ill. Ind. Zool.*, Hardwicke, 2, pl. 88, figs. 3, 3a (type-locality : N. India).
 1921. *Garra gotyla*, Hora, *Rec. Indian Mus.*, 22 : p. 653.
 1974. *Garra gotyla gotyla*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 27.

D. 2—3/8—9; P. 15; V. 9; A. 2/5; C. 17; L. 1. 34.

Diagnostic characters : Length of head 4.7 in total length, elongated, 2 pairs of barbels, semicircular mouth, snout covered with pores or with conical tubercles, with a deep groove across it forming a proboscis; smaller eyes, mental disc broader than long, caudal deeply forked.

Size : Largest recorded length 152 mm., 133 mm. being the highest length recorded by the author from Sibsagar.

Colour : Bluish gray above and pale yellow below.

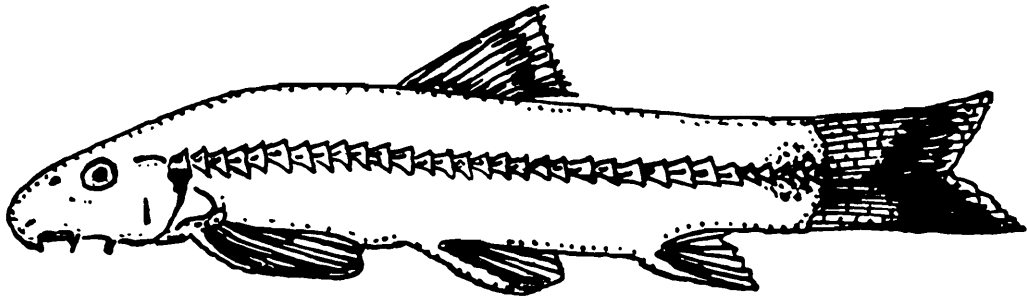


Fig. 26. *Garra gotyla gotyla* (Gray)

Distribution : India : all along the Himalayas ; Bangladesh, Pakistan.

Remarks : Live in the hill-stream rivers along the foot-hills.

49. *Garra lissorhynchus* (McClelland)

1842. *Platycara lissorhynchus* McClelland, *Calcutta Journ. Nat. Hist.* II, p. 587, pl. 18.
 1921. *Garra lissorhynchus*, Hora, *Rec. Indian Mus.*, 22, p. 662 pl. XXVI. fig. 2, 2a.
 1974. *Garra lissorhynchus*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish. Soc. India, p. 29.

D. 10 (2/8) ; P. 15 ; V 9 ; A. 6 (1/5) ; C. 19 ; L. 1. 35.

Diagnostic characters : Length of head 5.2 in total length, head and body greatly depressed in this species (resembling the Homalopterid genus *Balitora*), chest and middle of abdomen naked, while big scales are present on the post pelvic region ; broad and depressed head with interorbital space, lower surface of head and chest flat, snout overhanging, semicircular mouth with adhesive sucker, 4 barbels, thick and short ; horizontally placed pectorals and pelvics, greatly expanded pectoral fin.

Size : Largest recorded specimen 90 mm. in length.

Colour : Greenish brown, no colour markings except a dark blotch under the dorsal fin and a mark at the base of the caudal.

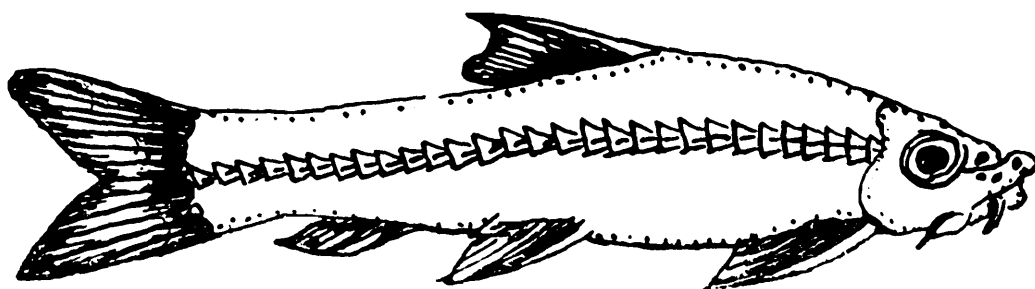


Fig. 27. *Garra lissorhynchus* (McCl.)

Distribution : India : Khasi Hills, Meghalaya ; Naga-Hills, Nagaland ; Manipur, Assam.

Remarks : Found to live in hill-streams and rivers at the foot-hills.

50. *Garra kempi* Hora

1921. *Garra kempi*, Hora, *Rec. Indian Mus*, 22, p. 656, pl. 26, figs. 3, 3a (type-locality : Abor-Hills, Meghalaya).
 1974. *Garra kempi*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish. Soc. India, p. 28.

D. 2/8 ; A. 2/5 ; P. 13 ; V 8 ; C. 26 ; Lt. 39.

Diagnostic characters : Length of head 4.5 in total length, head and body greatly depressed and flattened, a whitish horny area raised in front of barbels, opening of mouth as wide as the width of head, mental disc well developed, minute tubercles on the labial fold and free border of the mental disc, dorsal fin origin nearer to the snout than to the base of the caudal fin, pectoral as long as that of head and provided with thick pads on the ventral surface of some of the outer rays, anus is raised on a papilla and between the origin of ventral and anal fins.

Size : Maximum length 80.5 mm. from 'Siyom R. at an altitude of 1300 ft., Abor Hills, Assam,' collected by S. W. Kemp (Type species, Z.S.I., Regd. No. F. 7716/1) in 1912.

Colour : Upper surface of body and head blackish, dirty white below, fins tinged with black.

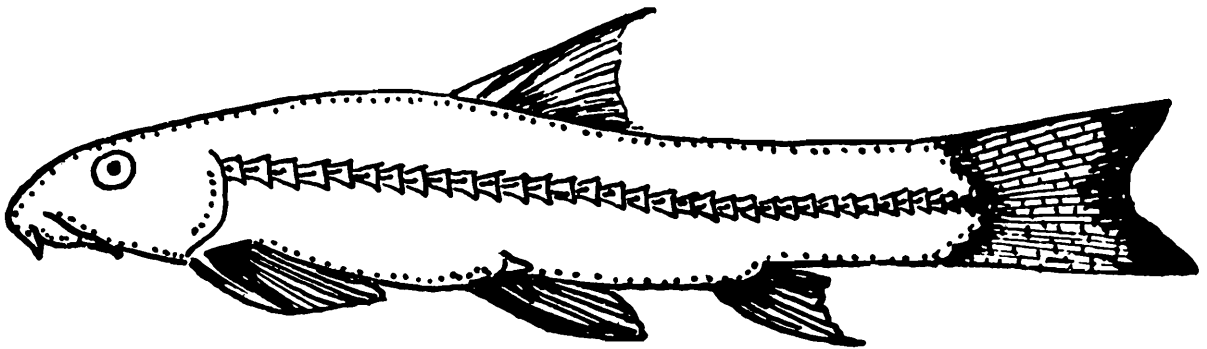


Fig. 28. *Garra kempfi* Hora

Distribution : India : Abor Hills, Assam and Nagaland.

51. *Garra naganensis* Hora

1921. *Garra naganensis* Hora, *Rec. Indian Mus.*, 22, p. 667, pl. XXV, figs. 2, 2a.

1974. *Garra naganensis*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish. Soc. India, p. 29,

D. 2/7 ; A. 1/5 ; P. 14 ; V 8 ; L. 1. 39.

Diagnostic characters : Length of head 4.9 in standard length, ventral profile somewhat convex, head flattened ; depth of body near to the dorsal fin equal to head length, eyes situated upwards and outwards, 2 pairs of short barbels, mouth provided with upper and lower labial folds, mental disc oval, dorsal fin origin much nearer to snout than to caudal fin base, 3rd ray of pelvic fin longest, anal short does not reach the base of caudal fin, large scales present to the post pelvic region.

Size : The only specimen collected by Dr. S. L. Hora from Senapati stream, Kairong, Naga-Hills in 1920 is of 98 mm. in length.

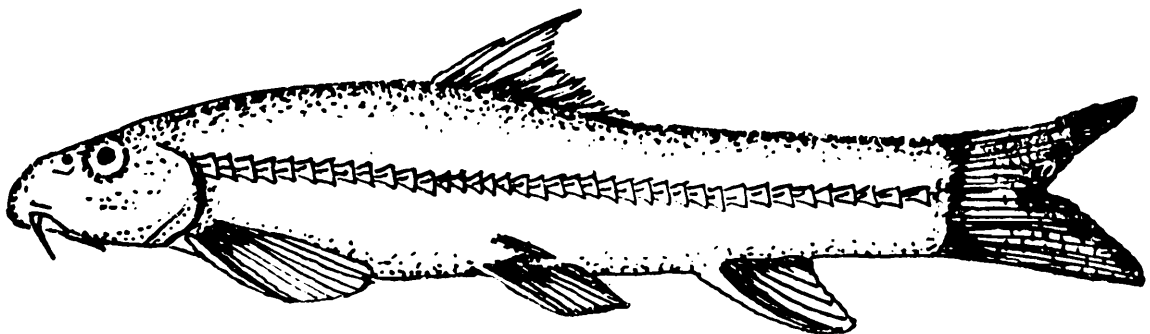


Fig. 29. *Garra naganensis* Hora

Colour : Upper surface and sides black and whitish below, dorsal surface of paired fins dusky.

Distribution : India : Assam, Nagaland.

Remarks : A high altitude hill stream fish.

Genus *Hypophthalmichthys* Bleeker, 1859

1859. *Hypophthalmichthys* Bleeker, *Nat. Tijdschr. Ned. India*, 20, p. 433 (*Leuciscus molitrix* Valenciennes by Original designation).

52. *Hypophthalmichthys molitrix* (C. V.)

1975. *Hypophthalmichthys molitrix*, Jhingran, *Fish and Fisheries of India*, p. 689-697.

1978. *Hypophthalmichthys molitrix*, Jayaram, *Zoologica*, 2, p. 37.

Local name : Silver carp.

D. 3/7 ; **A.** 2—3/12—14 ; **V** 1/7 ; **L.** 1 110 (28—33)/16—28) 124.

Diagnostic characters : Length of head 3.3 in standard length, abdomen keeled upto the vent, pointed head, oblong body, snout bluntly rounded, lower jaw slightly protruding with a tubercle, upper jaw slightly notched. small eyes and scales, origin of dorsal fin between tip of snout and caudal fin base and behind pelvics, pectoral reaching beyond the pelvic origin.

Size : It attains average length of 81.4 cm. and 7.2 kg. in weight within a period of approximately more than 4 years.

Colour : Dark fins, silvery body with blood red spots on the body generally on the caudal peduncle region.

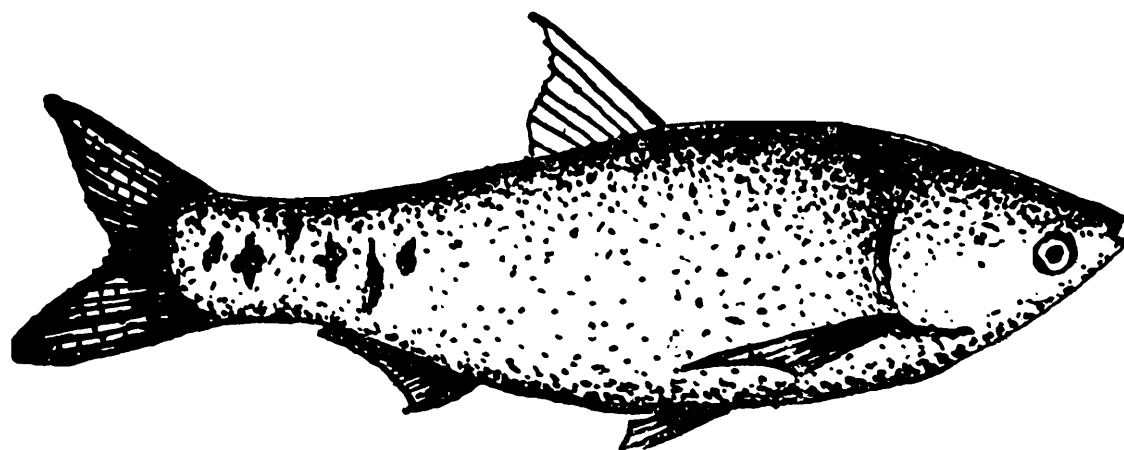


Fig. 30. *Hypophthalmichthys molitrix* (C. V.)

Distribution : Originally found in the river systems like West River, Yangtze, Kwangsi, Kwangtung in south and central China and in the Amur basin in U.S.S.R. (Jhingran, 1975). It was introduced to many parts of the world and is being now cultured in China, Taiwan, Malayasia, Thailand, India, Sri Lanka, Japan, Bangladesh, Pakistan, Nepal, U.S.S.R., Philippines, Burma, Hongkong, Singapore, U.A.R. and Israel.

Remarks : It is extensively cultured in tanks and ponds in Assam as well as other states in India. It is now regarded as an esteemed major carp of India.

Genus *Labeo* Cuvier, 1817

1817. *Labeo* Cuvier, *Regne Animal.*, 2 ed. 1, p. 194 (type-*Cyprinus niloticus* Forskal).

53. *Labeo bata* (Hamilton)

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

1974. *Labeo bata*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish. Soc. India, p. 30.

Local name : Bhangon/Naro/Bango

D. 2—3/9—10 ; P. 18 ; V 9 ; A. 2/5 ; C. 19 ; L. 1. 37—40.

Diagnostic characters : Length of head 5.5 in total length, a pair of very short maxillary barbels, dorsal profile more convex than ventral profile, continuous thin lips, a tubercle inside lower jaw above symphysis, dorsal origin nearer to snout end than to caudal base.

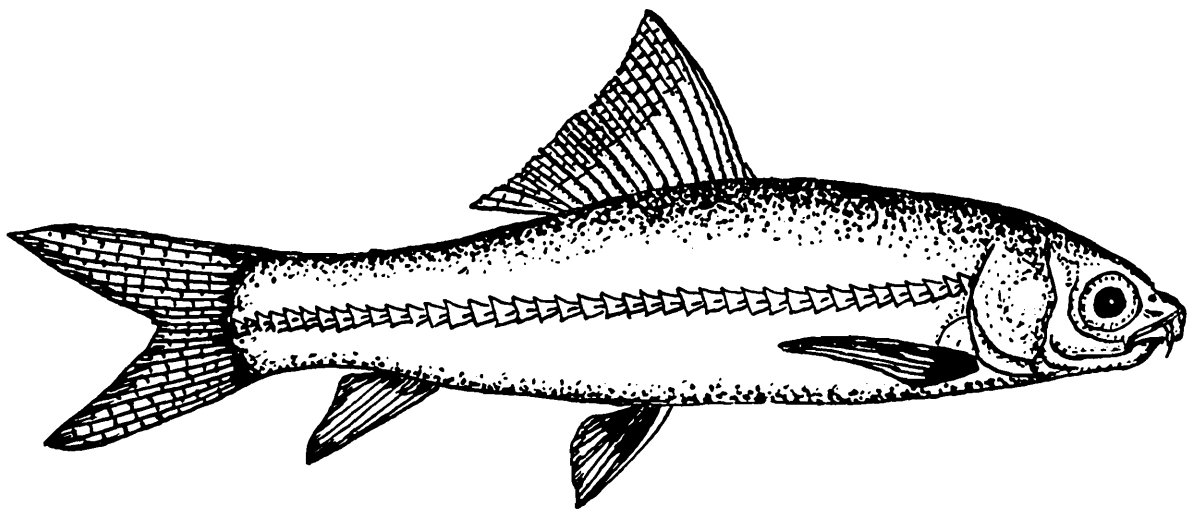


Fig. 31 *Labeo bata* (Ham.)

Size : Grows up to 609 mm. in length and extensively used for stocking tanks.

Colour : Varies with age, generally silvery, darkest along the back, lower fins stained with orange. fine black dots on all the fins, young ones sometimes with 3 to 4 lateral black spots.

Distribution : India : Assam, West Bengal, Orissa, M.P., Krishna and Godavari rivers in the South ; Bangladesh.

Remarks : A good eating minor carp of economic importance in West Bengal and Assam. It is widely cultured in *Bheries* and estuarine waters in the Sundarbans and the most dominant species of Assam compared to other *Labeo* species.

54. *Labeo rohita* (Hamilton)

1822. *Cyprinus rohita* Hamilton, *Fish. Ganges*, pp. 301, pl. 36, fig. 85 (type-locality : Gangetic provinces).

1974. *Labeo rohita*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish. Soc. India, p. 35.

Local name : Rau/Row

D. 3/12—13 ; P. 17 ; V 9 , A. 2/5 ; C. 19 ; L. 1. 40—42.

Diagnostic characters : Length of head 4.5 to 5 in total length, dorsal profile more convex than the ventral profile, snout without labial lobe, obtuse and depressed ; a thin very short maxillary pair of barbels, caudal deeply forked, dorsal situated between caudal base and snout.

Size : It grows to a meter in length ; largest specimen recorded by the author in the Tezpur evening fish market being about 90 cm. in length.

Colour : Generally brownish blue or reddish blue along the back with (it has been observed by the author that reddish tinge on the scales more prominently found in specimens in old tanks with considerable depth and vegetations without any relation to its growth and age) silvery sides and below, scales with dark borders with red or orange centres inside.

Distribution : India, Bangladesh, Pakistan, Burma.

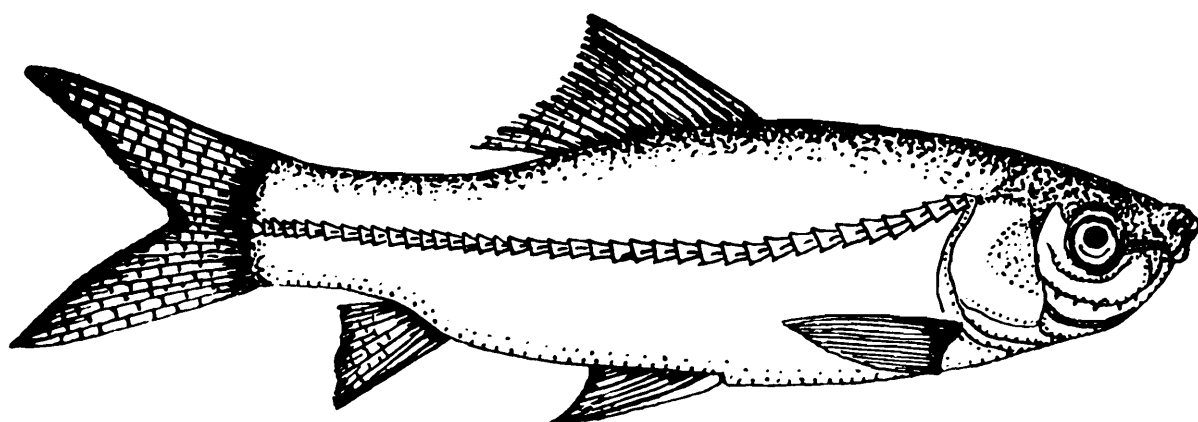


Fig. 32. *Labeo rohita* (Ham.)

Remarks : It has been introduced in South India, Bombay and Andamans (Port Blair & Diglipore particularly) for cultural purposes. It is one of the most esteemed major carps of India more particularly in Assam and West Bengal. It is widely cultured and used for stocking tanks all over India. It is riverine in nature but can be cultured in tanks, bheries, canals and beels also. A popular game fish and offers very good sports, known excitingly to the anglers more particularly in West Bengal and Assam (Sen. 1976).

55. *Labeo boga* (Hamilton)

1822. *Cyprinus boga* Hamilton, *Fish. Ganges*, pp. 286, 386, pl. 28 fig. 80 (type-locality : Brahmaputra river).
 1937. *Labeo boga*, Shaw & Shebbeare, *J. R. Asiat. Soc. Bengal* 3, p. 50.
 1959. *Labeo boga*, Misra, *Rec. Ind. Mus.*, 57 (1-4), p. 160.

D. 2—3/9—10 ; P. 16 ; V 9 ; A. 2/5 ; C. 19 ; L. 1. 37 to 29.

Diagnostic characters : Length of head 5.2 to 5.5 in total length, thick lips with a thin horny layer lining inside the lower jaw, snout with tubercles and without lateral lobes, two minute maxillary barbels, caudal fin deeply forked.

Size : Largest recorded specimen 304 mm. or more in length.

Colour : Dark along the back, with silvery sides, coppery opercle, fins covered with black dots, caudal quite red.

Distribution : India : throughout Northern India ; Bangladesh, Pakistan, Burma and Nepal.

Remarks : A robust fish mostly found in the hilly regions.

56. **Labeo calbasu** (Hamilton)

1822. *Cyprinus Calbasu* Hamilton, *Fish. Ganges*, pp 297, 389, pl. 2, fig. 33 (type-locality : Bengal).

1959. *Labeo calbasu*, Misra, *Rec. Ind. Mus.*, 57 (2-4), p. 161.

Local name : Mali/Kaliajora,

D. 3/13—15 ; P. 19 ; V 9 ; A. 2/5 ; C. 19 ; L. 1 40—44.

Diagnostic characters : Length of head 5 to 6 in total length, a deep robust fish with ventral and dorsal profiles equally convex, mouth narrow, snout without lateral lobe, obtuse and depressed, pores on the upper lip and snout, 4 barbels.

Size : Largest recorded specimen 914 mm. (3 ft.) or more in length. My maximum recorded length being 820 mm. at Neamatighat, Jorhat.

Colour : Blackish or metallic gray all over the body, slightly lighter below, fins black, upper caudal lobe sometimes edged whites.

Distribution : India, Bangladesh, Burma, Pakistan, Thailand and South China.

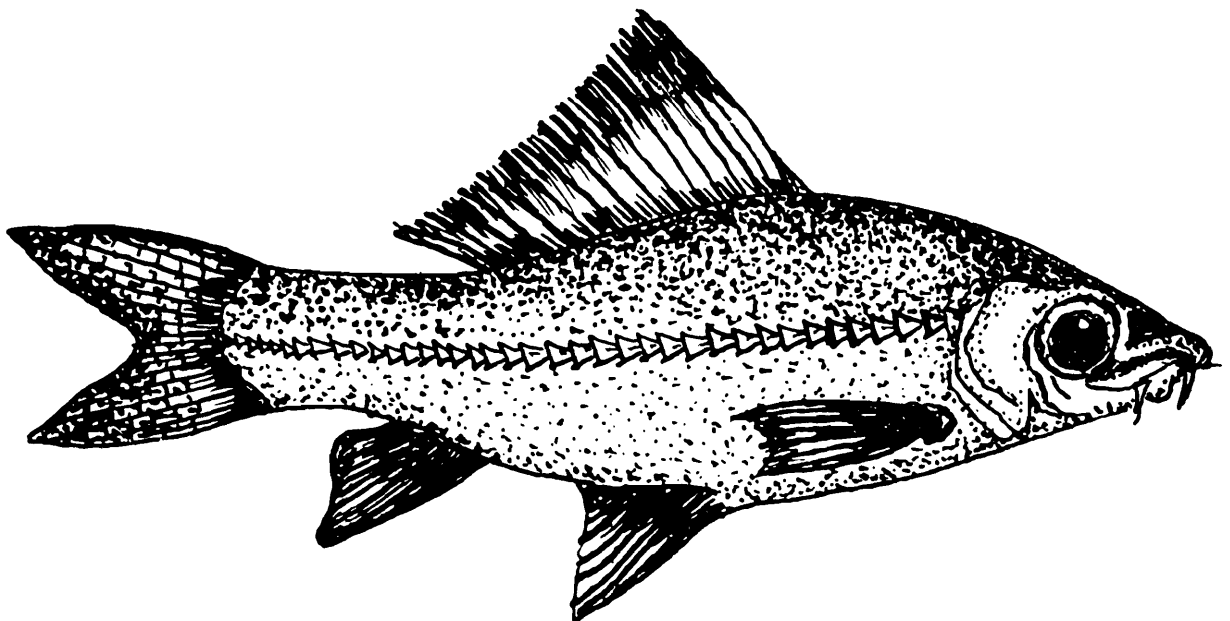


Fig. 33. *Labeo calbasu* (Ham.)

Remarks : A tasty carp, riverine in nature, commonly found in deep pools and clear sluggish waters. Used for stocking tanks and cultured extensively all over India.

57. ***Labeo gonius*** (Hamilton)

1822. *Cyprinus gonius* Hamilton, *Fish. Ganges*, pp. 292, 387 (type-locality : Bengal).

1974. *Labeo gonius*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 32.

Local name : Kurhi/Kuria/Bahtoor.

D. 2—3/13—14 ; P. 17 ; V 9 ; A. 2/5 ; C. 19 ; L. 1. 71—84.

Diagnostic characters : Length of head 5 to 5.5 in total length, snout without a lateral lobe prominent with pores, mouth narrow with thick fringed lips, horny covering inside the jaws, 2 pairs of short barbels, caudal deeply forked, small scales, faint dark longitudinal lines over the body.

Size : Largest recorded specimen 1,524 mm. in length (152 cm.) ; 23 to 49.5 cm. being the minimum and maximum lengths recorded by me from Tezpur, Gauhati, Dibrugarh and Jorhat.

Colour : Greenish black along the back and lighter dull white on the side and below, scales with dark margins giving impressions of dark longitudinal lines.

Distribution : India : Assam all over Northern India as far as Krishna river ; Bangladesh, Pakistan and Burma.

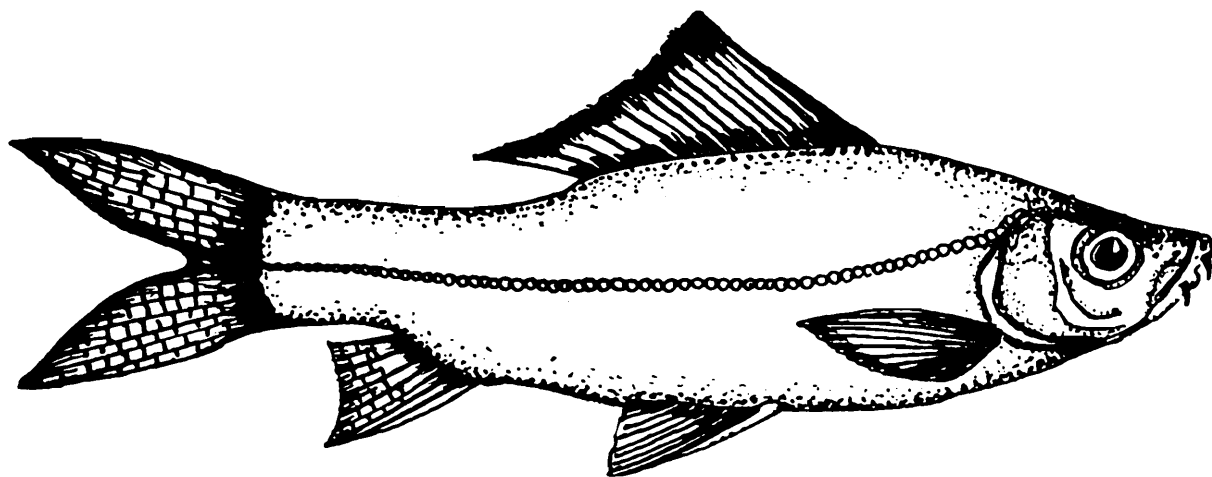


Fig. 34. *Labeo gonius* (Ham.)

Remarks : Found most commonly all over Assam and can be easily distinguished by its small scales. It lives in rivers, beels, canals and bheries.

58. *Labeo dero* (Hamilton)

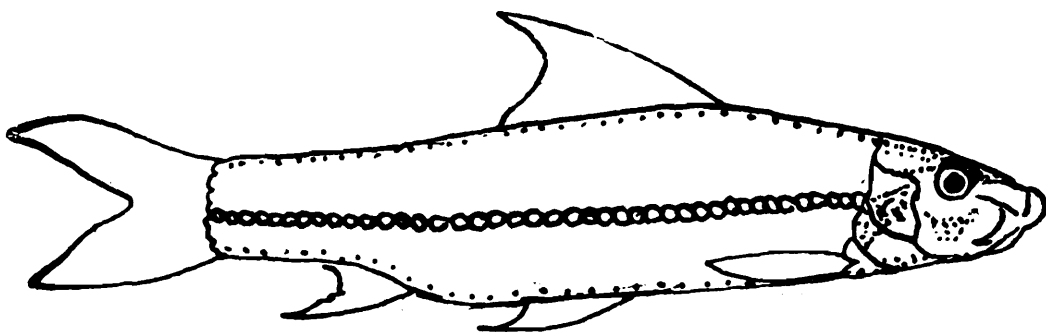
1822. *Cyprinus dero* Hamilton, *Fish. Ganges*, pp. 277, 331, 385, pl. 22 fig. 78 (type-locality : Brahmaputra river).

1974. *Labeo dero*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 32.

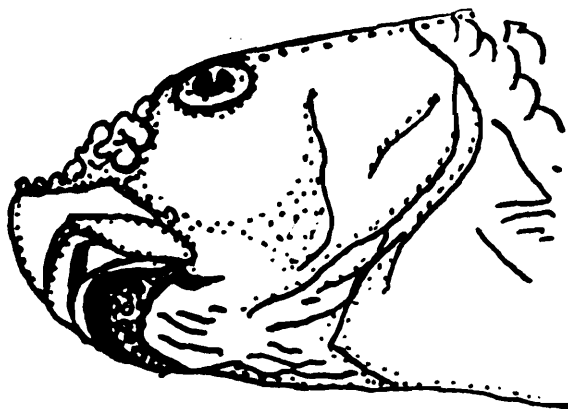
Local name : Silgharia.

D. 2—3/9—10 ; P. 17 ; V. 9 ; A. 2/5 ; C. 19 ; L. 1. 41—44.

Diagnostic characters : Length of head 5 to 5.5 in total length, comparatively a slender form with dorsal profile more convex than the ventral, snout deeply grooved and covered with pores, no lateral lobe, continuous lips with a horny covering inside lower jaw, a pair of short maxillary barbels.



(a)



(b)

Fig. 35. (a) *Labeo dero* (Ham.) (b) Mouth parts

Size : Largest recorded length being 254 mm. (10 inches) ; 75 cm. (30 inches) being the maximum length recorded by me in the Tezpur evening fish market caught from Jeavarli river.

Colour : Dark grey along the back and silvery on sides with fins grey with reddish tinge.

Distribution : India : all along the Himalayas and Kashmir ; Burma, Bangladesh, Pakistan.

Remarks : Prefers torrential cold waters.

59. *Labeo pangusia* (Hamilton)

1822. *Cyprinus pangusia* Hamilton, *Fish. Ganges*, pp. 285, 386 (type-locality : Koshi river).

1974. *Labeo pangusia*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 34.

Local name : Lasu.

D. 2/11 ; P. 15 ; V 9 ; A. 2/5 ; C. 19 ; L. 1. 40—42.

Diagnostic characters : Length of head 5.5 to 6 in total length, no groove across the narrow mouth, distinct lateral lobes, a pair of short maxillary barbels concealed inside the labial fold, snout very much obtuse with pores above, caudal fin deeply forked.

Size : Largest one recorded by Shaw and Shebbeare (1937) being "25.6 inches" The maximum length recorded by the author being 25.4 cm. at Neamatighat, Jorhat.

Colour : Greyish green on the back, lighter on the sides and beneath, fins sometimes tinted red.

Distribution : India : Assam and West Bengal ; Bangladesh, Burma. Mostly found in the Ganges and Brahmaputra drainage systems.

Remarks Lives in clear rivers and streams and mostly found in the Duars and Terai.

60. *Labeo nandina* (Hamilton)

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

1974. *Labeo nandina*, Manon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*; Spl. Pub. (1): J. Indl. Fish Soc. India, , p. 34.

Local name : Nadani.

D. 2—3/22—24 ; P. 15 ; V 9 ; A. 2/5 ; C. 19 ; L. 1 42—44.

Diagnostic Characters : Length of head 4.5 to 5 in total length, a robust fish with curved dorsal profile, snout obtuse without lateral lobe slightly of projecting type, interorbital space flat, slightly concave profile above the eyes, thick lips fringed with a distinct inner fold below and above, 2 pairs of short barbels, dorsal fin midway between snout and caudal fin base, caudal fin sharply forked.

Size : Shaw & Shebbeare recorded '7½ inches' (11.2 cm.) in length. I have recorded a maximum length of 26 cm. at Gauhatighat (Brahmaputra river).

Colour : Dark greenish back becoming lighter below, many scattered scales orange red, red iris. Day says 'A few cloudy blotches along the sides'

Distribution : India : Assam, West Bengal ; Bangladesh, Burma.

Genus *Osteobrama* Heckel, 1842

1842. *Osteobrama* Heckel, *Ichth. Russeger's Reisen in Europe, Asian Und Africa*, 1 : p. 1033, type, *Cyprinus Cotio* Ham.

61. *Osteobrama cotio cotio* (Hamilton)

1822. *Cyprinus cotio* Hamilton, *Fish. Ganges*, p. 339, pl. 39, fig. 93 (type-locality : Bengal).
1974. *Osteobrama cotio cotio*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1) : J. Indl. Fish Soc. India, p. 36.

Local name : Hafo/Hamfo.

D. 11—12 (3—4/8) ; P. 13 ; V. 10 ; A. 29—36 (2—3/27—33) ; C. 19 ; L. 1. 55—70.

Diagnostic characters : Length of head 2.5 to 3 in total length, profile over nape concave, no barbels, upper jaw slightly longer, dorsal fin nearer to snout than to caudal fin base, dorsal spine weak and serrated, predorsal scales 24.

Size : Largest recorded specimen 152 mm. in length ; 62 to 100 mm. being the minimum and maximum lengths recorded by me

from Brahmaputra river at Gauhati and Pahugarh beel, approximately 70 km. from Jorhat.

Colour : Silvery black on the back, sometimes with a silvery lateral band, sometimes a black blotch before the base of dorsal fin and another on the nape.

Distribution : Found all over India except Malabar and South of the Krishna river ; Bangladesh, Pakistan and Burma.

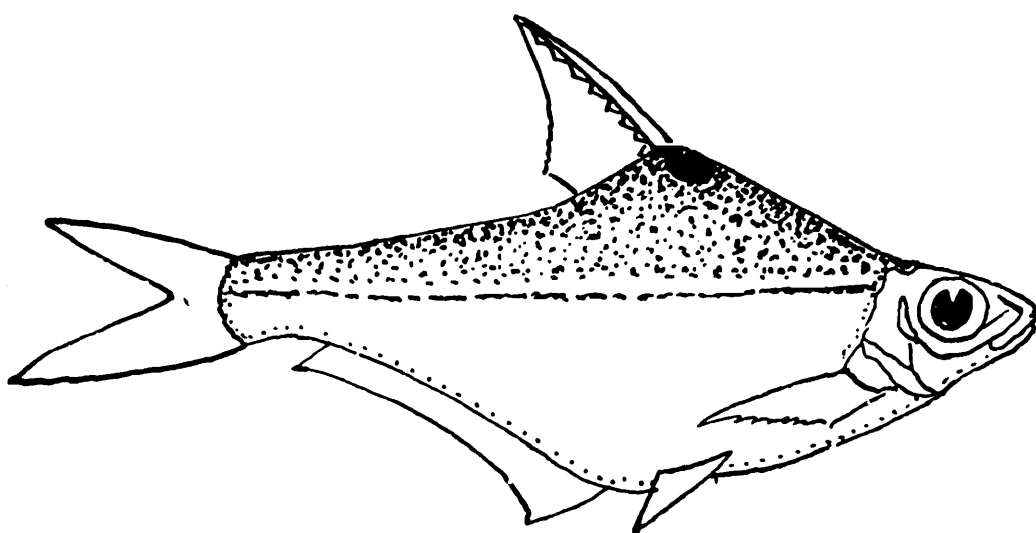


Fig. 36. *Osteobrama cotio cotio* (Ham.)

Remarks : I have collected good number of these fishes from a partially dried up beel at Pahugarh near Jorhat where depths at places were found to be 51 cm., 60 cm., and 95.5 cm. with thick layer of silt composed of dark clay, sand and aquatic weeds ; surface vegetations found were water hyacinth, *Pistia*, *Salvinia*, *Nymphaea* etc., submerged plants found were *Hydrilla*, *Trapa*, *Waterlilies*, *Cabomba* and *Myriophyllum*.

Genus *Puntius* Hamilton, 1822

1822. *Puntius* Hamilton, *Fish. Ganges*, pp. 310, 388 (type-*Cyprinus sophore* Hamilton)

62. *Puntius clavatus* (McClelland)

1845. *Barbus clavatus* McClelland, *Calcutta Journ. Nat. Hist.*, V. p. 280, pl. xxi, fig. 2.

1921. *Barbus clavatus*, Hora, *Rec. Ind. Mus.*, 22 : p. 185, pl. 9, fig. 1.

1974. *Puntius clavatus*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes.*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 38.

D. 4/8 ; A. 3/5 ; P. 14—15 ; V 8—9 ; L. 1. 40—42.

Diagnostic characters : Length of head 5 to 5.3 in total length, head short and conical, length of caudal fin equals the depth of body, snout shorter than the diameter of the eye, origin of dorsal fin midway between snout and caudal fin base with its last spine denticulated posteriorly, caudal fin very long and deeply forked.

Size : Maximum recorded length being '7 inches' in length from 'a river at the base of the Sikkim mountains in Bengal' (Day, 1878).

Colour : Blackish blue in the region above the lateral line, sides and below dull white, young ones possess an obscure blotch at the base of caudal fin, sometimes minute black spots forming longitudinal stripes along the side.

Distribution : India : Assam, Nagaland, Sikkim, West Bengal (North Bengal) ; Bangladesh.

Remarks : A typical hill stream fish, mainly confined to North Eastern Himalayan ranges.

63. *Puntius sophore* (Hamilton)

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

1974. *Puntius sophore*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 40

Local name : Putthi.

D. 3/8—9 ; P 17 ; V 9 ; A. 3/5 ; C. 19 ; L. 1. 23—26.

Diagnostic characters : Length of head 5 in total length, eye-diameter 3.5 to 4 in head length, dorsal profile more convex than ventral profile, barbels absent, complete lateral line, dorsal spine weak, predorsal scales 8—9, forked caudal.

Colour : Silvery, often with a black diffused spot at the caudal fin base, a scarlet lateral band and a dark spot at the base of dorsal fin, an orange golden spot below the eye, tips of fins reddish or orange tinged.

Size : Largest recorded specimen 127 mm. in length. I have collected examples of this species from various parts of Assam ranging from 46 to 95 mm. in length.

Distribution : India (below 2000 ft.) ; Bangladesh, Pakistan, Burma, Nepal and Southern China.

Remarks : I have found them to live both in clear as well as in foul waters, they can live even in extreme adverse condition inside silt with thick bed of aquatic weeds. They are voracious eaters of floating organisms and aquatic plants (Innes, 1944).

64. *Puntius guganio* (Hamilton)

1822. *Cyprinus guganio* Hamilton, *Fish. Ganges*, pp. 338, 339, 392 (type locality - Brahmaputra and Yamuna).
 1974. *Puntius guganio*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 39

Local name : Puthi.

D. 2/8 ; P. 12 ; V. 9 ; A. 7 ; L. 1. 29—31.

Diagnostic characters : Length of head 5 in total length, eye diameter 3 in head length, dorsal surface more convex than the ventral surface, mouth small, dorsal fin origin between tip of snout and caudal fin base, eyes and scales large, no barbels, incomplete lateral line, dorsal ray osseous and strong.

Colour : Head and back dotted, light greenish on the back with silvery sides with a band on the middle of the body (not complete), fins without colour.

Size : Rarely attains 38 mm. in length, 9 examples collected from Majoli river, Jorhat ranging from 25—36 mm. in length.

Distribution : India : Gangetic provinces and Assam.

Remarks : Specimens collected from the shallow (125 cm. deep) water zone of Majoli river at Jorhat.

65. *Puntius sarana sarana* (Hamilton)

1822. *Cyprinus sarana* Hamilton, *Fish. Ganges*, pp. 307, 388 (type locality : ponds and rivers of Bengal).
 1974. *Puntius sarana sarana*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 41

Local name : Cheni-putthi / Sani-putthi / Muraputthi.

D. 3/8 ; P. 15 ; V. 9 ; A. 3/5 ; C. 19 ; L. 1. 32—34.

Diagnostic characters : Length of head 5 in total length, eye diameter 4.5 to 4.7 in head length, dorsal surface more convex than ventral profile, 2 pairs of barbels, dorsal origin nearer to snout than to caudal fin base, complete lateral line.

Colour : Dark gray above and silvery below, sometime horizontal bands along the rows of scales in the upper half of the body, often a golden blotch on the opercle, fins greyish white.

Size : Attains 304 mm. in length, specimens collected from Brahmaputra river at Gauhati, Tezpur, Dibrugarh and Goalpara, range from 66—112 mm. in length.

Distribution : Freshwaters throughout India ; Bangladesh, Burma, Sri Lanka, Thailand, Pakistan, Southern China.

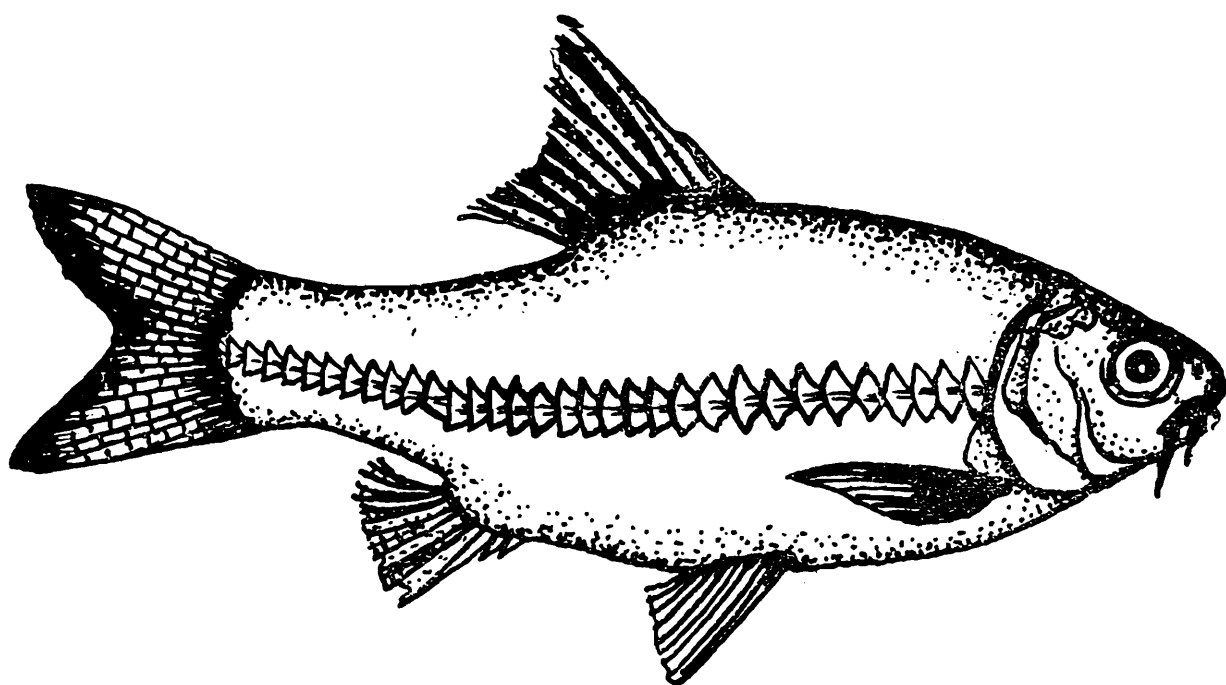


Fig. 37. *Puntius sarana sarana* (Ham.)

Remarks : Found to live in rivers, also found in plenty in the roadside ditches, canals, beels, ponds and paddy fields specially during the monsoons. One of the known commercially important species under this genus because of its comparatively larger size and oily good taste.

66. *Puntius phutunio* (Hamilton)

1822. *Cyprinus phutunio* Hamilton, *Fish. Ganges*, pp. 319, 390 (type locality : North-East Bengal).
 1947. *Puntius phutunio*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes.*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 39

Local name : Putthi.

D. 2—3/8 ; P. 15 ; V 9 ; A. 3/5 ; C. 19 ; L. 1. 20—23.

Diagnostic characters : Length of head 4 to 4.6 in total length, eye diameter 2.5 in head length, no barbels, dorsal profile more convex than the ventral profile, dorsal origin between tip of snout and caudal fin base with osseous and serrated dorsal spine, incomplete lateral line, predorsal scales 9, small mouth.

Colour : Dirty white (reddish brown) with 2 or 3 vertical bands or spots, one passing from back to the base of pectoral, another from back to the base of the anal, these bands grow shorter with age (Day, 1878) ; dorsal and caudal fins with dark bands (faint), there is an ill-defined dark band on the dorsal.

Size : Largest recorded specimen 95 mm. in length ; specimens collected from shallow reddish muddy water of Dibru river, 60 km. from Dibrugarh, ranging from 62—95 mm. in length.

Distribution : India : Assam, Orissa, West Bengal ; Burma, Bangladesh.

Remarks : Found to live both in clear streams and rivers as well as muddy waters.

67. *Puntius conchoni* (Hamilton)

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

1974. *Puntius conchoni*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 38

Local name : Putthi.

D. 3/8 ; P. 11 ; V 9 ; A. 2/5 ; C. 19 ; L. 1 24—26.

Diagnostic characters : Length of head 5 in total length, eye diameter 3 in head length, both the dorsal and ventral profiles convex, mild notch over the nape, no barbels, incomplete lateral line, dorsal fin with moderately strong and serrated spine opposite to the pelvic fin, predorsal scales 9.

Colour : Greenish gray on the back becoming silvery towards the sides, a large round black blotch on the middle of the caudal peduncle

(on 19—20 scales), orange coloured fins, dorsal fin tip tinged with black.

Size : Largest recorded specimen 127 mm. (5 inches) in length ; 15 exs. collected from Rangia and Jorhat ranging from 72 to 115 mm. in length.

Distribution : Assam, West Bengal, Orissa, Bihar, U. P., Punjab, Deccan ; Bangladesh, Pakistan.

Remarks : Very commonly found all over Assam in streams, ponds and the Brahmaputra systems.

68. *Puntius ticto* (Hamilton)

1822. *Cyprinus ticto* Hamilton, *Fish. Ganges*, pp. 314, 389, pl. 8 fig. 87 (type-locality : S. E. of Bengal).
1974. *Puntius ticto*, Menon, *A check-list of the Himatayan and Indo-Gangetic plains fishes.*, *J. Indl. Fish. Soc. India*, p. 42.

Local name : Putthi/Kanipotiah.

D. 3/8 ; P. 15 ; V 9 ; A. 2/5 ; C. 19 ; L. 1.22—26.

Diagnostic characters : Length of head 3 to 4 in total length, eye diameter 2.5 to 3 in head length, dorsal profile more convex than the ventral profile, dorsal fin origin midway between the tip of snout and caudal fin base and with a moderately strong and serrated spine, incomplete or often complete lateral line, ceases after 6 to 8 scales from gill opening ; predorsal scales 8—11, a black spot on 18th or 19th scales.

Colour : Silvery with two black lateral spots. During seasonal changes (March to September), this fish often develops bright red colour on the flanks and olive green on the back. According to Dr. S.L. Hora, these colour changes are found in males during breeding season.

Size : Largest recorded specimen 201 mm. (4 inches) in length, 70 exs. were collected from different parts of Assam ranging from 40 to 76 mm. in length.

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

Remarks : Most commonly found in ponds, road side ditches, paddy fields, canals, beels, rivers, streams, water reservoirs ; they are caught by hooks, nets and traps in plenty by villagers and fishermen in the monsoon, commercially of little importance due to its small size, thin bones and slightly bitter in taste (known as *Titaputhi* in West Bengal, *Tita* = Bitter). Found effective as a larvicidal fish (Alcock, 1902).

