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Competitive Research Grant (CRG)

Sub-Project Completion Report

on

DNA Barcoding of Freshwater Fishes of Bangladesh: Implication for Conservation and Management

Project Duration

May 2017 to September 2018

Department of Zoology
University of Dhaka

Submitted to



Project Implementation Unit-BARC, NATP 2
Bangladesh Agricultural Research Council
Farmgate, Dhaka-1260



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Project Implementation Unit

National Agricultural Technology Program-Phase II Project (NATP-2)

Bangladesh Agricultural Research Council (BARC)

New Airport Road, Farmgate, Dhaka – 1260

Bangladesh

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Acronyms

BDBOL	Bangladesh Barcode of Life
DNA	Deoxyribonucleic acid
COI	Cytochrome c oxidase subunit 1
DOF	Department of Fisheries
FRSS	Fisheries Resources Survey System
IUCN	International Union for Conservation of Nature
GB	GenBank
NCBI	National Center for Biotechnology Information
PCR	Polymerase chain reaction
LC	Least concern
NT	Near threatened
VU	Vulnerable
EN	Endangered
CR	Critically Endangered
DD	Data deficient

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Executive Summary

Bangladesh is very rich in ichthyo-faunal diversity and ranked third largest in Asia after China and India, with approximately 260 species of freshwater fish. The ichthyo-faunal diversity of the country is under increasing threat of overfishing, habitat destruction and pollution. The country has already lost more than a dozen vertebrate fauna during the last century. The country now needs to maintain the genetic identity as well as integrity of species in their natural habitats. The proposed study was thus directed towards to genetic characterization of freshwater fishes of Bangladesh.

Scheduled field visits and local fish market survey was made to collect the fresh water fish samples. Fish samples were collected from freshwater habitats, fish landing centers, fish markets or from the local fishermen during May 2017 to June 2018. Digital photographs of all the fishes were taken immediately and taxonomical identification of specimens was done following previous reports. Immediately after the collecting the specimens, tissue samples were excised and stored in absolute ethanol. A total of 317 specimens belong to 180 species have been collected and identified during the study period (May 2017-September 2018). All fish specimens are keeping as voucher specimens at the Departmental Museum. Genomic DNA was extracted from the muscle tissue samples by the standard Proteinase-K/Phenol-Chloroform-isoamyl alcohol method. Target COI genes were amplified using Fish F1 (forward) and Fish F2 (reverse) primers. Purified PCR products were then sequenced through Sanger Sequencer.

We have generated 260 sequences of 164 species belongs to 14 Orders 27 Families and 92 genera. We have already got the GenBank accession numbers of 164 species. For all the samples, %G were significantly lowered compared to other nucleotides and %GC compared to %AT. Also, a significantly lowered GC content was observed in second and third codon position compared to the first codon position in all samples. The average Kimura two-parameter (K2P) distances within genera, families, and orders were 15.83%, 19.14%, and 25.07%, respectively. The minimum and maximum K2P distance based genetic divergences were 0.19% and 57.14% respectively. Members of Cypriniformes, Siluriformes, and Perciformes were clustered separately in the neighbour-joining (NJ) tree. Nucleotide composition, GC distribution across codon positions, K2P distance, genetic divergence, and phylogenetic analyses reveal that these freshwater fishes are genetically very diverse. Along with morphological data, we have confirmed the existence of seven new records; *Clupisoma prateri*, *Batasio convexirostrum*, *Badis tuivaiei*, *Botia rostrata*, *Schistura fasciolata*, *Devario annandalei* and *Oryzias javanicus*. These findings suggest that fishes can be discriminated using these barcode data without any confusion.

A standardized reference library as 'Bangladesh Barcode of Life' (www.bdbol.net) Data base system has been developed for the use of researchers, students and policy makers.

This project completion report is the first document of genetic diversity of freshwater fishes of Bangladesh through DNA barcoding. Moreover, a standardized reference library entitled 'Bangladesh Barcode of Life' data base system along with all the DNA barcode data will be available for the use of researchers, students and policy makers.

CRG Sub-Project Completion Report (PCR)

A. Sub-project Description

1. Title of the CRG sub-project: DNA Barcoding of Freshwater Fishes of Bangladesh: Implication for Conservation and Management
2. Implementing organization: Department of Zoology, University of Dhaka
3. Name and full address with phone, cell and E-mail of PI/Co-PI (s): Dr. Md. Sagir Ahmed, Professor, Department of Zoology, University of Dhaka; Cell: 01552422621; E-mail: sagir@du.ac.bd
4. Sub-project budget (Tk):
 - 4.1 Total: 19,99,665 (Taka Nineteen Lac ninety nine thousand six hundred sixty five only).
 - 4.2 Revised (if any): NA
5. Duration of the sub-project:
 - 5.1 Start date (based on LoA signed): 16 May 2017
 - 5.2 End date: 30 September 2018
6. Justification of undertaking the sub-project:

Bangladesh is very rich in ichthyo-faunal diversity and ranked third largest in Asia after China and India, with approximately 260 species of freshwater fish. The ichthyo-faunal diversity of the country is under increasing threat of overfishing, habitat destruction and pollution. Fish have been an integral part of life of the people of Bangladesh from time immemorial. Fisheries, second only to agriculture in the overall economy of Bangladesh, contribute nearly 3.69 percent to the gross domestic product (GDP), 22 percent of gross agriculture products and 2.73 percent to the total export earnings (FRSS, 2016). It accounts for about 60 percent of animal protein intake in the diet of the people of Bangladesh (DOF, 2014).

The rapid increase of human population and consequent intensification of agricultural, industrial and infrastructural activities along with deficient management have led to the destruction of habitat, ecosystem and biodiversity of the country. Over fishing, use of destructive fishing gears, catch of spawner and under size fishes are the main causes of loss fish diversity and production in the country. The country has already lost more than a dozen vertebrate fauna during the last century. The lack of proper database on our biodiversity is one of the greatest impediments for utilization and safeguarding of our interests.

A DNA barcode is a short gene sequence taken from standardized portions of the genome, used to identify species. The small segment of mitochondrial DNA that scientists chose comes from a gene called Cytochrome c Oxidase Subunit I (COI). It contains only 648 base pairs of nucleic acids, making for quick

reading of its DNA sequence. But the small piece varies enough from creature for differences to distinguish one species from another (Hebert et al., 2003). The efficiency of DNA barcoding has been reported in the detection and description of new and cryptic fish. Moreover, several studies have already illustrated the advances provided by the iterative processes between morphological- and DNA barcode-based studies in taxonomy concluded that barcoding would permit the unambiguous identification of the vast majority of fish species. Australia, Canada, China and India have already barcoded all species of their freshwater fishes (Ward et al. 2005; Lakra et al. 2015). But in Bangladesh for the first time Department of Zoology, University of Dhaka has established a Fish DNA Barcoding Lab and initially started this work and barcoded few fishes of small indigenous species (SIS) (Ahmed et al. 2015).

A genetically sustainable fishery implies one that does not result in unacceptable loss of genetic diversity and/or unacceptable change of the genetic composition of distinct populations or population systems. The objective of conservation is to maintain the genetic identity as well as integrity of the species in their natural habitat as well as genetically sustainable fishery. Hence documentation of genetic variation and diversity is of vital significance to evolve conservation strategies with long-term impact. The country now needs to maintain the genetic identity as well as integrity of species in their natural habitats. The proposed study was thus directed towards to genetic characterization of freshwater fishes of Bangladesh.

7. Sub-project goal: To conserve the genetic diversity of freshwater fishes of Bangladesh

8. Sub-project objective (s):

- i) To know the genetic diversity of freshwater fishes of Bangladesh exploring the mitochondrial Cytochrome C Oxidase Subunit I (COI) gene;
- ii) To develop a standardized reference library as 'Bangladesh Barcode of Life' Data base system to store all the DNA barcode data for the use of researchers, students and policy makers and
- iii) To know the conservation status and recommendation on management of genetic diversity of freshwater fishes of Bangladesh.

9. Implementing location (s): Department of Zoology, University of Dhaka

10. **Methodology:**

Study area and specimens collection

The study area was included the rivers, haor, baors, beels, floodplains, upstream rivers and hill streams throughout the country. At least three specimens of each fish species was collected from the freshwater aquatic habitats, fish landing centers, fish markets or from the local fishermen. Personal fishing was also conducted to collect some rare and non commercial fish wherever necessary. Digital photographs of all the fishes were taken immediately and taxonomically identified following Siddiqui et al. (2007), Talwar and Jhingran (1991) and Rahman (2005). Immediately after the collecting the specimens, tissue samples were excised and stored in 70% ethanol.

DNA barcoding

Genomic DNA was extracted from the muscle tissue samples by the standard Proteinase-K/Phenol-Chloroform-isoamyl alcohol method (Sambrook and Rusell 2001; Chowdhury et al., 2016). The quality and quantity of the extracted DNA was measured using Nanodrop™ spectrophotometer. Approximately 655 bp was amplified from the 5' region of the *cox1* gene from mitochondrial DNA using the following primers: forward primer-5'TCA ACC AAC CAC AAA GAC ATT GGC AC 3and reverse 5TAG ACT TCT GGG TGG CCA AAG AAT CA 3.For this, 25 µl PCR reaction mixes was prepared which included 18.75 µl of ultrapure water, 2.25 µl of 10X PCR buffer, 1.25 µl of MgCl₂ (50 mM), 0.25 µl of each primer (0.01 mM), 0.125 µl of each dNTP (0.05 mM), 0.625 U of Taq polymerase, and 0.5–2.0 µl of DNA template. Amplifications was performed using a Veriti thermal cycler (Applied Biosystems.). The thermal regime consist of an initial step of 2 min at 95 °C followed by 35 cycles of 0.5 min at 94 °C, 0.5 min at 54°C, and 1 min at 72 °C, followed in turn by 10 min at 72 °C and then held at 4 °C. PCR products were visualized on 1% agarose gels. The PCR products were purified using PureLink™ PCR purification kit and sequence from First BASE Laboratories, Malaysia. Sequences were checked and aligned using Sequencher v5.4, and were submitted to GenBank with referred accession numbers. Bioinformatic analyses of the sequences were performed using CLC Workbench v7.7.1, Mega v5.05, Clustal Omega, and T-Coffee. Base compositions were analyzed using CLC Workbench v7.7.1 and Mega v5.05. Genetic distance and sequence divergences were calculated using the Kimura two parameter (K2P) distance model (Kimura 1980). Neighbour-joining (NJ) trees of K2P distances were created to provide a graphic representation of the patterning of divergence between species (Saitou and Nei 1987). Bootstrapping was performed in MEGA v5.05 (Kumar *et al.* 2004) with 1000 replications. All the statistical calculations was performed in Microsoft Excel. All the data including taxonomic characteristics and GenBank/BOLD accession number was tagged with the voucher specimen was preserved at the museum of Department of Zoology, University of Dhaka.

A barcode of life data base system was developed as a name of 'Bangladesh Barcode of Life. All DNA barcode data, sequences, along with GenBank accession numbers was documented in this web site for public access. A questionnaire was developed and distributed among the local people and fishermen to know the status and abundance of fish species available on those areas.

Table 1: Primers used for PCR amplification of mitochondrial COI gene

Primers	Sequences (5'-3')	Primer size (bp)	Tm (°C)
Fish F1	TCAACCAACCACAAAGACATTGGCAC	26	56° C
Fish R1	TAGACTTCTGGGTGGCCAAAGAATCA	26	56° C
Fish F2	TCGACTAATCATAAAGATATCGGCAC	26	56° C
Fish R2	ACTTCAGGGTGACCGAAGAATCAGAA	26	56° C

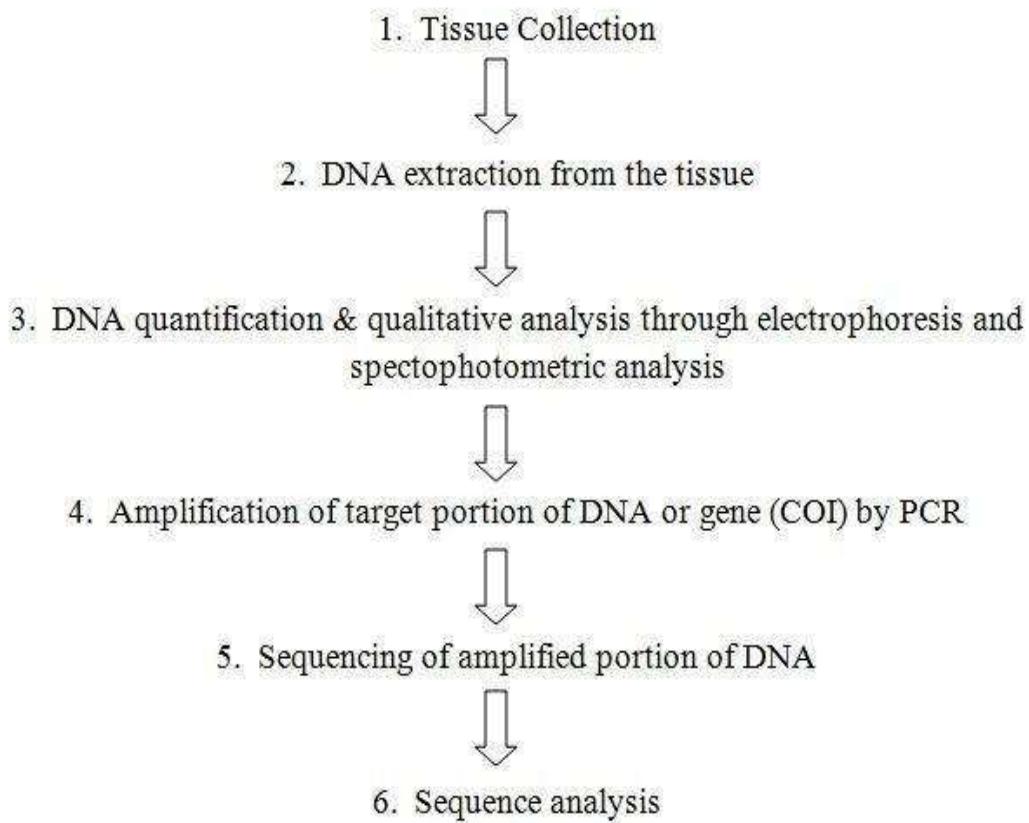
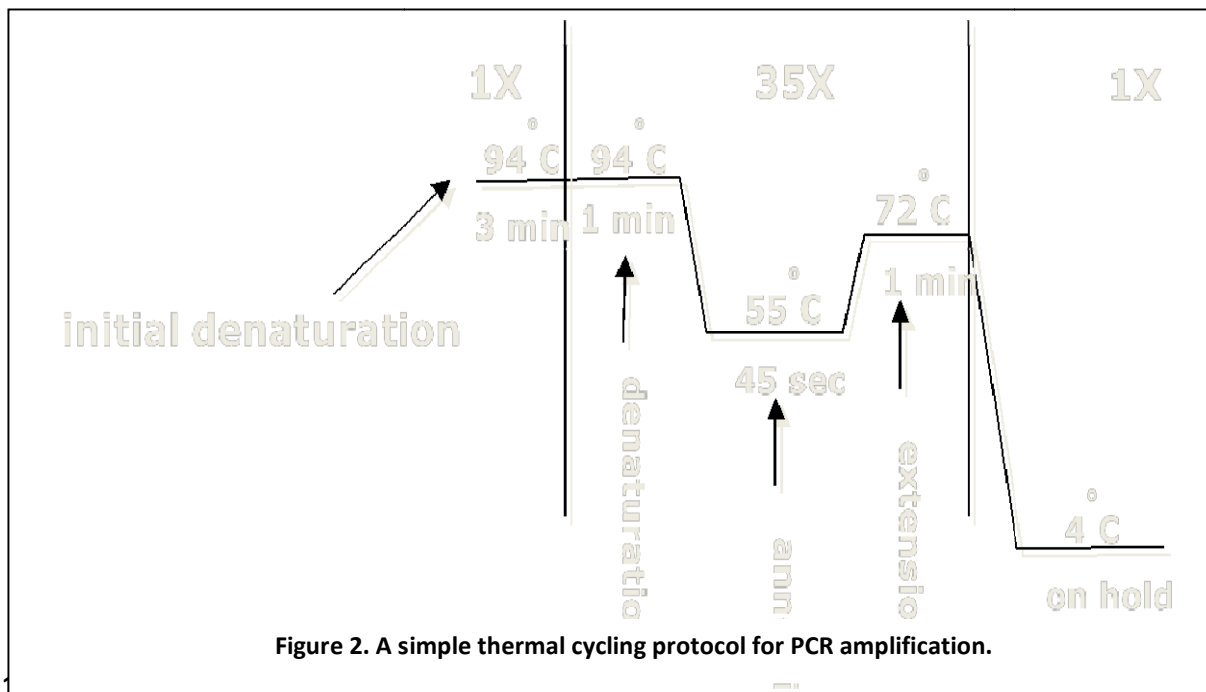


Figure 1. A flow chart of the procedural steps of DNA barcoding



A total of 317 specimens belong to 180 species have been collected and identified during the study period (May 2017- April 2018). Among the collected species, Order Cypriniformes was recorded as the most diversified fish group in terms of both number of species and individuals observed followed by Siluriformes and Perciformes (Table 1). So far, we have generated 260 sequences of 164 species belongs to 14 Orders 27 Families and 92 genera. In the mean time, we have already got the GenBank accession numbers of 164 species. These sequences have public access from the NCBI GenBank. All fish specimens are keeping as voucher specimens at the Departmental Museum. We reported at least seven new records; *Clupisoma prateri*, *Batasio convexirostrum*, *Badis tuivaiei*, *Botia rostrata*, *Schistura fasciolata*, *Devario annandalei* and *Oryzias javanicus*. No insertions/ deletions or codon stops were found, supporting the view that all of the amplified sequences constitute functional mitochondrial COI sequences.

Table 2: Order wise number of species identified and COI gene sequenced

Order	Family	Species identifies	No. of species Barcoded (GB Accession no)
CLUPEIFORMES	02	08	08 (13)
CYPRINIFORMES	04	61	61 (91)
SILURIFORMES	13	37	37 (63)
PERCIFORMES	21	32	32 (47)
Others	20	26	26 (46)
Total	60	164	164 (260)

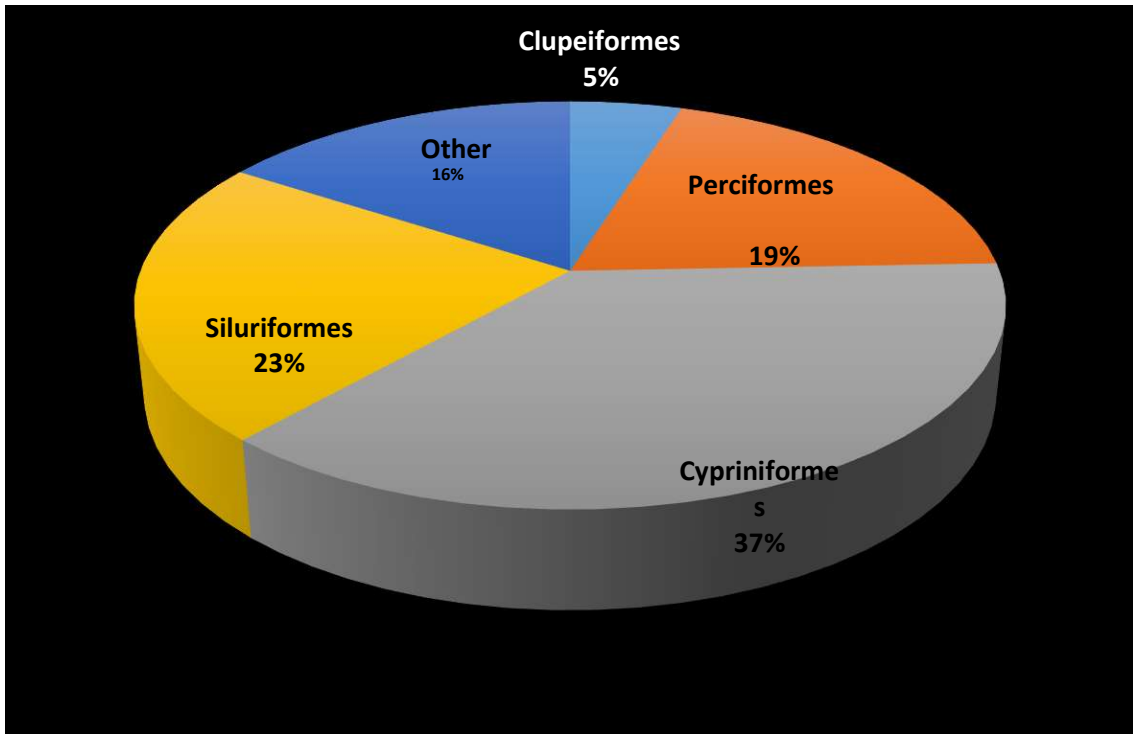


Figure 3: Abundance of freshwater fishes of different orders.

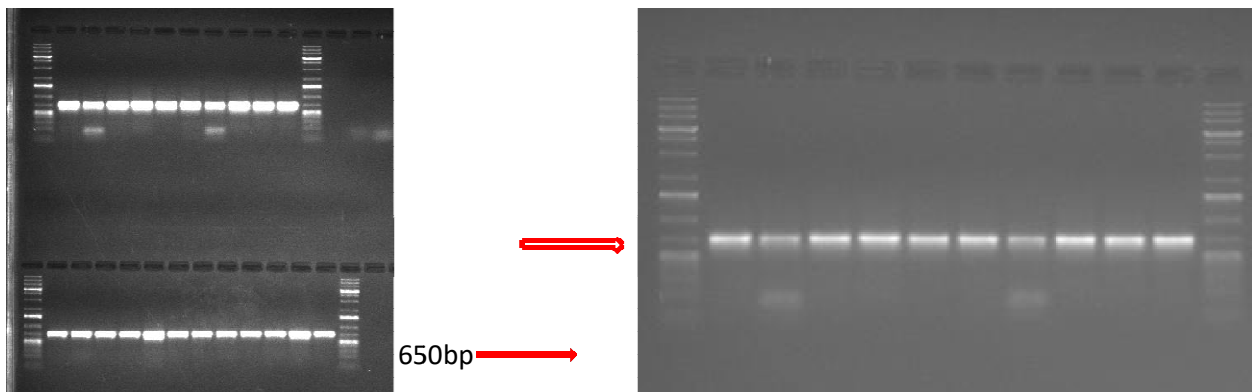


Figure 4: A. Gel image of PCR products COI gene, B. Gel image of purified PCR products COI gene

Table 3: List of Freshwater Fishes of Bangladesh along with their assigned GenBank Accession Numbers of COI gene

Sl	Order	Family	Genus	Species	Accession number
1	OSTEOGLOSSIFORES Bony tongues	NOTOPTERIDAE	<i>Chitala</i>	<i>C. chitala</i>	MF140393
2			<i>Notopterus</i>	<i>N. notopterus</i>	KT346361 KT364757
3	ELOPIFORMES Tarpons, tenpounders	MEGALOPIDAE (Tarpons)	<i>Megalops</i>	<i>M. cyprinoides</i>	Submitted
4	ANGUILLIFORMES Eels, morays	ANGUILLIDAE Freshwater eels	<i>Anguilla</i>	<i>A. bengalensis</i>	
5		MORINGUIDAE Worm or spaghetti eels	<i>Moringua</i>	<i>M. raitaborua</i>	
6		MURAENIDAE Moray eels	<i>Gymnothorax</i>	<i>G. tile</i>	
7		MURAENESOCIDAE False conger eels	<i>Congresox</i>	<i>C. talabon</i>	
8				<i>C. talabonoides</i>	
9			<i>Muraenesox</i>	<i>M. bagio</i>	
10		OPHICHTHIDAE Snake eels	<i>Pisodonophis</i>	<i>P. boro</i>	MG969529
11				<i>P. cancrivorus</i>	
12	CLUPEIFORMES Herrings	CLUPEIDAE Herrings, shads	<i>Corica</i>	<i>C. soborna</i>	KX455892 KY124368
13			<i>Gonialosa</i>	<i>G. manmina</i>	MH087054
14			<i>Ilisha</i>	<i>I. megaloptera</i>	
15			<i>Pellona</i>	<i>P. ditchela</i>	Submitted
16			<i>Tenuialosa</i>	<i>T. ilisha</i>	KX657721 MH230957
17				<i>T. toli</i>	KY124381 MH429339
18		ENGRAULIDAE Anchovies	<i>Coilia</i>	<i>C. dussumieri</i>	MH230980
19				<i>C. ramcarati</i>	MH311288
20			<i>Gudusia</i>	<i>G. chapra</i>	
21			<i>Setipinna</i>	<i>S. phasa</i>	MH429325
22				<i>S. tenuifilis</i>	MH429326
23			<i>Thryssa</i>	<i>T. purava</i>	
24	GONORHYNCHIFORMS Milkfishess	CHANIDAE Milkfishes	<i>Chanos</i>	<i>Chanos chanos</i>	Submitted

SI	Order	Family	Genus	Species	Accession number
25	CHANNIFORMES Snakeheads	CHANNIDAE Snakeheads	<i>Channa</i>	<i>C. barca</i>	
26				<i>C. marulius</i>	KX808573
27				<i>C. orientalis</i>	KT364793
28				<i>C. punctatus</i>	KT762386
29				<i>C. striatus</i>	KT762387
30	CYPRINIFORMES Carps	CYPRINIDAE Carps & minnows	<i>Amblypharyngodon</i>	<i>A. microlepis</i>	
31				<i>A. mola</i>	KT364774
					MH087039
32			<i>Aristichthys</i>	<i>A. nobilis</i>	
33			<i>Aspidoparia</i>	<i>A. jaya</i>	MG969532 MG969527
34				<i>A. morar</i>	
35			<i>Barbonymus</i>	<i>B. gonionotus</i>	KX657718
36			<i>Barilius</i>	<i>B. barila</i>	
37				<i>B. barna</i>	KT124376
38				<i>B. bendelisis</i>	
39				<i>B. shacra</i>	
40				<i>B. tileo</i>	
41				<i>B. vagra</i>	
42			<i>Bengala</i>	<i>B. elanga</i>	
43			<i>Gibelion</i>	<i>G. catla</i>	MG969520
44			<i>Chagunius</i>	<i>C. chagunio</i>	
45			<i>Chela</i>	<i>C. cachus</i>	KT353102
46				<i>C. laubuca</i>	KT353103
47			<i>Cirrhinus</i>	<i>C. cirrhosus</i>	KT353104
48				<i>C. reba</i>	KX455893. 1 MG969514
49			<i>Crossocheilus</i>	<i>C. latius</i>	MG969525 MG969531
50			<i>Ctenopharyngodon</i>	<i>C. idella</i>	KX657712
51			<i>Cyprinus</i>	<i>C. carpio</i>	KX657710 KX657711
52			<i>Danio</i>	<i>Danio dangila</i>	
53				<i>D. rerio</i>	MF170952
54			<i>Devario</i>	<i>D. aequipinnatus</i>	KT364769 KY124379
55				<i>D. devario</i>	
				<i>D. annandalei</i>	KY122375
56			<i>Esomus</i>	<i>E. danricus</i>	KT364776
57			<i>Garra</i>	<i>G. annandalei</i>	

Sl	Order	Family	Genus	Species	Accession number
58				<i>G. gotyla</i>	
				<i>G. nasuta</i>	KY124363
				<i>G. sp</i>	MF190550
59			<i>Hypophthalmichthys</i>	<i>H. molitrix</i>	KX657713 MF140395
60			<i>Labeo</i>	<i>L. angra</i>	
61				<i>L. bata</i>	KT353105 MG969515 MH087029
62				<i>L. boga</i>	
63				<i>L. boggut</i>	
64				<i>L. calbasu</i>	KT364767
65				<i>L. dero</i>	
66				<i>L. gonius</i>	KX455894. 1
67				<i>L. nandina</i>	
68				<i>L. pangusia</i>	
69				<i>L. rohita</i>	MF170947 MG969519 MH087049
70			<i>Mylopharyngodon</i>	<i>M. piceus</i>	
71			<i>Oreochthys</i>	<i>O. cosuatis</i>	KX455909
72			<i>Osteobrama</i>	<i>O. cotio</i>	KT762359
73			<i>Osteochilus</i>	<i>O. hasseltii</i>	
74			<i>Puntius</i>	<i>P. chola</i>	KT364771
75			<i>Pethia</i>	<i>P. conchonius</i>	KY124380 KY124379
76			<i>Petheia</i>	<i>P. gelius</i>	KT364772
77				<i>P. guganio</i>	KT762360
78				<i>P. phutunio</i>	KT353106
79			<i>Systosomus</i>	<i>S. sarana</i>	KT364772
80			<i>Puntius</i>	<i>P. sophore</i>	KX455895. 1
81				<i>P. terio</i>	KX455896. 1
82				<i>P. ticto</i>	Submitted
83			<i>Raiamas</i>	<i>R. bola</i>	KY124369
84			<i>Rasbora</i>	<i>R. daniconius</i>	KT364777
85				<i>R. rasbora</i>	
86			<i>Salmostoma</i>	<i>S. acinaces</i>	

Sl	Order	Family	Genus	Species	Accession number
87				<i>S. bacaila</i>	KT364775
					MG 550117 MH087030
88				<i>S. phulo</i>	KT364758 KT762379
89			<i>Securicula</i>	<i>S. gora</i>	MG969526 MG969533
90			<i>Tor</i>	<i>T. putitora</i>	KT762361
91				<i>T. tor</i>	KT762359
			<i>Neolissochilus</i>	<i>N. hexasticus</i>	KT364770
92		PSILORHYNCHIDAE Minnows, hill- stream carps	<i>Psilorhynchus</i>	<i>P. balitora</i>	KY124373
93				<i>P. gracilis</i>	
94				<i>P. sucatio</i>	MF170951
95		BALITORIDAE Hillstream loaches	<i>Acanthocobitis</i>	<i>A. botia</i>	KT762380
96				<i>A. zonalternans</i>	KT762362
97			<i>Nemacheilus</i>	<i>N. sikmaiensis</i>	
98			<i>Schistura</i>	<i>S. beavani</i>	
99				<i>S. corica</i>	
100				<i>S. savona</i>	
101				<i>S. scaturigina</i>	
				<i>S. fasciolata</i>	KY124367
102		COBITIDAE Loaches	<i>Botia</i>	<i>B. dario</i>	KY124374 MH087038 MH087045
103				<i>B. dayi</i>	
104				<i>B. lohachata</i>	KX455912
				<i>B. rostrata</i>	KY124362
105			<i>Lepidocephalus</i>	<i>L. berdmorei</i>	
106			<i>Lepidocephalichthys</i>	<i>L. annandalei</i>	MF140396
107				<i>L. guntea</i>	KT364759 KY124365 KT364778
108				<i>L. irrorata</i>	
109			<i>Neoeucirrhichthys</i>	<i>N. maydelli</i>	
110			<i>Pangio</i>	<i>P. pangia</i>	MF170949
111			<i>Canthophrys</i>	<i>C. gongota</i>	KX455897 MH087035

Sl	Order	Family	Genus	Species	Accession number
112	CHARACIFORMES	CHARACIDAE	<i>Pygocentrus</i>	<i>P. nattereri</i>	
	Characins	Characins			
113			<i>Piaractus</i>	<i>P. brachypomus</i>	MG 572222
				<i>P. mesopotamicus</i>	MF170945
				<i>P. mesopotemicus</i>	MF170945
114	SILURIFORMES Catfishes	BAGRIDAE Bagrid catfishes	<i>Batasio</i>	<i>B. batasio</i>	
115				<i>B. tengana</i>	
				<i>B. convexirostrum</i>	KY124366
116			<i>Hemibagrus</i>	<i>H. menoda</i>	KT762363
117			<i>Mystus</i>	<i>M. armatus</i>	KT762364
118				<i>M. bleekeri</i>	KT64779
119				<i>M. cavasius</i>	KX657719 KT762365
120				<i>M. gulio</i>	KX455898. 1 KX455905
121				<i>M. tengara</i>	KT762366
122				<i>M. vittatus</i>	KT364780
123			<i>Rama</i>	<i>R. chandramara</i>	KT762367
124			<i>Rita</i>	<i>R. rita</i>	KT364781
125			<i>Sperata</i>	<i>S. aor</i>	KT762381
126				<i>S. seenghala</i>	KT364786
127		SILURIDAE Butter catfishes	<i>Ompok</i>	<i>O. bimaculatus</i>	KT762368
128				<i>O. pabda</i>	KT364760
129				<i>O. pabo</i>	KX455911
130			<i>Wallago</i>	<i>W. attu</i>	KX657717
131		SCHILBEIDAE Schilbidcatfishes	<i>Ailia</i>	<i>A. coila</i>	KT364761 KT364782
132				<i>A. punctata</i>	
133			<i>Clupisoma</i>	<i>C. garua</i>	KX455904
				<i>C. parteri</i>	KT364783 KT762369 KX455899
134			<i>Eutropiichthys</i>	<i>E. murius</i>	
135				<i>E. vacha</i>	KT364762
136			<i>Pachypterus</i>	<i>P. atherinoides</i>	KT364757 KT364784
137			<i>Silonia</i>	<i>S. silondia</i>	Submitted

Sl	Order	Family	Genus	Species	Accession number
138		PANGASIIDAE Shark catfishes	<i>Pangasius</i>	<i>P. hypophthalmus</i>	MF373123
139				<i>P. pangasius</i>	
140		AMBLYCIPITIDAE Torrent catfishes	<i>Amblyceps</i>	<i>A. mangois</i>	KT762370
141		SISORIDAE Sisorid catfishes	<i>Bagarius</i>	<i>B. bagarius</i>	KX455910 KT762371
142			<i>Gagata</i>	<i>G. cenia</i>	KT762383
143				<i>G. gagata</i>	KT364785
144				<i>G. youssoufi</i>	
145			<i>Glyptothorax</i>	<i>G. indicus</i>	MH087037
146				<i>G. telchitta</i>	
147			<i>Gogangra</i>	<i>G. viridescens</i>	
148			<i>Hara</i>	<i>H. hara</i>	
149				<i>H. jerdoni</i>	KT762372
150			<i>Nangra</i>	<i>N. nangra</i>	
151			<i>Sisor</i>	<i>S. rhabdophorus</i>	
152		ERETHISTIDAE Sucker catfishes	<i>Conta</i>	<i>C. conta</i>	Submitted
153			<i>Erethistes</i>	<i>E. pussilus</i>	MG969534
154			<i>Pseudolaguvia</i>	<i>P. inornata</i>	
155				<i>P. muricata</i>	
156				<i>P. ribeiroi</i>	
157				<i>P. shawi</i>	
158		CLARIIDAE Airbreathing catfishes	<i>Clarias</i>	<i>C. batrachus</i>	KT762385
159				<i>C. gariepinus</i>	KX657715
160		HETEROPNEUSTID AE Stinging catfishes	<i>Heteropneustes</i>	<i>H. fossilis</i>	KT364787
161		CHACIDAE Square-head catfishes	<i>Chaca</i>	<i>C. chaca</i>	KX455900
162		OLYRIDAE Longtail catfishes	<i>Olyra</i>	<i>O. longicaudata</i>	KT762373 MF176156
163		ARIIDAE Sea catfishes	<i>Arius</i>	<i>A. gagora</i>	
164			<i>Batrachocephalus</i>	<i>B. mino</i>	
165			<i>Osteogeneiosus</i>	<i>O. militaris</i>	MH230979 MH429317 MH429348
166		PLOTOSIDAE Eeltail catfishes	<i>Plotosus</i>	<i>P. canius</i>	KX65771

SI	Order	Family	Genus	Species	Accession number
167		LORICARIIDAE Armored catfishes	<i>Hypostomus</i>	<i>H. plecostomus</i>	Submitted
168	CYPRINODONTIFORMES Rivulines, killifishes,	APLOCHEILIDAE Rivulines	<i>Aplocheilus</i>	<i>A. panchax</i>	Submitted
169		CYPRINODONTIDAE Killifishes	<i>Oryzias</i>	<i>O. melastigma</i>	
				<i>O. javanicus</i>	MF170950
170	SYNGNATHIFORMES Pipefishes, seahorses	SYNGNATHIDAE Pipefishes, seahorses	<i>Ichthyocampus</i>	<i>I. carce</i>	
171			<i>Microphis</i>	<i>M. chokderi</i>	
172				<i>M. cuncalus</i>	
173				<i>M. deocata</i>	KT762375
174	SYNBRANCHIFORMS Mud eels, swamp eels	SYNBRANCHIDAE Mud eels	<i>Monopterus</i>	<i>M.uchia</i>	MG969535
175			<i>Ophisternon</i>	<i>O. bengalense</i>	
176	SCORPAENIFORMES Scorpionfishes, flatheads	PLATYCEPHALIDAE Crocodile fishes, flatheads	<i>Platycephalus</i>	<i>P. indicus</i>	
177	PERCIFORMES Perches, perch-like fishes	CENTROPOMIDAE Giant perches, snooks	<i>Lates</i>	<i>L. calcarifer</i>	MG969518 MH087052
178		AMBASSIDAE Glass perches	<i>Chanda</i>	<i>C. nama</i>	KT364788
179			<i>Pseudambassis</i>	<i>P. baculis</i>	
180				<i>P. lala</i>	KT364789 KX459001
181				<i>P. ranga</i>	Submitted
182		SILLAGINIDAE Whitings	<i>Sillaginopsis</i>	<i>S. panijus</i>	Submitted
183		LEIOGNATHIDAE Ponyfishes	<i>Leiognathus</i>	<i>L. bindus</i>	
184				<i>L. equulus</i>	
185			<i>Secutor</i>	<i>S. insidiator</i>	
186				<i>S. ruconius</i>	MH230956 MH311292 MH429351
187		LOBOTIDAE Triple tails	<i>Lobotes</i>	<i>L. surinamensis</i>	
188		DATNIOIDIDAE Tigerfishes	<i>Datnioides</i>	<i>D. quadrifasciatus</i>	

SI	Order	Family	Genus	Species	Accession number
189		SPARIDAE Porgies	<i>Acanthopagrus</i>	<i>A. berda</i>	
190				<i>A. latus</i>	
191		SCIAENIDAE Jew fishes, drums or croakers	<i>Johnius</i>	<i>J. coitor</i>	
192			<i>Macropsinosa</i>	<i>M. cuja</i>	
193			<i>Otolithoides</i>	<i>O. spama</i>	
194		SCATOPHAGIDAE Butter fishes	<i>Scatophagus</i>	<i>S. argus</i>	Submitted
195		NANDIDAE Mud perches, asian leaf-fishes	<i>Nandus</i>	<i>N. nandus</i>	KT762376
196		PRISTOLEPIDAE Badis, dwarf chameleonfishes	<i>Badis</i>	<i>B. badis</i>	KT364764
				<i>B. chittagongis</i>	KX459002 KX455906 KY124371 KY124378
				<i>Badis tuivaiei</i>	KY124370
197		CICHLIDAE Cichlids	<i>Oreochromis</i>	<i>O. mossambicus</i>	
198				<i>O. niloticus</i>	KX657714
199		MUGILIDAE Mulletts	<i>Liza</i>	<i>L. parsia/M. parsia</i>	Submitted
			<i>Planiliza</i>	<i>P. parmata</i>	MH230952
200			<i>Mugil</i>	<i>M. cephalus</i>	Submitted
201			<i>Rhinomugil</i>	<i>R. corsula</i>	KT364790
202		POLYNEMIDAE Thread-fins	<i>Polynemus</i>	<i>P. paradiseus</i>	MH087032 MH311275 MH311276 MH311282
203		GOBIIDAE Gobies, mudskippers	<i>Acentrogobius</i>	<i>A. caninus</i>	
204				<i>A. cyanomos</i>	Submitted
205				<i>A. viridipunctatus</i>	
206			<i>Apocryptes</i>	<i>A. bato</i>	
207			<i>Awaous</i>	<i>A. grammepomus</i>	Submitted
208				<i>A. guamensis</i>	
209			<i>Boleophthalmus</i>	<i>B. boddarti</i>	MH429333
210			<i>Brachygobius</i>	<i>B. nusus</i>	Submitted
211			<i>Eugnathogobius</i>	<i>E. oligactis</i>	

SI	Order	Family	Genus	Species	Accession number
212			<i>Glossogobius</i>	<i>G. giuris</i>	KT364791 MH087041 MH429327
213			<i>Gobiopterus</i>	<i>G. chuno</i>	
214			<i>Oxyurichthys</i>	<i>O. microlepis</i>	
260			<i>Parapocryptes</i>	<i>P. batoides</i>	
216			<i>Periophthalmodon</i>	<i>P. schlosseri</i>	
217			<i>Periophthalmus</i>	<i>P. koelreuteri</i>	
218			<i>Pseudapocryptes</i>	<i>P. elongatus</i>	Submitted
219			<i>Scartelaos</i>	<i>S. histophorus</i>	MH087031
220			<i>Stigmatogobius</i>	<i>S. sadanundio</i>	Submitted
221		GOBIOIDIDAE Eel-like gobies	<i>Odontamblyopus</i>	<i>O. rubicundus</i>	MH429321
222			<i>Taenioides</i>	<i>T. buchanani</i>	Submitted
223				<i>T. cirratus</i>	
224		ELEOTRIDAE Gudgeons, sleepers	<i>Butis</i>	<i>B. butis</i>	Submitted
225				<i>B. melanostigma</i>	Submitted
226			<i>Eleotris</i>	<i>E. fusca</i>	MF170948
227				<i>E. lutea</i>	Submitted
228		ANABANTIDAE Climbing perches	<i>Anabas</i>	<i>A. testudineus</i>	KX459003
				<i>A. cobojious</i>	KY124377
229		OSPHRONEMIDAE Gouramies	<i>Pseudosphromenus</i>	<i>P. cupanus</i>	
230			<i>Trichogaster</i>	<i>T. fasciata</i>	MH087051
231				<i>T. lalia</i>	Submitted
232			<i>Ctenops</i>	<i>C. nobilis</i>	
233			<i>Trichogaster</i>	<i>T. chuna</i>	MH087047
			<i>Trichopsis</i>	<i>T. vittata</i>	KT344765 KT364768 KT364792
234				<i>T. pectoralis</i>	
235		MASTACEMBELIDAE Spiny eels	<i>Macrogathus</i>	<i>M. aculeatus</i>	Misidentified!
236				<i>M. pancalus</i>	KT762378
				<i>M. aral</i>	KT762377 MF170946
237			<i>Mastacembelus</i>	<i>M. armatus</i>	KT762364

SI	Order	Family	Genus	Species	Accession number
238	PLEURONECTIFORMES	BOTHIDAE Left-hand flounders	<i>Pseudorhombus</i>	<i>P. arsius</i>	MH230944 MH311283 MH429297
239		CYNOGLOSSIDAE Tongue soles	<i>Cynoglossus</i>	<i>C. arel</i>	
240				<i>C. cynoglossus</i>	Submitted
241				<i>C. lingua</i>	
242			<i>Paraplagusia</i>	<i>P. bilineata</i>	
243		SOLEIDAE Soles	<i>Brachirus</i>	<i>B. orientalis</i>	
244				<i>B. pan</i>	
245	BELONIFORMES Needle fishes, halfbeaks, gar fishes	BELONIDAE Gars	<i>Xenentodon</i>	<i>X. cancila</i>	MH087053
			<i>Oryzias</i>	<i>O. javanicus</i>	MF170950
246		HEMIRAMPHIDAE Half beaks	<i>Dermogenys</i>	<i>D. brachynotopterus</i>	
247				<i>D. pusillus</i>	
248			<i>Hyporhamphus</i>	<i>H. limbatus</i>	Submitted
249			<i>Zenarchopterus</i>	<i>Z. ectuntio</i>	Submitted
250	TETRAODONTIFORMES Puffers, file fishes	TETRAODONTIDAE Puffer fishes	<i>Leiodon</i>	<i>L. cutcutia</i>	MF140394
251			<i>Chelonodon</i>	<i>C. patoca</i>	

Brief Taxonomic description

1. *Notopterus notopterus* (Pallas, 1769)

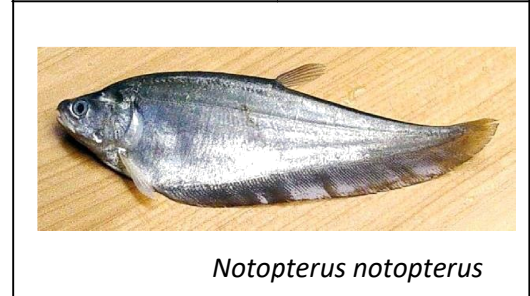
Synonyms: *Gymnotus notopterus* Pallas, 1769, *Spicilegia Zoologica* 7: 40; *Mystus kpirat* Hamilton, 1822, *Fishes of the Ganges*, p. 235; *Notopterus*

kpirat Day, 1878, *Fishes of India*, p. 653; *Notopterus notopterus* Shaw and Shebbeare, 1937.

English names: Grey Featherback

Local names: Foli, Pholui, Haila, Kanla.

Fin Formula: D. 7, P₁. 16; P₂. 5, A. 101.



Description: Body deeply compressed laterally, dorsal and ventral profile convex. Both jaws about equal. Head compressed. Anal very long and ribbon-like, confluent with the small caudal fin. Mouth terminal. Lateral line complete. Cheek and opercle scaled. Anal fins densely scaled. Scales on the head much larger than those on the body. Silvery white with numerous fine grey spots on the body and head, dark along the back. Attains a length of about 61 cm but the common size is about 25 cm.

Habit and Habitat: The fish is predatory in nature and carnivorous in habit. It can be found in rivers, canals, floodplains, beels and ponds throughout Bangladesh.

Distribution: It is widely distributed all over Bangladesh. Recorded from Tanguar Haor, Hail Haor, Derai Haor, Sylhet; Buriganga River, Dhaka; Sagordari, Jessore; Arial Beel, Munsigonj; Arial Khan River, Madaripur; Kirtankhola, Barishal; Kohua River, Feni; Sangu River, Bandarban and Karnafuli River, Kaptai, Rangamati.

Economic importance: *N. notopterus* is a species of commercial importance. It is also used as an ornamental fish in the aquarium.

Status and conservation: Rated as VU in the Red List of IUCN Bangladesh (2015). Stopping overfishing and establishing sanctuary is needed for conservation.

GenBank Accession No.: **KT364757.1**

>gi|915195110|gb|KT364757.1| *Notopterus notopterus* voucher DUZM002 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTATACCTTGTATTTGGGGCCTGAGCAGGCATAGTAGGTACAGCCCTAAGCCTGCT
AATCCGAGCAGAATTAAGCCAACCTGGCTCACTACTTGGCGACGACCAGATTTATAATGTTATCGTAACA
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TCCCACTAATAATTGGAGCCCTGATATAGCATTCCCCGAATAAATAACATAAGCTTCTGACTCCTACC
CCCATCGTTCCTACTACTCCTAGCCTCTTCAGGAGTAGAGGCCGGTGCCGGAACAGGATGAACCGTATAT
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CCAGTCTTAGCCGCCGGCATTACAATGCTTCTTACAGACCGCAACCTTAACACAACATTTTTGACCCGG
CAGGAGGGGGTGATCCAATCCTTTATCAGCACTTATTCTGATTCTTTGG
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2. *Chitala chitala* (Hamilton, 1822)

Synonyms: *Mystus chitala* Hamilton, 1822, *Fishes of the Ganges*, p. 236; *Notopterus ocellifer* Bleeker, 1865, *Nederl. Tijdschr. Dierk*

2: 11-14; *Notopterus chitala* Day, 1878, *Fishes of India*, p. 654.

English names: Humped Featherback, Clown Knife Fish

Local names: Chital

Fin formula: D 9; P₁16; P₂6; A 120

Description: Body elongated and deeply compressed. Back strongly humped in front of the dorsal, ventral profile almost straight. Head compressed, preorbital smooth. Tail elongate and tapering. Mouth large. Abdomen with 37-45 pairs of spines. Lateral line complete. Fine and numerous cycloid scales adhering firmly to the body. Preopercle and opercle scaled. Anal fin densely scaled. Small tuft-like dorsal fin inserted near the middle of a long back. Ribbon-like anal fin with about 100-135 rays. Caudal fin small, confluent with the anal. Pelvics rudimentary (Rahman, 1989; Talwar and Jhingran, 1991). Greenish above with about 15 silvery bars on each dorsal side. Sides and belly silvery. 5-8 round black spots near the end of the tail.

Habit and Habitat: Predator. Feeds on aquatic insects, molluscs, shrimps and small fishes. At its earlier stages it lives on aquatic plants and insects. Inhabits freshwater rivers, lakes, beels, reservoirs, canals and ponds.

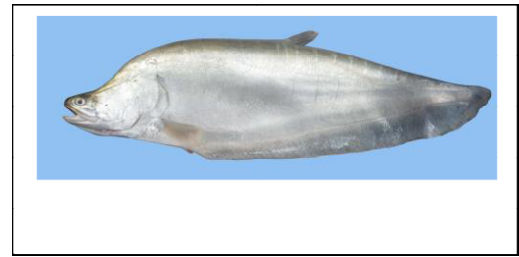
Economic importance: The Humped Featherback is a species of commercial importance. Used as an aquarium fish for its exceptional morphological behavior. Flesh is used to make fish ball or other delicious food items.

Status: Considered as EN in the Red list of IUCN Bangladesh (2015). GenBank: MF140393.1

GenBank: MF140393.1

>MF140393.1 *Chitala chitala* voucher ZMUD:001 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCACAAAGACATTGGCACCCCTATACCTTGTATTTGGGGCCTGAGCAGGTATAGTAGGCACAGCCCTAAGC
CTGCTAATCCGAGCAGAATTGAGCCAACCCGGCTCACTACTTGGCGACGACCAAATCTATAATGTTATCG
TTACAGCACACGCATTGTAATAATCTTCTTCATGGTAATGCCTATTATAATTGGAGGCTTTGGAAACTG
ATTAATCCCATAAATAATTGGGGCCCCAGATATAGCATTCCCCGAATAACAACATAAGCTTTTGACTC
CTGCCCCCATCATTCTTACTACTCCTAGCCTTTCAGGAGTAGAAGCCGGTGCCGGAAGTGGATGAACAG
TATACCCGCCTTTAGCAGGAAACCTAGCGCATGCAGGTGCCTCTGTAGACCTTACAATTTTTCACTACA
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GCCGTCTCAAAATATCAAACACCACTGTTTCATCTGAGCTGTATAATTACTGCAGTTTTACTTTACTAT
CACTTCCAGTTCTAGCTGCCGGTATTACAATACTACTTACAGACCGCAACCTTAACACAACATTCTTTGA
CCCGCAGGCGGAGGAGATCCAATCTTTACCAACACCTATTCTGATTCTTTGGCCACC
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Chitala chitala

3. *Anguilla bengalensis* (Gray, 1831)

Synonyms: *Muraena bengalensis* Gray, 1831, *Illus. Indian Zool.*, pl. 95; *Anguilla nebulosa* McClelland, 1844, *Calcutta J. Nat. Hist.* 177; *Anguilla bengalensis* Day, 1878, *Fishes of India*, p. 659.

English names: Giant Mottled Eel, Indian Longfin Eel

Local names: Bamosh, Banehara, Baow Baim.



Anguilla bengalensis

Description: Body elongate, cylindrical anteriorly, somewhat compressed along the tail. Head rounded, snout flattened dorsally. Dorsal fin origin nearer the gill-opening than the anus; pectoral fins present and rounded. Pelvic fin absent. Minute, elongate, oval scales present all over the body, embedded in the skin. Vertebrae 100-110. Body colour typically yellowish to olive or brown mottled with dark brown, lighter on the head and below; juveniles tend to be plainer and lack the mottling or marbling. (Masuda *et al.*, 1984).

Habit and Habitat: Demersal, catadromous, active at night. Feeds on a wide range of prey, especially crabs, frogs and fish. Lives in freshwater areas as adults and in estuaries and seas as young. Found in lowland rivers as well as upland tributaries.

Distribution: Recorded from Tanguar Haor, Sunamgonj; Boro Chora, Cox's Bazar.

Economic importance: This fish is economically important, being in high demand in the market.

Ecological role: Plays an important role in the aquatic ecosystem by their predatory habit.

Status: Considered as VU in the Red list of IUCN Bangladesh (2015).

4. *Pisodonophis boro* (Hamilton, 1822)

Synonyms: *Ophisurus boro* Hamilton, 1822, *Fishes of the Ganges*, pp. 20, 22; *Pisodonophis boro* Kaup, 1856, *Cat. apodal fishes*, p. 17; *Ophichthys boro* Day, 1878, *Fishes of India*, p. 664

English names: Rice Paddy Eel, Boro Snake-eel, Bengal's Snake Eel.

Local names: Kharu, Hijra



Description: Body nearly cylindrical, eel like. Snout moderately produced, cleft of the mouth wide, extending well behind the eye. Teeth variable, usually granular in a large patch in the maxilla, in many smaller rows in the pre-maxilla, large and in several rows on the vomer. Dorsal and anal fins low. Dorsal fin commences from well behind the pectoral fin. No caudal fin; dorsal and anal fins do not extend to the caudal tip. Pectoral rounded. Greenish-olive above with many minute black spots, greenish-white below, dorsal fin with a dark edging (Rahman, 2005).

Habit and Habitat: Found in lagoons and estuaries, entering freshwaters and paddy fields. Commonly seen crawling over the bottom like snakes.

Distribution: Recorded from Hakaluki Haor, Sylhet; Padma River, Rajshahi; Karikandi River, Madaripur; Jamuna River, Pungli River, Bangshai River, Tangail; Charfasson, Dhal Char, Bhola, Barishal; Hatia, Nijhum Dweep, Noakhali; Feni River and Muhuri River, Feni; Kaptai, Karnafuli River, Rangamati.

Economic importance: No commercial value. It is exported for use in the clarification of wines.

Ecological role: It is a carnivorous fish and plays an important role in the aquatic ecosystem.

Status: Considered as LC in the Red list of IUCN Bangladesh (2015).

>MG969529.1 *Pisodonophis boro* voucher DUZM011 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TAATAATTTTCTTTATAGTAATAACAGTAATAATTGGAGGCTTTGGTAACTGACTTGTACCACTAATAAT
CGGAGCCCCGACATGGCATTTCACGAATAAATAACATAAGCTTCTGGCTACTTCCACCCTCATTCCCTC
CTCCTGCTAGCATCTCTGGAGTCGAAGCCGGAGCCGGAACAGGATGAACTGTTTACCCCCCTCTGGCTG
GAAACCTAGCCCATGCCGGGGCTTCTGTAGACCTAACAATCTTTCCCTCCATCTAGCCGGAGTCTCATC
AATTCTGGGGGCAATTAACCTTTATCACAACAATTATTAATATAAAACCCCCAGCAATTACACAATATCAA
ACACCACTATTTGTTTGATCTGTCTAGTGACAGCCGTCTTACTCTATCCCTACCGGTCCTTGCTG
CAGGGATTACTATGCTTCTAACAGACCGAACTTAAATACAACATTCTTTGACCCAGCGGGAGGAGGAGA
CCCCATTCTTTATCAACACCTATTT
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5. *Corica soborna* (Hamilton, 1822)

Synonyms: *Corica soborna* Hamilton, 1822, *Fishes of the Ganges*, pp. 253, 383; *Spratella pseudopterus* Bleeker, 1852, *Nat. Tijdschr. Neder. Indië*, pp. 407-442; *Corica biharensis* Kamal and Ahsan, 1979, *J. Inland Fish. Soc. India* 10: 28.

English name: Ganges River-sprat

Local names: Kachki, Subarna-kharika

Fin formula: D 15; P₁ 13; P₂ 8; A 14 + 2



Description: Fairly elongate body. Abdominal profile more convex than that of the dorsal. Keeled belly with 10 prepelvic and 7 or 8 postpelvic scutes. Lower jaw slightly longer than the upper. Teeth minute or absent on the jaws. Eyes large in the anterior part of the head. Lower gillrakers 17-21. Last two anal finrays forming a separate finlet. Scales deciduous, cycloid, 40-42 along the medial lateral series. Colour brownish, shot with silver. A faint lateral band. Caudal fin with dark edges and a faint black spot at its base.

Habit and Habitat: Moves in groups at the surface of rivers and lakes. Feeds primarily on zooplankton and also some invertebrates. Inhabits rivers and lakes, also in estuaries. Kaptai Lake is a major habitat for the species in Bangladesh.

Distribution: Recorded from Padma river, Rajshahi; Tanguar Haor, Hakaluki Haor, Sunamganj; Hamham waterfall, Moulovibazar ; Itna Haor, Arial Beel, Munshigonj ; Halda River, Karnafuli River, Chittagong, Kaptai, Rangamati ; Sundarban, Satkhira, Khulna ; Kuhuri River, Muhuri River, Feni.

Economic importance: It is a commercially important species. Commonly used as food as it is rich in protein and minerals.

Ecological role: In natural habitats, it always remains in a balanced condition.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: KX455892.1

>KX455892.1 *Corica soborna* voucher ZMUD:012 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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6. *Gonialosa manmina* (Hamilton, 1822)

Synonyms: *Clupanodon manmina* Hamilton, 1822, *Fishes of the Ganges*, p. 247; *Chatoessus manmina* Day, 1878, *Fishes of India*, p. 633; *Gonialosa manmina* Munro, 1955, *Marine and Freshwater Fishes of Ceylon*, p. 29.

English names: Ganges River Gizzard Shad

Local names: Chapila, Goni Chapila



Fin Formula: D. 3/11; P₁. 13; P₂. 7; A. 2/22

Description: Body short. Strongly compressed laterally. Abdominal profile more convex than that of the dorsal. Mouth small, inferior. Snout prominent. Dorsal origin over that of the pelvics, slightly nearer to the snout than to the base of the caudal. Pectoral as long as the head excluding snout, reaching

above the origin of pelvics. Caudal deeply forked, lower lobe longer. Grayish along the back, silvery on the sides and below, opercle and cheek yellow. Snout and interorbital dotted. A well-defined shoulder spot. Fins yellowish. Dorsal and caudal with dark edges (Rahman, 2005).

Habit and Habitat: Pelagic, Plankton feeders, with numerous long gillrakers. Occurs in haors, rivers and estuaries throughout Bangladesh.

Distribution: Recorded from Tanguar Haor, Taherpur, Sylhet; Padma River, Rajshahi; Bangshi River, Madhupur, Tangail; Buriganga River, Dhaka; Shibchar, Madaripur; Muhuri River, Feni River, Kalidash River, Feni; Karnafuli River, Kaptai, Rangamati.

Economic importance: Commercially important, used as food.

Ecological role: Controls the population of plankton in the ecosystem where it lives.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: MH087054

>S29 [organism=*Gonialosa manmina*] *Gonialosa manminavoucher* DUZM013 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CAGGAGGAGGAGACCCAATTTTATCAACATCTTTTC
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8. *Gudusia chapra* (Hamilton, 1822)

Synonyms: *Clupanodon chapra* Hamilton, 1822, *Fishes of the Ganges*, p. 248; *Alausa microlepis* Valenciennes, 1847, *Hist. Nat. Poiss.* 20: 439; *Clupea chapra* Day, 1878, *Fishes of India*, p. 639.

English names: Indian River Shad

Local names: Chapila, Suiya, Suhia

Fin Formula : D. 14; P₁. 12; P₂. 7; A. 22



Description: Body strongly compressed, ventral is little more convex than that of the dorsal. Upper jaw with a distinct median notch. Lower jaw included when mouth firmly shut. Maxilla extends to below the middle of the eye. Origin of the dorsal a little nearer to the snout than to the caudal base. Pectoral does not quite reach the pelvics, caudal shorter than the head. Colour bright silvery with a black shoulder spot. A series of black spots appears along the upper edge of the body in formalin soaked specimens.

Habit and Habitat: Omnivorous and surface feeder. Feeds mainly on phytoplankton, zooplankton, debris, plant and animal matters. Found in rivers, ponds, beels, ditches and in inundated fields throughout Bangladesh.

Distribution: Recorded from Chalan Beel & Haiti Beel, Tanguar Haor, Hakaluki Haor, Lawachara, Sreemangal, Jaflong, Madhobkundo, Sylhet; Hamham, Moulvibazar; Sundarban, Khulna; Kaptai lake, Shuvolong, Rangamati; Padma River, Rajshahi. .

Economic importance: Chapila is a very popular fish species for subsistence. It is a species of minor commercial importance.

Ecological role: Found in the third trophic level of aquatic food chain. Helps in maintaining the ecological balance.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

9. *Setipinna phasa* (Hamilton, 1822)

Synonyms: *Clupea phasa* Hamilton, 1822, *Fishes of the Ganges*, p. 240; *Clupea telara* Hamilton, 1822, *Fishes of the Ganges*, p. 242; *Setipinna megalura* Swainson, 1839, *Nat.Hist. Fish.* p. 440

English names: Gangetic Hairfin Anchovy

Local names: Phasa, Phasa Kata, Phausa, Tel-tampri

Fin Formula: D. 14; P₁. 13; P₂. 7; A. 65



Setipinna phasa

Description: Elongate, deeply compressed. Dorsal and abdominal profiles evenly arched. Snout projects slightly. Eyes sub-cutaneous. A short spine in front of the dorsal. Pelvics much nearer the anal origin than to the pectoral origin. Outer ray of the pectoral produced, reaches first half of the anal. Lower lobe of the caudal longer. Greenish along the back, silvery below. Dorsal and caudal fins yellow. Upper lobe of the caudal and upper margin of the dorsal black. Pectoral deep blue-black excepting the elongated ray which is colourless, pelvics and anal colourless (Rahman, 2005).

Habit and Habitat: An omnivore. Feeds mainly on unicellular and multicellular algae, protozoans and crustaceans. Adults feed mostly mysids and small prawns. A riverine species, also found in estuaries.

Distribution: Recorded from Duhdpukuria, Dhopachari, Kaptai, Rangamati; Tanguar Haor, Arial Beel, Munshigonj; Sundarban, Khulna; Charfasson, Hatia, Nijhum Dweep, Bhola, Barishal; Bhairab, Sunamgonj; Bangshai River. Madhupur, Tangail, Ubdhakhali River, Netrokona.

Economic importance: *S. phasa* is a species of minor commercial importance.

Ecological role: Helps to control water pollution.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: MH429325

>MH429325 *Setipinna phasa*

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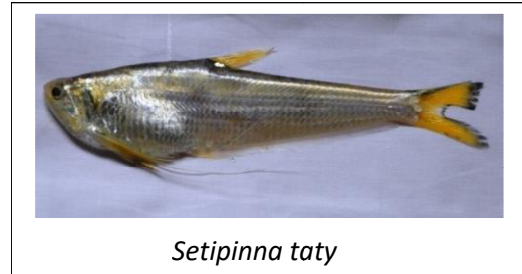
10. *Setipinna taty* (Valenciennes, 1848)

Synonyms: *Engraulis taty* Valenciennes, 1848, *Hist. Nat. Poiss.* 21: 60; *Setipinna taty* Whitehead, 1973, *J. mar. biol. Ass. India* 14(1): 237.

English name: Scaly Hairfin Anchovy

Local name: Teli Phasa

Fin Formula: D. I+2/10; P₁. I/11; P₂. I/6; A. 56



Description: Moderately elongate, deeply compressed body. Dorsal and abdominal profiles evenly convex. Snout projects slightly. Eyes sub-cutaneous. Maxilla dilated at the mandibular joint, reaches the angle of the preopercle. Dorsal with a short spine. Outer pectoral ray produced into a filament which sometimes reaches the middle of the anal. Lower lobe of the caudal longer. Upper surface of the head and body greyish; sides, abdomen, cheek and opercle silvery. Dorsal, caudal and anal yellow. Edges and posterior margin of the caudal blackish (Rahman, 2005).

Habit and Habitat: An omnivore. Feeds mainly on unicellular and multicellular algae, protozoans and crustaceans. Adults feed mostly on mysids and small prawns. Occurs in rivers and estuaries.

Distribution: Recorded from Barishal; Sundarban, Khulna; Charfasson, Bhola, Barishal; Hatia, Nijhum Dweep, Noakhali; Jamuna River, Bangshai river, Tangail.

Economic importance: *S. taty* is a species of minor commercial importance. Used as food.

Ecological role: Controls water pollution. By consuming algae, zooplankton, debris and plant parts, it keeps the water body clean.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

11. *Channa marulius* (Hamilton, 1822)

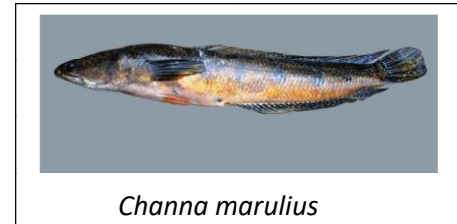
Synonyms: *Ophiocephalus marulius* Hamilton, 1822, *Fishes of the Ganges*, p. 65; *Ophiocephalus grandinosus* Cuvier, 1831, *Hist. Nat. Poiss.* 7: 434; *Ophiocephalus leucopunctatus* Sykes, 1839, *Proc. Zool. Soc. London*, p. 158.

English names: Giant Snakehead, Bullseye Snakehead, Great

Snakehead, Cobra Snakehead

Local names: Gajar, Gajal, Gajari

Fin formula: D 50; P₁ 18; P₂ 6; A 34



Description: Body almost cylindrical anteriorly, compressed posteriorly. Anterior nasal opening produced into a tubular process. Pelvic thoracic. Colour varies with age and habitat. Young with a brilliant orange band along the middle of the sides, but in mature forms there are 4 or 5 larger black blotches along the sides. A conspicuous black, light-edged ocellus at the upper base of the caudal. Juveniles with an orange band running from the eye to the middle of the caudal fin. Attains a length of about 120 cm in total length (Rahman, 1989).

Habit and Habitat: It is an extremely voracious predator with an ability to move overland for short distances. Consumes primarily fishes, frogs, snakes, insects, earthworms and tadpoles. The species is cannibalistic since small snakeheads often become prey for larger specimens. Found in sluggish or standing waters in rivers, canals, lakes and swamps.

Distribution: Recorded from Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Itna Haor, Arial Beel, Munshigonj; Tanguar Haor, Taherpur, Sylhet.

Economic importance: *C. marulius* is an important food fish in its native range. It is a popular sporting fish.

Ecological role: It can quickly decrease the local fish population through predation as it is a top-level predator.

Status and conservation: Considered as LC (Present study).

GenBank: KX808573.1

>KX808573.1 *Channa marulius* voucher DUZM026 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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ACTAAGCTTGAGGGTGCCTATTAGGCGATGATCAGATCTATAATGTAATAGTAACAGCGCATGCCTTTG
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TGGCGCCCTGACATAGCATTCCCCGCATGAATAACATAAGCTTCTGATTACTTCTCCCTCCTTTCTT
CTCCTGCTAGCCTCCTCCGAGTAGAAGCCGGAGCCGGCACTGGGTGGACCGTTTACCCGCCCTGGCCA
GCAACCTAGCTCACGCAGGGGCTTCTGTAGATTTAACTATCTTCTCCCTGCATCTTGCAGGTGTTTCTC AA
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12. *Channa orientalis* (Bloch and Schneider, 1801)

Synonyms: *Channa orientalis* Bloch and Schneider, 1801, *Syst. Ichth.*, p. 496; *Ophiocephalus gachua* Hamilton, 1822, *Fishes of the Ganges*, p. 68; *Ophiocephalus limbatus* Cuvier, 1831, *Hist. Nat. Poiss.* 1: 201

English names: Asiatic Snakehead, Walking Snakehead

Local names: Gachua, Raga, Ragha, Cheng

Fin Formula: D. 34; P₁. 14; P₂; 6; A. 23



Channa orientalis

Description: Body strongly compressed, ventral profile with a little more convex than that of the dorsal. Upper jaw with a distinct median notch. Lower jaw included when mouth firmly shut. Pectoral does not quite reach the pelvics, caudal shorter than the head, lower lobe a little longer, with axillary scales. Colour bright silvery with a black shoulder spot. A series of black spots appears along the upper edge of the body in formalin soaked specimens (Siddiqui, 2007).

Habit and Habitat: It can tolerate stagnant, poorly oxygenated, turbid and very foul water containing city wastes (Rahman, 2005). It has an amphibious mode of life and can remain alive out of water for a long time. It is a voracious eater and is attracted by any moving bait. It is carnivorous and destroys eggs and fries of other fishes. Inhabits rivers, ponds, ditches, beels, haors, streams and swamps of Bangladesh.

Distribution: Recorded from Tanguar Haor, Hakaluki Haor, Sunamganj; Madhabkundo, Sylhet; Humhum waterfall, Moulvibazar; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Buriganga River, Dhaka; Dinajpur; Sundarban, Satkhira, Khulna; Kirtankhola River, Barishal; Charfasson, Bhola; Muhuri River, Feni; Surma River Bhairab, Sunamgonj; Haoda beel, Madhupur, Tangail; Karnafuli River, Kaptai, Rangamati.

Economic importance: It is not a commercial species like other snakeheads. The fish is not generally liked by people as food.

Status and conservation: Red Considered as VU (Present study).

GenBank Accession No.:KT364793.1

>gi|915195182|gb|KT364793.1| *Channa orientalis* voucher DUZM027 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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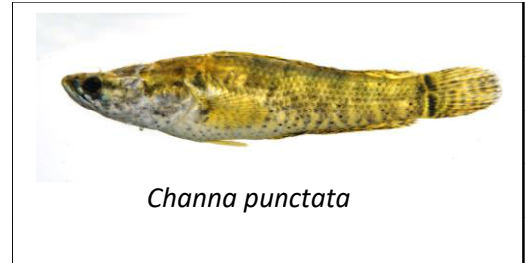
13. *Channa punctata* (Bloch, 1793)

Synonyms: *Ophiocephalus punctatus* Bloch, 1793, *Natur. Aus. Fische* 7: 139; *Ophiocephalus karrouveri* Lacepede, 1802, *Hist. Nat. Poiss.* 3: 552; *Ophiocephalus lata* Hamilton, 1822, *Fishes of the Ganges*, pp. 63,367.

English name: Spotted Snakehead

Local names: Taki, Chaitan

Fin Formula: D. 32; P₁. 16; P₂. 6; A. 22



Description: Body almost cylindrical anteriorly, laterally compressed posteriorly. Anterior nasal opening produced into a tubular process. Lateral line first passes for 15 scales, then descends for one row and subsequently passes straight to the middle of the caudal base. Colour varies with the water they reside in. Usually grey on the back fading to a lighter shade beneath. A series of about 8-9 vertical bands above the lateral line, alternating with a similar series below it. Scales on the sides in some specimens with small black spots (Rahman, 2005).

Habit and Habitat: Great predators (Rahman, 1989). Oviparous; carnivorous; solitary or in pairs, highly gregarious when young. Young (1.5-3.0 cm) feed primarily on zooplankton, with rotifers, insects and crustacean larvae constituting most of the diet. Adults consume fishes, insects, and aquatic vegetation (Quayyum and Qasim, 1962). The species is an opportunistic feeder. Occurs in beels, haors and river.

Distribution: Tanguar Haor, Sylhet and freshwater habitats of the country.

Economic importance: This species is regarded as important fishery resources in Bangladesh and elsewhere.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: KT762386.1

>gi|959006887|gb|KT762386.1| *Channa punctata* voucher DUZM28 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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14. *Amblypharyngodon mola* (Hamilton, 1822)

Synonyms: *Cyprinus mola* Hamilton, 1822, *Fishes of the Ganges*, p. 334; *Leuciscus mola* McClelland, 1839, *Asiat. Res.*, p. 293; 16; *Amblypharyngodon mola* Day, 1878, *Fishes of India*, p. 555.

English names: Mola Carplet, Pale Carplet

Local names: Mola, Moa.

Fin formula: D 2/9; P₁ 15; P₂ 9; A 2/5



Amblypharyngodon mola

Description: Body moderately elongate and compressed. Dorsal profile more convex than the abdominal. Abdomen rounded. Mouth moderate, somewhat superior, upper lip absent, lower jaw prominent. Lower jaw with a symphyseal knob which fits in the upper jaw. Gill-opening wide, gillrakers short, arranged at short intervals. Caudal peduncle long. Caudal fin deeply forked; lobes pointed. Airbladder with 3 lobes; middle lobe biggest and posterior one smallest. Golden-yellow with a broad silvery lateral band on the body. Dorsal, anal and caudal fins usually with dark markings; pectoral and pelvic fins hyaline (Siddiqui, 2007).

Habits and Habitat: Omnivore. Surface and column feeder. Feeds unicellular algae, protozoans and crustaceans, debris and plant parts. Inhabits ponds, canals, beels, slow-moving streams, ditches and paddy fields.

Distribution: Recorded from Chalan Beel, Halti Beel, Natore; Sreemangal; Sundarban, Khulna; Padma River, Rajshahi; Tanguar Haor, Hakaluki Haor, Sunamgan and all over Bangladesh.

Economic importance: Mola is a fish of minor commercial importance.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: **KT364774.1**

>gi|915195144|gb|KT364774.1| *Amblypharyngodon mola* voucher DUZM031 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TACCACTAATAATTGGGGCACCAGACATAGCATTCCCACGGATAAATAACATAAGCTTCTGACTGCTACC
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CCCCCTTAGCAGGCAACCTTGCCACGCAGGAGCATCAGTAGACCTGACAATCTTTCACTTCACTTAG
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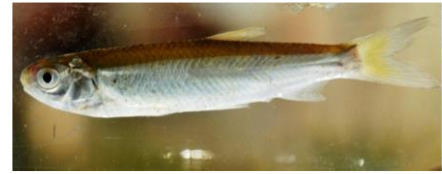
15. *Aspidoparia jaya* (Hamilton, 1822)

Synonyms: *Cyprinus jaya* Hamilton, 1822, *Fishes of the Ganges*, pp. 333, 392; *Leuciscus margarodis* McClelland, 1839, *Asiat. Res.* 19: 294, 411; *Leuciscus jaya* Bleeker, 1853, *Verh. Bat. Gen.* 25: 68.

English name: Jaya

Local names: Jaya, Peali, Peashi

Fin formula: D 2/7; P₁ 15; P₂ 8; A 2/7



Aspidoparia jaya

Description: Body elongate and subcylindrical. Mouth small, inferior; snout blunt. Lower lip absent, lower jaw with a sharp crescentic body edge; no barbel. Suborbital bones cover half the cheek. Pharyngeal teeth in two rows (Talwar and Jhingran, 1991). Scales deciduous. Lateral line greatly curved and runs along the lower half of the caudal peduncle. Dorsal fin originates above the pelvics, situated midway between the snout and the caudal base. Pectorals as long as the head, not reaching the pelvics. Colour silvery, back darkish (Rahman, 2005).

Habit and Habitat: Benthopelagic Inhabits rivers, streams and ponds in plains and mountainous regions.

Distribution: Recorded from Padma River, Rajshahi; Dinajpur; Jamuna River, Pungli River, Tangail; Old Brahmaputra River, Mymensing; Itna Haor, Arial Beel, Munshigonj.

Relative abundance: Rare.

Economic importance: Of minor commercial importance. A tasty food fish but rarely seen in the fishermen's catch.

Ecological role: Plays an important role in the aquatic ecosystem.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: MG969532.1

>MG969532.1 *Aspidoparia jaya* voucher DUZM033.2 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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16. *Aspidoparia morar* (Hamilton, 1822)

Synonyms: *Cyprinus morar* Hamilton, 1822, *Fishes of the Ganges*, p. 264; *Aspidoparia sardina* Heckel, 1845, *Russeger's Reison* 2(2): 288; *Aspidoparia morar* Day, 1878, *Fishes of India*, p. 585.

English names: Aspidopara

Local names: Morari, Morar

Fin Formula: D 2/7; P₁15; P₂ 8; A 2/9



Description: Body elongate and subcylindrical. Mouth inferior; jaws short, lower jaw with a sharp, crescentic bony edge. Pharyngeal teeth in three rows. Dorsal fin inserted well behind the pelvic fin base. Scales fairly deciduous. Suborbital bones broad, covering the cheek. Lateral line curved, running in the lower half of the caudal peduncle with 36-40 scales. Back light brown, flanks and belly yellowish-silvery; a burnished lateral streak on the sides. Fins dark yellow. (Talwar and Jhingran, 1991).

Habit and Habitat: Benthopelagic. Inhabits rivers and streams.

Distribution: Recorded from Jaflong, Sylhet; Atrai River, Dinajpur; Jamuna River, Tangail; Tanguar Haor, Sunamgonj; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Pungli River, Tangail.

Relative abundance: Rare.

Economic importance: Of minor commercial importance. Caught in small quantities in the upper reaches of the rivers Padma and Jamuna. Marketed fresh.

Ecological role: Plays an important role in the aquatic ecosystem.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

17. *Barilius bendelisis* (Hamilton, 1807)

Synonyms: *Cyprinus bendelisis* Hamilton, 1807, *Journey Mysore* 3: 345; *Cyprinus cocsa* Hamilton, 1822, *Fishes of the Ganges*, p. 272; *Cyprinus chedra* Hamilton, 1822, *Fishes of the Ganges*, p. 273.

English name: Hamilton's Barila

Local names: Joia, Hiralu, Tila, Chedra, Koksa

Fin formula: D 2/7; P₁ 13; P₂ 9; A 2/8

TL: 9.6 cm **SL:** 7.68 cm



Description: Body elongate and compressed. Ventral profile more convex than that of the dorsal. Mouth moderately cleft, maxilla reaching below the anterior margin of the eye. No knob at the mandibular symphysis. Barbel 2 pairs, short. Gill-membranes united to each other and with the isthmus. Dorsal fin originates midway between the posterior margin of the preopercle and the base of the caudal. Origin of pelvics slightly nearer to the snout than to the caudal base. Anal originating from below or behind the base of the dorsal. Caudal lobes equal or the lower one a little longer. Colour silvery. In immature specimens about 11-16 vertical bars along the sides. In larger specimens, the bars become indistinct and each scale develops a black spot at its base. The row of scales along the lateral line, however, shows two spots. The posterior edge of the dorsal and caudal fins is stained with black. (Rahman, 2005).

Habit and Habitat: Benthopelagic, Feeds on aquatic microorganisms, insects, plants, etc. Occurs in hill streams, beels and rivers with pebbly and rocky substratum.

Distribution: Recorded from Thanchi, Bandarban; Pekua beel, Sherpur; Kolagaonchora, Taherpur, Sylhet.

Relative abundance: Rare.

Economic importance: Of minor commercial importance.

Status: Considered as EN in the Red list of IUCN Bangladesh (2015).

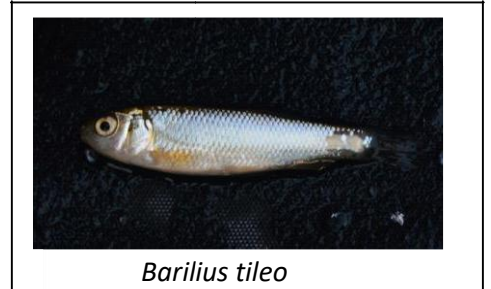
18. *Barilius tileo* (Hamilton, 1822)

Synonyms: *Cyprinus tileo* Hamilton, 1822, *Fishes of the Ganges*, p. 276; *Barilius tileo* Day, 1878, *Fishes of India*, p. 593; *Barilius menoni* Sen, 1976, *Curr. Sci.* 45(2): 59.

English names: Tileo Baril

Local names: Tila, Tila Koksa, Patharchata

Fin Formula: D 2/7; P₁ 13; P₂ 8; A 3/10



Description: Head compressed, snout pointed. Body deep, its depth 3.4-3.7 times in standard length. Mouth moderate; jaws short, maxilla extends to below the middle of the orbit; barbels a rudimentary maxillary pair, or entirely absent. Dorsal fin inserted in advance of the anal fin, the latter being behind the vertical from its last ray. Bluish-brown on the back, becoming silvery on the flanks and the belly; 2 or 3 rows of blue spots and blotches having a vertical character, along the sides of the body. Dorsal and caudal fins dark grey, with a light pinkish edge, other fins yellowish (Talwar and Jhingran, 1991). **Habit and Habitat:** Benthopelagic Feeds on algae, detritus and other benthic organisms Inhabits exclusively in streams adjoining hills with gravelly and rocky bottoms.

Relative abundance: Very rare.

Distribution: Recorded from Jaflong, Sylhet.

Economic importance: Having minor commercial interest.

Ecological role: Plays an important role in the aquatic ecosystem.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

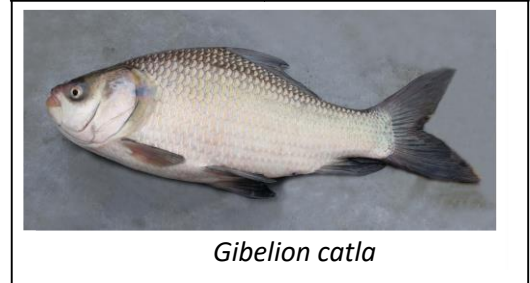
19. *Gibelion catla* (Hamilton, 1822)

Synonyms: *Cyprinus catla* Hamilton, 1822, *Fishes of the Ganges*, p. 287; *Cyprinus abraminoides* Sykes, 1841, *Trans. Zool. Soc.* 2: 353; *Catla buchani* Day, 1878, *Fishes of India*, p. 552

English names: Catla

Local names: Catla, Katal

Fin Formula: D 2/15-16; P₁ 18-20; P₂ 9; A 3/5



Description: Compressed and short body with a broad head. Mouth wide. Upper lip thin, covered over by the skin of the snout. Lower lip moderately thick, broad, post labial groove continuous. No cartilage inside of the lips. No barbel. Dorsal profile more convex than that of the abdomen. Gill-openings circular (Rahman, 2005).

Habit and Habitat: Surface and mid-water feeders, mainly omnivorous with juveniles feeding on insects, detritus and phytoplankton. Main food consists of algae, crustaceans and higher plants. Occurs in rivers, lakes and culture ponds.

Distribution: Recorded from Duhdpukuria, Dhopachari, Kaptai, Rangamati; Jamuna River, Tangail; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Tanguar Haor, Sunamgonj.

Relative abundance: Common.

Economic importance: Commercially important. Cultured in ponds and lakes throughout Bangladesh.

Ecological role: Plays an important role in the aquatic ecosystem.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: MG969520

>MG969520.1 *Catla catla* voucher DUZM043 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCCAATCCTCTACCAACACCTATTC
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20. *Chagunius chagunio* (Hamilton, 1822)

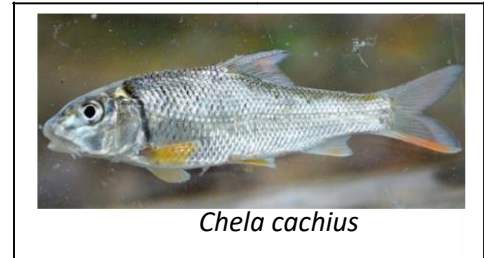
Synonyms: *Cyprinus chagunio* Hamilton, 1822, *Fishes of the Ganges*, p. 295; *Rohita chagunio* Valenciennes, 1842, *Hist. Nat. Poiss.* 16: 257; *Chagunius chagunio* Smith, 1938, *Proc. Biol. Soc. Washington* 51: 157.

English names: Medium Carp

Local names: Jarua, Carp.

Fin formula: D 3/8; P₁ 15; P₂ 9; A 3/5

TL: 7.37 cm; **SL:** 5.65 cm



Description: Compressed head with flat sides. Abdomen broadly rounded. Snout overhanging, divided into a central and two lateral lobes by a groove extending upward and forward from the base of each rostral barbel. Mouth subterminal, U-shaped, with two ends directed backwards. Lateral line complete. Last unbranched ray of the dorsal strongly osseous and coarsely serrated posteriorly. Body silvery with a faint pinkish tinge, a black spot at the base of each scale on upper three-quarters of the body. Fins yellowish, dorsal and caudal with a suffused sub-marginal band of red touched with black. Pelvics and anal tinged with red. Males more brilliant, with black fin tips more marked (Rahman, 2005).

Habit and Habitat: Large, clear water, fast flowing streams with rocky and gravelly bottoms are preferable habitats. Feeds on insects, algae and detritus around rocks and boulders.

Distribution: Recorded from Atrai River, Birganj, Dinajpur.

Relative abundance: Rare.

Economic importance: Not a commercial fish in Bangladesh.

Ecological role: Controls the insect population in the ecosystem and keeps the habitat clean.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

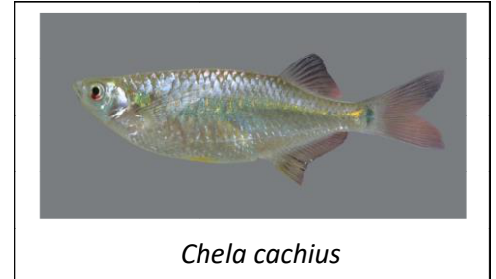
21. *Chela cachius* (Hamilton, 1822)

Synonyms: *Cyprinus cachius* Hamilton, 1822, *Fishes of the Ganges*, p. 258; *Cyprinus atpar* Hamilton, 1822, *Fishes of the Ganges*, p. 259; *Chela (Chela) cachius* Silas, 1958, *J. Bombay Nat. Hist. Soc.* 55(1): 66.

English name: Silver Hatchet Chela

Local names: Chapchela, Kachni

Fin formula: D 2/7; P₁ 10; P₂ 7; A 2/21



Description: Abdominal profile keeled from the pelvic origin to the anus. Mouth oblique, opening above, maxilla reaching below the front margin of the eyes. Lower jaw without a knob at the symphysis. Lateral line curved downwards. Four rows of scales between the lateral line and the base of the pelvics. Dorsal fin originates from above the middle of the anal base. Pelvics with an elongated first ray extending to the middle or even to the end of the anal. Caudal with equal lobes. Pelvic origin nearer to the pectoral origin than to anal origin. Colour brilliant silver, back light olive, belly whitish. A shining greenish longitudinal band on the sides (Rahman, 2005).

Habit and Habitat: Larvivorous, feeds on insects and also on stem and leaf tissue. Inhabits stagnant streams, ponds and tanks.

Distribution: Recorded from Kohua River, Feni; Charfasson, Bhola.

Relative abundance: Very rare.

Economic importance: Not a commercial species.

Ecological role: Controls the insect population and algal bloom at the bottom of its habitat.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT353102.1

>gi|939319443|gb|KT353102.1| *Chela cachius* voucher DUZM045 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CACCTCAGCTATACTACTCCTTGCCTCTGCCGGATGCTCAACTGGTGCAGGAACTGGTTGAACAGTATA
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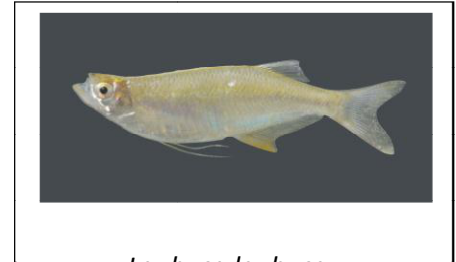
22. *Laubuca laubuca* (Hamilton, 1822)

Synonyms: *Cyprinus (Chela) laubuca* Hamilton, 1822, *Fishes of the Ganges*, p. 260; *Cyprinus laubuca* Valenciennes, 1842, *Hist. Nat. Poiss.* 16: 456; *Chela laubuca* Rahman, 1974, *Bangladesh J. Zool.* 2(2): 190.

English names: Indian Grass Barb, Blue Laubuca

Local name: Laubuca, Kash Khaira

Fin formula: D 2/8; P₁13; P₂ 7; A 3/18



Laubuca laubuca

Description: Compressed body with a convex carinate belly. Abdominal profile keeled from below the pelvic origin to the anus. Mouth oblique, maxilla reaches to below the front edge of the orbit. Lateral line curved downwards. Dorsal fin originates slightly behind the anal origin, pectoral extends to the middle or even the end of the pelvic's insertion; outer pelvic ray elongated but does not reach the anal. Pelvic origin nearer to the pectoral origin than to the anal origin; caudal forked, lobes equal (Rahman, 2005). Bright metallic blue with hyaline fins.

Habit and Habitat: Pelagic , Larvivorous, feeds on insects and also on stem and leaf tissue .Inhabits stagnant streams, ponds and tanks.

Distribution: Recorded from Kuhuri River, Muhuri River, Feni; Surma River basin, Bhairab, Sunamgonj.

Relative abundance: Very Rare.

Economic importance: Not a commercial species. Important aquarium fish.

Status and conservation: Considered as VU (Present study)

GenBank Accession No.: KT353103.1

>gi|939319445|gb|KT353103.1| *Laubuca laubuca* voucher DUZM046 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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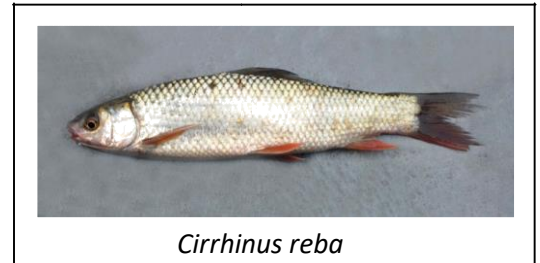
23. *Cirrhinus cirrhosus* (Bloch, 1795)

Synonyms: *Cyprinus mrigala* Hamilton, 1822, *Fishes of the Ganges*, p. 279; *Cirrhina blochii* Valenciennes, 1842, *Hist. Nat. Poiss.* 16: 290; *Cirrhina mrigala* Day, 1878, *Fishes of India*, p. 547

English names: Mrigal Carp, Mrigal

Local names: Mrigal, Mirka

Fin Formula: D 3/13; P₁ 17; P₂ 1/8; A 3/5



Description: Body elongate, its depth more than the length of the head. Dorsal profile more convex than that of the abdomen. Ventral profile nearly straight or only slightly convex. Snout obtusely rounded, covering upper lip and provided with pores. Dorsal arises midway between the snout tip and the posterior base of the anal. Pectorals shorter than the head by less than an eye-diameter. Greyish along the back, silvery on the sides and below. Anterior bases of scales black on the upper half of the body. Pectoral, pelvic and anal fins orange, stained with black (Rahman, 2005).

Habit and Habitat: It is essentially a plankton feeder, but also browses on algae in marginal shallows. Juveniles are omnivorous, adults are herbivorous. Inhabits rivers, lakes and ponds.

Distribution: Recorded from Kirtankhola River, Barishal; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Charfasson, Bhola.

Relative abundance: Fairly common.

Economic importance: The species has a great demand as food and has great economic value. Extensively cultured in ponds and tanks all over the country.

Ecological role: Plays an important role in the control of the algal population in the ecosystem where it lives.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT353104.1

>gi|939319447|gb|KT353104.1| *Cirrhinus cirrhosus* voucher DUZM047 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCCCATCATTCTGCTACTACTAGCCTCTTCTGGTGTGAAGCTGGAGCTGGAACAGGATGAACGGTATA
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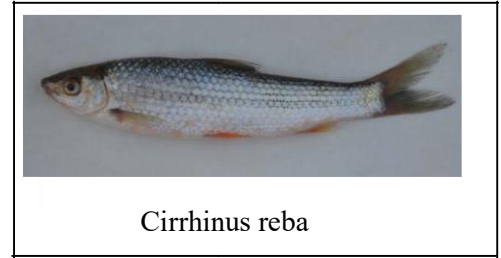
24. *Cirrhinus reba* (Hamilton, 1822)

Synonyms: *Cyprinus reba* Hamilton, 1822, *Fishes of the Ganges*, p. 280; *Cirrhina reba* Valenciennes, 1842, *Hist. Nat. Poiss.* 16: 292; *Mrigala bengalensis* Bleeker, 1853, *Verh. Bat. Gen.* 25: 136

English names: Reba

Local names: Bhagna, Raik, Tatkini, Bata, Laacho

Fin Formula: D 3/9; P₁ 16; P₂ 9; A 3/5



Description: Body elongate, dorsal profile slightly more convex than the ventral. Snout projects beyond the mouth, devoid of lateral lobes, studded with a few pores. A pair of short rostral barbels. Caudal fin deeply forked. Scales moderate; lateral line with 36-38 scales; 5.5 rows of scales between the lateral line and the pelvic fin base. Scales hexagonal. Dark grey dorsally, silvery on the flanks and belly. Scales darkest at their edges, forming bluish longitudinal bands above the lateral line. Anal and pelvic fins orange-tipped (Talwar and Jhingran, 1991).

Habit and Habitat: Benthopelagic, potamodromous, plankton feeder and prolific breeder. Found in rivers, streams, canals, ponds, beels and inundated fields throughout Bangladesh.

Distribution: Recorded from Kirtankhola, Barishal; Padma River, Rajshahi; Jaflong, Madhobkundo, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Buriganga River, Dhaka; Atrai River, Dinajpur; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Halda River, Banshkali, Chittagong; Karnafuli, Rangamati; Sundarban, Satkhira, Khulna; Madhupur, Tangail, Mymensing; Taherpur, Sylhet; Surma River, Bhairab, Sunamgonj, Kangsha River, Netrokona.

Relative abundance: Common.

Economic importance: Delicious and in great demand.

Ecological role: By feeding planktons it plays an important role in the aquatic ecosystems.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank: KX455893.1

>KX455893.1 *Cirrhinus reba* voucher ZMUD:048 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AGTCTATCCACCCCTGGCAGCAACTTAGCCACGCAGGAGCATCAGTAGACTTAACAATTTTCTCACTA
CACCTAGCAGGTGTATCATCAATTCTAGGGGCCATTAACCTCATTACTACAATAACATGAAACCAC
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25. *Danio rerio* (Hamilton, 1822)

Synonyms: *Cyprinus rerio* Hamilton, 1822, *Fishes of the Ganges*, p. 323; *Nuria rerio* Bleeker, 1853, *Verh. Bat. Gen.* 25: 62; *Danio rerio* Day, 1878, *Fishes of India*, p. 597; *Brachydanio rerio* Hora, 1937, *Rec. Ind. Mus.* 39(4): 339.

English name: Zebra Danio

Local name: Anju

Fin formula: D 2/7; P₁ 13; P₂ 1/6; A 2/11

TL: 2.67 cm ; **SL:** 2.08 cm

Description: Body elongate, slim and slightly compressed. Ventral profile more arched than that of the dorsal. Mouth oblique, opening above. Lower jaw longer than the upper. Barbel 2 pairs, rostral pair short, less than the diameter of the eyes; maxillary pair long, reaching the end of the opercle. Lateral line absent. Dorsal fin commences opposite the anal. Pectorals reach pelvics, pelvics reach anal. Caudal forked, equally lobed. Four metallic blue longitudinal bands, separated by three narrow silver ones. Three lower blue bands produced along caudal fin. Anal with three transverse blue bands. Paired fins colourless. Dorsal edge darkish (Rahman, 2005).

Habit and Habitat: Benthopelagic, feeds on worms and small crustaceans, also on insect larvae. Inhabits in streams, canals, ditches, ponds and beels throughout Bangladesh.

Distribution: Recorded from Madhabkundo, Sylhet; Chittagong University Hill stream, Chittagong; Humhum waterfall, Moulvibazar; Chellakhali River, Sherpur; Himchori, Cox's Bazar; Nohati Kum, Mirsorai;

Relative abundance: Rare.

Economic importance: Species of minor interest. Popular as an aquarium fish.

Ecological role: Keeps the aquatic habitat clean by consuming insect, larvae and small worms.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).



26. *Devario devario* (Hamilton, 1822)

Synonyms: *Cyprinus devario* Hamilton, 1822, *Fishes of the Ganges*, p. 341; *Devario buechanani* Bleeker, 1860, *Acta Soc. Sci. Indo-Neerl.*, 492 pp; *Danio devario* Day, 1878, *Fishes of India*, p. 595.

English names: Sind Danio

Local names: Bashpata, Chebli, Debashi, Chapchela, Debari

Fin Formula: D. 18; P₁. 12; P₂. 8; A. 18



Description: Body rhomboidal and compressed. Ventral profile more convex than that of the dorsal. Barbel absent. Dorsal originates in the centre between the snout tip and the caudal base. Origin of the pelvic nearer to the snout than to the caudal base. Body greenish-silvery; anal golden; pectorals, dorsal, pelvics and caudal yellowish. Caudal rays black. A bluish band along the centre of the body beginning from below the origin of the dorsal continues to the caudal base (Rahman, 1989). A pair of fainter bluish bands, one above and the other below the central one on the posterior part of the body. The space between these bands is yellowish.