69. ***Puntius shalynius*** Yazdani & Talukdar

1975. *Puntius shalynius* Yazdani & Talukdar, *J. Bombay nat. Hist. Soc.*, **72** (1) : 218-221 (type-locality - Khasi-Hills, Meghalaya).

Local name : Shalyni.

D. 3/7 ; P. 13—14 ; V 1/7 ; A. 2/5 ; C. 18—20 ; L. 1. 20—30.

Diagnostic characters : Length of head 4.7 in total length, eye diameter 4 in head length, small sized fish, dosal profile more convex than the ventral side, origin of dorsal fin nearer to the caudal fin base than to the tip of the snout with three undivided rays, first being almost indistinct and the longest third ray being serrated on its posterior side ; no barbels, scales fairly big, incomplete lateral line ceasing on or before 11th scale and variable between two sides in the same individual, minute white tubercles on head.

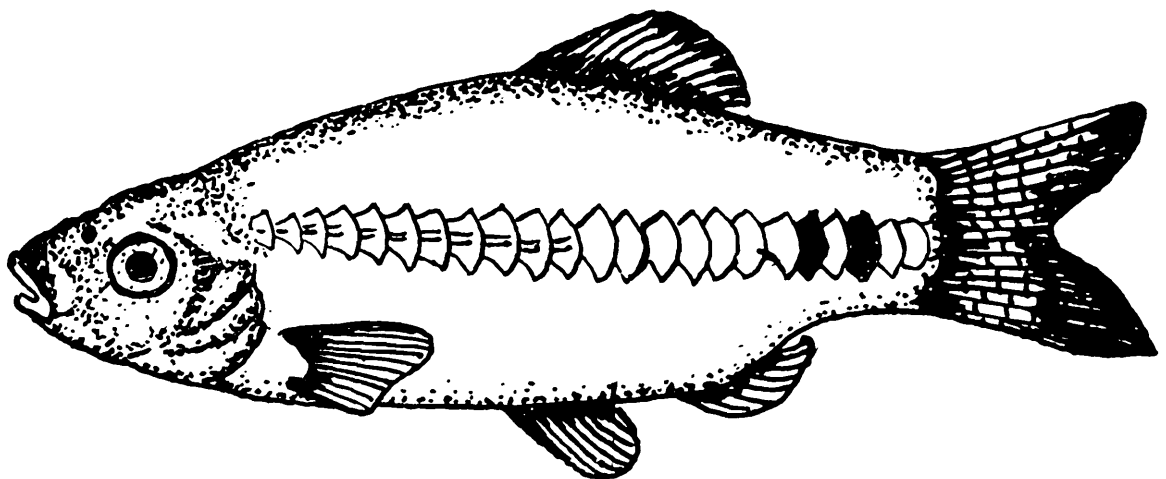


Fig. 38. *Puntius shalynius* Yazdani & Talukdar

Colour : Females yellow to black on sides and back, silvery below ; scales black edged, fins mostly orange with light blackish tinge, males more blackish in appearance, fins jet black except caudal fin, two spots on either side of the tail in both the sexes, a blue horizontal line along the middle of body, minute black dots on the sides of head.

Size : 28.5 – 60 mm. being the minimum and maximum lengths recorded from Khasi-Hills, Meghalaya.

Distribution : India : Khasi and Jaintia Hills, Meghalaya.

Remarks : Lives in clear streams and rivers.

70. *Puntius chola* (Hamilton)

1822. *Cyprinus chola* Hamilton, *Fish. Ganges*, pp. 312, 389 (type-locality - N. E. of Bengal).

1974. *Puntius chola*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India., p. 37.

Local name : Putthi.

D. 3/8 ; P. 15 ; V 9 ; A. 2/5 ; C. 19 ; L. 1. 26—28.

Diagnostic characters : Length of head 4.5 to 4.7 in total length, eye diameter 3.5—4 in head length, dorsal profile more convex than the ventral profile, a single pair of maxillary barbels, dorsal fin origin midway between tip of snout and caudal fin base with osseous and smooth undivided rays, complete lateral line, 10 to 12 pre dorsal scales.

Colour : Silvery, opercles shot with purple and gold ; a dark blotch on the space between 23rd to 25th scales, a dark mark at the base of the dorsal fin.

Size : Largest recorded specimen 125 mm. in length ; 6 exs. collected from a road side canal 4 km. from Dispur M.L.A.'s Hostel, Gauhati, ranging from 90 to 110 mm. in length.

Distribution : Throughout India, Sri Lanka, Pakistan and Burma.

Remarks : Common in the ditches, tanks, canals, paddy fields (during monsoons) ; fish oil is extracted from this fish in some localities of lower Assam and Burma.

71. *Puntius gelius* (Hamilton)

1822. *Cyprinus jelius* Hamilton, *Fish. Ganges*, pp. 320, 390, pl. 145, fig. 3 (type locality - N. E. parts of Bengal).

1974. *Puntius gelius*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 39.

Local name : Putthi.

D. 2/8 ; P. 15 ; V 9 ; A. 3/5 ; C. 19 ; L. 1. 23—24.

Diagnostic characters : Length of head 4.2 in total length, eye diameter 2.5 in head length, dorsal profile more convex than the ventral profile, barbels absent, dorsal fin slightly in advance of the plevic fin with strong osseous ray, coarsely serrated, incomplete lateral line, diminutive size.

Colour : Reddish brown, a silvery band along the side ; black bands on the caudal and anal fins, sprinkled with black spots all over the body.

Size : Largest recorded specimen 50 mm. in length.

Distribution : India : Bihar, West Bengal, Assam ; Bangladesh.

Remarks : Found to live in clear streams ; popularly known for eating its own eggs.

72. *Puntius terio* (Hamilton)

1822. *Cyprinus terio* Hamilton, *Fish. Ganges*, pp. 313, 389 (type-locality : N. E. Bengal).
1974. *Puntius terio*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1). *J. Indl. Fish. Soc. India*, p. 42.

Local name : Putthi.

D. 3/8 ; P. 15 ; V 9 ; A. 2/5 ; C. 19 ; L. 1. 22—23.

Diagnostic characters : Length of head 4 to 4.5 in total length, eye diameter 2.7 in head length, compressed body with convex dorsal profile, no barbels, dorsal fin midway between the tip of the snout and base of the caudal fin with strong osseous ray, incomplete lateral line ceasing after 3 or 4 scales.

Colour : The males are yellowish all over with their anal and ventral fins touched with orange, females silvery with clear fins, male partner becomes bright orange at mating time instead of crushed straw-berry red (Innes, 1944), a large black blotch on the side, dorsal with a median band.

Size : Largest recorded specimen 76 to 102 mm. in length. Only one example collected from a stagnant tank at Pahugarh beel, Jorhat being 65 mm. in length.

Distribution : India : Assam, West Bengal, Orissa, Punjab ; Bangladesh.

Remarks : Found to live in tanks with submerged aquatic plants like *Hyacinth*, *Vallisneria*, *Utricularia* etc.

Genus *Schizothorax* Heckel, 1838

1838. *Schizothorax* Heckel, *Fisch Cashmir*, p. 11 (Type, *Schizothorax plagiostomus* Heckel, designated by Bleeker in *Ned. Tijds. Dierk.*, 1, pp. 179-186, 1836).

73. *Schizothorax richardsonii* (Gray)

1830-32. *Cyprinus richardsonii* Gray, *Ill. Indian zool.*, 1, pl. 94 fig. 2 (illustration only).

1839. *Oreinus richardsonii*, McClelland, *Asiat. Res.* 19, pp. 273, 345.

1981. *Schizothorax richardsonii*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 67

D 3/8 ; P. 17 ; V 10 ; A. 2/5 ; C. 19 ; L. 1. 98—100.

Diagnostic characters : Length of head 4 to 6 in total length, eye diameter 5 to 6.5 in head length, obtuse snout, inferior mouth with a well developed lower lip with posterior free edge straight or somewhat convex, sometimes large pores on the snout, dorsal fin with moderately strong serrated spine becoming smooth in larger forms, 24 rows of minute scales between the dorsal fin base and lateral line, anal does not reach the caudal.

Colour : Bluish along the back becoming silvery with golden tinge on sides and beneath, head with purple and gold colours.

Size : Largest recorded specimen 50 cm in length.

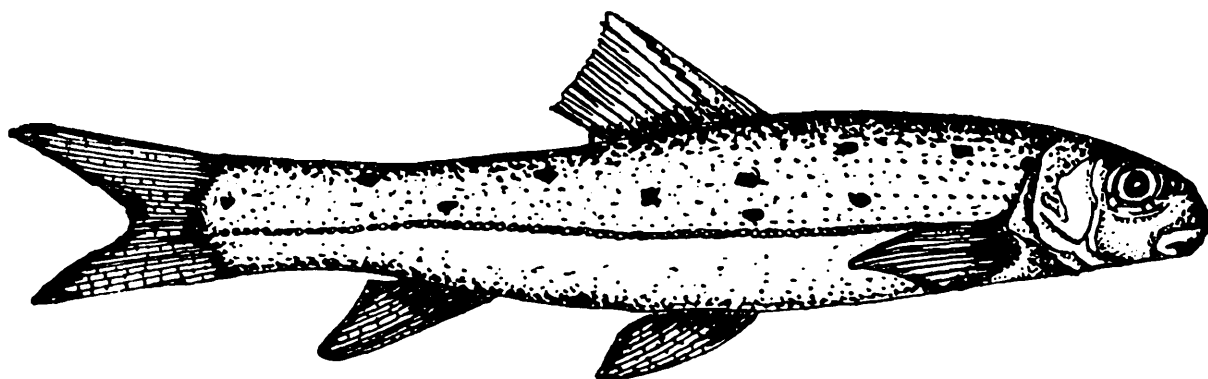


Fig. 39. *Schizothorax richardsonii* (Gray)

Distribution : India : Assam and Eastern Himalayas ; Pakistan.

Remarks : Lives in the head waters of mountainous snow fed streams and rivers preferably with rocky bottom. A popular food-fish.

74. *Schizothoraichthys progastus* (McClelland)

1839. *Oreinus progastus* McClelland, *Asiat. Res.*, **19**, pp. 274, 343, pl. 40, fig. 4 (type-locality : Assam).
1974. *Schizothoraichthys progastus*, Menon, *A Check-list of the Himalayan and Indo-genetic plains fishes*, Spl. Pub. (1) : *J. Indl. Fish. Soc. India*, p. 45.

D. 11—12 (3/8-9) ; P. 19 ; V. 11 ; A. 2/5 ; C. 19 ; L. 1. 150—160.

Diagnostic characters : Length of head 5.2 to 5.5 in total length, eye diameter 4.5 to 6 in head length, interorbital space nearly flat, pointed snout, upper jaw projecting, width of head half of its length, fleshy thick-lip having a free posterior edge in its whole circumference, upper lip elevated in the centre, lower with a central lobe and a lateral one on either side, four barbels, dorsal with a strong osseous ray coarsely serrated and as long as head behind the angle of the mouth, caudal deeply forked, minute scales.

Colour : Uniform silvery, sometimes having a few fine spots, fins with darkish edges.

Size : Attains about 50 cm. in length.

Distribution : India : Himalayas, from head waters of the Ganges to Sadiya in upper Assam.

Remarks : Specially found in the clear snow fed water areas of U. P. (Ganga), hill-streams of Upper Assam, Darjeeling district (West Bengal), mountain streams of Nepal.

***Schizopygopsis* Steindachner, 1866**

1866. *Schizopygopsis* Steindachner, *Verh. Zool. Bot. Ges. Wien.* **16**, p. 786, pl. 16, fig. 2 (type, *Schizopygopsis stoliczkae* Steindachner).

75. *Schizopygopsis stoliczkae* Steindachner

1976. *Schizopygopsis stoliczkae*, Sen & Datta, *Newsl. Zool. Surv. India*, **3** (4), p. 143 (Brahmaputra river, Arunachal Pradesh)
1981. *Schizopygopsis stoliczkae*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, *Z. S. I.*, p. 68.

D. 3—4/7—8 ; P. 13 ; V 11 ; A. 2/5 ; C. 19.

Diagnostic character : Length of head 5.5 in total length, eye diameter 4.2 in head length, inferior mouth slightly over hung by the snout, round abdomen, maxilla reaches below the front border of the orbit, anterior sharp horny edge to the mandible, dorsal fin midway between the snout and the caudal fin base with osseous and finely serrated ray, small scales at scapular region, lateral line curves ventrally and then continued straight through the caudal peduncle and reaching the centre of the base of caudal fin, caudal fin deeply forked.

Colour : Greenish olive on the back becoming silvery on the sides, entire body covered with minute irregular black spots.

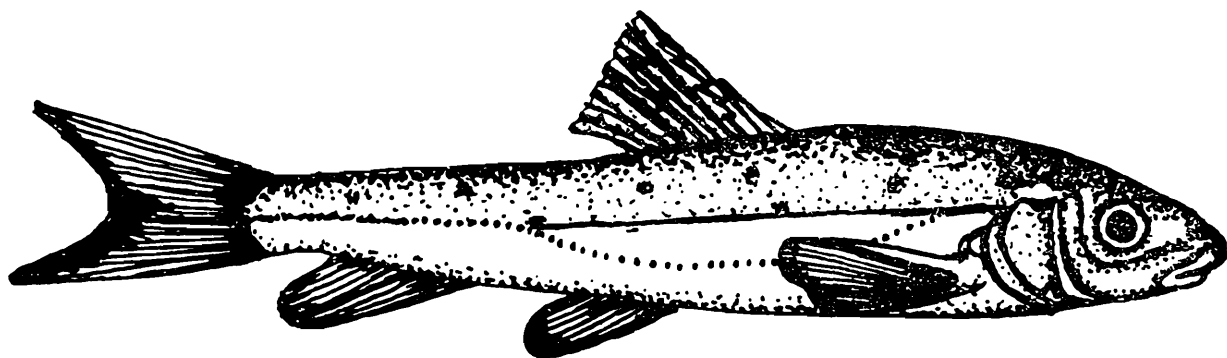


Fig. 40. *Schizopygopsis stoliczkae* Steind.

Size : Largest recorded specimen 90 mm. in length.

Distribution : India : Arunachal Pradesh, North Sikkim ; Central and West Asia.

Genus *Semiplotus* Bleeker, 1859

1859. *Semiplotus* Bleeker, *Nat Tijdschr. Neder - India*, 20, p. 425

76. *Semiplotus semiplotus* (McClelland)

1839. *Cyprinus semiplotus* McClelland, *Asiat. Res.*, p. 274, 346, pl. 37, fig. 2 (type-locality : Brahmaputra river, Upper Assam).

1981. *Semiplotus semiplotus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 95

D. 3/24—25 ; P. 16 ; V 10 ; A. 2/7 ; C. 19 ; L. 1 27—33.

Diagnostic characters : Length of head 5.5 to 6 in total length, eye diameter 4 to 6 in head length, dorsal profile more convex than the ventral profile, thickened snout with tubercles, obtuse ; lower jaw with an internal horny layer, barbels absent, dorsal fin with bony and entire spine, caudal deeply forked, mouth wide and inferior.

Colour : Dull silvery, deepest dark on the back, fins yellowish, anal tinged with orange.

Size : Largest recorded specimen 648 mm. in length ; one specimen collected from Jeavarli river at Tezpur measures 289 mm. in length.

Distribution : India : Freshwaters of Assam, North Bengal (Darjeeling Dt., Tarai and Duars) ; Nepal, Burma.

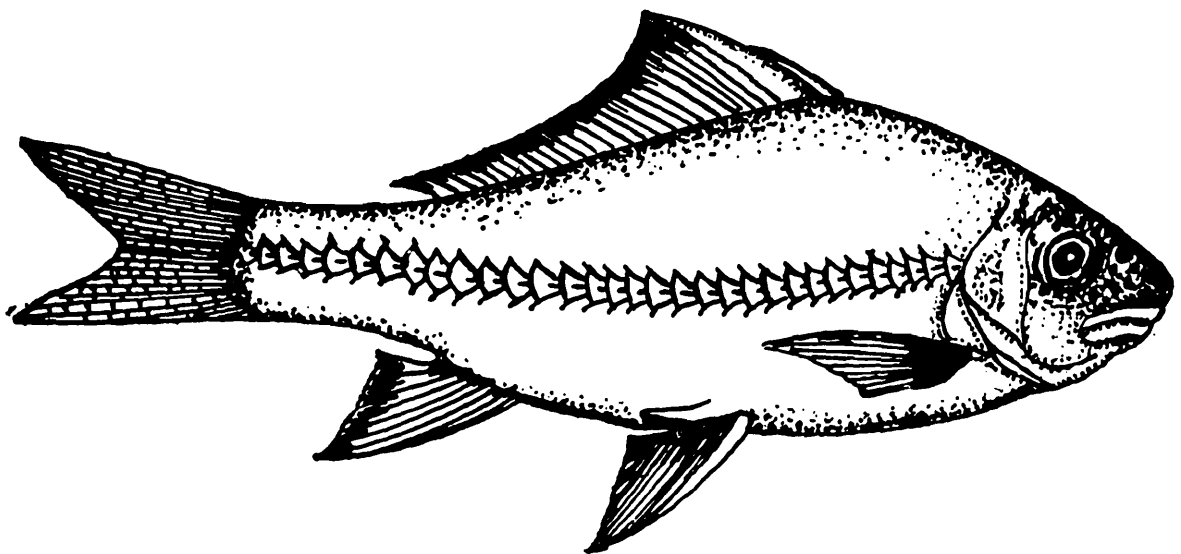


Fig. 41. *Semiplotus semiplotus* (McCll.)

Remarks : A good eating fish. Generally found to live in torrential hill stream rivers.

Genus **Tor** Gray, 1834

1833-34. *Tor* Gray, *Ill Ind. Zool. Hardwicke*, 2, p. 96 (type, *Cyprinus tor* Hamilton = *Tor hamiltoni* Gray)

77. **Tor tor** (Hamilton)

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

1981. *Tor tor*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z. S. I. p. 124.
1982. *Tor tor*, Sen & Jayaram, *The Mahseer Fishes of India : A Review*, *Zool. Surv. India*, Occ. Paper No. 39, p. 3.

Local name : Laopithea/Burapatra.

D. 12 (3/9) ; P. 19 ; V 9 ; A. 7-8 (2-3/5) ; L. 1. 22—27.

Diagnostic characters : Length of head 4.7 to 5 in total length, eye diameter 3—4 in head length, fleshy thick lips with uninterrupted labial fold, dorsal profile more arched than ventral side, 2 pairs of barbels, maxillary slightly larger than rostral but shorter than eye ; bigger scales, dorsal fin almost opposite to pelvic origin with smooth bony dorsal spine, $2\frac{1}{2}$ rows between lateral line and pelvic base.

Colour : Bright yellow or brown all over the body, fins reddish.

Size : Largest recorded specimen 120 to 150 cm. (4 to 5 ft.) in length ; 135 cm. (4.5 ft.) being the length of a large specimen collected from Tezpur evening fish market (obtained from Jeavarli river).

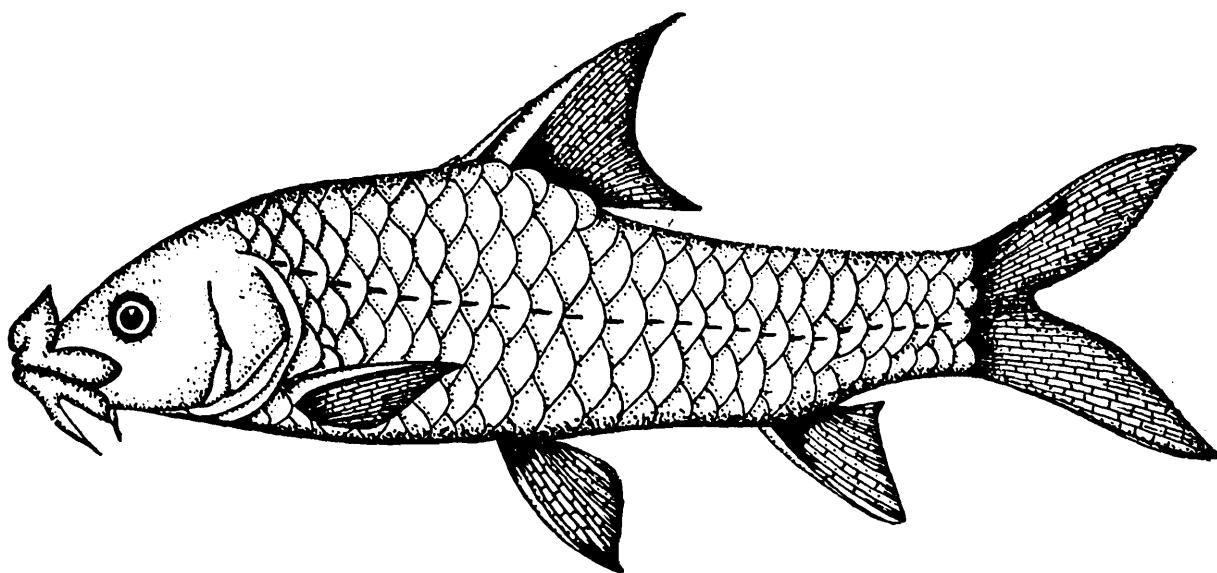


Fig. 42. *Tor tor* (Ham.)

Distribution : India : Widely distributed all along the foot-hills of the Himalayas and Assam.

Remarks : A popular game fish (Mahseer) of India ; lives in snow fed rivers replenished with monsoon rains, feeds on aquatic weeds, insects, shrimps, stone crickets, molluscs, small fish fry—an intermittent feeder, also known for its migratory habits. A fine food fish.

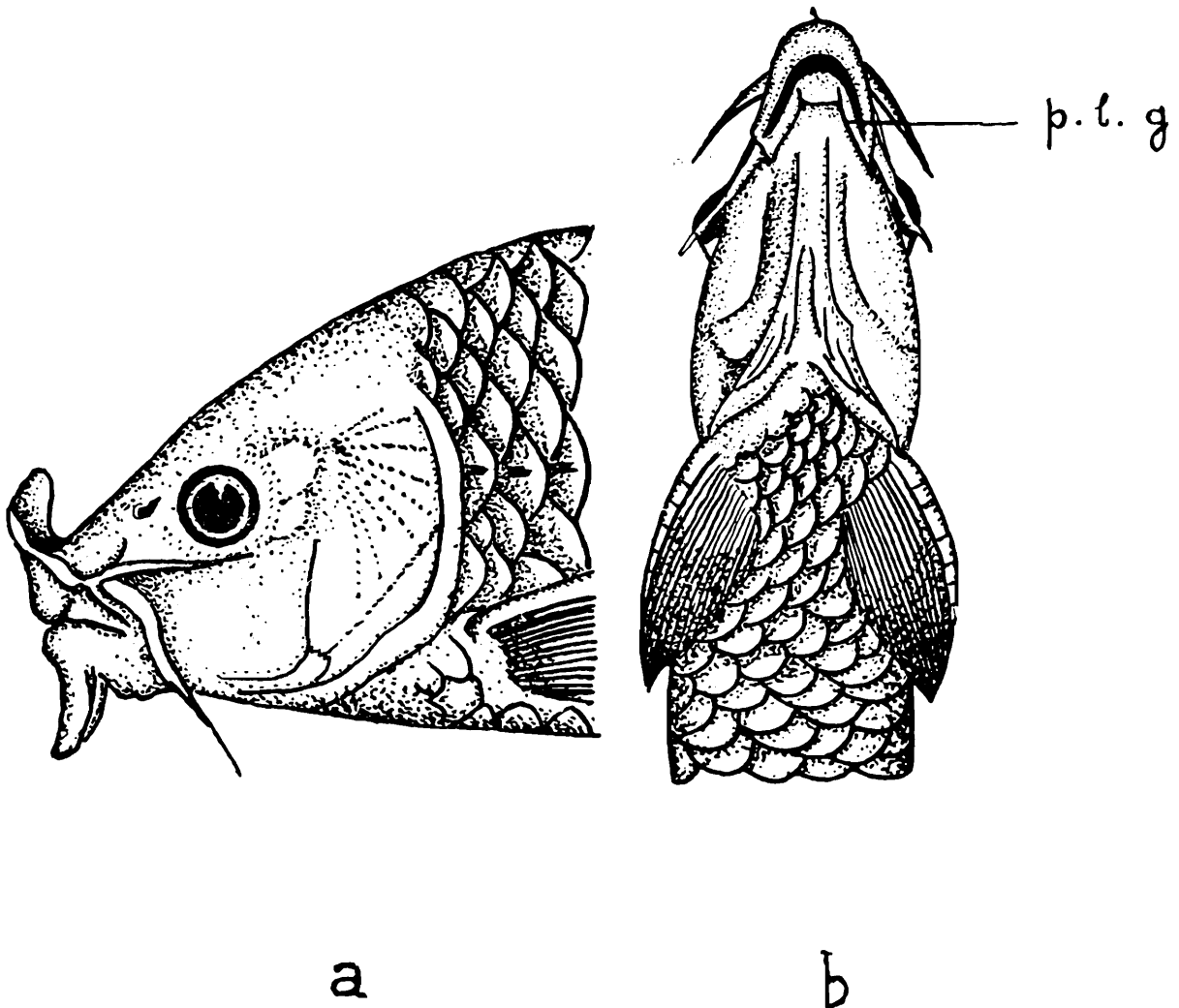


Fig. 43. *Tor tor* (Ham.) ; Oral features—(a) lateral and (b) ventral views showing post labial groove.

78. *Tor putitora* (Hamilton)

1822. *Cyprinus putitora* Hamilton, *Fish. Ganges*. pp. 303, 388, (type-locality : Eastern parts of Bengal).
1981. *Tor putitora*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I. p. 125.
1982. *Tor putitora*, Sen & Jayaram, *The Mahseer Fishes of India : A review*. Zool. Surv. India, Occ. Paper No. 39, p. 5.

Local name : Jongapithia/Junga Peetia

D. 3/9 ; P. 19 ; V 9 ; A. 2—3/5 ; C. 19 ; L. 1 25—28

Diagnostic characters : Length of head 4 to 4.5 in total length, eye diameter 3 to 5.3 in head length, thick lips with uninterrupted labial groove, 2 pairs of barbels of equal length and as long as eye, both the dorsal and ventral profiles equally arched, dorsal fin origin

midway between tip of snout and caudal fin base with strong but smooth spine, pre dorsal scales 9, length of head considerably greater than body depth.

Colour : Olive green back and top of head, golden scales above the lateral line with dark bases paling white towards the belly, fins yellowish often tinged with red (lower ones). It has been observed that extreme redness of the lower fins is associated with thicker lips (Shaw Shebbeare, 1937).

Size : Largest recorded specimen 120 cm. (9 ft.) in length.

Distribution : India : found all along the foot-hills of the Himalayas including Assam, U. P., Punjab, Kashmir valley, Darjeeling Dt. of West Bengal, Haryana ; Nepal, Bangladesh, Pakistan.

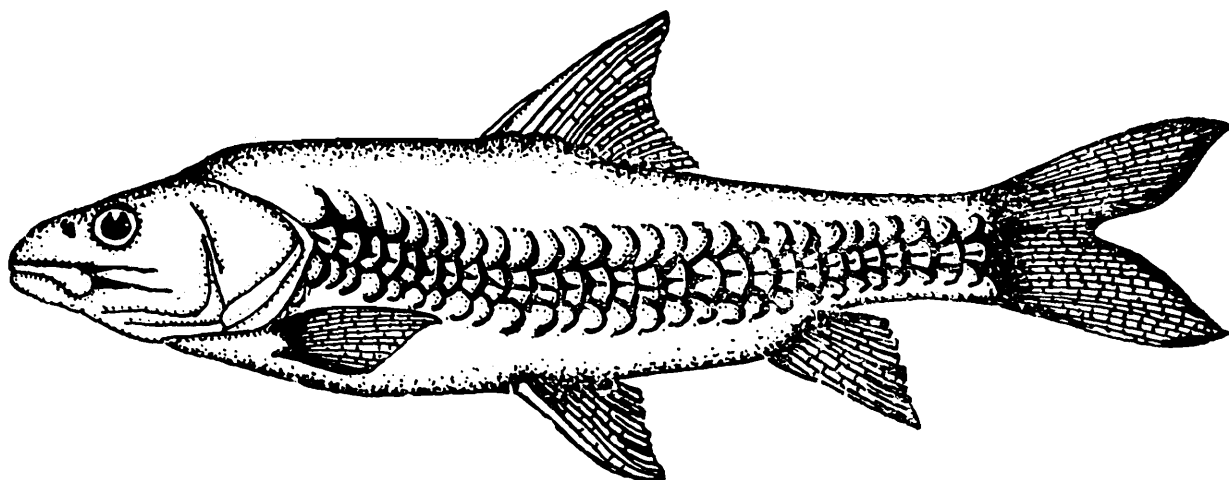


Fig. 44. *Tor putitora* (Ham.)

Remarks : A popular game fish of India, living in cold waters and in slow and shallow streams with gravelly beds ; breeds three times a year, January-February, May-June (when snow melts) and July-August-September. Exhibits sexual dimorphism, lips and snouts are greatly swollen during breeding phase.

79. *Tor progeneius* (McClelland)

1839. *Barbus progeneius* McClelland, *Asiat. Res.* 19, p. 270, 334, pl. 56, fig. 3 (Great rivers in the plains of India).
1942. *Barbus (Tor) progeneius*, Hora, *J. Bombay nat. Hist. Soc.*, 42, p. 526, pl. 8, text fig. 1-3 (Assam).
1982. *Tor progeneius*, Sen & Jayaram, *The Mahseer Fishes of India - A Review. Rec. Zool. Surv. India, Occ. Paper No. 39*, p. 11.

Local name : Jungha/Junga-Peetia/Junghapithia/Jongapittia

D. 12 ; P. 16 ; V. 9 ; A. 7 ; C. 19 ; L. 1.26 ; L. tr. 3/3

Diagnostic characters : The head is long and much compressed, fins short, large scales, mouth narrow and small, from the lower lip a fleshy appendix is extended, by which it is distinguished from the neighbouring species ; dorsal spine less developed, length of head almost equal to depth of body, tip of snout fleshy and produced into a semicircular flap, upper lip fleshy but not projected, continuous labial fold, a black streak behind the gill opening.

Size : Maximum reported length being 113 to 710 mm.

Distribution : North Eastern Himalayas in Assam, Naga-Hills and Manipur.

Remarks : This species has been very recently elevated as a separate species by Sen & Jayaram (1982). Before, it was regarded as a synonym of *Tor tor* or other closely allied *Tor* species probably due to

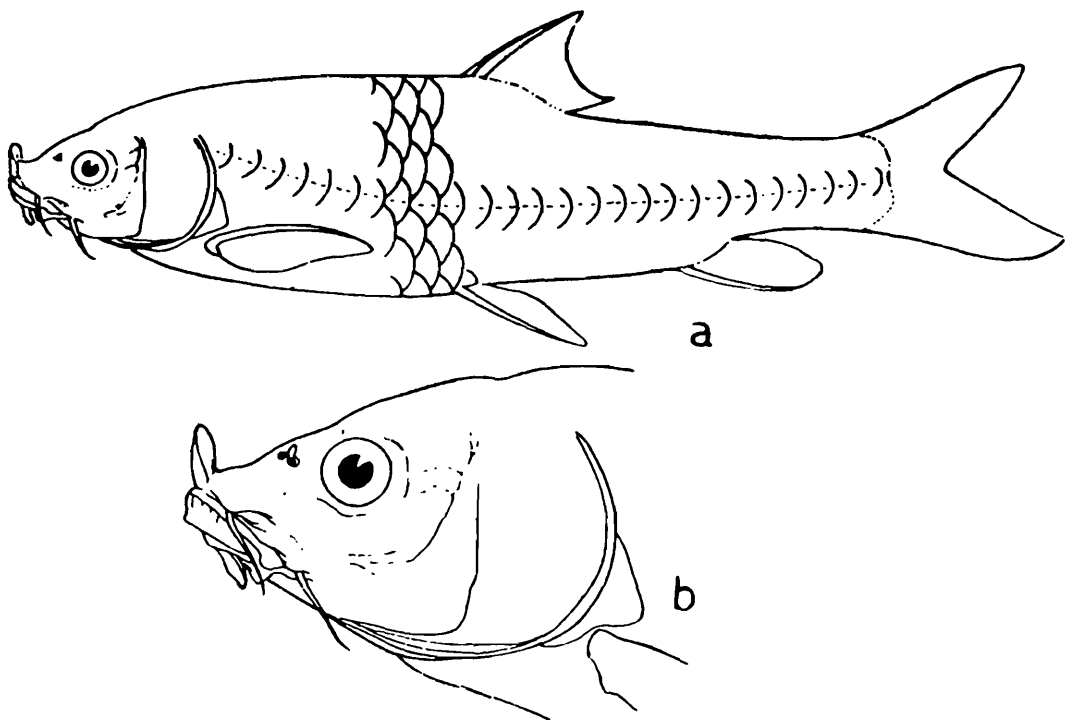


Fig. 45. (a) Lateral view of *Tor progneus* (McCl.)

(b) Lateral view of head showing the nature of the hypertrophied snout and lower lip. The upper lip is fleshy but not hypertrophied.

its lower lip character which is produced into a median fleshy lobe in the adult form. However *T progeneius* can be distinguished from *T tor* by its (1) length of head (3 times), (2) long compressed head and short fins, (3) dorsal spine less developed, (4) upper lip fleshy but not produced as in *T tor*, (5) length of head almost equal to depth of body and (6) a black streak behind the gill opening in the younger forms.

Family PSILORHYNCHIDAE

Large swim bladder absent, anterior portion of body somewhat depressed, snout rather spatulate, scales of moderate size. Only one genus, *Psilorhynchus* McClelland with three species.

Key to the species of genus Psilorhynchus

1. Body spindle shaped, eyes large, lateral in position ; ventral surface behind pectoral fin base with scales, pectoral fins with four simple rays ... *P. sucatio* (Ham.)
- Body not spindle shaped, eyes small, dorso-lateral in position, ventral surface behind pectoral fin base without scales or with irregularly distributed scales, pectoral fins with more than four simple rays ... 2
2. Ventral surface behind pectoral fin base with irregularly distributed scales, pectoral fins with six simple rays, lateral line with less than 40 scales ... *P. balitora* (Ham.)
- Ventral surface behind pectoral fin base without scales, pectoral fins with more than 8 simple rays, lateral line with more than 40 scales ... *P. homaloptera* Hora and Mukerji

Genus : *Psilorhynchus* McClelland, 1839

1839. *Psilorhynchus* McClelland, *Asiat. Res.*, 19, pp. 300, 428 (type, *Cyprinus balitora* Ham.)

80. *Psilorhynchus balitora* (Hamilton)

1822. *Cyprinus balitora* Hamilton, *Fish. Ganges*, pp. 348, 394 (type locality : rivers of N. E. Bengal).
1937. *Psilorhynchus balitora*, Shaw & Shebbeare, *J. Asiat. Soc. Beng.*, 3, p. 60. pl. 2, fig. 3. & text fig. 57.
1981. *Psilorhynchus balitora*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Z. S. I., Calcutta p. 140,

D. 9—10 (2/7—8) ; P. 17 ; V. 9 ; A. 7 (2/5) ; C. 18.

Diagnostic characters : Length of head 5.2 in total length, eye diameter 4.2 in head length, rounded head, slightly depressed ; back very much arched, a deep cleft extending from the snout to the angle of mouth, jaws with sharp edges without any horny covering, thick-lips, reflected and edged with round hard pores ; some fine pores on cheeks and snout, pectorals and ventrals nearly horizontal, no barbels.

Colour : Reddish brown with irregular black blotches forming complex bands, 3 bars on caudal fin.

Size : Largest recorded specimen 62 mm. in length (Shaw and Shebbeare, 1937).

Distribution : India : Jamuna in Delhi, Gomti river at Lucknow, Assam (hill streams and rapids), West Bengal (Darjeeling Dt.) ; Burma.

Remarks : A fish found to live in the hill streams and rapids throughout N. E. India particularly in the upper Assam, N. Cachar-Hills, Meghalaya and Manipur.

81. *Psilorhynchus sucatio* (Hamilton)

1822. *Cyprinus sucatio* Hamilton, *Fish. Ganges*, pp. 347, 393 (type locality : rivers of N. Bengal).
1937. *Psilorhynchus sucatio*, Shaw and Shebbeare, *J. Asiat. Soc. Beng.*, 3, p. 61, fig. 58.
1981. *Psilorhynchus sucatio*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 140.

C. 2/7—8 ; P. 4/9—10 ; V 2/7—8 ; A. 2/5 ; L. 1.35—38.

Diagnostic characters : Length of head 6 in total length, eye diameter 3 in head length, head depressed and spatulate, dorsal fin commences in advance of the ventrals and its origin much nearer to the tip of the snout than to the base of the caudal fin, caudal fin deeply forked with upper lobe slightly longer, depth of body 5.5 in total length.

Colour : Light brown with irregular black blotches above and below the lateral line. It is greenish with scattered dots on the sides, these dots are close together presenting a cloud like appearance, whitish below.

Size : Largest recorded specimen 81 mm. in length.

Distribution : India : Assam and Darjeeling Dt. (West Bengal).

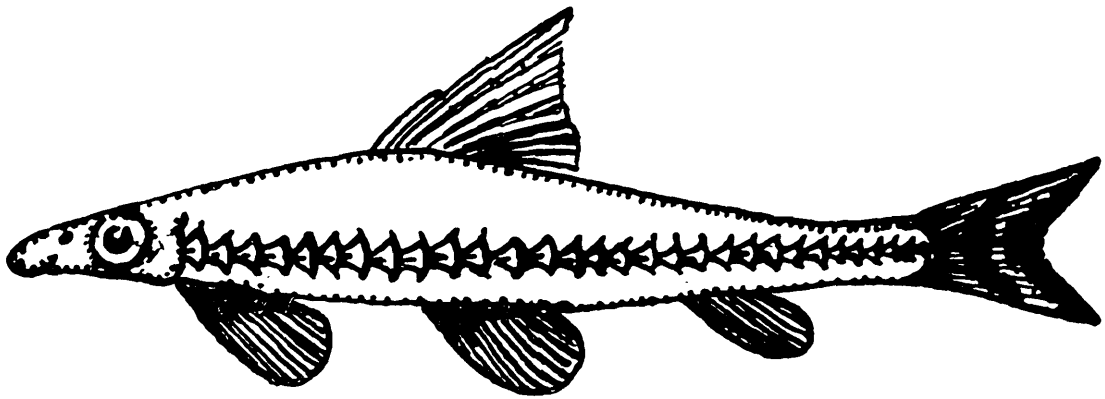


Fig. 46. *Psilorhynchus sucatio* (Ham.)

Remarks : They are found to live in rapids and hill streams with beds beset with rock boulders and pebbles.

82. *Psilorhynchus homaloptera* Hora & Mukerji

1935. *Psilorhynchus homaloptera*, Hora & Mukerji, *Rec. Indian Mus.*, 37, p. 391, pl. 7, figs. 1—6 (type locality : Emiloni, Naga-hills, Assam).
 1981. *Psilorhynchus homaloptera*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 140.

D. 2/7 ; P. 7/8—9 ; V 2/7 ; C. 18 ; L. 1.40—44.

Diagnostic characters : Length of head 5.1 to 5.6 in standard length, dorsal profile evenly arched, ventral surface of head and chest flat and horizontal, caudal peduncle short and fairly compressed, head greatly depressed, small obtusely pointed and has trenchant margins ; small eyes, 3.6 to 4 in head length, globular and dorso-laterally placed ; both the upper and lower jaws are provided with sharp rasping horny edges bordered by thick and fleshy lips, lunate caudal fins, pectorals broad and fan shaped with rounded margin.

Colour : In alcohol it is olivaceous green becoming lighter on the ventral side, fine black dots over head and body, a fairly broad dusky lateral band along the lateral line.

Size : Largest recorded specimen 100 mm. in length.

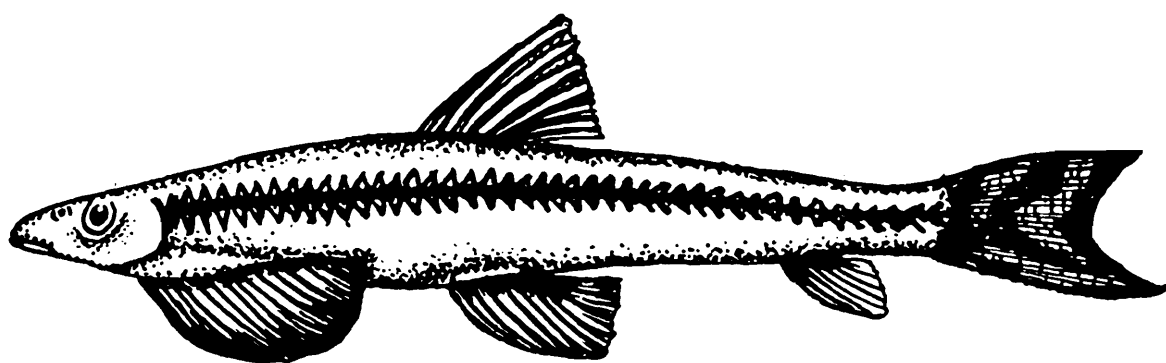


Fig. 47. *Psilorhynchus homaloptera* Hora & Mukerji

Distribution : India : Nagaland ; Nepal.

Remarks : It is found in fast streams and rivers with gravelly beds.

Family HOMALOPTERIDAE

Head and anterior part of body depressed with spatulate snout, head and part or whole of the ventral surface without scales, small inferior mouth, paired fins horizontally placed with at least two simple or unbranched rays, outer rays of paired fins provided with adhesive pads on ventral surface. Only one genus, *Balitora* Gray with two species.

Key to the species of the genus Balitora

- | | | | | |
|--|-----|-----|-----|-------------------------|
| 1. Pectoral fins extend beyond commencement of pelvic fins, caudal fin is almost of equal length | ... | ... | ... | <i>B. maculata</i> Gray |
| — Pectoral fins do not extend or just reach pelvic fins, caudal fin lobes unequal, lower lobe longer | ... | ... | ... | <i>B. brucei</i> Gray |

Genus *Balitora* Gray, 1830

1830-32. *Balitora* Gray, *Ill Ind. Zool.* 1, pl. 88, fig. 1 (type, *Balitora brucei* Gray, India)

83. *Balitora brucei* Gray

1830-32. *Balitora brucei* Gray, *Ill. Ind. Zool.*, 1, pl. 88, fig. 1 (type locality : mountain streams of India).

1974. *Balitora brucei*, Menon, *A check list of the Himalayan and Indo Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 48.

D. 3/8 ; P. 9—10/11—12 ; V 2/9 ; A. 2/5 ; C. 17 ; L. I. 69—70

Diagnostic characters : Length of head 6.5 in total length, eye diameter 2.5 from end of snout, snout broad and depressed with sharp margins, 3 pairs of barbels, pectoral nearly reaches the ventral, lower caudal lobe much longer, scales from chest to as far as the posterior margin of the base of the ventrals, anterior 9 rays of the pectoral unbranched.

Colour : Brownish with darker blotches, caudal banded.

Size : Largest recorded specimen 102 mm. in length.

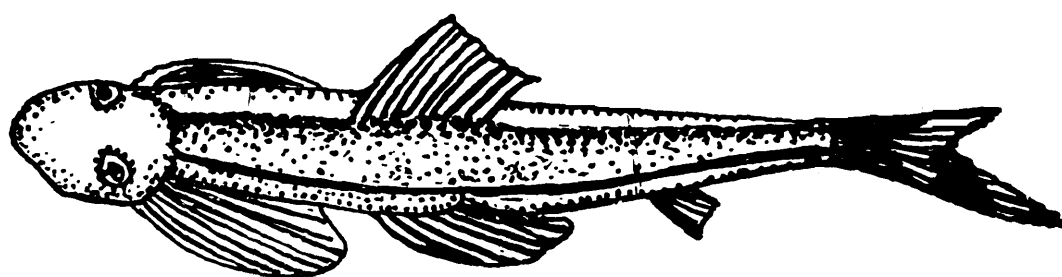


Fig. 48. *Balitora brucei* Gray

Distribution : India : Khashi-Hills, Assam, North Bengal (Darjeeling Dt.) ; Bhutan.

Remarks : A typical torrential fish.

84. *Balitora maculata* Gray

1830-32. *Balitora maculata* Gray, *Ill. Ind. Zool.*, 1, pl. 88, figs. 2, 2a (type locality : Indian mountain streams).

1920. *Balitora maculata*, Hora, *Rec. Indian Mus*, 19, p. 199, pl. 11, fig. 1,

D. 10 (2/8) ; P. 19 ; A. 7 (2/7) ; C. 17 ; L. 1.10.

Diagnostic characters : Length of head 5.7 in total length, eye-diameter 1/5th of the length of head, snout broadly depressed with fringed lips, rostral barbels short, dorsal origin nearer to head than to caudal fin base, complete lateral line, pectoral nearly reaching the ventral, outer 8 rays of pectoral fin unbranched.

Colour : Dull olive, becoming yellowish white beneath with large brown blotches all over the body.

Size : Largest recorded specimen 88 mm. in length.

Distribution : India : Assam Himalayas, Darjeeling Dt. (West Bengal).

Remarks : A typical torrentially adapted hill stream fish.

Family COBITIDAE

Six to eight barbels, scales very small, a sharp bony prickle beneath the eye in both the sexes. Nine genera and thirty species.

Key to the genera of family Cobitidae

- | | |
|---|----------------------------------|
| 1. An erectile suborbital spine present ... | 2 |
| — An erectile suborbital spine absent ... | 3 |
| 2. Scales on head absent, body oblong, short, moderately deep ; snout conical, flattened ; caudal forked or emarginate, eyes moderately large ... | <i>Botia</i> Gray |
| — Scales on the lateral and ventral sides of head present, body elongated and moderately compressed, eyes small ... | 4 |
| 3. Body almost cylindrical and somewhat depressed, snout obtusely rounded, lower lip interrupted in the middle ... | <i>Noemacheilus</i> v. Hass. |
| — Body markedly elongated, strongly depressed, roundish abdomen, snout short bluntly rounded, lower lip bilobate, continuous ; a suborbital spine present ... | <i>Acanthopthalmus</i> v. Hass. |
| 4. Snout blunt, a large erectile bifurcated spine below the eyes, caudal truncate, emarginate or forked ; lateral line absent ... | <i>Lepidocephalus</i> Bleeker |
| — Snout much elongate, a dark lateral line present ... | 5 |
| 5. Caudal emarginate, central surface roundish, very minute scales ... | <i>Acanthopsis</i> Bleeker |
| — Caudal entire, subtruncate or irregularly rounded ; snout elongated, body cylindrical and elongated ; large scales all over the body except the head ... | 6 |
| 6. Lateral line complete, body with 6-7 dark blotches ... | <i>Somileptes</i> Swainson |
| — Lateral line incomplete, body moderately compressed, snout blunt, caudal forked ... | 7 |
| 7. Body with irregular net of dark brownish and whitish yellow bars and stripes, body scaled, a well marked round spot in the middle of caudal base ... | <i>Mesonoemacheilus</i> Banarese |

- Body with distinct brownish cross bars (9-14), no well marked spot in the middle of caudal base ... 8
- 8. Forked caudal, dorsal fin with 8 or 9 branched rays and slightly convex edge, body scaled atleast posteriorly ... *Physoschistura*
Banarescue & Nalbant
- Lunate caudal fin, dorsal fin with 6 or 7 branched rays without any spine, small scaled body, absent on head ... *Aborichthys* Chaudhuri

Key to the species of genus Aborichthys

- 1. The snout is a little shorter than the post orbital part of the head, 7 branched rays in the dorsal fin ... *A. kempi* Chaudhuri
- Snout is not shorter than the post orbital part of the head ... 2
- 2. The snout is almost equal to the post orbital part of the head, 6 branched rays in the dorsal fin ... *A. elongatus* Hora
- Snout broadly rounded, slightly longer than the post orbital part of the head, caudal peduncle elongated, forward position of vent, body is marked with 30 to 35 black bands ... *A. garoensis* Hora

Key to the species of genus Botia

- 1. 3 pairs of barbels, minute eyes ; compressed body, suborbital spine reaches below the middle of eye ... *B. berdmorei* (Blyth)
- 4 pairs of barbels ... 2
- 2. Snout long, its length considerably more than the post orbital distance ... *B. rostrata* Günther
- Snout not very long, its length equal to less than post orbital distance ... *B. dario* (Ham.)