Habit and Habitat: Benthopelagic; feeds on worms, small crustaceans and insects. Inhabits rivers, canals, ponds, beels and inundated fields throughout Bangladesh.

Distribution: Recorded from Jaflong, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamgonj; Bangshai River, Madhupur, Tangail; Itna Haor, Kishorgonj.

Relative abundance: Rare.

Economic importance: This small fish has little economic value as food. It can be used as an aquarium fish.

Ecological role: It constitutes an important item of food for predatory fishes in the ecosystem.

Status and conservation: Considered as VU (Present study)

GenBank: KT364769.1

>KT364769.1 *Devario aequipinnatus* voucher DUZM054 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCAGTCTTGCTGCTGGTATTACAATACTTCTTACGGACCGAAATCTTAATACTACATTCTTTGACCCAT
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27. *Esomus danricus* (Hamilton, 1822)

Synonyms: *Cyprinus danrica* Hamilton, 1822, *Fishes of the Ganges*, pp. 325, 390; *Cyprinus jogia* Hamilton, 1822, *Fishes of the Ganges*, pp. 326, 391; *Esomus danrica* Bleeker, 1863, *Atl. Ichth. Cypr.* 3: 32; *Nuria danrica* Day, 1878, *Fishes of India*, p. 583;

English names: Flying Barb

Local names: Darkina, Danrika, Darka, Dadhika

Fin Formula: D. 2/6; P₁. 1/11; P₂. 1/6; A. 2/5



Description: Laterally compressed body, mouth small. A distinct concavity over the nape in some. Barbel 2 pairs, rostral pair extending to the angle of the preopercle, maxillary pair longer, reaching beyond the pelvics. Lower jaw longer. Lateral line incomplete, ceasing after 4 or 5 scales or may be absent. Dorsal fin placed in the posterior half of the body. Anal origin below posterior base of the dorsal. Pelvics equidistant from the snout tip and the caudal base. Pectoral extends over the pelvics, outer ray of pelvics elongated. A broad black lateral band from the eye to the caudal base. Margin of the scales of the upper half of the body dotted. Yellowish-white beneath (Rahman, 2005).

Habit and Habitat: Benthopelagic, potamodromous. This species is very active and equipped with exceptionally wide pectoral fins. Found in small streams, ponds, weedy ditches, beels and inundated fields.

Distribution: Recorded from Lawachara, Sreemangal; Buriganga River, Dhaka; Keshobpur, Jessore; Duhdpukuria, Dhopachari, Madhabkundo, Sylhet; Halda River, Karnafuli River, Chittagong, Kaptai, Rangamati; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Taherpur, Sylhet; Pekua beel, Someshwari River, Chellakhali River, Sherpur, Old Brahmaputra River, Mymensing; Feni River, Feni; Tanguar Haor, Sunamgonj; Bangshai River, Madhupur, Tangail.

Economic importance: Of minor commercial importance; can be reared in aquariums.

Status and conservation: Considered as NT (Present study)

GenBank Accession No.:KT364776.1

>gi|915195148|gb|KT364776.1| *Esomus danricus* voucher DUZM056 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTTTATTTAGTATTTGGTGCCTGAGCCGGAATAGTGGGAACCGCCCTAAGCCTTCT
ATCCGAGCCGAACTAAGCCAACCCGATCTCTATTAGGTGACGACCAAATCTATAATGTTATTGTTACA
GCTCATGCCCTTCGTAATGATTTTTTTATAGTAATAACCAATTCTCATTGGAGGGTTTGAAATTGACTCG
TGCCCTTAATAATTGGAGCCCCAGATATAGCATTCCCACGAATAAACAACATAAGCTTTTGACTTTTACC
CCCATCATTTTTATTACTTCTAGCTTCTGAGATTGAAGCCGGAGCAGGAACAGGATGAACTGTTTAT
CCTCCCTAGCTAGCAACCTCGCCCATGAAGGTGCATCCGTAGACTTAACAATTTTCTCACTTCATCTAG
CAGGGGTATCATCCATTTTAGGAGCAATTAATTTTATTACCAATCATTAAACATGAAACCCCCGCTAC
CTCCCAATATCAAACACCACTATTTGTTTGAGCCGTTTTAGTTACAGCAGTCCTACTACTGTCTTTA
CCAGTTTTAGCTGCCGGCATTACAATACTTCTAACTGATCGAAACCTTAACACTTCATTCTTCGACCCTG
CAGGAGGAGGAGACCAATTCTTTATCAACATTTATTTGATTCTTTGG
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28. *Labeo bata* (Hamilton, 1822)

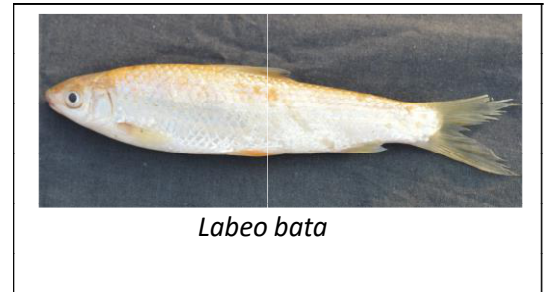
Synonyms: *Cyprinus bata* Hamilton, 1822, *Fishes of the Ganges*, p. 283; *Labeo lissorhynchus* McClelland, 1839, *Asiat. Res.* 19: 277-278; *Crossocheilus bata* Day, 1869, *Proc. Zool. Soc. Lond.*, p. 371

English names: Bata Labeo

Local names: Bata, Bhangon Bata

Fin Formula: D 2/9; P₁ 16-17; P₂ 1/8; A 2/5

Description: Body elongate, its dorsal profile more convex than the ventral. Snout slightly projecting beyond the mouth, often studded with pores. Dorsal originates midway between the snout tip and the anterior base of the anal. Pelvics originate slightly nearer to the snout tip than to the caudal base, pectoral shorter than the head, does not reach the pelvics (Rahman, 2005). Golden-yellow above and on the dorsal half of the flanks, silvery on lower half of flanks and belly; an irregular black blotch present on the anterior scales of the lateral line, a faint blotch on the caudal peduncle. Pelvic and anal fins dark with orange red tips; other fins with fine black dots (Talwar and Jhingran, 1991).



Habit and Habitat: Benthopelagic and potamodromous. The species seems to be a bottom-feeder, depends mainly on aquatic plants. Inhabits ponds, rivers and estuaries.

Distribution: Recorded from Chalan Beel, Halti Beel, Natore; Banskhali, Chittagong, Rangamati; Padma River, Rajshahi; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Charfasson, Bhola, Barishal; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Surma River, Bhairab, Sunamgonj; Madhupur, Tangail, Ubdhakhali river, Netrokona. **Ecological role:** Plays a vital role in the food chain of aquatic ecosystem.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT353105.1

>gi|939319449|gb|KT353105.1| *Labeo bata* voucher DUZM061 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCCCTTTATCTCGTATTTGGTGCCTGAGCCGGAATAGTAGGAACCGCCTTAAGCCTTC
TCATTCGGGGCCGAGCTAAGCCAACCCGGATCGCTTCTAGGCGACGACCAAATTTACAATGTTATTGTTAC
TGCCACGCCTTTGTAATAATTTCTTTATAGTAATGCCAATCCTCATTGGTGGATTGGAAACTGACTC
GTACCACTAATGATCGGAGCCCCAGACATGGCATTCCCTCGTATAAATAACATAAGCTTCTGACTCCTAC
CCCCATCATTCTGCTACTACTAGCCTCTTCTGGTGTGAAGCTGGAGCTGGGACAGGATGAACAGTATA
TCCACCTCTTGAGGTAATTTAGCCACGCAGGAGCATCAGTTGATCTGACAATTTCTCACTTCATCTA
GCAGGAGTTTCATCAATTCTAGGGGCCATTAATTTTATTACCACAACCATCAACATGAAACCTCCAGCCA
TCTACAATAACCAACACCTCTATTTGTCTGATCCGTACTTGTAACTGCCGTACTACTTCTCCTATCACT
ACCTGTTCTAGCCGCTGGTATTACAATACTCTTAACAGATCGAAATCTTAATACCACATTCTTCGACCCG
GCAGGGGGAGGAGACCCAATCCTCTACCAACACTTATTCTGATTCTTTGGCCA
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29. *Labeo calbasu* (Hamilton, 1822)

Synonyms: *Cyprinus calbasu* Hamilton, 1822, *Fishes of the Ganges*, p. 279; *Cirrhinus belangeri* Valenciennes, 1842, *Hist. Nat. Poiss.* 16: 247; *Rohita reynauldi* Valenciennes, 1842, *Hist. Nat. Poiss.* 16: 247

English names: Black Rohu, Kalbasu

Local names: Kalibaus, Baus, Kalia

Fin Formula: D 3/15; P₁ 18; P₂ 1/8; A 2/5



Description: Dorsal profile more convex than that of the abdomen. Snout obtuse, without any lateral lobe. Interorbital space convex. Lips thick, fringed. Post-labial groove continuous. A cartilaginous support inside both the lips. Two pairs of barbels, rostral pair longer than the

maxillary pair. No pores on the snout. Ventral surface of the head yellowish, portion of the eye around the pupil red in one-year old fish (Rahman, 2005).

Habit and Habitat: Occurs in slow-moving waters of rivers, beels and haors. Feeds on organic matter, molluscs, diatoms, plant matter, green-algae, blue-green algae and zooplankton. The fish is selective in feeding. Juveniles prefer zooplanktonic organisms, while the adults prefer organic matter and molluscs. Fecundity of 39-40 cm fish varies between 1,93,000 and 2,88,000. Breeds during the monsoon (June-July). **Distribution:** Recrded from Chalan Beel, Halti Beel, Natore; Tanguar Haor, Hakaluki Haor, Sunamganj, Moulvibazar; Buriganga River, Dhaka; Rangamati, Kaptai, Chittagong; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj, Sylhet; Surma River, Bhairab, Sunamgonj; Haoda beel, Pungli River, Tangail; Old Brahmaputra River, Banar River, Mymensing.

Economic importance: Commercially important fish species.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364767.1

>gi|915195130|gb|KT364767.1| *Labeo calbasu* voucher DUZM064 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTTATCTCGTATTTGGTGCCTGAGCCGGAATAGTAGGAACCGCCTTAAGCCTTCT
CATTCCGGGCTGAACTAAGCCAACCCGGATCGCTTCTAGGTGACGACCAAATTTATAATGTTATTGTAAC
GCTCATGCCTTCGTAATAATTTCTTTATAGTAATGCCCATCCTCATTGGAGGATTTGGAAACTGACTCG
TACCATTAATGATCGGAGCCCCAGACATGGCATTCCCCCGTATAAATAACATAAGCTTCTGACTCCTACC
CCCATCATTCTACTACTATTAGCCTCTTCTGGTGTGAGGCTGGAGCTGGAACAGGATGAACAGTATAC
CCACCCTTGCAGGTAACCTAGCCACGCAGGAGCATCAGTAGACCTAACAAATTTCTCACTCCACTTAG
CAGGAGTTTCATCAATCCTAGGAGCCATTAACCTCATTACTACAACCTAATATGAAACCTCCAGCCAT
CTCACAATATCAAACCTCTATTTCGTCTGGTCCGTAAGTGTAACTGCCGTAAGTACTTCTCCTATCATT
CCAGTATTGGCCGCTGGCATCAATGCTTTAACAGATCGAAATCTTAATACCACATTCTTCGACCCGG
CAGGAGGAGGAGACCAATCCTTTACCAACACCTATTCTGATTCTTTG
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30. *Labeo gonius* (Hamilton, 1822)

Synonyms: *Cyprinus gonius* Hamilton, 1822, *Fishes of the Ganges*, p. 292; *Labeo gonius* Day, 1878, *Fishes of India*, p. 537; *Labeo gonius* Shaw and Shebbeare, 1937, *J. Asiat. Soc. Bengal* 3: 53.

English names: Kuria Labeo

Local names: Ghannya, Goni, Kurchi

Fin Formula: D 3/14; P₁ 16; P₂ 1/8; A 2/5



Description: Body elongated, dorsal profile more convex than the ventral. Snout slightly projecting beyond the mouth, devoid of *Labeo gonius* lateral lobe, studded with numerous pores. Eyes moderate, the diameter 4.5-5 times in the head. Mouth narrow and subinferior; lips thick and fringed. A cartilaginous support inside both the lips. Barbel 2, very short pairs (rostral and maxillary).

Habit and Habitat: Benthopelagic, potamodromous. Feeds on phytoplankton, algae and crustaceans

Occurs in rivers, haors, beels and lakes.

Distribution: Recorded from Lawachara, Sreemangal

Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Duhdpukuria, Dhopachari, Kaptai, Rangamati; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Taherpur, Sylhet. **Economic importance:** *L. gonius* is currently a species of minor commercial importance.

Ecological role: By controlling the population of algae, diatoms and aquatic plants, it keeps the habitat clean.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank: KX455894.1

>KX455894.1 *Labeo gonius* voucher ZMUD:066 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AACCACAAAGACATTGGCACCCCTTTATCTCGTATTTGGTGCCTGAGCCGGAATAGTAGGAACTGCCTTAA
GCCTTCTTATTCGGGCCGAGCTAAGCCAACCCGGATCGCTTCTAGGCGACGACCAAATTTACAATGTCAT
CGTCACTGCTCACGCCTTCGTGATAATTTCTTTATAGTAATGCCCATCCTCATTGGAGGATTTGGAAT
TGACTTGTCCCATAATGATTGGGGCCCCAGACATAGCATTCCCCGTATAAACAACATAAGCTTCTGAC
TTTACCCCCATCATTCTGCTACTACTAGCCTCTTCTGGTGTGAAGCTGGAGCTGGAACAGGATGAAC
GGTATACCCGCCTCTTGACAGGAAATTTAGCCCCAGCAGGAGCATCGGTAGACCTAACAAATTTCTCACTT
CACTTAGCGGGTGTTCATCAATTCTAGGGGCTATTAATTTATTACCAACCATCAACATGAAGCCCC
CAGCCATCTACAATACCAAACACCTCTGTTCTGTTGATCCGTGCTCGTAACCGCCGACTGCTTCTTCT
ATCACTGCCAGTCTAGCTGCTGGTATTACAATGCTCTTAACAGATCGAAACCTTAATACCACATTCTTC
GACCCAGCAGGAGGGGGAGACCCAATTCTCTACCAACACTTATTCTGATTCTTTGGCCA
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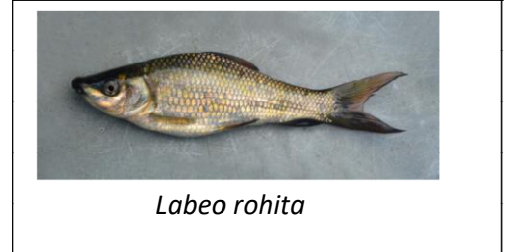
31. *Labeo rohita* (Hamilton, 1822)

Synonyms: *Cyprinus rohita* Hamilton, 1822, *Fishes of the Ganges*, p. 301; *Rohita buchanani* Valenciennes, 1842, *Hist. Nat. Poiss.* 16: 251; *Labeo dussumieri* Valenciennes, 1842, *Hist. Nat. Poiss.* 16: 353.

English names: Rohu, Rohu Carp

Local names: Rui, Rohit, Rohu, Rau

Fin Formula: D 3/13; P₁ 1/17; P₂ 1/8; A 2/5



Description: Body moderately elongate. Dorsal profile more convex than the ventral profile. Snout obtuse, projecting over the mouth, without any lateral lobe. Lips thick and fringed, with a distinct inner fold to each lip. Post-labial groove continuous. A pair of short maxillary barbels. Interorbital space convex. Brownish to bluish along the back, silvery on the sides and beneath. Scales with black margins and a red centre during the breeding season. Fins greyish or dark, pectoral fins dusky. Colour varies in fishes, those living among weeds exhibiting greenish-black on back (Talwar and Jhingran, 1991).

Habit and Habitat: Column feeder at mid water. Prefers to feed on plant matters including decaying vegetations (Talwar and Jhingran, 1991). Inhabits beels, deep pools, clear sluggish streams, ponds and tanks, inundated paddy fields and floodplains. Rui is extensively stocked in ponds and other closed water bodies.

Distribution: Recorded from Lawachara, Sreemangal; Padma River; Barishal; Buriganga River, Dhaka; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Tanguar Haor, Sunamgonj; Taherpur, Sylhet; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing.

Economic importance: Rohu is the most abundant among the species of genus *Labeo*, a commercially important species, and preferred as food fish throughout Bangladesh and other countries.

Ecological role: Plays an important role in the aquatic ecosystem by feeding plant matters and decaying vegetation

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: MF170947.1

>MF170947.1 *Labeo rohita* voucher ZMUD:069 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTTATCTCGTATTTGGTGCCTGAGCCGGAATAGTAGGAACCGCCTTAAGCCTTCT
TATCCGGGCTGAACTAAGCCAACCCGGATCGCTTCTAGGTGATGACCAAATTTATAATGTTATTGTAAC
GCCACGCCCTTCGTAATAATTTTCTTTATAGTAATGCCATCCTCATTGGAGGATTTGGGAACTGACTCG
TGCCACTAATGATTGGAGCCCCAGACATGGCATTCCCCGTATAAACAAACATAAGCTTCTGACTCCTACC
CCCATCATTCTATTACTATTAGCCTCTCCGGTGTAGAAGCTGGAGCTGGGACAGGATGGACAGTATAC
CCACCTTTGCAGGCAACTTAGCCACGCAGGAGCATCAGTAGACCTAACAAATTTCTCACTTCACTTAG
CAGGAGTTTCATCAATTTAGGGGCTATTAATTTTACTACAATAATATGAAACCTCCAGCCAT
CTCACAATATCAAACACCTTATTCGTCTGATCTGTCTAGTAACCGCCGTACTACTTCTCCTCTCACTA
CCAGTACTGGCCGCTGGAATACAATGCTTTAACAGATCGAAATCTGAATACTACATTCTTCGACCCGG
CAGGAGGAGGGGACCCAATCCTTTATCAACACCTATTCTGATTCTTTGGC
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32. *Oreichthys cosuatis* (Hamilton, 1822)

Synonyms: *Cyprinus cosuatis* Hamilton, 1822, *Fishes of the Ganges*, p. 338; *Barbus cosuatis* Day, 1878, *Fishes of India*, p. 581; *Oreichthys cosuatis* Smith, 1933, *Contributions to the Ichthyology of Siam*. *J. Siam Soc. Nat. Hist.* 8: 255-262; *Barbus apogon* Shaw and Shebbeare, 1937, *Fishes of Northern Bengal*, p. 34; *Oreichthys cosuatis* Hora, 1937, *Rec. Indian Mus.* 39(4): 321; *Puntius cosuatis* Rahman, 1974, *Bangladesh J. Sci. Ind. Res.* 9(3-4): 151.

English names: Cosuatis Barb, Indian High Fin Barb.

Local name: Kosuati

Fin formula: D 3/8; P₁13-14; P₂ 9; A 2/5



Description: Body fairly deep and compressed. Head with numerous fine, parallel sensory folds on the sides. Mouth small; no barbel. Dorsal fin fairly high, inserted slightly nearer to the snout tip than to the base of the caudal fin. Scales large; lateral line incomplete, confined to the anterior 4-5 scales; scales on the lateral line row larger than others. Height of the dorsal exceeds that of the body in younger specimens. Reddish-brown scales having dark bases. A black band along the top of the dorsal, another across its middle. Anterior anal rays with a band. During the breeding season, pectorals become yellow, pelvics scarlet red. Maximum total length of the species is reported to be 6 cm (Rahman, 1989).

Habit and Habitat: Benthopelagic, feeds on epiphyton. Occurs in ditches, ponds, streams and canals.

Distribution: Recorded from Tangual Haor, Sunamgonj; Hail Haor, Sreemangal.

Relative abundance: Rare.

Economic importance: Fisheries of no commercial interest.

Ecological role: Plays a vital role in the food chain of aquatic ecosystem.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank: KX455909.1

>KX455909.1 *Oreichthys cosuatis* voucher ZMUD:071 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AACCACAAAGACATTGGCACCCCTTTATCTAGTATTCGGTGCCTGAGCTGGAATAGTAGGAACCGCCCTAA
GTCTGCTTATCCGAGCTGAATTAATCAACCCGGGCACTCTTAGGCGATGACCAAATTTATAATGTAAT
CGTTACCGCTCATGCTTTTGAATAATCTTCTTTATAGTTATACCCATCCTTATCGGAGGATTCGGCAAT
TGACTTGTCCCTAATAATTGGTGCCCTGATATAGCCTTCCACGAATAAATAATATAAGCTTTTGAC
TACTACCCCATCCTTTTACTCTTATTAGCCTCCTGCTGTTGAAGCTGGGGCCGGAACAGGATGAAC
AGTCTATCCTCCTAGCCGAAATTTAGCCCATGCAGGAGCATCAGTAGACCTAACAATTTTCTCACTC
CACTTAGCAGGTGTTTCATCAATTTTAGGAGCAATTAATTTTATTACCACAACAATTAATATAAACCTC
CAGCCCTTCTCAATATCAAACCCATTATTTGTGTGATCCGTAACCGCTGTACTACTTCTACT
ATCCCTACCCGTTCTGGCTGCCGGTATTACAATACTTTAACAGACCGAAACCTCAATACTACTCTTCTT
GACCCTGCTGGAGGTGGAGACCCAATCTTTACCAACATCTATTCTGATTCTTTGGCCACCAAAAA
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33. *Puntius chola* (Hamilton, 1822)

Synonyms: *Cyprinus chola* Hamilton, 1822, *Fishes of the Ganges*, p. 312; *Cyprinus titius* Hamilton, 1822, *Fishes of the Ganges*, p. 315

English names: Swamp Barb, Chola Barb

Local names: Chalapunti, Punt

Fin Formula: D. 2/8; P₁. 15; P₂. 9; A. 7



Puntius chola

Description: Dorsal profile more convex than that of the abdomen. Mouth small, terminal, jaws subequal. Lower labial roove deep, narrowly interrupted at the middle. A pair of maxillary barbels. Lateral line complete. A dark blotch on the side of the tail. A black blotch at the base of the 2nd-5th rays of dorsal and 1 or 2 rows of dark spots along its centre. During the breeding season, the males develop a red band along the side from the end of the opercle to the forked end of the caudal fin (Rahman, 2005).

Habit and Habitat: Benthopelagic, potamodromous (Riede, 2004). Feeds on worms, crustaceans, insects and plant matter (Mills and Vevers, 1989). Plant matter includes diatoms and algae. Inhabits streams, rivers, canals, beels, haors, ponds and inundated fields.

Distribution: Recorded from Chalan Beel, Natore; Sundarban, Khulna; Banskhali, Chittagong, Rangamati; Padma River, Rajshahi; Jaflong, Madhobkundo, Derai Haor, Sylhet; Tanguar Haor, Sunamgonj; Someshwari River, Chellakhali River, Sherpur; Old Brahmaputra River, Mymensing. Kalidash River, Muhuri River, Feni; Surma River, Bhairab, Sunamgonj; Haoda Beel, Madhupur, Tangail, Ubdhakhali river, Netrokona.

Economic importance: A commercially important species.

Ecological role: Stays in the middle layer of the habitat. Keeps the water surface clean by consuming floating organisms and aquatic plants.

Status and conservation: Considered as NT (Present study).

GenBank Accession No.: KT364771.1

>gi|915195138|gb|KT364771.1| *Puntius chola* voucher DUZM074 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCTCTATCTTGTATTTGGTGCCTGAGCCGGAATAGTAGGAACCGCCCTAAGCCTCCT
CATCCGAGCCGAACCTAAGTCAACCAGGATCACTCTGGGTGACGACCAAATTTATAATGTTATCGTTACT
GCCCACGCTTTGTAATAATTTTCTTTATAGTTATGCCAATCCTAATTGGGGGATTTCGGAACTGACTAG
TCCCCTAATAATCGGGGCCCTGACATGGCATTCCCACGAATAAATAACATAAGTTTCTGACTTCTACC
ACCCTCATTCTTACTATTAGCCTCCTGAGATTGAAGCCGGAGCAGGAACAGGATGAACAGTCTAC
CCACCGTAGCAGGAAATCTGGCCCACGCCGGGGCGTCAGTAGACCTAACAATTTTTTCACTTCACCTGG
CAGGTGTTTCATCAATCTTGGGGCAATTAATTTTATTACTACAATTATAATAAAAACCCCAAGCCGT
CACCAATATCAAACACCACTATTTGTCTGATCCGTAAGTCTGCTGCTCCTGTTATCACTA
CCAGTCTTAGCCGAGGGATTACAATGCTTCTGACAGACCGAAACCTAATACCACATTCTTTGATCCGG
CGGGGGGAGGAGACCAATCTTTACCAACACCTATTCTGATTCTTTG
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34. *Puntius conchoni* (Hamilton, 1822)

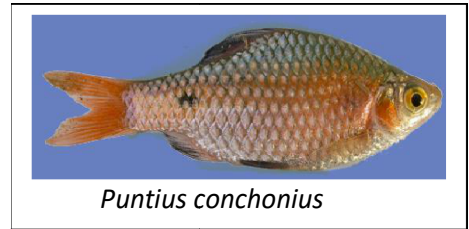
Synonyms: *Cyprinus conchoni* Hamilton, 1822, *Fishes of the Ganges*, p. 317; *Systemus conchoni* McClelland, 1839, *Asiat. Res.* 19(2): 284; *Barbus conchoni* Day, 1878, *Fishes of India*, p. 576

English names: Rosy Barb, Red Barb

Local names: Kanchan Punti, Taka Punti, Moyna Punti

Fin Formula: D.11; P₁. 13; P₂. 1/ 8; A.7.

Description: Body deeper and flatter than any other species of *Puntius*. Mouth terminal, upper jaw slightly longer. A slight concavity over the nape. Barbel absent. Lateral line incomplete. Last unbranched ray of the dorsal osseous and strongly denticulated along the posterior edge. Dorsal originates slightly nearer to the snout tip than to the caudal base. Pectoral as long as the head excluding the snout. Pelvics originate below the origin of the dorsal. Silvery, dark along the back and all scales with dark bases. A large black spot above the posterior portion of the anal fin. A band of black marks along the middle dorsal rays (Rahman, 2005).



Habit and Habitat: Feeds on worms, crustaceans, aquatic insects and plant matter (Shafi and Quddus, 1982). Inhabits pools, beels, jheels, lakes, rivers and canals. During the rainy season, the species occurs in inundated fields and feeds on diatoms, algae and other weeds. During the breeding period, the species becomes beautifully coloured with red and purple on the sides.

Distribution: Through out Bangladesh. Recorded from Chalan Beel, Natore; Lawachara, Sreemangal; Kirtankhora, Barishal; Sundarban, Khulna; Padma River, Rajshahi; Jaflong, Madhobkundo, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulovibazar Thanchi, Bandarban, Cox's Bazar Buriganga River, Dhaka Jamuna River, Tangail Itna Haor, Arial Beel, Munshigonj Madhabkundo, Sylhet Halda River, Karnafuli River, Chittagong, Kaptai, Rangamati Sundarban, Satkhira, Khulna Barishal Tanguar Haor, Taherpur, Sylhet Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, etc.

Economic importance: This is one of the most important ornamental *Puntius* species and a very beautiful fish.

Ecological role: Plays a vital role in the food chain of aquatic ecosystem by consuming the aquatic plants and muddy benthic organisms.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).).

GenBank: KY124379.1

>KY124379.1 Pethia conchoni voucher DUZM075 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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ATTTGGTGCCTGAGCCGGAATAGTTGGAACCGCCCTTAGCCTCCTAATCCGGGCGGAACCTTAGCCAACCT
GGATCACTCTTAGGCGATGACCAAATTTACAATGTTATTGTAAGTCCACGCTTCGTAATAATTTTCT
TTATAGTCATACCAGTACTAATTGGAGGATTCGGGAAGTACTGTTGCGGTTAATAATTGGGGCCCCAGA
CATAGCATTCCCCGAATAAATAATATAAGCTTTTACTCCTACCCCATCATTTTTACTTCTACTAGCC
TCTCCGGTGTGAAGCCGAGCCGGGACAGGATGAACAGTCTACCCACCCCTGCAGGCAATCTAGCCC
ACGCCGGAGCATCAGTTGACTTAACAATTTTTCTACTACTTAGCGGGTGTGTCATCAATTCTGGGGGC
TATTAATTTTACTACTAATTAATAATAAAACCCCCAGCGGTATCACAGTACCAAACACCGCTATTC
GTCTGATCAGTACTTGAAGTCTGACTACTTCTACTTTCTACTCCAGTTTTAGCTGCTGGGATTACAA
TACTCCTAACAGACCGAAACCTAAATACCTCATTCTTTGACCCGGCGGGAGGAGGTGACCCAATCCTTTA TCAA
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35. *Pethia gelius* (Hamilton, 1822)

Synonyms: *Cyprinus gelius* Hamilton, 1822, *Fishes of the Ganges*, p. 320; *Systemus gelius* McClelland, 1839, *Asiat. Res.* 19: 286; *Barbus gelius* Day, 1878, *Fishes of India*, p. 577.

English names: Golden Barb, Golden Dwarf Barb

Local name: Gili Punti

Fin formula: D 2/8; P₁14; P₂ 9; A 3/5



Pethia gelius

Description: Body elongate, moderately compressed. Mouth small, slightly oblique, upper jaw slightly longer. Barbel absent. Lateral line incomplete. Last unbranched ray of the dorsal osseous, serrated. Origin of the dorsal fin slightly nearer to the snout tip than to the caudal base. Pectoral as long as the head, excluding the snout. Origin of the pelvics below the dorsal. Body reddish-brown. A black band over the tail, a little anterior to the base of the caudal fin, another less distinct one behind the base of the caudal fin. A deep black large spot at the root of the anterior dorsal rays, small black spots at the bases of the pelvics and the anal fins. During the breeding season, the dorsal and caudal fins including the posterior region of the body become red and orange (Rahman, 2005).

Habit and Habitat: Feeds on benthos, zooplankton, crustaceans, insects, etc. Inhabits rivers and standing waters over silt and mud.

Distribution: Recorded from Lawachara, Sreemangal; Jaflong, Madhobkundo, Taherpur, Sylhet; Tanguar Haor, Sunamgonj; Someshwari River, Chellakhali River, Sherpur; Old Brahmaputra River, Mymensing; Surma River, Bhairab, Sunamgonj; Bangshai River, Madhupur, Tangail.

Economic importance: An ideal aquarium fish.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364772.1

>gi|915195140|gb|KT364772.1| *Pethia gelius* voucher DUZM076 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTATATCTTGTATTCCGGTGCATGAGCCGGGATAGTTGGAACCGCCCTTAGCCTCCT
TATCCGAGCCGAACTCAGCCAACCTGGATCACTTTTAGGTGACGACCAGATTTATAATGTTATTGTAAC
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TTCCCTAATAATTGGAGCCCCAGATATGGCATTCCCACGAATAAATAATATAAGCTTCTGATTACTCCC
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CAGGTGTGTCATCAATTCTGGGGCAATTAATTTTATTACTACAACCATTAATATGAAACCCCCAGCTGT
GTCTCAATACCAACACCCCTATTTGTATGATCCGTAAGTCTGTAAGTCTGTAAGTCTGTAAGTCTGTAAG
CCAGTTCTGGCCGCCGGGATTACAATACTTCTTACAGACCGAAACCTAAACACTGCATTCTTTGATCCGG
CAGGGGGAGGAGATCCAATTCTATATCAACACCTATTCTGATTCTTTGG
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36. *Pethia guganio* (Hamilton, 1822)

Synonyms: *Cyprinus guganio* Hamilton, 1822, *Fishes of the Ganges*, p. 338; *Barbus ambassis* Day, 1868, *Proc. Zool. Soc. London*, p. 583; *Barbus guganio* Day, 1878, *Fishes of India*, p. 579

English names: Glass-barb

Local names: Mola Punti

Fin Formula: D 3/8; P₁ 12; P₂ 9; A 3/5



Description: Body elongate, its depth is about one-third the standard length. Eyes large. Mouth terminal, upper jaw slightly longer. Barbel usually absent, sometimes a small maxillary pair. Lateral line incomplete. Origin of the dorsal a little in advance of the origin of the pelvics and slightly nearer to the snout tip than to the caudal base. Pectoral equals the head excluding the snout. Dorsal longer than the head. Scales small and deciduous. Colour diaphanous, light greenish with silvery bands along the side; a small black spot at the base of the anterior dorsal fin rays; a black blotch at the side of the caudal fin (Talwar and Jhingran, 1991).

Habit and Habitat: Found in rivers, beels, ponds, and similar water areas. Feeds on aquatic organisms, plankton, aquatic plants, etc.

Distribution: Recorded from Tanguar Haor, Sunamgonj; Jaflong, Madhobkundo, Sylhet; Kuhuri River, Muhuri River, Feni.

Economic importance: It is of very little interest to fisheries.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: KT762360.1

>gi|959006835|gb|KT762360.1| *Pethia guganio* voucher DUZM077 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCTATATCTCGTATTTGGTGCTTGAGCCGGAATGGTGGGAACCGCCCTTAGCCTAC
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TGCTCATGCCTTCGTAATAATTTCTTTATAGTTATGCCAGTATTGATTGGGGGATTTGGAACTGACTA
GTTCCACTAATGATTGGGGCCCCAGATATGGCATTCCACGAATAAATAACATAAGCTTCTGACTTCTGC
CACCATCATTCTACTGCTCTTAGCCTCTTCCGGAGTCGAGGCAGGAGCCGGAACAGGATGAACTGTCTA
CCCACCTCTTGCCGGCAACCTGGCCCATGCTGGAGCATCAGTAGACCTAACAAATTTTTTCATTGCACCTA
GCAGGTGTATCATCAATTTCTGGGGCAATTAATTTTATTACCACAATAAATAAAAACCACCAGCTG
TCTCCAATATCAAACGCCCTTATTCTGTGTATCTGCTTGTAACTGCTGTATTGCTCCTACTTTCACT
CCCAGTCTTAGCTGCCGGAATTACAATACTCCTCACGGATCGTAATCTAAACACCTCATTTTTTGACCCA
GCAGGAGGAGGAGACCCAATTCTATATCAACACCTATTCTGATTCTTTGGCCACC
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37. *Pethia phutunio* (Hamilton, 1822)

Synonyms: *Cyprinus phutunio* Hamilton, 1822, *Fishes of the Ganges*, p. 319; *Systemus phutunio* Bleeker, 1853, *Verh. Bat. Gen.* 62: 128; *Barbus phutunio* Day, 1878, *Fishes of India*, p. 578;

English names: Spotted Barb, Pigmy Barb, Dwarf Barb.

Local name: Phutani Punti

Fin formula: D 2/8; P₁ 14; P₂ 8; A 3/5



Description: Body moderately compressed, elevated. Dorsal profile more elevated than the abdomen. Mouth small, terminal or slightly oblique. Upper jaw slightly longer. Barbel absent. Scales large. Lateral line incomplete. Pelvics originate below the origin of dorsal. Pectoral as long as the head excluding the snout. Body greenish silvery. Scales on the sides and belly with silvery reflections. Two vertically elongated broad bands, one from the back to the middle of the pectoral and another from the back to the posterior end of the anal base. Two lighter bands, one from the anterior and other from the posterior end of the dorsal.

Habit and Habitat: Adults and juveniles feed on debris, zoobenthos, such as benthic crustaceans, insects, worms and plant matters (Mills and Vevers, 1989). Found in rivers, streams, pools, beels and ponds. **Distribution:** Recorded from Jaflong, Madhobkundo, Taherpur, Sylhet; Sundarban, Satkhira, Khulna; Tanguar Haor, Sunamgonj; Chellakhali River, Sherpur, Old Brahmaputra River, Mymensing; Surma River, Bhairab, Sunamgonj; Bangshai River, Madhupur, Tangail.

Relative abundance: Rare.

Economic importance: This barb, which attains a length of about 4 cm, is of minor interest to fisheries. It is an attractive aquarium fish.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: KT353106.1

>gi|939319451|gb|KT353106.1| *Pethia phutunio* voucher DUZM078 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GTGCCATTGATGATTGGGGCCCCAGACATAGCATTCCCCGAATAAATAACATAAGCTTCTGACTCCTTC
CCCCATCTTTCTACTACTACTAGCCTCATCCGGAGTTGAAGCCGGGGCCGGGACAGGGTGAACAGTGTA
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GCAGGTGTGCATCGATCCTAGGGCAATTAATTTTATTACTACAACCATTAATATAAAACCCCGGCCG
TATCCAATATCAAACACCACTATTTGTATGATCGGTACTTGTAACTGCTGTGCTATTACTACTTTCACT
CCCTGTGTTAGCTGCGGGAATTACAATACTACTAACAGATCGAAACCTAAATACCTCATTCTTTGATCCA
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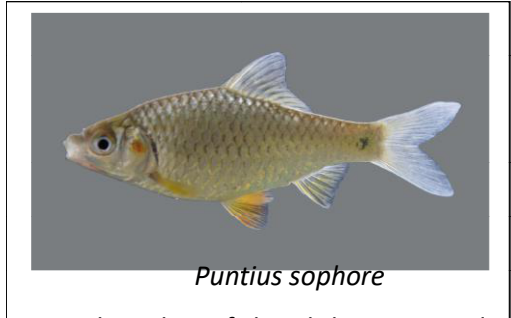
38. *Puntius sophore* (Hamilton, 1822)

Synonyms: *Cyprinus sophore* Hamilton, 1822, *Fishes of the Ganges*, pp. 310, 389; *Systemus sophore* McClelland, 1839, *Asiat. Res.* 19: 285; *Barbus sophore* Günther, 1868, *Cat. Fish. Brit. Mus.* 7: 152

English names: Spotfin Swamp Barb, Pool Barb

Local names: Punt, Jat Punt

Fin Formula: D. 10; P₁. 15; P₂.9; A. 8



Description: Body moderately compressed, dorsal profile more convex than that of the abdomen. Head short, about one-fourth the standard length (Talwar and Jhingran, 1991). Mouth small, terminal; upper jaw slightly longer. Barbel absent. Last unbranched ray of the dorsal osseous, smooth. Silvery with a round dark spot at the base of the dorsal rays and another at the tip of the tail. Flanks with a bluish lustre. Anal and pelvic fins brick red in mature males. Opercle shot with gold. A scarlet red band develops along the middle of either side in males during the breeding season. Less distinct in females (Rahman, 2005).

Habit and Habitat: Voracious eaters of floating organisms and aquatic plants. Can breed everywhere in its habitat during the rainy season. Inhabit rivers, streams, ponds and paddy fields.

Distribution: Recorded from Chalan Beel, Natore; Lawachara, Sreemangal; Kirtankhola, Barishal; Padma River, Rajshahi; Jafong, Madhobkundo, Taherpur, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulovibazar; Buriganga River, Dhaka; Keshobpur, Jessore; Jamuna River, Tangail; Itna Haor, Munshigonj, Sundarban, Satkhira, Khulna; Charfasson, Bhola; Old Brahmaputra River, Mymensing; Kuhuri River, Muhuri River, Feni; Surma River, Bhairab, Sunamgonj; Bangshai River, Madhupur, Tangail, Ubdhakhali river, Netrokona.

Economic importance: Commercially important.

Ecological role: By consuming floating organisms and aquatic plants it keeps the water surface clean where it lives.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: KX455895.1

>KX455895.1 *Puntius sophore* voucher ZMUD:080 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AACCACAAAGACATTGGCACCTTTATCTTGATTTGGTGCCTGAGCCGGAATAGTAGGAACCGCCCTGA
GTCTCCTTATCCGAGCTGAACCTAAGTCAACCAGGATCACTCCTAGGTGATGATCAAATTTATAATGTTAT
CGTCACTGCCACGCCTTCGTAATAATTTCTTTATAGTTATGCCCATCCTAATTGGGGGATTTCGGAAAT
TGATTAGTTCCACTAATAATTGGAGCCCCGACATAGCATTCCCACGAATAAATAACATAAGTTTCTGAC
TTCTTCTCCATCATTCTATTACTATTAGCTTCTTCTGGGGTTGAAGCCGGGGCAGGAACAGGGTGAAC
AGTTTATCCGCCTTAGCGGGAAATTTAGCCACGCTGGAGCATCCGTAGACCTGACAATCTTTCACTT
CATTTAGCAGGTGTTTCATCAATTCTGGGGCAATTAATTTTACTACAACCATTAATATGAAACCCC
CAGCCATTACCAATATCAAACACCACTATTCGTCTGATCCGTACTTGTAACTGCTGTCTTACTCCTACT
ATCACTACCAGTTTATGCCGAGGTATTACAATACTTCTAACAGATCGAAACCTTAACACCACATTCTTT
GACCCAGCAGGGGGAGGAGACCCAATCCTTACCAACACTTATTCTGATTCTTTGGCCACCCG
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39. *Puntius terio* (Hamilton, 1822)

Synonyms: *Cyprinus terio* Hamilton, 1822, *Fishes of the Ganges*, p. 313; *Systomus terio* Bleeker, 1853, *Verh. Bat. Gen.* 25: 62; *Barbus terio* Day, 1878, *Fishes of India*, p. 580;

English names: One Spot Barb

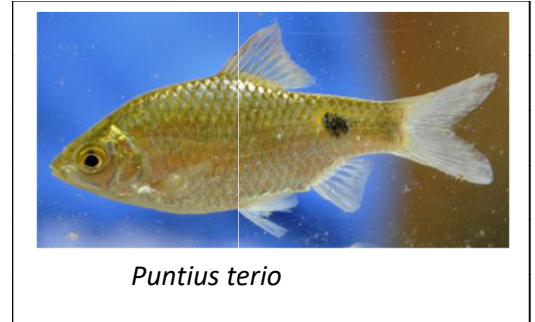
Local names: Teri Punti

Fin Formula: D. 3/8; P₁. 13; P₂. 9; A. 8

TL: 5.47 cm; **SL:** 4.14 cm

Description: Body deep and compressed. Dorsal profile more convex than that of the abdomen. Barbel absent. Mouth moderate. Dorsal fin originates midway between the tip of the

snout and the base of the caudal fin. Its last unbranched ray osseous, smooth, nearly as long as the head. Pelvics originate below that of the dorsal. Lateral line incomplete, ceasing after 4 to 7 scales; 22 or 23 scales in the longitudinal series. Scales medium. Upper side yellowish-silvery. A large black blotch at the middle of the side over the anal fin. A black transverse mark immediately behind the gill covers. Fins hyaline or delicate yellowish. Each scale having a number of fine black dots. Reddish-orange spot on the operculum, a fine dark line between the body spot and the base of the caudal fin. Male yellowish all over and its anal and pelvic fins are touched with orange. Female silvery with clear fins. During the breeding season, the males become orange in colour. Largest size of 9 cm has been reported (Talwar and Jhingran, 1991).



Habit and Habitat: Benthopelagic, feeds mainly on diatoms, algae, crustaceans, insects and mud-sands. Inhabits rivers, pools, streams, beels, canals, ponds, ditches and inundated fields. Occurs in standing water over silt and mud.

Distribution: Recorded from Tanguar Haor, Lawachara, Sreemangal, Kaptai lake, Shuvolong, Rangamati, Hakaluki Haor, Sunamganj, Hamham waterfall, Moulovibazar, Bandarban, Dudhpukuria, Dhopachari, Halda River, Karnafuli River, Chittagong, Kaptai, Rangamati, Taherpur, Sylhet, Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing, Khagrachori, Kuhuri River, Muhuri River, Feni, Madhupur, Tangail, Mymensing.

Economic importance: Not a commercially important species.

Ecological role: By controlling algae and diatoms, it keeps the habitat clean where it lives.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: KX455896.1

>KX455896.1 *Puntius terio* voucher ZMUD:081 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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ACTGCTCAGCCTTCGTAATAATTTCTTTATAGTTATGCCTATTTAATTGGTGGGTTGGAACTGAC
TAGTTCCTACTAATAATTGGAGCCCCTGATATAGCATTTCCACGAATAAATAACATAAGTTTTTGACTTCT
TCCACCATCATTCTGCTTCTATTAGCCTCCTCTGGGGTTGAAGCCGGGGCAGGAACAGGGTGAACAGTA
TATCCACCCCTGGCAGGAACTGGCCCATGCTGGAGCATCAGTAGACTTAAACAATCTTTCACTTCACT
TGGCAGGTGTTTCATCAATCTTGGAGCAATTAATTTTATTACCACAATTAATATAAAACCCCCAGC
CATTACCCAGTATCAAACACCTCTATTCGTATGATCTGACTTGTAACTGCCGTGCTGCTCCTATTATCA
CTACCCAGTACTAGCCGAGGTATTACAATGCTTCTAACGGATCGAAATCTTAATACTACATTCTTTGACC
CAGCGGGGAGGAGGAGACCCAATCCTTTATCAACACTTATTCTGATTCTTTGGCCACCC
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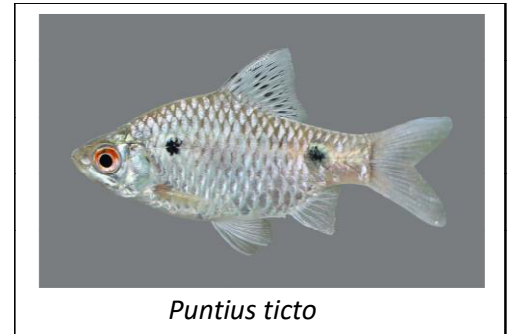
40. *Puntius ticto* (Hamilton, 1822)

Synonyms: *Cyprinus ticto* Hamilton, 1822, *Fishes of the Ganges*, p. 314; *Systemus ticto* McClelland, 1839, *Asiat. Res.* 19: 382; *Puntius punctatus* Day, 1865, *Proc. Zool. Soc. Lond.*, p. 302.

English names: Ticto Barb, Firefin Barb, Two-spot Barb

Local names: Tit Puntj, Tita Puntj

Fin formula: D 3/8; P₁15; P₂ 9; A 3/5



Description: Body oblong, mouth small, terminal. Depth of body less than one-third of the standard length. Barbel absent. Dorsal fin inserted behind the pelvic fin origin, its last unbranched ray osseous, fairly strong and serrated at its posterior edge. Lateral line incomplete. Color of the back grey to grassy-green, flanks brilliant shining silver, belly whitish. Two black spots, a smaller one near the commencement of the lateral line above the pectoral fin on scale 3 and a larger one behind the base of the anal involving scales 18-21.

Habit and Habitat: Feeds on plants, benthic invertebrates and insects. Browses close to the substrate in shallow waters. Still, shallow, marginal waters of tanks and rivers, mostly with muddy bottoms.

Distribution: Recorded from Lawachara, Sreemangal; Thanchi, Bandarban; Cox's Bazar, Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Charfasson, Bhola, Kuhuri River, Muhuri River, Feni; Surma River; Bhairab, Sunamgonj; Madhupur, Tangail.

Relative abundance: Common.

Economic importance: The species is of minor commercial importance.

Ecological role: Controls water pollution. Plays an important role in the aquatic ecosystem.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

41. *Rasbora rasbora* (Hamilton, 1822)

Synonyms: *Cyprinus rasbora* Hamilton, 1822, *Fishes of the Ganges*, p. 329; *Rasbora buchhanani* Day, 1878, *Fishes of India*, p. 584.

English name: Gangetic Scissortail Rasbora

Local names: Darkina, Leuzza Darkina

Fin formula: D 2/7; P₁ 15; P₂ 9; A 2/5



Description: Abdominal profile more convex than the dorsal profile. Cleft of mouth oblique, maxilla extends below the anterior margin of the eyes. Prominences and emarginations of the jaws well-defined. Lateral line concave, running above the lower half of the sides and with 27-29 scales. Dorsal fin arises midway between the anterior margin of the eye and the base of the caudal fin. Pelvics originate about midway between the snout and the caudal base (Rahman, 2005). Colour olive-brown above, silvery below, a blue-black iridescent lateral stripe from the head to the base of the caudal fin, latter with a sharply defined black tip, other fins yellowish (Talwar and Jhingran, 1991).

Habits and Habitat: Benthopelagic. Sometimes forms large schools. Surface feeder, mainly feeds on

aquatic insects and detritus. Occurs in a variety of habitats: haors, streams and rivers.

Distribution: Recorded from Kaptai lake, Shuvolong, Rangamati; Shyamnagar, Satkhira; Charfasson, Bhola, Barishal and Kohua River, Muhuri River, Feni..

Economic importance: Not a commercial species. Caught in small quantities along with other catches from rivers, canals and haors.

Ecological role: Food of predator fishes. It can control the insect population and algal bloom on the surface layer of the aquatic environment. By eating aquatic detritus it keeps the water clean.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

42. *Salmophasia bacaila* (Hamilton, 1822)

Synonyms: *Cyprinus bacaila* Hamilton, 1822, *Fishes of the Ganges*, p. 265; *Chela phulo* Day, 1878, *Fishes of India*, p. 603; *Salmostoma bacaila* Banareescu, 1968, *Revue roum. Biol. (Zool.)*, 13(1): 4.

English names: Large Razorbelly Minnow.

Local names: Katari, Narkalichela

Fin Formula: D 2/8; P₁ 13; P₂ 9; A 2/12



Description: Abdominal edge keeled from below the pectoral to the anus. Mouth oblique, lower jaw longer; a prominent knob at the symphysis of the lower jaw. Maxillary extends below the first fourth of the eye. Sub-orbital bones broad, nearly covers the cheek. Lateral line concave. Pectorals longer than the head. Pelvics nearer to the anal origin than to the pectoral origin. Body bright silvery with back greenish. A light grey lateral band may exist in some juveniles (Rahman, 2005).

Habits and Habitat: Benthopelagic, potamodromous, widely distributed in the lower reaches of rivers, ponds, beels, ditches and canals throughout Bangladesh. Surface feeder and feeds mainly on aquatic insects and detritus. It has the habit of jumping above the water surface. Rivers, ponds, beels, ditches and canals throughout Bangladesh.

Distribution: Recorded from Chalan Beel, Natore; Lawachara, Sreemangal; Jaflong, Madhobkundo, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulovibazar; Punarvaba River, Dinajpur; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khuln; Charfasson, Bhola; Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Kuhuri River, Muhuri River, Feni; Pungli River, Tangail.

Economic importance: Not a commercial species.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT364775.1

>gi|915195146|gb|KT364775.1| *Salmophasia bacaila* voucher DUZM087 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GCCCACGCCTTCGTAATAATCTTCTTTATAGTAATGCCAATCCTCATTGGGGGATTTGGAAACTGGCTAG
TACCTTTAATGATCGGGGCCAGACATGGCATTCCCCGAATGAACAACATAAGTTTCTGACTTCTACC
CCCATCATTCTCTGCTTTTAGCCTCTTCAGGTGTAGAAGCCGGTGCCGGAACAGGGTGAACAGTTTAT
CCCCACTGGCGGGTAACCTGGCACACGCAGGTGCATCAGTAGATCTAACAATCTTCTCCCTCCACCTGG
CAGGTGTATCATCAATTCTAGGGGCAATTAACCTCATTACGACAATTAATATGAAACCCCCAGCCAT
TTCCAGTACCAGACTCCATTGTTTGTCTGAGCAGTTCTTGTAAACGGCAGTCCTGCTTCTCTATCACTA
CCAGTGCTAGCCGAGGAATTACAATACTCCTTACGGATCGAAATCTTAATACCTCATTCTCGACCCCG
CAGGAGGAGGAGATCCCATCCTTTACCAACACCTGTTTTGATTCTTTG
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43. *Salmostoma phulo* (Hamilton, 1822)

Synonyms: *Cyprinus phulo* Hamilton, 1822, *Fishes of the Ganges*, p. 262; *Chela phulo* Day, 1878, *Fishes of India*, p. 602; *Oxygaster phulo* Rahman, 1974, *Bangladesh J. Zool.* 13(1): 5.

English names: Finescale Razorbelly Minnow

Local names: Fulchela

Fin Formula: D. 9; P₁. 11; P₂. 8; A. 18

TL: 6.66 cm ; **SL:** 5.57



Salmostoma phulo

Description: Body elongated, laterally compressed. Abdominal edge keeled from below the pectoral to the anus. Mouth directed upward, maxilla not quite reaching the front margin of the eyes. Lateral line concave. Origin of the dorsal above the origin of the anal with some variations in either direction. Pectorals longer than the head, pelvic origin nearer to the anal origin than to the pectoral origin. Pectorals and pelvics with maxillary scales. Lower lobe of caudal longer. Colour silvery with a bright silvery lateral band (Rahman, 2005).

Habit and Habitat: Benthopelagic, Inhabits in rivers, ponds, beels, ditches and canals throughout Bangladesh. This species is a surface-feeder and feeds mainly on aquatic insects and detritus.

Distribution: Recorded from Chalan Beel, Natore; Lawachara, Sreemangal; Tanguar Haor, Sunamgonj; Jaflong, Madhobkundo, Sylhet; Kaptai, Rangamati; Dudhpukuria, Dhopachari, Halda River, Karnafuli River, Chittagong; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Taherpur, Sylhet; Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Kuhuri River, Muhuri River, Feni; Surma River, Bhairab, Sunamgonj; Haoda Beel, Madhupur, Tangail. **Economic importance:** Not a commercial species.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT364758.1

>gi|915195112|gb|KT364758.1| Salmophasia phulo voucher DUZM088 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TACCCCTGATAATTGGGGCCCCAGATATAGCATTCCCGAATAAATAATATGAGCTTCTGGCTTCTACC
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CCGCCGTTAGCGGTAATCTAGCCCACGCAGGAGCATCAGTAGACCTAACAACTTCTCCTCCACTTAG
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CTCCAATACCAAACCCCGCTATTCGTTTGAGCCGTGCTTGTAACAGCCGTCCTTCTTCTACTATCGTTA
CCAGTTTTGGCCGCGGGGATCACAATGCTTCTAACAGATCGAAATCTCAATACCTCATTCTTTGACCCAG
CAGGAGGAGGAGACCCCATCTTATATCAACATTTATTCTGATTCTTTGG
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44. *Securicula gora* (Hamilton, 1822)

Synonyms: *Cyprinus gora* Hamilton, 1822, *Fishes of the Ganges*, p. 268; *Opsarius pholicephalus* McClelland, 1839, *Asiat. Res.*, p. 415; *Chela gora* Günther, 1868, *Cat.*

Fish. Brit. Mus. 7: 332.

English name: Gora-chela

Local name: Ghora Chela



Fin Formula: D 3/7; P₁ 14; P₂ 8; A 2/16.

Description: Body fairly elongate and compressed. Abdominal edge keeled from below the pectoral to the anus. Lower jaw with prominent symphyseal knob (Rahman, 2005). Mouth oblique, its cleft extending to front edge of the eye. Maxilla reaches below middle of the orbit; lower jaw longer. Dorsal fin short, inserted slightly in advance of the origin of the anal fin. Pectoral strong, well-built, much longer than the head. Pelvic origin nearer to the anal origin than to the pectoral origin. Pectorals and pelvics with well-developed axillary scales. Lower lobe of the caudal longer. Scales minute; lateral line concave. Body bright and uniform silvery.

Habit and Habitat: Surface feeder, predatory in nature and feeds regularly on insects, insect larvae, crustaceans, etc. Occurs in ponds, canals, beels and rivers in the middle and lower reaches.

Distribution: Recorded from Lawachara, Sreemangal; Sundarban, Khulna; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Charfasson, Bhola, Tanguar Haor, Sunamganj; Taherpur, Sylhet; Kuhuri River, Muhuri River, Feni; Madhupur, Tangail; Mymensing.

Relative abundance: Common.

Economic importance: Of no commercial interest.

Ecological role: Controls insect population in the aquatic ecosystem.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank: MG969526.1

>MG969526.1 *Securicula gora* voucher DUZM089 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCTATATCTCGTATTTGGTGCTTGAGCGGGCATAGTAGGAACCGCCCTTAGCCTCTTAATCCGGGCTGAA
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TGATAATTTTCTTTATAGTTATACCAATCCTCATCGGGGGCTTTGGCAACTGATTAGTGCCTCTTATGAT
TGGGGCCCCAGACATAGCATTTCTCGAATAAATAATATAAGCTTCTGATTATTGCCCCATCATTCCTT
CTACTTCTAGCCTCCTCGGGCGTAGAAGCTGGTGCCGGGACAGGGTGGACAGTATACCCACCACTCTCAG
GGAATCTGGCACACGCAGGAGCATCAGTAGACCTAACGATCTTCTCTCTACCTAGCAGGTGTGTCATC
CATCCTCGGAGCAATCAACTTTATTACCACAATAAATGAAACCCCGCCATCTCTCAGTATCAG
ACTCCCTATTTGTGTGGCCGTGCTTGTAAACAGCCGTTCTACTTTTACTGTCGCTCCAGTTCTGGCTG
CAGGGATCACCATGCTTCTACAGATCGAAACCTCAACACTTCTTTCTTTGACCCGGCAGGGGGAGGAGA
CCCATCCTTTACCAACACCTATTC
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45. *Systemus sarana* (Hamilton, 1822)

Synonyms: *Cyprinus sarana* Hamilton, 1822, *Fishes of the Ganges*, p. 307; *Barbus deliciosus* McClelland, 1839, *Asiat. Res.*, pp. 217-471; *Barbus sarana* Day, 1878, *Fishes of India*, p. 560; *Barbus (Puntius) sarana* Bhuiyan, 1964, *Fishes of Dacca*, p. 33; *Puntius sarana* Rahman, 1974,

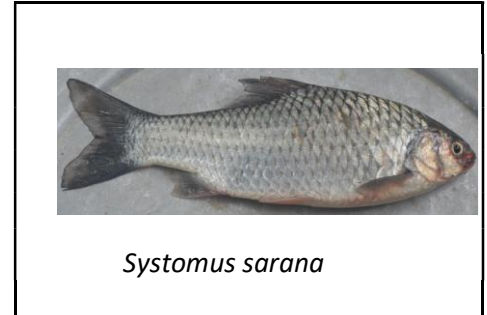
Bangladesh J. Sci. Ind. Res. 9(3-4): 151.

English name: Olive Barb

Local names: Sar Punt, Sarna Puti, Saral Punt, Kurti

Fin formula: D 3/8; P₁ 15; P₂ 9; A 3/5

Description: Body deep, moderately compressed. Mouth terminal.



Dorsal profile elevated. Barbel 2 pairs, rostral as long as the orbit, maxillary a little longer. No pores on the snout. Post-labial groove narrowly interrupted at the middle. Lateral line complete, with 32-34 scales. Last unbranched ray of the dorsal strongly osseous and finely serrated along its posterior edge. Origin of the dorsal slightly nearer to the snout tip than to the caudal base. Pectoral nearly as long as the head excluding the snout. Pelvics originate below the origin of the dorsal. Silvery, darker on the back; opercle with a gold shot; sometimes a small dot behind the gill-opening. Fins greyish-white (Rahman, 2005).

Habit and Habitat: Benthopelagic, potamodromous Occurs in rivers, lakes, beels and other freshwater areas in Bangladesh.

Distribution: Recorded from Tanguar Haor, Itna Haor, Lawachara, Sreemangal; Hakaluki Haor, Sunamganj; Hamham waterfall, Moulvibazar; Buriganga River, Dhaka; Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna, Taherpur, Sylhet and Bhairab, Sunamgonj.

Relative abundance: Common.

Economic importance: *S. sarana* is a species of minor commercial importance.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank Accession No. : KT364773.1

>gi|915195142|gb|KT364773.1| *Systemus sarana* voucher DUZM079 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCTATATCTCGTATTTGGTGCCTGAGCCGGAATAGTGGGAACCGCCTTAAGCCTTCT
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TACCACTAATAATTGGAGCCCCAGATATAGCATTTCACGAATAAATAACATAAGCTTCTGACTACTACC
TCCATCGTTCCTCTACTTCTGGCCTCTCCGGGGTAGAAGCAGGGGCAGGAACAGGTTGAACAGTATAC
CCACCCCTTGACAGGAACTAGCCACGCAGGGGCATCAGTAGACCTAACTATTTCTACTGCATTTAG
CAGGTGTTTCATCAATCCTTGGGGCAATTAATTTTATTACCACAATAAATAAAAACCCAGCTAT
TTCTCAATATCAAACACCATTATTCGTTTGATCTGTACTTGTAACTGCCGTACTACTTCTACTCTCACTA
CCAGTACTAGCCCGGGAATTACAATACTTCTAACAGACCGAAACCTTAACACCACATTCTTCGACCCTG
CAGGAGGAGGAGACCAATCCTTTACCAACATCTATTCTGATTCTTTGG
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46. *Tor putitora* (Hamilton, 1822)

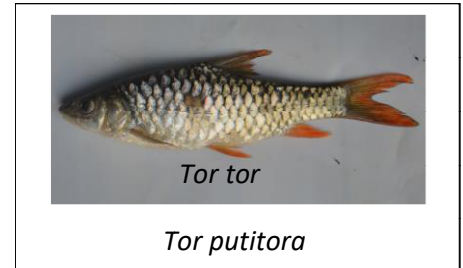
Synonyms: *Cyprinus putitora* Hamilton, 1822, *Fishes of the Ganges*, p. 303; *Barbus macrocephalus* McClelland, 1839, *Asiat. Res.*, p. 270; *Barbus mosal* Günther, 1868, *Cat. Fish. Brit. Mus.* 7: 130.

English names: Putitor Mahseer, Golden Mahseer

Local names: Mohashol, Putitor Mahseer

Fin formula: D 2/9; P¹ 15; P₂ 9; A 2/5

TL: 21 cm; **SL:** 15.8 cm



Description: Dorsal profile arched in immature specimens. In mature fish dorsal and ventral profiles nearly straight. Mouth small, gape does not extend below to the anterior margin of the eye, upper jaw slightly longer. Lips thick, fleshy, lower with an uninterrupted posterior groove forming a median lobe. Barbel 2 pairs, well-developed. Last unbranched ray of the dorsal osseous, strong, smooth posteriorly. Dorsal originates midway between the snout tip and the caudal base. Pectorals as long as or slightly longer than the head excluding the snout. Anal does not reach the base of the caudal. A well-developed scaly appendage in the axil of each pelvic fin. Lateral line complete, 25-26 scales along the lateral line, 7 rows in the transverse series; 2.5 rows between the lateral line and the pelvic base, 4.5 rows in between the lateral line and the dorsal origin, 8-9 rows before the dorsal. Greenish-silvery above, silvery shot with gold in the sides. Scales golden with dark bases formed of minute black dots. Fins yellow. Largest recorded size in India is 2.7 m (Talwar and Jhingran, 1991).

Habit and Habitat: Omnivorous, feeding on fish, phytoplankton, zooplankton, insects, molluscs, dipteran larvae and plant matter. Inhabits streams, riverine pools and lakes. **Distribution:** Surma river basin, Bhairab, Sunamgonj.

Relative abundance: Very rare.

Economic importance: Commercial and a very attractive sport fish with excellent food value.

Ecological role: Plays a vital role in the biological control of planktons in the ecosystem where it lives.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank: KT762361.1

>KT762361.1 *Tor putitora* voucher DUZM090 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCCCTTTATCTTGTATTTGGTGCCTGAGCCGGAATAGTGGGAACCGCCTTAAGCCTTC
TCATCCGGGCTGAACTAAGCCAGCCCGGATCGCTTCTAGGTGATGACCAAATTTATAATGTTATCGTCAC
TGCTCACGCCTTCGTAATAATCTTCTTTATAGTAATACCCATTCTCATTGGGGGATTTGGAACTGGCTT
GTGCCACTAATAATTGGGGCCCCAGACATGGCGTTCCCAGTATAAATAACATAAGCTTTTGACTACTAC
CCCCATCTTTCTTCTACTAGCCTTCCGGCGTTGAAGCTGGAGCTGGGACAGGGTGAACAGTTTA
TCCACCTCTTGAGGCAACCTAGCCCATGCAGGAGCATCAGTAGATCTAACAATCTTTCACTCCACTTA
GCAGGTGTCTCATCAATTCTGGGGCAATTAACCTTTATTACTACAACAATTAACATAAAACCCCCAGCTA
TTTCCAATATCAAACACCTTTATTTGTTTGATCCGTAATTGTAACCGCGTACTACTACTCTATCATT
GCCAGTTCTAGCCGCTGGGATTACAATACTTCTAACAGACCGAAACCTTAACACTACATTCTTTGACCCA
GCAGGTGGAGGAGACCCAATTCTATATCAACACCTATTCTGATTCTTTGGCCACC
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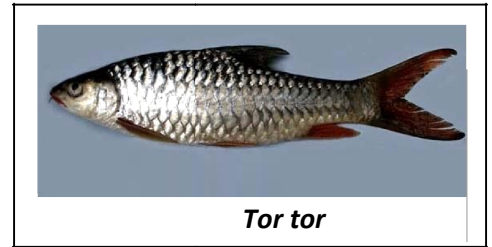
47. *Tor tor* (Hamilton, 1822)

Synonyms: *Cyprinus tor* Hamilton, 1822, *Fishes of the Ganges*, pp. 305, 388; *Barbus (Tor) tor* Hora, 1941, *J. Bombay Nat. Hist. Soc.* 41: 518; *Tor tor* Menon, 1954, *Rec. Indian Mus.* 52: 22.

English names: Tor Mahseer, Mahseer

Local names: Mohashol, Mohal

Fin formula: D 3/9; P₁ 16; P₂ 9; A 2/7



Description: Body stout and fairly deep. Head relatively small. Eyes visible from the underside of the head (Talwar and Jhingran, 1991). Dorsal profile arched. Mouth small, its gape does not extend below the eye. Lips thick, fleshy. Lower lip

Distribution: Chittagong Fish Ghat.

Relative abundance: Very Rare.

Economic importance: Caught in small quantities and marketed in cities.

Ecological role: As a voracious feeder of submerged plants, the species plays an important role in the biological control of aquatic weeds in the ecosystem.

Status and conservation: Considered as CR in the Red list of IUCN Bangladesh (2015).

48. *Acanthocobitis botia* (Hamilton, 1822)

Synonyms: *Cobitis botia* Hamilton, 1822; *Acanthocobitis longipinnis* Peters, 1861; *Nemacheilus botia* Günther, 1868.

English names: Mottled Loach, Zipper Loach, Sand Loach

Local names: Bilturi, Natwa, Balichata

Fin formula: D 2/11; P₁ 10; P₂1/7; A 1/5



Acanthocobitis botia

Description: Body slender; cylindrical anteriorly, compressed posteriorly. Dorsal profile slightly arched, ventral profile flat. Eyes small, not visible from the underside of the head. Dorsal fin inserted ahead of the pelvic fin. Edge of the dorsal fin straight, nearly as long as the head, reaching below the origin of the dorsal. Caudal fin slightly emarginate. Scales continuous, imbricate, considerably reduced on the breast. Lateral line usually complete. Live specimens are light olive to yellowish-orange with 10-14 blackish irregular bands descending from the back and ending in dark spots below the lateral line. Five to six longitudinal rows of spots on the dorsal fin; caudal fin with 5 posteriorly directed >-shaped dark bands. A black ocellus at the upper corner of the caudal base. A narrow dark band from the snout tip to the anterior margin of the eye. (Talwar and Jhingran, 1991).

Habit and Habitat: The usual habitat is small, shallow, swift, clear, cool streamlets. Feeds on zoobenthos and insect larvae.

Distribution: Recorded from Chalan Beel, Halti Beel, Natore; Padma River, Rajshahi; Lawachara, Sreemangal; Madhabkundo, Derai Haor, Sylhet; Tanguar Haor, Sunamgonj; Sundarban, Satkhira, Khulna; Haoda Beel, Madhupur, Tangail.

Relative abundance: Common.

Economic importance: The species is of minor commercial importance.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT762380.1

>gi|959006875|gb|KT762380.1| *Acanthocobitis botia* voucher DUZM095 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCCCTTTATTTAGTATTCGGTGCCTGAGCCGGAATAGTCGGTACTGCCTTAAGCCTGC
TCATTCGAGCTGAACTAAGCCAACCGGGTCACTTCTAGGCGACGACCAAATTTACAACGTAATTGTTAC
GGCGCATGCCTTCGTTATAATCTTCTTTATAGTAATACCTATCCTCATCGGAGGGTTTGAAATTGACTT
GTACCACTAATAATCGGTGCGCAGATATGGCGTTCCCCGAATAAATAACATAAGCTTCTGGCTTCTGC
CCCCCTCCTTCTTCTTATTAGCCTCATCAGGGGTAGAGGCTGGGGCCGGGACAGGATGAACCGTGTA
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GCAGGTGTATCTTCATCCTTGGTGCCATCACTTTATTACAACAATAAATAACATAAAAACCCCGCTA
TTTCTCAATACCAAACCCCTTTATTTGTGTGGGCAGTCCTTGTAACCGCTGTCCTACTACTCTTATCACT
CCCCGTCTAGCCGCCGATTACAATGCTTTAACTGACCGAAACCTAAATACCACATTCTCGATCCC
GCTGGAGGAGGAGACCCAATTCTTACCAACACTTATTCTGATTCTTTGGCCACC
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49. *Schistura savona* (Hamilton, 1822)

Synonyms: *Cobitis savona* Hamilton, 1822, *Fishes of the Ganges.*, p. 357; *Schistura savona* McClelland, 1839, *Asiat. Res.* 19: 303; *Nemachilus savona* Günther, 1868, *Cat. Fish. Brit. Mus.* 7: 354; *Noemacheilus savona* Menon, 1974, *Inland Fish. Soc. India Spl. Pub.* 1: 57.

English names: Savona Loach, Half Banded Loach, Bicolor Loach

Local names: Savon Khoraka

Fin Formula: D 2/8; P₁ 10; P₂ 7; A 6



Description: Slender, dorsal profile greatly arched, ventral profile concave. Head and body compressed. Mouth small, crescentic, surrounded by thin lips. Lower lip not notched at the middle. Eyes large, situated at the middle of the head touching the dorsal surface. Barbel 3 pairs, 2 rostral and 1 maxillary pairs, about equal in size. Dorsal origin slightly nearer to the snout tip than the caudal base. Pelvics originate a little behind the dorsal. Dorsal goes above the anterior base of the anal. Pelvics with a small appendage. Posterior edge of the dorsal rather convex. Caudal forked. Brownish above, yellowish below; 10-12 very narrow vertical white bands on the body. Base of the caudal black. Bands only one-sixth in width of the ground colour (Rahman, 1989).

Habit and Habitat: Bottom dwellers, mainly omnivorous, generally feeds on mosquito larvae, shrimps, tubifex, daphnia and some algae. Occurs in rapid streams with bottoms of rocks and stones. They hide underneath the rocks for their protection. Dahuki River along the Sylhet-Jaflong highway is the ideal habitat for the species.

Distribution: Recorded from Tanguar Haor, Jaflong & Madhobkundo, Sylhet, Bandarban, Halda River, Karnafuli River, Chittagong, Kaptai, Rangamati, Pekuabeel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing.

Economic importance: Of no interest to fisheries.

Ecological role: It is an omnivorous species and consumes benthic organisms underneath the rocks and boulders and thereby keep the aquatic habitat clean.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

50. *Paracanthocobitis abutwebi* R. A. Singer & Page, 2015

English names: Hillstream Zipper Loach

Fin Formula: D. II/11; P₁. 13; P₂. 8; A. I/6

TL: 7.9 cm **SL:** 6.55cm



Description: Body depth more or less uniform, slightly deeper at dorsal-fin origin. Color pattern consists of 10–13 small dorsal saddles not extending to lateral line and becoming closer together toward head, sometimes with small spots or dashes between saddles. Ten to 16 dark spots along lateral line, extending onto lower side but not onto venter. Speckled pattern on upper side sometimes extending onto lateral line. Round black spot in ocellus near dorsal margin of caudal peduncle; 4–5 dark bands on caudal fin (Singer, 2015).

Habit and Habitat: Demersal, Found in specially hill streams.

Distribution: Recorded from Lawachara, Sreemangal; Banshkhali, Chittagong; Jaflon, Madhobkundo, Taherpur, Sylhet; Surma River, Bhairab, Tanguar Haor, Hakaluki Haor, Sunamganj; Bandarban, Duhdpukuria, Dhopachari, Kaptai, Rangamati; Halda River, Karnafuli River, Chittagong; Someshwari River, Chellakhali River, Sherpur; Old Brahmaputra River, Mymensing; Khagrachori; Madhupur, Tangail, Mymensing; Padma River; Rajshahi; Humhum waterfall, Moulvibazar, Ubdhakhali river, Netrokona.

Relative abundance: Common.

Economic importance: Of minor importance on fisheries.

Ecological role: It is an insectivorous species. Found in the hill stream habitat.

Status: Considered as DD (Present study).

51. *Botia dario* (Hamilton, 1822)

Synonyms: *Cobitis dario* Hamilton, 1822, *Fishes of the Ganges*, p. 354; *Cobitis geto* Hamilton, 1822, *Fishes of the Ganges*, p. 355; *Diacanthus flavicauda* Swainson, 1839, *Nat. Hist. Fish.* 2: 310; *Botia dario* Day, 1878,

Fishes of India, p. 606.

English names: Necktie Loach, Queen Loach, Bengal Loach

Local names: Rani

Fin Formula: D. 12; P₁. 14; P₂. 8; A.8



Description: Abdominal profile keeled from the pelvic origin to the anus. Lateral line curved downwards. Four rows of scales between the lateral line and the base of the pelvics. Predorsal. Dorsal fin originates from above the middle of the anal base. Pelvics with an elongated first ray extending to the middle or even to the end of the anal. Caudal with equal lobes. Pelvic origin nearer to the pectoral origin than to anal origin. Colour brilliant silver, back light olive, belly whitish. A shining greenish longitudinal band on the sides (Rahman, 2005).

Habit and Habitat: : In aquariums, they prefer foods such as worms, small shrimps, snails, etc. but will accept flaked and sinking foods as well. They are not usually nocturnal but prefer rocks or plants to rest their eyes. According to the fishbase sources, this loach eats about 30 times of its body weight each year. They can grow up to 15 cm in the wild, and perhaps in a large aquarium But like most loaches, aquariums may retard their natural growth. Found wild in the rolling mountain streams of Bangladesh. They can be found in the creeks and streams of the northern and eastern regions of the country (bordering India and Myanmar), and are also known in India. The fish most likely populates the streams that supply the Bengal section of the Ganges River. *B. dario* is also reported in Bhutan, but only in the Gaylephug River, which eventually drains into the far north of Bangladesh. Inhabits the of stagnant streams, ponds and tanks.

Distribution: Recorded from Banskhali, Chittagong, Rangamati; Jaflong, Madhobkundo, Taherpur, Sylhet, Tanguar Haor, Hakaluk Haor, Sunamganj; Humhum waterfall, Moulvibazar; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Surma River, Bhairab; Madhupur, Tangail, Mymensing, Kangsha River, Netrokona.

Relative abundance: Fairly common.

Economic importance: Not a commercial species.

Ecological role: Controls the snail population in the aquatic ecosystem where it lives.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank: KY124374.1

>KY124374.1 *Botia dario* voucher DUZM0102 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CTTTATTTAGTATTTGGTGCCTGAGCCGGAATAGTTGGCACAGCCCTCAGCCTTTAATTCGAGCTGAAC
TCAGCCAACCCGGTCCCTTCTAGGTGATGATCAAATTTACAACGTTATCGTCACTGCACATGCTTTCGT
TATAATTTCTTTATAGTAATACCAATCCTTATTGGGGGATTCGGGAAGTACTCCTTCCACTTATAATT
GGAGCCCCTGACATAGCATTCCCTCGAATAAATAATATAAGCTTTTGACTTCTCCCACCATCTTTTCTTC
TCCTTTTAGCATCCTCTGGTGTGCGAAGCTGGGGCCGGAAGTGGTTGAACAGTATACCCACCACTTGCTGG
CAACTTAGCCACGCAGGAGCATCCGTAGACTTAACTATTTTTCTACTACACTTAGCAGGAGTTTCATCT
ATTTTAGGAGCAATCAATTTTATTACCACATCCATCAACATGAAACCCCAAGCTATTTCTCAATACAAA
CACCATTATTCGTGTGAGCTGTACTGTAAACAGCAGTCTATTACTTTTATCCCTACCAGTGCTAGCTGC
CGGAATTACAATACTGTAAACAGACCGTAATTTAAATACAACATTCTTTGACCCCGCCGGAGGGGGTGAC
CCAATTCTTTACCAACACTTATTCTG
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52. *Botia lohachata* (Chaudhuri, 1912)

English name: Y-loach

Local names: Rani, Putul, Beti

Fin formula: D 2/9; P₁ 14; P₂ 8; A 2/5



Description: Body moderately compressed. Mouth small, inferior. Suborbital spine strong, bifid, extending below the posterior edge of the orbit. Barbel 4 pairs, 2 rostral, 1 maxillary and 1 mandibular pairs. Base of the rostral barbels close together. Maxillary and rostral barbels almost equal, mandibular pair shorter. Sub-orbital spine in a groove below the eye. Origin of the dorsal equidistant from the snout tip and the caudal base. Pelvics originate a little behind the dorsal. Caudal forked. Scales minute, hardly noticeable. Lateral line present. Body yellowish. A broad anteriorly tapering black band on the upper surface of the snout from above the eye to the base of rostral barbels. A round black blotch in interorbital space; 4 Y-shaped transverse bands run from the back to the abdomen and transverse bar or blotch at centre between every two bands. Dorsal with 1 or 2 and caudal with 2 or 3 cross bands (Rahman, 2005).

Habit and Habitat: Oviparous. Primarily nocturnal. Feeds on worms, snails, small fish, etc. Inhabits creeks with rocky and sandy bottoms.

Distribution: Recorded from Chalan Beel & Haiti Beel, Natore.

Relative abundance: Very rare.

Economic importance: It is widely used in aquarium trade, but not a commercially important fish.

Ecological role: Plays an important role in controlling the snail population.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank: KX455912.1

>KX455912.1 *Botia lohachata* voucher ZMUD:104 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CGTCACTGCACATGCCTTTGTTATGATTTTCTTATAGTAATACCAATCCTTATTGGGGGATTTCGGAAAC
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TTCTGCCCCATCTTTTCTTCTTCTTAGCATCCTCTGGAGTTGAAGCCGGAGCCGGAACCTGGTTGAAC
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CATTTAGCAGGAGTCTCATCATTTTAGGGGCAATTAATTTATTACCACATCCATTAATATGAAACCTC
CAGCAATTTCTCAATACCAAACACCATTATTTGTATGAGCCGTACTTGTAAACGGCAGTTCTACTGCTTTT
ATCCCTACCAGTACTAGCCGCCGGAATTACAATGCTGTAAACAGATCGTAATTTAAACACAACATTCTTC
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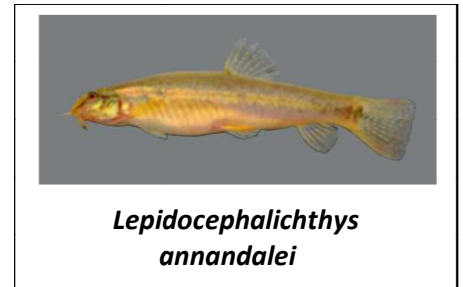
53. *Lepidocephalichthys annandalei* (Chaudhuri, 1912)

Synonyms: *Lepidocephalichthys annandalei* Chaudhuri, 1912, *Rec. Indian Mus.* 7: 442; *Lepidocephalus menoni* Pillai and Yazdani, 1976, *J. Zool. Soc. India* 26: 13; *Lepidocephalus annandalei* Tilak and Hussain, 1981, *Occ. Paper Rec. Zool. Surv. India* 32: 16.

English name: Annandale Loach

Local names: Gutum, Puiya

Fin formula: D 1/7; P1 8; P₂ 6; A 2/5



Description: Body elongate, cylindrical. Snout deeply compressed, curved downward. A bifid spine below the orbit, concealed in skin. Barbel minute, 3 pairs, 2 rostral and 1 maxillary pairs. A membranous flap stretches between the bases of maxillary and the mandibular barbels. Mandibular flap with 2 or 4 barbel-like projections. Pelvics originate a little behind the origin of the dorsal, caudal notched at the middle, lunate. Light brown on the back, silvery on the flanks, white beneath; 9-10 irregular brown blotches along the lateral line. Minute dark brown specks on the upper half of the body. These specks form a series of about 10-11, very short transverse bars on the dorsal ridge. A black streak from the eye to the snout. A deep black spot at the upper base of the caudal. Another characteristic deep black spot (encircled by white ring) at the middle of the outer margin of the caudal rays (Rahman, 2005).

Habit and Habitat: Inhabits clear, swift streams and rivers.

Distribution: Recorded from Padma River; Rajshahi; Tanguar Haor, Sunamgonj.

Relative abundance: Rare.

Economic importance: Of no interest to fisheries.

Ecological role: Controls the population of invertebrates at the bottom of the river.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

GenBank: KY124364.1

>KY124364.1 *Lepidocephalichthys annandalei* voucher DUZM 106 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TTATAATGTCATCGTTACTGCCACGCCTTCGTGATAATCTTTTTATAGTAATACCAATTCTTATTGGC
GGGTTTGGAAATTGATTAATCCTCTCATAATTGGCGCCCTGACATAGCATTCCACGAATAAATAATA
TAAGCTTTGACTCCTGCCCCCTCATTCTTCTTCTATTGGCCTCCTCTGGGGTTGAAGCTGGAGCTGG
AACGGATGGACGTTTACCCTCCGCTAGCAGGAAACCTTGCCACGCCGGCGCATCCGTTGATCTAACA
ATCTTCTCCCTTCACTAGCGGGTGTATCATCCATCCTTGGGGCAATTAACCTTATTACTACAACAATCA
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TCTTACTCTATCACTCCCGTCTTAGCTGCTGGGATTACTATGCTTCTCACAGATCGTAACCTAAAT
ACAACATTCTTCGACCCAGCCGGAGGTGGCGACCCAATTCTTTATCAACACTTATTCTGATTC
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54. *Lepidocephalus berdmorei* (Blyth, 1861)

Synonyms: *Acanthopsis berdmorei* Blyth, 1861, *J. Asiat. Soc. Bengal* 29: 160; *Cobitis berdmorei* Day, 1869, *Proc. Zool. Soc. Bengal* 29: 550; *Lepidocephalichthys berdmorei* Day, 1878, *Fishes of India*, p. 610.

English name: Burmese Loach

Local name: Puiya

Fin Formula: D 2/6; P₁ 8; P₂ 6; A 2/5



Description: Body elongated, slightly compressed anteriorly but strongly compressed posteriorly. Dorsal profile slightly arched, ventral profile nearly straight. Eyes situated just before the middle of the head. Snout curved downward. A bifid spine below the orbit. Mouth small, inferior with thick lips. Barbel 3 pairs, 1 pair each of the rostral, maxillary and mandibular; mental lobe produced posteriorly into three or more short barbel-like projections. Dorsal fin inserted behind the pelvic fin base, much nearer to the caudal fin base than the snout tip. Caudal fins emarginate. Scales small, imbricate, present all over the body; 40 rows between the back and the anal fin; sub-dorsal scales oval. Back light-brown, a row of 10-12 round brown spots on the sides; between back and lateral spots, a row of smaller spots exists, a large black spot on the caudal base. Caudal with 4-7 V-shaped bands, dorsal with 4 rows of black dots. Anal, pectoral and pelvics with few spots, round spots on the head. Largest specimen examined in India was 8 cm in standard length (Menon, 1992)

Habits and habitats: Inhabits hill streams with moderate currents and pebble to stone bottom. Found in clear, swift streams and lakes with sandy bottoms. Burrows quickly in the sand and gravels when frightened. Eats benthic organisms.

Distribution: Recorded from Chengi River, Khagrachhari; Haoda Beel, Madhupur, Tangail.

Economic importance: Puiya is of no interest to fisheries. It might be a potential aquarium fish.

Ecological role: Consumes aquatic detritus from the bottom and keeps the water clean.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

55. *Lepidocephalichthys guntea* (Hamilton, 1822)

Synonyms: *Cobitis guntea* Hamilton, 1822, *Fishes of the Ganges*, p. 353; *Cobitis balgara* Hamilton, 1822, *Fishes of the Ganges*, p. 356; *Lepidocephalichthys guntea* Day, 1878, *Fishes of India*, p. 609

English names: Peppered Loach, Guntea Loach

Local names: Gutum, Puiya

Fin Formula: D 2/6; P1 8-9; P₂ 8; A 2/5



Discription: Body compressed. Dorsal and ventral profile nearly parallel; body deepest near the origin of the dorsal. Barbel 3 pairs, 2 rostral and 1 maxillary pairs; mandibular flaps with barbels. An erectile strong, bifid spine below the orbit. Origin of the dorsal at the centre between the anterior margin of the eye and the caudal base. In some specimens it originates at the centre between the snout tip and the caudal base. Caudal rounded. **Habit and Habitat:** Found in flowing streams or even clear standing waters. In the streams of Mymensing, Sylhet, Dinajpur and Rangpur. Also in swamps and beels throughout Bangladesh (Talwar and Jhingran, 1991). Demersal; potamodromous (Riede, 2004); fresh and brackish water. Feeds on insect larvae and bottom detritus.

Distribution: Recorded from Chalan Beel & Halti Beel, Natore; Lawachara, Sreemangal, Jaflong & Madhobkundo, Taherpur, Sylhet, Rangamati, Kaptai, Chittagong, Dudhpukuria, Dhopachari, Kaptai, Rangamati, Jamuna River, Itna Haor, Arial Beel, Munshigonj, Madhabkundo, Sylhet, Sundarban, Satkhira, Khulna, Tanguar Haor, Sunamgonj, Pekuabeel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing, Kuhuri River, Muhuri River, Feni, Surma river, Bhairab, Madhupur, Tangail, Mymensing. **Economic importance:** Of no interest to fisheries but of interest as an aquarium fish. **Ecological role:** Cleans up the organic debris from the ecosystem.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT364759.1

>gi|915195114|gb|KT364759.1| *Lepidocephalichthys guntea* voucher DUZM107 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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ACAGCCCTCAGCCTTTAATTCGTGCTGAGCTAAGCCAACCCGGATCACTACTAGGAGATGACCAAATTT
ACAACGTCATCGTTACCGCCACGCCTTTGTAATAATTTCTTTATAGTAATACCAATCCTCATCGGGGG
ATTCGGCAACTGACTAATCCCCTTATAATTGGTGCCCGAGACATGGCATTCCCTCGAATAAACAAATATA
AGCTTTTGACTTTTACCACCTCTTTCTCCTTTTACTAGCCTCCTCCGGTGTAGAAGCTGGAGCCGGGA
CCGGGTGAACGTTTATCCACCGCTAGCTGGTAATCTGGCACATGCTGGCGCATCCGTTGACCTAACAAT
CTTCTCCCTCACTTAGCTGGTGTCTCTCCATCTTAGGGGCGATCACTTTATTACTACCACTATTAAC
ATAAAACCCCTGCCATCTCCAATACCAAACCCCTATTTATTGAGCTGTCCTGATTACAGCCGTCC
TCCTACTCTATCACTCCCAGTTTTAGCTGCTGGGATTACTATACTATTAAGTATCGAAACCTGAACAC
GACATTCTTTGACCCGGCCGGAGGGGGAGATCCAATCCTTTATCAACACTTATTCTGATTCTTTGG
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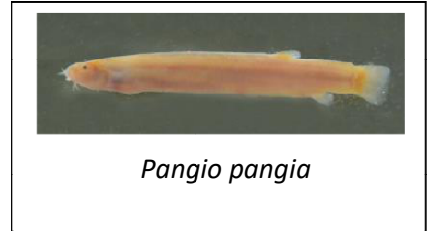
56. *Pangio pangia* (Hamilton, 1822)

Synonyms: *Cobitis pangia* Hamilton, 1822, *Fishes of the Ganges*, p. 355; *Cobitis cinnamomea* McClelland, 1839, *Asiat. Res.*, p. 304; *Apua fusca* Blyth, 1861, *J. Asiat. Soc. Bengal* 29: 169; *Acanthopthalmus pangia* Day, 1878, *Fishes of India*, p. 610.

English names: Pangia Coolie-loach, Cinnamon Loach

Local names: Pangya, Panga

Fin formula: D 2/8; P1 10; P₂ 6; A 2/7; C 17



Description: Body elongated, laterally compressed. Head compressed and small. Eyes minute. An erectile, bifid suborbital spine. Mouth small and inferior. Lips thick, lower lip with two contiguous prolongations but no leaf-like lobes. Barbel 3 pairs, 1 rostral and 2 maxillary pairs. Dorsal fin small, situated at the posterior third of the body, entirely in advance of the anal. Caudal fin truncate. Pelvic fin with 6 rays; scales minute, embedded in the skin. Dull red or reddish-brown, lighter on the ventral side (Talwar and Jhingran, 1991).

Habit and Habitat: Demersal. Inhabits shallow, slow-moving rivers with sandy bottoms. The species loves to dig and hide in the bottom.

Distribution: Recorded from Sangu River, Bandarban; Halda River, Chittagong; Karnafuli River, Kaptai, Rangamati; Madhupur, Tangail; Mymensing.

Relative abundance:

Economic importance: Of minor interest to fisheries. Reared in aquariums in some countries.

Ecological role: Plays an important role in the food chain of aquatic ecosystem.

Status and conservation: Considered as VU (Present study)

GenBank Accession No.: MF170949.1

>MF170949.1 *Pangio pangia* voucher ZMUD:110 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCTCTACCTCGTATTTGGTGCCTGAGCCGGAATAGTTGGAACCGCTCTCAGCCTTTT
AATTCGGGCTGAGCTCAGCCAACCCGGATCCTTGCTTGGCGACGACCAAATCTACAACGTCATTGTTACC
GCCACGCCCTTTGTAATAATCTTCTTTATAGTAATACCAATCCTCATCGGTGGATTTGGTAACTGACTAA
TTCTCTTATAAATTGGGGCCCCAGACATGGCATTCCCTCGAATAAATAACATAAGCTTCTGACTCCTACC
CCCATCCTTCTCTACTCTTAGCCTCATCTGGCGTAGAAGCTGGGGCTGGGACTGGATGAACTGTTTAT
CCTCCACTAGCGGGCAACCTCGCCCATGCCGGCGCATCCGTAGACCTAACCATCTTTCCCTTCACTTAG
CCGGTGTGTCTCAATTCTAGGAGCCATTACTTTATTACCACTACCATTAACATGAAGCCCCAGCTAT
CTCTCAATACCAAACCTCTATTTGTTTGAGCAGTACTTATTACAGCAGTCCTTCTTTGTTATCACTA
CCAGTATTAGCTGCCGGTATTACAATACTGCTGACAGACCGAACTTAAATACAACATTCTTTGACCCAG
CAGGAGGAGGAGACCCAATCTTTACCAACACCTGTCTGATTCTTTGGCC
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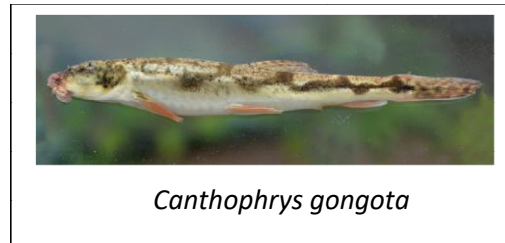
Canthophrys gongota (Hamilton, 1822)

Synonyms: *Cobitis gongota* Hamilton, 1822, *Fishes of the Ganges*, p. 351; *Cobitis cucura* Hamilton, 1822, *Fishes of the Ganges*, p. 352; *Somileptis bispinosa* Swainson, 1839, *Nat. Hist. Fish.* 2: 311

English names: Gongota Loach, Mooseface Loach

Local names: Poia, GharPoia, Pahari Gutum, Puiya

Fin Formula: D.9; P1. 10; P₂. 7; A. 7



Description: Body subcylindrical, tapering posteriorly. Upper profile of the snout nearly straight. Eyes close together situated high up at the middle of the head. Lips thick lower lip with papillae. Barbel 3 pairs, 2 rostral and 1 maxillary pairs. Lateral line present. Caudal truncate. Greenish above, yellowish-white below. A variable pattern along the sides usually consisting of a series of about 5 large brown blotches. Back usually with irregular bands descending up to the lateral line. A dark patch on the cheek below the eye (Rahman, 2005).

Habit and habitat: Demersal. Feeds on worms, crustaceans, insects, etc Occurs in shallow streams.

Distribution: Recorded from Chalan Beel, Natore; Lawachara, Sreemangal; Jaflong, Madhobkundo, Taherpur, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Dinajpur; Itna Haor, Arial Beel, Munshigonj; Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Surma River, Bhairab, Sunamganj.

Relative abundance: Fairly common.

Economic importance: It is used in the aquarium trade but is of little interest to fisheries.

Ecological role: Plays a vital role in the aquatic ecosystem by controlling the insect population where it lives.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank: KX455897.1

>KX455897.1 *Canthophrys gongota* voucher ZMUD:111 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AACCACAAAGACATTGGCACCCCTTTACCTAGTATTTGGTGCTTGGGCCGGAATAGTCGGGACCGCCCTCA
GCCTCTTGATTCGCGCCGAACCTCAGCCAACCTGGTGCACCTTCTTGGCGATGACCAAATCTACAACGTTAT
CGTTACTGCCCATGCATTTGTCATAATCTTCTTTATAGTAATACCTATTCTTATTGGCGGATTCGGCAAT
TGACTTATCCCCTTATAATTGGCGCCCCAGATATGGCATTTCACGCATAAAACAACATAAGTTTTTGGAC
TCCTCCCCCGTCTTTCTCTTCTATTAGCCTCATCAGGCGTCAAGCAGGTGCTGGAACAGGGTGGAC
TGTTTACCCGCCACTAGCAGGCAATCTTGCCCATGCAGGTGCATCTGTAGACCTAACCATCTTTTCTCTT
CATCTGGCTGGTGTGCTCTATCCTAGGGGCCATCACTTCATCACCACAACCATTAACATAAAACCCC
CAGCTATTTCTCAATATCAAACACCCTATTTGTCTGAGCCGTCTTAGTTACAGCCGTGCTACTTCTACT
GTCACCTCCAGTTCTGGCAGCCGGAATTACAATACTACTTACAGATCGAAACCTAAACACAACATTTTTT
GACCCGGCCGGGGGAGGGGACCCAATTCTCTATCAACACTTATTCTGATTCTTTGGCCACCAAGAA
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58. *Hemibagrus menoda* (Hamilton, 1822)

Synonyms: *Pimelodus menoda* Hamilton, 1822, *Fishes of the Ganges*, p. 203; *Bagrus corsula* Valenciennes, 1839, *Hist. Nat. Poiss.* 14: 419; *Marcones corsula* Day, 1878, *Fishes of India*, p. 446.

English name: Menoda Catfish

Local names: Ghagla, Gang Tengra, Arwari, Kawni

Fin formula: D I/7; P1 I/7; P₂ 6; A 11

Description: Body elongated, compressed and abdomen rounded. Head depressed. Occipital process narrow, covered by a skin. Interneural shield between the occipital process and the basal bone of the dorsal fin absent. Barbel 4 pairs, maxillary pair reaches the end of the pelvic fin or beyond, outer mandibular pair reaches the base of the pectoral, inner mandibular and nasal pairs short. Dorsal spine not denticulated. Pectoral spine with 19-20 denticulations posteriorly. Outer edge of the upper lobe of caudal curved. Greyish-brown above, dull white below. Several rows of vertically arranged punctate marks along the middle of the sides.



Habit and Habitat: Inhabits rivers and their tributaries. It buries in soft, wet clay in bottoms of rivers, tributaries and ponds.

Distribution: Recorded from Itna Haor, Arial Beel, Munshigonj ; Bhairab, Sunamgonj.

Relative abundance: Rare.