Key to the subgenera of genus Lepidocephalus

- 1. Scales present on the vertex, dorsal and ventral fins situated in the posterior half of body ... *Lepidocephalus*
- Scales absent on the vertex, dorsal and ventral fins situated in the anterior half of body ... *Lepidocephalichthys*

Key to the species of subgenus Lepidocephalus

21 rows of scales between back and anal fin base, caudal fin concave, suborbital spine elongated and forked, mouth with thick lips *L. (Lepidocephalus) irrorata* Hora

Key to the species of subgenus Lepidocephalichthys

1. 22—25 rows of scales between back and anal fin base, bird shaped suborbital spine below the eye, lanceolate type of caudal fin ... *L. (Lepidocephalichthys) dibruensis* Sen
- 25—30 rows of scales between back and anal fin base, caudal fin convex or cut square with rounded corners 2
2. A large erectile bifurcated spine sunk below the eye *L. (Lepidocephalichthys) guntea* (Ham.)
- Small erectile suborbital spine extending to beneath the first third of orbit, about 40 rows of scales between back and anal fin base ... 3
3. Eyes small, situated just before the middle of the length of head *L. (Lepidocephalichthys) berdmorei* Blyth
- Eyes large, dorsally placed and close together ; a dark spot on the upper caudal base 4
4. Caudal tip bifurcated into two lobes, sides of body without spots, 16 rows of scales between back and anal fin base *L. (Lepidocephalichthys) goalparensis* Pillai & Yazdani
- Caudal fin truncate or rounded, 28 rows of scales between back and anal fin base, body (dorsal) with patches of brown and gray spots, 10—12 irregular dark blotches along the lateral sides of body ... *L. (Lepidocephalichthys) annandalei* Chaudhuri

Remarks : Nalbant (1963) bifurcated the genus *Lepidocephalus* Bleeker into two sub-genera viz, *L. (Lepidocephalichthys)* and *L. (Lepidocephalus)* while revising the genera of the sub-family Cobitinae on the basis of the chief distinction between the presence or absence of scales on the vertex and positions of dorsal and ventral fins.

Key to the species of genus Noemacheilus

1. Body irregularly blotched, caudal fin entire or slightly emarginate *N. botia* (Ham.)
- Body not irregularly blotched, caudal fin forked 2
2. About 13 blotches or bands along the side *N. corica* (Ham.)
- 7 to 17 numerous vertical brown bands, caudal fin may be forked, deeply forked, square or truncate 3
3. Small eyes, snout compressed, caudal fin slightly forked *N. multifasciatus* Day
- Moderately large eyes 4
4. Square caudal fin, 9 to 12 transverse brown bands, yellowish ground colour *N. scaturigina* (McCl.)
- Caudal fin not square shaped 5
5. Caudal fin truncate, 14 to 16 brown transverse bands, yellowish ground colour, strongly developed nasal barbels *N. rupicola inglishi* Hora.
- Caudal fin semi emarginate, forked or deeply forked 6
6. Caudal fin semi emarginate type, 7 to 11 broad black bands on the body, blunt head, flat under surface *N. kangjupkhulensis* Hora
- Caudal fin forked or deeply forked 7
7. 9 dark vertical bands wider than the inter spaces, caudal fin forked *N. beavani* Gunther
- 11 to 17 vertical bands 8
8. Caudal fin emarginate type, dorsal and caudal fin banded or spotted *N. r. rupicola* (McCl.)
- Dorsal and caudal fins not banded, or spotted, caudal fin forked 9
9. 11—15 dark bands on the body *N. zonatus* (McCl.)
- 12 black rings around the body, a black bar across the caudal fin 10
10. Six barbels not very long *N. sikmaiensis* Hora
- Six barbels fairly long, a red-black bar at the base of caudal fin 11
11. 13 brown bands, caudal fin deeply forked *N. prashadi* Hora
- 10—11 short transverse bands, caudal fin entire, a black ocellus near the margin of caudal fin base *N. zonalternans* (Blyth)

Key to the species of genus Mesonoemacheilus

1. Lateral line usually reaching to above anal, scales with reduced and eccentric focal zone, irregular white spots *M. herrei* Nalbant & Banarescue
- Short and interrupted lateral line, scales with moderately large focal zone, no whitish spots *M. reticulofasciatus* Singh & Banarescue

Genus Acanthopthalmus V Hasselt, 1823

1823. *Acanthopthalmus* Van Hasselt, *Alg. Konst. Letterbode*, 2, p. 132. (type, *Acanthopthalmus fasciatus* Van Hasselt).

85. Acanthopthalmus pangia (Hamilton)

1822. *Cobitis pangia* Hamilton, *Fish. Ganges*. pp. 355, 394 (type locality : N. E. parts of Bengal).
1937. *Acanthopthalmus pangia*, Shaw and Shebbeare, *J. Asiat. Soc. Beng.*, 3, p. 65, text fig. 61.

D. 2/6 ; P. 10 ; V 6—7 ; A. 2/5 ; C. 17.

Diagnostic characters : Length of head 7.5 to 8, depth of body 7.5 to 8 in total length, minute eyes, six barbels, one rostral and two maxillary pair, laterally compressed body elongated, an erectile bifid suborbital spine present, dorsal arises just in front of anal, distinct scales, caudal rounded.

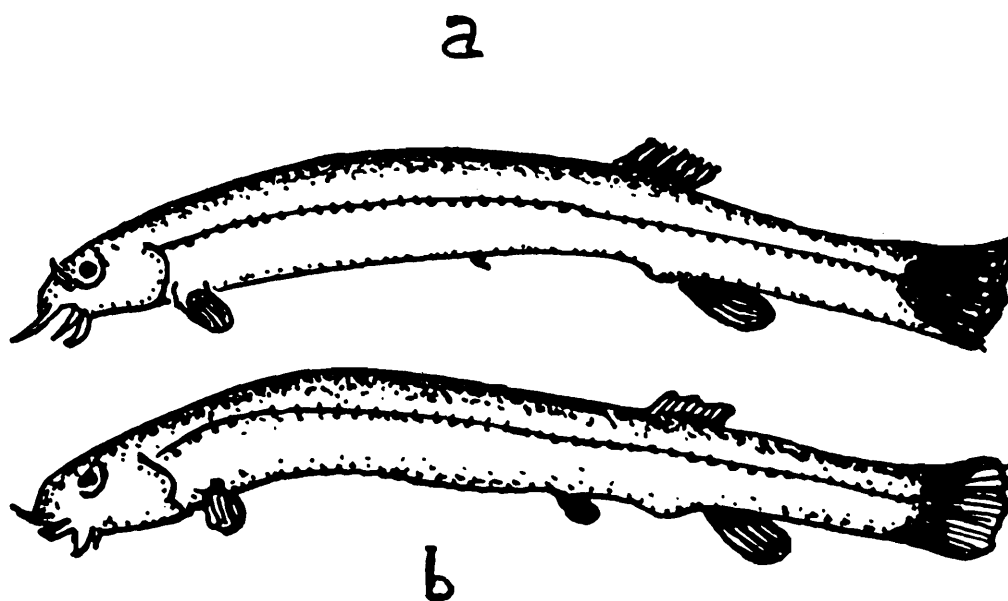


Fig. 49. *Acanthopthalmus pangia* (Ham.)—(a) without and (b) with small pelvic fins.

Colour : Brownish yellow without any markings.

Size : Largest recorded specimen 53 mm. in length.

Distribution : India : North Bengal (Darjeeling Dt.), Manipur ; Burma and Indonesia.

Remarks : A typical hill stream fish occasionally with or without pelvic fins, may be due to different ecological conditions or habitats. According to Hora (1930), who suggested that these two forms might be correlated with their habitats as he collected some individuals of this species from the debris at the bottom of still pools of the Sevoke river (near the junction with the Tista) without pelvic fins and others from the torrential water with pelvic fins. Day allotted these forms to two separate genera *Acanthopthalmus* (with pelvics) and *Apua* (without pelvics).

Genus *Aborichthys* Chaudhuri, 1913

1913. *Aborichthys* Chaudhuri, *Rec. Indian Mus.*, 8, p. 244 (type, *Aborichthys kempi* Chaudhuri).

86. *Aborichthys kempi* Chaudhuri

1913. *Aborichthys kempi* Chaudhuri, *Rec. Indian Mus.*, 8, p. 245 (type locality : Abor Hills, Assam).

1981. *Aborichthys kempi*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 146.

D. 2/7 ; P. 11 ; A. 25.

Diagnostic characters : Length of head 5 in total length, small eyes 7.5 in head length, inferior mouth surrounded by a circular suctorial lip, fringed front and dilated into two fleshy knobs in the middle of lower jaw, barbels 6, covering flaps of the gill openings continuous with the isthmus skin, incomplete lateral line, deciduous and extremely minute scales, entire caudal fin.

Colour : Round grey blotches and loops on the head, 18 to 21 dark brown transverse stripes gradually disappearing at the ventral surface.

Size : Largest recorded specimen 196 mm. in length.

Distribution : India : Garo and Abor-hills, Meghalaya ; U. Burma.

87. *Aborichthys elongatus* Hora

1921. *Aborichthys elongatus* Hora, *Rec. Indian Mus.* **22**, p. 735 (type-locality: Darjeeling Himalayas)
1981. *Aborichthys elongatus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Z. S. I., p. 146.

D. 2/6 ; P. 10 ; A. 2/4 ; C. 19.

Diagnostic characters : Length of head 6 to 6.7, depth 8 to 9.5 in total length, both dorsal and ventral profile straight and horizontal behind the pectoral fins and run almost parallel to each other to the base of the caudal fin, mouth placed on the undersurface and bordered with thick lips, lower lip interrupted in the middle, snout almost equal to the post orbital part of the head, dorsal equidistant from tip of snout and caudal fin base, body very much elongated, cylindrical, laterally compressed ; caudal fin free.

Colour : Dusky upper surface and sides, under surface either white or dull, pale olivaceous body marked by alternating broad and narrow bands of yellowish orange colour, these bands form almost complete rings on the dorsal and ventral sides with slight interruptions, a black ocellus on the caudal fin base.

Size : Largest recorded specimen 95 mm. in length (Hora, 1921).

Distribution : India : Darjeeling-Himalayas and Assam.

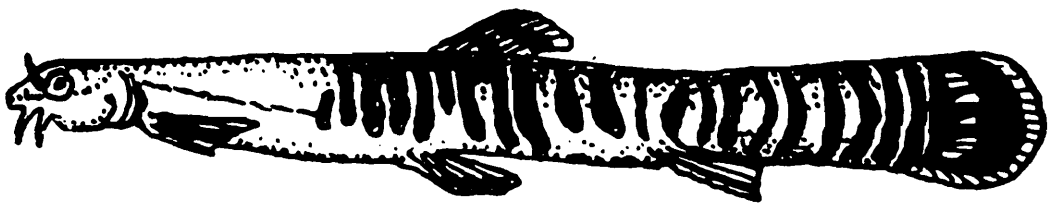


Fig. 50. *Aborichthys elongatus* Hora

Remarks : This is a high altitude species closely allied to *A. kempi* but can be distinguished easily from it by (1) snout almost equal to post-orbital part of head (shorter snout) (2) 6-branched dorsal fin rays (7 branched rays) (3) position of dorsal fin. This species is recorded here for the first time from the state of Assam (Dibrugarh).

88. *Aborichthys garoensis* Hora

1925. *Aborichthys garoensis* Hora, *Rec. Indian Mus*, 27, p. 233 (type-locality : Tura, Garo Hills, Assam).
1981. *Aborichthys garoensis*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 146.

D. 2/6 ; P. 11 ; V 8 ; A. 2/7 ; C. 18.

Diagnostic characters : Length of head 6.5 to 9.9 in standard length, greatly elongated form with body and tail compressed, eye diameter 6 to 7.2 in head length, broadly rounded snout anteriorly, gill-opening small, mouth on the undersurface bordered by thick, papillated lips which hang loosely and continuous at the angles of the mouth, lower lip interrupted in the middle, premaxillaries form a low beak-like projection in the middle of the upper jaw, six barbels, small dorsal fin nearer to the tip of snout than to caudal fin base, rays of both the paired fins are provided with thick cutaneous pads, body covered with small elliptical scales, incomplete lateral line, vent nearer to tip of snout.

Colour : Body marked with 30 to 35 black bands, pale olivaceous general colour, upper surface of head marked with short black lines.

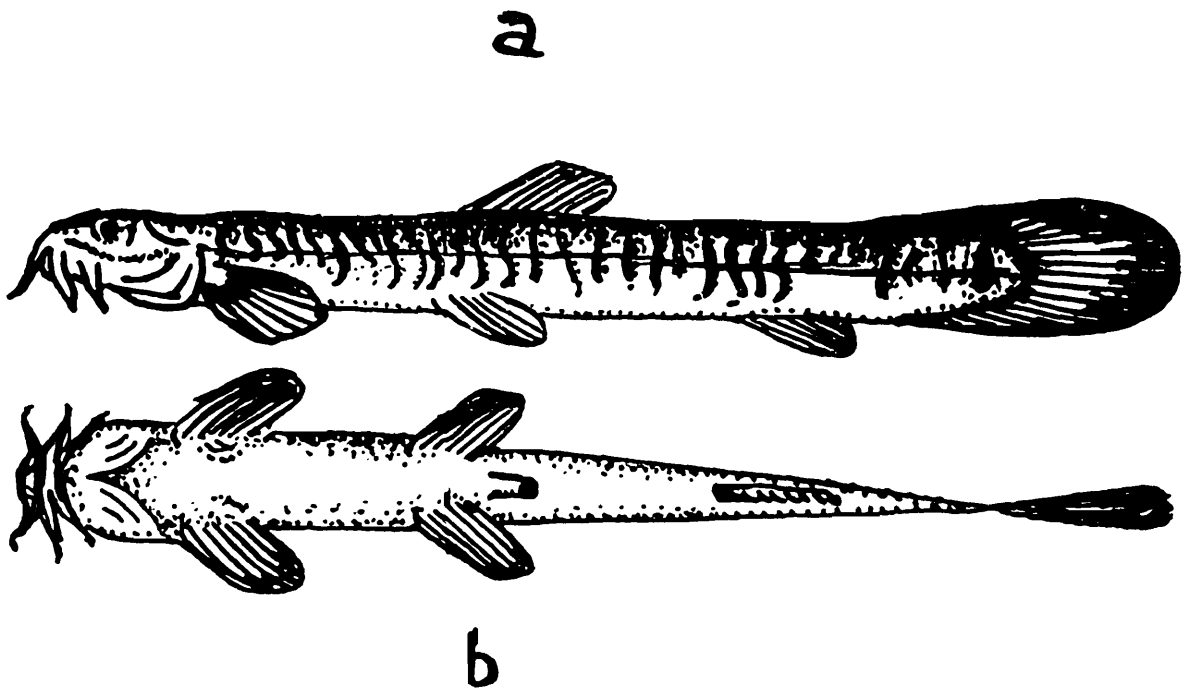


Fig. 51. *Aborichthys garoensis* Hora (a) lateral and (b) ventral sides.

Size : Largest recorded specimen 105.5 mm. in length.

Distribution : The Garo-hills, Meghalaya.

Remarks : There are only type specimens in the Z.S.I. collection collected by Dr. S. W. Kemp in 1917 from Tura, Garo hills, Meghalaya, at an altitude of '1200—1500 feet' *A. garoensis* is a very characteristic form and can be readily distinguished from the other two known species under this genus by the (1) forward position of vent, (2) position of dorsal fin.

Genus *Acanthopsis* Bleeker, 1858

1858-1859. *Acanthopsis* Bleeker, *Nat. Tijdschr. Ned. Indie*, XVI, p, 303.

89. *Acanthopsis choirorhynchus* (Bleeker)

1823. *Acanthopsis dialyzona* van. Hasselt, *Alg. Konst-en Letterbode*, II, p. 133 (No description).

1906. *Acanthopsis choirorhynchus*, Popta, *Notes Leyden Mus.*, XXVII, p. 204.

1916. *Acanthopsis choirorhynchus*, Weber & Beaufort, *The Fishes of Indo-Australia Archipelago*, III, p. 26.

D. 2/10—11 ; A. 2/5—7 ; P. 1/9 ; V 1/6.

Diagnostic characters : Length of head 5.7 and depth 10.5 in total length, eye diameter about 8 times in head length, origin of dorsal midway between snout and caudal fin, anal nearly midway between ventral and caudal, caudal emarginate, lower lobe slightly longer, much elongated snout, very minute scales, eyes covered by skins with an erectile bifid sub-orbital spine, 3 pairs of barbels.

Colour : Yellowish brown back with 12 to 14 dark cross bars, a dark lateral line with a series of 8 to 12 round spots, a black spot at the upper base of the caudal. According to Bleeker¹ "*The dark bands on head and back may be wanting in species from Borneo and Java (A. macrorhynchus* Blkr.)"

Size : Largest specimen recorded 180 mm. in length. Two specimens were collected from a Brahmaputra tributary at Dibrugarh, Assam, ranging from 58 to 171 mm. in length.

1. *Cobitis macrorhynchus* Bleeker, I.c. *Act. Soc. Sc. Indo-Neerl*, 11, 1857. Tiende Bijdrage, Borneo, p. 20.

Distribution : India : Assam, Manipur ; Sumatra, Java, Borneo, and Malay Peninsula.

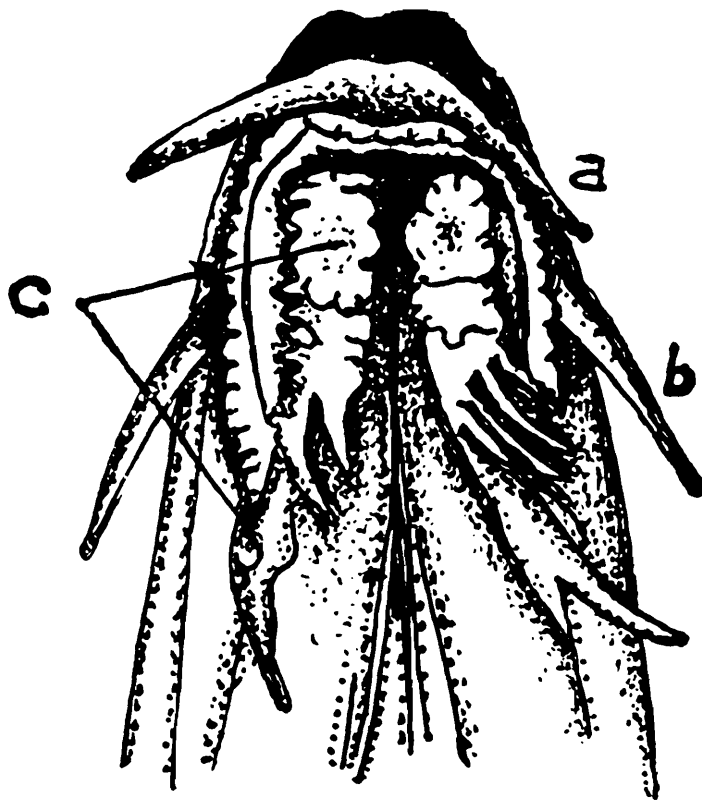
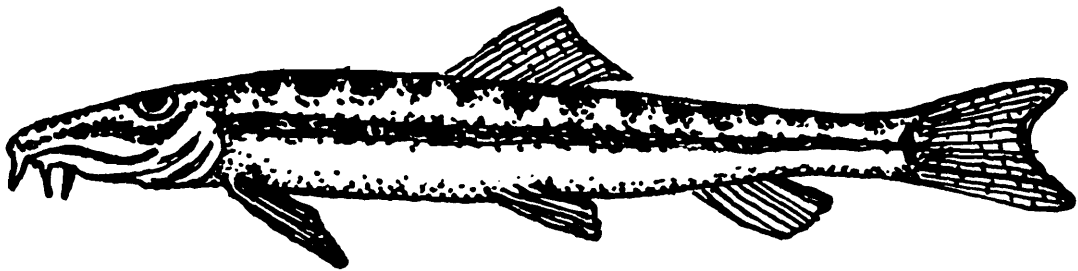


Fig. 52. *Acanthopsis choirorhynchus* (Blkr.) with ventral surface of head showing (a) rostral barbel (b) anterior barbel of upper jaw and (c) lower lip with fringes.

Remarks : Known earlier from Sumatra, Java, Borneo, Malaya Peninsula and Burma. It is recorded here for the first time from Assam (Dibrugarh). It has close similarities with *Somileptes gongota* (Ham.) but can be easily distinguished by the following features, viz., (1) elongated snout (2) eye diameter in head length (3) position of bifid suborbital spine (4) depth of body (5) colour patterns and (6) emarginate type of caudal fin.

Genus **Botia** Gray, 1831

1831. *Botia* Gray, Zool. Misc., p. 8 (type, *Botia almorhae* Gray)

90. *Botia berdmorei* (Blyth)

1860. *Syncrossus berdmorei* Blyth, *J. Asiat. Soc. Beng.*, 29, p. 166 (type locality : Tenasserim Provinces, Burma).
1921. *Botia berdmorei*, Hora, *Rec. Indian Mus.*, 22, p. 195
1974. *Botia berdmorei*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 50

D. 13—15 (2/11—13) ; P. 13 ; V 8 ; A. 7 (2/5) ; C. 17.

Diagnostic characters : Length of head 4.6 to 5 in total length, compressed body, eye diameter 7 in head length, suborbital spine reaches to below the middle of eye, six barbels, dorsal fin commences midway between the post orbit and base of caudal fin, minute scales.

Size : Largest specimen examined (Type, F. 2636/1) 140 mm. in length from Tenasserim, Burma, collected by Major Berdmore.

Colour : Colour varies greatly ; buff colored usually with 10 to 18 oblique transverse bands on the body and 5 longitudinal rows of black dots. Upper surface of head black, two black streaks run from the eye to the snout.

Distribution : India : Manipur valley ; Burma.

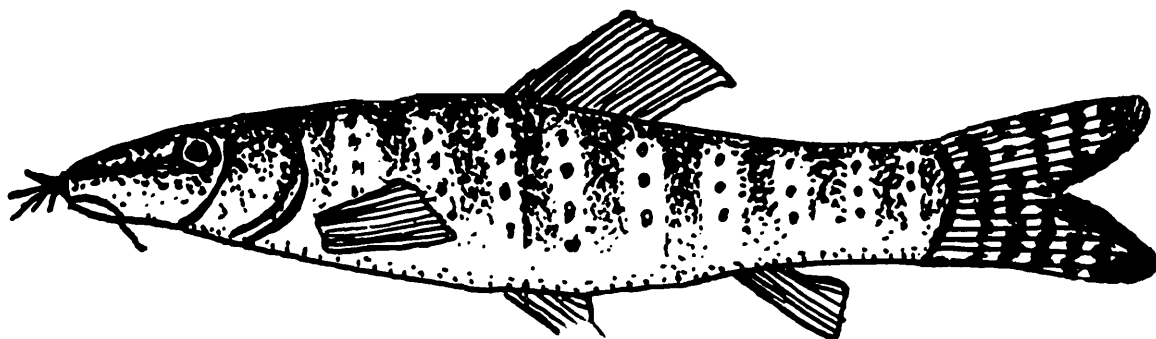


Fig. 53. *Botia berdmorei* (Blyth)

Remarks : Vinciguerra's (1889) confusion regarding the number of barbels as found in Day's (1878) description of the species has been verified to be 6 barbels (Hora, 1921).

91. *Botia dario* (Hamilton)

1822. *Cobitis dario* Hamilton, *Fish. Ganges*, pp. 354, 394, pl. 29. (type locality : rivers of Bengal).
1981. *Botia dario*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 117.

D. 3/9—11 ; P. 14 ; V 8 ; A. 2/5—6 ; C. 19.

Diagnostic characters : Length of head 4.5 to 5 in total length, eye diameter 5 in head length, laterally compressed body, the back is mouse like, sharply arched from dorsal fin towards the mouth with short downward pointed 4 pairs of barbels, a strong bifid backwardly curved spine below the eye, minute scales, caudal deeply forked.

Colour : Body with 7 or more dark brown and oblique bands separated by yellowish ones, more or less 3 broken dark bands on the caudal fin.

Size : Largest recorded specimen 89 mm. in length.

Distribution : India : Assam, West Bengal, Bihar, Punjab and Uttar Pradesh.

92. *Botia rostrata* Günther

1868. *Botia rostrata* Günther, *Cat. Brit. Mus.*, 7, p. 367 (type locality : Bengal).

1981. *Botia rostrata*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 176.

D. 3/9 ; P. 14 ; V 8 ; A. 2/5 ; C. 19.

Diagnostic characters : Length of head 5.5 in total length, eye diameter 7 in head length, body and head compressed, snout pointed, 4 pairs of barbels, dorsal arises between the anterior margin of the orbit and the base of the caudal, minute scales.

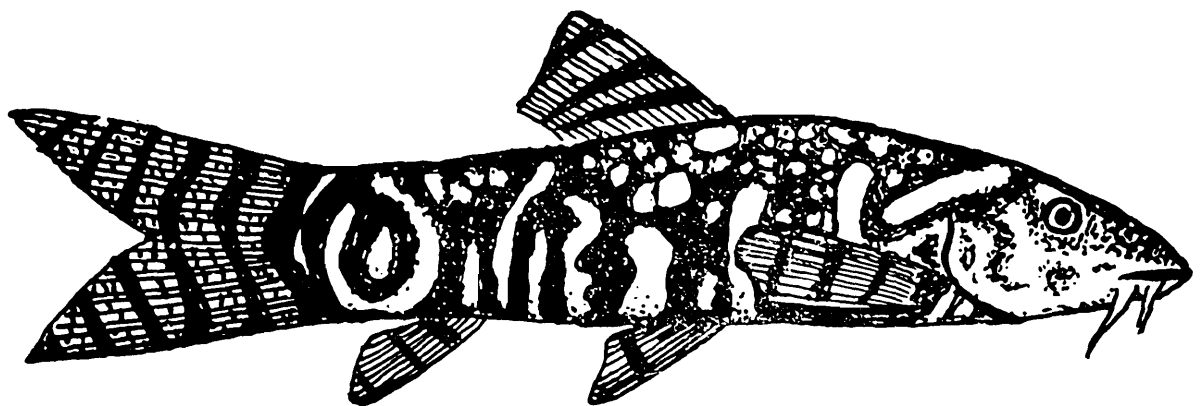


Fig. 54. *Botia rostrata* Günther

Colour : Irregular and partly confluent brown cross bands enclosing differently sized round blotches of yellowish blue colours, fins with cross bands.

Size : Largest recorded specimen 120 mm. in length ; largest specimen recorded by the author 105 mm. from Dibrugarh.

Distribution : India : Assam-Himalayas and Darjeeling Dt., of West Bengal.

Remarks : *B. geto* Day and *B. dayi* Hora are synonymous with *B. rostrata* (Menon, 1974).

Genus *Lepidocephalus* Bleeker, 1858

1858. *Lepidocephalus* Bleeker, *Nat. Tijdschr. Nederl. Indie*, 16, p. 303 (type, *Cobitis macrochir* Bleeker).

93. *Lepidocephalus* (*Lepidocephalichthys*) *berdmorei* Blyth

1860. *Acanthopsis berdmorei* Blyth, *Proc. Asiat. Soc. Beng.* p. 168 (type locality : Tenasserim)

1921. *Lepidocephalus berdmorei*, Hora, *Rec. Ind. Mus.*, 22, p. 196.

1981. *Lepidocephalus berdmorei*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 181.

D. 10 (2/8) ; P. 10 ; V. 8 ; A. 7– 8 (2/5–6) ; C. 17.

Diagnostic characters : Length of head 6 to 6.2 in total length, suborbital bifid spine, 3 pairs of barbels, small scales, 40 rows of scales between anal fin and the back.

Colour : Dorsal and caudal lineated with fine dots, a dark line along the body composed of black spots, yellowish brown colour all over the body, a black spot at the base, usually 10 to 18 oblique transverse bands on the body and about 5 longitudinal rows of black dots, two black streaks running from eye to the snout.

Size : Largest recorded specimen 90 mm. from Potsengbaum, Manipur (Hora, 1921).

Distribution : India : Manipur, West Bengal (Darjeeling Dt.).

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

1822. *Cobitis guntea* Hamilton, *Fish. Ganges*, pp. 353, 395 (type locality : ponds and freshwaters of Bengal).
 1981. *Lepidocephalus guntea*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 181.

Local name : Bottia

D. 2/6 ; P. 8 ; V 7—8 ; A. 2/5 ; C. 16.

Diagnostic characters : Length of head 6 in total length, upper and lower portions of body parallel but body depressed in front of dorsal fin, a large erectile bifid spine countersunk below the eye, head partly scaled, 3 pairs of barbels.

Colour : Dark brown on the dorsal side and the rest being yellowish white with mixed blackish specks to form a pattern of darker and lighter longitudinal bands, a dark wide line composed of black dots along the middle of the body stretching from gill to caudal fin base.

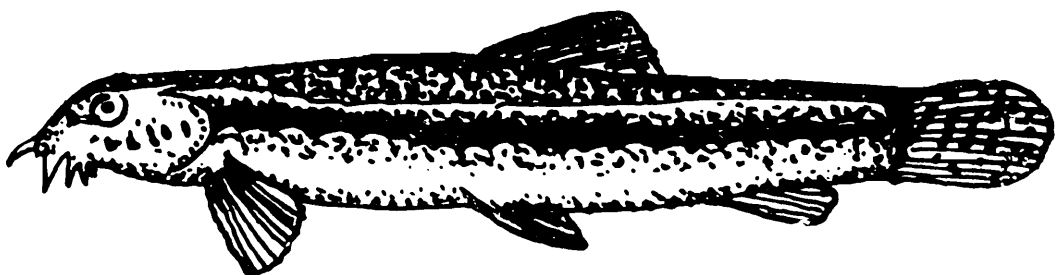


Fig. 55. *Lepidocephalus (L) guntea* (Ham.)

Size : Largest specimen examined 96 mm. in length from Jorhat.

Distribution : India : All over India except Karnataka, Kerala and South of Krishna ; Nepal, Bangladesh.

95. *Lepidocephalus (Lepidocephalus) irrorata* Hora

1921. *Lepidocephalus irrorata* Hora, *Rec. Indian Mus.*, 22, 196, pl. 9 figs. 5, 5a, 5b (type locality : Manipur).
 1981. *Lepidocephalus irrorata*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 181.

Local Name : Bottia

D. 2/7 ; A. 3/5 ; V 1/5 ; P. 7—8 ; C. 15—16.

Diagnostic characters : Length of head 6.4 to 7.6 in total length, bifid suborbital spine, 4 pairs of barbels, semicircular mouth with thick lips, vent is placed on raised papilla and provided with lips, minute scales, 34 rows of scales in oblique line between the bases of dorsal and ventral fins.

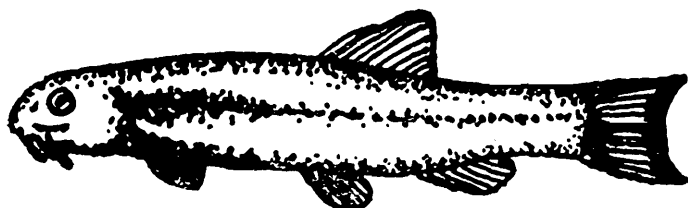


Fig. 56. *Lepidocephalus (L) irrorata* Hora

Colour : Short colour bars across the back and a row of fine spots along the sides, pale olivaceous, densely speckled with black, a dark streak from eye to snout, fins whitish with numerous dark transverse bars.

Size : Largest recorded specimen 75 mm. in length.

Distribution : India : Manipur.

96. *Lepidocephalus (Lepidocephalichthys) dibruensis* Sen

1979. *Lepidocephalus dibruensis* Sen, *Bull. Zool. Surv. India*, 2 (1) : 35-38 (type locality - Dibru River, Guijan, Dibrugarh, Upper Assam).

Local name : Bottia

D. 2/6 ; P. 8 ; V. 7 ; A. 7 ; C. 17--18.

Diagnostic characters : Length of head 7.5 in total length, eye diameter 4.5 to 4.7 in head length, more elongated body, a median longitudinal groove from head to the base of caudal fin, six barbels, sub and post orbital regions and upper part of the opercle scaled, typically bird shaped sub-orbital bifid spine with two convex bony elevations or curves on both the right and left sides of the spine, constricted snout, convex dorsal profile, ventral profile more or less horizontal, dorsal opposite to the pelvic fin, lanceolate type of caudal fin, pectoral, anal and pelvic fins shortened, 22 to 25 rows of scales from back to anal fin base.

Colour : Yellowish white with minute black dots on the dorsal side, a conspicuous light dark median band composed of fused black dots running from head to caudal fin base.

Size : Largest specimen examined 100 mm. in length from Dibru river, Guijan, 60 km. from Dibrugarh which is the type (No. FF. 1204).

Distribution : Dibru river, Guijan, 60 km. from Dibrugarh, Assam.

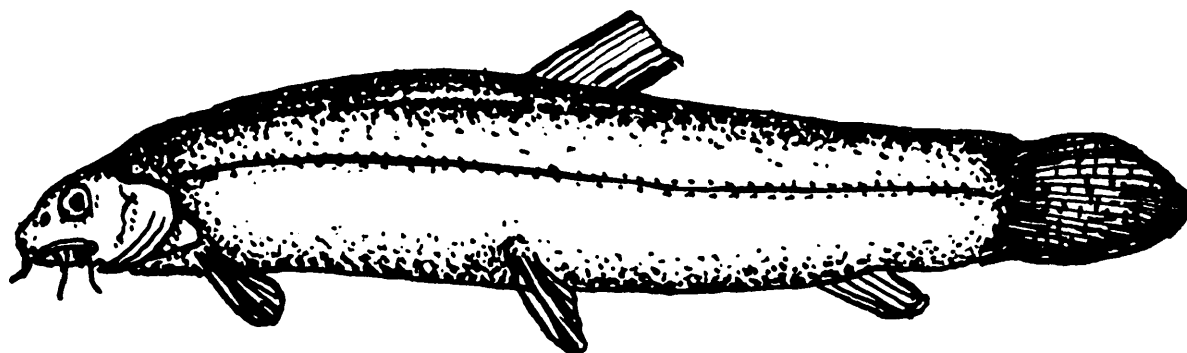


Fig. 51. *Lepidocephalus (L) dibruensis* Sen

Remarks : Dibru river is a shallow, slow moving tributary of the Brahmaputra from where the types were collected by the author ranging from 94 to 100 mm. in length on 4.12.75.

97. *Lepidocephalus (Lepidocephalichthys) annandalei* Chaudhuri

1912. *Lepidocephalus annandalei* Chaudhuri, *Rec. Indian Mus.*, 7, p. 442, pl. 40, figs. 3, 3a, 3b, (type locality-Mahananda and Tista rivers at Siliguri and Jalpaiguri, West Bengal).
 1937. *Lepidocephalus annandalei*, Shaw and Shebbeare, *J. Asiat. Soc. Beng.* 3, pp. 67-68.

Local name : Bottia

D. 1/7 ; P. 7—8 ; V 7 ; A. 1/6 ; C. 25—26.

Diagnostic characters : Length of head 6 and depth 8 in total length, elongated body with preorbital bifid spine, very minute barbels, furcate type of caudal fin.

Colour : Light brown dorsally, sides and below silvery white, minute dark brown specks form a series of about 8 short transverse bars on the back, larger brown dots on the sides of head and a distinct triangular black spot on the caudal fin base.

Size : Largest specimen recorded 38 mm. in length from Matigara, Northern Bengal (Shaw and Shebbeare, 1937).

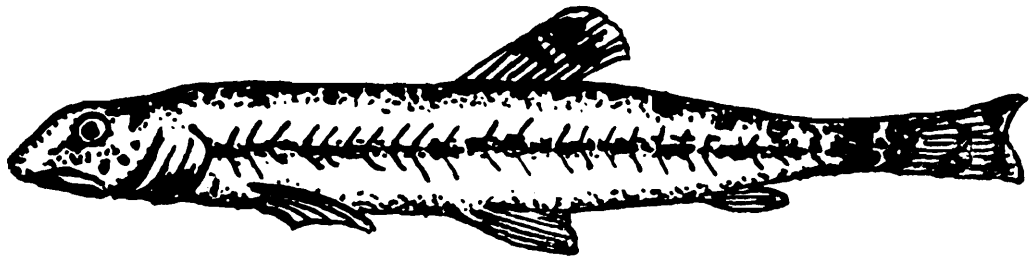


Fig. 58. *Lepidocephalus (L) annandalei* Chaudhuri

Distribution : India : Eastern-Himalayas, Assam.

Remarks : Found to live in small hill streams.

98. *Lepidocephalus (Lepidocephalichthys) goalparensis* Pillai & Yazdani 1974. *Lepidocephalus goalparensis* Pillai & Yazdani, *Zool. Soc. India*, 26 (1 & 2), p. 15. (type locality : Goalpara, Assam).

Local name : Bottia

D. 3/6 ; P. 7 ; V 7 ; A. 2/6 ; C. 18.

Diagnostic characters : Length of head 6 in total length, eye diameter about 4 in head length, elongated and compressed body tapering antero-posteriorly, dorsal profile more arched than the ventral, large eyes closely placed, posterior prong of the suborbital bifid spine slightly longer, 4 pairs of well developed barbels, semi emarginate type of caudal fin, minute scales.

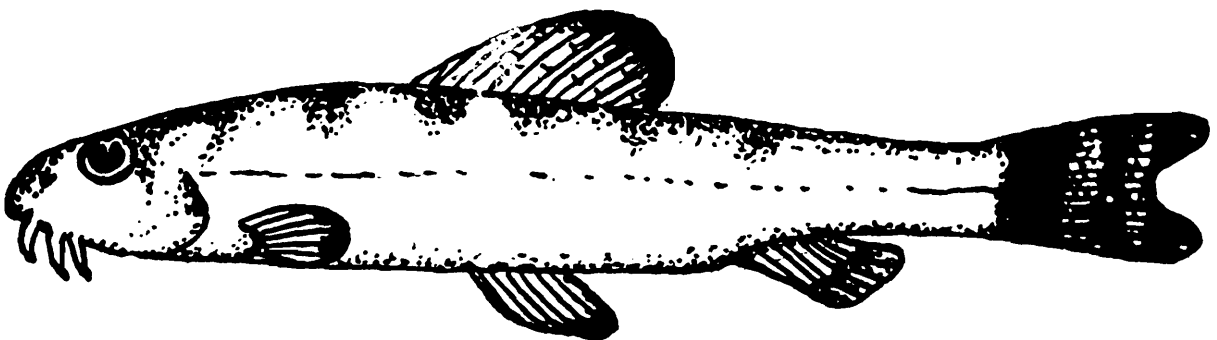


Fig. 59. *Lepidocephalus (L) goalparensis* Pillai & Yazdani

Colour : Dark brown spots scattered all over the body which concentrate together on the dorsal side to form 9 irregular faint bars, a

dark brown streak running from tip of snout to upper part of operculum, 3 bands on the caudal.

Size : Largest specimen recorded 38 mm. in length.

Distribution : India : Goalpara, Assam.

Remarks : Live in sandy and gravelly beds, their enlarged shifted eyes show typical adaptation, may be due to their partially buried type of living, has been described new recently by Pillai and Yazdani (1974).

Genus *Noemacheilus* Van Hasselt, 1823

1823. *Noemacheilus* Van Hasselt, *Alg. Konst. Letterbode*, 2 (35), p. 133 (type, *Noemacheilus fasciatus* Van Hasselt)

99. *Noemacheilus corica* (Hamilton)

1822. *Cobitis corica* Hamilton, *Fish. Ganges*, pp. 359, 395 (type locality : R. Koshi)
1974. *Noemacheilus corica*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Sp. Pub. (1), *J. Indl. Fish. Soc. India*, p. 54.

Local name : Bali-bottia/Balli-botiah

D. 10 (2/8) ; P. 13 ; V 8 ; A. 7 (2/5) ; C. 17.

Diagnostic characters : Length of head 5.5 in total length, 3rd and 4th pectoral rays produced reaching the base of the pelvic fin, eyes in the middle of the length of head, rostral barbels longer than the orbit, dorsal commences anterior to the pelvics and nearer to the snout, scales visible in the posterior half of the body, caudal forked.

Colour : Bluish with about 13 black blotches along the middle of the sides with further smaller ones above and descending between these bigger blotches, usually a silvery band along the middle of the body.

Size : Largest specimen recorded 98 mm. in length.

Distribution : India : only found in Assam, Eastern-Himalayas.

Remarks : Generally found to live in the small hill streams, foot hills, ditches etc.

100. *Noemacheilus beavani* (Günther)

1868. *Noemacheilus beavani* Günther, *Cat. Fish. Brit. Mus.*, 7, p. 350 (type locality : R. Koshi).
 1981. *Noemacheilus beavani*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 153.

Local name : Bali-bottia/Balli-potiah

D. 10 (2/8) ; P. 11 ; V. 7 ; A. 7 (2/5) ; C. 19.

Diagnostic characters : Length of head 5 in total length, small eyes just before the middle of the length of head, preorbital not enlarged, 3 pairs of barbels, lobed caudal, dorsal with an oblique upper edge slightly nearer to the snout, scales minute.

Colour : Body with 9 dark cross bands, broader than the lighter interspaces ; a black streak across the base of the caudal.

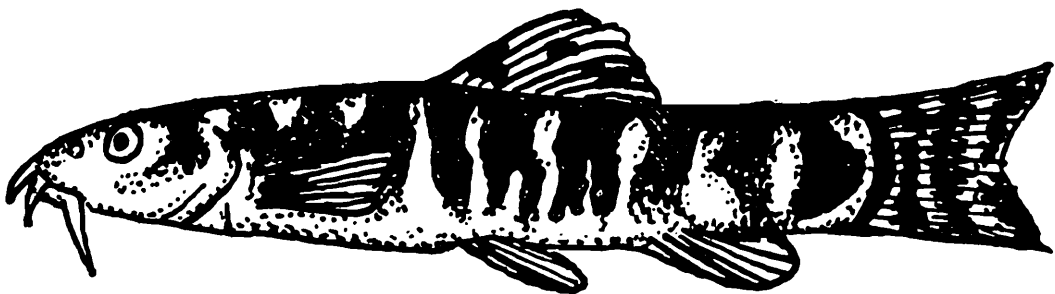


Fig. 60. *Noemacheilus beavani* Günther

Size : Largest specimen 45 mm. in length collected from a hilly nullaha at Tejpur.

Distribution : India : Assam, Eastern Himalayas, U.P.

Remarks : Dorsal and caudal rays are beset with black dots.

101 *Noemacheilus kangjupkhulensis* Hora

1921. *Noemacheilus kangjupkhulensis* Hora, *Rec. Indian Mus.*, 22, p. 202, pl. 10, figs. 4, 4a (type locality : Manipur valley).
 1981. *Noemacheilus kangjupkhulensis*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 156.

Local name : Bali-bottia/Balli-potiah

Laingoi-phumba/Sarin (Manipuri)

D. 2/6—7 ; A. 2/5 ; V 6—7 ; P. 9 ; C. 18.

Diagnostic characters : Length of head 5.2 to 5.6 in total length, eye diameter 5.5 in head length, head bluntly pointed and slightly depressed, open pores scattered all over the head and a row of these pores below the eye continued along the lateral line, mouth ventrally situated, surrounded by thick lips, upper lip slightly notched, and the lower one widely interrupted in the middle, lateral line incomplete, vent is situated on a raised papilla with lips.

Colour : 7—11 broad black bands on the body separated by an equal number of white ones which are only half as broad, a black band at the caudal fin base and a black spot at the base of first 3 rays of the dorsal.

Size : Largest specimen recorded 43 mm. in length from Manipur valley (Hora, 1921).

Distribution : India : Assam and Manipur valley

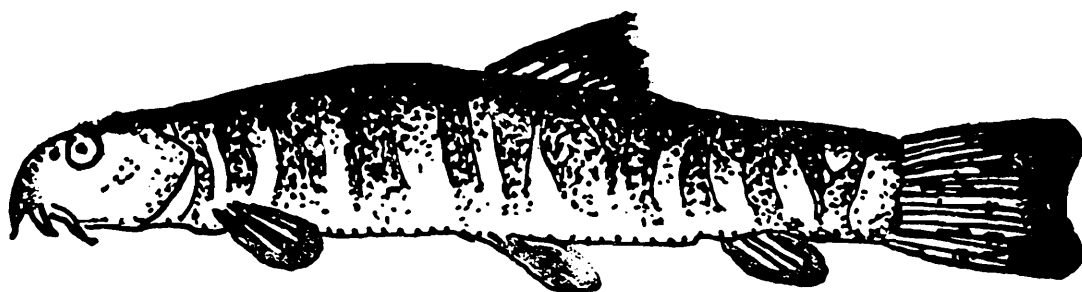


Fig. 61. *Noemacheilus kangjupkhulensis* Hora

Remarks : A cushion like muscular pad behind the lower tip which is slightly fimbriated.

102 *Noemacheilus manipurensis* Chaudhuri

1912. *Noemacheilus manipurensis* Chaudhuri, *Rec. Indian Mus.*, 7, p. 449, pl. 40 (type locality : Manipur).
 1935. *Noemacheilus manipurensis*, Hora and Mukerji, *Rec. Indian Mus.*, 37, p. 398.

Local name : Bali-bottia/Nga-sarva.

D. 2/8 ; P. 11 ; V 9 ; A. 2/5 ; C. 18.

Diagnostic characters : Length of head 5.6 in total length, diameter of eye 6 in head length, incomplete lateral line, 3 pairs of barbels, anterior side of dorsal more convex, caudal truncate or slightly

lobed, ventral surface moderately flattened, dorsal origin opposite to pelvic origin (Annandale and Hora, 1921).

Colour : When banded, vertical bands throughout the body, sometimes without bands or mottled or plain forms only.

Size : Largest specimen recorded 80 mm. from Manipur (Hora and Mukerji, 1935).

Distribution : India : Assam, Manipur and Naga-Hills.

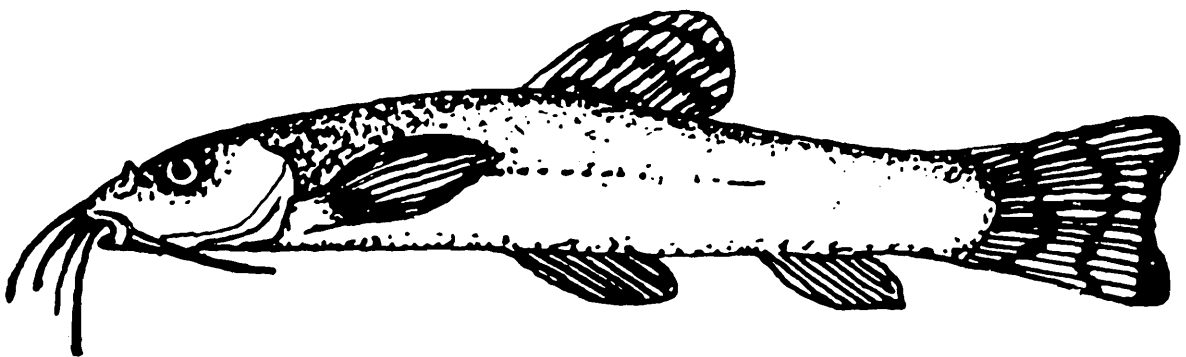


Fig. 62 *Noemacheilus manipurensis* Chaudhuri

Remarks : It is interesting to note that specimens when collected from sluggish streams of Manipur valley were found to be of the mottled or plain type, whereas specimens collected from torrential streams of Naga hills were found to be of the banded type (Hora & Mukerji, 1935).

103. *Noemacheilus zonalternans* (Blyth)

1860. *Cobitis zonalternans* Blyth, *J. Asiat. Soc. Beng*, 29, p. 172.
 1974. *Noemacheilus zonalternans*, Menon, *A check list of the Himalayan and Indo-Gangetic plain fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 58.
 1981., *Noemacheilus zonalternans*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, *Z. S. I.*, pp. 159, 158.

D. 3/9—10 ; A. 2/5 ; P. 11 ; V 7 ; C. 19.

Diagnostic characters : Length of head 4.8 to 5.2 in total length, eye diameter 4 to 4.3 in head length, six barbels, dorsal fin arises in advance of the ventrals and almost as high as the depth of body below it, its origin being nearer to the snout than to the base of caudal fin,

small mouth and semicircular upper jaw with a prominent knob in the middle, lower lip interrupted in the middle, incomplete line.

Colour : A dark lateral streak, crossed by 12 short transverse bands, which alternate with about the same number of dorsal dark cross bands, dorsal and caudal with 3 or 4 rows of black spots respectively, a black ocellus near the superior margin of the base of caudal fin.

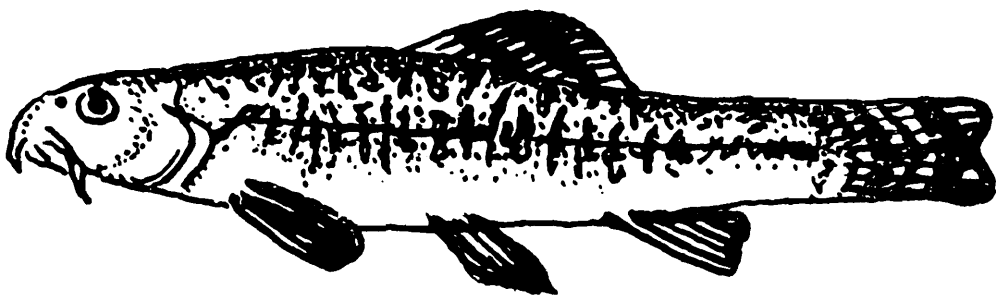


Fig. 63. *Noemacheilus zonalternans* (Blyth)

Size : Largest specimen recorded 40.0 mm. in length (Hora, 1921).

Distribution : India : Manipur : Burma.

Remarks : Sexual dimorphism is exhibited by the males in having a suborbital pad.

104. *Noemacheilus prashadi* Hora

1921. *Noemacheilus prashadi* Hora, *Rec. Indian Mus.*, 22, p. 203, pl. 10, figs. 2, 2ā, (type locality : Thonagpal tank, Thoubal and Sikmai Streams, Manipur).

1974. *Noemacheilus prashadi*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub (1), *J. Indl. Fish. Soc. India*, p. 56

Local name : Nga-Tup

D. 4/8 ; V 8 ; A. 6 ; P. 11 ; C. 19.

Diagnostic characters : Length of head 5 to 5.5 in total length, eye diameter 5 to 6.3 in head length, lateral line well marked anteriorly but gradually fades away downward and ultimately disappears behind the anal fin, dorsal fin origin in advance of the pelvic fin and nearer to the snout, caudal fin deeply forked, open pores present all over the head and continued along the lateral line, six fairly long barbels.

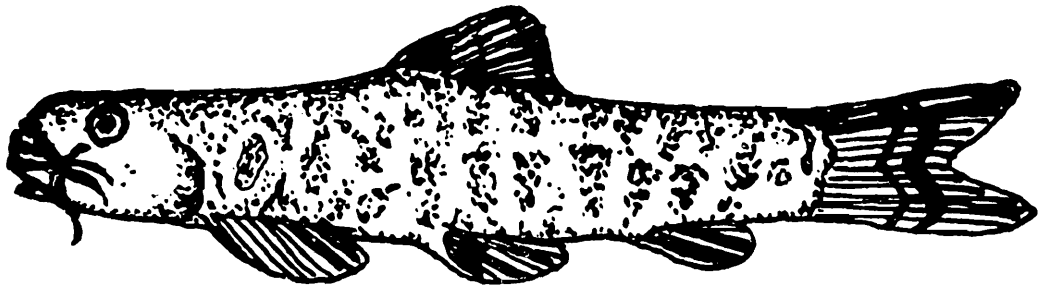


Fig. 64. *Noemacheilus prashadi* Hora

Colour : Dorsal portion above the lateral line reticulated by numerous black vertical bands, wider surfaces of head and body pale olivaceous, a red black bar at the base of caudal fin and two dotted bands across it, dorsal fin also marked by two bands.

Size : Largest specimen recorded 102 mm. in length.

Distribution : India : Restricted to Manipur valley only.

105. *Noemacheilus sikmaiensis* Hora

1921. *Noemacheilus sikmaiensis* Hora, *Rec. Indian Mus.*, 22, p. 201. (type locality : Sikmai stream near Palel on the Burma Road, Manipur).
 1975. *Noemacheilus sikmaiensis*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 58.

Local name : Bali Bottia/Nga-tup

D. 2/8 ; A. 2/5 ; P. 11—12 ; V 8 ; C. 17—18.

Diagnostic characters : Length of head 5.5 in total length, diameter of eye 4.5 in head length, minute eyes, head slightly depressed and the ventral profile almost horizontal, dorsal portion rises gradually from the end of snout to the base of dorsal fin, definite rows of pores all over the head and those just below the eye meet posteriorly and continued along the lateral line, mouth inferior and semicircular surrounded by thick lips, six barbels, well developed ventrals provided with scally appendages at their bases, deeply forked caudal.

Colour : 12 to 13 black rings around the body separated by an equal number of slightly narrow white ones, a black bar across the base of the caudal fin, a black spot at the base of the first few dorsal rays, caudal with black markings along the length in the middle.

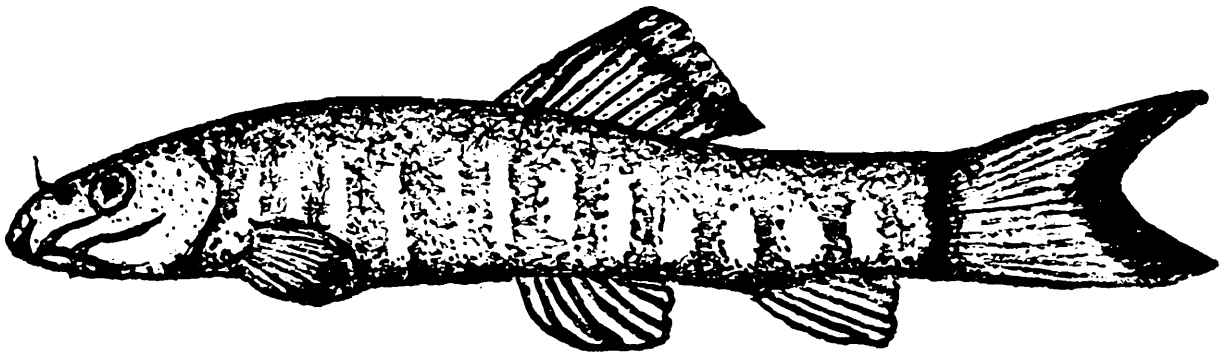


Fig. 65. *Noemacheilus sikmaiensis* Hora

Size : Largest specimen examined 41.3 mm. in length from Assam.

Distribution : India : Manipur, Assam.

106. *Noemacheilus multifasciatus* Day

1878. *Noemacheilus multifasciatus* Day, *Fish. India*, p. 617, pl. 153, fig. 7. (type locality : Assam and Darjeeling).
 1981. *Noemacheilus multifasciatus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, *Z. S. I.*, p. 155.

D. 2/8 ; P. 11 ; V 9 ; A. 2/5 ; C. 18.

Diagnostic characters : Length of head 5.5 in total length, eyes situated before the middle of the length of head. 2.5 to 2.6 diameter from end of snout and 1.7 apart, compressed snout with narrow mouth, 3 pairs of barbels, origin of dorsal midway between snout and caudal fin base, complete lateral line.

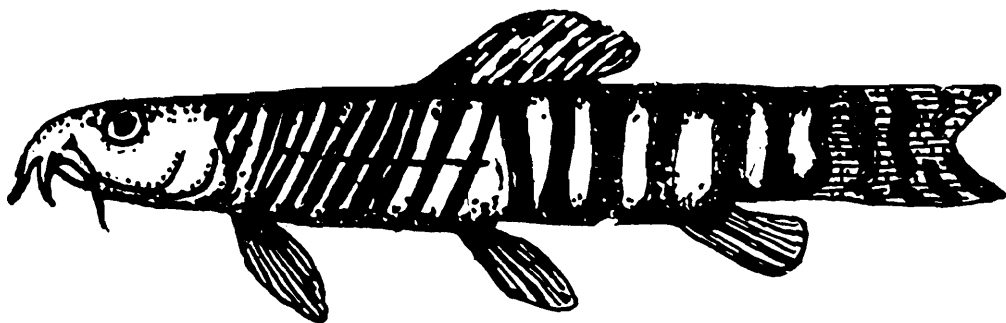


Fig. 66. *Noemacheilus multifasciatus* Day

Colour : Vertical bands as wide as the ground colour, pass from the back to the lower surface of the abdomen, numerous bands between

the head and dorsal fin, a dark band at the base of caudal, dark marks on the head radiating from the eye, fins yellowish, dorsal and caudal with 4 spotted bands.

Size : Largest specimen reported 83 mm. in length from Assam.

Distribution : India : Assam and Darjeeling.

Remarks : Though according to Day 'lateral line is complete', but Hora (1935) studied Day's specimens in British Museum and found 'incomplete'

107. *Noemacheilus rupicola rupicola* (McClelland)

1935. *Noemacheilus rupicola* Hora, *Rec. Indian Mus.*, **37**, p. 400.

1974. *Noemacheilus rupicola rupicola* Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 56.

Local name : Bali-Botia/Balli-Potiah

D. 9—11 (2—3/7—8) ; P. 10 ; V.8 ; A. 7 (2/5) ; C. 18.

Diagnostic characters : Length of head 5.5 and depth 7 to 8 in total length, minute eyes in the middle of head, transverse mouth, snout obtuse in the adult, free portion of tail not as deep as long, caudal emarginate type, scales absent or minute in the posterior half of the body, lateral line complete.

Colour : Yellowish with 12 to 17 vertical brown bars decreasing in width below the lateral line, a wide dark band across the caudal fin base, rows of black spots on the doarsal and caudal fins.

Size : Largest specimen recorded 102 mm. in length.

Distribution : India : Naga-Hills, Assam ; Darjeeling Dist. (West Bengal), all along the Himalayan foot hills.

Remarks : Absence of well marked nasal appendages Hora¹ (1935) remarked "In their build the specimens of *Noemacheilus rupicola* from the Naga-Hills agree with the form *N. rupicola* var. *inglisi* recently described by one of us from Eastern Himalayas, but differ from it in the absence of well marked nasal appendages. It is an Assamese race of the Himalayan species"

1. *Rec. Indian Mus.* **37**, p. 58, 1935.

108. *Noemacheilus rupicola inglisi* Hora

1935. *Noemacheilus rupicola inglisi* Hora, *Rec. Indian Mus.*, 37, p. 58 (type locality : Eastern Himalayan rivers below Darjeeling and Sikkim).
1974. *Noemacheilus rupicola inglisi* Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 57.

Local name : Balli-Potiah

D. 2/7 ; A. 1/5 ; P. 12 ; V 8 ; C. 16.

Diagnostic characters : Length of head 4.5 to 5.1 and depth 5.2 to 7.1 in standard length, a stout, elongated fish with dorsal profile slightly arched ; horizontally placed paired fins, head short and broad, slightly longer than broad, dorso-laterally placed eyes, semicircular horizontal mouth with fleshy lips, lower lip interrupted in the middle, barbels longer than eye diameter, small indistinct scales, caudal truncate or slightly bilobed.

Colour : Body marked with 14 to 16 vertical bands, a black spot usually present at the base of the anterior dorsal rays, short dark stripes on the outer rays of dorsal and caudal fins.

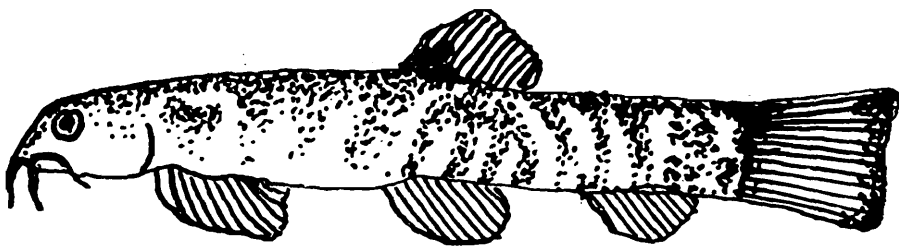


Fig. 67. *Noemacheilus rupicola inglisi* Hora

Size : Largest recorded specimen 83.5 mm. in total length.

Distribution : Eastern-Himalayas, rivers below the Darjeeling (West Bengal) and Sikkim, Assam-Himalayas.

Remarks : It has distinct nasal barbels, smaller fins and outer rays of paired fins provided with pads.

109. *Noemacheilus zonatus* (McClelland)

1839. *Schistura zonatus* McClelland, *Asiat. Res.*, 19, pp. 308, 441, pl. 53, fig. 1 (type locality : Upper Assam).
1974. *Noemacheilus zonatus*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 59.

D. 9 (2/7) ; P. 11 ; V 8 ; A. 7—8 (2/5—6) ; C. 17.

Diagnostic characters : Length of head 5 in total length, diameter of eye $1/5$ of head length, pointed snout with compressed sides, barbels as long as eye, small but distinct scales, 12 rows of scales above lateral line and 13 rows from it to the base of ventral, forked caudal fin.

Colour : Yellowish with a greenish tinge, about 15 dark brown bands or zones pass across the back and descend on either side below the lateral line, a few near the head and some in the posterior third of the body interrupted, black marks on ventrals, pectorals and caudals spotted, two faint dark bands on the dorsal.

Size : Largest recorded specimen 60 mm. in length.

Distribution : India : Yamuna, Ganga river system in Bihar, West Bengal, Assam, Orissa ; Bangladesh

110. *Noemacheilus scaturigina* (McClelland)

1839. *Cobitis* (*Schistura*) *scaturigina* McClelland, *Asiat. Res.*, 19, pp. 308, 443, pl. 53, fig. 6 (type locality : Assam).
1981. *Noemacheilus scaturigina*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 157.

D. 2/7 ; A. 2/5 ; P. 10 ; V 8 ; C. 19.

Diagnostic characters : Length of head 4.2 to 4.5 in total length, diameter of eye 4 to 5.4 in head length, small elongated body with both profiles straight and horizontal, long and narrow head, pointed anteriorly ; small mouth, semicircular, bordered by fleshy lips ; sharp lower jaw, shovel-like ; inconspicuous scales, complete lateral line, dorsal begins in advance of the ventrals, caudal square or slightly lobed.

Colour : Head and body grayish above and pale olivaceous below, 9 to 12 saddle shaped, narrow dark bands descending down on the sides from dorsal surface, a black basal band on the caudal fin base, V-shaped stripes on the caudal fin.

Size : 54.6 mm. being the largest length recorded from Assam.

Distribution : India : Assam-Himalayas, Darjeeling. West Bengal U. P. ; Nepal.

Remarks : In the male specimen there is a fleshy loose pad below the eye, the upper surface of the anterior pectoral rays tuberculated, the lower lip is interrupted and reflected towards the sides in the middle.

Special note : *N. spilopterus*, *N. guttatus*, *N. monoceros* and *N. pavonaceous* have not been included in this fauna though recorded by Day (1878) and Jayaram (1981) from Assam to avoid probable synonymisations with the nearest boardly established species studied and also thinking of the revisionary works of the *Cobitid* group recently undertaken by Dr. A. K. G. Menon. *N. pavonaceous* is already synonymised with *N. botia* (Menon, 1974).

Genus Mesonoemacheilus Bănărescu and Nalbant, 1981

1981. *Mesonoemacheilus* Bănărescu and Nalbant, *Trav. Mus. Hist. nat. ... Grigore Antipa*", vol. XXIII, pp. 202-203.

111. Mesonoemacheilus herrei Nalbant and Bănărescu

1981. *Mesonoemacheilus herrei* Nalbant and Bănărescu, *Trav. Mns. Hist. nat. ... Grigore Antipa*", vol. XXIII, pp. 203-206.

D. 3/8 ; A. 2/5 ; P. 1/9—10 ; V 1/7.

Diagnostic characters : Lips, above on lower one, rather deeply furrowed ; processus dentiformis strong, but no corresponding incision on lower jaw ; dorsal profile behind nape slightly arched or almost straight, origin of dorsal fin slightly nearer to snout than caudal base, but in some cases equally distant ; caudal forked, slightly convex dorsal fin, the second rostral and the maxillary barbels usually equally long, in some specimens the maxillary one is longer, lateral line usually reaching to above anal.

Size : 57.5 mm. in standard length (Holotype : SU 41307).

Colour : The dark brown net that characterises the species of *Mesonoemacheilus* well developed, covering most of the body sides ; the whitish areas reduced to irregular spots, many of them undulated, V—, U— or Y— shaped ; small well marked blackish spot in the middle of

caudal base, there are 3—4 rows of spots on the caudal, 3—4 on the dorsal and a spot on the dorsal origin.

Distribution : India : Anamallai Hills, Valparai, Puthutotam Estate.

Remarks : This species is a South Indian form collected and determined as '*N. guentheri*' by A. W. Herre in 1941 ; especially included in this fauna for better comparative studies with the other N. E. forms.

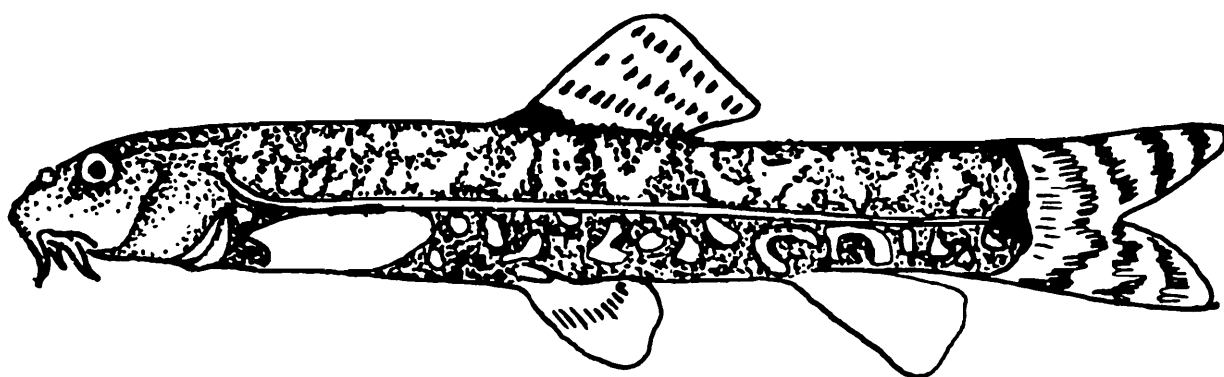


Fig. 68. *Mesonoemacheilus herri* Nalbant and Bănărescu

112. *Mesonoemacheilus reticulofasciatus* Sing and Bănărescu

1981. *Mesonoemacheilus reticulofasciatus* Singh & Bănărescu, *Trav. Mus. nat. ... Grigore Antipa*, vol. XXIII, pp. 206-208. ”

D. 3/7—8 ; A. 2/5 ; P. 1—9 ; V 1/6—7.

Diagnostic characters : Body almost cylindrical anteriorly, compressed posteriorly ; dorsal profile rather arched, lips moderately furrowed, processus dentiformis feeble, barbels distinct at their bases, lateral line reaches to below the anterior part of the dorsal fin, scales with a rather small and eccentric focal zone, forked caudal, its lobes being rounded.

Size : 40.2 mm. in standard length (Holotype : V/ERS 3062).

Colour : Body light yellowish, with an irregular net of crossbars connected by a longitudinal stripe, many of them branched (V- or Y-shaped) ; a blackish spot on the dorsal origin and another on the middle of the caudal base, a dark stripe extends from eye to the tip of snout, a row of spots on the dorsal fin, two or three on the caudal.

Distribution : India : Barapani, 20 km. from Shillong, Meghalaya, Brahmaputra basin.

Remarks : "This new species differs sharply from the other four within the genus *Mesonoemacheilus* in having the colour pattern less typical for the genus and the rostral barbels not confluent at their bases. These differences may justify in the future separation of *M. reticulofasciatus* in a distinct subgenus" (Singh and Nalbant, 1981).

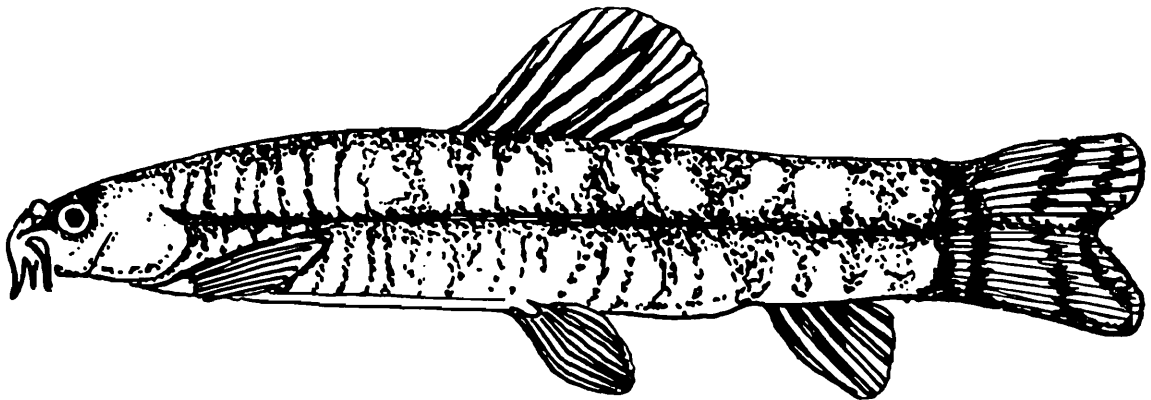


Fig. 69. *Mesonoemacheilus reticulofasciatus* Singh and Bănărescu

Genus *Physoschistura* Bănărescu and Nalbant, 1981

1981. *Physoschistura* Bănărescu and Nalbant, *Trav. Mus. Hist. nat. ... Grigore Antipa*", vol. XXIII, pp. 208-209.

113. *Physoschistura elongata* Sen and Nalbant

1981. *Physoschistura elongata* Sen and Nalbant, *Trav. Mus. Hist. nat. ... Grigore Antipa*", vol. XXIII, pp. 210-211.

D. 3/8 ; A. 2/5 ; P. 1/9—10 ; V 1/6.

Diagnostic characters : Slender body, eight branched dorsal rays, 9—14 crossbars, lateral line reaching below the dorsal fin, processus dentiformis somewhat stronger, barbels of second rostral pair longer than maxillary ones, scales present only in the posterior half of body, their focal zones large.

Size : Largest recorded specimen from Barapani, 20 km. from Shillong, Meghalaya, 29.0 mm. (Holotype, V/ERS 3063) in standard length.

Colour : Body light yellowish with 9—14 well marked almost vertical brownish crossbars (3-4 in front of dorsal, two under and 4—6

behind dorsal), the crossbars are interrupted on the back and even on the sides, most of them are divided in an upper and a lower fragment ; an incomplete and often divided dark bar on the caudal base and a spot on the dorsal origin.

Distribution : Shillong, Meghalaya.

Remarks : The Burmese form *Physoschistura brunneana* (Annan-dale) is the only other known species of this genus.

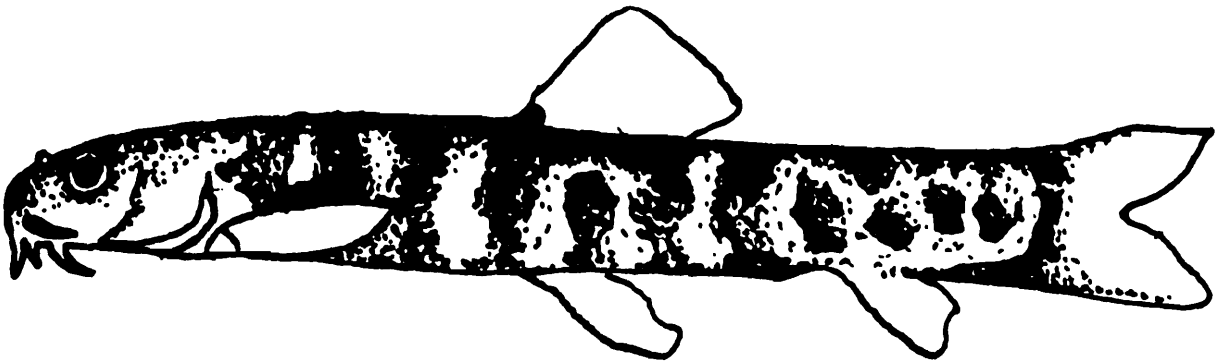


Fig. 70. *Physoschistura elongata* Sen and Nalbant

Genus *Somileptes* Bleeker, 1863

1863. *Somileptes* Bleeker, *Atlas. Ichth. Cypr.*, 3, p. 3 (type, *Cobitis gongota* Hamilton).

114. *Somileptes gongota* (Hamilton)

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

1981. *Somileptes gongota*, Jayaram, *F. W. Fishes of India*, Hand book No. 2, Calcutta, Z. S. I., p. 180.

D. 3/8 ; P. 1/10 ; V 2/6 ; A. 2/5 ; C. 16.

Diagnostic characters : Length of head 5.2 in total length, upper profile slightly concave and rising abruptly to above the eyes which are close together near the top of the head, from this point the body gradually narrows down to the peduncle ; a small bifid sub-orbital spine reaching below the middle of the orbit, dorsal fin opposite to the pelvic fin root, entire caudal, minute scales.

Colour : Light brownish with darker specks above, yellowish or whitish beneath ; a variable pattern with about 5 large brown blotches.

with light edge joining with the oblique dark stripes, two dark patches on cheeks, yellowish fins, dorsal and caudal fins with transverse rows of dark spots.

Size : Largest recorded specimen 95 mm. in length from Khowang, Dibrugarh.

Distribution : India : Assam and North Bengal.

Remarks : Found to live in the muddy hill stream waters.

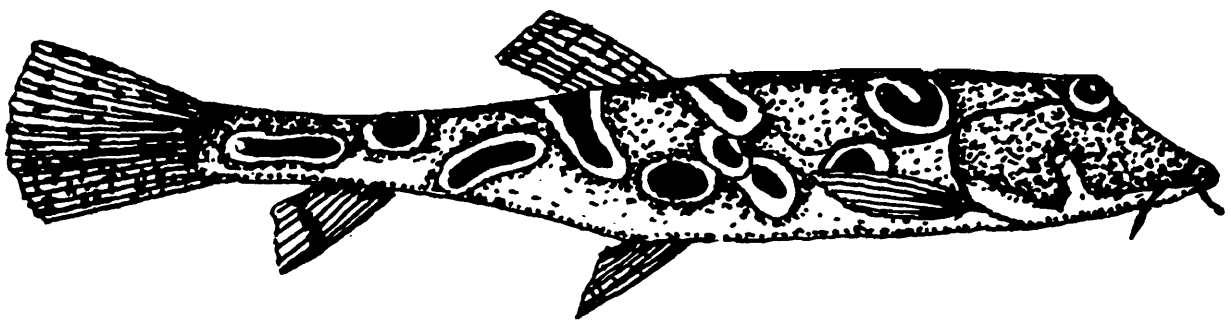


Fig. 71. *Somileptes gongota* (Ham.)

Special note : Genus *Noemacheilus* van Hasselt, containing subgenera *Aborichthys* Chaudhuri, *Mesonoemacheilus* Bănărescu & Nalbant, *Noemacheilus* van Hasselt, *Acanthocobitis* Peters, *Noemacheilichthys* Day, *Schistura* McClelland and *Indoreonectes* Rita & Bănărescu, has been placed under super-family Cobitoidea, family Homalopteridae and sub-family Noemacheilinae and the genera *Lepidocephalus* Bleeker (= *Lepidocephalichthys* Bleeker), *Somileptes* Swainson, *Acanthopsis* van Hasselt, *Acanthophthalmus* van Hasselt, *Acanthopsoides* Fowler under family Cobitidae and sub-family Cobitinae and *Botia* Gray and *Leptobotia* Bleeker under sub-family Botiinae, according to the latest revisionary works by Dr. A. G. K. Menon on Cobitid fishes (in press).

Order SILURIFORMES

Family BAGRIDAE

Head and body not ventrally flattened, paired fins not horizontal, anal fin short with less than 20 rays (8 to 16) excepting *Horabagrus* Jayaram from Kerala with 23 to 28 rays, nostrils widely separated, barbels 8 or 6, generally well developed ; rayed dorsal with a strong or feeble spine, gill-openings wide, extending to above base of pectoral fin ; air bladder large, fuses in the abdominal cavity ; moderately thick walled. Four genera and ten species.

Key to the genera of family Bagridae

1. 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 the middle 2
- Maxillary barbels reaching not beyond pectoral fin base, pores on ventral surface and sides on head, teeth on lower jaw laterally prolonged but only slightly, band not separated in the middle 3
2. Interneural shield in between basal bone of dorsal fin and occipital process absent ... *Mystus Scopoli*
- Interneural shield in between basal bone of dorsal fin and occipital process present ... *Aorichthys Wu*
3. Pectoral fins reach pelvic base, eyes inferior, along angle of mouth ; visible from below ... *Chandramara Jayaram*
- Pectoral fins do not reach pelvic base, eyes superior above angle of mouth, generally not visible from below ... *Batasio Blyth*

Key to the species of genus Aorichthys

1. Snout spatulated, width of gape of mouth 1/3rd of head length, caudal fin with 19-21 rays ... *A. seenghala (Sykes)*
- Snout rounded, width of gape of mouth less than 1/2 of head length, caudal fin with 17 rays ... *A. aor (Ham.)*

Key to the species of genus Mystus

1. Maxillary barbels reach base of plevic fins, head length not more than 4 times in total length, caudal peduncle not constricted, its least height about 2 times in its length ... *Mystus tengara (Ham.)*
- Maxillary barbels reach anal fin, head length more than 5 times in total length 2
2. Eye diameter 4.5 in head length, pectoral fin with 9—10 rays, body with a dark shoulder spot ... *Mystus bleekeri (Day)*
- Eye diameter 3.5 to 4.0 in head length, pectoral fin with 6 rays 3
3. 1 or 2 longitudinal light bands above lateral line, body with a bluish shoulder spot and a silvery line along the side ending in a dark caudal spot ... *Mystus montanus (Jerdon)*

- 3 or 4 longitudinal bluish bands on sides, body with a dark shoulder spot, no spot at the caudal base ... 4
- 4. Maxillary barbels extended to pelvics, short adipose dorsal fin (base of adipose dorsal fin generally same as the distance between the dorsal and adipose dorsal fins) ... *Mystus vittatus* (Bloch)
- Maxillary barbels reach caudal fin base or beyond, adipose dorsal fin long ... 5
- 5. A single dark spot at the base of the dorsal fin (it may be mere a darkening in front of this fin), body depth 5.5 in total length ... *Mystus cavasius* (Ham.)
- No single dark spot at the base of dorsal fin, several dark spots or clusters along the anterior half of the lateral line (but in many specimens studied it may be seen concentratedly on the posterior half of the lateral line), depth of body 4.4 to 5.0 in standard length, maxillary barbels reach to nearly or quite the base of the anal ... *Mystus menoda menoda* (Ham.)

Genus *Aorichthys* Wu, 1939

1939. *Aorichthys* Wu, *Sinensia*, 10, p. 134 (proposed originally as substitute name for *Aoria* Jordan, 1919 preoccupied in Insecta = *Macrones* Duméril, 1856 preoccupied in Insecta, type species *Pimelodus aor* Hamilton, by subsequent designation, Jayaram, 1971).
1981. *Aorichthys*, Jayaram, *F. W. Fishes of India*, Hand book No. 2, Calcutta, Z. S. I., p. 204.

115. *Aorichthys aor* (Hamilton)

1822. *Pimelodus aor* Hamilton, *Fish. Ganges*, pp. 205, 379, pl. 20, fig. 68 (type-locality : Rivers of Bengal and upper parts of Gangetic estuaries).
1977. *Aorichthys aor*, Jayaram, *Rec. zool. Surv. India*, Occ. paper No. 8, p. 40.

Local name : Arii

D. 1/7 ; P. 1/9—10 ; V 6 ; A. 11—14—9 ; C. 17.

Diagnostic characters : Length of head 4.5 to 5 in total length, diameter of eye 5 to 8 in head length, broad snout, depressed ; upper jaw longer, the median longitudinal furrow on head extended up to base of occipital process, there is an intermediate interneural shield, 8—barbels, maxillary reaching caudal base or even beyond, palatine teeth in an uninterrupted, semilunar, transverse band ; pectoral spine stronger than dorsal, rugose, but shorter.

Colour : Bluish leaden above becoming whitish below, a black tinge on posterior lower end of rayed dorsal fin may be present in preserved specimens.

Size : Largest specimen recorded 2 mts. in length ; largest specimen examined at Jorhat fish market by the author being 24 cm. in length.

Distribution : India : N. India up to the Krishna river system in the south, Punjab, Assam, Orissa, West Bengal ; Pakistan, Bangladesh and Burma.

Remarks : It breeds before the commencement of the monsoon rains. Mostly riverine with considerable fishery value. Some people seem to prefer the head and other cut pieces (Jayaram, 1977).

116. *Aorichthys seenghala* (Hamilton)

1839. *Platystoma seenghala* Sykes, *Trans. Zool. Soc. Lond*, 2, p. 371, pl. 63, fig. 2 (type locality : Mota Mula river, Poona).

1977. *Aorichthys seenghala*, Jayaram, *Rec. zool. Surv. India. Occ. paper* No. 8, p. 40.

Local name : Arii

D. 1/7 ; P. 1/9 ; V. 6 ; A. 11—12 ; C. 19—21.

Diagnostic characters : Length of the head 4.5 in total length, diameter of eye 7 to 8 in head length, spatulate snout, 8—barbels, maxillary barbels reach middle or end of rayed dorsal fin, upper jaw longer with shallow cleft of mouth, median longitudinal groove on head extends up to base of occipital process, palatine teeth in a continuous crescentic band, dorsal spine weak, pectoral spine strong, serrated ; base of adipose dorsal equal or slightly exceeds that of dorsal fin.

Colour : A round black spot on the posterior end of adipose fin, brownish along back, silvery on sides and below.

Size : Largest recorded specimen 1.5 mts. I have collected specimens from all over Assam viz., Rangia, Tezpur, Gauhati and Jorhat ranging from 210 to 341 mm. in length,

Distribution : India : Large rivers of India up to Krishna river system in the south, Punjab, West Bengal (Darjeeling Dt.), Assam, Poona, Ahmedabad ; Pakistan, Bangladesh and China.

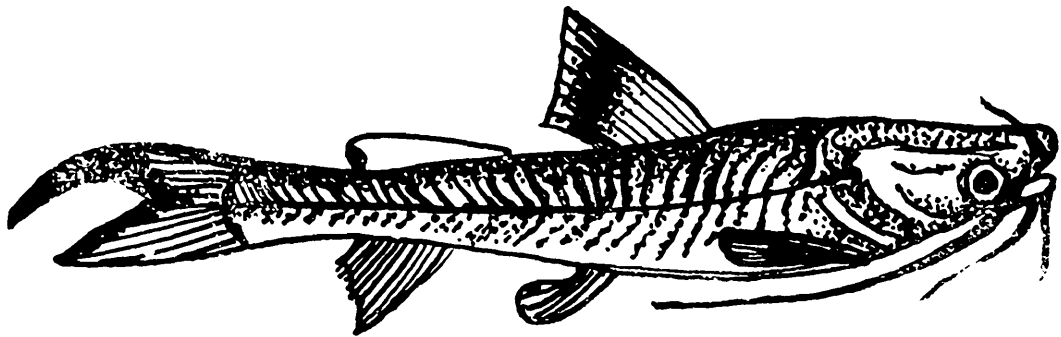


Fig. 72. *Aorichthys seenghala* (Ham.)

Genus **Batasio** Blyth, 1860

1860. *Batasio* Blyth, *J. Asiat. Soc. Bengal*, 29, p. 149 (type *Pimelodus batasio* Hamilton, by original designation).
 1862. *Rama* Bleeker, *Atlas Ichthyol. Indici Prodr.*, 2, Siluri, p. 8 (type, *Pimelodus rama* Hamilton, by original designation ; genus proposed provisionally).
 1921. *Macronoides* Hora, *Rec. Indian Mus.*, 22, p. 179 [type, *Macronoides affinis* (Blyth), as a subgenus].
 1941. *Batasio*, Hora & Law, *Rec. Indian Mus.*, 43, p. 28.
 1977. *Batasio*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 8, p. 16.

117. ***Batasio tengana*** (Hamilton)

1822. *Pimelodus tengana* Hamilton, *Fish. Ganges*, pp. 176, 377, pl. 39, fig. 58 (type locality : Brahmaputra river).
 1977. *Batasio tengana*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 8, p. 17.

D. 1/7—8 ; P. 1/7—9 ; V. 6 ; A. 11—15 ; C. 16—18.

Diagnostic characters : Length of head 4.5 in total length, eye diameter 6.5 in head length, body with oblique vertical bands or spots, adipose dorsal fin base shorter or equal to anal fin base, occipital process reaching basal bone of dorsal fin.

Colour : Grey olivaceous, deeper above, lighter beneath ; a broad black spot on the nape, a number of oblique shaped bands on body not extending to ventral surface may also be seen.

Size : Largest recorded specimen 70 mm. in length.

Distribution : India : Assam, North Bengal ; Bangladesh, N. Burma, Thailand, Malayasia.

Remarks : Dr. K. C. Jayaram (1977) placed this genus *Batasio* under family Bagridae instead of family Sisoridae (Menon, 1974).

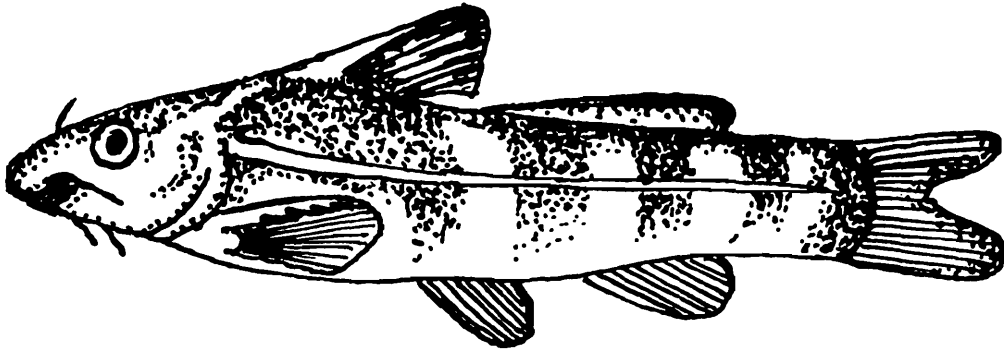


Fig. 73. *Batasio tengana* (Ham.)

Genus *Chandramara* Jayaram, 1972

1972. *Chandramara* Jayaram, *Int. Revue ges. Hydrobiol.*, **57** (5), p. 816 (type species, *Pimelodus chandramara* Hamilton by original designation).
 1977. *Chandramara* Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 8, p. 18.

118. *Chandramara chandramara* (Hamilton)

1822. *Pimelodus chandramara* Hamilton, *An account of the fishes of the river Ganges and its tributaries*, pp. 162, 375 (type locality : River Atrai)
 1972. *Chandramara chandramara*, Jayaram, *Int. Revue ges. Hydrobiol.*, **57** (5), pp. 815-820.

D. 1/7 ; P. 1/5—6 ; V 6 ; A. 13—17 ; C. 16.

Diagnostic characters : Length of head 4 to 4.5 in total length, dorsal profile arched, body speckled with dots, small head, compressed with pores on ventral and also along the lateral sides ; rounded snout, subequal jaws, thin lips, plain ; eyes large, inferior, visible from below ventral surface of head ; pectoral fins with 5 or 6 rays, with outer most ray long, reaching pelvic fin base, occasionally with a prolongation ; anal fin short, with 13 to 17 rays ; forked caudal fin, lateral line complete with a few sensory pores above pectoral fin base.

Colour : Pale olive in preserved condition, speckled with black dots, irregularly distributed all over the body ; pale and plain surface, a conspicuous black spot on the shoulder and also one on the occiput.

Size : Largest recorded specimen 57 mm. in length.

Distribution : India : North Bengal, Assam ; Bangladesh.

Genus *Mystus* Scopoli, 1777

1777. *Mystus Scopoli, Introductio ad historium naturalem*, p. 451 (type species; *Bagrus halepensis* Valenciennes=*Mystus pelusius* (Solander). by subsequent selection).
1977. *Mystus*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 8, p. 20.

119. *Mystus bleekeri* (Day)

1846. *Bagrus keletius* (nec Valenciennes) Bleeker, *Nat. Geneesk Arch. Ned. Ind.*, 3 (2), p. 135 (type locality : Bengal)
1977. *Mystus bleekeri*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 8, p. 29.

Local name : Singorah/Singarah/Nga-Chep

D. 1/7 ; P. 1/9—10 ; V 6 ; A. 9—10 ; C. 17.

Diagnostic characters : Length of head 5.2 to 5.5 in total length, eye diameter 4.5 in head length, snout obtuse, gape of mouth equals to half of the head length, median longitudinal groove shallow and reaching to base of occipital process ; barbels 8, maxillary extending to anal ; teeth on palate in an uninterrupted semilunar band, pectoral spine serrated, stronger than dorsal ; origin of adipose dorsal just behind the rayed dorsal.

Colour : Brownish grey above, lighter below ; two light longitudinal bands below the lateral line.

Size : Largest recorded specimen 135 mm. in length ; largest specimen collected by the author from Jahajghat, Tezpur, being 91 mm. in length.

Distribution : India : North Indian Gangetic waters, Naga-Hills, Assam, Manipur, West Bengal, 'southern most limit being the Mahanadi headwaters' (Hora 1940) ; Pakistan, Bangladesh, Burma & Sumatra.

120. *Mystus cavasius* (Hamilton)

1822. *Pimelodus cavasius* Hamilton, *Fish. Ganges*, pp. 203, 279, pl. 11 fig. 67 (type locality : Gangetic provinces)
1981. *Mystus cavasius*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 196.

Local name : Barsingarah/Singarah

D. 1/7 ; P. 1/8 ; V 6 ; A. 11—13 ; C. 16.

Diagnostic characters : Length of head 6 to 6.2 in total length, eye diameter 3.2 to 3.5 in head length, upper jaw longer with gape of mouth less than half of head length, median longitudinal groove wide, extending to base of occipital process ; 8 barbels, maxillary pair extending beyond caudal base ; palatine teeth in a continuous, crescentic band ; pectoral spine serrated, adipose dorsal fin long, arises just behind the rayed dorsal fin.

Colour : Yellowish abdomen and cheeks and leaden back when alive, a black shoulder spot and a dark spot at the base of dorsal fin (casually seen), a bluish band along the lateral line may be present occasionally.

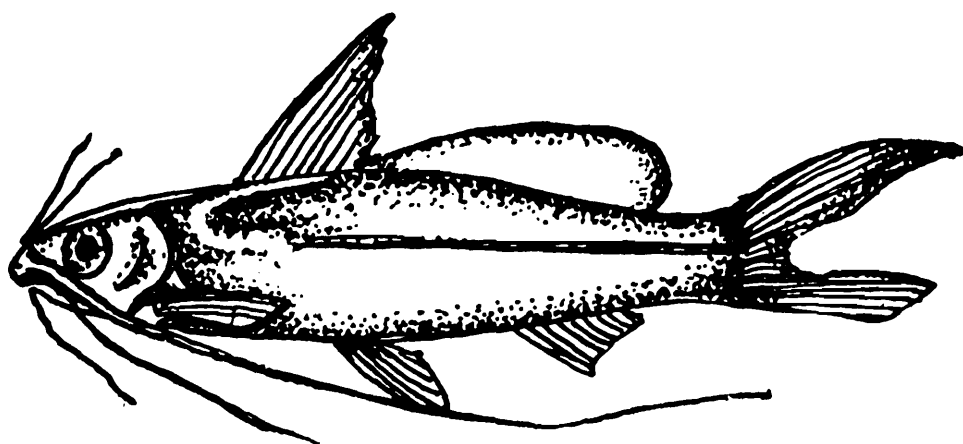


Fig. 74. *Mystus cavasius* (Ham.)

Size : Largest recorded specimen 450 mm., in length ; the largest specimen studied from Pandu being 157 mm. in length.

Distribution : Throughout India, Pakistan, Bangladesh, Burma; Thailand, Malayasia.

Remarks : In half grown and young individuals the maxillary barbels do not extend beyond the anal fin.

121. *Mystus menoda menoda* (Hamilton)

1822. *Pimelodus menoda* Hamilton, *Fish. Ganges*, pp. 203, 379, pl. 1, fig. 72 (type-locality : Kosi, Mahananda, North Bihar and Bengal).

1977. *Mystus menoda menoda* Jayaram, *Rec. Zool. Surv. Occ. Paper no. 3*, p. 33.

Local name : Gagol

D. 1/7 ; P. 1/9 ; V 6 ; A. 11—13 (3—5/8) ; C. 17.

Diagnostic characters : Length of head 4 to 4.6 in total length, maxillary barbels reaching to end of pelvic, median longitudinal groove reaching occipital process in young but not in adult, villiform teeth in band in jaws, vomerine patch crescentic, continuous ; dorsal fin as high as body with a spine serrated internally in its upper half, its origin being nearer to adipose dorsal base than to tip of snout ; pectoral with a strong spine as long as head and serrated (20—23) internally, rugose externally.

Colour : Greyish brown above, dull white beneath ; fins greyish stained with black, several black spots or clusters along the lateral line.

Size : Largest recorded specimen 300 mm. in length ; the largest specimen obtained from Tejpur being 210 mm. in length.

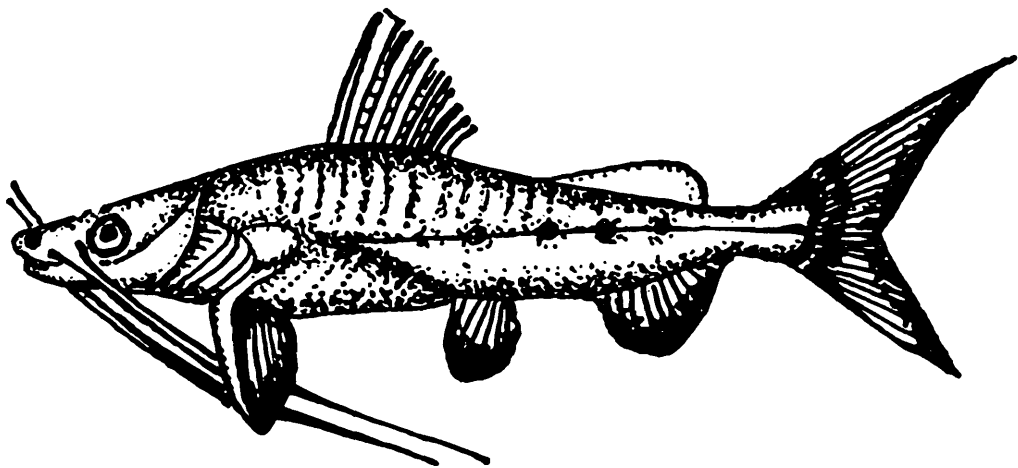


Fig. 75. *Mystus menoda menoda* (Ham.)