Economic importance: It is a popular food fish in Bangladesh. It has a good taste and high market value.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT762363.1

>gi|959006841|gb|KT762363.1| *Hemibagrus menoda* voucher DUZM116 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCCCTTACTTAGTATTCGGTGCCTGAGCCGGAATAGTTGGTACAGCCCTTAGCTTAC
TAATTCGGGCAGAACTAGCCCAACCCGGTGCCTACTAGGTGATGATCAAATTTACAATGTTATTGTAAC
TGCCACGCCTTCATCATAATTTCTTTATAGTAATACCAATTATAATTGGAGGCTTCGGGAATTGACTT
GTACCATTAATGATTGGAGCACCAGACATGGCATTTCACGAATAAATAACATAAGTTTCTGACTACTTC
CACCATCCTTCTACTACTATTGGCCTCATCTGGCGTTGAAGCAGGTGCAGGCACAGGATGAACTGTTTA
TCCCCACTCGCTGGTAACCTCGCACATGCAGGAGCTTCTGTAGATCTAACTATTTTCTCCCTCCATCTT
GCAGGGGTATCATCTATTTTAGGAGCCATTAATTTTATTACAACCATTATAATATAAAACCCCGCCA
TCTCTCAATATCAAACGCCTCTGTTTCGTATGAGCTGTATTAATTACAGCTGTACTTCTACTACTCCTT
CCCAGTCCTAGCCGCTGGTATCACAATATTATTAACAGACCGAAATCTAAATACCACATTCTTTGATCCG
GCAGGAGGAGGAGATCCAATCCTTTATCAACACCTTTTCTGATTCTTTGGCC
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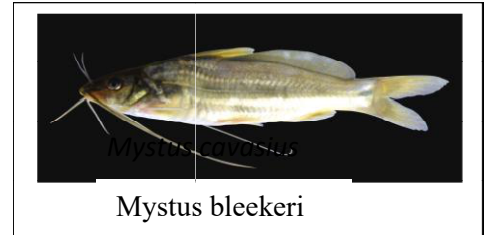

59. *Mystus bleekeri* (Day, 1877)

Synonyms: *Bagrus keletius* Bleeker, 1846, *Nat. Geneesk. Arch. Ned. Indie* 3(2): 135; *Macrones bleekeri* Day, 1877, *Fishes of India*, p. 451; *Mystus bleekeri* Shaw and Shebbeare, 1937, *Fishes of Northern Bengal*, p. 91; *Mystus (Mystus) bleekeri* Jayaram, 1955, *Rec. Indian Mus.* 51: 530.

English name: Day's Mystus

Local names: Tengra, Gulsha Tengra

Fin formula: D I/7; P1 I/10; P₂ 6; A 10



Description: Body elongated and compressed, depth about one-fourth of the standard length. Median longitudinal groove on the head shallow, reaches the base of the occipital process. Occipital process rather wide at the base, reaches the basal bone of the dorsal. Adipose fin large, inserted just behind the rayed dorsal fin. Caudal fin forked; upper lobe of the caudal longer. Pectoral spine with 11-12 serrations. Maxillary barbels usually reach the anal fin, sometimes beyond. Outer mandibular reaches the pectoral end or a little shorter, nasal pair reaches the hind border of the orbit. Adipose much longer than the head. No spot at the base of the dorsal. Leaden above, yellowish beneath. A dark band along the lateral line; also two light longitudinal bands, one above and the other below the lateral line. A dark shoulder spot behind the head. Fins greyish-white, darkest at their edges (Rahman, 2005).

Habit and Habitat: Demersal, potamodromous. Feeds on insect larvae, zooplankton and small fishes. Found in rivers, canals, khals, beels and similar water bodies in Bangladesh.

Distribution: Haor, baor, beels and rivers through out the country.

Economic importance: This species is of minor commercial importance in case of fishery but has demand as an aquarium fish.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT364779.1

>gi|915195154|gb|KT364779.1| *Mystus bleekeri* voucher DUZM118 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AATCCGGGCAGAACTAGCCCAACCCGGCGCCCTTCTGGGTGATGATCAGATTTACAATGTTATTGTAAC
GCTCATGCCTTCATCATAATTTCTTTATAGTAATACCAATCATAATCGGAGGCTTCGGAAACTGACTTG
TACCTCTAATAATCGGAGCCCCAGATATGGCCTTCCACGAATAAATAATATAAGCTTCTGATTACTCCC
TCCCTCATTCTACTACTATTAGCCTCCTCCGGAGTTGAAGCTGGTGCAGGTACAGGGTGGACTGTTTAC
CCACCTCTTGCTGGTAACCTCGCCCATGCTGGAGCCTCAGTAGACCTAACCATTTCTCCCTACATCTTG
CAGGAGTCTCATCTATTCTTGGGGCCATTAACCTTATTACAACCTATTATCAATATAAAACCCCGCCAT
TTCCCAATACCAAACCACTATTTGTATGAGCTGTAATAATTACAGCTGCCTTCTACTACTGTGCGCTC
CCCGTTCTAGCTGCTGGTATTACAATATTACTAACAGATCGAAACCTTAATACTACATTCTTCGACCCGG
CAGGAGGAGGAGATCCAATTCTCTATCAGCACTTATTCTGATTCTTTGG
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60. *Mystus cavasius* (Hamilton, 1822)

Synonyms: *Pimelodus cavasius* Hamilton, 1822, *Fishes of the Ganges*, p. 203; *Pimelodus seengfee* Sykes, 1841, *Trans. Zool. Soc. Lond.* 2: 374; *Hypselobagrus macronema* Bleeker, 1865, *Ned. Tijds. Dierk.* 2: 175

English name: Gangetic Mystus

Local names: Kabashi Tengra, Gulsha, GulshaTengra

Fin formula: D I/7; P₁ I/8; P₂ 6; A 11



Description: Body elongated and compressed, depth about one-fourth of the standard length. Head conical. Occipital process narrow, extends to the basal bone of the dorsal fin; median longitudinal groove on the head extends to the base of the occipital process. Barbel 4 pairs, maxillary barbels extend posteriorly beyond the caudal fin base. Dorsal spine non-denticulated. Pectoral spine with 11-12 denticulations. Adipose fin large, inserted close behind the base of the rayed dorsal fin. Caudal fin deeply forked. Branchiostegal rays 6. Lateral line complete, yellowish beneath. A black spot is present covering the basal bone of the dorsal fin. No distinct bluish longitudinal band along the side. Fins greyish-white. Maximum size recorded is 40 cm in standard length.

Habit and Habitat: Feeds on insect larvae, zooplankton and small fish. Prefers tidal rivers and lakes; also beels, canals, ditches, ponds, and inundated fields.

Distribution: It's a riverine species occasionally found in floodplain.

Economic importance: Kabashi Tengra is a commercially important species and a common food fish in Bangladesh.

Status and conservation: Considered as LC (Present study)

GenBank: KT762365.1

>gi|959006845|gb|KT762365.1| *Mystus cavasius* voucher DUZM119 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCCCTTACCTAGTATTCGGTGCCTGAGCCGGAATAGTTGGTACAGCCCTTAGCTTAC
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TGCTCATGCCTTATCATAATTTTCTTATAGTAATACCAATCATAATCGGAGGCTTTGGAAATTGACTC
GTACCACTAATGATTGGGGCGCCAGACATGGCATTCCCACGAATAAACAACATGAGTTTCTGACTACTCC
CTCCCTCCTTCTACTATTATTAGCCTCCTCTGGTGTGAAGCTGGTGCAGGTACAGGATGAACCGTTTA
TCCCCCCTTGCTGGCAATCTTGACACGCCGGAGCCTCAGTAGATTTAACTATTTTCTCCCTACATCTT
GCAGGGGTATCATCCATTCTAGGGGCTATTAATTTTATTACAATATTATTAATATGAAACCCCGACCA
TCTCCAATATCAGACTCCCTTATTTGTATGAGCTGTATTAATTACAGCAGTCTCTTACTACTTTCCCT
CCCAGTTCTGGCTGCCGGTATCACAATACTACTAACAGATCGAAACCTCAATACCACATTCTTCGACCCA
GCAGGAGGAGGAGACCCAATCTTTATCAACACCTATTCTGATTCTTTGGCCACC
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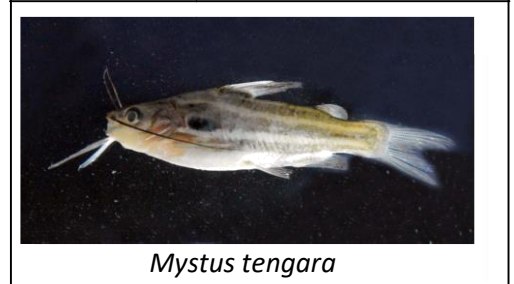
61. *Mystus tengara* (Hamilton, 1822)

Synonyms: *Pimelodus tengara* Hamilton, 1822, *Fishes of the Ganges*, pp. 183, 377; *Macrones tengara* Day, 1878, *Fishes of India*, p. 447; *Macrones tengara* Day, 1889, *Fauna Br. India*, Fishes 1: 156.

English names: Striped Dwarf Catfish, Tengara Mystus, Pearl Catfish

Local names: Bajari Tengra, Ghuitta Tengra, Bajuri, Bujri, Bojja

Fin formula: D I/7; P₁ I/8; P₂ 6; A 11.



Description: Body elongated and somewhat compressed, head depressed. Barbel 4 pairs, maxillary pair extends to the base of the pelvic fins, nasal as long as the head excluding the snout. Dorsal spine with a few indistinct serrations anteriorly, finely serrated posteriorly. Adipose fin long, inserted close behind the rayed dorsal fin. Pectoral spine with 10-13 denticulations. Caudal fin forked, upper lobe longer. Branchiostegal rays 10 (Rahman, 1989; Talwar and Jhingran, 1991). Body greenish to bright yellow; back only slightly darkened, usually pale brown, flanks and belly porcelain-white; 4 or 5 heavy dark brown to green-black longitudinal bands on the flanks; a dark shoulder spot. Fins hyaline, delicate bluish in colour (Talwar and Jhingran, 1991).

Habit and Habitat: Inhabits weedy, sandy and muddy parts of the pools, streams, rivers and canals in the rainy season.

Distribution: Recorded from Chalan Beel, Haiti Beel, Natore; Kirtankhola River, Barishal; Sundarban, Khulna; Banskhali, Chittagong, Rangamati; Padma River; Rajshahi; Jaflong, Madhobkundo, Tanguar Haor, Hakaluki Haor, Sunamganj; Moulvibazar; Buriganga River.

Economic importance: *M. tengara* is a species of minor commercial importance.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: KT762366.1

>gi|959006847|gb|KT762366.1| *Mystus tengara* voucher DUZM121 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TGCTCATGCCTTCATTATAATTTCTTTATAGTAATACCAATCATGATTGGGGGCTTCGGAAACTGGCTT
GTACCACTAATGATCGGAGCGCCCGACATAGCCTCCACGTATAAATAACATAAGCTTTTGATTACTCC
CACCTCTTTCTACTCTATTAGCCTCCTCCGGCGTTGAAGCCGGGGCAGGAACAGGGTGAAGTGTGTTA
TCCCCCTCTTGGCGCAATCTTGCTCATGCCGAGCCTCAGTAGATCTAACCATCTTCTCCCTACATCTT
GCAGGGGTGTCATCCATTCTTGGGGCCATTAATTTTATTACAACAATTATTAATATAAAACCCCGTCTA
TCTCCAATACCAGACACCACTATTTGTATGGGCTGTACTAATTACTGCCGTTCTTCTACTACTTTCCCT
TCCGTCCTAGCTGCCGGCATTACAATGCTCCTAACAGACCGAAATCTTAACACCACCTTCTCGACCCCT
GCAGGAGGGGGGAGACCCAATTCTGTACCAACATTTATTCTGATTCTTTGGCCCA
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62. *Mystus vittatus* (Bloch, 1797)

Synonyms: *Silurus vittatus* Bloch, 1797, *Ichthyol. Hist. Nat.* 11: 40; *Pimeloduscario* Hamilton, 1822, *Fishes of the Ganges*, p. 181; *Bagrus vittatus* Jerdon, 1849, *Madras J. Lit. Sci.* 15: 338

English names: Striped Dwarf Catfish, Asian Striped Catfish, Striped River Catfish

Local names: Tengra

Fin Formula: D I/7; P₁ I/9; P₂ 6; A 11



Description: Body elongated and compressed. Head depressed, occipital process large, more than twice as long as the broad at its base, reaching the basal bone of the dorsal fin. Median longitudinal groove on the head short, not extending to the base of the occipital process. Adipose originates in advance of the anal origin. Pectoral spine with 13-16 denticulations. Caudal fin forked, upper lobe of the caudal barely longer than the lower. Lateral line distinct. Airbladder heart-shaped (Bhuiyan, 1964). Males have an elongate genital papilla in front of the anal fin. Largest size recorded in Bangladesh is 11.7 cm in total length (Rahman, 1989). Colour varies with age. Usually greyish-silvery to shining golden body with 5 pale blue or dark brown to black longitudinal bands, 3 above and 2 below lateral lines on the body. A dark shoulder spot. Fins yellowish-grey.

Habit and Habitat: Mainly seen in the flooded ponds, lakes, canals, beels, streams and rivers.

Distribution: Recorded from Chalan Beel, Natore; Lawachara, Sreemangal; Kirtankhola River, Barishal; Sundarban, Khulna; Banshkhali, Chittagong, Rangamati; Padma River, Rajshahi, Jaflong, Madhobkundo, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj;

Relative abundance: Very common.

Economic importance: Of minor commercial importance.

Ecological role: Controls the production of mosquitoes by feeding the larvae.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364780.1

>gi|915195156|gb|KT364780.1| *Mystus vittatus* voucher DUZM122 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GCTCATGCCCTTATTATAATTTCTTTATAGTAATGCCAATCATAATTGGAGGTTTCGGAAATTGACTTG
TACCACTAATGATCGGAGCCCCGACATGGCCTTCCCACGTATGAATAACATAAGCTTCTGATTATTGCC
CCCCTTTTTCTACTTCTATTAGCTTCTCCGGCGTGAAGCCGGGGCAGGAACAGGTTGAACTGTTTAT
CCGCCTCTCGCCGGAATCTTGCCATGCTGGAGCCTCAGTAGACCTAACCATTTCTCCCTTCATCTTG
CAGGAGTGTCTCAATTCTGGAGCCATTAATTTATTACAACCATTAACATAAAACCCCATCTAT
CTCCCAATATCAAACACCGCTGTTTGTGTGGGCTGTATTAATCACTGCTGTTCTCCTACTACTCTCCCTC
CCAGTCTAGCTGCTGGCATTACAATGCTGTTAACAGATCGAAATCTTAACACCACCTTCTCGATCCTG
CGGGGGGAGGAGATCCAATCTTTATCAACACTTATTTGATTCTTTGG
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63. *Chandramara chandramara* (Hamilton, 1822)

Synonyms: *Pimelodus chandramara* Hamilton, 1822, *Fishes of the Ganges*, p. 162; *Pimelodus rama* Hamilton, 1822, *Fishes of the Ganges*, p. 176; *Rama rama* Rossel, 1964, *Mitt. Hamburg Zool. Mus. Inst.* 61: 151.

English names: Asian Cory, Gold Shadow Catfish, Hovering Catfish,

Humming Bird Catfish

Local names: Gura Tengra.



Fin Formula: D I/6; P₁ I/5; P₂ 6; A 14

Description: Elongated body with dorsal profile moderately arched, ventral profile nearly straight from below the pectoral to the anal. Mouth small, anterior, upper jaw slightly longer. Median groove on the head wide, extends to the middle of the occipital process. Gill-opening wide, membranes continued forward below, free from the isthmus. Barbel 4 pairs, 1 pair each of the maxillary, nasal and 2 pairs of the mandibular, all shorter than the head. Airbladder visible from outside in the region above the pectoral fins. Eyes subcutaneous and conspicuously large (Rahman, 1989; Talwar and Jhingran, 1991).

Habit and Habitat: Bottom-dweller. Ominivorous, mainly animal feeder. Occurs in beels, ditches, streams and canals. In the rainy season, it occurs in swamps in the flooded jute fields (Bhuiyan, 1964). According to Talwar and Jhingran (1991), it inhabits mountain streams.

Distribution: Recorded from Tanguar Haor, Sunamgonj.

Relative abundance: Very rare.

Economic importance: *R. chandramara* is a species of rare occurrence and does not have any economic value.

Status and conservation: Considered as NT (Present study)

GenBank: KT762367.1

>gi|959006849|gb|KT762367.1| *Chandramara chandramara* voucher DUZM123
cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TGCTCATGCTTTTATTATAATCTTCTTTATAGTAATACCAATTATAATTGGAGGCTTTGGCAATTGACTT
GTGCCCTTAATAATTGGGGCACCAGACATGGCCTTCCTCGAATAAATAATATAAGCTTTTGACTCCTCC
CCCCTTCATTTCTGCTTCTTAGCCTCCTCTGGCGTAGAAGCCGGAGCAGGAACAGGATGAAGTGTGTTA
TCCTCCTTAGCCGAAATCTTGACATGCCGGAGCTTCTGTTGATTTAACAAATTTTTCACTTCATCTT
GCAGGTGTATCATCAATTTTAGGTGCTATCAATTTTATTACCACTATTATAATAAAACCTCCTTCAA
TCTACAATATCAAATCCATTATTTGTATGAGCAGTATAATTACTGCCGTCCTCCTGTTACTATCACT
ACCAATTAGCTGCTGGAATTACAATGCTATTAACAGACCGAAATCTAAATACCACATTCTTTGACCTT
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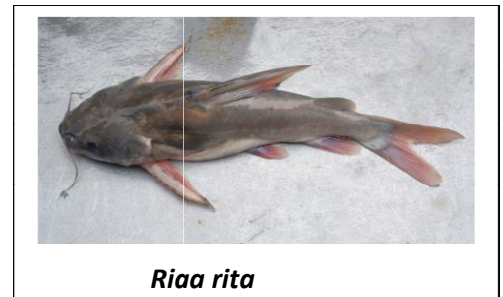
64. *Rita rita* (Hamilton, 1822)

Synonyms: *Pimelodus rita* Hamilton, 1822, *Fishes of the Ganges*, p. 165; *Arius ritoides* Valenciennes, 1840, *Hist. Nat. Poiss.* 15: 92; *Rita buchmanani* Bleeker, 1854, *Prod. Silur.*, p. 65; *Rita buchmanani* Day, 1877.

English name: Rita

Local name: Rita

Fin formula: D I/6; P₁ I/10; P₂ 8; A 11-13



Description: Body elongate. Head depressed; occipital process subcutaneous, extends to the basal bone of the dorsal fin. Mouth transverse; villiform teeth in two contiguous bands in front of the upper jaw. Molariform teeth in two elliptical patches on the palate. Occipital process broad, deeply notched posteriorly to receive triangular basal bone of the dorsal fin. Barbel 3 pairs, maxillary pair extends posteriorly to the operculum, mandibular pair to the pre-operculum, nasal pair minute or small with a valve-like base. Gill-membranes continued forward below; united to each other, free from the isthmus. Dorsal spine very stout, hollow, as long as or longer than the head in adults; smooth anteriorly, finely serrated posteriorly on its upper part. Pectoral spine stout and hollow, shorter than the dorsal spine, denticulated on both the edges. Pelvics originate below the posterior base of the dorsal. Caudal fin forked. Lateral line straight (Rahman, 1989; Talwar and Jhingran, 1991). Greenish-brown above and on the flanks, brownish-white on the abdomen.

Habit and Habitat: Inhabits both fresh and brackish waters.

Distribution: Recorded from Barishal, Sundarban, Khulna, Padma river, Rajshahi, Tanguar Haor, Hakaluki Haor, Sunamganj, Hamham waterfall, Moulovibazar, Buriganga River, Dhaka, Jamuna River, Tanguar Haor, Taherpur, Sylhet, Surma river basin, Bhairab, Sunamgonj.

Economic importance: The species is commercial exploited as food fish.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364781.1

>gi|915195158|gb|KT364781.1| Rita rita voucher DUZM124 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TTTGGTGCTTGGGCTGGGATGGTTGGTACAGCCCTCAGCCTACTAATTCGGGCAGAGCTAGCCCAACCCG
GCACTCTTTGGGTGATGACCAAATTTATAATGTTATCGTTACTGCCATGCCTTCGTAATAATTTCTT
TATAGTAATACCAATTATGATTGGAGGCTTCGGAAATTGACTAGTACCACTAATGATTGGAGCACCAGAT
ATAGCATTCCCTCGAATAAAACAACATGAGTTTCTGACTTTTACCACCATCATTCTACTACTGCTAGCCT
CGTCAGGAGTTGAAGCAGGGGCTGGAACAGGATGAACTGTTTACCCTCCCCTTGCCGGCAACCTTGACA
TGCAGGAGCCTCTGTTGACTTAACTATTTTCTCCCTACATCTCGCAGGTGTGTCTTCAATTCTTGGGGCC
ATTAACCTTCAATACAACAATTATTAACATAAAACCTCCAGCCATTTACAATACCAAACACCTTTATTTCG
TATGAGCCATTTTAATTACAGCCGTAATCTTCTATTATCTCTACCAGTTTTAGCCGCTGGCATTACCAT
GCTACTAACAGACCGAAATTTAAATACAACATCTTCGACCCGCTGGAGGAGGTGACCCAATCTTTAC
CAACATCTATTCTGATTCTTTGG
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65. *Sperata aor* (Hamilton, 1822)

Synonyms: *Pimelodus aor* Hamilton, 1822, *Fishes of the Ganges*, p. 205; *Macrones aor* Day, 1878, *Fishes of India*, p. 444; *Mystus (Osteobagrus) aor* Jayaram, 1955, *Rec. Indian Mus.* 51: 548.

English names: Long-whiskered Catfish

Local names: Gutum, Puiya



Fin Formula: D I/7; P₁ I/9; P₂ 1/5; A 12

Discription: Head depressed; snout rounded. Barbel 4 pairs, maxillary pair extends to the end of the anal or the caudal base or beyond, outer mandibular pair reaches the base of the pectoral and inner mandibular pair two-thirds of that distance, nasal pair to the anterior half of the eye. Median longitudinal groove on the head reaches the base of the occipital process. Interneural shield exists between the occipital process and the basal bone of the dorsal fin. Habits and habitats: Predatory, preys on smaller fishes, large insects and worms. Found in rivers, canals, khals, beels, ponds, lakes, ditches, inundated fields and similar freshwater areas in Bangladesh (Rahman, 1989).

Habit and Habitat: Found in rivers, canals, beels, ditches, haors, baors.

Distribution: Recorded from Tanguar Haor, Kaptai lake,; Hakaluki Haor, Sunamganj; Buriganga River, Dhaka; Kaptai; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Halda River, Karnafuli River, Chittagong; Sylhet; Kuhuri River, Muhuri River, Feni; Surma river basin, Bhairab, Sunamgonj; Madhupur, Tangail; Mymensing; Banshkhali,

Economic importance: This species is exploited commercially as food fish.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

GenBank: KT762381.1

>gi|959006877|gb|KT762381.1| *Sperata aor* voucher DUZM125 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TGCCACGCCTTCGTATAATTTCTTTATAGTAATACCAATTATAATTGGAGGATTCGGAAACTGACTT
GTTCCACTAATAATTGGAGCGCCTGATATAGCATTCCACGAATAAACAATATAAGTTTTGATTACTCC
CCCCCTATTCTTATTACTAGCCTCGTCTGGTGTAGAAGCGGGTGCAGGTACAGGATGAAGTGTGTTA
CCCCCACTTGCTAGCAATCTCGCACACGCAGGGGCATCTGTAGATCTAACTATTTCTCCCTCCATCTT
GCAGGTGTGCATCCATTTTAGGAGCTATTAATTTTATTACAACCATTATAATATAAAAACCGCCGGCCA
TTTCCAATAACAAACACCACTATTTGTATGAGCCGTATTAGTTACAGCCGTACTCTTATTACTCTCACT
ACCAGTTCTAGCCGCCGACATTACAATACTACTAACAGACCGAAACCTTAACACCACATTTTCGACCCG
GCAGGAGGAGGAGACCCAATTTATCAGCACCTTTTTGATTCTTTGGCCACC
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67. *Sperata seenghala* (Sykes, 1839)

Synonyms: *Platystoma seenghala* Sykes, 1839, *Trans. Zool. Soc. Lond.* 2: 371; *Macrones seenghala* Day, 1878, *Fishes of India*, p. 444; *Mystus seenghala* Shaw and Shebbeare, 1937, *Fishes of Northern Bengal*, p. 99.

English name: Giant River-catfish

Local names: Guijja, GuijjaAyre, Bhangat, TallaAyre



Fin formula: D I/7; P₁ I/9; P₂ 1/5; A 11.

Description: Head depressed snout spatulate. Median groove on the head reaches the base of the occipital process. Barbel 4 pairs, maxillary pair extends to the base of the pelvics or a little beyond, outer mandibular does not quite reach the pectoral base and nasal pair to the anterior margin or the middle of the orbit. Dorsal spine as long as the head excluding the snout, rugose anteriorly, indistinctly serrated posteriorly. Pectoral spine half as long as the head. Adipose fin about half as long as the head. Rayed dorsal, when laid flat does not reach the adipose dorsal. Interspace between the two dorsals nearly equal to the base of the rayed dorsal. Upper lobe of the caudal longer. Bluish on the back, silvery on the sides and beneath. A well-defined round black spot present at the posterior end of the adipose fin (Rahman, 2005).

Habit and Habitat: Found in rivers, canals, beels, ditches, haors, baors.

Distribution: Recorded from Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Jamuna River, Tangail; Halda River, Karnafuli River, Chittagong; Kaptai, Rangamati, Taherpur, Sylhet; Bangshai River, Pungli River, Madhupur, Tangail; Banar River, Mymensing.

Economic importance: A commercially important species.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364786.1

>gi|915195168|gb|KT364786.1| *Sperata seenghala* voucher DUZM126 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TTCTTTAATAATTGGAGCACCTGATATGGCATTTCACGAATAAATAATATAAGCTTCTGATTACTTCC
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CCCCCTTGCTGGTAACCTCGCACACGCGGGGGCATCTGTAGATCTAACTATTTTTTCCCTCCATCTTG
CAGGTGTATCGTCCATTTTAGGAGCCATCAATTTTATTACAACCATTTAAACATAAAACCACCAGCCAT
CTCCAATACCAAACACCATTATTTGTATGGGCCGTGCTAGTTACAGCCGTA CTCTTGCTGCTCTCATTA
CCAGTCTTAGCTGCTGGCATTACAATACTACTAACGGACCGAAACCTTAACACCACATTTTTCGACCCGG
CAGGAGGAGGAGACCAATTCTTTATCAACACCTTTTTGATTCTTTGG
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68. *Clarias batrachus* (Linnaeus, 1758)

Synonyms: *Silurus batrachus* Linnaeus, 1758, *Silurus angularis* Russel, 1803, *Macropteronotus magur* Hamilton, 1822, *Clarias batrachus* Valenciennes, 1840, *Clarias magur* Day, 1889.

English names: Walking Catfish, Clarias Catfish, Freshwater Catfish

Local names: Magur, Mosqur, Mojgor

Fin formula: D 64-70; P₁ I/9-10; P₂ 6; A 45-52

Description: Body elongate, head greatly depressed and tail compressed. Upper and lateral parts of the head covered by osseous plates forming a casque. Mouth terminal with a transverse opening, upper jaw slightly longer. Teeth in villiform crescentic band on the jaws, none on the palate. Eyes small, with a free orbital margin. Anterior nostrils short tubes behind the upper lip, posterior nostrils more or less rounded slits behind the nasal barbels. Barbel 4 pairs; nasal pair extends to near the occipital process, maxillary pair extends to the middle or end of the pectoral fins, mandibular pairs shorter. Dorsal and anal fins long, composed of soft rays, free from the caudal fin. Pectorals rounded with a finely serrated strong spine. Caudal rounded and free from the vertical (dorsal and anal) fins (Rahman, 1989; Talwar and Jhingran, 1991).

Habit and Habitat: Found in a wide variety of habitats including lakes and rivers but are best known for their ability to thrive where many fishes cannot. Warm, stagnant often hypoxic water, such as muddy ponds, canals, ditches, swamps and floodplains are common habitats for this fish.

Distribution: Recorded from Tanguar Haor; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Bhairab, Sunamgonj.

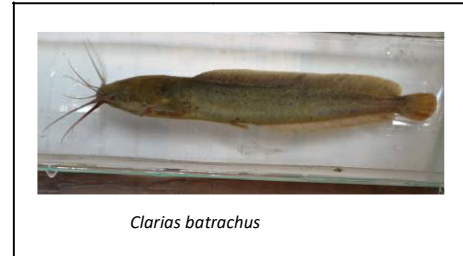
Economic importance: *Clarius batrachus* is a commercially important catfish .

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: **KT762385.1**

>gi|959006885|gb|KT762385.1| *Clarias batrachus* voucher DUZM158 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GTACCTCTAATAATCGGTGCCCCAGATATAGCATTCCACGAATAAATAATATAAGCTTCTGATTACTAC
CCCCCTCCTTCTACTGCTACTTGCCTCATCAGGCGTTGAAGCGGGGGCAGGAACAGGGTGAACAGTATA
CCCACCCCTTGAGGAACTGGCACATGCAGGAGCTCCGTAGACTTAACCATTTTTCTCTACATCTA
GCAGGTGTATCATCAATCTTGCTCCATTAACCTTATCACAACCATTATTAACATGAAACCGCCAGCCA
TCTCCAATATCAAACACCCCTATTTGTTTGATCCGTAATAATCACAGCAGTACTACTTCTGTCCCT
TCCAGTATTAGCTGCGGGAATCACTATATTATTAACAGACCGTAATTTAAACACAACCTTCTTTGATCCT
GCGGGAGGGGGGGACCCAATCCTTATCAACACCTCTTCTGATTCTTTGGCCACC
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69. *Ompok bimaculatus* (Bloch, 1797)

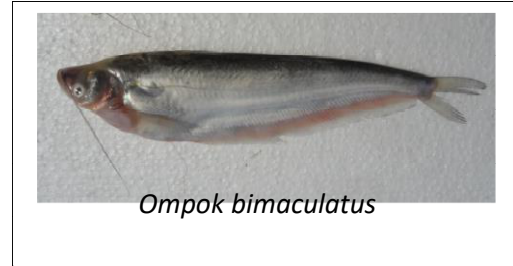
Synonyms: *Silurus bimaculatus* Bloch, 1797, *Hist. Nat.Poiss.* 11: 17; *Silurus canio* Hamilton, 1822, *Fishes of the Ganges*, p. 151; *Silurus indicus* McClelland, 1842, *Calcutta J. Nat. Hist.* 2: 58

English names: Butter Catfish, Two Spot Glass Catfish

Local names: Kani Pabda

Fin Formula: D 4; P₁ I/12; P₂7; A 68

TL: 14.3; **SL:** 12.3



Description: Body elongate and laterally compressed. Head depressed, snout rounded. Mouth superior, ends in front of the eye. Lower jaw slightly longer. Eyes moderate, its lower border below the level of the mouth cleft. Nostrils set apart, anterior tubular, posterior a hole. Snout bluntly pointed. Teeth in villiform bands on the jaws, in two oval patches on the vomer; none on the palate. Barbel 2 pairs; maxillary barbels extend to beyond the middle of the body, mandibular pair small, as long as the snout. Lateral line nearly straight. Dorsal fin small, spineless, situated above the last half of the pectoral, latter extending over the pelvics; pectoral spine finely serrated on the inner edge. Long anal fin, inserted well behind the dorsal fin. Caudal fin deeply forked with pointed lobes.

Habit and Habitat: Found in quiet, shallow, often-muddy water, in sandy streams, rivers or tanks. Also occurs in canals, beels and inundated fields.

Distribution: Recorded from Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Taherpur, Sylhet; Surma river basin, Bhairab, Sunamgonj, Madhupur, Tangail; Sundarban, Satkhira, Khulna; Banskhali, Chittagong; Rangamati, Kangsha River, Netrokona.

Relative abundance: Fairly common.

Economic importance: A commercially important species.

Ecological role: Plays an important role in the aquatic ecosystem.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank: KT762368.1

>KT762368.1 *Ompok bimaculatus* voucher DUZM127 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CGCCACGCCTTCGTAATAATTTTCTTTATAGTAATAACCAATCATGATTGGGGGCTTTGGAAATTGACTC
GTGCCCTTATGATTGGAGCACCAGATATAGCATTCCCCGAATAAATAACATAAGCTTCTGACTTCTGC
CTCCATCATTCTCCTTCTATTAGCATCTTCTGGAGTTGAAGCAGGGGCAGGCACAGGGTGAAGTGTGTTA
TCCCCACTTGACAGGAAATCTTGACACGCAGGAGCCTCTGTAGACTTAACAATTTTCTCACTACATCTT
GCAGGGGTATCATCCATTCTGGGGGCAATTAACCTTATTACAACAATTATTAACATAAAAACCCCGGCCA
TCTACAATATCAAACACCACTATTTGTATGAGCCGCTTAATTACAGCAGTTCTCCTACTATTGTCTCT
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GCGGGAGGGGGAGACCAATTCTTACCAACATCTTTCTGATTCTTTGGCCCA
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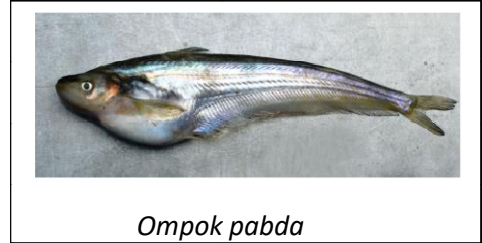
70. *Ompok pabda* (Hamilton, 1822)

Synonyms: *Silurus pabda* Hamilton, 1822, *Fishes of the Ganges*, p. 150; *Wallago pabda* Bleeker, 1853, *Vert. Bat. Gen.* 25: 54; *Callichrous pabda* Day, 1878, *Fishes of India*, p.479.

English names: Pabdah Catfish, Two Stripe Gulper Catfish

Local name: Madhu Pabda

Fin formula: D 4; P₁ I/11; P₂ 8; A 56



Description: Laterally compressed, elongated body. Head depressed, snout rounded. Lower jaw longer than the upper. Mouth superior, ends in front of the eye. Barbel 2 pairs; maxillary pair reaches to the end of the pectoral fin. Dorsal fin situated above the last half of the pectoral. Pectoral spine smooth. Anal long. Caudal forked, both lobes rounded or arching rather than tapering to a point. Whole fin directed slightly downward. Caudal lobes shorter than the head. Colour variable. Generally silvery-grey, darker on the back and fading to white on the belly. In some there are two longitudinal lighter bands, one above and one below the lateral line. A dark oval shoulder spot present. Body cloudy, on the sides with black dots (Rahman, 2005).

Habit and Habitat: Found in quiet, shallow, often-muddy water, in sandy streams, rivers or tanks. Also occurs in canals, beels and inundated fields.

Distribution: Recorded from Chalan Beel, Haiti Beel, Natore; Tanguar Haor, Taherpur, Sylhet; Surma River basin, Bhairab, Sunamgonj; Madhupur, Tangail; Mymensing.

Relative abundance: Fairly common.

Economic importance: A commercially important species.

Ecological role: A relatively peaceful species that is compatible with most fish of equal size or larger, not safe with small fishes/shrimps.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364760.1

>gi|915195116|gb|KT364760.1| *Ompok pabda* voucher DUZM128 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GCCACGCCTTCGTAATAATCTTCTTTATAGTAATACCAATCATGATTGGCGGCTTCGGAAACTGACTAG
TACCTCTTATAATCGGGGCCCTGACATAGCATTCCCTCGGATGAATAACATAAGCTTCTGACTCTTGCC
CCCCTCCTTCTTCTCCTATTAGCATCTCCGCCGTGGAAGCGGGGGCAGGCACAGGGTGAAGTGTGTAT
CCCCCCTTGCAGGAAATCTCGCACATGCTGGAGCCTCTGTAGACTTAACAATTTTCTCACTGCACCTCG
CAGGGGTGTCTCTATTTTGGGGGCAATTAACCTCATCAACAATCATTAAATATAAAACCCCCAGCCAT
TTCACAATACCAAACCCCTATTTGTGTGAGCCGTAATAATTACGGCCGTCCTGCTACTACTATCCTTG
CCCGTACTAGCTGCCGGTATCAACAATCTTAACAGACCGGAACCTAAACACCACATTCTTTGACCCAG
CAGGCGGGGGAGACCAATCCTTTACCAACACCTTTCTGATTCTTTGG
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71. *Ompok pabo* (Hamilton, 1822)

Synonyms: *Silurus pabo* Hamilton, 1822, *Fishes of the Ganges*, p. 153; *Callichrous pabo* Day, 1878, *Fishes of India*, p. 477; *Ompok pabo* Misra, 1976, *Fauna of India, Pisces* (2nd ed.), 3: 196.

English names: Pabo Catfish

Local names: Pabda, Kala Pabda

Fin Formula: D 5; P₁ I/14; P₂ 10; A 3/66



Description: Elongated, compressed body. Mouth large and oblique. Teeth in villiform bands on the jaws. Maxillary barbel extends slightly below the posterior border of the eyes. Mandibular pair very short, almost equal to one eye diameter. Anal long, inserted well behind the dorsal fin with 66-71 branched rays. Pectoral spine serrated on its inner edge. Caudal deeply forked. Silvery-grey with a faint shoulder spot. Body cloudy all over with black dots.

Habit and Habitat: Found in quiet, shallow, often-muddy water, in sandy streams, rivers or tanks. Also occurs in canals, beels and inundated fields.

Distribution: Recorded from Lawachara, Sreemangal, Jaflong, Madhobkundo, Taherpur, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Sundarban, Satkhira, Khulna; Kuhuri River, Muhuri River, Feni.

Economic importance: A commercially important species.

Ecological role: A relatively peaceful species that is compatible with most fish of equal size or larger, not safe with small fishes/shrimps.

Status and conservation: Considered as CR in the Red list of IUCN Bangladesh (2015).

GenBank: KX455911.1

>KX455911.1 *Ompok pabo* voucher ZMUD:129 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TGACTAGTACCTCTTATAATCGGGGCCCTGACATAGCATTCCCTCGGATGAATAACATAAGCTTCTGAC
TCTTGCCCCCTCCTTCTTCTCCTATTAGCATCCTCCGCCGTCGAAGCGGGGGCAGGCACAGGGTGAAC
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CAGCCATTTACAATACCAAACACCCCTATTTGTGTGAGCCGTAATAACGCGGTCCTGCTACTACT
ATCCTTGCCCGTACTAGCTGCCGGTATCACAATACTTCTAACAGACCGGAACCTAAACACCACATTCTTT
GACCCAGCAGGGCGGGGGAGACCCAATCCTTACCAACACCTTTTCTGATTCTTTGGCCACCAAAAA
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72. *Wallago attu* (Schneider, 1801)

Synonyms: *Silurus attu* Schneider, 1801, *Syst. Ichth.*, p. 378; *Sliurus boalis* Hamilton, 1822, *Fishes of the Ganges*, p. 154; *Silurus wallago* Valenciennes, 1839, *Hist. Nat. Poiss.* 14: 354; *Callichrous macrostomus* Swainson, 1839, *Nat. Hist. Fish.* 2: 306; *Wallago attu* Day, 1878, *Fishes of India*, p. 479.

English names: Boal, Wallago, Freshwater Shark, Helicopter Catfish

Local names: Boal, Boali, Boyari, Keyali, Boil

Fin formula: D 5; P₁ I/13; P2 10; A 86



Distribution: Elongated, laterally compressed body, head depressed. Dorsal profile nearly straight. Nostrils set apart, anterior tubular, posterior a hole. Barbel 2 pairs, maxillary pair extends well beyond the origin of the anal fin, mandibular pair short, as long as the snout. Snout bluntly pointed. Mouth deeply cleft, maxilla extends beyond the eyes, lower jaw slightly longer. Pectoral with a finely serrated spine. Eye circular, above the level of the angle of the mouth, not covered by the skin. Uniform silvery or olive with golden gloss above, sides dull white. A faint orange-yellow band along the lateral line. Anal and caudal fins dusky. The species may attain 200 cm in total length and weigh more than 45 kg (Talwar and Jhingran, 1991).

Habit and Habitat: Inhabits large rivers, lakes, beels and ponds.

Distribution: Recorded from Lawachara, Sreemangal; Kirtonkhola Barishal; Sundarban, Khulna; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Buriganga River, Dhaka; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Taherpur, Sylhet; Jamuna River, Tangail.

Relative abundance: Very Common.

Economic importance: Commercially important species.

Ecological role: Consumes different fish species in the ecosystem. Acts as a predator.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

>KX657717.1 *Wallago attu* voucher DUZM130 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GAGCCGGAATAGTTGGTACAGCCCTCAGTCTACTAATTCGAGCAGAGCTGGCCCAACCTGGCGCCCTTCT
AGGCGACGACCAAATTTACAACGTTATTGTTACCGCCACGCTTTTGAATAATTTTCTTTATAGTAATG
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ACTAATCACAGCAGTACTGCTTCTACTATCCCTACCTGTCTAGCCGCAGGCATTACAATGCTGTAAACA
GACCGAAATTTAAACACCACATTCTTTGATCC
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73. *Ailia coila* (Hamilton, 1822)

Synonyms: *Malapterurus coila* Hamilton, 1822, *Fishes of the Ganges*, p. 158; *Ailia bengalensis* Gray, 1831, *Zool. Miscell.*, p. 8; *Melapterurus cuvieri* Swainson, 1839, *Nat. Hist. Fish.* 2: 307; *Ailia coila* Day,

1877, *Fishes of India*, p. 488.

English name: Gangetic Ailia

Local names: Kajuli, Bashpata



Fin Formula: D. absent; P₁. I/14; P₂. 6; A 68

Description: Body elongate and deeply compressed. Eyes with narrow adipose lids. Upper jaw longer. Barbel 4 pairs, long; gill-openings moderate. Teeth villiform in a narrow band in the jaws and in two widely separated small and oval patches on the vomer (Rahman, 1989). Dorsal fin absent; small adipose inserted above the last 6th ray of the anal fin. Colour silvery. Anal and caudal bases are slightly yellowish. Occiput often with black spots. *A.coila* breeds during the monsoon, from July-September in the shallow waters of large rivers. Diameter of the ripe ova is 0.8 mm on average.

Habit and Habitat: Lives in shoals in major freshwater rivers and connected waters. It breeds in the shallow waters of the larger rivers.

Distribution: Recorded from Tanguar Haor, Hakaluki Haor, Sunamganj, Moulovibazar; Buriganga River, Dhaka; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Halda River, Karnafuli River, Chittagong; Kaptai, Rangamati; Surma river basin, Bhairab, Sunamgonj; Madhupur, Tangail; Mymensing.

Relative abundance: Common.

Economic importance: *Ailia coila* is a commercially important species.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364761.1

>gi|915195118|gb|KT364761.1| *Ailia coila* voucher DUZM131 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTTTATTTGGTATTTGGTGCTTGAGCTGGAATAGTTGGTACAGCCCTTAGCCTACT
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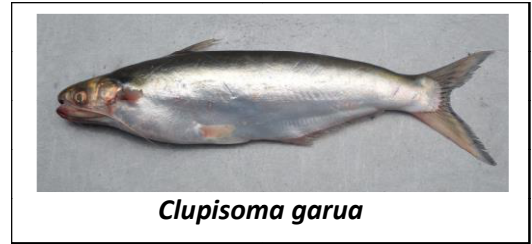
74. *Clupisoma garua* (Hamilton, 1822)

Synonyms: *Silurus garua* Hamilton, 1822, *Fishes of the Ganges*, p.156; *Clupisoma argentata* Swainson, 1839, *Nat. Hist. Animal* 2: 306; *Schilbe garua* Valenciennes, 1839, *Hist. Nat. Poiss.* 14: 379

English names: Garua Bacha, Gagra

Local names: Ghaura, Gharua, Gagra, Garua Bacha

Fin Formula: D I/7; P₁ I/11; P₂ 6; A 3/21-50



Description: Body elongate and compressed, abdominal edge keeled between the pelvic fin and the vent. Mouth moderate and sub-terminal, maxilla extends below the front margin of the eye. Barbel 4 pairs, nasal ones do not reach the eye, maxillary ones extend to the base of the pelvic fins, while both mandibular pairs extend to the pectoral fins. Adipose fin absent in adults. Pectoral fins do not extend to the pelvic fins. Colour silvery with the back yellowish-green. Head and shoulder with a golden gloss.

Habit and Habitat: Inhabits large fresh water bodies and tidal rivers.

Distribution: Recorded from Kirtonkhola River, Barishal; Sundarban, Khulna; Buriganga River, Dhaka; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Charfasson, Bhola, Barishal; Surma River Basin, Bhairab; Sunamgonj; Madhupur, Tangail; Banar River, Mymensing.

Relative abundance: Common.

Economic importance: *C. garua* is a commercially important species.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364783.1

>gi|915195162|gb|KT364783.1| *Clupisoma prateri* voucher DUZM133B cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCTCTATTTAGTATTTGGTGCCTGAGCCGGAATAGTTGGCACAGCCCTTAGCCTACT
GATTCGGGCAGAACTAGCCCAACCTGGTACTCTACTGGGCGATGACCAGATTTATAATGTTATTGTTACT
GCCCATGCCTTCATCATAATTTTCTTATAGTAATACCAATCATAATTGGAGGATTTGGAAATTGACTCG
TTCCCTAATGATTGGGGCACCAGACATGGCATTCCCTCGAATAAATAACATAAGCTTCTGATTACTACC
CCCATCTTCTGCTACTTCTTGCTCATCTGGAGTTGAAGCAGGAGCAGGAACAGGGTGAAGTGTATAC
CCCCCTCGCTGGCAACCTGGCACATGCAGGAGCTTCTGTAGATTTAACTATCTTCTCCCTTCACCTTG
CTGGGGTTTCATCAATTTTAGGAGCAATTAATTTTATTACAATTTAATTAATATGAAACCCCAAGCTAT
TTCACAGTATCAAACACCTCTATTTGTATGAGCCGTATTAATTACAGCCGACTACTTCTGCTGTCTCTA
CCAGTATTAGCCGCTGGGATTACAATACTACTAACAGATCGAAACCTAAATACCACATTCTTCGACCCGG
CAGGGGGAGGAGATCCAATTCTTTATCAACACCTTTTCTGATTCTTTGG
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75. *Eutropiichthys murius* (Hamilton, 1822)

Synonyms: *Pimelodus murius* Hamilton, 1822, *Fishes of the Ganges*, p. 195; *Eutropius murius* Günther, 1864, *Cat. Fish. Brit. Mus.* 5: 54; *Pseudeutropius murius* Day, 1878, *Fishes of India*, p. 472; *Eutropiichthys murius* Hora, 1938, *J. Bombay Nat. Hist. Soc.* 39: 435.

English name: MuriusVacha

Local names: MuriBacha, Motus

Fin formula: D I/7; P₁I/13; P²6; A 3/35-37



Description: Body elongate and laterally compressed. Mouth moderate, maxilla extends below the front margin of the eye. Snout rounded, upper jaw slightly longer than the lower. Eyes with broad adipose lids. Barbel 4 pairs, nasal pair extends to the posterior end of the eye, maxillary pair to the base of the pectorals, inner mandibular pair as long as the head excluding snout, slightly longer than the outer pair. Gill-openings wide, membranes united to each other, free from the isthmus. Median groove on the head extends to the end of the occipital process. Occipital process thin and narrow. Abdominal edge keeled between the pelvics and the anal opening. Teeth villiform in bands in the jaws, palate and vomer. The band of teeth on the palate with those on the vomer forms an extensive horseshoe-shaped backwardly produced band. Dorsal spine as long as the head excluding the snout, finely serrated anteriorly, denticulated posteriorly. Pectoral spine slightly longer than the dorsal spine, rugose anteriorly, denticulated posteriorly. Rayed dorsal much in advance of the pelvics. Adipose always present. Bluish-grey above, silvery on the sides and abdomen. Outer edge of the pectoral, dorsal and caudal black. Bases of the pelvics, anal and caudal yellowish.

Habit and Habitat: Found in rivers, streams and canals (Rahman, 2005).

Distribution: Recorded from Chittagong, Rangamati, Banshkhali, Buriganga River, Dhaka, Duhdpukuria, Dhopachari, Kaptai, Rangamati, Jamuna River, Tangail, Charfasson, Bhola, Barishal. **Economic importance:** Of minor commercial importance in Bangladesh.

Ecological role: It is a voracious feeder. Keeps the aquatic habitat clean.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

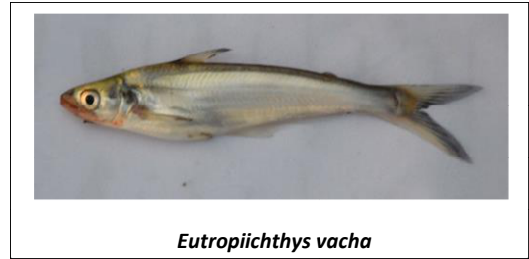
76. *Eutropiichthys vacha* (Hamilton, 1822)

Synonyms: *Pimelodus vacha* Hamilton, 1822, *Fishes of the Ganges*, p. 196; *Eutropiichthys burmanicus* Day, 1877, *Report Freshwater Fish and Fisheries of India and Burma*, p. 490; *Eutropiichthys vacha* Day, 1878, *Fishes of India*, p. 490.

English names: BatchwaVacha, Bacha

Local names: Bacha, GaruaBacha

Fin Formula: D. 1/7; P₁.1/13; P₂. 6; A. 49



Description: Body compressed, dorsal and ventral profiles about equally convex. Snout compressed, pointed. Mouth large, gape extends below the posterior margin of the eye. Eyes with broad adipose lids. Barbel 4 pairs, nasal pair extends to the posterior margin of the orbit, maxillary pair extends to a little beyond the eye, mandibular pairs up to the gill-opening below. Gill-membranes deeply notched, free from each other and from the isthmus. Median groove on the head shallow, reaches the end of the occipital process

Habit and Habitat: Inhabits fresh and tidal rivers and lakes.

Distribution: Recorded from Buriganga River, Dhaka; Dudhpukuria, Dhopachari, Kaptai, Rangamati; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Kuhuri River, Muhuri River, Feni; Surma river basin, Bhairab; Sunamgonj; Madhupur, Tangail; Old Brahmaputa River, Mymensing.

Relative abundance: Common.

Economic importance: *E. vacha* is a commercially important species.

Ecological role: Acts as a voracious feeder. Keeps the habitat clean where it lives.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364762.1

>gi|915195120|gb|KT364762.1| *Eutropiichthys vacha* voucher DUZM135 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TCCCCTGATGATTGGGGCACCAGACATGGCATTCCCCGAATAAATAACATAAGCTTCTGGCTGCTACC
TCCGTCCTTCTGCTACTTCTTGCTCGTCTGGAGTTGAAGCGGGGGCAGGAACAGGATGAACTGTCTAC
CCCCCTAGCTGGCAACCTGGCACATGCAGGAGCCTCTGTAGACTTAACCATCTTCTCTACATCTTG
CCGGAGTTTCATCTATTTAGGAGCAATCAATTTTATTACAATATTATTAACATGAAACCCCCAGCTAT
TTCACAATATCAAACACCATTATTTGTATGAGCCGTCTTAATTACAGCCGTTCTACTGCTACTGTCCCTA
CCAGTGCTAGCCGCCGGCATTACAATATTATTAACAGATCGAAACCTAAACACCACATTCTTTGACCCAG
CAGGAGGGGGGAGACCCTATCTCTACCAACATCTTTCTGATTCTTTGG
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77. *Pachypterus atherinoides* (Bloch, 1794)

Synonyms: *Silurius atherinoides* Bloch, 1794, *Nat. austand.,Fische.* 8: 48; *Pimelodus argius* Hamilton, 1822, *Fishes of the Ganges*, p. 180; *Bagrus atherinoides* Valenciennes, 1839, *Hist. Nat. Poiss.* 14: 396;

English names: Indian Potasi

Local names: Batasi, Bataiya, Batais

Fin Formula: D. I/5; P₁. I/7; P₂. 6; A. 35

Description: Elongate and deeply compressed body. Eyes with free orbital margin, no adipose eye-lids. Barbel 4 pairs, nasal pair extends to the end of the opercle, maxillary pair to the middle of the pelvics or the first third of the anal, outer mandibular pair to the middle of the pectoral, inner mandibular pair shorter. Dorsal spine as long as the head excluding the snout, rough anteriorly, finely serrated posteriorly. Pectoral spine as long as, longer or shorter than the dorsal spine; smooth anteriorly, denticulated posteriorly. Pelvics originate from behind the base of the dorsal. Caudal forked. Silvery, usually with 4 bands along the sides formed of minute dots. Occiput and anterior part of the dorsal black. Longitudinal bands absent in some. **Habit and Habitat:** Inhabits freshwaters and tidal rivers.



Pachypterus atherinoides

Distribution: Recorded from Chalan Beel, Natore; Tanguar Haor, Lawachara, Sreemangal; Sundarban, Khulna; Banskhali, Chittagong; Rangamati; Padma River, Rajshahi; Jafong, Madhobkundo, Sylhet; Satkhira, Khulna; Charfasson, Bhola; Kirtonkhola Barishal; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing and other region of the country. **Economic importance:** Of minor commercial importance in Bangladesh.

Ecological role: As an omnivorous species plays an important role in the aquatic food chain

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364763.1

>gi|915195122|gb|KT364763.1| Neotropius atherinoides voucher DUZM136 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCTGTTCTTGCTGCTGGCATTACAATGCTATTAACAGACCGAACTTAAACACTACATTCTTCGACCCGG
CAGGGGGAGGAGATCCAATTCTCTATCAACACCTTTCTGATTCTTTGG
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78. *Silonia silondia* (Hamilton, 1822)

Synonyms: *Pimelodus silondia* Hamilton, 1822, *Fishes of the Ganges*, p. 160; *Silonia lurida* Swainson, 1838, *Nat. Hist. Animal*, p. 345; *Silundia gangetica* Valenciennes, 1840, *Hist. Nat. Poiss.* 15: 49; *Silonia silondia* Hora, 1937, *Curr. Sci.* 5: 352.

English names: Silond Catfish, Silondia Vacha

Local names: Shilong, Silond, Dhain, Siloin, Jilang

Fin formula: D I/7; P₁ I/12-13; P₂ 6; A 44



Description: Body elongated and compressed, depth about one-fourth the standard length. Mouth wide and terminal, obliquely directed upwards. A pair of small maxillary barbels embedded in the skin. Eyes with narrow adipose lids; snout rounded. Gill-openings wide, membranes free from the isthmus. Occipital process broad, triangular. Teeth in villiform bands on the jaws, vomer and palate; some jaw teeth caniniform. In palate and vomer teeth form a contiguous and extensive horseshoe-shaped band. Dorsal fin with weak spine, placed considerably in advance of the pelvic fins. Pectoral fin with a strong spine, extended beyond the origin of the pelvic fins in young, but not in adults (Rahman, 1989; Talwar and Jhingran, 1991). Back dusky-green, flanks and abdomen silvery; opercle shot with orange and yellow, lips red. Dorsal and pectoral fins of a light neutral tint, the pectorals with an orange band at its base; anal fin light purplish with an orange band at the base; caudal fin much darker, with a reddish band at the base (Talwar and Jhingran, 1991).

Habit and Habitat: Available in estuaries and rivers throughout Bangladesh.

Distribution: Chalan Beel & Haiti Beel, Natore; Madhupur, Tangail, Mymensing.

Relative abundance: Rare.

Economic importance: It is a commercially important species.

Ecological role: It is a carnivorous and voracious feeder. Plays a vital role in the aquatic ecosystem.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

79. *Pangasianodon hypophthalmus* (Hamilton, 1822)

Synonyms: *Pimelodus pangasius* Hamilton, 1822, *Fishes of the Ganges*, p. 163; *Pangasius buchanani* Valenciennes, 1840, *Hist. Nat. Poiss.* 15: 45; *Pangasius*

pangasius Hora, 1938, *J. Bombay Nat. Hist. Soc.* 40(3): 362

English names: Pungas, Yellowtail Catfish, Pungas Catfish

Local names: Pangas



Fin Formula: D II/7; P₁ I/12; P₂ 6; A 3-4/26-29

Description: Greatest width of the head equals its length behind the angle of the mouth. Snout obtusely rounded. Barbel 2 pairs, maxillary pair reaches the posterior base to the middle of the pectoral, mandibular pair shorter, reaches a little beyond the gill-opening. Dorsal spine moderately strong. Pectoral spine stronger than the dorsal one, finely serrated anteriorly and denticulated posteriorly. Caudal forked. Adipose very short. Lateral line complete (Bhuiyan, 1964). Dusky yellowish-green on the back, glossed with silvery-purple on the flanks, side of the head with a golden tinge, fins light reddish-yellow. It attains a length of about 1.5 m (Talwar and Jhingran, 1991).

Habit and Habitat: Occurs in freshwaters and brakish rivers.

Distribution: Recorded from Kirtonkhola River Barishal; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Hatia, Nijhum Dweep, Bhola; Tanguar Haor, Taherpur, Sylhet.

Economic importance: *P. pangasius* is a commercially important species.

Ecological role: Keeps the bottom of the ecosystem clean by feeding on foul and decaying animals and vegetable matter.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank: MF373123.1

>MF373123.1 *Pangasianodon hypophthalmus* voucher ZMUD:138 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCTCTGGAGTAGAAGCAGGGGCGAGGAACAGGATGAAGTATATCCACCCCTTGCTGGAAACCTCGCACA
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CAACATCAATTTCTGATTCTTT
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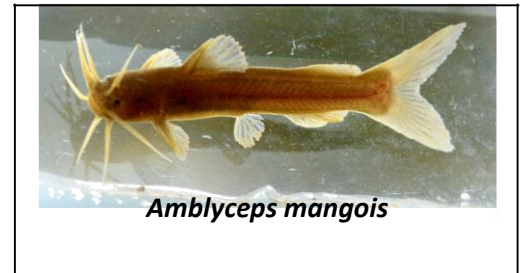
Amblyceps mangois (Hamilton, 1822)

Synonyms: *Pimelodus mangois* Hamilton, 1822, *Fishes of the Ganges*, p.199; *Pimelodus indicus* McClelland, 1842, *Calcutta J. Nat. Hist.* 27: 584; *Amblyceps caecutiens* Blyth, 1858, *J. Asiat. Soc. Bengal* 27: 282

English names: Indian Torrent Catfish

Local names: Chotta Shinghi

Fin Formula: D 1/16; P₁1/7; P₂ 6; A 9



Description: Body elongate, depressed anteriorly and compressed posteriorly. Head markedly depressed, flat and wide with a large mouth. Eyes small, subcutaneous, situated at the beginning of the middle third of the head. Snout rounded. Barbel 4 pairs. Lateral line absent. Dorsal and pectorals with fairly long but weak spines concealed in the skin. Dorsal not as high as the body, originates over the last third of the pectoral fin. Fin rays of the dorsal, anal and pectoral almost entirely enveloped by the skin. Caudal deeply forked, upper lobe much longer than the lower. Adipose low, originates slightly behind the origin of the anal. Caudal peduncle as high as long. Greyish-brown, lighter beneath (Rahman, 2005).

Habit and Habitat: Inhabits in Rivers.

Distribution: Recorded from Halda River, Karnafuli River, Chittagong; Kaptai, Rangamati; Bangshai River, Madhupur, Tangail; Old Brahmaputra River, Mymensing.

Relative abundance: Rare.

Economic importance: Of minor importance to fisheries.

Ecological role: Plays an important role in the aquatic ecosystem as a benthopelagic feeder.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT762370.1

>gi|959006855|gb|KT762370.1| *Amblyceps mangois* voucher DUZM140 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TAATTCGGGGCGGAGCTGGCCCAACCTGGCGCTCTCTTAGGAGACGACCAAATTTATAATGTTATTGTTAC
TGCCCATGCTTTTATTATAATTTCTTTATAGTAATACCAATCATAATTGGCGGGTTCGGAAACTGACTT
GTCCCTTAATGATCGGGGCTCCTGATATGGCATTCCCCGAATAAACAACATAAGCTTCTGACTTCTCC
CCCCTTTCTGCTGCTACTTGCCTTCTGGGGTGAAGCAGGGCGCAGGAACCGGGTGAAGTGTCTA
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TTTCACAGTATCAAACCTCACTCTTTGTCTGAGCAGTACTAATTACAGCCGTGCTCCTTCTACTATCTCT
GCCCCGACTGGCTGCCGGCATCAATACTACTAACAGACCGAACTTAAATACCACCTCTTTGACCCA
GCAGGGGGAGGGGATCCCATCCTCTACCAACCTGTTTTGATTCTTTGGCCACC
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81. *Bagarius bagarius* (Hamilton, 1822)

Synonyms: *Pimelodus bagarius* Hamilton, 1822, *Fishes of the Ganges*, p. 186; *Bagarius yarrellii* Day, 1878, *Fishes of India*, p. 495; *Bagarius bagarius* Weber and de Beaufort, 1913, *Fishes of the Indo-Australian Archipelago* 2: 270.

English names: Gangetic Goonch, Devil Catfish, Sand Shark

Local names: Baghair, Baghari, Bagh Machh

Fin formula: D I/6; P₁ I/13; P₂ 6; A 13; C 16



Bagarius bagarius

Description: Body elongate, head depressed. Mouth inferior and crescentic. Eyes small, superior. Nostrils close together, separated by a membranous fold with a very short nasal barbel. Barbel 4 pairs; maxillary barbels with stiff and broad bases, extending to the base of the pectoral. Lips thick, teeth sharp. Gill-openings wide, membranes united to each other and with the isthmus. Eyes small, superior. Skin rough and slimy with the tubercles. Dorsal fins situated entirely in advance of the pelvic. Dorsal and pectoral spines nearly half as long as the head with a soft prolongation. Pectoral spines strong, flattened, serrated entirely. Adipose short. Caudal deeply forked, upper lobe produced into a long filament. Body greyish or light yellowish with large irregular black bands and markings. Eyes much smaller in diameter in the larger specimens.

Habit and Habitat: Inhabits rapid and rocky pools of large rivers; main streams of large rivers and lakes. In Bangladesh, the Surma-Kushiyara, the Kangsha, the Brahmaputra and the Titas rivers and the Karnafuli reservoir are the principal habitats.

Distribution: Recorded from Surma river basin, Bhairab; Sunamgonj.

Economic importance: Of minor commercial importance to fisheries.

Status and conservation: Considered as CR in the Red list of IUCN Bangladesh (2015).

GenBank: KT762371.1

>KT762371.1 *Bagarius bagarius* voucher DUZM141 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TAATTCGGGCAGAGCTAGCCCAACCTGGCGCCCTTCTAGGCGATGACCAAATTTATAATGTCATTGTTAC
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GTGCCACTAATGATTGGAGCTCCCGACATGGCATTCCCTCGAATAAATAACATAAGCTTCTGACTACTGC
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CCCCCACTTGAGGAAACCTCGCACATGCAGGAGCTTCCGTGGATTTAACTATTTTTCACTGCATCTT
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TCTCCAGTACCAAACACCATTATTCGTGTGGGCCGTCTCATCACAGCAGTACTTCTCCTGCTCTCTCT
GCCAGTACTTGCCGCGGGCATCAATGTTATTAACAGACCGAAACCTAAACACCACCTTCTTTGACCCA
GCAGGAGGAGGTGATCCAATCCTATATCAACATCTTTCTGATTCTTTGGCCACC
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82. *Gagata cenia* (Hamilton, 1822)

Synonyms: *Pimelodus cenia* Hamilton, 1822, *Gagata cenia* Day, 1878, *Fishes of India*, p. 492.

English names: Indian Gagata, Clown Catfish

Local names: Cenia, Jungla, Couwa

Fin formula: D I/6; P₁ I/8; P₂ 1/5; A 3/11; C 18



Description: Body elongate, compressed; dorsal and ventral profiles slightly arched. Head flattened on the ventral surface, more or less rounded anteriorly. Median groove on the head moderately wide, fairly deep, extends to the base of the occipital process. Barbel 4 pairs; nasal pair small, about half-eye diameter; maxillary pair shorter than the head, stiff at the basal portion, extends to the gill-opening or base of the pectorals. Bases of the mandibular barbels close together, set more or less in a transverse line behind the lower lip. Outer mandibulars do not reach the gill-opening. Inner pair shorter. Two finger-like processes at the base of the inner mandibular barbels. Dorsal shorter than the head; spine smooth on the posterior edge with fine serrations on the anterior edge. Pectorals shorter than the head, spines finely serrated at the distal half on the outer edge, 2-9 denticulations on the inner edge. Yellowish-bronze in colour, 5 or 6 bands along the dorsal surface, one at the occipital region, one at the beginning of the dorsal, one below posterior base of the dorsal, one below the adipose and one in the tail. Caudal base and lobes black. Dorsal with a black mark.

Habit and Habitat: The Meghna River is an ideal habitat for all the species under the genus *Gagata*.

Distribution: Padma river, Rajshahi ; Tanguar Haor, Hakaluki Haor Surma river basin, Bhairab; Sunamgonj; Tangail; Mymensing.

Economic importance: This is a species of minor commercial importance.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT762384.1

>gi|959006883|gb|KT762384.1| *Gagata cenia* voucher DUZM142 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCCCTTTATTTAGTATTTGGTGCTTGAGCTGGAATAGTAGGTACAGCCCTTAGCCTAC
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TTTACAATATCAAACACCCCTGTTTGTATGGGCTGTCTAATTACAGCAGTGCTTCTACTGCTATCACT
ACCAGTACTAGCTGCAGGTATTACAATACTCCTGACGGATCGAAATCTAAACACAACCTTCTTTGACCCG
GCAGGAGGGGGGAGACCCCATCTTTATCAACATTTATTCTGATTCTTTGGCCACC
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83. *Glyptothorax indicus* Talwar, 1991

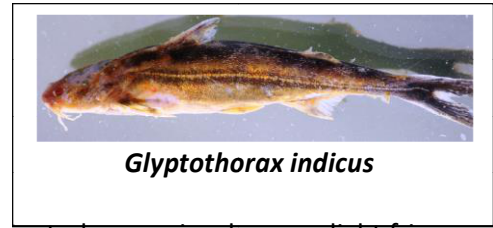
Synonym: *Glyptothorax horai* Shaw and Shebbeare, 1937, *J. Bombay Nat. Hist. Soc.* 39: 188.

English name: Sylhet Hara

Local names: Teli, Telchitta

Description:

D 1/6; P₁ 1/9; P₂ 6; A 10



Head depressed, dorsal and ventral profile equally arched. Mouth ventral, upper jaw longer, slight fringe on the upper lip. Barbel 4 pairs, maxillary pair reaches the base of the pectoral. Jaw toothed, palate edentulous. Adhesive apparatus well-developed, extends to the tip of the mouth, broader than long, and consists of longitudinal folds of skin extending to the tip of the mouth. Paired fins inserted horizontally. Dorsal spine smooth, moderately strong; adipose dorsal longer than the rayed dorsal. Pectorals with strong, flattened spines with 8 or 9 strong curved teeth internally. Brownish-yellow with a dark blotch on the shoulder. Anal and caudal fins darker at the base of the tip. Attains a size of about 11 cm in standard length (Rahman, 2005).

Habits and habitats: Benthopelagic, feeds mainly on bottom organisms. Primarily inhabits hill-streams. Descends to the plains from the hills in the fast-flowing waters during the rains. It mainly lives in rivers, haors, beels, etc. Clings to the stones at the bottom by means of the adhesive thoracic apparatus.

Distribution: Pakistan, India, Bangladesh and Nepal. The species was recorded from the streams of the Terai (West Bengal) by Shaw and Shebbear (1937).

Economic importance: Of minor commercial importance in India. In Bangladesh, it has no commercial value. The flesh content of the species is small and people do not like it. Not seen in the fishermen's catch in Bangladesh.

Ecological role: Plays the role of a detritus-feeder in the hill stream ecosystem. It is a quiet species.

Status and conservation: Considered as DD in the Red list of IUCN Bangladesh (2015).

GenBank: MH087037.1

>MH087037.1 *Glyptothorax indicus* voucher DUZM145 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCTATATCTCGTATTTGGTGCTTGGGCTGGGATAGTGGGCACAGCCCTGAGTCTTCTGATTCGGGCAGAA
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CGGAGCACCCGATATAGCATTTCACGAATAACAACATAAGCTTCTGACTTCTACCACCATCCTTTCTC
CTACTACTTGCCTCTTCAGGAGTTGAAGCTGGAGCTGGTACAGGATGAACTGTATATCCACCACCTTGCTG
GAAACCTGGCAGATGCTGGAGCTCCGTAGATTTAACCATCTTCTCCCTCCATCTTGCAGGAGTATCGTC
AATTCTAGGAGCTATTAATTTTATTACAACATTTATTAACATGAAACCTCCGGCAATTTACAATATCAA
ACACCCTTATTTGTGTGAGCTGACTAATTACAGCGGTACTCCTTCTACTCTCACTACCAGTACTTGCCG
CAGGTATACAATACTACTAACAGACCGAAATCTAAATACAACCTTCTTTGACCCGGCAGGAGGAGGTGA
CCCAATTTTATATCAACATTTATTC
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84. *Hara hara* (Hamilton, 1822)

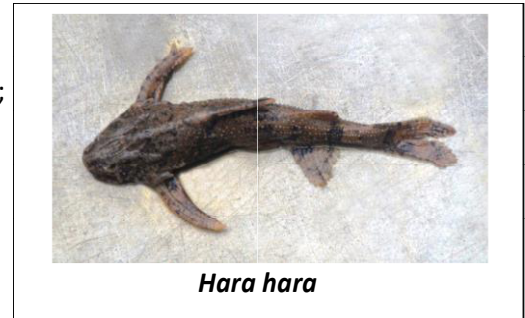
Synonyms: *Pimelodus hara* Hamilton, 1822, *Fishes of the Ganges*, p. 190; *Hara filamentosa* Blyth, 1860, *J. Asiat. Soc.*

Bengal 29: 151; *Erethistes hara* Day, 1877, *Fishes of India*, p. 452; *Hara hara* Hora, 1949, *Rec. Indian Mus.*, p. 47.

English name: Kosi Hara

Local name: Kutakanti

Fin formula: D I/5; P₁ I/6; P₂ 6; A 9; C 14



Description: Body moderately elongate; dorsal profile arched; ventral profile in front of the pelvics nearly horizontal. Head depressed, flattened below. Mouth small, inferior; upper jaw longer. Barbel 4 pairs; nasal does not reach the eye; maxillary reaches the base of the pectoral; outer mandibular extends beyond the head, inner mandibular reaches to the gill-opening. Median groove on the head shallow, does not quite reach the base of the occipital process. Dorsal arises midway between the snout tip and the posterior edge of the adipose fin. Pelvics originate from below the anterior half of the dorsal. Pectoral spine moderately long, equal to or a little longer than the head. Caudal forked. Skin rough, provided with round bony tubercles which run in parallel lines along the posterior half of the body. Yellowish-brown colour with four broad crossbands behind the dorsal fin; a dark blotch at the end of the adipose fin. Fins generally with black marks, often with black bands (Talwar and Jhingran, 1991).

Habit and Habitat: Inhabits slow-moving freshwater rivers and streams. Distributed in the streams of Sylhet, Mymensingh and Dinajpur districts of Bangladesh (Rahman, 2005).

Distribution: Recorded from Thanchi, Bandarban; Borochara, Cox's Bazar ; Dokhala Khirai river, Madhupur; Tanguar Haor, Sylhet.

Economic importance: Of very little interest to the fisheries.

Ecological role: Controls water pollution by consuming aquatic detritus.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

85. *Hara jerdoni* Day, 1870

Synonyms: *Hara jerdoni* Day, 1870, *J. Asiat. Soc. Bengal* 39: 39; *Erethistes jerdoni* Day, 1878, *Fishes of India*, p. 453.

English name: Sylhet Hara

Local name: Kutakanti



Description: D I/5; P₁ I/6; P₂ 6; A 8; C 12 Body fairly elongate, dorsal profile slightly arched, ventral profile nearly horizontal in front of the pelvics; head depressed, flattened below. Mouth small, inferior; upper jaw slightly longer. Eyes small, situated at the anterior half of the head. Barbel 4 pairs; nasal extends beyond the posterior end of the orbit, maxillary reaches the posterior end of the pectoral base, mandibular shorter. Median groove on the head deep, reaches the base of the occipital process. Dorsal arises midway between the snout tip and the mid-base of the adipose dorsal. Pelvics originate below the posterior half of the dorsal. Pectoral spine long, 1.5 times of the head; provided with 22-24 anteriorly directed serrations on the outer margin, 10-14 backwardly directed well-marked serrations on the inner margin. Dorsal spine smooth anteriorly, pectinated posteriorly. Caudal emarginate with 12 principal rays. Skin smooth, without bony tubercles. Colour brownish, irregularly banded on the body. Caudal, anal and pelvics banded. Dorsal with black mark at the centre. All barbels are banded (Rahman, 2005).

Habits and habitats: A very sluggish fish. Feeds on insect larvae, benthic detritus, etc. Inhabits slow-moving hill streams, with sandy beds bearing aquatic weeds and decaying leaves. It also occurs in rivers and beels of Bangladesh.

Distribution: India and Bangladesh.

Economic importance: The species is harvested with other fishes from the rivers of Sylhet, Mymensingh, Tangail and Chandpur. This has little market value and is usually thrown away by the fishermen.

Ecological role: Demersal in slow-moving freshwater rivers and streams, might have some role in controlling water pollution by consuming aquatic detritus.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

Remarks: The formidable pectoral spines are the most prominent feature of this fish. It attains a length of about 3.5 cm.

GenBank: KT762372.1

>KT762372.1 *Hara jerdoni* voucher DUZM149 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCCCTTATCTAGTATTTGGTGCATGAGCCGGAATAGTGGGCACAGCCTTAAGCCTCC
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TGCTCAGCCTTCGTTATAATTTCTTTATAGTAATACCAATTATAATTGGAGGATTTGGCAACTGACTA
GTACCCCTAATAATTGGAGCCCAGACATAGCATTCCACGAATAAACACATAAGCTTTTGACTTCTAC
CCCCATTTTCTTCTACTTCTCACCTTTCTGGGGTAGAAGCCGGGGCAGGAACAGGATGAACTGTGTA
CCCACCCTAGCTGGAACCTGGCCCACGCCGGAGCATCCGTGACTTAACCATTTTTTCACTACACCTT
GCAGGTGTTTCTCCATCCTGGGCGCCATTAACCTTTATTACAATAATTAATAAAAACCCCGCAA
TCTACAATAACCAACCCCTATTTGTGTGAGCTGTCCTAATTACAGCAGTTCTACTACTCTCCCT
ACCAGTCCTTGCTGCAGGCATTACAATACTCCTGACAGATCGAACTTAAACACCACCTTCTCGACCCT
GCAGGAGGGGGTGACCCAATTCTATACCAACATCTCTTCTGATTCTTTGGCCACC
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86. *Heteropneustes fossilis* (Bloch, 1794)

Synonyms: *Silurus fossilis* Bloch, 1794, *Hist. Nat. Poiss.* 44: 36; *Silurus singio* Hamilton, 1822, *Fishes of the Ganges*, p. 147; *Saccobranthus fossilis* Valenciennes, 1840, *Hist. Nat. Poiss.* 15: 400 **English names:** Stinging Catfish, Fossil Catfish, Liver Catfish

Local names: Shing, Jiol, Shinghi, Jill Shinghi
Fin Formula: D. 6; P₁. 1/7; P₂. 6; A. 66.



Description: Body elongate, subcylindrical up to the pelvic fin base, compressed behind. Head depressed with the top and sides covered with osseous peats, occipital process not extending to the base of the dorsal fin. Fertilised eggs are adhesive, demersal and spherical in shape and green in colour. Attains about 30 cm in total length. Yellow or leaden or dark purplish-brown above, lighter below; usually with two yellowish lateral bands. Young ones are reddish, mature specimens almost black.

Habit and Habitat: Found in Pnds, swamps, Beels, Rivers, Canals.

Distribution: Recorded from Chalan Beel, Haiti Beel, Natore; Lawachara, Sreemangal; Kirtonkhola River, Barishal; Padma River, Rajshahi; Jaflong, Madhobkundo, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulovibazar; Buriganga River, Dhaka; Keshobpur, Jessore; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Sundarban, Satkhira, Khulna; Taherpur, Sylhet; Old Brahmaputra River, Mymensing; Kuhuri River, Muhuri River, Feni; Pungli River, Tangail.

Relative abundance: Very common.

Economic importance: A fish of high economic importance.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364787.1

>gi|915195170|gb|KT364787.1| *Heteropneustes fossilis* voucher DUZM160 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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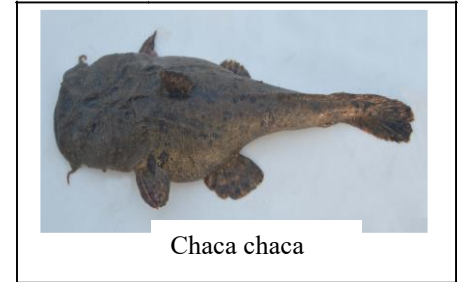
87. *Chaca chaca* (Hamilton, 1822)

Synonyms: *Platystacus chaca* Hamilton, 1822, *Fishes of the Ganges*, p. 140; *Chaca buchanani* Günther, 1846, *Cat. Fish. Brit. Mus.* 5: 29; *Chaca lophioides* Day, 1878, *Fishes of India*, p. 481; *Chaca chaca* Misra, 1976, *Fauna of India, Pisces* (2nd ed.), 3: 121.

English name: Square head Catfish

Local names: Chaka, Gangainna, Chaka Veka

Fin formula: D I/4; P₁ I/5; P₂ 6; A 10; Caudo-dorsal 20-25+8-12



Description: Body depressed anteriorly, laterally compressed, posteriorly tapering. Head very large, strongly depressed, rectangular in shape. Mouth very wide, opening above when jaws pressed together. Lower jaw slightly longer. Anterior nostril tubular, situated near the edge of the snout. Upper surface of the head with many tubular openings. Eyes small, sub-cutaneous. Simple or arborescent, tubercular and cutaneous appendages on the top and sides of the head. Dorsal surface of the body with scabrous, tuberculated skin. Ventral surface of the body smooth. Barbel 3 pairs; maxillary pair small located at the corner of the mouth and mandibular pairs widely separated. Gill-openings very narrow, restricted near the base of the pectoral. Fine villiform teeth on the jaws, none on the vomer and palate. Median groove on the head reaches the base of the occipital process, the latter connected with the basal bone of the dorsal fin. Eyes small in the anterior fourth of the head, width of the interorbital about half of the head length. Dorsal spine with few serrations on the anterior edge; pectorals and pelvics rounded, placed horizontally. Pectoral spine strong, serrated anteriorly. Large black spots along the sides in the posterior half of the body. Outer edge of the pectorals, pelvics and caudal white (Rahman, 2005).

Habit and Habitat: inhabits Rivers, beels, canals, ponds and estuaries throughout Bangladesh.

Distribution: Recorded from Tanguar Haor, Lawachara, Sreemangal, Hakaluki Haor, Sunamganj; Hamham waterfall, Moulvibazar; Taherpur, Sylhet.

Relative abundance: Common.

Economic importance: It is a species of no commercial importance.

Ecological role: Plays a vital role in the coastal ecosystem.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank: KX455900.1

>KX455900.1 *Chaca chaca* voucher ZMUD:0161 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CGTTACTGCCATGCTTTTGAATAATCTTTTATAGTAATACCAATCATAATTGGGGGCTTCGGGAAC
TGGCTTGTACCACTAATGATCGGAGCACCAGACATGGCCTTCCCACGAATAAATAACATAAGCTTCTGAC
TCCTTCCCCCTCACTACTATTACTACTAGCATCCTCCGGGTAGAGGCCGGGGTCGGGACCGGATGAAC
GGTCTATCCCCCCTCGCCGAAATCTAGCACATGCCGGAGCCTCTGTTGACCTAGCCATCTTCTCTCTA
CACCTTGCCGGAGCTTCTCCATTATAGGAGCTATCAACTTTATCACAACAATTATCAACATAAAACCCC
CATCAACCTCACAATATCAAACCCCTCTGTTTGTATGAGCCATTTAATCACAGCCGACTCTTACTACT
ATCCCTCCAGTATTAGCCGCTGGCATTACAATACTACTAACAGACCGAAACCTTAACACCACTTTCTTC
GACCCAGCGGGAGGAGGAGACCCAATTCTCTACCAACACCTGTTTTGATTCTTTGGCCACCAGGAA
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88. *Olyra longicaudata* (McClelland, 1842)

Synonyms: *Olyra longicaudata* McClelland, 1842, *Calcutta J. Nat. Hist.* 2: 588; *Olyra elongata* Günther, 1883, *Ann. Mag. Nat. Hist.* 11(5): 140; *Olyra kempfi* Chaudhuri, 1912.

English names: Bannertail Catfish, Longtail Catfish

Local name: Bot Shinghi

Fin formula: D 1/7; P₁ 1/6; P₂ 1/5; A 18-19



Description: Elongate, depressed anteriorly, compressed posteriorly. Head much depressed, snout rounded. Upper jaw slightly longer than the lower. Mouth terminal, teeth villiform. Gill-openings wide, gill-membranes notched nearly to the chin. Nostril widely separated, anterior tubular, posterior with a barbel. Barbel 4 pairs. Eyes small, subcutaneous, situated at the middle third of the head. Origin of the dorsal nearly above the origin of the pelvics. Dorsal without a spine. Pectoral with a short stout spine, with 12-13 backwardly directed denticulations. Pectorals half as long as the head. Adipose long, very low, originating above the middle of the anal fin. Caudal forked, upper lobe much larger than the lower. Pectoral spine enveloped in a skin. Base of the dorsal and the anal enveloped in a thick skin. Reddish-brown in colour. A narrow and faint dark band along the lateral line. Two pale brown bands, one above and the other below the band along the lateral line. Barbels blackish (Talwar and Jhingran, 1991; Rahman, 2005).

Habit and Habitat: Ideal habitat in Bangladesh are the hill streams of Sylhet and Chittagong hill districts.

Distribution: Recorded from Tanguar Haor, Hakaluki Haor, Sunamganj, Hamham waterfall, Moulvibazar, Taherpur, Sylhet, Khagrachari.

Economic importance: The species is of little interest to fisheries.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT762373.1

>gi|959006861|gb|KT762373.1| *Olyra longicaudata* voucher DUZM162 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GTACCACTAATAATTGGAGCCCTGATATAGCCTTTCCCGAATAAACAACATAAGTTTCTGACTTCTAC
CGCCCTCCTTTCTGCTTCTCTGGCCTTCTGCTGTAGAAGCCGGAGCCGGAACCGGCTGAACAGTCTA
TCCACCCCTTGCTGTAACCTGGCCATGCAGGAGCCTCTGTCGACTTAACATTTTTCCCTGCATTTA
GCTGGTGTCTTCAATTCTGGGGCTATCAACTTCATCACAACAATCATTAAATAAAACCCCTGCCA
TTTACAATACCAACCCCACTATTTGTGTGAGCAGTATTAATTACAGCAGTTCTTCTACTCCTATCCCT
CCCAGTTCTAGCTGCAGGCATCACCATACTATTAACGGACCCTAATCTAAATACTACTTTCTTTGATCCG
GCAGGAGGTGGAGATCCCATCCTATATCAACATCTATTCTGATTCTTTGGCCACC
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89. *Hypostomus plecostomus* (Linnaeus, 1758)

Synonyms: *Plecostomus plecostomus* Linnaeus, 1758, *Syst. Nat.*, pp. 230-338; *Acipenser plecostomus* Linnaeus, 1758, *Syst. Nat.*, pp. 230-338; *Hypostomus guacari* Lacepede, 1803, *Hist. Nat. Poiss.*, p. 323.

English names: Plecostomus, Suckermouth Catfish, Common Pleco, Plecostomus Catfish **Local name:** Choshok Machh

Fin formula: D I/9; P₁ I/4; P₂ I/4; A I/3

TL: 26 cm **SL:** 19 cm

Description: Body elongated, dark brown with a large, flat head. The belly is flat and lacks the bony plates that occur all over the rest of the body. The eyes are small and set high on the head. The mouth is located on the underside of the head and is shaped like a suction cup. It has one pair of barbels. Body colour varies depending on the age, species, and environment. Usually the body has a base colour of light brown to black. The fish may be spotted, striped or with one solid colour. The fins are of the same colour as the rest of the body. The dorsal fin stands tall when erect.

Habit and Habitat: Usually occurs in fresh running waters and brackish waters of the river mouths.

Distribution: Recorded from Tanguar Haor, Sunamganj, Taherour, Sylhet.

Relative abundance: Common.

Economic importance: This species is of little or no value as a food fish. Used as aquarium fish.

Status and conservation: Not evaluated

90. *Aplocheilus panchax* (Hamilton, 1822)

Synonyms: *Esox panchax* Hamilton, 1822, *Fishes of the Ganges*, p.221; *Aplocheilus chrysostigmus* McClelland, 1839, *Asiat. Res.*, p. 301; *Panchax melanopterus* Bleeker, 1850, *Verh. Bat. Gen.* 23: 144.

English names: Panchax Minnow, Blue Panchax, Tin Head

Local names: Techoukka, Kanpona, Choukkani, Bechi

Fin Formula: D 7-8; P₁ 14; P₂ 6; A 16



Description: Body elongate and compressed posteriorly, head depressed. Eyes large, its diameter equals interorbital width. Dorsal fin on the posterior third of the body. Anal fin almost square shaped, its base much wider than the dorsal fin base. Pelvic fins small, without any elongated ray. Caudal rounded in mature specimens, somewhat pointed in young. Lateral line absent. Upper surface of the body greenish, becoming dull white with a bluish iridescence on the flanks and belly; a glistening silver spot on the top of the head. Fins yellowish; lower third of the dorsal fin with a jet black basal spot; anal fin orange at the base, reddish with a dark spot on the outer parts. The fish is conspicuous by its peculiar shape as well as the shining spot on the top of the head (Rahman, 1989; Talwar and Jhingran, 1991).

Habit and Habitat: Found in ponds, ditches, canals, streams and other water bodies throughout Bangladesh.

Distribution: Recorded from Lawachara, Sreemangal; Sundarban, Khulna; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulovibazar; Thanchi, Bandarban; Inani, Cox's Bazar; Dudhpukuria, Dhopachari, Kaptai, Rangamati; Halda River, Karnafuli River, Chittagong; Kaptai, Rangamati; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Kirtonkhola River, Barishal; Taherpur, Sylhet; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Chengi River, Khagrachori; Kuhuri River, Muhuri River, Feni; Surma River, Bhairab; Sunamgonj; Madhupur, Tangail.

Relative abundance: Common.

Economic importance: The species is important as an ornamental fish.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

91. *Oryzias melastigma* (McClelland, 1839)

Synonyms: *Aplocheilus melastigmus* McClelland, 1839, *Asiat. Res.* 19(2): 301; *Haplochilus melastigma* Day, 1878, *Fishes of India*, p. 522; *Oryzias melanostigma* Hora, 1942, *Rec. Indian Mus.* 44(2): 197; *Panchax melastigma* Munro, 1955, *Marine and Freshwater Fishes of Ceylon*, p. 85.

English name: Estuarine Ricefish

Local names: Bechi, Kanpona

Fin formula: D 7; P₁ 1/10; P₂ 6; A 23-24



Description: Head depressed, mouth oblique. Lower jaw slightly longer. Teeth in a single row in the jaws. Lower margin of the orbit with pores. Scales cycloid, large, 27 in the lateral series. Lateral line absent. Head scaled. Dorsal fin placed well back, inserted above the last fourth of the anal. Pectoral slightly longer than the head; pelvics reach the anal. Caudal rounded. Body dull green above, white below (Rahman, 2005). A thin dark line along the middle of the side of the body which ends in a dull spot at the base of the caudal fin (Talwar and Jhingran, 1991).

Habit and Habitat: Primarily inhabits estuarine and brackish waters, usually in shallow lagoons and swamps among roots and mangroves along the margins of water, readily adapts to freshwater conditions and even breeds in freshwater ponds, lakes and rivers.

Distribution: Recorded from Halda River, Karnafuli River, Chittagong, Kaptai, Rangamati, Sundarban, Satkhira, Khulna, Tanguar Haor, Taherpur, Sylhet, Kuhuri River, Muhuri River, Feni.

Relative abundance: Common.

Economic importance: No significant commercial value.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

92. *Monopterus cuchia* (Hamilton, 1822)

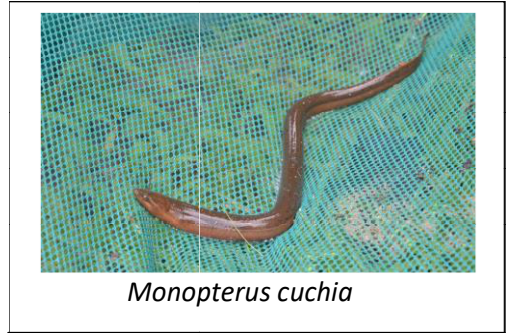
Synonyms: *Unibranchaperturacuchia* Hamilton, 1822, *Fishes of the Ganges*, p. 16; *Ophichthys punctata* Swainson, 1839, *Nat. Hist.*

Fish.,2: 336; *Pneumabranchnus albinus* McClelland, 1845, *Calcutta J.*

*Nat. Hist.*5: 195

English names: Cuchia, Gangetic Mud Eel, Freshwater Mud Eel

Local names: Kuchia, Kunche, Kuicha



Monopterus cuchia

Fin Formula: D very rudimentary; P₁,P², and C absent

Description: Body cylindrical anteriorly, tail tapering, compressed. Skin slippery. Eyes small, covered by skin, on the upper half of the head. A single crescentic gill-opening on the ventral side of the head. Gills much reduced; a pair of respiratory sacs on either side of the vertebral column originating from the gill chamber. A valved nostril opens above the orbit, a second round one in front of the snout. Lips fleshy. Upper jaw longer. Pectorals, pelvics and caudal fin absent; dorsal and anal fin folds rudimentary or reduced to the median folds. Branchiostegal rays 6. Scales in the posterior half of the body, arranged longitudinally. Greenish or chestnut-brown above, becoming lighter on the abdomen. Numerous round spots on the body above the lateral line and all over the tail

Habit and Habitat: Lives in shallow, well-vegetated water and mud of rivers, pools, streams, beels, canals, ponds, estuaries, etc.

Distribution: Recorded from Tanguar Haor, HakalukiHaor, Sunamganj; Hamham waterfall, Moulovibazar, Sundarban, Satkhira, Khulna, Charfasson, Bhola, Barishal, Taherpur, Sylhet.

Economic importance: Not known as a commercially important species.

Ecological role: Plays an important role in the food chain of the aquatic ecosystem.

Status and conservation: Considered as VU in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: MG969535

> *Monopterus cuchia* voucher DUZM174 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial.

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93. *Chanda nama* (Hamilton, 1822)

Synonyms: *Chanda nama* Hamilton, 1822, *Fishes of the Ganges*, p. 109; *Ambassis indica* McClelland, 1842, *Calcutta J. Nat. Hist.* 2: 585; *Bogoda nama* Bleeker, 1853, *Verh. Bat. Gen.* 25: 89.
English names: Elongate Glass-perchlet, Asian Glass Fish

Local names: Nama Chanda, Chanda

Fin Formula: D VII+I/17; P₁ 12; P₂ I/5; A III/16

Description: Body oval and strongly compressed. A considerable rise from the occiput to the base of the dorsal fin. Scales minute, often irregularly arranged; lateral line with present. Transparent yellowish-white patch with numerous tiny black dots concentrates behind the gill-cover. Crown of the head blackish. Vertical fins orange, especially in sexually mature males. Caudal fin black and orange. It attains a length of about 11 cm.

Habit and Habitat: The species swims through the flooded paddy fields in schools during the rainy season, breeds everywhere during the rains, and lives in Fresh and brackish waters, both in standing and running waters; clear streams, canals, beels, ponds, and inundated paddy fields.

Distribution: Found in all types of freshwater bodies thorough out Bangladesh including Tanguar haor.

Relative abundance: Very common.

Economic importance: Low-priced fish.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364788.1

>gi|915195172|gb|KT364788.1| *Chanda nama* voucher DUZM178 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTTTATTTAGTATTTGGTGCCTGAGCTGGAATGGTAGGCACCGCCCTTAGCCTCCT
TATCCGAGCAGAAGCTTAGTCAACCAGGCTCCCTTTAGGGGACGACCAGATTTATAATGTTATCGTTACG
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TTCTCTAATAAATTGGCGCCCCGATATAGCATTCCCTCGAATAAACAATATGAGCTTCTGGCTCCTCCC
CCCATCATTCTCTGCTTCTAGCCTCTCCGGTGTAGAGGCTGGGGCTGGGACCGGCTGAAGTGTAT
CCCCACTAGCTGGCAACCTAGCACATGCAGGGGCATCAGTTGACCTAGCAATTTCTCCCTTCATCTAG
CTGGTGTCTTCAATTCTGGGGGCAATCAACTTTATTACGACTATTATTAACATGAAGCCCCAGCTAT
TACTCAGTACCAGACACCCTGTTTGTCTGAGCCGTGCTAATTACAGCGGTTCTTCTCTTTCTTTCTCT
CCAGTCTTGCAGCCGCTATTACAATACTACTAAGTACCGAACTTAAACACTACCTTCTTCGATCCCC
CAGGAGGAGGAGACCCTATCCTGTACCAACACCTATTCTGATTCTTTGG
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94. *Parambassis lala* (Hamilton, 1822)

Synonyms: *Chanda lala* Hamilton, 1822, *Fishes of the Ganges*, p. 114; *Ambassis ranga* Day, 1875, *Fishes of India*, p. 51; *Ambassis lala* Innes, 1935, *Exotic Aquarium Fishes*, p. 445; *Pseudambassis lala* Talwar and Jhingran, 1991, *Inland Fish.*, 2: 804.

English name: Highfin Glassy Perchlet

Local names: Lal Chanda, Kat Chanda



Parambassis lala

Fin formula: D VII + I/11; P₁ 1/10; P₂ I/5; A III/13

Description: Body small and almost rounded. Mouth oblique. Gillrakers about 16 on the lower arm of the first arch. Second spine of the dorsal fin elongate. Scales minute; lateral line with about 90 scales; cheek with 7 transverse scale-rows. Body coloured bright orange-yellow, with three vertical dusky bands (of minute dots) extending dorso-ventrally on the sides. Dorsal, anal and caudal fins scarlet red. Edges of the first dorsal and the anal fins bluish. Operculum with dark stripe on the side. It attains a standard length of about 3 cm.

Habit and Habitat: This demersal fish is found both in fresh and brackish water. Inhabits ponds, ditches and pools (Talwar and Jhingran, 1991).

Distribution: Recorded from Rangamati, Kaptai; Karnafuli River, Chittagong; Sundarban, Satkhira, Khulna; Tanguar Haor, Taherpur, Sylhet; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Kuhuri River, Muhuri River, Feni; Surma river basin, Bhairab; Sunamgonj; Madhupur, Tangail.

Economic importance: The species has no commercial value.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.:KT364789.1

>gi|915195174|gb|KT364789.1| *Parambassis lala* voucher DUZM181 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTCTACNTAGTATTTGGTGCCTGGGCCGGCATAGTAGGCACCGCCCTTAGCCTGCT
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TCCCTCCTTCTTCTCCTTGCCTCTTCCGGCGTAGAGGCTGGGGCTGGAACCGTTGAACTGTCTAT
CCCCCTAGCTGGTAACCTAGCACACGCGGGGCATCCGTTGACCTGGCCATCTTCTCCCTCCACTTAG
CTGGGGTCTCATCAATTCTTGGTGCAATTAACCTTTATTACTACTATTATTAATATGAAACCTCCCGCCAT
CACTCAGTACCAGACACCCTTGTTCTGCTGAGCTGTCTCATTACAGCTGTTCTCCTGCTACTCTCTCTT
CCAGTCTTGCAGCTGCCATTACTATACTATTAACGGACCGAAACCTAAACACAACCTTTTTTATCCAG
CAGGCGGGGGAGACCCCATCTTTATCAACACCTGTTCTGATTCTTTGG
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95. *Pseudambassis ranga* (Hamilton, 1822)

Synonyms: *Chanda ranga* Hamilton, 1822, *Fishes of the Ganges*, pp. 113, 371; *Ambassis ranga* Day, 1878, *Fishes of India*, p. 51; *Pseudambassis ranga* Talwar and Jhingran, 1991, *Inland Fish*. 2: 805.