Distribution : India : Assam, North Eastern India ; Bangladesh, Burma.

Remarks : The occipital process is long, thin and lies deep under the skin but does not reach the basal bone of the dorsal fin.

122. *Mystus vittatus* (Bloch)

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

1977. *Mystus vittatus*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 8, p. 38.

Local name : Singarah/Tingara/Singorah.

D. 1/7 ; P. 1/9 ; V. 6 ; A. 9 – 12 (2–3/7–9) ; C. 17.

Diagnostic characters : Length of head 4.7 to 5 in total length, diameter of eye 4.5 to 6 in head length, median longitudinal groove extends to mid way behind post orbit, occipital process rough, 8 barbels, maxillary extending to pelvics; teeth in a semilunar band across the palate, dorsal spine finely serrated, half as long as head; adipose dorsal base usually of the same length as the interspace between the two fins; pectoral serrated.

Colour : Silvery with prominent golden tinge, 5 narrow black bands on the body above and below the lateral line, a black shoulder spot usually present, fins edged with dark black.

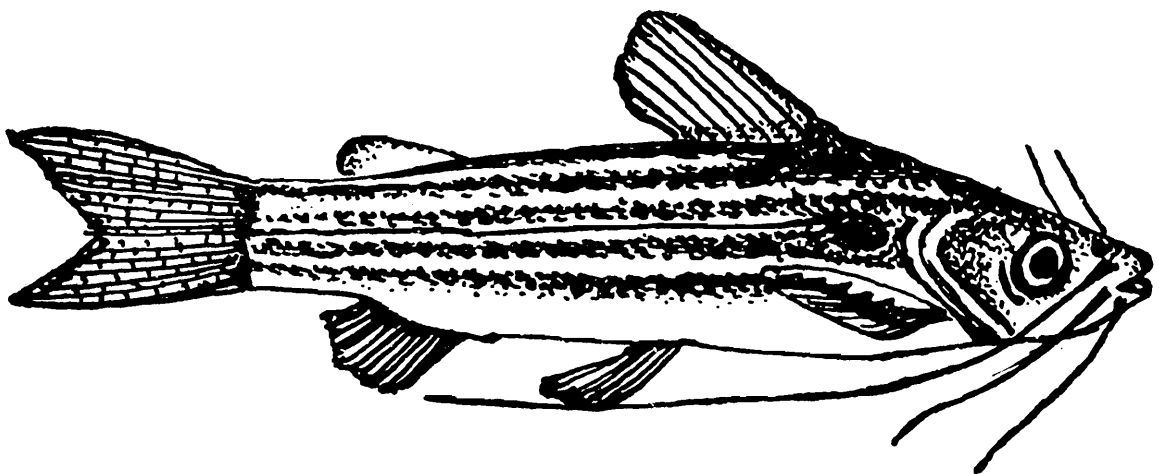


Fig. 76. *Mystus vittatus* (Bloch)

Size : Largest recorded specimen 200 mm. in length; the largest specimen obtained from Rangia, Gauhati, Dibrugarh and Tezpur being 140 mm. in length.

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

Remarks : Most commonly found cat fish in ponds, tanks, beels, rivers etc.

123. *Mystus montanus* (Jerdon)

1849. *Bagrus montanus* Jerdon, *Madras F. Lit. Sci.*, 15 (2), p. 337 (type-locality : Manantoddy, Wynaad).

1977. *Mystus montanus*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 8, p. 34.

D. 1/7 ; P. 1/6 ; V 6 ; A. 12 (3/9) ; C. 19.

Diagnostic characters : Length of head 5 in total length, eye diameter 3.5 to 4.0 in head length, upper jaw longer, maxillary barbels reaching posterior end of anal base, outer mandibulars to

pelvic base, inner to pectoral base and nasals to hind border of eye ; teeth villiform in band in jaws, vomerine teeth villiform in crescentic continuous band, dorsal with a weak spine, serrated internally, its origin nearer to adipose dorsal than to tip of snout ; pectorals low and not reaching pelvics, with a strong spine (16 serrations); forked caudal.

Colour : Silvery above yellowish white below, often a dark line along the lateral line ending with a black circular blotch at the base of the caudal fin, dull white or tipped with green when alive.

Size : Largest recorded specimen 115 mm. in length.

Distribution : India : Hoshangabad dist., M. P. Assam and Wynaad dist., Kerala.

Remarks : In smaller specimens—a bluish shoulder spot and one or two light bands along the sides of body above the lateral line are usually present.

124. *Mystus tengara* (Hamilton)

1822. *Pimelodus tengara* Hamilton, *Fish. Ganges*, pp. 183, 377, pl. 23, fig. 60 (type locality : North Bengal).

1977. *Mystus tengara*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 8, p. 37.

Local name : Singorah/Tingara/Tingga - rah.

D. 1/7 ; P. 1/8 ; V 6 ; A. 11—13 (2—3/9—10) ; C. 19.

Diagnostic characters : Length of head 4.3 in total length, eye diameter 3.5 in head length, median longitudinal groove in head reaching base of occipital process, dorsal spine serrated anteriorly, pectoral spine with 8 to 13 teeth along inner margin, teeth villiform in jaws, vomerine teeth villiform in crescentic continuous band, dorsal origin nearer to adipose dorsal than to tip of snout, caudal forked,

Colour : Brilliant yellow with dark shoulder spot and about 5 black longitudinal bands.

Size : Largest recorded specimen 100 mm. in length, the largest specimen obtained from Tinsukhia, Gauhati and Rangia being 95 mm. in length.

Distribution : India : Assam, Punjab, U. P., West Bengal, Bihar, M. P., Orissa , Bangladesh, Pakistan.

Remarks : Commonly collected by traps, cast-nets along with other varieties from rivers, ponds, tanks, beels and paddy-fields. Invariably found mixed up with the most closely allied species *M. vittatus* in the markets all over. It is absent in South India (Jayaram, 1977). Very much common in West Bengal.

Family SILURIDAE

Adipose dorsal absent, two pairs of barbels—nasal barbels absent, gill openings very wide, extending upto lateral line ; pectoral fins with a strong spine, occasionally serrated ; anal fin very long, caudal rounded to emarginate with bluntly rounded lobes or forked, large airbladder. Three genera and five species.

Key to the genera of family Siluridae

- | | | |
|--|--------|-------------------------|
| 1. Cleft of mouth very deep extending beyond eye posteriorly, barbels always 4 | ... | <i>Wallago</i> Bleeker |
| — Cleft of mouth not deep and not extending beyond eye, barbels 2 to 6 | | 2 |
| 2. Caudal rounded, barbels 4 to 6 | ... | <i>Silurus</i> Linnaeus |
| — Caudal bilobed, 2 to 4 barbels | ... | <i>Ompok</i> Lacépède |

Key to the species of genus Ompok

- | | | |
|---|--------|-------------------------------|
| 1. Maxillary barbels longer than head, extending up to or beyond anal fin | | <i>O. bimaculatus</i> (Bloch) |
| — Maxillary barbels shorter than head, not extending up to anal fin | | 2 |
| 2. Anal fin with 22 to 56 rays | | <i>O. pabda</i> (Ham.) |
| — Anal fin with 66 to 71 rays | | <i>O. pabo</i> (Ham.) |

Genus *Ompok* Lacépède, 1803

1803. *Ompak* Lacépède, *Hist. Nat. Poiss*, 5, p. 49 (type, *Ompok siluroides* Lacépède)

125. *Ompok bimaculatus* (Bloch)

1797. *Silurus bimaculatus* Bloch, *Ichthyol. Hist. Nat. Poiss*, Part 2, p. 17, pl. 364 (type locality : Malabar)

1977. *Ompak bimaculatus*, Jayaram, *Rec. zool. Surv. India, Mis. Pub.*, Occ. Paper No. 10, p. 4.

Local name : Pabho/Pava/Pahboh

D. 4 ; P. 1/12—14 ; V. 8—9 ; A. 61—76(2—3/59—73) ; C. 17—18.

Diagnostic characters : Length of head 5 to 7 in total length, eye diameter 4 to 4.5 in head length, maxillary barbels longer than head,

extending upto anal fin ; mandibular barbels rudimentary, short dorsal without spine, much nearer to snout ; anal rays long continuous, caudal forked with longer upper lobe.

Colour : Silvery shot with purple, a black spot on the shoulder behind the gill opening, dorsal side greenish dark with a wash of golden yellow when alive, a small triangular black spot just above the lateral line on caudal peduncle.

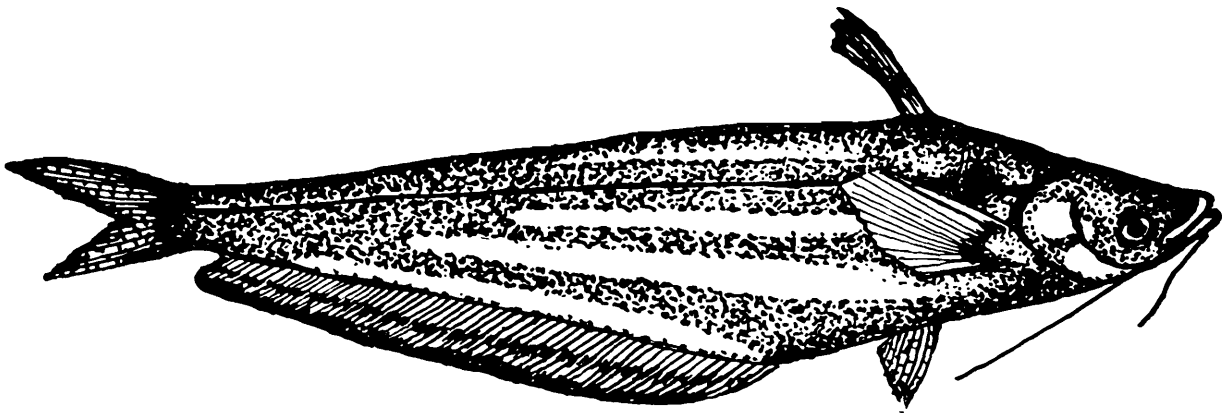


Fig. 77. *Ompok bimaculatus* (Bloch)

Size : Largest recorded specimen 457 mm. in length ; the largest specimen obtained from Assam being 275 mm. in length.

Distribution : Throughout India, Pakistan, Bangladesh, Sri Lanka, Thailand, Malaya, Vietnam, Sumatra, Java, Borneo and Yunan.

Remarks : Found to live in rivers, cannals, ponds, beels etc., also found to live in dried up swampy catchment areas of lower and upper Assam. An esteemed food fish popularly known as 'Butter-fish'

126. *Ompok pabda* (Hamilton)

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

1977. *Ompok pabda*, Jayaram, *Rec. Zool. Surv. India*, Occ. Paper No, 10, p. 5.

Local name : Pabho/Pava/Pahboh

D. 4 ; P. 1/11—13 ; V 7—8 ; A. 52—57 (2—3/50—54) ; C. 17—19.

Diagnostic characters : Length of head 4.5 to 5.6 in total length, eye diameter 5.5 in head length, maxillary barbels shorter than head,

not extending upto commencement of anal fin ; 2 pairs of barbels, anal long, continuous ; caudal forked with rounded lobes.

Colour : Usually silvery glossed with gold with a black shoulder spot above middle of pectoral fin and another generally close to base of caudal fin, silvery green with yellowish tinge, dark back fading to silver on abdomen ; anal and caudal fins golden yellow, when alive.

Size : Largest recorded specimen 172 mm. in total length.

Distribution : India, Pakistan, Bangladesh, Burma.

Remarks : An esteemed food fish (commonly known for its taste as 'Butter-fish') all over India more particularly in West Bengal and Assam, generally confined to Indus, Ganga and Brahmaputra river systems. Also recorded by Prashad and Mukerji (1929) from Indawgyi Lake, Burma. Its eggs are of dull green colour (Jayaram, 1977). *O. pabda* can be easily distinguished from *O. bimaculatus* by its shorter maxillary barbels and lesser number of rays in the anal fin (22 to 56 versus 59 to 93).

127. **Ompok pabo** (Hamilton)

1822. *Silurus pabo* Hamilton, *Fish. Ganges*, p. 153, p. 1, 17, fig. 48 (type locality : Brahmaputra river, Assam).

1977. *Ompok pabo*, Jayaram, *Rec. zool. Surv. India, Mis. Pub. Occ. Paper No. 10*, p. 5.

Local name : Pava/Pahboh/Pabho

D. 5 ; P. 1/14 ; V. 9—10 ; A. 66—71 (3/63—68) ; C. 17.

Diagnostic characters : Length of head 5 to 5.2 in total length, eye diameter 4 to 4.5 in head length, dorsal fin short, spineless ; 4 barbels, maxillary barbels shorter than head, not extending up to anal fin ; pectoral spine serrated or rarely smooth.

Size : Largest recorded length being 241 mm. ; 219 mm. being the largest length recorded at Sibsagar road side fish market.

Colour : Silvery with a faint shoulder spot.

Distribution : India : Assam, West Bengal ; Bangladesh.

Remarks : *O. pabo* can be easily distinguished from *O. bimaculatus* and *O. pabda* by the large number of rays in the anal fins, 66 to 71 versus 59 to 73 in *O. bimaculatus* and 52 to 58 in *O. pabda*.

Genus : **Silurus** Linnaeus, 1758

1758. *Silurus* Linnaeus, *Syst. Nat. Ed. 10*, p. 304 (type, *Silurus glanis* Linnaeus, by subsequent designation by Bleeker, 1862, p. 393).

128. ***Silurus cochinchinensis*** (Valenciennes)

1839. *Silurus cochinchinensis* Valenciennes, *Hist. nat. Poiss. 14*, p. 352 (type locality, Cochinchina).

1977. *Silurus cochinchinensis*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 10, p. 9.

D. 4 ; P. 1/11 ; V 10 ; A. 62—64 (2/60—62) ; C. 17.

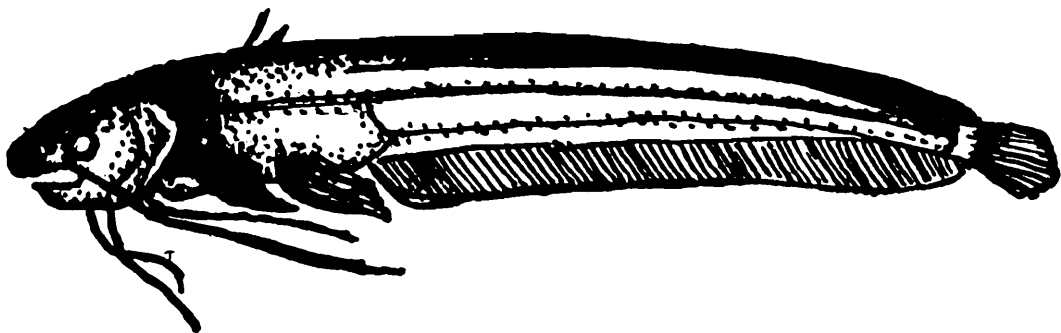


Fig. 78. *Silurus cochinchinensis* Val.

Diagnostic characters : Length of head 6 to 6.5 in total length, teeth on prevomer in a continuous band, premaxillary band of teeth continuous in a narrow band, 4 barbels, maxillaries about twice the head length ; short dorsal without spines, its origin in front of pelvic origin ; strong pectoral spine, long anal, rounded caudal.

Colour : Leadен above, purplish below, covered all over by minute black specks which often form irregular finger like marks on shoulder, caudal often yellowish.

Size : Largest recorded specimen 182 mm. in length.

Distribution : India : Assam, Eastern Himalayas ; Burma.

Genus : **Wallago** Bleeker, 1851

1851. *Wallago* Bleeker, *Nat. Tijdschr. Nederl. Inde*, 2, p. 202 (type, *Wallago dinema* Bleeker).

129. *Wallago attu* (Schneider)

1801. *Wallago attu* Schneider, *Syst. Ichthyol.*, p. 378, pl. 75 (type locality, Malabar).

1977. *Wallago attu* Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 10, p. 6.

Local name : Barali

D. 5 ; P. 1/13—15 ; V 8—10 ; A. 86—93(4/82—89) ; C. 17.

Diagnostic characters : Length of head 5 to 5.5 in total length, eye diameter 7 to 8 in head length, small eyes above level of corner of mouth, not visible from under side of head ; 2 pairs of barbels, dorsal fin without spine, adipose dorsal absent, anal fin very long, free from caudal fin.

Colour : Uniform silvery, gray above becoming dull white below ; in fresh specimen, a light greenish wash on the back and cream colour on the sides with a faint orange-yellow band along the lateral line.

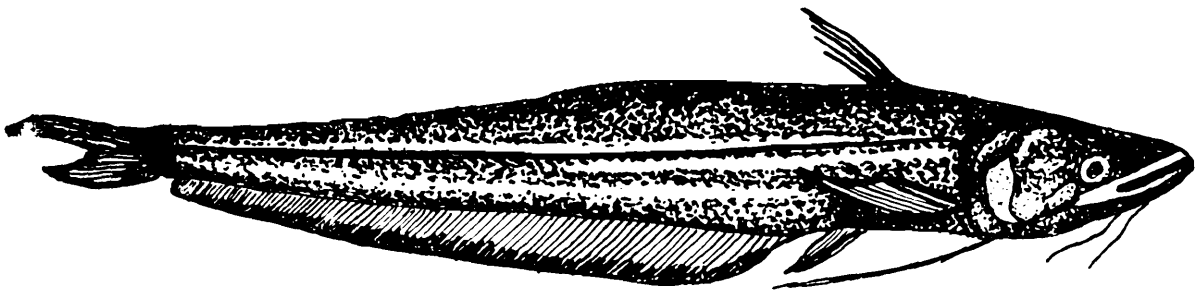


Fig. 79. *Wallago attu* (Bloch)

Size : Largest recorded specimen 2 meters in length ; 175 cm. being the maximum length recorded by the author from Gauhati fish market ; next longest one recorded from Neamatighat, Jorhat, being 156 cm. in length.

Distribution : India, Bangladesh, Pakistan, Sri Lanka, Burma, Thailand, Malaya, Java, Sumatra and China.

Remarks : Due to its rich oil content it is liked by many. It is also offered to Goddess Kali by the Hindus (Jayaram, 1977). The author had seen sacrificing a giant *Wallago* (Boal) weighing 22 kgs. and 151 cm. in length by the local tribal people before the deity below the Kudukut water fall by the side of the Basant Nivas guest house at Deogarh, Dt. Sambalpur, Orissa, in 1974.

Family **Schilbeidae**

Medium to large sized fishes with a compressed body, nostrils widely separated, barbels two, four or eight, fairly well developed ; wide gill opening extending to lateral line, rayed dorsal and adipose dorsal fins may be present or absent, pectoral with a strong spine, generally serrated ; long anal fin confluent with the caudal which is forked. Four genera and five species.

Key to the genera of family Schilbeidae

- | | | |
|---|--------|-------------------------------|
| 1. Rayed dorsal fin absent, anal long | ... | <i>Ailia</i> Gray |
| — Rayed dorsal fin present, anal moderately long | | 2 |
| 2. Cleft of mouth oblique, extending up to middle of eye | | <i>Eutropiichthys</i> Bleeker |
| — Cleft of mouth not oblique, extending only to front edge of eye | | 3 |
| 3. Teeth on palate in bands, not separated in middle ; posterior nostrils wide | ... | <i>Clupisoma</i> Swn. |
| — Teeth on palate in two separate patches, which may be connected by a linear series, posterior nostrils narrow | | <i>Pseudeutropius</i> Bleeker |

Key to the species of genus Eutropiichthys

- | | | |
|---|-----|-------------------------------------|
| 1. Teeth on palate in a band wider than pre-maxillary band, nasal barbels reach hind border of head or slightly beyond | ... | <i>Eutropiichthys vacha</i> (Ham.) |
| — Teeth on palate in a band narrower than premaxillary band or just equal to it, nasal barbels reach a short distance behind the posterior edge of eyes | ... | <i>Eutropiichthys murius</i> (Ham.) |

Genus : **Ailia** Gray, 1831

1831. *Ailia* Gray, *Zool. Miscellany*, p. 8 (type, *Malapterus* (sic.) (*Ailia*) *bengalensis* Gray = *Malapterurus coila* (Hamilton)).

130. **Ailia coila** (Hamilton)

1822. *Malapterurus coila* Hamilton, *Fish. Ganges*, pp. 158, 375 (type locality : freshwater rivers of Bengal, Ganges)
1977. *Ailia coila*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 10, p. 13.

Local name : Kadali/Bapati/Kanoli/Bardua

D. 0 ; P. 1/14—16 ; V 6 ; A. 58—71 ; C. 19.

Diagnostic characters : Length of head 6 to 7 in total length, diameter of eye 3.5 to 3.7 in head length, upper jaw longer and overhung by the snout, anal fin with 58 to 78 rays, four pairs of barbels, dorsal fin absent, a small adipose dorsal.

Colour : Skin smooth, silvery ; some of the fins edged with gray.

Size : Largest recorded specimen 177 mm. in length ; 162 mm. being the maximum length of the specimen collected from Tezpur, Jorhat and Pandu.

Distribution : India, Pakistan, Bangladesh. It is mainly confined to rivers Ganga, Brahmaputra, Jamuna, Mahanadi and Indus (Jayaram, 1977).

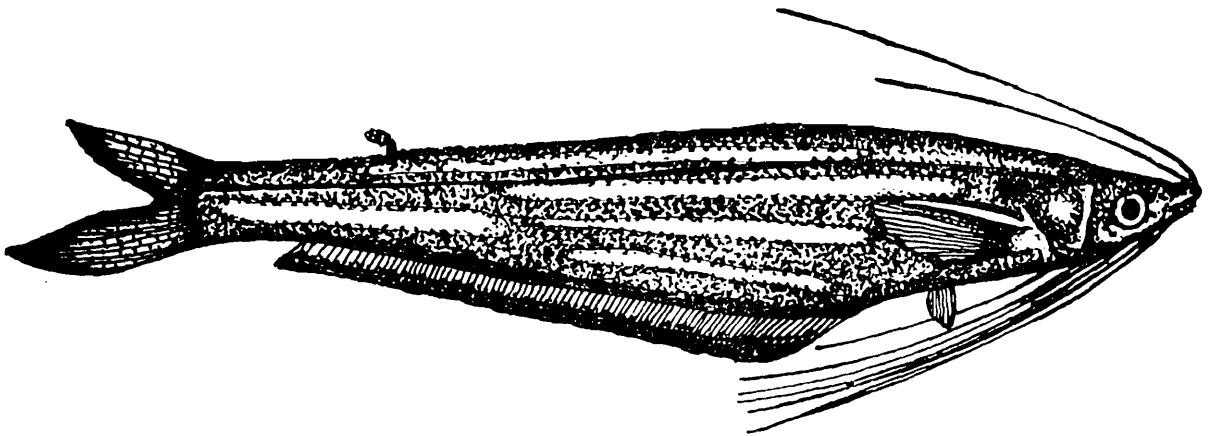


Fig. 80. *Ailia coila* (Ham.)

Remarks : It is a surface and midwater fish living in shoals in larger rivers (Jayaram, 1977). A fish of excellent taste but very difficult to preserve, as this fish gets easily spoiled with slightest rise of temperature or rough handling. I have seen this fish in the markets all over Assam and West Bengal with head and abdominal parts very often damaged ; sometimes preserved in saline water by the fishermen for extra hardening.

Genus : *Clupisoma* Swainson, 1839

1839. *Clupisoma* Swainson, *Nat. Hist. Fish. Animal*, 2, p. 306 (type, *Silurus garua* Hamilton)

131. *Clupisoma garua* (Hamilton)

1822. *Silurus garua* Hamilton, *Fish. Ganges*, pp. 157, 375, pl. 21 fig. 50 (type-locality, freshwater river of Gangetic provinces).

1977. *Clupisoma garua*, Jayaram, *Res. zool. Surv. India*, Occ. Paper No. 10, p. 18.

Local name : Neria

D. 1/7 ; P. 1/11 ; V 6 ; A. 29—36 (3/26—33) ; C. 17.

Diagnostic characters : Length of head 5.5 to 6.5 in total length, diameter of eye 3.5 to 4 in head length, abdominal edge keeled between pelvics and vent, pectorals not extending to pelvics, nasal barbels not extending to front margin of eye, anal fin may be with 36 to 39 rays, adipose dorsal only exists in the immatured ones and almost undetectable in the adult ones.

Colour : Silvery, fins tinged with grey, head and shoulder with a golden gloss when fresh.

Size : Largest recorded specimen 609 mm. in length.

Distribution : India : throughout North India, Bihar, West Bengal, Assam, Orissa, Madhaya Pradesh ; Bangladesh, Pakistan, Burma.

Remarks : Unfortunately not taken as food for being considered as a foul feeder.

Genus : *Eutropiichthys* Bleeker, 1862

1862. *Eutropiichthys* Bleeker, *Versl. Amsterdam* 14, p. 398 (type, *Pimelodus vacha* Hamilton).

132. *Eutropiichthys murius* (Hamilton)

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

1977. *Eutropiichthys murius*, Jayaram, *Rec. zool. Surv. India. Occ. Paper No. 10*, p. 23.

Local name : Kangon/Tunti/Bacha

D. 1/7/0 ; P. 1/10 ; V. 6 ; A. 38—43 (3/35—40) ; C. 17.

Diagnostic characters : Length of head 5.5 to 6 in total length, eye diameter 3.3 in head length, eyes laterally placed, each with a broad circular adipose lid ; median longitudinal groove on the head extends to the end of the occipital process which is narrowed and short, maxillary barbels reach pectoral base, outer and inner mandibular barbels a little longer than head ; teeth on palate in a continuous band, narrower than or just as wide as premaxillary band ; dorsal fin with a weak spine, very thinly serrated externally ; a very small adipose dorsal fin, caudal deeply forked.

Colour : Silvery, lightest along the sides and below ; dorsal, pectoral and caudal fins blackish at their margins.

Size : Maximum recorded size 200 mm. in length.

Distribution : India, Pakistan, Bangladesh. The southern limit in India is the Mahanadi river system (Jayaram, 1977).

Remarks : Found in big rivers. Commercially important though not caught frequently like *E. vacha*. A smooth skinned cat fish.

133. *Eutropiichthys vacha* (Hamilton)

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

1977. *Eutropiichthys vacha*, Jayaram, *Rec. zool. Surv. India Occ. Paper No. 10*, p. 23.

Local name : Bacha

D. 1/7/0 ; P. 1/13—16 ; V 7 ; A. 44—51 (3—4/41—47) ; C. 17.

Diagnostic characters : Length of head 5.5 to 5.7 in total length, eye diameter 3.5 to 3.7 in head length with broad adipose dorsal lids, cleft of mouth oblique reaching beyond midorbit, snout pointed and compressed with upper jaw longer, teeth on palatine form an uninterrupted band with those on vomer, 8 barbels reaching as long as head, pectoral spine serrated as long as dorsal spine which is thin and serrated, adipose dorsal fin very small, caudal forked, lateral line present.

Colour : Grayish silvery, dark along the back, pectoral and caudal black edged.

Size : Largest recorded specimen 304 mm. in length ; the largest specimen recorded at the Dibru river fish-landing centre at Guijan, Dibrugarh, by the author being 275 mm. in length.

Distribution : Throughout India, Bangladesh, Pakistan, Burma, Thailand. The Mahanadi forms the southern limit in India (Jayaram, 1977).

Remarks : A smooth skinned good eating cat fish. Captured in large numbers (specially in the lower and middle Assam regions) from rivers and of considerable economic importance. A voracious eater feeding on small fishes and aquatic insects.

Genus : **Pseudeutropius** Bleeker, 1862

1862. *Pseudeutropius* Bleeker, *Versl. Akad. Amsterdam*, 14, p. 398 (type, *Eutropius brachyopterus* Bleeker).

134. **Pseudeutropius atherinoides** (Bloch)

1794. *Silurus atherinoides* Bloch, *Ausland Fische.*, 8, p. 48, pl. 371, fig. 1 (type-locality: Tranquebar).
 1977. *Pseudeutropius atherinoides*, Jayaram, *Rec. zool. Surv. India*, Occ. Paper No. 10, p. 15.

Local name : Boh-du-ah

D. 1/5—6/0 ; P. 1/7 ; V 6 ; A. 33—41 (3/30—38).

Diagnostic characters : Length of head 5 to 5.5 in total length, eye diameter 2.5 to 3 in head length, no adipose lids with free orbital margins, median longitudinal groove on the head broad, shallow and reaches to the base of the occipital process ; maxillary longer than the head, caudal deeply forked, pectoral spine larger and stronger than the dorsal, a small adipose dorsal present, teeth on palate in two narrow separate crescentic bands.

Colour : Body silvery, greenish along the back, with 3/4 longitudinal bands on sides formed by black dots, a round black spot at the caudal base, usually a black spot at the nape and in front of the base of dorsal fin.

Size : Largest recorded specimen 150 mm. in length ; 160 mm. being the maximum total length collected from Neamatighat, Jorhat.

Distribution : Throughout India, Burma, Pakistan, Bangladesh, 'Not so far recorded below the Cauvery system' (Jayaram, 1977).

Family PANGASIDAE

Body elongated, compressed ; abdomen rounded, head moderately sized, exceptionally granulated, blunt ; snout more or less prominent, rounded or bluntly pointed ; mouth subterminal, horizontal or slightly ascending ; large eyes, visible from below ventral surface ; thin lips, small teeth, villiform in bands on jaws in four patches on palate. Only one genus *Pangasius* Val. with a single species.

Remarks : This family is represented by its single genus *Pangasius* in Indian waters. Though many authors like Regan (1911),

Weber and Beaufort (1913), Jordan (1923) have kept *Pangasidae* as a separate family, Hora (1938) considered it inseparable from the family *Schilbeidae* and was subsequently followed by Smith (1945) and Misra (1962). Tilak (1964) considered it as a separate family on the basis of osteological characters. Greenwood (1966), Menon (1974) and Jayaram (1977 and 1981) have also treated subsequently *Pangasidae* as a separate family.

Genus : *Pangasius* Valenciennes, 1840

1840. *Pangasius* Valenciennes, 1840, *Hist. Nat. Poiss.*, 15, p. 45 (type, *Pimelodus pangasius* Hamilton, by original designation).

135. *Pangasius pangasius* (Hamilton)

1822. *Pimelodus pangasius* Hamilton, *Fish. Ganges*, pp. 163, 376, pl. 33, fig. 52 (type locality : Estuaries of Bengal).

1974. *Pangasius pangasius*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 71.

Local name : Ponga/Pongas (Goalpara)

D. 1/7/0 ; P. 1/12—13 ; V 6 ; A. 30—34 (4—5/26—29) ; C. 19.

Diagnostic characters : Length of head 4.5 to 6.0 in total length, eye diameter 3.0 to 5.0 in head length, body elongated and compressed, depth of body 5.0 to 6.5 in total length, mouth inferior, lunate, upper jaw longer and partly exposed ; 2 pairs of barbels, maxillary extends to pectoral base ; a long narrow median groove on head, large eyes, visible from below ventral surface ; gill membranes deeply notched, united, free from isthmus ; adipose dorsolateral fin short and posteriorly free ; caudal deeply forked, complete lateral line, dorsal and pectorals strongly serrated.

Colour : Silvery, darkest along the back and glossed with purple on the sides, cheeks and under surface of head with golden tinge (Hora, 1980).

Size : The largest recorded specimen 12.19 mm. in length ; the largest specimen recorded by the author at Gauhati fish market (Fancybazar), Assam, being 11.5 cm.

Distribution : India, Pakistan, Bangladesh, Burma, Thailand, Malaya, Java.

Remarks : It is reported to be a foul feeder (Misra, 1962). It descends large tidal rivers and estuaries and feeds on molluscs, prawns and other aquatic animals. An important food fish and its flesh is very white, finely grained and tasty though not liked by many because of being a foul feeder. It is common in the Gangetic estuaries and is brought in large quantities to Calcutta fish markets during July-August months (Jayaram, 1977). It is found in fairly large numbers in the lower Assam regions than in the upper Assam regions. The fish is rarely seen now-a-days

Family AMBLYCIPITIDAE

A pair of distinct nasal barbels present, nostrils close together separated by nāsāl barbel, 4 pairs of barbels, lateral line absent, gill membranes free from isthmus. Only one genus *Amblyceps* Bleeker with one species.

Genus : *Amblyceps* Blyth, 1858

1858. *Amblyceps* Blyth, *Proc. Asit. Soc. Beng.*, 27, p. 218 (type, *Pimelodus mangois* Hamilton).

136. *Amblyceps mangois* (Hamilton)

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

1981. *Amblyceps mangois*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, *Z. S. I.*, pp. 185, 228.

D. 1/6/0 ; P. 1/7 ; V 6 ; A. 9—12 (2—3/7—9) ; C. 19.

Diagnostic characters : Length of head 6.2 in total length, small eyes, wide mouth, lower jaw slightly longer, body tapers uniformly from head to tail, caudal fin forked, no lateral line, adipose dorsal fin low with broad base.



Fig. 81. *Amblyceps mangois* (Ham.)

Colour : Brownish gray, lighter beneath.

Size : The largest recorded specimen 125 mm. in length.

Distribution : All along the base of the Himalayas, West Bengal (Darjeeling district), Bihar, Assam ; Nepal, North Burma.

Family SISORIDAE

Generally small to medium sized fishes with head and anterior part of body compressed, an adhesive apparatus on thorax may be present or absent, four pairs of barbels, close nostrils separated by nasal barbel of varying length ; rayed dorsal short with or without a spine, adipose dorsal smooth and free generally but sometimes may be confluent with caudal, rudimentary in the form of short spine (Sisor) ; paired fins inserted horizontally, may or may not be plaited below ; pectorals may be with or without spine, short anal fin, not confluent with caudal ; caudal fin deeply forked, emarginate, truncate or rounded ; complete lateral line. Ten genera and sixteen species.

Key to the genera of family Sisoridae

- | | | |
|---|---|-------------------------------------|
| 1. An adhesive apparatus on ventral surface of body present, distinct and well developed ... | 2 | |
| — An adhesive apparatus on ventral surface of body absent, if present faintly developed, indistinct | 4 | |
| 2. Adhesive apparatus in the form of distinct well-developed transverse folds ... | | <i>Pseudecheneis</i> Blyth |
| — Adhesive apparatus in the form of longitudinal folds | 3 | |
| 3. Gill membranes separated by broad isthmus, caudal fin rays prolonged, head oval shaped, compressed | | <i>Conta</i> Hora |
| — Gill membranes united with isthmus, caudal fin rays not prolonged, head flat and depressed | | <i>Glyptothorax</i> Blyth |
| 4. Dorsal spine present, well developed ... | 5 | |
| — Dorsal spine absent, anterior most ray thick but not bony | 9 | |
| 5. Serrations along outer margin of pectoral spine divergent or a combination of retrorse and antrorse teeth | 6 | |
| — Serrations along outer margin of pectoral spine either absent or when present weak in one direction only | 7 | |
| 6. Serrations along outer margin of pectoral spine divergent | | <i>Erethistes</i> Müller & Troschel |

- Serrations along outer margin of pectoral spine directed towards the base in proximal half (antrorse), while along distal half directed towards the tip (retrorse) ... *Erethistoides* Hora
- 7. Caudal fin rays not prolonged, body smooth without bony plates ... 8
- Caudal fin rays prolonged, body with bony plates, gill opening wide, adipose dorsal fin long, smooth ... *Bagarius* Bleeker
- 8. Eyes large, dorso lateral; mandibular pair of barbels inserted on a transverse line at the same level, gill membranes broadly united with isthmus, ventral surface of head compressed and narrow ... *Gagata* Bleeker
- Eyes small subcutaneous in anterior or posterior half of head, head small and depressed ... 10
- 9. Caudal fin emarginate, semicircular, barbels annulated, body plain ... *Hara* Blyth
- Caudal fin lunate or truncate ... 10
- 10. Post-labial groove broadly interrupted, teeth on upper jaw in a discontinuous or continuous band not extending backwards at sides ... *Euchiloglanis* Regan
- Post-labial groove continuous, pectoral fins with 10 to 12 branched rays ... *Exostoma* Blyth

Key to the species of genus Gagata

- 1. Maxillary barbels reach the pectoral root, two distinct greenish bands descend from the back, head 4 to 4.25 in total length, anal with 11 rays (2/9) ... *G. viridescens* (Ham.)
- Maxillary barbels do not reach the pectoral root, two very light green bands descend from the back, head 4.5 to 5 in total length, anal with 14 to 16 rays (3-4/11-12) ... *G. cenia* (Ham.)

Key to the species of genus Glyptothorax

- 1. Adhesive apparatus on the thorax large as long as broad, maxillary barbels reach first third of the pectorals, upper surface of head without elevated spots ... *G. striatus* (McCl.)
- Adhesive apparatus on thorax complete posteriorly enclosing the central pit, conical in shape; maxillary barbels as long as the head, upper surface of head with elevated spots ... 2

2. Rayed dorsal slightly longer or equal to depth of body *G. cavia* (Ham.)
- Rayed dorsal equal or shorter than body depth 3
3. Dark patches at the base of rayed dorsal, dorsal spine strong *G. sinense manipurensis* Menon
- No dark patches at the base of rayed dorsal, three whitish longitudinal streaks or bands on the body, dorsal spine weak 4
4. Rayed dorsal equal to depth of body. *G. trilineatus* Blyth
- Rayed dorsal shorter than body depth, dark bands at the base with a whitish saddle-shaped spot below and on either side of dorsal fin, pectoral fins not reaching pelvic fins *G. platypogonoides* (Bleeker)

Key to the species of genus Hara

1. Blunt spinate ossicles in the skin, pectoral spine shorter than head length, median longitudinal groove on the head shallow and reaches to opposite the hind edge of eye *H. hara* (Ham.)
- Smooth skin, pectoral spine flattened and exceeding the distance between the snout and base of dorsal fin, median longitudinal groove extends nearly to the base of the occipital process where it terminates in a small depression *H. jerdoni* (Day)

Genus *Bagarius* Bleeker, 1858

1858. *Bagarius* Bleeker, *Verh. Bat. Gen.*, 25, p. 121 (type, *Pimelodus bagarius* Hamilton); Hora, 1939, *J. Bombay. nat. Hist. Soc.* 40 (4), pp. 585-593 (review).

137. *Bagarius bagarius* (Hamilton)

1822. *Pimelodus bagarius* Hamilton, *Fish. Ganges*, pp. 186, 378, pl. 7, fig. 62 (type-locality: the Ganges).
1981. *Bagarius bagarius*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., p. 238.

Local name : Garua

D. 1/6/0 ; P. 1/12 ; V 1/5 ; A. 3/9—12 ; C. 17.

Diagnostic characters : Head Depressed, 3.7 in total length (without prolonged caudal ray) ; small eyes, upper jaw longer, gape of mouth short, half of head length ; 4 pairs of barbels, maxillary with broad bases, longer than head ; dorsal spine smooth, pectoral spine shorter

and serrated ; caudal deeply forked, its upper lobe prolonged, pectorals produced into filaments.

Colour : Skin scabrous, greyish yellow with large, irregular brown and black blotches and bands.

Size : The largest recorded specimen 1,524mm. in length. I have seen and studied a giant *Bagarius*, the largest so far recorded, measuring 225 cm. (7.5 ft.) in length and 80 kg. in weight at the Jahajghat fish landing centre below the Tezpur Circuit House on the bank of Brahmaputra on 27.8.80. A good fish landing centre indeed specially for the giant and spectacular *Bagarius* fishes.

Distribution : India : all over Northern India and Deccan, Orissa, Assam, West Bengal, Bihar, Manipur, Poona ; Burma, Bangladesh, Pakistan, Nepal, Thailand, Malaya.

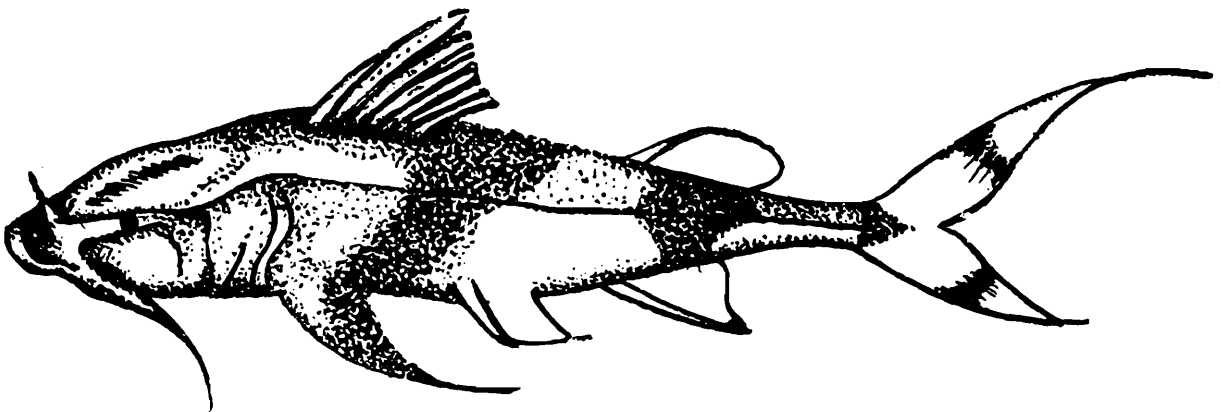


Fig. 82. *Bagarius bagarius* (Ham.)

Remarks : This is the only known valid species under this genus from this region as well as the whole of India. Not a good eating fish due to its very stiff and fibrous flesh, yellowish red in colour. Not liked by people due to its stiff flesh, big size and awful looking ; eaten generally by the poorer section.

Genus *Conta* Hora, 1950

1950. *Conta* Hora, *Rec. Indian Mus.*, 47, p. 194, (type species, *Pimelodus conta* Hamilton, by original designation).

138. *Conta conta* (Hamilton)

1822. *Pimelodus conta* Hamilton, *Fish. Ganges*, p. 191 (type-locality : River Mahananda, N. E. Bengal).

1974. *Conta conta*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 75.
1981. *Conta conta*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., p. 247.

D. 1/6/0 ; P. 1/6 ; V 6 ; A. 2—3/7 ; C. 17.

Diagnostic characters : Length of head 5 in total length, median longitudinal groove on the head deep and extends to the base of the occipital process, humero - cubital process elongated, rough with two rounded osseous projections posteriorly ; 4 pairs of barbels, strong dorsal spine nearly as long as head length, rugose anteriorly ; pectoral spine shorter, denticulated internally ; deeply forked caudal, upper lobe with a prolongation ; mandibular barbels never appeared to be annulated with back, a well developed adhesive pad on abdomen.

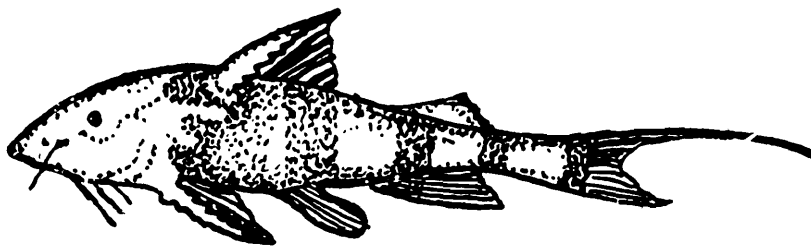


Fig. 83. *Conta conta* (Ham.)

Colour : Yellowish brown with dark bands or blotches, fin with black bands.

Size : Largest recorded specimen 102 mm. in length.

Distribution : Assam, Naga-hills and Darjeeling-Himalayas.

Remarks : Generally found to live in small hill stream pools and rivers.

Genus *Erethistoides* Hora, 1950

1950. *Erethistoides* Hora, *Rec. Indian Mus.*, 47, p. 190 (type, *Erethistoides montana* Hora, by original designation).

139. *Erethistoides montana montana* Hora

1949. *Erethistoides montana* Hora, *Rec. Indian Mus.* 47 p. 191 pl. 12, figs. 10-12 (type-locality : Tangla, Darrang Dist., Assam).
1981. *Erethistoides montana montana*, Jayaram, F. W. *Fishes of India*, Handbook No. 2. Calcutta, Z.S.I., p. 244.

D. $1/5$; A. 9 ; P. $1/6$; V 6 ; C. 13.

Diagnostic characters : Length of head 4.2 in total length, body elongated, greatly depressed, covered with small backwardly directed spines on dorsal surface ; abdomen flat and horizontal, snout projecting like a broad hood in front of mouth, small eyes, dorso laterally situated in posterior half of head ; gill membranes fused with isthmus, pectoral spine strongly serrated along outer edge with teeth directed towards tip of spine in distal half, spine tips produced into a filiform process, caudal fin emarginate, lower portion greatly produced.

Colour : The general colour is dusky white dorsally and whitish below, head at the nape is provided with a dark band and the body with three bands, one below the first dorsal, one below the adipose dorsal and one in front of the caudal ; dorsal and caudal fins are provided with bands.

Size : Largest recorded specimen 37.8 mm. in length.

Distribution : Assam and Darjeeling-Himalaya.

Genus *Erethistes* Müller & Troschel, 1845

1845. *Erethistes* Müller & Troschel, *Horae Ichthyol.*, 3, p. 12 (type, *Erethistes pussilus* Müller & Troschel).

140. *Erethistes pussilus* Müller & Troschel

1845. *Erethistes pussilus* Müller and Troschel, *Horae Ichthyol.*, 3, p. 12, pl. 1, fig. 3 (type locality — Assam)
1981. *Erethistes pussilus*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., p. 243.

D. $1/6$; P. $1/5-6$; V $1/5$; A. 11 ($3/8$) ; C. 15.

Diagnostic characters : Head triangular as broad as long, its length being 3.6 to 4.3 in standard length, the height is equal to the length of head ; small eyes, 4 in snout length ; snout coarsely roughened and the ridge on it ends in a point over the snout, a shallow groove from behind the tip of the snout and below the eyes, occipital process narrow with parallel margins, extends to the basal bone of the dorsal fin ; narrow bands like teeth in the upper and lower jaws, gill openings narrow and separated from each other, dorsal fin with spine, roughened and denticulated ; pectorals provided with strong spines and extend to pelvic fin.

Colour : Brown.

Size : Attains '1 to 2 inches' (Hora, 1947) in length.

Distribution : India : Assam, Orissa, Bihar ; Burma.

Genus **Exostoma** Blyth, 1860

1860. *Exostoma* Blyth, *J. Asiat. Soc. Beng*, 29, p. 154, (type, *Exostoma berdmorei* Blyth, by original designation) ; Hora & Silas, 1952, *Rec. Indian Mus.*, 42, p. 23 (revision).

141. **Exostoma labiatum** (McClelland)

1842. *Glyptothorax labiatus* McClelland, Calcutta, *J. nat. Hist.*, 2, p. 588 (type-locality-Mishmee-Hills, Assam).
1981. *Exostoma labiatum*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., p. 66.

D. 1/6/0 ; P. 1/13 ; V 1/6 ; A. 1/5 ; C. 3+17+3.

Diagnostic characters : Head length $\frac{1}{5}$ of the total length, elongated body, flattened ventrally, head depressed, as long as broad ; eye diameter 15.5 in head length, jaws in the form of a double crescent or 'ω' shaped, lips broad with a median and a lateral lobe on either side, having a barbel between , maxillary barbels extend to the pectoral fin, lower labial fold uninterrupted, anal commences to nearer to caudal fin than to the ventral fin.