English names: Indian Glassy Fish

Local names: Chanda, Ranga Chanda, LalChanda

Fin Formula: D VII+I/14; P₁12; P₂ I/ 5; A III/15.



Description: Body stout, deep and compressed. Preorbital serrated on the upper and lower edges. Preopercular hind edge smooth, with one or two serrations at an angle. Transparent colour with a greenish-yellow tinge and a silvery gloss on the dorsum; a silvery broad lateral stripe on the side of the body; a dusky spot on the shoulder. Fins hyaline; outer edges of the dorsal, anal and caudal fins are blackish.

Habit and Habitat: Demersal. Widely distributed in clear, freshwater streams, canals, beels, ponds.

Distribution: Recorded from Chalan Beel, Natore; Lawachara, Sreemangal; Jaflong, Madhobkundo, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulovibazar; Keshobpur, Jessore, Dudhpukuria, Dhopachari, Kaptai, Rangamati; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Halda River, Karnafuli River, Chittagong; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Kirtonkhola River, Barishal; Taherpur, Sylhet; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Surma river basin, Bhairab; Sunamgonj; Madhupur, Tangail.

Relative abundance: Very common.

Economic importance: Of minor commercial importance.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

96. *Johnius coitor* (Hamilton, 1822)

Synonyms: *Bola coitor* Hamilton, 1822, *Fishes of the Ganges*, p. 75; *Sciaena coitor* Day, 1878, *Fishes of India*, p. 187; *Johnius coitor* Talwar and Shetty, 1971, *Proc. Indian Acad. Sci.* 74 (B): 75.

English names: Coitor Croaker



Johnius coitor

Local names: Koitor, Koitor Poa, DecrePoa

Fin Formula: D IX-XI+I/30; P₁ 17; P₂ I/5; A II/7

Description: Dorsal profile more convex than that of the abdomen. Snout pointed, prominent and swollen superiorly with quadrilobate free border. Lower jaw much shorter than the upper. Mouth inferior. Five pores on the mandible. Preopercle serrated, two opercular spines. Villiform teeth on both the jaws. Gill-membranes continued forward below, gill-openings wide.

Habit and Habitat: Demersal. Inhabits rivers and shallow coastal areas.

Distribution: Recorded from Dudhpukuria, Dhopachari, Chittagong; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Halda River, Karnafuli River, Chittagong; Kaptai, Rangamati; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Kirtonkhola River, Barishal; Hatia, Nijhum Dweep, Bhola; Tanguar Haor, Sunamgonj; Taherpur, Sylhet; Surma river basin, Bhairab; Madhupur, Tangail; Mymensing.

Economic importance: A commercially important species.

Ecological role: Plays an important role in the estuarine habitat.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

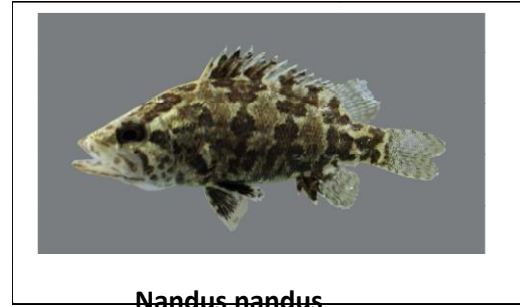
97. *Nandus nandus* (Hamilton, 1822)

Synonyms: *Coius nandus* Hamilton, 1822, *Fishes of the Ganges*, 96, 370; *Nandus marmoratus* Valenciennes, 1831, *Hist. Nat. Poiss.* 7: 482; *Bengula hamiltonii* Gray, 1834, *Ill. Ind. Zool.* 2: 88

English names: Mottled Nandus, Mud Perch

Local names: Bheda, Meni, Roina, Nandui

Fin Formula: D. XXIV/12; P₁. 15; P₂. I/6; A. III/8



Description: A deep, laterally compressed body with a nearly straight belly and arched back. Head large and compressed. Mouth very large, protrusible; teeth villiform on the jaws. Eyes large. Dorsal spines rather strong; anal spines moderately strong, second spine longest. Fins greenish; yellowish narrow bands of spots across soft portions of the dorsal, anal and caudal fins. It attains a length of about 20 cm.

Habit and Habitat: This fish inhabits fresh and brackish waters. Occurs frequently in the ditches, beels and inundated fields.

Distribution: Recorded from Sunamgonj; Lawachara, Sreemangal; Kirtonkhola River, Barishal; Sundarban, Khulna; Jaflong, Madhobkundo, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulovibazar; Keshobpur, Jessore; Itna Haor, Arial Beel, Munshigonj; Charfasson, Bhola; Taherpur, Sylhet; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Kuhuri River, Muhuri River, Feni; Surma River, Bhairab, Sunamgonj; Madhupur, Tangail; Mymensing.

Economic importance: A commercially important species.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT762376.1

>gi|959006867|gb|KT762376.1| *Nandus nandus* voucher DUZM195 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAAGACATTGGCACCCCTGTATCTAGTATTTGGTGCCTGAGCTGGCATAGTAGGAACAGCCCTAAGCCTAC
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AGCACATGCTTTCGTAATAATCTTCTTTATAGTTATACCAATTATGATCGGGGGCTTTGGGAACTGACTT
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CCCCCTTTTCTCCTCCTCTTGGCCTCTTCTGGCGTAGAAGCGGGCGTGGGAACCGGATGAACCGTTTA
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GCAGGTATTTTCATCAATCTTGGGTCAATTAACCTTTATTACAACAATCATTAAATATAAAAACCTCCGGCCA
TAACAATATATCAGATCCGCTGTTTCGTGTGAGCCCTTTAATCACCACAGTTTACTTCTTCTATCCCT
TCCAGTCTGGCCGCCGATTACAATGCTTCTCACAGATCGAACTTAAATACATCATTCTTTGATCCA
GCGGGAGGAGGAGATCCAATCTCTACCAACACCTGTTTGGATTCTTTGGCC
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98. *Badis badis* (Hamilton, 1822)

Synonyms: *Labrus badis* Hamilton, 1822, *Fishes of the Ganges*, p. 70; *Badis buchmanii* Day, 1878, *Fishes of India*, p. 128; *Badis badis* Mukerji, 1933, *J. Bombay Nat. Hist. Soc.* 36(4): 812-813.

English names: Badis, Dwarf Chameleon fish.

Local names: Koi Bandi, Napit.

Fin Formula: D. XVI/7; P₁. 13; P₂. I/5; A. III/6



Description: Elongated, relatively low, compressed body. Mouth

small, oblique. Lower jaw slightly longer; maxilla reaches to below the front edge of the orbit. A spine at the posterior superior angle of the opercle. Scales ctenoid on the head and body. Soft portions of the dorsal and anal fins pointed. Second and third anal spines sub-equal, about twice as long as the first. Pectoral shorter than the head. Caudal rounded. Colouration subject to great variation. A series of dark transverse bands on a ground colour of dirty red, dark brown or dark green. A bluish-black spot on the shoulder, another on the opercle and a third near the base of the caudal (Rahman, 2005).

Habit and Habitat: Benthopelagic, Occurs solitarily in rivers, ponds, beels and ditches, spending much of its time motionless.

Distribution: Recorded from Chalan Beel, Natore; Tanguar Haor, Jaflong, Madhobkundo, Sylhet; Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibaza; Inani, Cox's Bazar; Buriganga River, Dhaka; Bandarban; Dudhpukuria, Dhopachari, Kaptai, Rangamati; Halda River, Karnafuli River, Chittagong; Old Brahmaputra River, Mymensing; Khagrachori; Kuhuri River, Muhuri River, Feni.

Economic importance: One of the most demanding aquarium fishes.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: **KT364764.1**

>gi|915195124|gb|KT364764.1| *Badis badis* voucher DUZM196 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GCACTCTCCAATATCAAACCCCTATTTGTTGGGCCCTCCTGGTAACCACTGTTCTTCTTACTTT
CCTTACCTGTGCTAGCCGCCGATTACAATGCTTCTGACAGATCGCAACCTAAATACCTCCTTTTTTGA
CCCAGCCGGTGGCGGAGACCCATTCTTTACCAACACCTGTTTTGATTCTTTGG
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99. *Oreochromis mossambicus* (Peters, 1852)

Synonyms: *Chromis mossambicus* Peters, 1852, *Montab. Akad. Wiss. Berlin*, p. 681; *Tilapia mossambica* Jones and Sarojini, 1952, *J. Bombay Nat. Hist. Soc.* 50(3): 606; *Oreochromis mossambica* Trewavas, 1983, *Tilapiine Fishes*, p. 292.

English names: Tilapia, Mozambique Cichlid, Mozambique Tilapia, Java Tilapia

Local name: Tilapia

Fin formula: D XV-XVI/12; P₁15; P₂ I/5; A III/11 *Oreochromis mo*
TL: 7.3 cm **SL:** 5.64 cm.



Oreochromis mossambicus

Description: Body elongate, fairly deep and compressed; upper profile of the head concave, snout rounded. Mouth large. Longest soft dorsal ray extending to above the proximal part of the caudal fin in females and immature males, but in breeding males to half or three-quarter length of the caudal fin. Caudal fin truncate, often with rounded corners. Scales cycloid. Females and non-breeding males are watery-grey to yellowish, with three or four dark blotches along the flanks, lower part of the head pale greyish-white; upper lip bluish. Dorsal fin black with a red margin; pectoral fins translucent red; caudal fin with a broad red margin (Talwar and Jhingran, 1991).

Habit and Habitat: Benthopelagic. It is a freshwater fish inhabiting estuarine areas, pools of sluggish streams, canals, lakes and ponds.

Distribution: Recorded from Kirtonkhola River, Barishal; Bandarban; Halda River, Karnafuli River, Chittagong; Kaptai, Rangamati; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Tanguar Haor, Sunamgonj; Taherpur, Sylhet.

Relative abundance: Very common.

Economic importance: It is a commercially important species.

Ecological role: Plays an important role in the aquatic ecosystem by consuming algae, detritus etc.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

100. *Oreochromis niloticus* (Linnaeus, 1758)

Synonyms: *Tilapia nilotica* Linnaeus, 1758, *Systema Naturae*, pp. 230-338; *Chromis nilotica* Linnaeus, 1758, *Systema Naturae*, 824 pp; *Chromis guentheri* Steindachner, 1864, *Ichthyologische Mittheilungen*, pp. 223-232.

English name: Nile Tilapia

Local name: Tilapia, Nilotica

Fin formula: D XVI-XVII/11; P₁15; P₂l/5; A III/8



Description: Body elongate, fairly deep and compressed; upper profile of the head concave, snout rounded. Mouth large. Longest soft dorsal ray extending to above the proximal part of the caudal fin in females and immature males, but in breeding males to half or three-quarter length of the caudal fin. Caudal fin truncate, often with rounded corners. Scales cycloid. The most distinguishing characteristic of the species is the presence of regular vertical stripes along the sides. Margin of the dorsal fin grey or black. Vertical bars in the caudal fin 7-12.

Habit and Habitat: Benthopelagic. It is a freshwater fish inhabiting estuarine areas, pools of sluggish streams, canals, lakes and ponds.

Distribution: Recorded from Kirtonkhola River, Barishal; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Tanguar Haor, sunamgonj; Taherpur, Sylhet.

Relative abundance: Very common.

Economic importance: It is a popular culture fish.

Ecological role: Generally the adult fish performs the role of the first consumer and the juveniles as the higher level of consumers in an aquatic food chain. Competes with small indigenous fish and gradually occupies their habitats. The fish has proved to be harmful to other fish species, because of its ability to mature early and to breed more frequently resulting in its overpopulation in the ponds.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: KX657714.1

>KX657714.1 *Oreochromis niloticus* voucher DUZM252 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AATACCAATTATGATTGGAGGCTTTGGAACTGACTAGTACCCCTCATGATTGGTGCACCAGACATGGC
C TTCCCTCGAATAAATAACATGAGCTTTTACTTCTCCCCCTCATTCTTCTTCTTCTCGCCTCATCTG
GAGTCGAAGCAGGTGCCGGCACAGGATGGACTGTTTATCCCCGCTCGCAGGCAATCTTGCCACGCT
GG CTTTCTGTTGACTTAACCATCTTCTCCCTCCACTTGGCCGGAGTGTGCATCTATTTTAGGTGCAATTAAT
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AACAGACCGAAACCTAAACACAACCTTCTTGACCCTGCCGGAGGAGGAGACCCC
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101. *Rhinomugil corsula* (Hamilton, 1822)

Synonyms: *Mugil corsula* Hamilton, 1822, *Fishes of the Ganges*, p. 221; *Liza corsula* Menon, 1999, *Rec. Zool. Surv. India Misc. Publ. Occas. Pap.* 175: 366; *Rhinomugil corsula* Talwar and Jhingran, 1991, *Inland Fish.* 2: 897.



English name: Corsula Mullet

Local names: Khorsula, Bata, Khalla, Arwari, Halla, Hira, Khor, Pungtara, Urul

Fin formula: D₁IV; D₂I/7; P₁ 15; P₂ I/5; A III/9

Description: Body sub-cylindrical anteriorly, moderately compressed posteriorly. Dorsal profile nearly straight. Head flat above, compressed at the sides. Eyes elevated, dorso-lateral in position. Upper lip not forming the anterior tip of the snout, inferior in position below a projecting fleshy, bluntly rounded snout. Preorbital serrated along the lower and posterior edge; maxillary almost hidden. First dorsal short, less than half of the pectoral length, originates slightly nearer to the snout tip than to the base of the caudal. Pectoral without an axillary scale. Pelvics with an axillary scale. Caudal slightly emarginated. Scales very weakly ctenoid. Bases of the caudal, second dorsal and anal with scales. Greyish-brown on the surface, lighter along the abdomen. Dorsal and caudal stained with grey (Rahman, 2005).

Habit and Habitat: Surface-dwelling fish. Inhabit rivers and estuaries throughout Bangladesh.

Distribution: Recorded from Padma river, Rajshahi, Tanguar Haor, Hakaluki Haor, Sunamganj; Hamham waterfall, Moulovibazar, Keshobpur, Jamuna River, Tangail, ItnaHaor, Arial Beel, Munshigonj, Halda River, Karnafuli River, Chittagong, Kaptai, Rangamati, Sundarban, Satkhira, Khulna, Charfasson, Bhola, Barishal, Hatia, Nijhum Dweep, Bhola, Madhupur, Tangail, Mymensing.

Economic importance: It has a little interest on fisheries.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

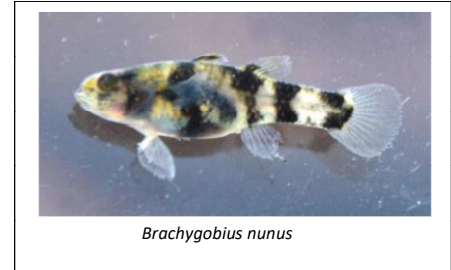
GenBank Accession No.: KT364790.1

>gi|915195176|gb|KT364790.1| *Rhinomugil corsula* voucher DUZM201 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCACCCCTAGCCAGCAATTTAGCCCATGCCGAGCATCCGTTGACCTAACCATCTTTCCCTTCACTTAG
CAGGGGTATCCTCTATTTTAGGGGCTATTAATTTTATTACAACCATCATTAATATGAAACCTCCTGCTAT
TTCCAGTATCAAACCTCCCTCTTTGTTTGAGCTGTGCTAATTACAGCTGTTCTTCTTCTACTTTCTCTT
CCAGTACTTGAGCTGGTATTACAATGCTTCTTACAGATCGTAACTCAATACTTCTTTCTTCGACCCGG
CGGGGGGAGGGGACCCTATCCTTTATCAACATTTATTCTGATTCTTTGG
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102. *Brachygobius nunus* (Hamilton, 1822)

Synonyms: *Gobius nunus* Hamilton, 1822, *Fishes of the Ganges*, p. 54; *Gobius alcockii* Annandale, 1906, *J. Asiat. Soc. Bengal* 2: 201; *Brachygobius nunus* Koumans, 1953, *Fishes of the Indo-Australian Archipelago* 10: 194.



English names: Bumblebee Goby, Golden-banded Goby

Local name: Nuna Baila

Fin formula: D₁VI; D₂ I/7; P₁ 14; A I/7; C 15

TL: 1.94cm **SL:** 1.16 cm

Description: Anteriorly cylindrical, posteriorly compressed. Size small. Head obtuse, convex, slightly depressed. Mouth oblique, lower jaw longer than the upper. Maxilla reaches below the anterior third of the eye. Longitudinal rows of the lateral mucous canals on the head. Teeth in villiform rows in the jaws, outer row in the upper jaw enlarged. Tongue rounded, free. Twenty-five to 27 ctenoid scales in the median lateral series. Opercle scaled. Head scaled above behind the eye to the first dorsal with thin cycloid scales. Second dorsal and anal of about the same length, opposite each other. Dorsal fins lower than the height of the body. Caudal rounded. Yellowish-brown with 7 or 8 black bands, the first through the eye, the second through the opercle and 5 or 6 more down the body, the last being on the caudal base. Largest recorded size in Bangladesh is 1.7 cm in total length (Rahman, 2005).

Habits and Habitat: *B. nunus* occurs in estuaries, mangroves, tidal creeks and freshwater rivers.

Distribution: Recorded from Sundarban, Satkhira, Khulna; Tanguar Haor, Taherpur, Sylhet; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing.

Relative abundance: Fairly common.

Economic importance: The species is of no interest to fisheries.

Ecological role: Plays an important role in the biological control of insects in the mangrove ecosystem.

Status and conservation: Considered as VU (Present study).

103. *Glossogobius giuris* (Hamilton, 1822)

Synonyms: *Gobius giuris* Hamilton, 1822, *Fishes of the Ganges*, p. 51; *Gobius kokius* Valenciennes, 1837, *Hist. Nat. Poiss.* 12: 68; *Gobius russellii* Valenciennes, 1837, *Hist. Nat. Poiss.*, p. 75;

English names: Tank Goby, Bar-eyed Goby

Local names: Bele, Bailla

Fin Formula: D₁ VI; D₂ I/9; P₁ 17-18; A I/9



Description: Body elongated, anteriorly cylindrical, posteriorly compressed. Head pointed, depressed, lower

jaw longer. Scales on the upper part of the head, upper parts of cheek, opercle, breast and belly cycloid; others ctenoid; 31-34 scales in the lateral series, 25-30 rows before the base of the dorsal. Dorsal fins close together

Habit and Habitat: Primarily inhabits rivers, canals, beels, ditches and similar freshwater bodies; it also lives in estuaries and seas.

Distribution: Occurs in all types of freshwater habitats.

Economic importance: It has considerable economic importance.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: **KT364791.1**

>gi|915195178|gb|KT364791.1| *Glossogobius giuris* voucher DUZM212 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AACATTCTTTGACCCCGCGGGAGGAGGAGACCAATCCTGTACCAACATCTATTCTGATTCTTTGG
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104. *Eleotris fusca* (Bloch and Schneider, 1801)

Synonyms: *Poecilia fusca* Bloch and Schneider, 1801, *Syst. Ichth.*, p.453; *Chielodipterus culius* Hamilton, 1822, *Fishes of the Ganges*, p. 55; *Eleotris fusca* Day, 1878, *Fishes of India*, p. 313.

English names: Dusky Sleeper, Brown Gudgeon, Brown Sleeper

Local names: Kuli, Budh Baila, Bhut Bele, Goby

Fin formula: D₁ VI; D₂ I/8; P₁ 17; P₂ I/5; A I/8

TL: 5.13cm **SL:** 4.13 cm



Eleotris fusca

Description: Elongated body, anteriorly cylindrical and posteriorly compressed. Head depressed. Head scaled above, between and behind the eyes, on cheeks and opercles. Snout and areas below eyes naked. Base of the pectoral strong, well-developed. Pectoral rounded, as long as the head, excluding the snout. Pelvics shorter than the pectoral. Caudal obtusely rounded, slightly shorter than the head. Blackish or brownish. Vertical fins with a reddish hue. Fins barred with spots. A diffuse spot at the upper base of the pectoral behind the gill-cover. (Talwar and Jhingran, 1991; Rahman, 2005).

Habit and Habitat: Inhabits estuaries and freshwaters.

Distribution: Recorded from Halda River, Karnafuli River, Chittagong; Kaptai, Rangamati; Sundarban, Satkhira, Khulna.

Relative abundance: Rare.

Economic importance: It is of minor commercial importance.

Ecological role: Plays a vital role in the coastal ecosystem.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: MF170948.1

>MF170948.1 *Eleotris fusca* voucher ZMUD:226 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CAAGACATTGGCACCCCTCTATCTTGTATTTGGTGCTTGGGCGGGCATGGTAGGCACCGCTTTAAGCCTAC
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CTCCCTCCTCCTCCTCTCTGGCATCTTCAGGCGTTGAAGCGGGCGCTGGCACAGGATGAACTGTCTA
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GCAGGCGTTTCATCAATTTAGGGGCTATTAACCTTTATTACCACAATTATTAATATGAAACCCCCGCAA
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TCCCGTACTTGCCGCCGGCATTACAATACTGCTTACCGACCGAAACCTAACACCACCTTCTTTGACCCC
GCCGGAGGAGGTGACCCAATTTTATACCAACACCTTTTCTGATTCTTT
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105. *Eleotris lutea* (Day, 1876)

English name: Lutea Sleeper

Local names: Kuli, Goby

Fin formula: D₁ VI; D₂ I/8; P₁ 14-15; P₂ I/5; A I/8



Eleotris lutea

Description: Elongated, compressed body with depressed head.

Anterior nostrils tubular at the anterior margin of the snout; posterior ones rounded slits above the upper margin of the eye. Mouth oblique, maxilla extends to below the middle of the eye. Lower jaw prominent, longer than the upper. Villiform teeth in 3 or 4 rows in both the jaws, outer row enlarged, in the lower jaw inner row enlarged. Mucous canals on the snout, interorbital, cheek and opercle. A single strong spine directed downward and forward at the angle of the preopercle. Tongue large, truncate. Gill-membranes broadly united with the isthmus. Scales small, ctenoid on the body, but cycloid on the head, breast and belly; 45-50 scales along the lateral series; 22-23 rows before the first dorsal. Interorbital, snout, cheek and opercle naked. Both dorsal and anal fins lower than the body. Pectoral as long as the head excluding the snout. Pelvics of similar length. Caudal obtusely rounded, shorter than the head. Brownish or greyish. Dark vertical bands across body most distinct posteriorly. Dorsal and anal fins with bands of black spots; caudal fin black, slightly reticulated. The largest size recorded in Bangladesh is 6.4 cm in standard length (Rahman, 2005).

Habit and Habitat: Sleepers occur in fresh or brackish waters, although some species are truly marine.

Distribution: Recorded from Madhupur, Tangail, Mymensing.

Relative abundance: Rare.

Economic importance: Of no interest to fisheries.

Ecological role: Plays the role of a minor predator by hunting macrofauna in the coastal ecosystem.

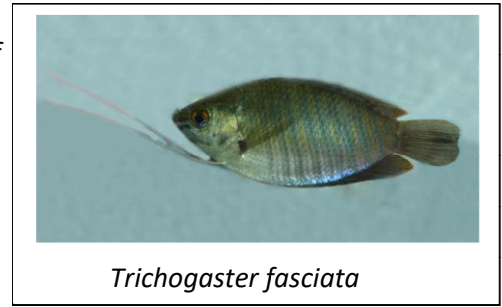
Status and conservation: Considered as DD in the Red list of IUCN Bangladesh (2015).

106. *Trichogaster fasciata* (Bloch and Schneider, 1801)

Synonyms: *Trichogaster fasciatus* Bloch and Schneider, 1801, *Syst. Ichth.*, p. 164; *Trichopodus colisa* Hamilton, 1822, *Fishes of the Ganges*, p. 117; *Trichopodus bejens* Hamilton, 1822, *Fishes of the Ganges*, p. 118.

English names: Striped Gourami, Giant Gourami.

Local names: Khailsha, Khoila, Cheli, Khoira



Trichogaster fasciata

Fin Formula: D. XVIII/14; P₁. 9; P₂. 1; A. XVI/17

Description: Dorsal and abdominal profile equally convex. Mouth small, directed obliquely upward. Lower margin of the preorbital with 9-14 denticulations. In many specimens, the lips are thick with papillae. Lower edge of the preopercle serrated. Subopercle serrated in some, entire in others. Caudal usually cut square or very indistinctly notched, may be rounded in some. Greenish or bluish above, dirty white below. Orange, backwardly directed oblique bands descend from back to the abdomen. A brilliant green spot on the gill cover. Eyes rust red. Pelvics with yellow-white bases and brilliant red tips. Dorsal and caudal fins spotted with orange. Immature specimens usually with a spot at the root of the caudal (Rahman, 1989).

Habit and Habitat: Found ponds, ditches, canals, rice fields, beels, baors and flood plains.

Distribution: Recorded from Lawachara, Sreemangal; Sundarban, Khulna; Kaptai Lake, Suvolong, Rangamati; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum Waterfall, Moulvibazar; Keshabpur, Jessore; Itna Haor, Arial Beel, Munshigonj; Halda River, Karnafuli River, Chittagong; Charfasson, Bhola; Kirtonkhola River, Barishal; Pekua beel, Chellakhali River, Old Brahmaputra River, Mymensing; Surma River basin, Bhairab; Sunamgonj; Haoda Beel, Bangshai River, Madhupur, Tangail.

Relative abundance: Very common.

Economic importance: It is a minor commercially important species.

Ecological role: Plays an important role in the biological control of the mosquito.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: MH087051

> ***Trichogaster fasciata* voucher DUZM230 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial.**

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CCTTACTTAGTCTTTGGTGCTTGAGCTGGAATAGTAGGAACCGCTTAAAGTTTGCTCAT
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TCAATATCAAACACCTTTATTGTTTATCGTTGATCCGTCCTAATTACTGCTGTACTACTCTTCT
TTCCCTCCAGTACTAGCTGCTGGTATTACAATACTTTAACAGACCGGAATCTAAATAC
CACCTTCTTTGATCCTGCTGGTGGGGGAGATCCTATTCTATCAACACCTCTTC
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107 *Trichogaster lalia* (Hamilton, 1822)

Synonyms: *Trichopodus lalius* Hamilton, 1822, *Fishes of the Ganges*, pp. 120, 372; *Colisa unicolor* Cuvier, 1831, *Hist. Nat. Poiss.* 7: 386; *Trichogaster lalius* Day, 1878, *Fishes of India*, p. 375.

English names: Dwarf Gourami, Red Gourami

Local names: Lal Khailsha, Baicha, Ranga Khailsha

Fin Formula: D XVI/12; P₁. 9; P₂. 1; A. XVIII/16



Description: Body strongly compressed. Mouth small, strongly protrusible, directed upwards; lips normal. Dorsal fin of the male is pointed in contrast to the rounded dorsal of the female. Caudal fin rounded to truncate. Scales large, 27 or 28 in longitudinal series; vertical fins densely scaled. Lateral line incomplete, interrupted, indistinct in the posterior half. Males are slightly longer than the females and have a bright orange-red body with double rows of scarlet red and light blue spots forming oblique bands on the flank. Caudal and posterior part of the anal brilliant red, pelvics orange-red. Females have a duller silvery blue-grey colour.

Habit and Habitat: Found in the rivers, haors and beels.

Distribution: Recorded from Chalan Beel, Natore; Sagordari, Keshabpur, Jessore; Sundarban, Satkhira, Khulna; Lawachara, Sreemangal; Jaflong, Madhobkundo, Derai Haor, Hail Haor, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Surma River, Bhairab; Sunamgonj; Humhum waterfall, Moulvibazar; Itna Haor, Arial Beel, Munshigonj; Halda River, Chittagong; Karnafuli River, Kaptai, Rangamati; Pekua beel, Mymensing; Kuhuri River, Feni River, Feni; Bangshai River, Madhupur, Tangail.

Relative abundance: Very common.

Economic importance: It is a species of low commercial value.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

108. *Ctenops nobilis* McClelland, 1845

Synonyms: *Ctenops nobilis* McClelland, 1845, *Calcutta J. Nat. Hist.* 5: 28; *Osphronemus nobilis* Day, 1878, *Fishes of India*, p. 372.

English names: Indian Paradise fish, Frail Gourami, Indian Gourami

Local names: Neftani, Napit Khailsha, Modhumala

Fin Formula: D. VI/6, P₁. 13, P₂. I/5, A. IV/23

TL: 4.3cm SL: 3.1 cm



Description: Body elongate, relatively deep and strongly compressed. Abdomen rounded. Head acute, with a longer lower jaw; teeth on the jaws. Dorsal fin short-based, inserted well back on the body. Pectoral fin with a strong spine and 5 rays. Lateral line only slightly recognisable, irregularly piercing ctenoid scales; 28-33 scales in longitudinal series. Brown or black with a silvery white band, usually interrupted, from the eye to the base of the caudal. Similar stripes or series of oblong spots below. A black light-edged ocellus at the upper base of the caudal.

Habit and Habitat: Occurs in Rivers, canals and beels.

Distribution: Recorded from Buriganga River, Dhaka; Charfasson, Bhola; Kirtonkhola River, Barishal; Pekua beel, Someshwari River, Chellakhali River, Sherpur, Old Brahmaputra River, Mymensing ; Kuhuri River, Muhuri River, Feni; Surma river basin, Bhairab, Sunamgonj.

Relative abundance: Fairly common.

Economic importance: Not commercially important.

Ecological role: It may sometimes become a threat to the other species though it is usually harmless in nature. It is a larvivorous fish.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

109. *Trichogaster chuna* (Hamilton, 1822)

Synonyms: *Trichopodus chuna* Hamilton, 1822, *Fishes of the Ganges*, p. 121; *Trichogaster chuna* Day, 1878, *Fishes of India*, p. 373; *Colisa chuna* Qureshi, 1965,

Common Freshwater Fishes of Pakistan, p. 150;

English name: Honey Gourami

Local names: Chuna Khailsha, Baicha



Trichogaster chuna

Fin formula: D XVI/6; P₁ 9; P₂ 1; A XXIII/13; C 15

Description: Body oblong and compressed. Mouth small and protractile. Preorbital serrated. Dorsal spines increasing in length posteriorly. Caudal fin slightly emarginated. Soft dorsal pointed. Pelvics consist of a filiform ray extending to the caudal. Lateral line interrupted, incomplete or absent in some; 27-28 scales in the lateral series. Dull greenish above, brownish below. A distinct dark band extends from the eye to the caudal.

Habit and Habitat: Inhabits pools, ditches, inundated fields, rivers and beels with vegetation.

Distribution: Recorded from Tanguar Haor, Taherpur, Sylhet; Surma River, Bhairab; Sunamgonj.

Relative abundance: Rare.

Economic importance: This is a tiny fish of very little commercial importance. Used in aquaria.

Ecological role: Keeps the water clean by consuming plankton, vegetation and detritus.

Status and conservation: Considered as VU (Present study).

MH087047

>[MH087048] *Trichogaster chuna* voucher DUZM233 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TTACAATGCTTTTAACAGATCGTAATTTAATAACACCTTTTTTGACCCTGCAGGCGGAGGAGACCCAATTCTTTAT
CAACACCTCTTT
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110. *Macrognathus aculeatus* (Bloch, 1786)

Synonyms: *Ophidium aculeatum* Bloch, 1786, *Naturg. Ausland. ische* 5: 60; *Rhynchobdella aculeate* Day, 1878, *Fishes of India*, p. 338; *Macrognathus aculeatus* Smith, 1945, *Freshwater Fishes of Siam or Thailand*, p. 61.

English names: Lesser Spiny Eel, One-stripe Spiny Eel,

Spotted Spiny Eel, Peacock Spiny Eel

Local names: Tara Baim, Baim, Bam.

Fin formula: D XXXVII/80, P₁ 26, A III/78.



Macrognathus aculeatus

Description: Body elongate. Rostrum relatively large, with a concave ventral surface lined with 14-28 paired tooth plates. No preorbital spine. Caudal rounded, soft dorsal and anal separated from the caudal by a deep notch. Head scales larger than those on the body. Scales present on bases of the fins. Lateral line well-marked. Pelvics absent. Greenish or brownish-grey above, yellowish beneath. A light band along the body above the lateral line. A series of 3-9 large black ocelli having a white edge, along the base of the dorsal. Caudal with vertical brown bars. Largest size recorded in Bangladesh is 24 cm (Rahman, 2005).

Habit and Habitat: Inhabits in ponds, ditches, beels, canals, inundated fields and rivers. Also available in brackish waters within the tidal influence.

Distribution: Recorded from Chalan Beel, Haiti Beel, Natore; Lawachara, Sreemangal, Banskhali, Chittagong, Rangamati; Keshobpur, Jessore; Jamuna River, Tangail, Itna Haor, Arial Beel, Munshigonj, Tanguar Haor, Taherpur, Sylhet, Pekuabeel, Someshwari River, Chellakhali River, Sherpur; Old Brahmaputra River, Mymensing; Surma River, Bhairab, Sunamgonj; Bangshai River, Madhupur, Tangail, Ubdhakhali River, Netrokona.

Relative abundance: Very common.

Economic importance: Contribute to a significant fishery in Bangladesh.

Ecological role: Plays an important role in controlling the population of harmful insects in the environment through its feeding habits. It also helps to control water pollution by eating detritus.

Status and conservation: Considered as NT in the Red list of IUCN Bangladesh (2015).

Comments: Need taxonomic revision probably it is misidentified as *M. aral*.

111. *Macrognathus pancalus* (Hamilton, 1822)

Synonyms: *Macrognathus pancalus* Hamilton, 1822, *Fishes of the Ganges*, p. 30; *Mastacembelus punctatus* Cuvier and Valenciennes, 1832, *Hist. Nat. Poiss.* 8: 463; *Mastacembelus pancalus* Day, 1876, *Fishes of India*, p. 240.



Macrognathus pancalus

English name: Striped Spiny Eel.

Local names: Guchi Baim, Guchi, Chirka, Turi

Fin formula: D XXIV-XXVI/38; P₁ 19; P₂ absent; A III/34; C 12

Description: Body eel-like, elongated and slightly compressed. Rostrum rounded in cross-section, devoid of toothplates. Preopercle with 2-5 spines; preorbital spine strong and can pierce human skin. Mouth small. Lateral line complete. Scales cycloid and minute. Dorsal fin inserted above the middle of the pectoral fins; dorsal and anal fins separated from the caudal fin. Greenish-olive along the back, yellowish on the belly, with many yellowish-white spots on the flanks and often with dark brown vertical stripes in the posterior half of the body. Soft dorsal, anal, pectoral and caudal fins yellow, with numerous minute black spots. Attains a maximum length of about 17.5 cm (Shafi and Quddus, 2001).

Habit and Habitat: It inhabits the floor and spawns in the upper water level.

Distribution: Throughout the country.

Economic importance: Commercial importance to fisheries.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT762378.1

>gi|959006871|gb|KT762378.1| *Macrognathus pancalus* voucher DUZM236 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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CCCAGTCTAGCCGCTGGGATCACAATACTTCTAACAGACCGAAACCTTAACACCACATTCTTTGACCCC
GCAGGAGGTGGAGACCCAGTTCTCTACCAACACCTATTCTGATTCTTTGGCCACC
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112. *Mastacembelus armatus* (Lacepede, 1800)

Synonyms: *Macrogathus armatus* Lacepede, 1800, *Hist. Nat. Poiss.* 2: 286; *Mastacembelus armatus* Valenciennes, 1831, *Hist. Nat. Poiss.* 8: 460; *Macrogathus caudatus* McClelland, 1842, *Calcutta J. Nat. Hist.* 2: 586

English names: Tire-track Spiny Eel

Local names: Baim, Sal Baim, Bain, Bamosh, Bumni, Gont



Fin Formula: D /78; P₁ 21; P₂ absent; A III/77

Description: Body relatively slender. Dorsal and anal fins broadly joined to the caudal fin; outline of caudal fin merged with that of the dorsal and anal fins. A large backwardly directed spine above the angle of the mouth. Mouth small, its gape extending below to the posterior nostril. Sharp teeth in bands on both the jaws. Spinous dorsal fin inserted above the pectoral fins. Dorsal and anal fins broadly joined to the caudal fin. Scales minute, head scaled. Rich brown above, yellowish below. A zigzag black band from the eye to the caudal fin along the upper half of the side. A row of black spots along the base of the soft dorsal fin. Pectoral, dorsal and anal fins usually spotted. (Rahman, 2005)

Habit and Habitat: Inhabits in rivers, canals, streams, beels, ponds and inundated fields. Also inhabits brackish water.

Distribution: Recorded from throughout the country.

Economic importance: *M. armatus* is the largest Spiny Eel in Bangladesh and has considerable commercial value.

Status and conservation: Considered as EN in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: KT762364.1

>gi|959006843|gb|KT762364.1| *Mastacembelus armatus* voucher DUZM237 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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113. *Pseudorhombus arsius* (Hamilton, 1822)

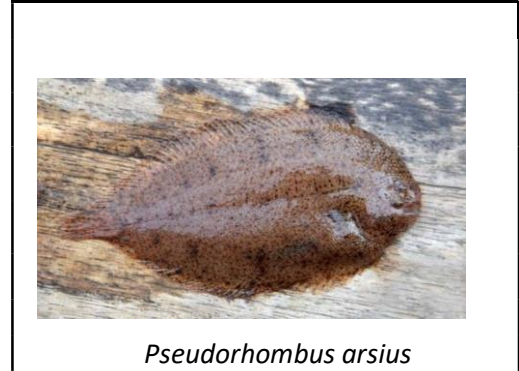
Synonyms: *Pleronectes arsius* Hamilton, 1822, *Fishes of the Ganges*, p. 128; *Pseudorhombus arsius* Day, 1878, *Fishes of India*, p. 423.

English names: Large-toothed Flounder

Local names: Serbati, Bara Daitta Serbati

Fin Formula: D. 72; P₁. 11; P₂. 6; A. 56

TL: 7.2 cm **SL:** 5.2 cm



Description: Oval, flat body, mouth protractile, upper-jaw teeth small and closely spaced posteriorly, becoming widely spaced and enlarged anteriorly. Scales on the eye side ctenoid, on the blind side cycloid. Lateral line curved above the pectoral fin, forming two branches on the head. Colour of the eye side brownish with various dark spots and rings; usually large dark spots on the lateral line and posterior third of the body near the anterior end of the caudal peduncle. Median fins with scattered dark spots, frequently arranged in longitudinal rows on the dorsal and anal fins (Talwar and Jhingran, 1991). **Habit and Habitat:** Occurs in the Bay of Bengal, enters estuaries and tidal rivers.

Distribution: Dudhpukuria, Dhopachari, Kaptai, Rangamati; Charfasson, Bhola, Ubdhakhali River, Netrokona.

Economic importance: Constitutes a modest fishery in the estuarine areas of India and Bangladesh.

Ecological role: Plays a vital role by controlling algae and detritus from the aquatic environment.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank Accession No.: MH429297

> *Pseudorhombus arsius*

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GTCGGCACAGCCCTTAGCCTGCTCATTGAGCCGAGCTTAGCCAACCTGGTGCCCTCCTAGGAGACGACCAGATTTA
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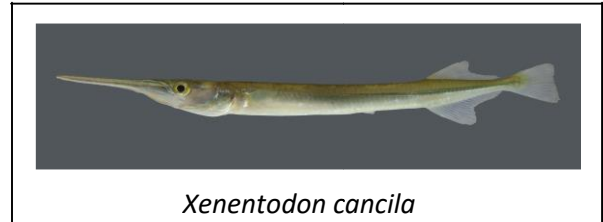
114. *Xenentodon cancila* (Hamilton, 1822)

Synonyms: *Esox cancila* Hamilton, 1822, *Fishes of the Ganges*, p. 213; *Belone cancila* Day, 1878, *Fishes of India*, p. 511; *Xenentodon cancila* Shaw and Shebbeare, 1937, *Fishes of Northern Bengal*, p. 108.

English names: Freshwater Garfish, Needle Fish, Silver Needle Fish

Local names: Kankila, Kaikya, Kakila

Fin formula: D. 16; P₁. 10; P₂. 6; A. 17



Description: Body extremely elongated and slightly compressed. Eyes rather small. Cheeks long. A deep longitudinal groove along the upper surface of the head. Upper and lower jaws produced into long beaks, the lower being slightly longer than the upper. A single row of sharp, needle-like unequal teeth present on each beak. Fins without spines. Dorsal fin inserted opposite the origin of the anal fin in the posterior region of the body. Pectoral fins short and inserted high up on the sides. Pelvic fins abdominal. Caudal fin truncate. Lateral line near the lower profile. Greenish above, flanks greenish-silvery, grading to whitish below. A silvery lateral band with a dark margin runs along the side; a series of 4-5 blotches (absent in the young) on the sides between the pectoral and anal fins. Dorsal and anal fins with dark edges.

Habit and Habitat: Occurs primarily in rivers, also in ponds, canals, beels, and inundated fields.

Distribution: Recorded from Lawachara, Sreemangal; Banskhali, Chittagong; Kaptai lake, Shuvolong, Duhdpukuria, Dhopachari, Rangamati; Padma River, Rajshahi; Jaflong, Madhobkundo, Hail Haor, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Chittagong; Jamuna River, Tangail; Itna Haor, Arial Beel, Munshigonj; Poshur River, Khulna; Charfasson, Bhola, Kirtonkhola River, Barishal; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Kuhuri River, Muhuri River, Feni; Surma River basin, Bhairab; Sunamgonj; Bangshai River, Madhupur, Tangail.

Relative abundance: Very common.

Economic importance: Commercial significance minor.

Ecological role: Predatory in nature. Plays a vital role in the aquatic ecosystem.

Status : Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: MH087053.1

>MH087053.1 *Xenentodon cancila* voucher DUZM245 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GGCGATGACCAAATTTACAATGTTATTGTAACAGCACATGCCTTTGTAATAATTTCTTTATAGTAATAC
CAATTATAATTGGAGGCTTCGGTAACTGACTAATCCCTCTTATAATTGGAGCCCCAGATATAGCATTTC
ACGAATAAACAAACATAAGCTTCTGACTTCTCCCCCATCTTTCTACTTCTTTGGCCTCATCAGGAGTT
GAAGCCGGTGCAGGAAGTGGGTGGACAGTCTACCCCTCTAGCCGGTAATCTAGCACATGCTGGAGCAT
CTGTTGATCTAACCATTTTTCTTTACACTTGGCAGGTGTTTCATCAATTTAGGGGCCATTAATTTTAT
TACCACTATTATTAATATGAAACCCCCAGCAATCTCCAGTACCAAACACCCCTTTTCGTTTGAGCTGTT
TTAATTACTGCTGTCTACTCTCTCTCTTACCAGTTTTAGCTGCTGGGATTACAATACTCTTAACAG
ACCGAAATCTAAACACCACCTTCTTTGACCCCGCTGGGGGAGGTGACCCCATCTCTACCAACATCTC
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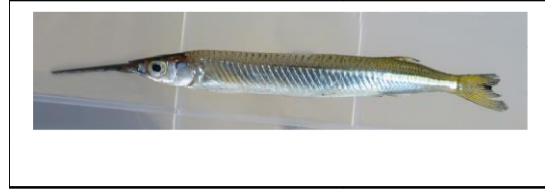
115. *Hyporhamphus limbatus* (Valenciennes, 1846)

Synonyms: *Hemiramphus limbatus* Valenciennes, 1846, *Hist. Nat. Poiss.* 19: 44; *Hemiramphus limbatus* Day, 1878, *Fishes of India*, p. 516; *Hyporhamphus gaimardi* Munro, 1955, *Marine and Freshwater Fishes of Ceylon*, p. 74.

English names: Congaturi Halfbeak

Local names: Ek Thuita, Ek Thota

Fin Formula: D 14; P₁ 10; P₂ 6; A 13



Hyporhamphus limbatus

Description: Body elongate, cylindrical to compressed with the lower beak greatly produced. Upper jaw short, triangular, slightly broader than long with a mesial keel. Teeth villiform in many rows on both jaws. Dorsal fin originates opposite the anal, its base approximately equal to that of the anal. Pelvic fins originate about midway between the posterior edge of the eye and the caudal base. Caudal deeply forked, lower lobe longer. Dorsal and anal rays in males not modified. Dorsal and anal fins inserted in the posterior fourth of the body. No scale on the dorsal and the anal fins. Silvery or yellowish-white with a brilliant silvery lateral band which is broader posteriorly. Scales on the upper half with minute black dots. Caudal, dorsal and anal with dark edges (Rahman, 2005).

Habit and Habitat: Inhabits coastal waters, estuaries and freshwaters. It moves in clusters, in the upper region of water bodies and is found mostly in water currents of big rivers.

Distribution: Recorded from Lawachara, Sreemangal; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Itna Haor, Arial Beel, Munshigonj; Halda River, Karnafuli River, Chittagong; Kaptai, Rangamati; Sundarban, Satkhira, Khulna; Charfasson, Bhola; Bangshai River, Madhupur, Tangail.

Economic importance: Of minor commercial importance to fisheries.

Ecological role: Contributes to the food chain in the freshwater ecosystem. Feeds on zooplankton and aquatic insects.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

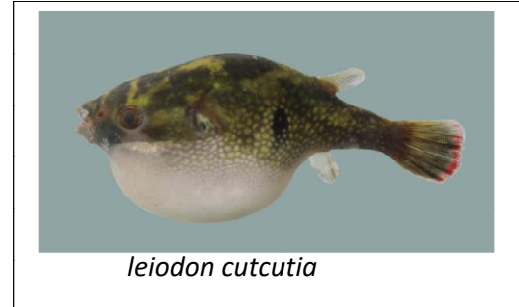
116. *Leiodon cutcutia* (Hamilton, 1822)

Synonyms: *Tetrodon cutcutia* Hamilton, 1822, *Fishes of the Ganges*, p. 8; *Tetrodon caria* Hamilton, 1822, *Fishes of the Ganges*, p. 9; *Leisomus cutcutia* Blyth, 1855, *J. Asiat. Soc. Bengal*, p. 173.

English names: Ocellated Pufferfish, Common Pufferfish

Local names: Tapa, Kutkuitta, Potka

Fin Formula: D. 10; P₁. 21; P₂. absent; A. 10



Description: Broad, head and back tapering abruptly to the tail. Mouth opening a little inferior with two large teeth on each jaw. Gill-openings much reduced and restricted in front of the pectoral base. Each nostril forms a single orifice situated at the end of a very simple short tube. Nostril nearer to the angle of the mouth than to the anterior margin of the eye. Eyes large, situated slightly behind the middle of the head. Interorbital flat and broad. Two lateral lines, upper not reaching the end of the tail but meeting the lower above the anal (Siddiqui, 2007).

Habit and Habitat: Occurs in ponds, beels, canals and rivers.

Distribution: Recorded from Chalan Beel, Halti Beel, Natore; Lawachara, Sreemangal, Jaflong, Madhobkundo, Sylhet; Tanguar Haor, Hakaluki Haor, Sunamganj; Humhum waterfall, Moulvibazar; Itna Haor, Arial Beel, Munshigonj; Pekua beel, Someshwari River, Chellakhali River, Old Brahmaputra River, Mymensing; Kuhuri River, Muhuri River, Feni; Surma River, Bhairab; Sunamgonj; Pungli River, Jamuna River, Tangail.

Relative Abundance: Very Common.

Economic importance: This fish is of less interest to fisheries.

Ecological role: Plays an important role in the aquatic habitat where it lives.

Status and conservation: Considered as LC in the Red list of IUCN Bangladesh (2015).