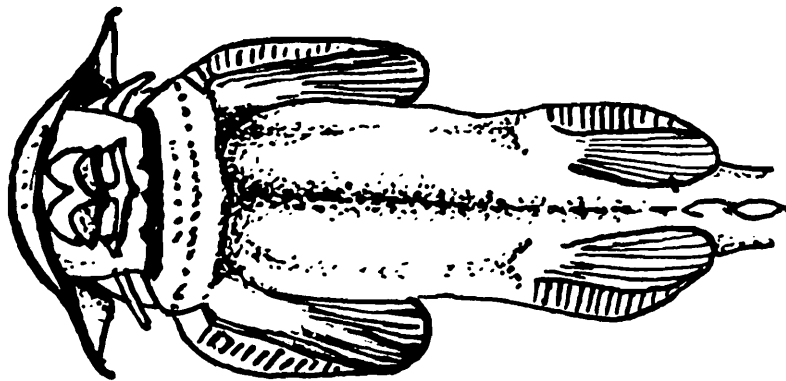


Fig. 84. *Exostoma labiatum* (McCl.)—Ventral view showing labial and fin modifications

Colour : Yellowish grey above becoming pale below.

Size : Largest recorded specimen 60 mm. in length.

Distribution : India : Mishmee and Abor-Hills, Meghalaya.

Genus **Euchiloglanis** Regan, 1907

1907. *Euchiloglanis* Regan, *Rec. Indian Mus.*, 1, p. 158 (Substitute name for *Chimarrichthys* Sauvage-type, *Euchiloglanis davidi* Sauvage).

142. **Euchiloglanis hodgarti** (Hora)

1923. *Glyptosternum hodgarti* Hora, *Rec. Indian Mus.*, 25, p. 38 pl. 2, figs. 1, 2, 3 [type locality : Nepal (Pharping), Darjeeling and the Abor-hills].
1966. *Euchiloglanis hodgarti*, Menon & Sen, *Sci. & Cult*, 32 : 211-212.
1981. *Euchiloglanis hodgarti*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., p. 263.

D. 1/6/0 ; P. 1/17 ; V 6 ; A. 2/6 ; C. 13.

Diagnostic characters : Length of head 5.0 in total length, body tapering towards the tail, flat and wide ; head with 4 pairs of barbels, flattened belly between the horizontal pectoral fins, labial folds broadly interrupted, not reflected round the mouth ; chest appears to be a flat adhesive surface bounded by the striated rays of pectoral and pelvic fins, maxillary barbels wide and spreading.

Colour : Yellowish brown.

Size : Largest recorded specimen 100 mm. in length.

Distribution : India : Abor-hills, Meghalaya, Darjeeling, West Bengal ; Kali river at Dharchula, U. P. ; Nepal, Bangladesh.

Remarks : Its extension of the geographical range from eastern Nepal to further west at Dharchula (Kali river), U. P., near the Indo-Nepal border was recorded last by us (Menon and Sen, 1966). This species before 1966 was so far known along the Himalayas only as far westwards as Pharping in the Bhagmati drainage system of eastern Nepal (Hora & Silas, 1952). Our discovery of the species at Dharchula, U.P. in 1966 extended its known range of distribution further westwards along the Himalayas.

Genus **Gagata** Bleeker, 1858

1858. *Gagata* Bleeker, *Ichth. Arch. Ind. Prod.*, 1 : p. 204 (type, *Gagata typus* Blk. = *Pimelodus gagata* Ham.)

143. **Gagata viridescens** (Hamilton)

1822. *Pimelodus viridescens* Hamilton, *Fish. Ganges*, pp. 173, 376, pl. 10, fig. 56 (type-locality : North Bengal).

1981. *Gagata viridescens*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), J. Indl. Fish. Soc. India, p. 77.

Local name : Keyakatta

D. 1/6/0 ; P. 1/8 ; V 1/5 ; A. 3—4/8 ; C. 18—21

Diagnostic characters : Length of head 4 to 4.25 in total length, body compressed and flattened ventrally to the pelvics, head covered with minute spine like structures, broad snout, rounded with over hanging and fleshy mouth ; diameter of eye 3.5 to 4 in head length, maxillary barbels reach posterior border of eye, nasals minute and rudimentary ; wide gill opening, dorsal with a small entire strong spine nearer to adipose dorsal, pectoral with a strong spine externally smooth, smooth skin.

Colour : Coppery, glossed with golden tinge on the sides, a black blotch on the occiput, 3 or 4 along the back descending downwards.

Size : Attains 85 mm. in length.

Distribution : India : Assam, North Bengal, Bihar ; Nepal, Bangladesh.

Remarks : Not liked by people as food due to its hard bony structure.

144. *Gagata cenia* (Hamilton)

1822. *Pimelodus cenia* Hamilton, *Fish. Ganges*, pp. 174, 376, pl. 31, fig. 57 (type locality : North Bengal).

1981. *Gagata cenia*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., p. 39.

Local name : Keyakatta

D. 1/6/0 ; P. 1/7—9 ; V 1/5 ; A. 2—3/10—12 ; C. 17—19.

Diagnostic characters : Length of head 4.5 to 5 in total length, body flattened ventrally to the pelvics, head covered with soft skin, prominent snout with overhanging mouth, sub cutaneous eyes, dorso laterally placed, its diameter being 1.8 to 3.4 in head length ; small mouth, horizontal, crescentic ; thick lips, fleshy and continuous at the angles of mouth ; maxillary and nasal barbels shorter and minute respectively, median longitudinal groove on head extending to the

occipital process, dorsal with a finely serrated spine, pectoral with a strong serrated spine, smooth skin.

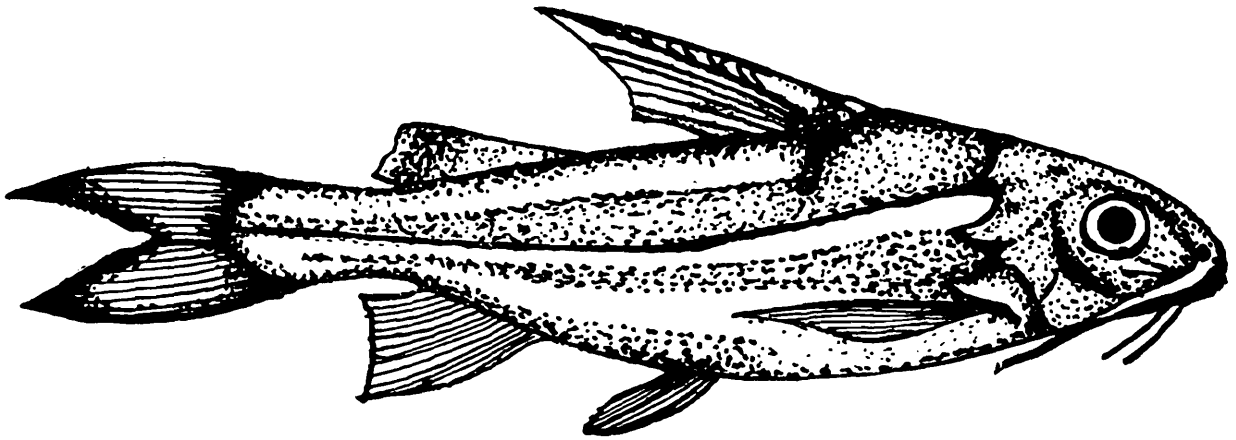


Fig. 85. *Gagata cenia* (Ham.)

Colour : Yellowish brown above becoming silvery below, 3 dark bands on head, 4 on back descending up to lateral line.

Size : Largest recorded specimen 152 mm. in length,

Distribution : India : Assam, West Bengal, Bihar, Orissa, Punjab, Delhi, U. P. ; Burma, Bangladesh, Nepal, Pakistan.

Genus *Glyptothorax* Blyth, 1860

1860. *Glyptothorax* Blyth, *J. Asiat. Soc. Bengal*, 29 : p. 154 (type, *Glyptothorax trilineatus* Blyth by original designation).

145. *Glyptothorax cavia* (Hamilton)

1822. *Pimelodus cavia* Hamilton, *Fish. Ganges*, pp. 188, 378 (type-locality : North Bengal).

1981. *Glyptothorax cavia*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., pp. 253, 259.

D. 1/6/0 ; P. 1/8 ; V 1/5 ; A. 2/9—10 ; C. 18—21.

Diagnostic characters : Head very large and greatly depressed, 4.4 in total length, broadly rounded anteriorly, covered with bony plates forming ridges ; upper jaw longer, eyes small, subcutaneous ; inferior mouth, lips papillated ; occipital process not reaching the base of dorsal, dorsal with a strong spine, low pectorals, horizontal with a strong broad spine ; caudal forked, smooth skin, deep thoracic adhesive apparatus with a deep central pit.

Colour : Brownish gray above, dirty yellow beneath, sides and dorsal beset with deep coloured spots, often with narrow longitudinal bands on sides.

Size : Largest recorded specimen 165 mm. in length.

Distribution : India : Assam and North Eastern states.

146. *Glyptothorax striatus* (McClelland)

1842. *Glyptosternon striatus* McClelland, *Calcutta, J. nat. Hist.* 2 : p. 587, pl. 6, figs. 1, 2 (type-locality : Khasi mountains, Assam).

1981. *Glyptothorax striatus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta. *Z.S.I.*, pp. 254, 257.

D. 1/6/0 ; P. 1/10 ; V 1/5 ; A. 2/9 ; C. 17.

Diagnostic characters : Length of head 4.75 in total length, depressed head nearly as broad as long, snout depressed, broadly pointed ; superior subcutaneous eyes, 10.5 in head length ; upper jaw longer, lips not papillated ; maxillary barbels with broad base reaching middle of pectorals, occipital process 3 times as long as broad, not reaching basal bone of dorsal ; thoracic adhesive apparatus large, as long as broad ; pectorals low horizontal, pelvics reaching anal origin, caudal deeply forked.

Colour : Uniformly brown

Size : Largest recorded specimen 216 mm. in length.

Disiribution : India : Meghalaya, Assam and Eastern Himalayas.

147. *Glyptothorax trilineatus* Blyth

1860. *Glyptothorax trilineatus* Blyth, *J. Asiat. Soc. Beng.*, 29 : pl. 154 (type-locality : Tenasserim).

1981. *Glyptothorax trilineatus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, *Z.S.I.*, pp. 254, 261.

D. 1/6—7/0 ; P. 1/10—11 ; V 1/5 ; A. 1/9—10 ; C. 16—18.

Diagnostic characters : Length of head 5.7 to 6.0 in total length, superior small eyes, 7.5 to 9.7 in head length ; inferior horizontal mouth, upper jaw longer, lips papillated ; maxillary reaching middle of pectorals, thoracic adhesive apparatus longer than broad, without

a central pit ; dorsal with a weak spine finely serrated at its upper part or entire internally, low pectoral with a broad spine denticulated internally, anal origin opposite to adipose dorsal origin, nearer to pelvic origin than to caudal base ; forked caudal.

Colour : Granulated skin, chestnut brown above, pale yellow below with a well marked dirty white longitudinal streak along the back from occiput to caudal base, a second along the lateral line and the third one along the abdominal margin, fins tinged with dirty to brownish yellow.

Size : Largest recorded specimen 140 mm. in length.

Distribution : India : Manipur ; Burma, Thailand.

148. *Glyptothorax sinense manipurensis* Menon

1954. *Glyptothorax manipurensis* Menon, *Rec. Indian Mus.*, **52**, p. 23 (type locality-Barak river, Manipur).
1981. *Glyptothorax sinense manipurensis*, Jayaram, *F. W. Fishes of India, Handbook No. 2*, Calcutta, *Z.S I*, pp. 254, 261.

D. 1/6 ; P. 1/9 ; A. 2/9 ; V 1/5 ; C. 22—24.

Diagnostic characters : Length of head 4 to 4.6 in standard length, broadly pointed, body very much laterally compressed, elongated ; dorsal profile rises from the tip of snout to the origin of dorsal fin when it slopes down gradually to caudal fin base, diameter of eyes 6 to 7 in head length, inferior mouth, horizontal, width of gape almost equal to snout length ; well developed lips with papillae, snout length 2 times in head length, maxillary barbels reach middle of base of pectorals, dorsal spine sheathed in skin, strong and serrated along its posterior margin ; pectoral spine broad and denticulated along its inner margin, caudal deeply forked.

Colour : Olivaceous with dark patches at the bases of dorsal, caudal and adipose dorsal.

Size : Attains 126 mm. in length.

Distribution : India : Manipur.

Remarks : An endemic species to Manipur. Its paired fins are not plaited. Adhesive apparatus on the chest longer than broad.

149. *Glyptothorax platypogonoides* (Bleeker)

1855. *Pimelodus platypogonoides* Bleeker, *Nat. Tijds. Ned., Indie* 9, p. 272.
 1974. *Glyptothorax platypogonoides*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub (1), *J. Indl. Fish. Soc. India*, p. 79.

D. 1/6—7/0 ; P. 1/9—10 ; V 1/5 ; A. 1/9—10 ; C. 16—18.

Diagnostic characters : Length of head 5.5 to 5.7 in total length, dorsal profile considerably arched, ventral profile horizontal, flattened head, pointed anteriorly ; small eyes, its diameter being 7.4 to 9.5 in head length ; length of snout 2.2 to 2.3 in head length, teeth in the upper jaw form a narrow band while in the lower jaw this band is interrupted, gill openings form channelled, spout-like structures on the ventral surface in front of the bases of the pectoral fins ; dorsal fin commences mid way between the tip of the snout and base of the adipose dorsal, dorsal spine sheathed in skin, strong and serrated internally, pectoral spine strong and broad, denticulated ; pectoral fins extend to the middle of the dorsal fin base, a small anal papilla present, caudal deeply forked, adhesive apparatus on chest devoid of any central pit.

Colour : Brownish olive on the dorsal and lateral sides with pale yellow below, all the fins are marked with spotted bands.

Size : Largest recorded specimen 103 mm. in total length.

Distribution : India : Assam ; Burma, Thailand and Sumatra.

Remarks : 'The outer rays of the paired fins are without any adhesive mechanism on their ventral surfaces' (Menon, M.A., S., 1954).

Genus *Hara* Blyth, 1860

1860. *Hara* Blyth, *J. Asiat. Soc. Bengal.*, 29 : p. 151 (type, *Hara buchanani* Blyth = *Pimelodus hara* Ham.).

150. *Hara hara* (Hamilton)

1822. *Pimelodus hara* Hamilton, *Fish. Ganges*, p. 190 (type locality : R. Koshi).
 1981. *Hara hara*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, *Z.S.I.*, pp. 245-246.

D. 1/6/0 ; P. 1/6 ; V 6 ; A. 10—11 (3/7—8) ; C. 15.

Diagnostic characters : Length of head 4.3 in total length, body depressed, broadly conical and flattened ventrally ; bluntly pointed snout, depressed ; superior, subcutaneous small eyes, 9.0 in head length ; mouth inferior, lips papillated, upper jaws longer ; maxillary barbels reaching gill opening, median longitudinal groove not reaching base of occipital process, scapular and cubito humeral process well developed, no thoracic adhesive apparatus, dorsal with a strong serrated spine, low pectorals, nonplaited with a strong flattened spine with internal (forwardly) and external (backwardly) denticulations and serrations, deeply lunate caudal, skin tuberculated.

Colour : Yellowish brown with broad cross bands, fins with small cross bands.

Size : Largest recorded specimen 135 mm. in length.

Distribution : India : Assam, Orissa, Gangetic provinces ; Burma.

151 *Hara jerdoni* (Day)

1870. *Hara jerdoni* Day, *J. Asiat. Soc. Beng.*, 39 : p. 39 (type locality : Sylhet now in Bangladesh).
 1981. *Hara jerdoni*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z.S.I., pp. 245-246.

D. 1/5/0 ; P. 1/6 ; V 6 ; A. 10 ; C. 12.

Diagnostic characters : Length of head 3.5 to 3.7 in total length, conical head, flattened ventrally ; snout bluntly pointed, depressed ; superior, subcutaneous eyes 7.5 in head length ; inferior mouth, upper jaw longer, maxillary reaching gill opening, median longitudinal groove reaching the base of occipital process, no thoracic adhesive apparatus, scapular and cubito humeral process well developed, dorsal with a strong serrated spine, pectorals low, horizontal, nonplaited with strong flattened spine bearing 9—12 strong internal denticulations (forwardly), and 26 small external serrations (backwardly) ; forked caudal, subequal lobes ; smooth skin, under surface of chest with numerous glandular pores, pectorals 1.7 in head length.

Colour : Brownish with black and white annulations, irregular cross bands on body.

Size : Largest recorded specimen 37 mm. in length,

Distribution : Assam, Bihar, West Bengal ; Bangladesh.

Genus **Pseudecheneis** Blyth, 1860

1860. *Pseudecheneis* Blyth, *J. Asiat. Soc. Beng.*, 29, p. 154 (type, *Glyptosternon sulcatus* McClelland).

152. ***Pseudecheneis sulcatus*** (McClelland)

1840. *Pseudecheneis sulcatus* McClelland, *Calcutta, J. nat. Hist.* 2, p. 578, pl. 6 (type locality : Khasi Hills, Assam).
1981. *Pseudecheneis sulcatus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, *Z. S. I.*, p. 268.

D. 17/0 ; P. 1/13 ; V 1/5 ; A. 9—13 (2—4/7—9) ; C. 17.

Diagnostic characters : Depressed head as long as broad, 6.0 in total length ; superior small eyes 12.5 in head length, small mouth, inferior ; upper jaw longer, lower lip papillated ; median longitudinal groove on head broad, reaching midorbit ; maxillary broad based, reaching anterior margin of eyes ; gill membranes confluent with broad isthmus, a sucker like, oval, thoracic adhesive apparatus with about 14 lamellae, dorsal with a weak spine, pectorals low with a flattened serrated spine (internally), caudal emarginate, lower lobe longer, smooth skin.

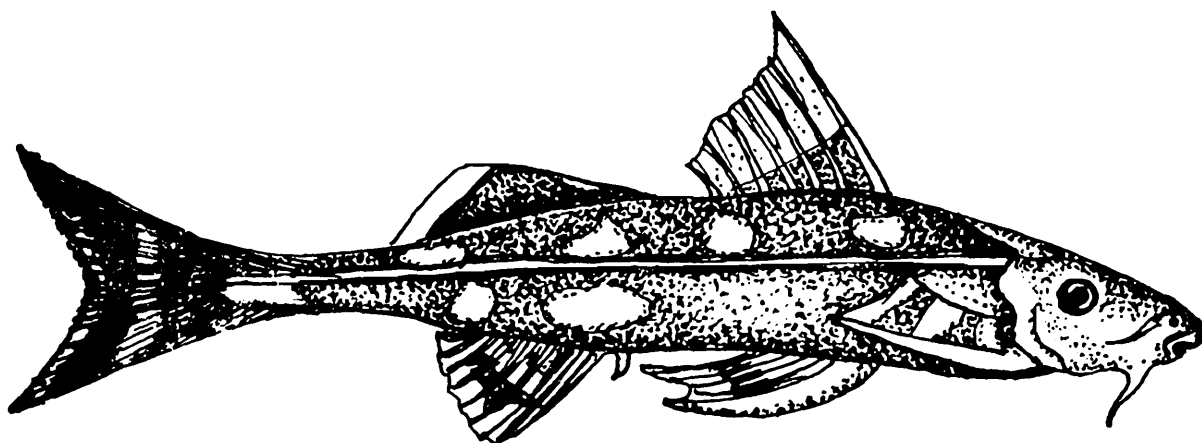


Fig. 86. *Pseudecheneis sulcatus* (McCl.)

Colour : Blackish with large irregular yellowish blotches, fins yellow with black bands.

Size : Largest recorded specimen 20 cm. in length.

Distribution : India : Assam, Darjeeling and Nepal Himalayas.

Family CLARIIDAE

Head moderate sized, greatly depressed, covered with osseous plates dorsally and laterally forming a case covering a diverticulum of the gill cavity, snout broadly rounded, mouth terminal, fairly wide, transverse ; small eyes, dorso laterally placed ; free orbital margins, fleshy lips, papillated ; upper jaw longer, 4 pairs of barbels, teeth villiform in broad bands or patches on jaws and palate, gill membranes deeply notched, partly united with each other, free from isthmus ; an accessory respiratory dendritic branchial organ attached to second to fourth branchial arches present. Only one genus *Clarius* Scopoli with a single species.

Genus *Clarias* Scopoli, 1777

1777. *Clarias* Scopoli, *Introd. Hist. Nat.*, p. 445, (type, *Clarias orontis* Günther)

153. *Clarias batrachus* (Linnaeus)

1758. *Silurus batrachus* Linnaeus, *Syst. Nat.*, I, ed 10, p. 305 (type locality : Asia, Africa).

1981. *Clarias batrachus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p, 270.

Local name : Mah-gur/Magur

D. 62—76 ; P. 1/8—11 ; V 6 ; A. 45—58 ; C. 15—17.

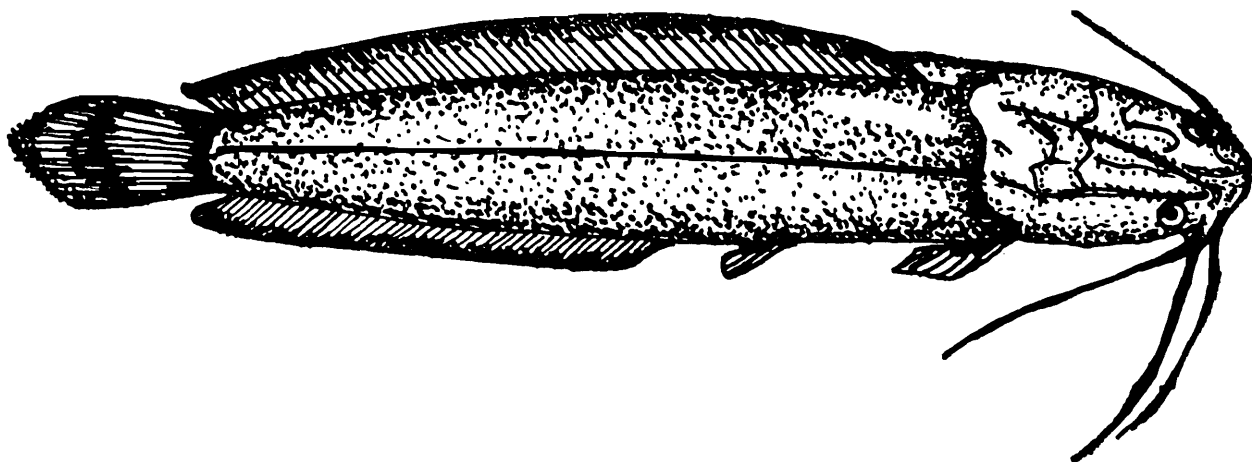


Fig. 87. *Clarias batrachus* (L)

Diagnostic characters : Length of head 5.6 to 6 in total length, small eyes, 8 in head length ; greatest width of head equals its length, upper jaw longer, a long dorsal fin, nostrils wide apart, terminal mouth, transverse ; maxillary barbels reach middle or base of pectoral

fin, with a finely serrated spine but covered with skin, round caudal, accessory respiratory organ present.

Colour : Uniform rich reddish brown or greyish black, smooth skinned.

Size : Largest specimen collected from Assam (Ujanbazar and Neamatighat) being 290 mm. in length.

Distribution : India, Pakistan, Nepal, Sri Lanka, Bangladesh, Burma, Thailand, Malaya, Philippines, Java and Malayasia.

Remarks : Found to live in fresh, brackish as well as marshy or muddy waters (dried up beels, tanks, cannals, bheries etc.). A priced fish liked by people for its believed rejuvenating vigor. Special schemes have been introduced by the State Fisheries Directorate, Assam, to produce this fish more extensively¹.

Family : HETEROPNEUSTIDAE

Body elongated, compressed, with greatly depressed head covered with osseous plates, 4 pairs of barbels, small terminal mouth with upper jaw longer, a median longitudinal groove on head with elongated occipital process, wide gill opening with free gill membrane from isthmus, a short, spineless rayed dorsal, no adipose dorsal, pectoral with strong spine, a long anal, caudal rounded. Only one genus *Heteropneustes* Müller with a single species.

Genus *Heteropneustes* Müller, 1840

1840. *Heteropneustes* Müller, *Arch. Anat. Physiol*, p. 115 (type *Silurus fossilis* Bloch).

154. *Heteropneustes fossilis* (Bloch)

1797. *Silurus fossilis* Bloch, *Ichth. Hist. nat. ed. Poiss.*, 11, p. 36, pl. 370, fig. 2 (type locality : Tranquebar).

1981. *Heteropneustes fossilis*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 273-274.

Local name : Singhi/Singee/Sheen-ee

D. 6—7 ; P. 1/7 ; V. 6 ; A. 60—79 ; C. 17—23.

¹ Also the main resolution taken particularly for Assam for this fish by the Third All India Seminar on Ichthyology organised by the Gauhati University during 26th to 29th July, 1982.

Diagnostic characters : Length of head 5.5 to 7 in total length, width of head equals its length, diameter of eye 2 to 3 times from end of snout, maxillary barbels extending to middle of pectoral or to pelvic base, gill opening wide, gill membranes free from isthmus, gill cavity with an accessory respiratory apparatus extending backwards to tail region, dorsal much shorter, nearer to snout end than caudal base, with spine ; pectorals not reaching pelvics, with a strong serrated poisonous spine, rounded caudal.

Colour : Dark purplish brown or leaden brown often with two yellowish lateral bands in juveniles.

Size : Attains 304 mm. in length ; specimens collected by the author from Rangia (Barali river), Dibrugarh (Dibru river), Tezpur (Ganeshghat) and Jorhat (Neamatighat) range between 117 to 280 mm, in length.

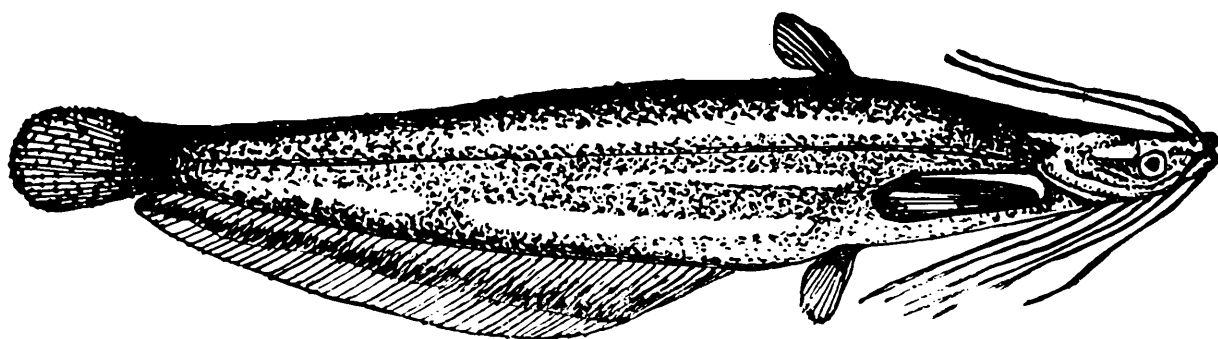


Fig. 88. *Heteropneustes fossilis* (Bloch)

Distribution : Freshwaters of India, Pakistan, Bangladesh, Nepal, Burma, Sri Lanka, China and Thailand.

Remarks : A good eating fish, usually preferred during convalescent period. Known for its high blood enriching properties and rejuvenating vigor. A fish of high economic importance. The strong and sharp pectoral spine may cause painful wounds and bleeding if not hold carefully.

Family CHACIDAE

Robust large sized ugly looking fish with head and body ahead of anal fin depressed, nostrils widely separated, barbels three pairs (four pairs if posterior nostrils beset with tentacles), a deep median

longitudinal groove on large head, gill membranes confluent with isthmus, adipose dorsal spineless united with caudal, first dorsal short with a strong spine ; caudal rounded, head, body, and lateral line with a few series of cutaneous tentacles. Only one genus *Chaca* Gray with one species.

Genus *Chaca* Gray, 1831

1831. *Chaca* Gray, *Zool. Misc.*, p. 9 (type, *Platystacus chaca* Hamilton, by monotypy); Jayaram and Mazumder, 1964, *Proc. zool. Soc. Calcutta*, 17 (2), p. 178, (review) ; Jayaram, 1980, *Occ. Paper, Z. S. I.*, No. 23, p. 15.

155. *Chaca chaca* (Hamilton)

1822. *Platystacus chaca* Hamilton, *Fish. Ganges*, pp. 140, 374, pl. 28, fig. 43. (type locality : North-East Bengal).
1981. *Chaca chaca*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, *Z. S. I.*, pp. 274-275.

Local name : Chega/Gajeb-bakau

D. 1/3—4 ; P. 1/4—5 ; V 6 ; A. 7—10 ; C. 40—48.

Diagnostic characters : Length of head 3 in total length, eyes minute, its diameter being 17 times in head length ; flat body, vertically compressed ; head covered with soft skin, very large, broad, depressed with a very wide mouth, upper surface covered with tubercles and short soft spines, its large chin provided with an adhesive apparatus formed of radiating plates ; dorsal and pectoral each with strong spine enclosed in skin, maxillary and mandibular barbels very small, caudal rounded, body and head with short tentacles, a ring of these tentacles round the eyes and several along the edge of the lower jaw.

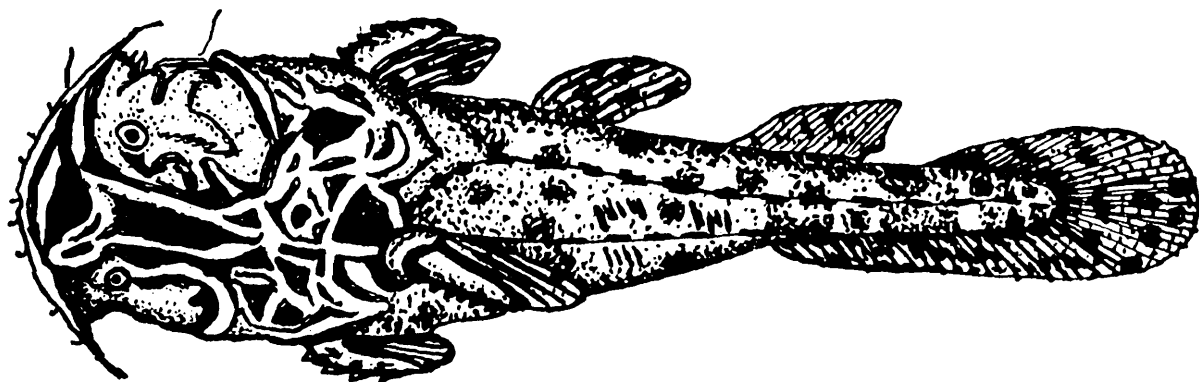


Fig. 89. *Chaca chaca* (Ham.)

Colour : Dark brownish, lighter on chin, pectorals and pelvics lighter with dark mottlings.

Size : Largest lengths recorded '8 inches' (203 mm.), '6 inches' (152 mm.) and '8.1 inches' (204 mm.) by Day (1878), Shaw and Shebbeare (1937) and Misra (1976) respectively.

Distribution : India : Assam, West Bengal, Bangladesh, Nepal, Burma, Malaya, Sumatra, Borneo, Banka and Malayasia.

Remarks : Most ugliest fish ever known. Hamilton Buchanan remarked 'of all the horrid animals of this tribe the *Chaka* is the most disagreeable to behold. All persons turn away from it with loathing' It causes wounds to the feet of fishermen with its sharp dorsal spines when remaining buried inside the mud.

Family OLYRIDAE

Loach like, small sized, elongated fish with body flattened in front of pelvics and compressed behind, 4 pairs of barbels, generally well developed ; gill openings very wide, extending to far forwards, functional part greatly restricted by flaps of skin along lower edges ; adipose dorsal fin long, not confluent with either dorsal or caudal ; pectoral fin with a sharp serrated spine, anal fin not confluent with caudal which is long, lanceolate or forked, filiform, upper part better developed than lower. Only one genus *olyra* and four species.

Key to the species of genus Olyra

- | | | |
|---|-------------------------------------|---|
| 1. Caudal fin entire with central rays prolonged
(neither lanceolate nor forked) ... | <i>O. laticeps</i> McCl. | |
| — Caudal fin forked ... | | 2 |
| 2. Upper lobe of caudal fin not very long than
lower lobe ... | <i>O. horai</i> (Prashad & Mukerji) | |
| — Upper lobe of caudal fin almost twice as long
as lower one ... | | 3 |
| 3. Body depth 9 to 11 in standard length, anal
fin rays 18 to 23 ... | <i>O. longicaudata</i> (McCl.) | |
| — Body depth 11 to 12 in standard length, anal
fin rays 17 to 18 ... | <i>O. kempi</i> . Chaudhuri | |

Genus *Olyra* McClelland, 1842

1842. *Olyra* McClelland, *Calcutta, J. Nat. Hist.*, 2, p. 588 (type, *Olyra longicaudata* McClelland).

156. *Olyra laticeps* McClelland

1842. *Olyra laticeps* McClelland, *J. Nat. Hist. Calcutta*, 2, pp. 588, 589, pl. 21, fig. 2, (type locality : Khasi mountains).
1976. *Olyra laticeps*, Misra, *Fauna India* (Pisces), Vol. III, p. 144.

D. 1/6/0 ; P. 1/8 ; V 1/6 ; A. 15 (4/11) ; C. 18.

Diagnostic characters : Head depressed, sub cylindrical, 4.8 in total length ; snout much depressed, 4.0 in head length ; small eyes, subcutaneous, superior, 10 in head length ; nostrils wide apart, maxillary barbels as long as broad, outer mandibular barbels reaching hind border of eye, wide gill openings, dorsal without a spine, pectorals above the level of pelvics with a strong serrated spine, caudal entire, not forked, middle rays slightly prolonged ; lateral line present.

Colour : Olive brown, lighter below.

Size : Attains 46 mm. in length.

Distribution : India : Assam

157. *Olyra longicaudata* McClelland

1842. *Olyra longicaudata* McClelland, *J. Nat. Hist. Calcutta* 2, p. 588, pl. 21, fig. 1. (type-locality : Khasi hills, Assam).
1981. *Olyra longicaudata*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 276.

D. 8 ; P. 1/6 ; V 5 ; A. 18—23 ; C. 14—16.

Diagnostic characters : Length of head about 7.0 in total length, head depressed, covered with soft skin ; small eyes, superior, subcutaneous, about 10 in head length ; terminal mouth, transverse ; sub-equal jaws, fleshy lips, maxillary barbels reaching the pectoral base, outer and inner mandibular barbels short, wide gill openings, dorsal without spine, origin nearer to adipose dorsal than to snout end ; pectorals not reaching pelvics and with strong spine serrated on both sides ; pelvics not reaching anal, lanceolate caudal entire with elongated central rays, smooth skin, subcylindrical and elongated body.

Colour : Brownish above and pale below.

Size : Largest recorded specimen 73 mm. in length.

Distribution : India : Assam, West Bengal (Kalimpong and Darjeeling) ; Burma.

158. *Olyra kempi* Chaudhuri

1912. *Olyra kempi* Chaudhuri, *Rec. Indian Mus.*, p. 443, pl. 11, figs. 4, 4a, 4b (type-locality : Mangaldai, Assam).

1976. *Olyra kempi*, Misra, *Fauna India*, (Pisces), Vol. III, p. 142.

D. 7/0 ; P. 1/4—6 , V. 6 ; A. 17—19 ; C. 15—16.

Diagnostic characters : Head depressed, covered with soft skin, 7.5 in total length ; subcylindrical, elongated and compressed ; spatulate snout, eyes moderate, subcutaneous and superior, 4.5 to 5.0 in head length , terminal mouth, transverse, upper jaw slightly longer ; maxillary reaching to pectoral end, wide gill opening, dorsal without spine, its origin nearer to adipose dorsal origin than to snout end ; caudal forked with an elongated upper lobe, adipose dorsal fin long and low, maxillary barbules longest, reaching at least to pectoral base and sometimes beyond the end of it ; caudal forked with upper lobe elongated.

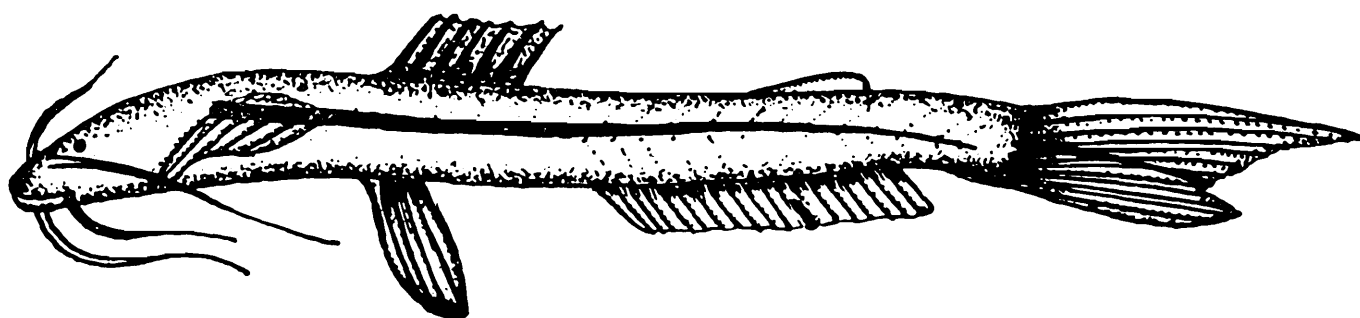


Fig. 90. *Olyra kempi* Chaudhuri

Colour : Brown body with 3 longitudinal bands, abdomen and fins dull white.

Size : Maximum lengths recorded being 75 mm. (2.8), 120 mm. (4.7 inches) and 54 mm. (2.1 inches) by Misra (1976), Shaw and Shebbeare (1937) and Chaudhuri (1912) respectively.

Distribution : India : Assam, West Bengal.

159. *Olyra horai* (Prashad & Mukerji)

1929. *Amblyceps horai* Prashad and Mukerji, *Rec. Indian Mus.*, 31, p. 173, p. 7, fig. 1. text fig. 1

1976. *Olyra horai*, Misra, *Fauna India*, (Pisces), Vol. 3, p. 141

D. 17/0 ; P. 17 ; V. 15 ; A. 10/11 ; C. 17.

Diagnostic characters : Subcylindrical, elongated and depressed body, head depressed, covered with skin, 7 to 8 in total length ; snout broadly rounded, small eyes, superior and subcutaneous, 8.8 in head length ; terminal, transverse mouth with fleshy lips ; a row of open pores along the lower jaw margin and a few ones along the cheeks, dorsal without a spine, pectorals not reaching pelvics, with a strong serrated spine ; pelvics not reaching anal, deeply forked caudal.

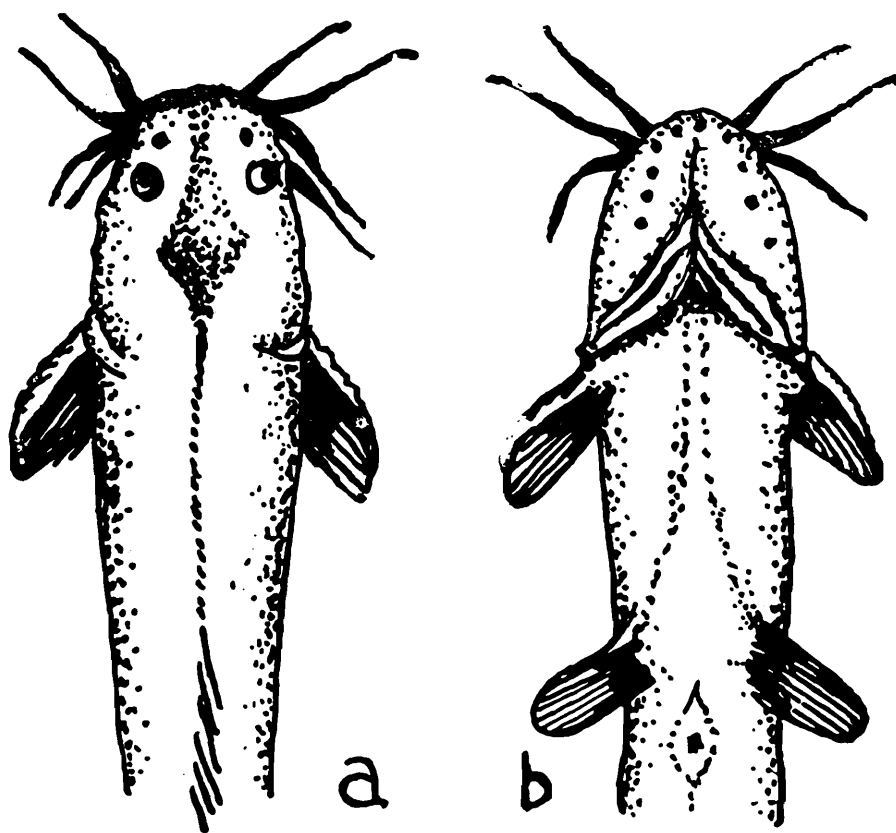


Fig. 91. *Olyra horai* (Prashad & Mukerji)

Colour : Brownish above and paler beneath, minute black dots all over the body, fins dirty white, caudal greyish.

Size : Largest recorded specimen 84 mm. in length.

Distribution : India : Meghalaya ; Burma.

Order ATHERINIFORMES

Family CYPRINODONTIDAE

Body moderately compressed and elongated, head and body with scales, preorbital very narrow, premaxillaries may be protractile, teeth on jaws, a small patch on vomer ; gill membranes free from each other and also from isthmus, a single dorsal fin inserted in posterior half of body, no spines, no barbels, lateral line absent. Only one genus *Aplocheilus* McClelland with one species.

Genus *Aplocheilus* McClelland, 1839

1839. *Aplocheilus* McClelland, *Asiat. Res.*, 19, p. 301 (type, *Aplocheilus crysostigmus* McClelland).

160. *Aplocheilus panchax* (Hamilton)

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

1981. *Aplocheilus panchax*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 295.

D. 7—11 ; P. 15 ; V 6 ; A. 15--17 ; C. 13 ; L. 1.31—34.

Diagnostic characters : Length of head 4 to 4.5 in total length, eye diameter 3.5 in head length, lower jaw longer, maxilla reaching to below first third of eye, dorsal origin above the last anal rays, pectorals as long as head, pelvic fin without any prolonged ray, caudal rounded, anal nearly square, ventral small.

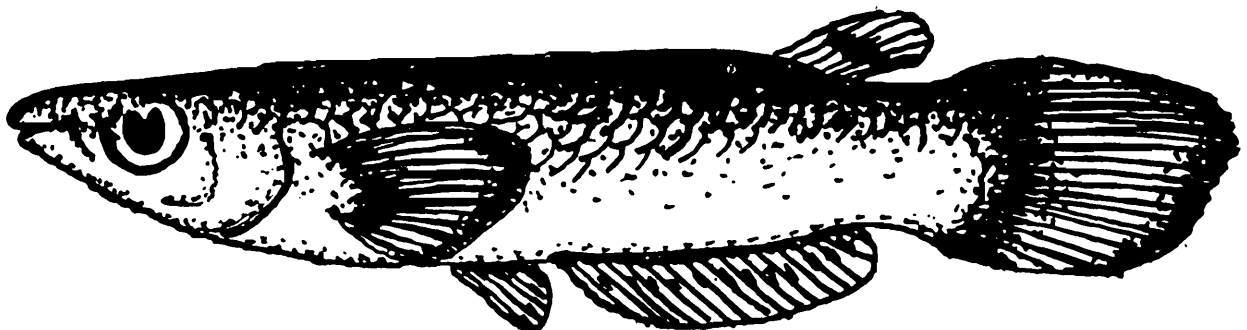


Fig. 92. *Aplocheilus panchax* (Ham.)

Colour : A white occipital spot, greenish above, dull white beneath, fins yellowish, lower third with a large black spot, caudal and anal tinged with orange.

Size : Largest recorded specimen 89 mm. in length.

Distribution : India : Fresh and brackish waters of U. P., Punjab, Bihar, West Bengal, Assam, M. P., Andamans, Orissa ; Pakistan, Bangladesh, Burma, Sri Lanka, Malaya, Thailand.

Remarks : It is the most important indigenous larvivorous fish. Aitkins (1901), Alcock (1911, 1920), Brahmachari (1909), Chaudhuri (1909, 1911), Covell (1935), Gravely (1937), Hora (1927), Hora and Nair (1938), Job (1940, 1940a), John (1940), Mac Donald (1914), Southwell (1920), Thomas (1927) and Wilson (1914) have all testified to the great utility of this fish for malaria control. Thrives well in fresh and brackish waters and a perennial breeder.

Family BELONIDAE

Body elongate, slender with small scales ; head with scales, both jaws elongated into a beak, gill openings wide, teeth on jaws, dorsal fin placed far posteriorly and without spines, dorsal fin rays varying in elevation, sometimes forming a lobe to the fin ; no separate finlets. Only one genus *Xenentodon* Regan with a single species.

Genus *Xenentodon* Regan, 1911

1911. *Xenentodon* Regan, *Ann. Mag. nat. Hist.*, (8) 7, p. 382 (type, *Belone cancila* Hamilton)

161. *Xenentodon cancila* (Hamilton)

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

1981. *Xenentodon cancila*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 290-292.

Local name : Kokila/kakila.

D. 15--18 ; P. 11 ; V 6 ; A. 16—18 ; C. 15.

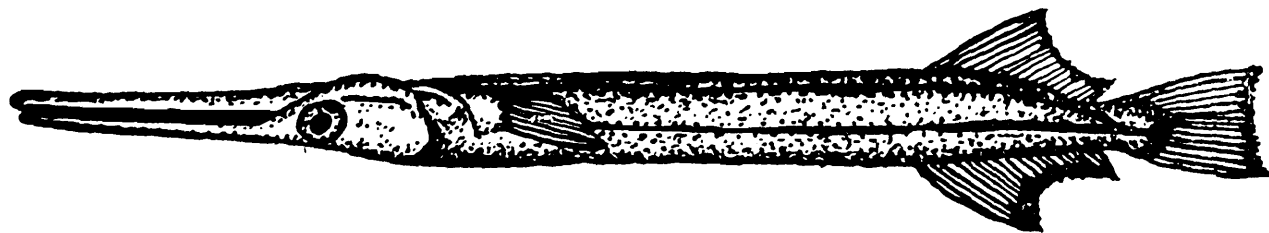


Fig. 93. *Xenentodon cancila* (Ham.)

Diagnostic characters : Length of head 2.6 in total length, body elongate, both jaws lengthened into a long beak, dorsal and anal fins

similar and arranged symmetrically close to the tail giving the fish a torpedo like appearance, eye diameter 3 to 3.2 in head length, a deep median longitudinal groove on upper surface of head, pelvic origin nearer to caudal base than to hind border of eye.

Colour Greenish gray above and lighter below with abdomen whitish, a dark edged silvery stripe from eye to caudal fin base, often 4 or 5 black lateral blotches between pectoral and anal bases.

Size : Largest recorded specimen 304 mm. in length , the largest specimen collected by the author being 281 mm. in length from Tejpur.

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

Remarks : Economically less important fish. Lives in rivers, canals, lakes and bee's.

Order CHANNIFORMS

Family CHANNIDAE

Body with large scales, head with plate like scales, long spineless dorsal and anal fins, both free from caudal fin , lateral line abruptly curved or interrupted. Only one genus *Channa* Scopoli with six species.

Key to the species of genus Channa

- | | |
|--|--------------------------------|
| 1. Pelvic fin less than half length of pectoral fin, pectoral fins spotted in zones, darker and lighter patches, chin marbled ... | 2 |
| — Pelvic fin more than half length of pectoral fin, pectoral fins plain ... | <i>C. punctata</i> (Bloch) |
| 2. Anal fin with 27 rays, circular black spots each occupying part of a scale present, base of dorsal iridescent blue in life, dorsal fin with 39 to 40 rays ... | <i>C. stewartii</i> (Playfair) |
| — Anal fin with 22 rays, no black spots on scales, dorsal fin with 34 rays ... | 3 |
| 3. Predorsal scales 12, pectoral with a black base transversely barred ... | <i>C. orientalis</i> (Ham.) |
| — 18 to 20 predorsal scales, lateral sides with yellowish-cum-darker bands ... | 4 |

4. Length of head 3.3 to 4 *C. striatus* (Bl.)
 — Length of head 4 to 5, predorsal scales 16 ... 5
5. A black white edged ocellus on basal part of caudal, 4 to 5 rings or blotches on lateral line *C. marulius* (Ham.)
 — No such ocellus or rings, back and sides covered with large black blotches, caudal and anal fins with red edges, dark violet superiorly becoming dull white shot with purple beneath ; lateral line scales 60—65 *C. barca* (Ham.)

Genus *Channa* Scopoli, 1777

1977. *Channa* Scopoli, *Introd. Hist. Nat.*, p. 459 (type, *Channa oreintalis* Bloch & Sch.)

162. *Channa orientalis* (Hamilton)

1801. *Channa orientalis* Schneider, *Syst. Ichth. Bloch.* p. 496 pl. 90, fig. 2 (type-locality : India).
 1981. *Channa orientalis*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 306-307.

Local name : Chengeli/Chengali

D. 32—37 ; P. 15 ; V 6 ; A. 21—23 ; C. 12 ; L. 1. 40—45.

Diagnostic characters : Length of head 3.5 to 4.2 in total length, diameter of eye $\frac{1}{6}$ of head length, maxilla reaches to below the hind edge of the orbit, broad and irregular scales on the summit of the head, predorsal scales 12.

Colour : Greenish superiorly with some blackish spots on the body, base of pectoral fin with transverse black bands, dull white or brownish white on the sides and beneath.

Size : Largest recorded specimen 203 mm. in length.

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

Remarks : *Channa gachua* is a synonym of this species (Menon 1974). Economically less important fish, found to live in beels, tanks, canals, road-side ditches, marshy water bodies and paddy fields.

163. *Channa barca* (Hamilton)

1822. *Ophiocephalus barca* Hamilton, *Fish. Ganges*, pp. 67, 367, pl. 35 ; fig 20 (type locality : R. Brahmaputra near Goalpara, Assam).
1981. *Channa barca*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 306-307.

Local name : Changa/Bora-chung.

D. 47—52 ; P. 16 ; V $1\frac{1}{5}$, A. 34—36 , C. 19 , L. 1.60—65.

Diagnostic characters Length of head 4 to 4.25 in total length, diameter of eye 7 to 7.5 in head length, maxilla extended to below hind border of eye, pelvics $\frac{2}{5}$ th of the pectoral length, predorsal scales 15, cephalic pits simple, lateral line bends downwards after proceeding 12 scales.

Colour : Dark violet superiorly, becoming dull white shot with purple beneath, back and sides covered with large black blotches, some also exist on dorsal, caudal and anal fins, each of which have a red edge ; pectorals reddish with numerous spots.

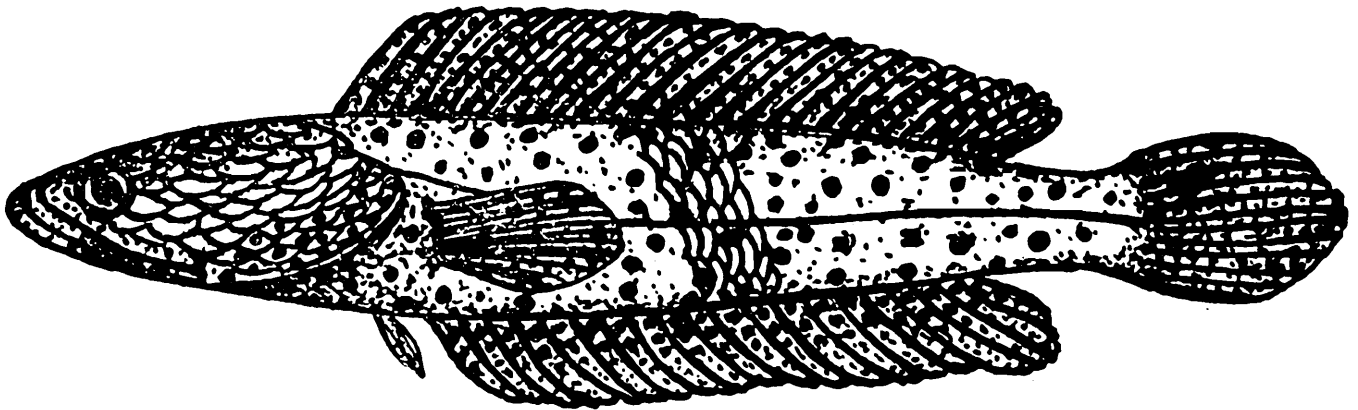


Fig. 94. *Channa barca* (Ham.)

Size Largest recorded specimen 329 mm. in length ; the only specimen collected from a tea garden side nullaha on way to Kukurmara road-side fish landing centre, 45 kms. from Panbazar, Gauhati, being 105 mm. in total length.

Distribution : India : Assam, North Bengal ; Bhutan.

Remarks : This is a very rare form and very difficult to collect. According to Hamilton 'It inhabits perpendicular banks, in holes dug

like those of the Martin (*Hirundo*). In these it lurks, watching for its prey, with its head out.', Economically less important, taken by poorer section of people.

164. ***Channa marulius*** (Hamilton)

1822. *Ophiocephalus marulius* Hamilton, *Fish. Ganges*, pp. 65, 367, pl. 17, fig. 19 (type-locality : the Ganges).
1981. *Channa marulius*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z. S. I. pp. 306—307.

Local name : Sal/Haal.

D. 45—55 ; P. 18 ; V 6 ; A. 28—36 ; L. 1.60—70.

Diagnostic characters : Length of head 4 to 5 in total length, diameter of eye 5 to 7 in head length, maxilla extended to half eye-diameter behind orbit, predorsals 16, no barbels, 10 rows of scales between orbit and angle of preopercle, cephalic pits multiple.

Colour : Colour greatly vary with environment ; generally brownish or greenish grey above, paler below ; 4 or 5 large ocelli, dark brown with a hinder margin, lighter than ground colour on lateral line ; these circular rings are not present in young specimens, young with a brilliant, orange coloured lateral band ; a large ocellus at upper part of the base of caudal.

Size : The largest recorded specimen 1, 219 mm. in length ; the largest specimen collected by the author in Assam at the Neamatighat fish landing centre, Jorhat, being 1,159 mm. in length.

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

Remarks : Not generally taken by people purely on the superstitious grounds. The black circular blotches or rings on the lateral sides (3 or 4 in a big well matured form) represent '*Sudarshan chakra*' of Lord Sri Krishna according to a large section of rural people. Always taken by the poorer section. However, it is regarded to be highly invigorating for the weak persons specially suffering from anaemia. Found in rivers usually in the vicinity of mud or fine sands. It is also known for its savage attitude, boldness and vigor in protecting their young ones. Offers good fighting but 'frequently settles on the

bottom after a preliminary demonstration on the surface' (Shaw & Shebbeare, 1937).

165. *Channa punctata* (Bloch)

1793. *Ophiocephalus punctatus* Bloch, *Naturng. Ausland. Fische.*, 7, p. 139, pl. 358 (type-locality : Malabar coast)
1981. *Channa punctatus*, Jayaram, *F. W. Fishes of India Handbook No. 2*, Calcutta Z. S. I., pp. 306-307.

Local name : Ga-a-roi/Goroi/Gurrie.

D. 29—32 ; P. 17 ; V 6 , A. 21—23 ; C. 12 ; L. 1. 37—40.

Diagnostic characters : Length of head 3.3 to 3.6 in total length, lower jaw longer, maxillary reaching to below or behind hind border of eye, pelvics $\frac{3}{4}$ th as long as pectoral, five rows of scales between eye and angle of preopercle, predorsal scales 12.

Colour : Colour varies with environment ; generally greenish grey becoming yellow bellow, a dark stripe along the side of head and several short cross bands from back to middle of body, fins spotted.

Size : Attains about 304 mm. in length.

Distribution : Throughout India, Nepal, Sri Lanka, Bangladesh, Pakistan, Burma, Malaya, China, Tahiti, Polynesia.

Remarks : A very commonly seen fish, found in tanks, beels, canals, paddy fields, ditches and nullahas and thrives well in muddy and swampy areas.

166. *Channa striatus* (Bloch)

1793. *Ophiocephalus striatus* Bloch, *Naturng. Ausland. Fische.*, 2, p. 141, pl. 359 (type-locality : Malabar).
1981. *Channa striatus*, Jayaram, *F. W. Fishes of India Handbook No. 2*, Calcutta, Z. S. I., pp. 306-307.

Local name : Shol

D. 37—45 ; P. 17 ; V 6 , A. 23—26 , C. 13 , L. 1.50—57.

Diagnostic characters : Length of head 3.3 to 4 in total length, eye diameter 6 to 7 in head length, lower jaw longer, maxillary reaching to below hind border of eye or even one eye diameter behind, teeth

conical in jaw, 9 rows of scales between eye and angle of opercle, pre-dorsal scales 18 to 20.

Calour : Dark greyish black above, dirty white or yellowish white beneath, greyish bands descend from sides to abdomen, fins greyish, a large black blotch may be found at the end of the base of dorsal fin when young.

Size : Largest so far recorded specimen 914 mm. in length ; the largest specimen collected by the author from a road-side village market on way to Pahugarh beel, 50 km. from Jorhat, being 695 mm. in length. In this specimen the grey abdominal bands were found to be with deeper bright yellow base instead of the common dirty white sides and below, probably due to ecological factors.

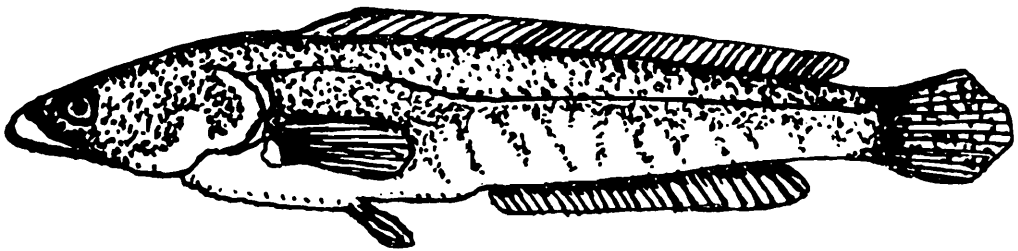


Fig. 95. *Channa striatus* (Bloch)

Distribution : All over India, Sri Lanka, Bangladesh, Pakistan, Burma, Malaya Archipelago, Thailand, South China and Philippine.

Remarks : This is the most popular and economically important fish under this genus, liked by people as food all over the country, particularly, in Assam and West Bengal, for its good taste and less bones.

167. *Channa stewartii* (Playfair)

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

1974. *Channa stewartii*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p 91.

Local name : Sen-ga-lee.

D. 39—40 ; P. 17 ; V 6 ; A. 27 ; C. 14 ; L. 1.45—50.

Diagnostic characters : Length of head 4 in total length, eye diameter 6.5 in head length, maxilla reaches beyond the hind edge of eye,

dorsal fin originates over the base of the pectoral fin, pectoral as long as the post orbital length of the head, plate like scales on the upper surface of head rather larger and roughened by lines almost surrounding a central spot.

Colour : Purplish black superiorly, becoming lighter or greyish-white on the sides and below, many scales with black round marks, fins dark, pectoral in the young yellow in its lower half with a blue basal blotch or spot, dorsal edged with yellow, lighter yellow when young.

Size : Largest recorded specimen 254 mm. in length, 120 mm. being the length of a lone specimen collected from Assam (Nuna beel, about 20 Km. from Rangia), found to be, as if, completely painted with a thin black coat all over the body, slightly uncommon deep black colour all over

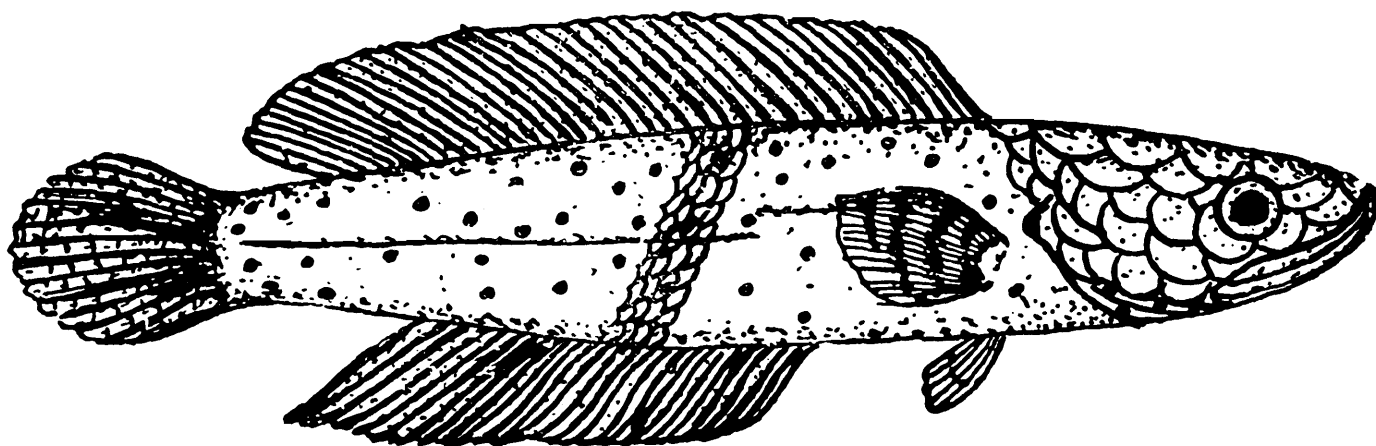


Fig. 96. *Channa stewartii* (Playfair)

Distribution : Assam, Eastern Himalayas, Arunachal Pradesh, Meghalaya, West Bengal, Andamans (Sen, 1975), Nepal.

Remarks : Generally found in beels; marshy water-bodies and estuarine beds; can withstand to some extent, saline admixture and can live well even in estuaries. I collected 4 examples of this species from Diglipore, North Andamans in 1972 from a wide fresh-water canal with sea connections.

Order SYMBRANCHIFORMES

Family SYMBRANCHIDAE

Minute scales and accessory respiratory sacs present or absent, pointed snout, pectorals low, strong socketted teeth in the mouth,

rudimentary doosal, paired fins absent. Only one genus *Monopterus* Lacépède with two species.

Key to the species of genus Monopterus

- | | | | |
|---|-----|-----|--------------------------------|
| 1. Length of head 6 to 8 in the distance between snout and anus | ... | ... | <i>M. cuchia</i> (Ham.) |
| — Length of head 11.25 in the distance between snout and anus | ... | ... | <i>M. hodgarti</i> (Chaudhuri) |

Genus *Monopterus* Lacépède, 1800

1800. *Monopterus* Lacépède, *Hist. Nat. Poiss*, 2, p. 138 (type *Monopterus javanensis* Lac.—Rosen & Green wood, 1976, *Bull. Amer. Mus. Nat. Hist*, 157, p. 56 (revision, reclassification) —*Amphipnous* Müller, 1841, *Abh. Akad. Wiss. Berlin*, p. 544 (type, *Unibranchapertura cuchia* Hamilton, by monotypy).

168. *Monopterus cuchia* (Hamilton)

1822. *Unibranchapertura cuchia* Hamilton, *Fish Ganges*, pp. 16, 363, pl. 16, fig. 14 (type-locality : S. E. Bengal).
1981. *Monopterus cuchia*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 309-310.

Local name : Kuchia

Diagnostic characters : An eel shaped fish with a narrow pointed tail, length of head 6 to 8 in the distance between snout and anus, eye diameter 2 to 3 in snout, a single transverse ventral opening, upper jaw slightly longer, lips fleshy, accessory breathing apparatus present, rudimentary dorsal commences slightly before anus, paired fins absent, distinct scales longitudinally arranged.

Colour : Greenish to chestnut brown or dark reddish brown above becoming lighter beneath or often buff coloured, numerous black dots on the body.

Size : Largest recorded lengths being 609 mm. and 600 mm. by Misra (1962) and Shaw & Shebbeare (1937) respectively.



Fig. 97. *Monopterus cuchia* (Ham.)

Distribution Fresh and brackish waters of Punjab, Orissa, West Bengal (Darjeeling District), Assam ; Pakistan, Nepal, Bangladesh and Burma.

Remarks : This fish resembles like a snake and hence people do not take it as food except the very poorer section. Hamilton writes '*Native reject it as food and imagine that its bite is fatal to cattle, although less powerful on the human kind a superstition highly improbable*' They are found to live during drought seasons in mud holes in the paddy fields in the Duars and Terai (Shaw and Shebbeare, 1937).

169. *Monopterus hodgarti* (Chaudhuri)

1939. *Moringua hodgarti* Chaudhuri, *Rec Indian Mus.*, 8, p. 255, pl. 9, figs. 3, 3a (type-locality : Rotung, Abor Hills).
 1974. *Amphipnous hodgarti*, Menon, *A check list of the Himalayan and Indo-Gangetic plains fishes.*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 93

Local name : Kuchia

Diagnostic characters : Eel shaped, elongated with flat compressed body towards the caudal region ; length of head 11.25 in the distance from snout to vent, length of tail 3 in the distance from snout to vent, 4.25 in total length ; height of body 1.5 in head length, eyes high up, very small, just behind the posterior nostrils and right above the opening of the mouth , upper jaw slightly longer, gill openings form two oblique slits on the ventral side, uniserial teeth, directed backwards and pointed , dorsal and caudal fins slightly developed, confined to the posterior one third of the tail and continuous with each other , no pectorals.

Colour : Muddy grey, lighter ventrally.

Size : Largest recorded specimen 220 mm. in length.

Distribution : This species is strictly endemic to Assam and adjoining N. E. states. Live in hill streams, also found to live in holes inside mud in adverse drought conditions, and at the onset of rains, it comes out.

Order PERCIFORMES

Family CHANDIDAE

Body compressed, more or less diaphanous, lower limb of preopercle with a double serrated edge, opercle without spine, slightly

translucent, two dorsal fins, the first with seven spines, the anal with three ; a forwardly recumbent spine in front of dorsal fin base, scales cycloid, of moderate or small size, frequently deciduous ; lateral line complete, interrupted or absent. Only one genus *Chanda* Hamilton with two species.

Key to the species of the genus Chanda

1. Length of head 4 to 4.5 in total length, diameter of eye 3 in head length, preorbital slightly serrated, 2 or 3 large crooked canine teeth on either side of the lower jaw *C. nama* Ham.
- Length of head 3.2 to 4 in total length, diameter of eye 2.5 in head length, preorbital distinctly serrated, no crooked canine teeth, all the teeth are small *C. ranga* Ham.

Genus *Chanda* Hamilton, 1822

1822. *Chanda* Hamilton, *Fish Ganges*, pp. 103, 370 (type, *Chanda nalua* Hamilton).
 1971. *Chanda*, Talwar, *Bull. Zool. Nomencl.*, **28** (3—4), pp. 104—105 (*Chanda nama* Hamilton proposed as type species).

170. *Chanda nama* Hamilton

1822. *Chanda nama* Hamilton, *Fish Ganges*, pp. 109, 371, pl. 39, fig. 37 (type-locality : Bengal).
 1981. *Chanda nama*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 317—318.

Local name : Chanda.

D. 7/1/13—17 ; P. 13 ; V 1/5 ; A. 3/14—17 ; C. 17.

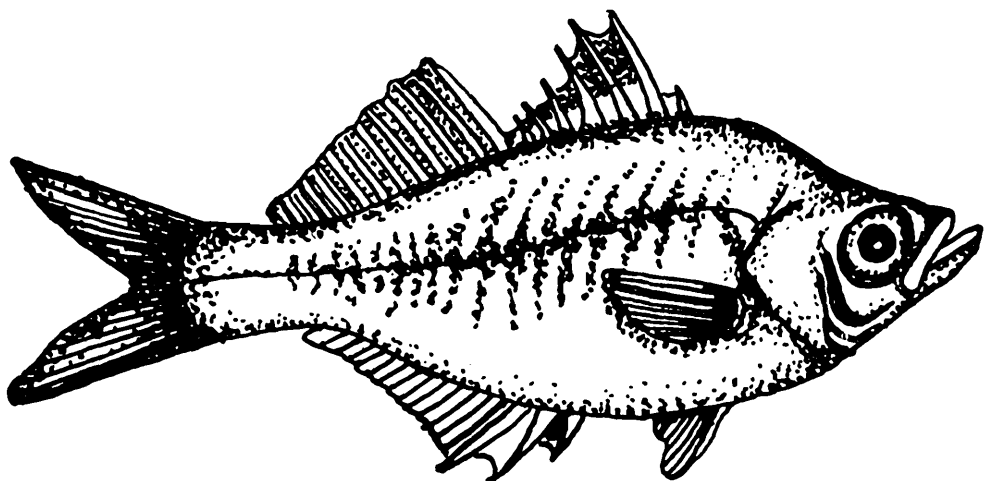


Fig. 98. *Chanda nama* Ham.

Diagnostic characters Length of head 4 to 4.5 in total length, deep and strongly compressed, laterally almost flat, eye diameter 3 in head length, dorsal and ventral profiles equally convex, lower jaw longer, maxilla reaching to below the first third of eye, preorbital slightly serrated, sub and inter opercle entire, two dorsals united at their base, a recumbent spine present, lateral line rays indistinct.

Colour : Yellowish olive (translucent), covered with minute dots, fins orange, black dots and orange tinge on fins are visible when alive.

Size : Largest recorded specimen 76 mm. in length.

Distribution : Throughout India, Nepal, Bangladesh and Burma.

Remarks : Not liked by people due to its strong spines and scanty flesh.

171, **Chanda ranga** Hamilton

1822. *Chanda ranga* Hamilton, *Fish. Ganges*, pp. 113, 371, pl. 16, fig. 38 (type-locality : Gangetic provinces)
1981. *Chanda ranga*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 317-318.

Local name Chanda.

D. 7/1/13—15, P. 11, V 1/5, A. 3/14—16, C. 17

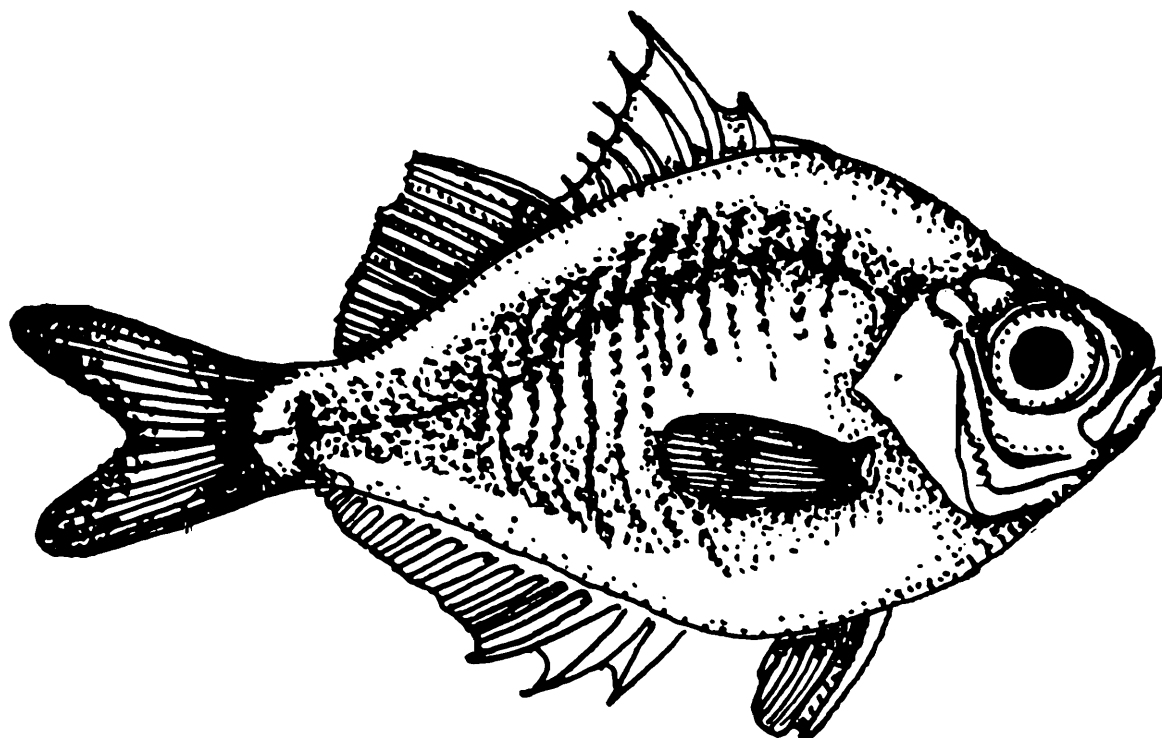


Fig. 99. *Chanda ranga* Ham.

Diagnostic characters : Length of head 3.2 to 4 in total length, eyes 2.5 in head length, maxilla reaches to below midorbit, small teeth, 2 dorsals united at their base, a recumbent dorsal spine present, anal spines 3, body more deeper.

Colour : Olive, with grey borders of vertical fins.

Size : Largest recorded specimen 72 to 102 mm. in length.

Remarks : Both *C. nama* and *C. ranga* resemble one another, more particularly when juveniles and caught freshly in the field. However, they can be distinguished from one another by the presence of 2 to 3 large canines in the lower jaw in *C. nama* which are absent in *C. ranga* ; the body is deeper in *C. ranga* than *C. nama*.

Distribution : India, Bangladesh, Nepal, Burma, Malaya, Thailand.

Special 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).

Family CICHLIDAE

Body elevated and compressed, abdomen rounded, terminal mouth, cleft small, snout spout like, large eyes, thin lips, equal jaws, compressed and lobate at their summits ; lateral line interrupted, abruptly ceasing and thereafter continuing as small open pores with 30 to 40 scales ; anal spines 12 to 16. Only one genus *Tilapia* Smith and one species.

Genus *Tilapia* Smith, 1849

1849. *Tilapia* Smith, *III. Zool. S. Afr. Fish.* (type, *Chromis nilotica* Val.).

172. *Tilapia mossambica* (Peters)

1852. *Chromis mossambicus* Peters, *Monat sb. Akad., Wiss, Berlin*, p. 681.

1952. *Tilapia mossambica*, Jones & Sarojini, *J. Bombay nat. Hist. Soc.*, **50** (3), fig. 7, pl. 36, pp. 594—609.

1955. *Tilapia mossambica*, Munro, *Marine and Freshwater fishes of Ceylon*, Deptt., of Ext. Affairs, Canberra, pp. 176—177.

1975. *Tilapia mossambica*, Jhingran, *Fish & Fisheries of India*, Hindustan Publishing Corporation, 6-U. B., Jawahar Nagar, Delhi-110 007, India, pp. 717—725.

1978. *Tilapia mossambica*, Jayaram, *Zoologiana*, No. 2, pp. 33—39.

1981. *Tilapia mossambica*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 339—340.

Local name : Tilapia/Telapia.

D. 14—15/11—12 ; P. 12—13 , V 1/5 ; A. 2/11 , C. 17 ; L. 1. 28—36. (interrupted).

Diagnostic characters Length of head 4 in total length, deeper body with arched back, sloping curved snout, short maxilla, eye diameter 5 in head length, lower jaws slightly longer, small teeth and in several series, cleft of mouth short, lateral line incomplete or interrupted, caudal subtruncate.

Colour : Greenish—olive to golden, each scale with a dark centre, vertical fins blackish with indistinct white spots, younger ones with one ovate black spot behind the base of the last dorsal spine.

Size : 201 to 220 mm. in length (Sukumaran, 1969). At Gauhati fish market (Fancy bazar), I have recorded maximum length 160 mm. ; whereas in Calcutta fish markets very big and spectacular sized specimens very often found ranging from 180 to 230 mm. (7 to 9 inches) in length.

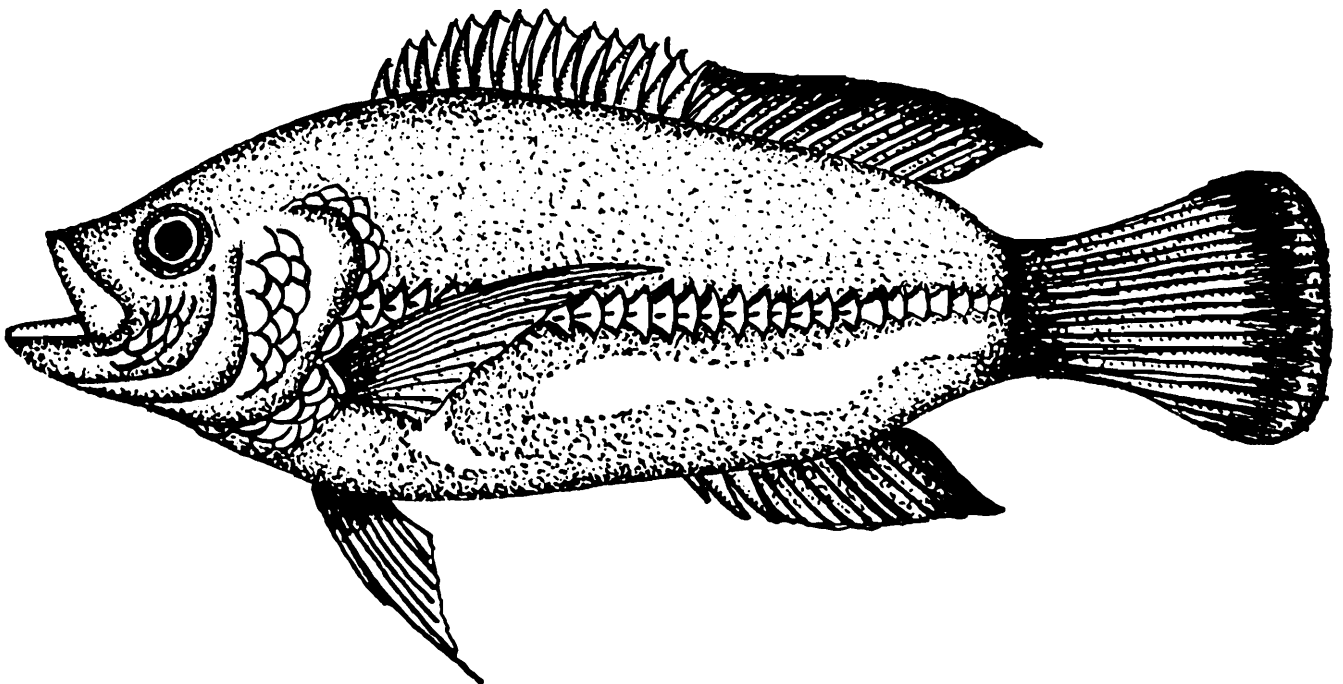


Fig. 100. *Tilapia mossambica* (Peters)

Distribution Fresh and brackish waters of India, Java, Malayasia, Philippines, Thailand, Sri Lanka, Pakistan, Bangladesh, Vietnam,

Congo, Madagascar, Mozambique, Rhodesia, S. Africa, Tanzania, Uganda, U. A. R., Zambia etc.

Remarks : A native of the rivers on the east coast of Africa and a very well adapted species in our country with the advantage that it can tolerate varying degree of salinity. Adults are herbivorous but can feed upon worms, insects, crustaceans, fish larvae etc. when food is in great scarcity. It is a prolific breeder almost round the year. It is not cultured along with other Indian major carps (*Labeo*, *Mrigala*, *Cirrhina*, *Catla* etc.) to avoid its depredation on carp fry as it is a known 'predatory' fish. It was first brought to India from Bangkok in 1952 and to-day is one of the most commonly known exotic food fish found all over India (Jayaram, 1978). In India, it was first introduced in Madras in August, 1952 by the C. M. F. R. I., Mandapam from Bangkok and then afterwards it was introduced in the fresh and brackish waters of the various states of India (Panikkar and Tampi, 1954). In Assam *Tilapia* is cultured in a small experimental way by the State Fisheries Department as well by the private fishermen even though banned officially being a predatory fish. Its original habitats are the rivers of east coast of Africa from Algoa Bay in South Africa to West Shebelle river in Somaliland (Hora and Pillai, 1962). Now it is being cultured extensively all over the world including India in the ponds and tanks in Java, Malaysia, Philippines, Thailand, Sri Lanka, Pakistan, Bangladesh, Vietnam, Congo, South Africa, Tanzania, Uganda, U.A.R., Rhodesia, Zambia etc. (Jhingran, 1975). The adult *Tilapia* mainly depends on vegetable food viz., *Chlorophyceae*, *Myxophyceae*, and *Bacillariophyceae* (Hora and Pillai, 1962). It reaches its first maturity at 9 to 10 cm. length (2 months old) (Jhingran, 1975). It is reported that it carries its eggs in its mouth. The fecundity of *Tilapia mossambica* between 80 to 1000 eggs (Mironova, 1969). It breeds throughout the year except in subtropical zones where reproduction is interrupted due to cold season. It breeds every two months with an interval of 25 to 44 days between the consecutive spawnings (Chimitz, 1955). Also known to grow very fast.

Family NANDIDAE

Maxilla extending beyond eyes, operculum with 1—spine, body oblong and compressed, feeble teeth, more or less with complete dentition; branchiostegals 5 to 6, single dorsal fin, anal with 3 spines, its rays smaller to those of the dorsal; ctenoid scales, covering the body; lateral

line interrupted or absent, no suprabranchial orgrn, air vessel present. Two genera *Badis* Bleeker and *Nandus* Valenciennes with two species.

Key to the genere of the family Nandidae

- | | | |
|---|-----|----------------------|
| 1. Mouth large, very much protractile ; pre- | | |
| opercle serrated, teeth present on root of | | |
| tongue | ... | ... |
| | | <i>Nandus</i> Val. |
| — Mouth small, moderately protractile, slightly | | |
| upturned ; preopercle not serrated, no teeth | | |
| on the tongue | ... | ... |
| | | <i>Badis</i> Bleeker |

Genus **Badis** Bleeker, 1853

1853. *Badis* Bleeker, *Verh. Bat. Gen.*, 25, p. 106 (type, *Labrus badis* Ham. = *Badis buchanani* Blkr.

173. **Badis badis** (Hamilton)

1822. *Labrus badis* Hamilton, *Fish Ganges*, pp. 70, 368, pl. 25, fig. 23 (type-locality : Gangetic provinces).
 1981. *Badis badis*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 334—335.

D. 16—17/7—10 ; P. 12 , A. 3/6—8 ; C. 16 , L. 1. 26—33.

Diagnostic characters : Length of head 4.25 in total length, elongated body, oval shaped, laterally compressed ; eye diameter 3.25 in head length, head scaled, lateral line placed high on the body but interrupted on 8 or 9 scales from the caudal, 3 anal spines.

Colour : A series of dark transverse bands on a ground colour of purple or dark brown or dark green, these bands are often missing or not visible due to deep base colour when the fish is a fully matured one ; sometimes bluish or bluish black spots on opercle, caudal fin base, shoulder and body.

Size : Largest recorded specimen 90 mm. in length.

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

Remarks : Not found commonly, This species strongly resembles *Anabas testudineus* (family *Anabantidae*) but curiously belong to altogether a diffrent family *Nandidae* ; on the other hand, *Nandus nandus* and

Badis badis, so dissimilar morphologically specially body profiles and head, belong to family *Nandidae* ; an interesting problem to be studied in detail in future.

Genus *Nandus* Valenciennes, 1831

1831. *Nandus* Valenciennes (in C. & V.), *Hist. Nat. Poiss.*, 7, p. 481 (type, *Nandus marmoratus* Valenciennes).

174. *Nandus nandus* (Hamilton)

1822. *Coius nandus* Hamilton, *Fish. Ganges*, pp. 96, 370, pl. 30, fig. 32 (type-locality : Gangetic provinces).

1981. *Nandus nandus* Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 335—336.

Local name : Ged-gedi.

D. 12—14/11—13 ; V 1/5 ; A. 3/7—9 ; L. 1. 46—57.

Diagnostic characters : Length of head 3 in total length, body laterally compressed, deeper with a nearly straight belly and arched back ; pointed snout, mouth very much protractile, with deep cleft of mouth ; eyes 5 to 6 in head length, maxilla reaching beyond postorbit, caudal rounded.

Colour : Greenish brown with bronze to brassy reflections (when alive), 3 vertical broad bands (patches) over the body, a dark blotch on the free portion of tail, narrow bands or spots across the fins.

Size : Largest recorded specimen 177 mm: in length.

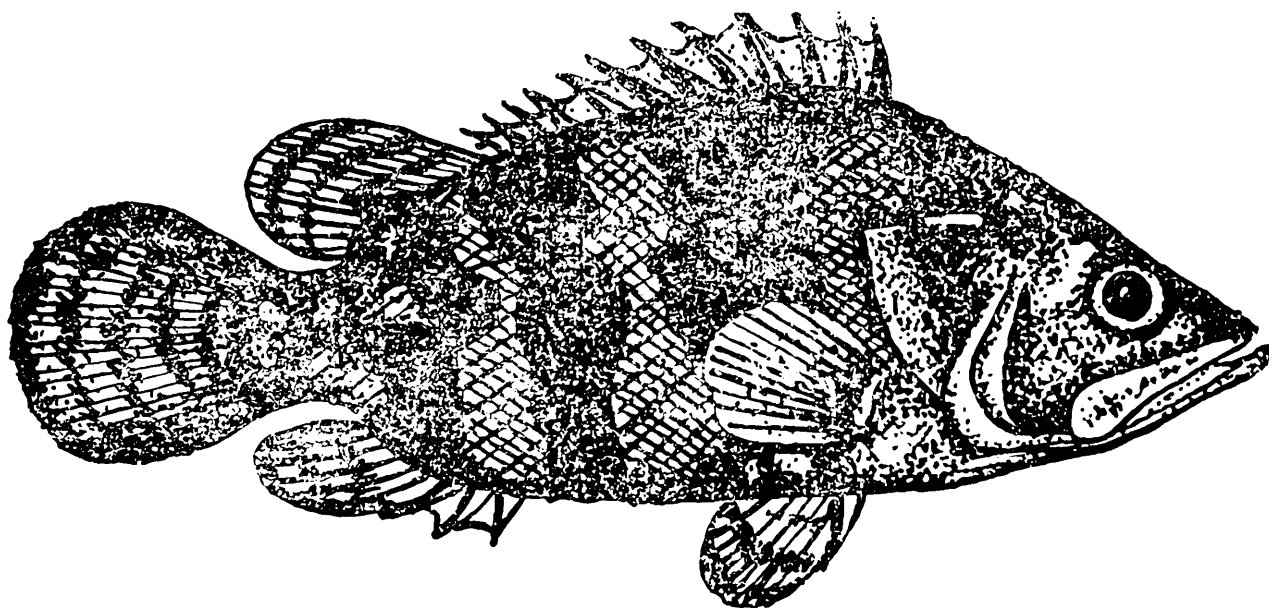


Fig. 101 *Nandus nandus* (Ham.)

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

Remarks : Found to live in rivers, tanks canals, lakes as well as in the beels, ditches and foul waters. Also found to live in the inundated paddy fields during monsoons and generally preying upon small fishes like *Glossogobius giuris*, *Colisa fasciata*, *Chanda nama*, *Danio*, *Channa*, *Cirrhinus*, *Puntius*, *Amblypharyngodon mola* etc. which were found and examined by the author from the gut contents of 7 matured specimens collected from Nuna beel, 20 km. from Rangia (a piscivorous species).

Family MUGILIDAE

Two dorsal fins short, well separated, first with spines; body oblong to elongate, compressed ; lateral line absent, head and body with scales, eyes with or without adipose eye-lids, no detached fin behind anal and second dorsal fins. Only one genus with one species.

Genus *Sicamugil* Fowler, 1939

1939. *Sicamugil* Fowler, *Notul. Nat. Acad. Philad*, 17, p. 9 (type, *Mugil hamiltonii*).

175. *Sicamugil cascasia* (Hamilton)

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

1981. *Sicamugil cascasia*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 344—345.

D. 4. $1/8$; P. 15 ; V $1/5$; A. $3/8-9$; C. 14 ; L. 1. 36—39.

Diagnostic characters : Head flat above, 4.5 in total length ; inter orbital space 2.5 in head length, faintly visible maxilla, first dorsal nearer to snout than to caudal base, 2nd dorsal originates opposite to anal fin, caudal fin furcate, opercle with a spine, no enlarged pectoral, axillary scales present.

Colour : Yellowish olive head, back dusky grey, silvery below, caudal and pectoral bases deeply yellowish, fins not coloured.

Size : Largest recorded specimen 102 mm. in length.

Distribution : Upper reaches of Brahmaputra, Ganga and Yamua river systems ; Pakistan (Indus river), Sri Lanka, Burma and Bangladesh.

Remarks : This is the only freshwater species under this family.

Family GOBIIDAE

Pelvic fins united with a membrane at the base to form a sucking disc, varying from oblong to elongate, head generally with mucous canals and open pores, two dorsal fins united with each other or separated narrowly by a notch, basal membranes present or absent, anal fin short or long or continuous with caudal fin, anal papilla present, lateral line absent. Only one genus *Glossogobius* Gill with one species.

Family GOBIIDAE

Genus *Glossogobius* Gill, 1860

1860. *Glossogobius* Gill, *Proc. Acad. nat. Sci. Philad.* p. 146 (type, *Gobius platycephalus* Richardson).

176. *Glossogobius giuris* (Hamilton)

1822. *Gobius gutum* Hamilton, *Fish. Ganges*, pp. 50, 366 (type-locality : Lower parts of Padma river).

1981. *Glossogobius giurits*, Jayaram, *F. W. Fishes of India*, Handbook No, 2, Calcutta, Z. S. I., pp. 357—358.

Local name : Patimutara.

D. 6/1/8—9 ; P. 20 ; V 1/5 ; A. 1/8—9 ; C. 17 ; L. 1. 30—34.

Diagnostic characters : A long, tapering fish with a somewhat vertically compressed, pointed head, 3 to 7 in total length ; eyes 4 to 8 in head length, lower jaw prominent and slightly longer, snout pointed, two dorsals placed close, eyes placed on top of head, pelvics united at the base to form a disc.

Colour : Transparent yellowish grey with 4 to 6 blotches on the body along the lateral line.

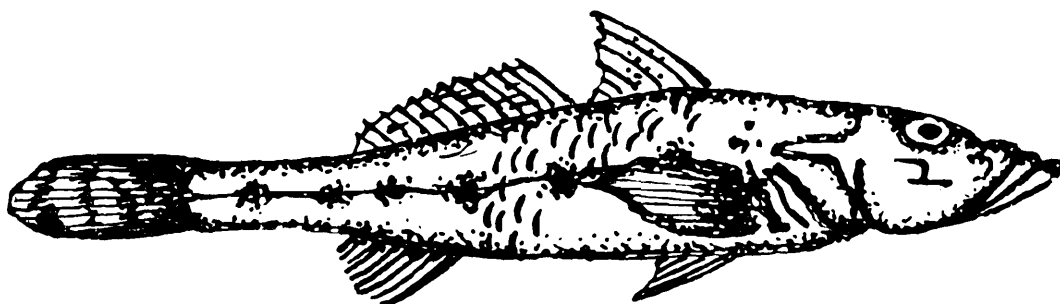


Fig. 102. *Glossogobius giuris* (Ham.)

Size : Largest recorded specimen 304 mm. in length.

Distribution : India, East Africa, Sri Lanka, Bangladesh, Pakistan, Malay Peninsula, China, Japan, Philippines, Australia, Indo-Australian Archipelago and South Pacific islands.

Remarks : Found to live in rivers, tanks, canals, lakes, beels etc. Most commonly found fresh water species throughout India under this family. A food fish but not tasty.

Family ANABANTIDAE

Body compressed, moderately elongated ; head and body covered with ctenoid scales, branchial arches with toothed tubercles, a single long dorsal fin with spinous and soft rays, pelvic inserted below the base of pectoral fin, anal with spines, lateral line interrupted, outer rays of pelvics not much produced. Three genera and three species.

Key to the genera of family Anabantidae

- | | | | |
|--|-----|-----|----------------------|
| 1. Pelvic fin in the form of single elongated filiform ray, single dorsal fin inserted above pectoral base with 15 to 18 spines and 7 to 13 rays | ... | ... | <i>Colisa</i> Cuvier |
| — Pelvic fin normal, not in the form of single filiform ray ; single dorsal fin inserted in posterior half of body above mid anal fin | ... | ... | 2 |
| 2. Single dorsal fin with 4 to 6 spines and 7 to 8 rays, mouth pipe shaped | ... | ... | <i>Ctenops</i> McCl. |
| — Single dorsal fin inserted above pectoral fin base with 17 to 18 spines and 18 to 20 rays, terminal small mouth | ... | ... | <i>Anabas</i> Cuvier |

Key to the species of the genus Colisa

- | | | | |
|--|-----|-----|---------------------------|
| 1. Body with a single black longitudinal band along side to lower half of tail | ... | ... | <i>C. sota</i> (Ham.) |
| — Body with many oblique bands from back to belly | ... | ... | 2 |
| 2. Soft part of dorsal and anal fins not produced, but rounded ; body with scarlet and light blue vertical bands | ... | ... | <i>C. lalius</i> (Ham.) |
| — Soft part of dorsal and anal fins produced to a varying degree, body with oblique bands (14 or more) | ... | ... | <i>C. fasciata</i> (Sch.) |

Family ANABANTIDAE

Genus *Anabas* Cuvier, 1817

1817. *Anabas* Cuvier, *Le Regue. Animal.*, 2, p. 339 (type, *Perca scandens* Daldorf).

177. *Anabas testudineus* Bloch

1795. *Anabas testudineus* Bloch, *Naturges. ausland Fish.* 7, p. 121, pl. 322 [type-locality : Japan ("East Indies")].

1981. *Anabas testudiens*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 378-379.

Local name : Kawai.

D. 17—18/8—10 ; P. 15 ; V $1/5$; A. 9—10/9—11 ; L. 1. 28—32.

Diagnostic characters : Oblong body, laterally compressed with wide head ; length of head 3.5 in total length, eyes 4.5 to 5 in head length, lower jaw slightly longer, opercle and preopercle serrated, a single dorsal longer than the anal with 17 to 18 spines, 9 to 10 anal spines, interrupted lateral line (17th scale).

Colour : Greyish green above, greenish yellow or reddish yellow below ; 4 wide cross bands on body, sometimes a black spot on caudal base.

Size : Largest recorded specimen 203 mm. in length. I have recorded maximum length 230 mm. at Neamatighat fish landing centre, Jorhat.

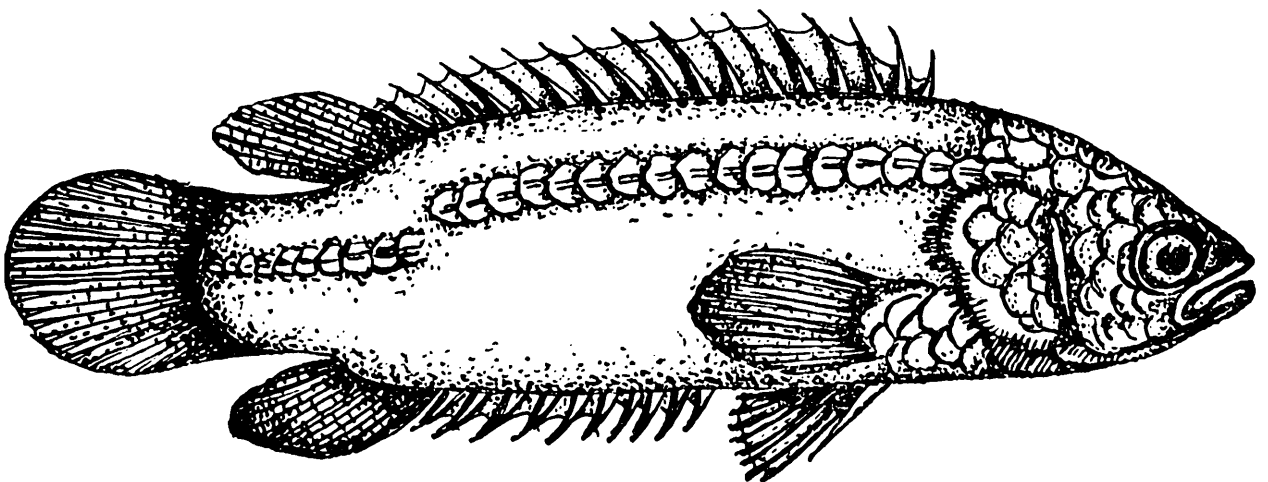


Fig. 103. *Anabas testudineus* Bl.

Distribution : India, Pakistan, Burma, Sri Lanka, Malay Archipelago, Thailand, Indo-China, China, Bangladesh, Philippines and Polynesia.

Remarks : Though strongly bony, it is a popular food fish all over India and specially known for its taste ; well spread all over Assam specially in the marshy areas and beels.

Genus **Colisa** Cuvier, 1831

1831. *Colisa*, Cuvier, *Hist. Nat. Poiss*, 7, p. 359 (type, *Colisa vulgaris* Cuvier).

178. **Colisa sota** (Hamilton)

1822. *Trichopodus sota* Hamilton, *Fish. Ganges*, pp. 120, 378 (type-locality : not known).

1981. *Colisa sota*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 384

Local name : Kho/eehona/Bahsaylee.

D. 17—18/7—8 ; P. 9 ; V 1 , A. 17—20/11—15 , L. 1 27—29.

Diagnostic characters : Length of head 3.5 to 4.0 in total length, deep body, compressed laterally ; cleft of mouth small, lateral line interrupted, each pelvic fin modified into a single filiform ray, furcate type of caudal fin.

Colour : Greenish brown, lighter along the abdomen, a dark band along the lateral line.

Size : Largest recorded specimen 45 mm. in length.

Distribution : Assam and West Bengal only.

Remarks : This species in Assam is mainly confined to upper regions and frequently found along with the other popular species, *C. fasciata* and very difficult to sort out when very young.

179. **Colisa lalia** (Hamilton)

1822. *Trichopodus lalius* Hamilton, *Fish. Ganges*, pp. 120, 372 (type-locality : Ganges provinces).

1981. *Colisa lalius*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 384.

Local name : Lalkhalisha (Goalpara)

D. 15—16/7—8 ; P. 10 , V 1 ; A. 17—18/13—14 ; C. 15 ; L. 1 26—28.

Diagnostic characters : Length of head 3.3 to 3.5 in total length, eye diameter 3.2 to 3.5 in head length, profile over eyes rather concave, preorbital denticulated, lower limb of preopercle serrated, subopercle entire, vertical fins densely scaled, the soft dorsal and anal part rounded, not produced ; rounded caudal.

Colour : Reddish blue with vertical bands, dorsal and caudal fins barred in scarlet dots.

Size : Attains 50 mm. in length.

Distribution : Brahmaputra river in Assam, Ganga and Yamuna river systems ; Pakistan, Bangladesh and Borneo.

Remarks : These fishes are small sized, beautifully coloured (scarlet) and very often used as lovely aquarium fishes specially in winter season as Day (1878) says 'In the cold season at Calcutta these lovely little fishes are often sold alive in bottles of water, and they thrive pretty well in an aquarium' In Goalpara they are popularly called as 'Lalkholisha'

180. *Colisa fasciata* (Schneider)

1801. *Trichogaster fasciatus* Schneider, *Syst. Ichth. Bloch* p. 164, pl. 36 (type-locality=Tranquebar).

1981. *Colisa fasciata*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 383-384.

Local name : Kholeehona.

D. 15—17/9—13 ; V 1 ; A. 15—18/14—19 ; P. 10 ; L. 1. 29—31.

Diagnostic characters : Length of head 3.7 to 4.2 in total length, body deep and laterally compressed, cleft of mouth small, dorsal and pelvic fins elongated, each pelvic fin consists of single, filiform ray, reaching atleast to the base of caudal fin which is of a semiemarginate type, lateral line interrupted, eye diameter 3.2 to 3.5 in head length, soft parts of dorsal and anal fins produced, caudal fin slightly notched.

Colour : Greenish or bluish above, dirty white below ; 14 or more orange (mixed with red) coloured vertical bands descend obliquely downwards from back to belly and bordered by blue bands, very bright

and prominent when alive ; eyes red, ventral fins edged with red, dorsal and caudal fins spotted with orange.

Size : Largest recorded specimen 126 mm. in length. I have collected specimens ranging from 65 to 116 mm. in length from Goalpara, Cachar, Tezpur and Gauhati.

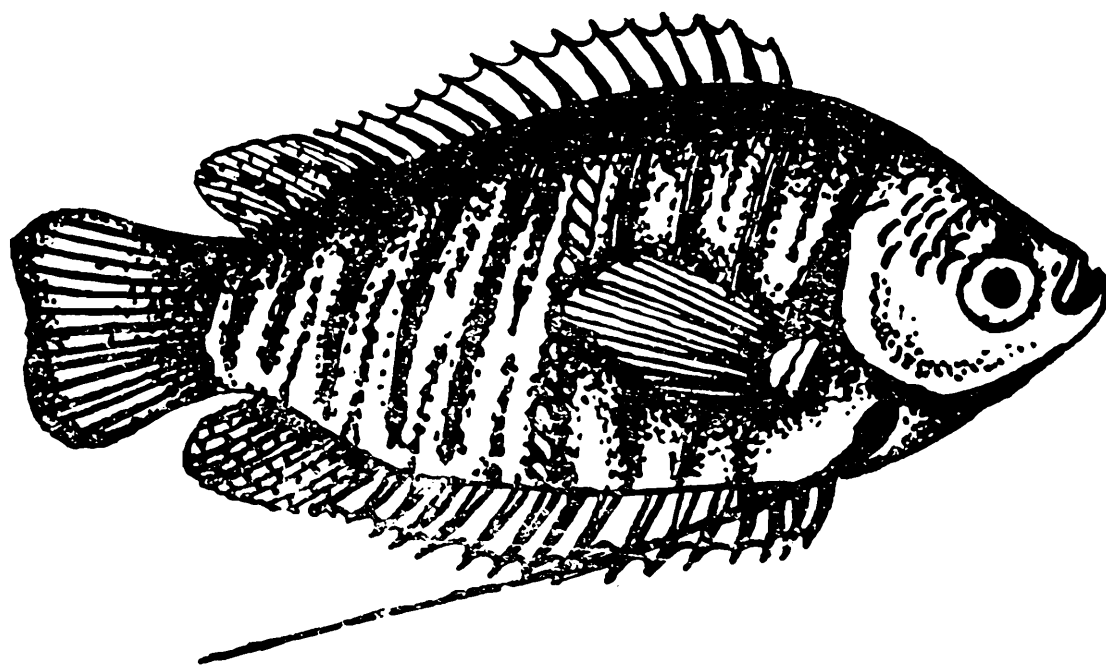


Fig. 104. *Colisa fasciatus* (Schn.)

Distribution : The estuaries of the Ganges, Assam, Punjab, West Bengal, North India , Nepal, Bangladesh, Pakistan Burma.

Remarks : This species is the popular one regarded both as food and aquarium fish for the brilliantly coloured vertical bands. Found more abundantly in beels, marshy areas than lakes, ponds and rivers. It is a hardy fish with wide distribution and rapid growth. It has been regarded as good larvivorous fish too (Hora & Mukerji, 1948). Southwell (1920) found it of median utility..

Genus *Ctenops*, McClelland, 1845

1845. *Ctenops* McClelland, *Calcutta, J. Nat. Hist.*, 5, p 281 (type, *Ctenops nobilis* McClelland).

181. *Ctenops nobilis* McClelland

1845. *Ctenops nobilis* McClelland, *Calcutta J. Nat. Hist.*, 5, p. 281 (type-locality : Rivers at Sikkim, N. Beagal frontier).
1937. *Ctenops nobilis*, Shaw & Shebbeare, *J. Asiat. Soc. Beng.*, 3, p. 113, fig. 118.
1974. *Ctenops nobilis*, Menon, *A check-list of the Himalayan and Indo-Gangetic plains fishes*, Spl. Pub. (1), *J. Indl. Fish. Soc. India*, p. 100.

1981. *Ctenops nobilis*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 381.

D. 5—6/7—8 ; P. 12 ; V 1/5 ; C. 16 ; A. 5/23—25 ; L. 1. 28—31.

Diagnostic characters : Length of head 3.5 to 4 in total length, deep body, compressed, with ventral profile more curved than the dorsal ; pointed and long snout (pipe shaped), small mouth, cleft of mouth oblique and short, protractile ; dorsal situated near the caudal fin base, outer pelvic fin ray prolonged to a filament.

Colour : Brownish, a silvery white band (interrupted usually) passes along the middle of body from eye to tail, a second (more interrupted) band from pectoral fin along the side and a third one along the base of the anal.

Size : Largest recorded specimen 102 mm. in length.

Distribution : Assam, North Bengal and Bihar.

Remarks : Found to live in small streams and rivers.

Order MASTACEMBELIFORMES

Family MASTACEMBELIDAE

Body eel shaped, compressed and elongated, covered with minute scales ; elongated snout supported by soft bony rod, tubular nostrils, preoperculum with or without spines, anal with 1 to 3 spines, pelvic fins and girdle absent, pectoral fin with 17 to 27 rays, caudal fin short either confluent with dorsal and anal or narrowly separated. Two genera and three species.

Key to the genera of the family Mastacembelidae

- | | | | |
|--|-----|-----|------------------------------|
| 1. A preorbital spine, snout not transversely striated ventrally | ... | ... | <i>Mastacembelus</i> Scopoli |
| — No preorbital spine, snout transversely striated ventrally | ... | ... | <i>Macrognaathus</i> Lac. |

Key to the species of genus Mastacembelus

- | | | |
|---|-----|-----------------------------|
| 1. Caudal confluent with vertical fins | ... | <i>M. a. armatus</i> (Lac.) |
| — Caudal non confluent with vertical fins | ... | <i>M. pancalus</i> (Ham.) |

Genus *Mastacembelus* Scopoli, 1744

1744. *Mastacembelus* Scopoli, *Introd. Hist. Nat.*, p. 458 [type, *Mastacembelus unicolor* (C. & V.)].

182. *Mastacembelus armatus armatus* Lacépède

1800. *Macrognathus armatus* Lacépède, *Hist. Nat. Poiss.*, 2, p. 286. (type-locality-not given); Hamilton, *Fish. Ganges*, 28, pl. 37, fig. 6, 1822; Bengal.
1981. *Mastacembelus armatus armatus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 389.

Local name : Bami.

D. 32—39/74—90, P. 23, A. 3/75—88.

Diagnostic characters : Length of head 6.5 to 7.5 in total length, an eel shaped elongated fish, snout trilobed with a fleshy prolonged projection, cleft of mouth narrow, a preorbital spine present, single long dorsal fin with 32 to 39 free spines, origin of soft part of dorsal fin behind anal origin, no pelvic fins, teeth minute.

Size : Largest recorded specimen 60 cm. in length.

Colour : Rich brownish above and light grey below and sides, undulating dark brown patterns between back and lateral line, more prominent at the posterior end, a black narrow line through the eye.

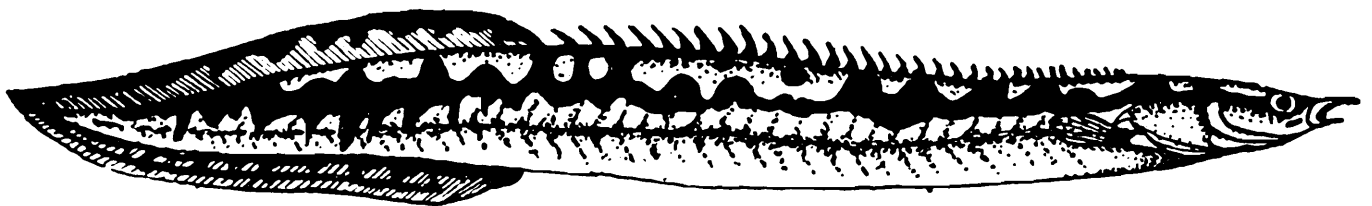


Fig. 105. *Mastacembelus armatus armatus* Lac.

Distribution : Freshwaters all over India; Bangladesh, Pakistan, Sri Lanka, Burma, Nepal, Thailand, Cambodia, Tonkin, S. China, Malaya, Sumatra, Java, Viet-Nam.

Remarks : Found to live in fresh and brackish waters. This is a hardy fish and can face extreme drought situation by keeping itself buried inside the mud and silt for months together till the onset of monsoon rains. A good eating fish popularly known for its oily taste and large size compared to the other *Mastacembelus* species.

183. *Mastacembelus pancalus* (Hamilton)

1822. *Macrognathus pancalus* Hamilton, *Fish. Ganges*, pp. 30, 364, pl. 22, fig. 7 (type-locality : Bengal).

1981. *Mastacembelus pancalus*, Jayaram, *F. W. Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 388-389.

Local name : Tora/Tura/Tourah.

D. 24—26/30—42 ; P. 19 ; A. 3/31—46 ; C. 12.

Diagnostic characters : Length of head 5 to 5.5 in total length, an eel shaped fish with tapering head and tail, a long fleshy snout trilobed at its extremity, narrow cleft of mouth, a prerorbital spine present, minute teeth, a single dorsal with 24 to 26 free stumpy spines, dorsal and anal not united with caudal, scales minute, no pelvic fins.

Colour : Greenish olive above, yellowish below, yellowish white spots on scales.

Size : Largest recorded specimen 177 mm. in length.

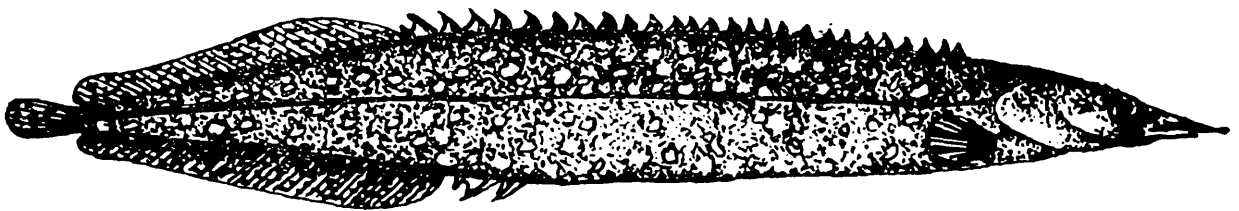


Fig. 106. *Mastacembelus pancalus* (Ham.)

Distribution : India, Bangladesh, Pakistan.

Remarks : This species is more commonly found in the markets and comparatively shorter in length compared to the other larger sized species, *M. a. armatus*. Day observes 'In upper Assam the body is more banded'

Special remarks : In all there are altogether 8 species so far known belonging to *Mastacembelus* genus ; out of which only 3 species are indigenous viz., *M. a. armatus*, *M. pancalus* and *M. guentheri*, (South Indian species, Malabar coast). Other five exotic species are (1) *M. alboguttatus*, (2) *M. caudiocellatus*, (3) *M. zebrinus*, (4) *M. oatesii* and (5) *M. unicolor* all from Burma.

Genus *Macrognathus* Lacépède, 1800

1800. *Macrognathus* Lacépède, *Hist. Nat. Poiss.*, 2. p. 283 (type, *Ophidium aculeatum* Bloch).

184. *Macrognathus aculeatus* (Bloch)

1887. *Ophidium aculeatum* Bloch, *Naturges. ausland. Fische*, 11, p. 72, pl. 159, fig. 2 (type-locality : East Indies).

1981. *Macrognathus aculeatus*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., p. 389.

Local name Tora.

D. 16—20/44—54, P. 23, A. 2—3/44—52, C. 15.

Diagnostic characters : Length of head 5 to 6 in total length, an eel shaped fish with tapering head and tail, lateral line distinct, narrow cleft of mouth, elongated fleshy snout, trilobed with inferior transverse striations, no preorbital spine, lower jaw much shortened, minute teeth, a single dorsal with 13 to 20 stumpy free spines, caudal not united with dorsal and anal fins, head scales larger than body scales.

Size : Largest recorded length 380 mm. or 15 inches in length (Day, 1878). 'Our longest 14 inches' (Shaw & Shebbeare, 1937). I have recorded maximum 280 mm. (11 inches) in length from Tezpur (Ganeshghat) with sharply distinct circular ocelli.

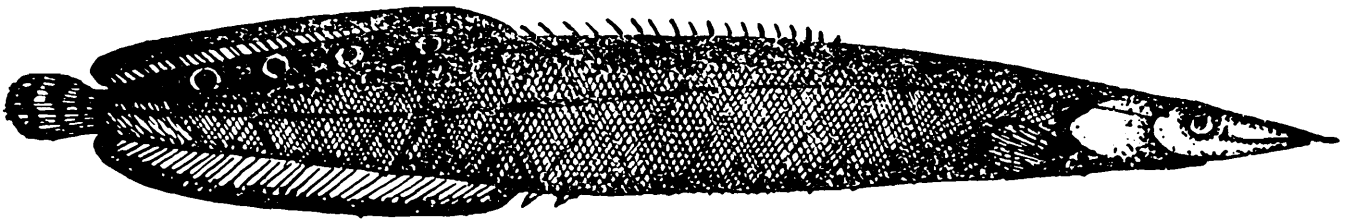


Fig. 107 *Macrognathus aculeatus* (Bloch)

Distribution : India, Pakistan, Nepal, Bangladesh, Burma, Sri Lanka, Malay Archipelago, Thailand, Vietnam, China.

Remarks : This species is devoid of preorbital spine with distinct lateral line and shorter lower jaw.

Family PILLAIIDAE

Body eel like, subcylindrical and elongated; head depressed anteriorly, head and body without scales, upper jaw with a large, single and strong hockey stick like bone bearing teeth; dorsal and anal fins long without spine, caudal fin homocercal, short, confluent with dorsal and anal fins. Only one genus *Pillaia* Yazdani and two species.

Key to the species of genus Pillaia

1. Pectoral fin with 7 to 9, caudal fin with 8 to 10 rays; head depressed ...

P. indica Yazdani

- Pectoral fin with 19 or 20, caudal fin with 12
rays, head conical

P. khajuriai Talwar,
Yazdani & Kundu

Genus *Pillaia* Yazdani, 1972

1972. *Pillaia* Yazdani, *J. Bombay nat. Hist. Soc.*, 69 (1), pp. 134-145 (type, *Pillaia indica* Yazdani, by monotypy and original designation).

185. *Pillaia indica* Yazdani

1972. *Pillaia indica* Yazdani, *J. Bombay nat. Hist. Soc.*, 69 (1), pp. 134-135 (type-locality : Sumer stream, Khasi & Jayantia Hills, Meghalaya, Monotypic).
1975. *Pillaia indica* Yazdani, *J. Bombay Nat. Hist. Soc.*, 74 (1), p. 23.

D. 34—36 ; A. 34—36 ; P. 7—9 ; C. 8—10.

Diagnostic characters : Small eel like fish with long anteriorly depressed body, no spines before the dorsal and anal or anywhere else on the body, dorsal and anal united with the caudal with 8 to 10 unbranched rays, no scales, lateral line less distinct on the body, branchiostegals 6, indistinct fleshy rostral appendage bearing anterior tubular nostrils, wide gill opening, small teeth, sharply pointed and curved inwards, pectorals small, ventrals absent.

Colour : "Upper part of body light to dark purplish brown, the lower part yellowish or very light brown, fins dirty white, series of open V-s of dark colour and dark lines on either side of the body" (Yazdani, 1972).

Size : Reported maximum total length being 77 mm. from Sumer stream, Meghalaya (Holotype).

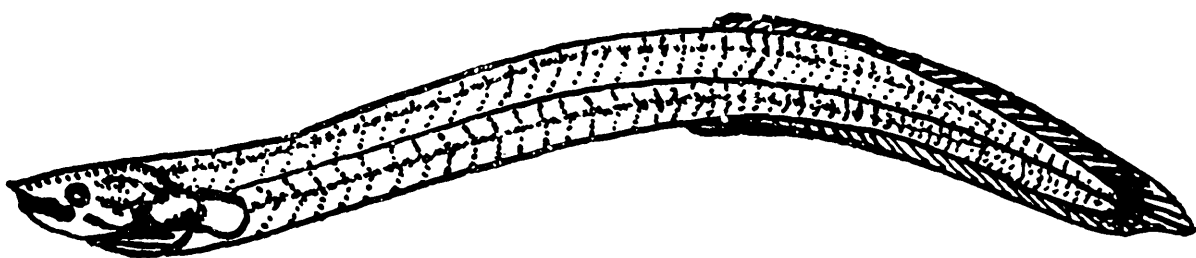


Fig. 108. *Pillaia indica* Yazdani

Distribution : Meghalaya.

Remarks : This is a recently described new species by Yazdani (1972) after Dr. R. S. Pillai, Z.S.I. Lives along the edges of streams

amidst dense overhanging vegetation at altitudes ranging from 1066.8 to 1524.0 metres.

186. ***Pillaia khajuriae*** Talwar, Yazdani & Kundu

1977. *Pillai khajuriae* Talwar, Yazdani & Kundu, *Proc. Indian Acad. Sci.*, **85** (2), pp. 53-56 (type-locality, paddy-field at Rongrengiri, Garo-Hills district, Meghalaya).

D. 44 (3—4/40) , P. 19—20 , A. 38 (1/37) , C. 12.

Diagnostic characters : Body eel like, naked, subcylindrical with a laterally compressed tail, which tapers considerably , mouth wide, snout conical, lips flap like laterally, anteriorly fairly thick , anterior nostrils tubular, gill openings wide, separate, free from isthmus , lateral line not discernible, dorsal and anal fins well developed, confluent with the caudal fin ; caudal tapering, teeth conical, curved inwards.

Colour : 'Pale brown with scattered melanophores on head, body and fins' (Talwar *et. al.*, 1977).

Size : Ranging between 57 to 68 mm. in standard length.

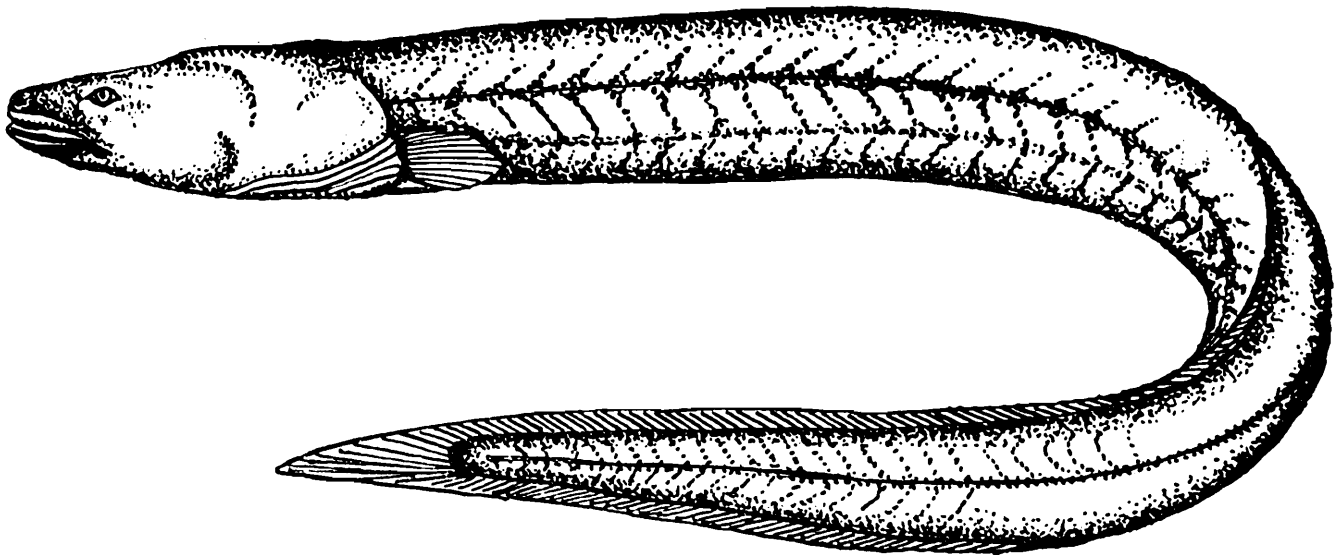


Fig. 109. *Pillaia khajuriae* Talwar, Yazdani & Kundu

Distribution Assam, Meghalaya.

Remarks This is a recently described new species by Talwar *et. al.* (1977) belonging to the recently established new genus and family *Pillaia* and *Pillaiidae* by Yazdani (1972, 1976).

Order TETRAODONTIFORMES

Family TETRAODONTIDAE

Skin covering modified into small or large spines or laminae in the form of a beak, having a cutting edge and covered with a layer of ivory like substance ; a portion of oesophagus dilatable and capable of being distended with air, no lateral line, a single dorsal and anal fin without spines, pectoral fins present, a single nostril on each side or with an open nasal sac. One genus and species.

Genus **Tetraodon** Linnaeus, 1758

1758. *Tetraodon* Linnaeus, *Systema. Naturae*, Ed. 10, p. 332 (type, *Tetraodon lineatus* L.)

187. ***Tetraodon cutcutia*** Hamilton

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

1981. *Tetraodon cutcutia*, Jayaram, F. W. *Fishes of India*, Handbook No. 2, Calcutta, Z. S. I., pp. 393-394.

Local name : Gangatope

D. 10—11 ; P. 21 ; A. 10 ; C. 7.

Diagnostic characters : Back broad, tapering abruptly to the tail ; all fins round, no pelvic fins, large eyes, when inflated through mouth becomes a round ball like, length of head equals its distance from the base of the dorsal fin, inter-orbital space flat and broad, spines entirely absent.

Colour : Upper surface of head dark green with black transverse bars across the snout and another joining eyes, triangular dark patches on dorsal surface, whitish below.

Size : Largest recorded specimen 90 mm. in length.

Distribution : Freshwater of Assam, West Bengal, Orissa and Bangladesh.

Remarks : Only freshwater species—lives in clear slow moving streams. I have noticed several times in the Calcutta news papers occasional death reports caused due to taking this fish (known as *Tepa* in West Bengal) by the poors. This fish is now banned as a poisonous fish in West Bengal.

REFERENCES

- AHMED, M. 1978. Personal correspondence letter No. A. F. 50/74/pt./67 dated the 5th April, 1978 (Director, State Fisheries, Assam).
- AITKINS, E. H. 1901 Notes on Anopheles or Malaria Mosquito. *J. Bombay nat. Hist. Soc.*, **13**; p. 695.
- ALCOCK, A. 1902. 'A Naturalist in Indian seas,' p. 201. London.
- 1911 'Entomology for Medical officers', pp. 55—58, London.
- 1920. 'Entomology for Medical officers', 2nd Edition, pp. 70—72, London.
- ALIKUNHI, K. H. 1966. *FAO Fish Synopsis*, **31** (1).
- ALIKUNHI, K. H. and SUKUMARAN, K. K. 1962. Preliminary observations on carps in India. *Proc. Indian Sci. Congr.*, **49** (3) : 387.
- 1964. Preliminary observations on Chines carps in India. *Proc. Indian Acad. Sci.*, **60 B** (3) : 171—188.
- ANNANDALE, N. and HORA, S. L. 1921 The Fauna of Loktak Lake in Manipur. *Proc. Indian Sci. Congr., Calcutta*, (N. S.), **17**, p. 147
- BRAHMACHARI, B. B. 1909. Campaign against Malarial Fevers at Cossipore-Chitpore Municipality. *Cal. Med. J.*, **3**, p. 318.
- BARMAN, R. P 1983. A new species of the genus *Danio* Hamilton from India (Pisces : Cyprinidae). *Cur. Sci.*, **52** (4) : 177-178.
- BĂNARESCU, P. and NALBANT, T 1968. Cobitidae (Pisces, Cypriniformes) collected by the German-Indian expedition. *Mitt. Hamburg zool. Mus. Inst.*, **65** : 327—351.
- CHAUDHURI, B. L. 1909. Mosquito-larvae-eating Propensity of the Genus *Haplochilus*. *J. Proc. Asiat. Soc. Beng.*, **5**, pp. 36 & 37.
- 1911. Fish and Mosquito Larvae. *Cal. Med. J.*, **6**, pp 457—470.
- 1912. Fish (Abor Expdt.). *Rec. Indian Mus.*, **8**, pp. 241—257.

- CHAKRABORTY, R. D. 1972. Silver Jubilee Souvenir C. I. F. R. I., Barrackpore, pp. 25—29.
- CHIMITZ, P. 1955. *Tilapia* and its Culture. A preliminary bibliography. *FAO Fish. Bull.* **8** (1).
- CHOUDHURY, SUSHILA and SEN, NIBEDITA, 1977. On a collection of fish from Arunachal Pradesh with some new records. *Newsl. Zool. Surv. India*, **3** (4).
- Covell, G. 1935. Anti-Mosquito Measures with special reference to India. Health Bulletin No. 11, *Malaria Bureau* No. 3, 4th Ed., Delhi.
- DEY, F. 1878. The fishes of India, London, XX—778 pp., 198 pls.
- 1889. The *fauna of British India*, Fishes, **1** : 18+548, London.
- DATTA, A. K. and SEN, T. K. 1977. *Schizopygopsis stoliczkae* Steindachner, first record from Arunachal Pradesh, India, with observations on the extension of geographical range. *Newsl. Zool. Surv. India*, **3** (4) : 143-144.
- DEY, S. C. and SINGH, H. T. 1967. Three new records from Assam. *J. Assam. Sci.*, **10** : 136—138.
- GRAVELY, F. H. 1937 Mosquito—Destroying Fishes. *Curr. Sci.*, **5**, pp. 482-483.
- GREEN WOOD, P. H., ROSEN, D. F., WEITZMAN, S. H. and MYERS, G. S. 1966. Phyletic studies on Teleostean fishes, with a provisional classification of living forms. *Bull. Amer. Mus. Nat. Hist.* New York, **131** (Article 4) : 341—455.
- HOLCIK, J. and MIHALIK, JOZEF. 1970. Fresh water fishes. The Hamlyn Publishing Group Ltd., Hamlyn House, Middlesex, England, pp. 94—101.
- HORA, S. L. 1921 Fish & Fisheries of Manipur with some observations on those of the Naga-Hills. *Rec. Indian Mus.*, Calcutta, **22** (3) : 165—214, 4 pls.
- 1924. Fish of Siju Cave, Garo Hills, Assam. *Rec. Indian Mus.*, **26** : 27—31.

- 1927. The use of fishes for the control of mosquitoes. *Indian Med Gaz.*, Calcutta **61**, pp. 1—6.
- 1930. Animal Plasticity and environment. *Nature*, London, **126**, pp. 435—436.
- 1935. Fish of Naga Hills, Assam. *Rec. Indian Mus.*, Calcutta, **37** (3), pp. 381—404, pl. 1.
- 1936. On a further collection of fish from the Naga Hills. *Rec. Indian Mus.*, **38** (3) : 317—331.
- 1937. Distribution of Himalayan fishes and its bearing on certain Palaeogeographical problems. *Rec. Indian Mus.*, Calcutta **39** (3) : pp. 251—259.
- 1938. The game fishes of India V. The *Pangas* cat-fish. *J. Bombay nat. Hist. Soc.*, **40** (3), pp. 355—366, Pl. 1
- 1940. On a collection of fish from the head waters of the Mahanadi river, Raipur District, C.P. *Rec. Indian Mus.*, **42** (2) : 365—374.
- 1941. The game fishes of India. XIII. The Mahseers or the large-scaled Barbels of India, 6. The Jungha or the Assamese *Barbus (Tor) progenius* McClelland. *J. Bombay nat. Hist. Soc.*, **42** (3), pp. 526—572, pl. 1.
- 1944. On the Malayan affinities of the freshwater fish fauna of Peninsular India and its bearing on the probable age of the Garo-Rajmahal gap. *Proc. Nat. Inst. Sci. India*, **10** (4), p. 423—439.
- 1949. The fish fauna of the Rihand river and its zoogeographical significance. *J. Zool. Soc. India*, Calcutta, **1** : 1—7.
- 1951. Siluroid fishes of India, Burma and Ceylon. XIII. Fishes of the genera *Erethistes* Müller and Troschel, *Hara* Blyth and of two new allied genera. *Rec. Indian Mus.*, Delhi, **47**, pp. 183—201, pls. 1, 2, text-figs. 1—5.
- 1951a. Some observations on the palaeogeography of the Garo-Rajmahal gap as evidenced by the distribution of the Malayan

fauna and flora to Peninsular India. *Proc. Nat. Inst. Sci. India*, Calcutta, **16** (6), pp. 437—444.

HORA, S. L. and MENON, A. G. K. 1952. Distribution of Indian fishes of the past and their bearing on the geography of India. 1. The extinct *Dipnoan* and *Ganoid* fishes of India. *Everyday Sci.*, Ambala, **1** (1), pp. 26—27.

HORA, S. L. and MUKERJI, D. D. 1935. Fish of the Naga Hills, Assam. *Rec. Indian Mus.*, Calcutta, **37** (3), pp. 381—404.

— 1953. Table for the identification of Indian Fresh water fishes with description of certain families and observations on the relative utility of the probable Larvivorous Fishes of India. Health Bulletin No. 12, *Malaria Bureau* No. 4, ed. 3, pp. 1—47, Delhi.

HORA, S. L. and NAIR, K. K. 1938. Observations on nutrition of *Panchax panchax* (Ham.). *Proc. Nat. Inst. Sci. India*, **4** (2), pp. 245—251.

— 1941. Fishes of the Satpura Range, Hoshangabad District, Central Provinces. *Rec. Indian Mus.*, Delhi, **43** (3): 361—373.

HORA, S. L. and PILLAY, T. V. R. 1962. Hand book on fish culture in the Indo-Pacific fisheries region. *FAO Fish Biol. Tech. Pap.* (14) : 203.

HORA, S. L. and SILAS, E. G. 1952. Notes on fishes in the Indian Museum, XLVII. Revision of the *Glyptosternoid* fishes of the family Sisoridae with description of new genera and species. *Rec. Indian Mus.*, Delhi, **49** (1), pp. 5—30, Pl. 1.

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

JAYARAM, K. C. 1963. A new species of Sisorid fish from the Kameng Frotier Division, N.E.F.A. *J. Zool. Soc. India*, **15** (1) : 85—87.

— 1977. Aid to the identification of Siluroid fishes of India, Burma, Sri Lanka, Pakistan & Bangladesh. 1. Bagridae. *Rec. Zool. Surv. India*, Occ. Paper No. 8, pp. 1—41.

- 1977. 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, pp. 1—33.
 - 1978. Aspects of indigenous and exotic fishes of India. *Zoologica*, (2), *Zool. Surv India*, pp. 5—39.
 - 1981. The fresh water fishes of India, Pakistan, Bangladesh, Burma and Sri Lanka, Handbook No. 2, Calcutta, *ZSI.*, iii—vii+1—475+i—xiii (Plates).
- JHINGRAN, V G. 1975. Fish and fisheries of India. Delhi : Hindustan Publishing Corporation, 6-U.B., Jawahar Nagar, Delhi-7 ; xv+954 pp.
- JOHN, C. C. 1940. Observations on the utility of *Aplocheilus lineatus* (C. V.) for Mosquito control. *J. Mal. Inst. India*, 3, pp. 67—80.
- JOB, T J. 1940. Notes on the geographical distribution and larvicidal properties of *Horaichthys setnai* Kulkarni. *J. Bombay nat. Hist. Soc.*, 42, pp. 201—202.
- 1940a. On the Breeding and Development of Indian “Mosquito-fish” of the Genera *Aplocheilus* McClelland and *Oryzias* Jordan and Snyder. *Rec. Indian Mus.*, 42, pp. 51—79.
 - 1941. Efficiency of Killifish, *Aplocheilus panchax* (Hamilton) in the Control of Mosquitoes. *Proc. Nat. Inst. Sci. India*, 7 : pp. 317—350.
- JORDAN, D. S. 1923. A classification of fishes including families and genera as far as known. California, Stanford University, x+243 pp.
- KARAMCHANDANDI, S. J. and MISRA, D. N. 1980. Preliminary observations on the status of Silver Carp in relation to *Catla* in the culture fishery of Kulgarhi Reservoir. *J. Bomby nat. Hist. Soc. India*, 77 (2) : p. 267.
- MACDONALD, W. R. 1914. Note on the use of Larvicidal Fish in combating Malaria Fever. *Proc. Third All India Sanitary Conference*, 4, pp. 75—77.

- MENON, A. G. K. 1951. Further studies regarding Hora's Satpura hypothesis. The role of the eastern ghats in the distribution of the Malayan fauna and flora to Peninsular India. *Proc. Nat. Inst. Sci. India*, **17** (6) : 475—497.
- 1954. Fish geography of the Himalayas. *Proc. Nat. Inst. Sci. India*, **20** : 467—493.
- 1973. Origin of the fresh water fish fauna of India. *Curr. Sci.* **42**(16) : 553—556.
- 1974. A check list of fishes of the Himalayan and Indo-Gangetic plains. *Spl. Pub.* (1), *J. Indl. Fish. Soc. India*, i—vii+136.
- MENON, A. G. K. and PRASHAD, K. N. 1961. A new Pycnodont fish from the Eocene beds of Garo Hills, Assam. *Rec. Geol. Surv. India*, **85** (4) : 563—567.
- MENON, A. G. K. and SEN, T. K. 1966. Extension of the geographical range of *Euchiloglanis hodgarti* (Hora) with certain observations on the Zoogeography and evolution of the *Glyptosternoid* fishes of the family Sisoridae. *Sci. & Cult.*, **32** (4) : 211—212.
- MENON, M. A. S. 1952. On a collection of fish from Manipur, Assam. *Rec. Ind. Mus.*, **50** (2) : 265—270.
- 1954. Notes on fishes on the genus *Glyptothorax* Blyth. *Rec. Ind. Mus.*, **52** : 44.
- MIRONOVA, N. V. 1969. The biology of *Tilapia mossambica* (Peters) under natural and laboratory conditions. *Probl. Ichthyol.* **9** (4) : 506—514.
- MISRA, K. S. 1962. An aid to the identification of the common commercial fishes of India and Pakistan, *Rec. Indian Mus.*, **57** (1—4) : 1—390.
- 1976. Fauna India (Pisces), Vol. II, pp. 1—438.
- 1976. Fauna India (Pisces), Vol. III, pp. 1—367.
- MOTWANI, M. P., JAYARAM, K. C. and SEHGAL, K. L. 1962. Fish and fisheries of Brahmaputra river system, Assam. Fish fauna with

observations of their zoogeographic significances. *Trop. Ecol. Varanasi*, **3** (1 & 2), pp. 17—43.

NALBANT, T. 1963. A study of the genera of Botiinae and Cobitinae (Pisces, Ostariophysi, Cobitidae). *Trav. Mus. Hist. Nat., "Grigore Antipa"* Bucarest, **4** : pp. 343—379.

PRASHAD, B. and MUKERJI, D. D. 1929. The fish of the Indawgyi Lake and the streams of the Myitkyina district (upper Burma). *Rec. Ind. Mus.* **31** : 161—223, 4 pls.

PANIKKAR, N. K. and TAMPI, P. R. S., 1954. On the mouth breeding Cichlid, *Tilapia mossambica* Peters. *Indian J. Fish.* **1** (162) : 217—30.

PILLAI, R. S. and YAZDANI, G. M., 1971. First record of the Catfish, *Olyra horai* Prashad and Mukerjee (Siluriformes : Olyridae) from India with a brief redescription of the species *J. Zool. Soc. India*, **23** (2) : 135—136.

— 1974. Two new species and two records of *Lepidocephalichthys* Bleeker (Pisces : Cobitidae) from Assam and Meghalaya, India, with a key to the known species. *J. Zool. Soc. India*, **26** (1 & 2) : 11—17.

— 1977. Ichthyofauna of Garo-hills, Meghalaya (India). *Rec. Zool. Surv. India*, **72** (1—4) : pp. 1—22.

REGAN, C. T. 1911. Classification of the teleostean fishes of the order Ostariophysi. 2. Siluroidea. *Ann. Mag. Nat. Hist.* **8** (8) : 553—577.

SEHGAL, K. L. 1959. Two new fish records from Assam. *J. Bombay nat. Hist. Soc. India*, **56** (1—2) : 147.

SEN, T. K. 1975. Further light on the fresh water fish fauna of Andaman Islands. *Seafood Expt. J.*, **8** (2) : 31—33.

— 1976. On the distribution of genus *Labeo* in Assam. *Newsl. Zool. Surv. India*, **2** (5) : 208—209.

— 1978. Fishes of Assam with scientific, local and english names. *Seafood Expt. J.*, **9** (1) : 63—67.

- 1979. *Lepidocephalus dibruensis*, a new *Cobitid* fish from Dibru river, Dibrugarh, Assam, with a key to the Indian species of *Lepidocephalus* Bleeker. *Bull. Zool. Surv. India*, **2** (1) : 35—38.
- SEN, T. K., DASGUPTA, J. M. & RAMA RAO, K. V. 1970. Scientific, local and english names of the commercial fishes of Calcutta. *Seafood Expt. J.*, **11** (1) : 49—54.
- SEN, T. K. and JAYARAM, K. C. 1982. The Mahseer Fishes of India : A review. *Rec. zool. Surv. India*, Occ. Paper No. 39 : 1—38.
- SHAW, G. E. and SHEBBEARE, E. O. 1937. The Fishes of Northern Bengal. *J. Roy. Asiat. Soc. Bengal*, (Science), pp. 1—137, 6 pls.
- SILAS, E. G. 1952. Taxonomic assessment and levels of evolutionary divergence of fishes with the so-called Malayan affinities in Peninsular India. *Proc. Nat. Inst. Sci. India*, **18** (5) : 423—447.
- SINGH, S. B. 1972. A Silver Jubilee Souvenir. *C.I.F.R.I*, Barrackpore, pp. 30—33.
- SINGH, ASKET., SEN, NIBEDITA & BĂNĂRESCU, P. 1981. New *Noemacheiline* loaches from India (Pisces, Cobitidae). *Trav. Mus. Hist. nat. .. Grigora Antipa*, Bucarest, **23** : 201—212.
- SMITH, H. M. 1945. The fresh water fishes of Siam, or Thailand. *Bull. U.S. Nat. Hist. Mus.*, No. 188, XI + 622 pp.
- SRIVASTAVA, C. B. 1966. On a collection of fish from Tirap Frontior Division, NEFA, India, *J. Zool. Soc. India*, **18** (162) : 122—128.
- SOUTHWELL, T 1920. Fish & Mosquito Larvae in Bengal, Bihar & Orissa. India. *Ann. Trop. Med. & Parasit.*, Liverpool, **14**, pp. 181—186.
- SUKUMARAN, K. K. 1969. Growth, maturation and fecundity of Cultivated fishes. FAO/UNDP Regional Seminar on induced breeding of Cultivated fishes. Calcutta—FRI/IBCF/5 : 53p.
- 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), pp. 104—105.

- TALWAR, P. K. and WHITEHEAD, P. J. P. 1971. The clupeoid fishes described by Francis Day. *Bull. Brit. Mus. nat. Hist.*, **22** (2) : 59—85.
- TALWAR, P. K., YAZDANI, G. M. and KUNDU, D. K. 1977. On a new eel-like fish of the genus *Pillaia* Yazdani (Pisces : Mastacembeloidei) from India. *Proc. Indian Acad. Sci.*, **85B** (2), 53—56.
- THOMAS, H. S. 1927. 'Tank fishing in India', 2nd edition, p. 78. London.
- TILAK, R. 1964. The osteocranium and the Weberian apparatus of the fishes of the family Schilbeidae (Pisces ; Siluroidea). *Proc. Zool. Soc. London*, **143** (1) : 1—36.
- TREWAVAS, E. 1983. A review of the tilapiine fishes of the genera *Sarotherodon*, *Oreochromis* and *Danakilia*. *Bull. Brit. Mus.*, (N.H.), Zool., p. 580.
- VINCIGUERRA 1889. *Ann. Mus. Tor. Nat. Genova*, (2), IX, p. 345.
- WEBER, M. and BEAUFORT, DE L. F. 1913. The fishes of the Indo-Australian archipelago. Leiden, **2**, pp. i—xx, 1—404, figs. 1—151.
- WHITEHEAD, P. J. P. 1972. A synopsis of the clupeoid fishes of India. *J. mar. biol. Ass. India*, **14**(1) : 160—256.
- WILSON, H. C. 1914. A note on the Treatment of Swamps, Streambeds, Ponds, Wells and Pools with a view to destruction of Mosquito Larvae. *Ind. J. Med. Res.*, **1**, pp. 691—701.
- YAZDANI, G. M. 1972. A new genus and species of fish from India. *J. Bombay nat. Hist. Soc.*, **69**(1) : 134—135.
- 1976. New descriptions—A new family of Mastacembeloid fish from India. *J. Bombay nat. Hist. Soc.*, **73** : 166—170.
- YAZDANI, G. M. & TALUKDAR, S. K. 1975. A new species of *Puntius* (Cypriniformes : Cyprinidae) from Khasi & Jaintia Hills (Meghalaya), India. *J. Bombay nat. Hist. Soc.*, **72**(1) : 218—221.

ERRATA

<i>Page No.</i>	<i>Place</i>	<i>For</i>	<i>Read as</i>
8.	Sl. no. 55	' <i>Laebo</i> '	<i>Labeo</i>
10, 133.	Sl. no. 116	' <i>Aorichthys seenghala</i> (Hamilton)'	<i>Aorichthys seenghala</i> (Sykes)
11.	Sl. nos. 142, 149 & 151	' <i>E. hodgarti</i> Hora'	<i>E. hodgarti</i> (Hora)
		' <i>G. platypogonoides</i> Bleeker'	<i>G. platypogonoides</i> (Bleeker)
		' <i>H. jerdoni</i> Day'	<i>H. jerdoni</i> (Day)
28.	(1) Above genus <i>Chela</i> Ham.	—	Subfamily - Abramidinae (Cultrinae)
	(2) Fin formula of <i>C. laubuca</i>	'D. 10-11 (2/9-9)'	D. 10-11 (2/8-9)
31.	Fin formula of <i>S. bacaila</i>	'(2/11-13)'	deleted
34.	Fin formula of <i>B. bola</i>	'3 (3/10)'	13 (3/10)
49.	(1) Dist. Col.	'Bangadesh'	Bangladesh
	(2) 1st ref. of <i>A. jaya</i>	'1842'	1822
58.	4th line under 'Diagnostic Characters' col.	'a symmetrically'	asymmetrically
65.	2nd ref. of <i>G. lissorhynchus</i>	' <i>Garra lissorhynchus</i> '	<i>Garra lissorhynchus</i>
102.	Sl. no. 5.	' <i>N. r. inglihsi</i> '	<i>N. r. inglisi</i>
121.	2nd ref. of <i>N. sikmaiensis</i>	'1975'	1974
127.	Size col. of <i>M. reticulofasciatus</i>	'402'	40.2 mm.
132.	Fin formula of <i>A. aor</i>	'A. 11-14-9'	A. 11-14
149.	Sl. no. 133, 1st ref.	' <i>Eutropiichthys vacha</i> Hamilton'	<i>Pimelodus vacha</i> Hamilton
192.	1st line	'Orgrn'	Organ
204.	Colour col. of <i>M. aculeatus</i> (dropped)		Greenish or brownish above fading to yellowish below ; smaller ones with a series of 4 to 9 large black ocelli along the base of the dorsal.

<i>Page No.</i>	<i>Place</i>	<i>For</i>	<i>Read as</i>
151.	Size Col.	'12.19 mm'	121.9 cm
149.	Diagnostic Characters	'8 barbels reaching as long as head'	8 barbels, maxillaries reaching as long as head
92.	Size Col.	'120 cm'	274 cm
38.	„	'125 km'	125 mm
61.	„	'120 mm'	120 cm