GenBank: MF140394.1

>MF140394.1 *Leiodon cutcutia* voucher ZMUD:250 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACTCTCTATTTTGTATTTGGTGCTTGAGCTGGTATAGTAGGCACCGCCCTAAGCCTCTT
AATTCGAGCTGAACTGGGCCAACCAGGGGCACTCCTAGGTAACGACCAGATCTACAATGTAATCGTCCAC
A
GCTCACGCATTCGTAATAATTTTCTTTATAGTAATACCAATCATGATCGGAGGCTTTGGAAATTGATTAG
TCCCCCTTATAATTGGAGCCCCAGACATGGCATTCCCCGAATGAACAACATAAGCTTCTGACTACTCCC
TCCATCCTTCTCCTTCTCCTAGCATCCTCCGGCGTAGAAGCAGGAGCAGGAACAGGCTGAACTGTCTAC
CCGCCACTGGCAGGAAACCTGGCCCATAACAGGAGCCTCCGTTGACCTCGCCATTTTTTCACTCCACCTAG
CGGGGGCCTCATCCATCCTAGGTGCTATTAACTTTATCACTACAATCATTAAACATAAAAACCCCAACTAC
TTCCAATACCAAACCCCTCTTTTCGTATGAGCTGTTTTAGTCACTGCTGTCTTCTCCTATTATCCCTA
CCCGTCCTTGAGCCGGGATTACAATGCTCCTCACAGACCGCAACCTAAACACCACCTTTTTTGACCCAT
CGGGCGGAGGGGATCCAATTCTCTACCAACACCTATTTTGATTCTTTGGCCA
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Species of new records



Badis tuivaiei GB- KY124370



Botia rostrata GB- KY124362



Clupisoma prateri GB- KT364783



Schistura fasciolata GB- KY124367



Oryzias javanicus GB-MF170950



Bataasio convexirostrum GB- KY124366

Scientific Name: *Botia rostrata*

Synonyms: *Botia dayi* Hora, 1932, *The Raffles Bulletin of Zoology, Suppl. No. 26: 1-199.*, *Botianebulosa* Blyth, 1860 **English name:** Gangetic loach, ladder loach, or twin-banded loach

Local name: Rani

Fin formula: D. 9; P₁.12; P₂. 7; A. 6



Description: Body elongated and greatly compressed. Head long, narrow and pointed. Snout very long. Eyes small, placed in posterior half of head. Mouth small. Barbels four pairs (two pairs of rostral, one each of maxillary and mandibular). Caudal fin deeply forked. Scales indistinct. Yellowish with brown cross bands of irregular pattern which occasionally form rings or blotches. Dorsal and anal fins with two brown cross bands; pectoral and pelvic fins and each caudal lobe with three brown cross bands. **Habitat:** India: Assam and west Bengal; and Bangladesh. Inhabits hill streams. A riverine species tending to congregate in pools and stiller areas characterised by rocky substrates. It undergoes upstream migrations prior to spawning.

Distribution: *B. rostrata* Native to the lower Ganges and middle to lower Brahmaputra riverbasins in northern India and Bangladesh; apparent occurrences in Myanmar and China almost certainly refer to misidentified *B. histrionica* In Bangladesh it probably inhabits tributaries of the Padma (Ganges) and the Surma-Meghna river systems although Grant (2007) notes that some or all of these different populations may turn out to represent distinct species with further work.

B. sp. 'upper Brahmaputra' – Recorded from numerous tributary drainages of the middle to upper Brahmaputra River in Assam and Arunachal Pradesh states, India including the Khwang, Manas, Kameng (known as JiaBhoreli in Assam), Subansiri, Dikrong, Pachin, Ranga, Siang, Dibang, Lohit, Noadhing, Buridhing and Tirap rivers.

Economic importance: *Botia rostrata* is a species of minor commercial importance.

Status and conservation: Considered as critically Data Deficient in the Red List of IUCN Bangladesh (2000).

GenBank: KY124362.1

>KY124362.1 *Botia rostrata* voucher DUZM 104-1 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TTAATTCGGGCTGAACTCAGCCAACCTGGGTCCTTCTAGGTGATGATCAAATTTATAATGTTATCGTCA
CTGCACATGCCTTTGTTATGATTTTCTTTATAGTAATACCAATCCTTATTGGGGGATTGCGGAACTGGCT
TCTTCCACTTATGATTGGAGCCCCTGATATAGCATTCCCTCGAATAAATAATATAAGCTTTTGACTTCTA
CCCCATCTTTTCTTCTCTCCTAGCATCCTCTGGAGTTGAAGCCGGAGCCGGAAGTGGGTGAACAGTAT
ATCTCCACTTGCTGGCAACTTAGCCACGCAGGAGCATCCGTAGACTTAACTATTTTCTCATTACATTT
AGCAGGAGTTTCATCCATTTTAGGAGCAATTAATTTTATTACCACATCCATTAATATGAAACCCCCAGCA
ATTCTCAATACCAAACACCATTTTGTATGAGCCGTACTTGTAACGGCAGTTCTACTGCTTTTATCCC
TACCCGTACTGGCCGCGGAATTACAATGCTGTTAACAGACCGTAATTTAAACACAACATTCTTCGACCC
CGCTGGAGGAGGAGACCAATCCTTTATCAACATTTATTCTGATTCTTTGGCC
```

Scientific Name: *Badis tuivaiei*

Synonyms:

English name:

Local names: Napti koi

Fin formula:

Description: Habit and Habitat: Not much information is available other than that at the Wahumiam locality the river was not very wide and contained shallow, slowly-moving, clear water at time of collection. The substrate was composed of boulders, pebbles and sand. Much of Meghalaya consists of forested hills which receive a great deal of rainfall meaning depth and flow rate are likely to increase considerably at certain times of year. Images we've seen of the Tuivai River in Mizoram depict a similar biotope with rocky substrate and thick riparian vegetation in places.

Distribution: Described from the Tuivai and Irang rivers, both tributaries of the Barak River in Manipur state, northeastern India and also recorded from the section of the Tuivai flowing through Mizoram state. Subsequent collections from the Wahumiam River, Meghalaya state and the Wanapha River in the Jaintia Hills district have further extended its range. The Barak comprises part of the Ganges River system while the Wahumiam is a tributary of the Ichamati River which forms the border between India and Bangladesh for part of its length.

GenBank: KY124370.1

>KY124370.1 *Badis tuivaiei* voucher DUZM196-1 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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TGCATGAGCCGGGATAGTAGGTACAGCCCTTAGTCTCCTAATTCGAGCCGAACTCAGCCAACCAGGAACT
CTGTTAGGCGATGACCAGATTTATAATGTTATTGTTACAGCACATGCTTTCGTAATAATTTCTTTATAG
TTATACCAATCATAATTGGAGGGTTTGGAACTGACTACTCCCACTGATAATCGGCGCCCCGATATAGC
ATTCCTCGAATAAACAAACATAAGCTTTGACTCCTCCCTCCATCCTTCTGCTTCTTCTGGCCTCTTCT
GGGGTAGAGGCAGGCGCCGGAACCGGGTGAACAGTATATCCTCCCCTGGCAGGTAATCTAGCGCATGCAG
GTGCATCCGTGGATCTAACCATCTTCTCCCTCCACTTAGCGGGGGTGTCTTCAATTTAGGTTCCATCAA
TTTTATTACTACCATTCTAACATAAAACCCCCGACTCTCTCAGTATCAAACCCCTCTATTTGTCTGA
GCCCTCTAGTAACCACCGTCTCTCTTACTTTCCCTACCCGTGCTAGCCGCCGGCATTACAATGCTTC
TAACAGATCGCAACCTAAATACCTCCTTCTTTGACCCAGCCGGTGGCGGAGATCCCATTCTTTACCAACA CTTGT
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Clupisoma prateri

Synonyms: *Pseudeutropius garua*(non Hamilton, 1822)

English name: Burmese garua

Local names: Garua, Gaura

Fin formula:



Description:Dorsal spines (total): **2; Dorsal soft rays (total):**

7; Anal spines: 0; Anal soft rays: 41 - 46; Vertebrae: 48 - 50. A

species of *Clupisoma* in which the pectoral spine extends at least to the base of the pelvic fin, the abdomen is markedly keeled from the level of the pectoral-fin origin to the anus, pectoral fin with 12 or 13 segmented rays, anal fin with 37 to 41 branched rays, and first gill arch with at least 20 rakers. The body is silvery, except for a dorsal greenish band that extends only slightly ventral of the middorsal line of the body. D. II, 7; A. iv-v, 37-41; Pt. I, 12-13; Pv. i, 5. Barbels in four pairs: one pair of nasal barbels, one pair of axillary barbels, two pairs of mental barbels, and one pair of inner mental barbels.

GenBank: KT364783.1

>KT364783.1 *Clupisoma prateri* voucher DUZM133B cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AAGACATTGGCACCCCTCTATTTAGTATTTGGTGCCTGAGCCGGAATAGTTGGCACAGCCCTTAGCCTACT
GATTCGGGCAGAACTAGCCCAACCTGGTACTCTACTGGGCGATGACCAGATTTATAATGTTATTGTTACT
GCCCATGCCTTCATCATAATTTTCTTTATAGTAATACCAATCATAATTGGAGGATTTGGAAATTGACTCG
TTCCCCTAATGATTGGGGCACCAGACATGGCATTCCCTCGAATAAATAACATAAGCTTCTGATTACTACC
CCCATCTTTCCTGCTACTTCTTGCCTCATCTGGAGTTGAAGCAGGAGCAGGAACAGGGTGAAGTGTATAC
CCCCCTCTCGCTGGCAACCTGGCACATGCAGGAGCTTCTGTAGATTTAACTATCTTCTCCCTTACCTTG
CTGGGGTTTCATCAATTTTAGGAGCAATTAATTTTATTACAATATTATAATGAAACCCCGAGCTAT
TTCACAGTATCAAACACCTCTATTTGTATGAGCCGTATTAATTACAGCCGTACTACTTCTGCTGTCTCTA
CCAGTATTAGCCGCTGGGATTACAATACTACTAACAGATCGAAACCTAAATACCACATTCTTCGACCCGG
CAGGGGGAGGAGATCCAATTTTATCAACACCTTTTCTGATTCTTTGG
```

Scientific Name: *Batasio convexirostrum*

English Name:

Common Name:

Fin formula:

Description: The bagrid genus *Batasio* Blyth comprises of small, laterally compressed catfishes distributed in South and Southeast Asia, diagnosed from its confamilials in having large sensory pores on the head, a narrow mental region, a pair of posteriorly-directed processes on the anterior part of vomer, a transversely-elongated bar-like entopterygoid, and the metapterygoid in close contact with the quadrate but free from the hyomandibular (Mo, 1991).



B. convexirostrum is distinguished from its congeners (except *B. dayi*, *B. elongatus* and *B. procerus*) in having a head and body coloration consisting of only a dark-brown vertical predorsal bar (vs. predorsal bar absent altogether, or if present, in combination with either a mid-lateral stripe, a dark-brown spot, or a series of vertical bars posteriorly) against a lighter-brown body. It differs from *B. dayi* in having a longer snout (length: 39.2–45.5% HL vs. 35.5–38.7% HL), a greater number of pectoral-fin rays (9–10 vs. 8) and vertebrae (39–40 vs. 36–38), and the dorsal fin dark grey at base and distal one-third, hyaline in between (vs. black, hyaline close to its base); and from both *B. procerus* and *B. elongatus* in having a shorter dorsal-to-adipose distance (1.7–4.1% SL vs. 4.4–14.2), and fewer gill rakers on the first branchial arch (4–5 vs. 9–27). *Batasioconvexirostrum* further differs from *B. procerus* in having a greater eye diameter (24.6–29.8 vs. 17.2–22.6% HL), a deeper head (19.6–21.7% SL vs. 16.8–18.6), a longer snout (39.2–45.5% HL vs. 33.8–38.3) and a longer pectoral-spine (14.6–17.6% SL vs. 8.9–13.2), a greater number of pectoral-fin rays (9–10 vs. 7–8), and fewer vertebrae (39–40 vs. 41–43); and from *B. elongatus* in having a deeper body (20.2–21.6% SL vs. 15.8–19.3) and a greater number of vertebrae (39–40 vs. 36–38).

Economic importance: Not exported for the trade as yet.

Distribution: The species is presently known only from the Koladyne River and the Mat River (a tributary of the former) in Mizoram State, India. Indian waters, North Eastern India Waters, Kaladan, African Waters, Angola Waters.

GenBank: KY124366.1

>KY124366.1 *Batasio convexirostrum* voucher DUZM114-1 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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GGTCGGTACAGCCCTTAGCCTATTAATTCGGGCAGAGCTGGCCAACCAGGCGCCCTTCTAGGCGATGA  
C CAAATTTATAATGTTATTGTAAGTACTGCCACGCTTTCGTAATAATCTTTTTATAGTAATACCAATTATAA  
TTGGGGGCTTTGGTAAGTACTGATTAGTACTACTAATGATTGGAGCCCCAGATATAGCCTTCCCCGAATAAA  
TAACATAAGCTTCTGATTACTTCTCCATCATTTCTACTGCTACTAGCCTCATCTGGTGTAGAAGCCGGA  
GCTGGTACAGGATGAACTGTCTACCCCTTTAGCTGGAAATCTTGACACGCCGGGGCTCCGTCGACC  
TAACAATCTTCTACTACACCTAGCAGGTGTTTCTCAATTTAGGTGCCATCAACTTCATTACAATAT  
TATTAATATAAAACCCCTTCAATTTACAATATCAAATCCATTATTTGTATGAGCTGTCCTAATTACT  
GCTGTTCTATTACTATTATCCTTACCAGTACTAGCCGCGGTATTACAATACTATTAACAGACCGAAATC  
TTAATACCACCTTCTTGATCCTGCAGGAGGCGGAGACCCTATTCTATACCAACATTTATTCTGATTCTT
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Scientific Name: *Oryzias javanicus*

Synonyms: *Aplocheilus javanicus*

English Name: Javanese rice fish

Common Name:

Fin formula:



Description: Body translucent in which the internal organs are clearly visible. The skin is virtually colourless, apart from the

cheeks which are purplish or pink. The tail fin is truncate (i.e. squarish), and a dark lateral line is generally visible.

Habit & habitat: Typically found in coastal, normally brackish, streams and pools including mangrove swamps and forests, but has also been recorded in freshwater habitats and is known to be tolerant of a wide salinity range.

Distribution: This species is widely distributed throughout Peninsular Thailand, Malaysia (Malay Peninsula plus the states of Sabah and Sarawak, Borneo), Singapore and Indonesia, with records from the Riau Archipelago, Sumatra, Java, Borneo, Bali, Lombok and Sulawesi existing in the latter.

GenBank: MF170950.1

>MF170950.1 *Oryzias javanicus* voucher ZMUD:169/B cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

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AACCACAAAGACATTGGCACCCCTCTATTTAGTTTTGGTGCCTGAGCAGGGATAGTGGGCACTGCTCTGA
GCCTACTAATCCGAGCGGAACCTAAGTCAGCCAGGATCACTCCTAGGAGACGACCAGATTTATAATGTTA
T TGTTACTGCACATGCCTTTGTAATAATTTCTTTATAGTTATGCCAATCATGATCGGCGGCTTTGAAAC
T GACTGATCCCATAATGATTGGAGCCCCGATATGGCCTTCCCACGAATAAATAATATGAGCTTCTGAC
TTCTTCCCCCTTCTTTCTTCTCTTCTAGCCTCTCTGGCGTTGAAGCCGGGGCTGGAACCTGGGTGAAC
GGTCTATCCCCCGCTAGCCGGAACCTAGCCCATGCAGGGGCTCTGTAGATTTAACCATTTTTCTCTC
CATCTTGCCGGGATCTCATCAATTCTGGGGGCGATTAACCTCATTACTACTATTATTAACATGAAACCTC
CCGCAATTTCCAGTACCAAACCCCTCTGTTTGGTGGCCGTTTAATTACTGCTGTTCTTCTGCTTCT
T TCACTCCCCGTCCTAGCTGCAGGAATTACAATACTTTTAACCGACCGAACTTAAACACCACGTTCTTT
GATCCCGCTGGTGGAGGAGACCCAATCCTTTATCAACACCTATTTTGATTCTTTGGCCA
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Bioinformatics and data analysis:

Bioinformatics analyses of the sequences was performed using CLC Workbench v7.7.1, Mega v5.05, Clustal Omega, and T-Coffee. Base compositions were analyzed using CLC Workbench v7.7.1 and Mega v5.05. Genetic distance and sequence divergences were calculated using the Kimura two parameter (K2P) distance model (Kimura 1980). The sequence analysis revealed that the average nucleotide

frequencies in these 81 species were A=25.19±1.60%, T=29.67±1.77%, G=18.03±0.96%, and C=27.11±1.96% (Table 4-6, Fig.5-6)

Table 4: GC content (%) at different codon positions of freshwater fishes

Order	1 st codon		2 nd codon		3 rd codon	
	%GC	%AT	%GC	%AT	%GC	%AT
Perciformes	55.8	44.2	42.89	57.11	39.94	60.06
Cypriniformes	56.35	43.65	43.10	56.9	34.44	65.56
Siluriformes	56.01	43.99	42.68	57.32	34.8	65.2
Others	56.1	43.9	42.60	57.4	38.85	61.15

Table 5: Summary of genetic divergences between different taxonomic levels based on K2P distance model.

Level	Sample Size	Minimum (%)	Average (%)	Maximum (%)	SEM
Between Species	77	0.19	30.34	57.14	0.11
Between Genus	52	4.90	30.45	54.11	0.16
Between Family	23	20.04	31.36	39.04	0.22
Between Order	6	24.35	32.23	36.45	0.74

Table 6. Summary of genetic divergences within different taxonomic levels based on K2P distance model

Level	Sample Size	Minimum (%)	Average (%)	Maximum (%)	SEM
Within Genus ^a	16	8.35	15.83	27.03	1.56
Within Family ^a	12	8.60	19.14	26.40	1.73
Within Order ^a	4	17.35	25.07	31.28	2.97

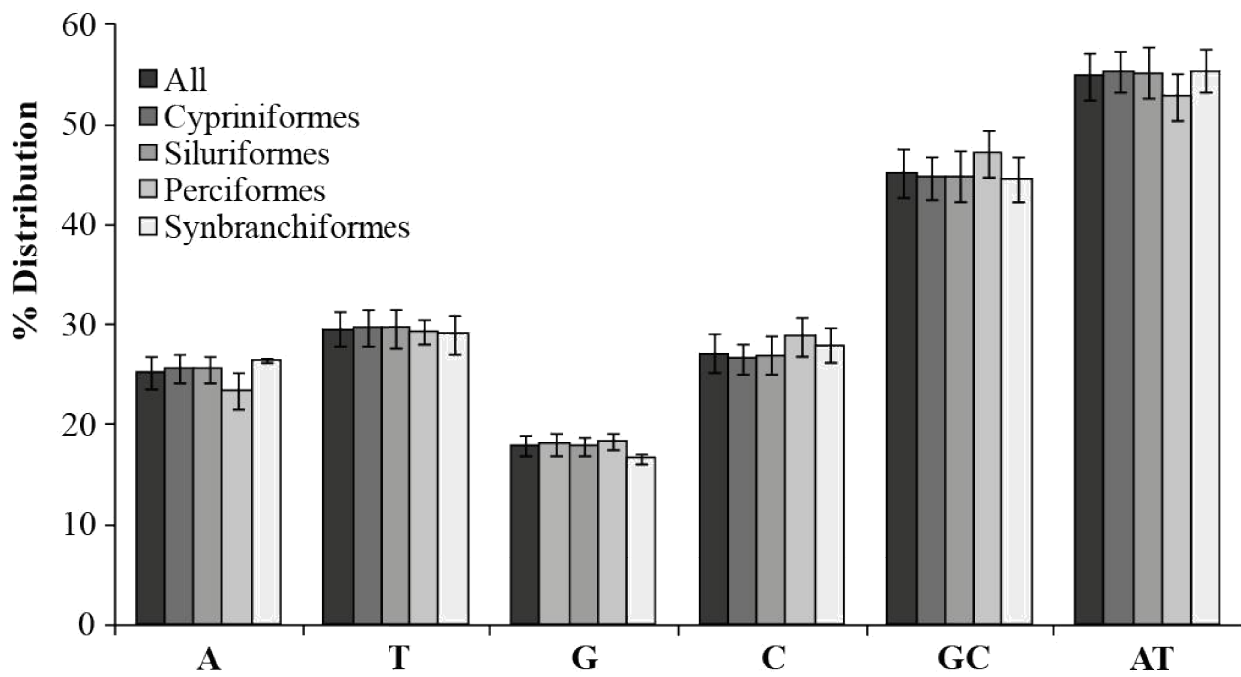


Fig. 5. Composition of the nucleotides in the sequenced COI region of freshwater fishes of Bangladesh.

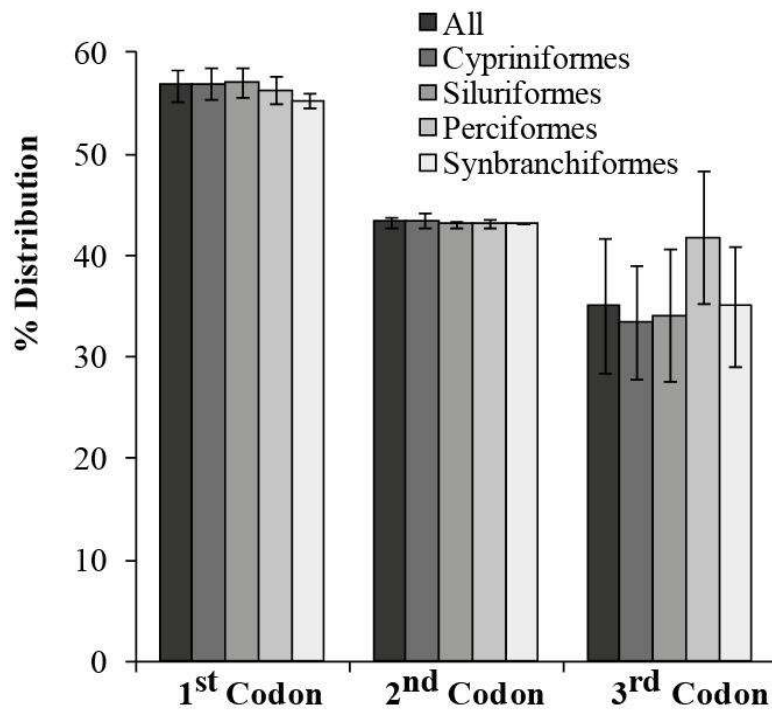


Figure 6. GC content in different codon positions in the sequenced COI region of freshwater fishes of Bangladesh

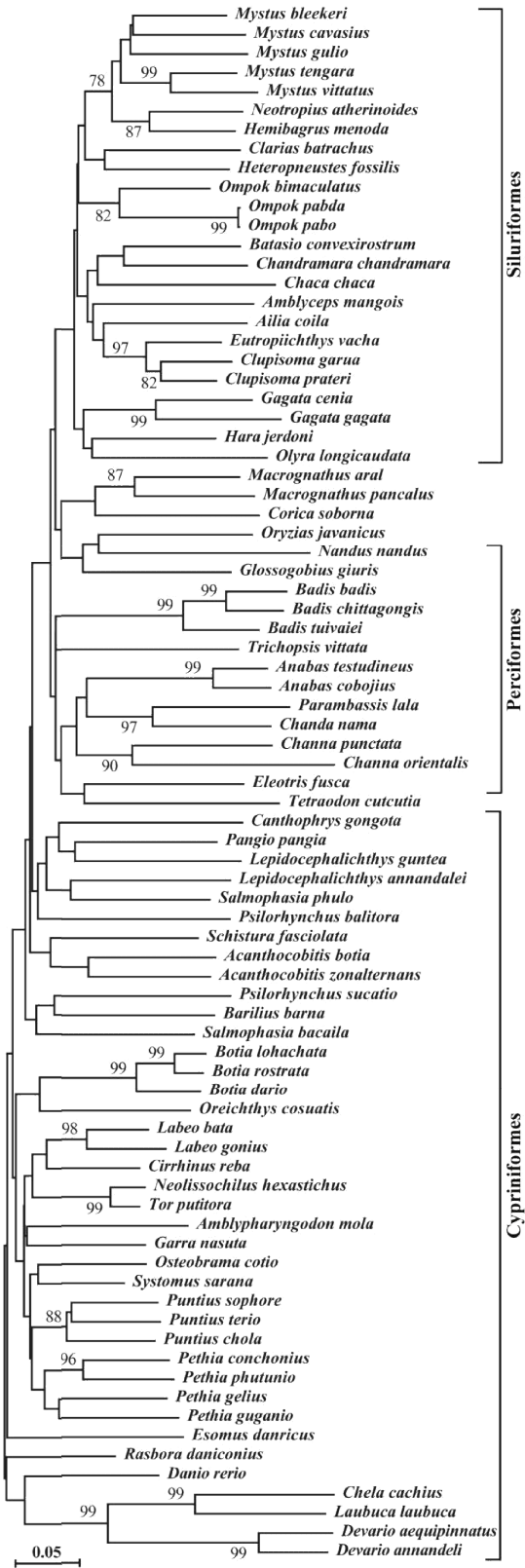


Figure : 7. NJ phylogenetic tree of the sequenced data based on K2P distances.

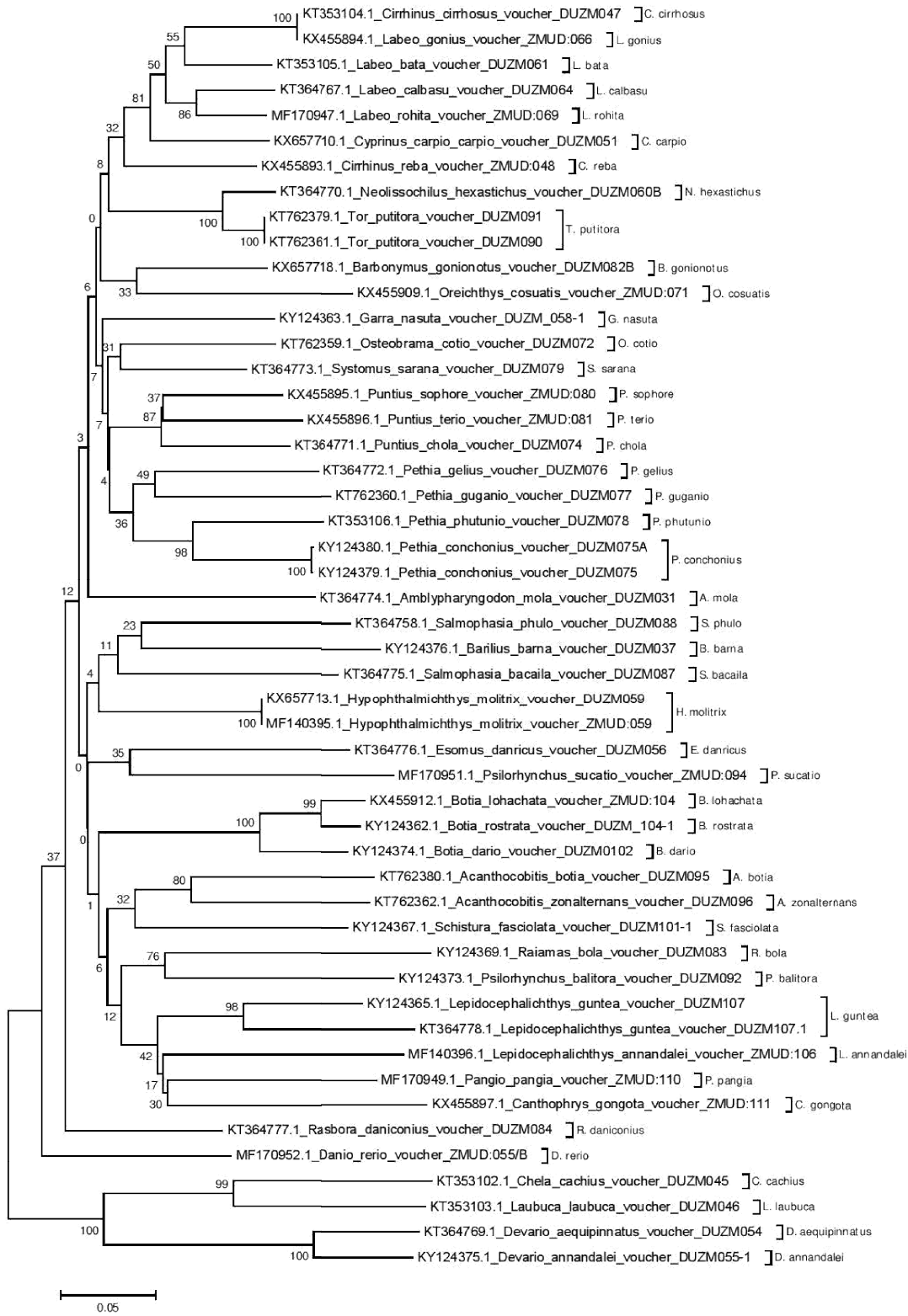


Fig. 8. Phylogenetic tree (NJ) of COI gene sequence of Order Cypriniformes

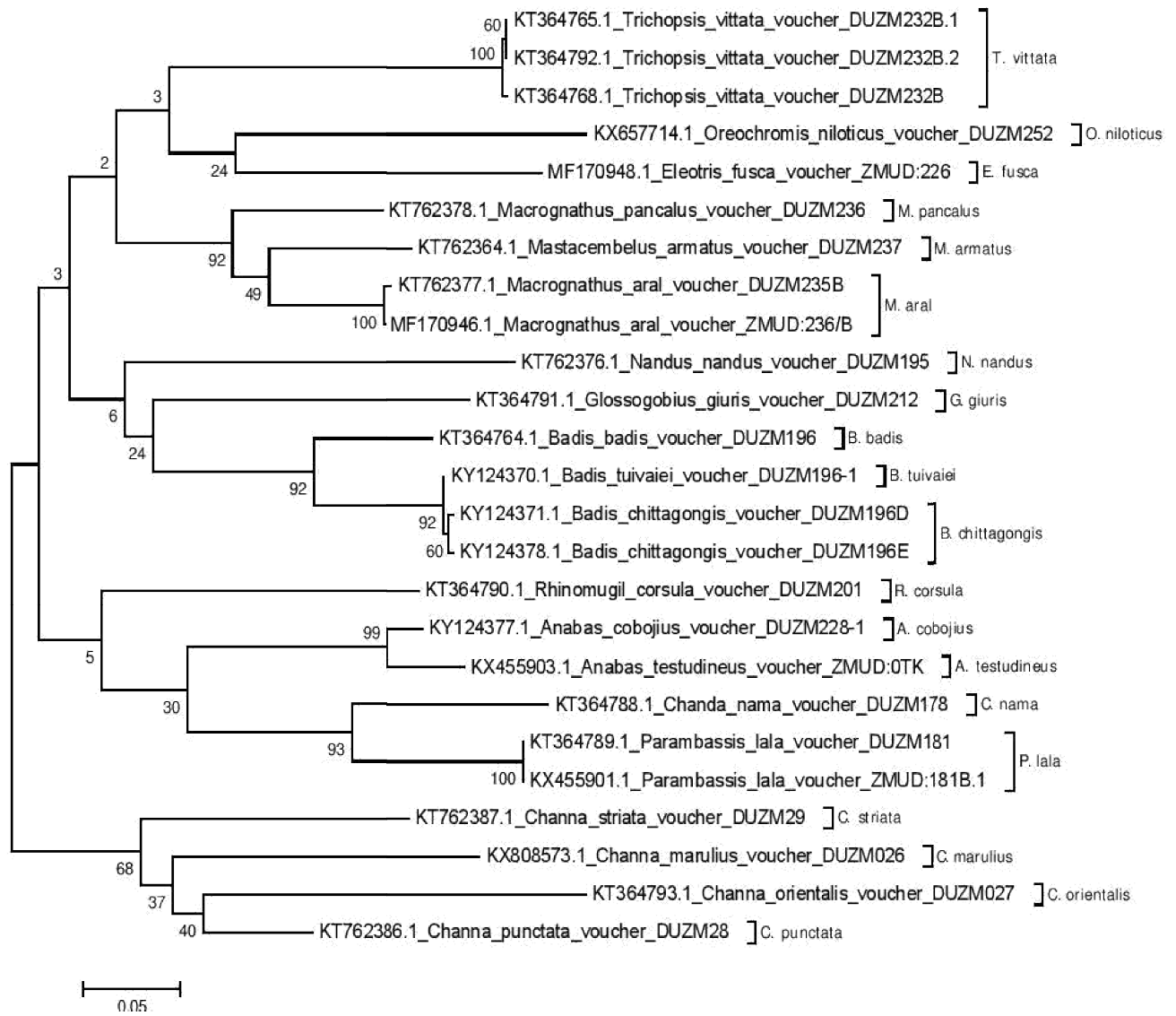


Fig. 9. Phylogenetic tree (ML) of COI gene sequence of Order Perciformes

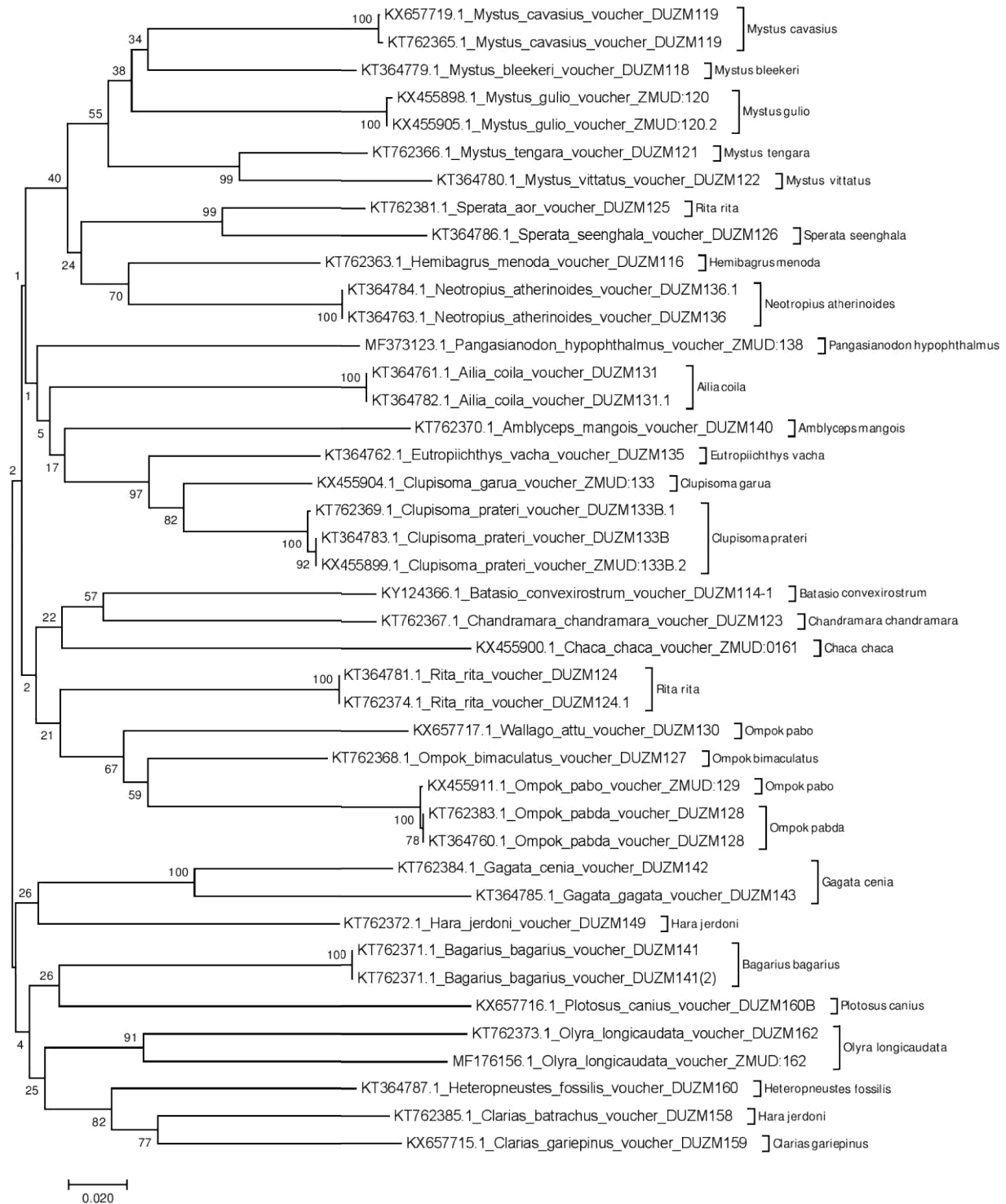


Fig. 10. Phylogenetic tree (NJ) of COI gene sequence of Order Siluriformes

Discussions

The purpose of DNA barcoding is to provide an efficient molecular method for species-specific identification using the sequence of mitochondrial COI gene (Pugedo et al., 2016). DNA barcoding has clearly discriminated freshwater fish species from Australia, Canada, India, and Cuba (Ward et al., 2005; Hubert et al., 2008; Lara et al., 2010; Lakra et al., 2016). Here, we have profiled the barcode of freshwater fishes collected from Bangladesh and also have demonstrated the promise of barcoding to identify these native species partial COI genes. Barcodes were generated for 164 species of (Table 3). No insertions/ deletions or codon stops were found, supporting the view that all of the amplified sequences constitute functional mitochondrial COI sequences. Moreover, all the amplified sequences were larger than 650-bp, the limit typically observed for nuclear DNA sequences originating from mtDNA (NUMTs) (Gunbin et al., 2017). All of these species were differentiable based on the individual COI barcodes. Hence, this study has strongly validated the efficiency of COI barcodes for identifying fish species.

Among these species studied, 51 species (~44%) have been found threatened as per IUCN red list 2015. These threatened fishes comprise three as critically endangered (CR), 15 as endangered (EN), 17 as vulnerable (VU) species, and 16 species of fish were near threatened (NT). Sixty species were least concern (LC), and the rest four species were data deficient (DD). Moreover, we have recorded the existence of seven new records species in Bangladesh during this study. These species were morphologically identified and confirmed with molecular taxonomy by individual COI sequences. These species include *Garra nasuta* (Cyprinidae); *Schistura fasciolata* (Balitoridae); *Clupisoma prateri* (Schilbeidae); *Batasio convexirostrum* (Bagridae); *Badis tuivaiei* (Badidae); and *Oryzias javanicus* (Adrianichthyidae) (Plate.1). *Badis tuivaiei* (ID DUZM 196-1, GB KY124370.1) and *Devario annandalei* (ID DUZM 055-1, GB KY124375.1) were collected from Madhobkundo (24.63 N 92.22 E) Eastern region of Bangladesh. A conspicuous black blotch covers the superficial part of the cleithrum above pectoral fin base and a black blotch between third and fourth dorsal spine and a mid-basal rounded black spot on caudal fin was the key characteristics of *B. tuivaiei* (Vishwanath and Shanta, 2004). *D. annandalei* differs from its congeners in possessing appendants to the pectoral fins (Chaudhuri, 1908). The specimens of *Batasio convexirostrum* (ID DUZM114-1 GB KY124366.1), *Garra nasuta* (ID DUZM 058-1 GB KY124363.1) and *Schistura fasciolata* (ID DUZM101-1, GB KY124367) were collected from the Shongram Mayabi Water Fall, Jaflong the North Eastern border of Bangladesh (25.19 N 92.00 E). *B. convexirostrum* is distinguished from its congeners in having a head and body coloration consisting of only a dark-brown vertical predorsal against a lighter-brown body. It differs from *B. dayi* in having a longer snout (length:42.5% HL vs. 35.5% HL), a greater number of pectoral-fin rays (10 vs. 8) and the dorsal fin dark grey at base and distal one-third, hyaline in between (vs. black, hyaline close to its base) (Darshan et al., 2011). Identification of *G. nasuta* and *S. fasciolata* were performed based on Talwar and Jhingran, (1991). *Clupisoma prateri* (ID DUZM 133B, GB KT364783.1) was collected from Tanguar Haor, Sunamgonj (25.07 N 91.31 E) it differs from *C. garua* having anal fin rays 40-44 and maxillary barbels extends upto middle of pelvic fins (Jayaram, 1977). *Oryzias javanicus* (ID ZMUD 169/B, GB MF170950.1, Location: 22.4911 N 92.2198 E) differs from all other *Oryzias* species by having yellow submarginal bands on the dorsal and ventral portions of the caudal fin (Magtoon and Termvidchakorn, 2009). In addition of morphometric and meristic characteristics our generated COI sequences of these species showed 99-100% identity with existing GB sequences confirm new records from this region.

All these species were distantly related to the previously studied Indian samples and samples from other neighboring countries. This data indicates that these species were indigenous to Bangladesh but previously misidentified or remained unidentified.

The sequence analysis revealed that the average nucleotide frequencies in these freshwater species were A=25.19±1.60%, T=29.67±1.77%, G=18.03±0.96%, and C=27.11±1.96%. The sequence analysis indicated that average nucleotide frequencies and GC content of the amplified 655 bp mitochondrial COI

region of Bangladeshi freshwater fishes are quite similar with that of Australian and Indian fishes (Ward et al., 2005; Lakra et al., 2016). But, the frequencies of nucleotides differ across the orders. However, significantly lower average %A and higher average %C and %GC was observed in Perciformes compared to the two major orders, Cypriniformes and Siluriformes ($p < 0.01$). Similarly, Synbranchiformes showed higher average %A and lower average %G compared to Cypriniformes, Siluriformes, and Perciformes ($p < 0.02$), however the small size was too small ($n=2$). Higher %A but lower %C was observed in the members of Schilbeidae family. Also, higher %G but lower %A was observed in the members of Ambassidae Family. We have observed significantly higher GC content in Perciformes compared to the two major orders, Cypriniformes and Siluriformes. The overall average GC content was 45.14 ± 2.41 (Figure 5-6). The highest GC content was observed in Channidae and Ambassidae families, and the lowest GC content was observed in Bagridae family (Supplementary Table 2). The average GC content of the first, second, and the third codon positions were $56.83 \pm 1.49\%$, $43.35 \pm 0.54\%$, and $35.18 \pm 6.65\%$ respectively, indicating that the GC contents lower significantly at the second and third codon positions compared to that of the first codon position. The lowest %GC was found in the members of Bagridae family and Schilbeidae family at the second codon position and at the third codon position respectively (Supplementary Table 3). However, the GC content at the first codon was comparable across the orders. But, the average GC content at the second codon position of Cypriniformes was higher than that of Siluriformes and Synbranchiformes ($p < 0.03$) and the GC content at the third codon position was higher in Perciformes compared to that of Cypriniformes and Siluriformes ($p < 0.005$) (Table 4)). These findings reflect that most synonymous mutations might occurred at the second and third positions, which is comparable to the previously published data on Australian fishes (Ward et al., 2005).

The average K2P distance was 30.34% between individual species, 30.45% between genera, 31.36% between families, and 32.23% between orders (Table 5-6). An average K2P distance of 32.16 was calculated among the members of Perciformes. Minimum calculated K2P distance was 28.56% and 19.76% within the members of Cypriniformes and Siluriformes (Supplementary Table 4). These data indicates that the genetic diversity is very high among these species. There exists an increment of genetic divergence towards higher taxonomic category. The NJ tree based on the K2P distances illustrates the genetic relationship within the species studied here (Figure 7). The three major orders (Cypriniformes, Siluriformes, and Perciformes) were clustered separately in the NJ tree. Separate phylogenetic tree (NJ) was constructed to evaluate the relationship among the species of different orders (Figure 8-10). However,

the two species of Synbranchiformes and the only species of Clupeiformes lied between the Siluriformes and Perciformes; and the only species of Tetraodontiformes lied between Cypriniformes and Perciformes. The average K2P distance based genetic divergence was 15.83% for species within a genus, 19.14% for genera within a family, and 25.07% for families within an order (Table 3). The genetic divergence was high among the members of the family Cyprinidae. However, the genetic divergence was low among the members of the family Schilbeidae (Supplementary Table 5). The genetic divergence was low among the species of *Botia*, *Clupisoma*, and *Anabas*. On the other hand, the species of *Salmophasia*, *Lepidocephalichthys*, and *Channa* showed high genetic divergence (Supplementary Table 6). These findings suggest that the barcode data can be used to delineate species boundaries of Bangladeshi fish.

Beside the nucleotide contents, the calculated K2P distance showed the existence of high diversity among the species and within the species of genera. For example, the average K2P distance within the species of *Badis* was 11.15% with minimum 8.22% and maximum 12.66%. This clearly indicates that the sequence diversity was sufficient to discriminate the species of *Badis*. The NJ tree revealed an identical phylogenetic relationship among the species, and there was no observation of misplacement of species. Congeneric species were found clustered together and in most cases so did the confamilial species. All the nodes were supported by high bootstrap values (80–100%) (Figure 7-9).

These findings showed high conformity with previous researches on DNA barcode (Ward et al., 2005; Lara et al., 2010). Moreover, the average inter-specific genetic divergence was calculated as 15.11% with SEM 1.4%. This is possibly due to the high mutation rate of the COI segment (Yuan et al., 2014). Hence, the diversity of these barcode sequences was sufficient to discriminate the species within a genus. Overall, this study suggests that the freshwater fishes of Bangladesh are genetically very diverse and barcode approach along with morphological data can results in authentic identification of these species.

We have barcoded freshwater fishes of Bangladesh for the first time. These barcode data corroborate the presence of seven fishes in Bangladesh as new record. The barcode data reveals that there exists a high genetic diversity among these populations. Our results conclude that the COI barcode approach can unambiguously identify Bangladeshi freshwater fishes. The present study thus confirms the efficacy of COI gene in identifying the freshwater fish species. We intend to extend our research to barcode remaining freshwater and marine fishes from Bangladesh waters.

12. Research highlight/findings (Bullet point – max 10 nos.)

- A total of 317 specimens belong to 180 species have been collected and identified during the study period (May 2017- September 2018).
- We have generated 260 DNA sequences of 164 species belong to 14 Orders 27 Families and 92 genera.
- In the mean time, we have already got the GenBank accession numbers of 164 species.
- All fish specimens are keeping as voucher specimens at the Departmental Museum.
- We reported at least seven new records; *Clupisoma prateri*, *Batasio convexirostrum*, *Badis tuivaiei*, *Botia rostrata*, *Schistura fasciolata*, *Devario annandalei* and *Oryzias javanicus*
- A standardized reference library as 'Bangladesh Barcode of Life' (www.bdbol.net) Data base system has been developed for the use of researchers, students and policy makers.

B. Implementation Position

1. Procurement:

Description of equipment and capital items	PP Target		Achievement		Remarks
	Phy (#)	Fin (Tk)	Phy (#)	Fin (Tk)	
(a) Office equipment	nil				
(b) Lab & field equipment	1. GD1: Chemicals, Reagents and consumables for Laboratory	2,67,000	1. GD1: Chemicals, Reagents and consumables for Laboratory	2,52,370	Completed as per planed scheduled following PPR 2008
	2.GD2: Micropipettes DNA extraction kit PCR Purification kit	1,64,00	2.GD2: Micropipettes DNA extraction kit PCR Purification kit	1,54,500	
	3.GD3 Website Design, Hosting & services	75,000	3.GD3 Website Design, Hosting & services	75,500	
(c) Other capital items	4.GD4: Computer & printer	70,000	4.GD4: Computer & printer	73,800	Completed

2. Establishment/renovation facilities: NA

Description of facilities	Newly established		Upgraded/refurbished		Remarks
	PP Target	Achievement	PP Target	Achievement	

C. Financial and physical progress

Items of expenditure/activities	Total approved budget	Fund received	Actual expenditure	Balance/unspent	Physical progress (%)	Fig in Tk
						Reasons for deviation
A. Contractual staff salary	6,43,465	648,465	6,48,465	0	100	
B. Field research/lab expenses and supplies	8,75,200	795,506	7,95,506	0	100	
C. Operating expenses	1,06,000	108,337	1,08,337	0	100	

D. Vehicle hire and fuel, oil & maintenance	2,00,000	171,515	1,71,515	0	100	
E. Training/workshop/seminar etc.	-	-	-	-	-	
F. Publications and printing	95,000	16,870	16,870	0	100	
G. Miscellaneous	10,000	22,800	22,800	0	100	
H. Capital expenses	70,000	70,479	70,479	0	100	

D. Achievement of Sub-project by objectives: (Tangible form)

Specific objectives of the sub-project	Major technical activities performed in respect of the set objectives	Output (i.e. product obtained, visible, measurable)	Outcome (short term effect of the research)
To know the genetic diversity of freshwater fishes of Bangladesh exploring the mitochondrial Cytochrome C Oxidase Submit I (COI) gene	Field visits, collection of tissue and specimens, data collection - Genomic DNA extraction, purification and sequencing -Sequence editing, analysis and submit for GenBank/ BOLD for accession numbers	-Target fish specimens, tissue & data collected and stored - Voucher specimens preserved, genomic dna and PCR product are stored for future use -We have generated 260 DNA sequences of 164 species belong to 14 Orders 27 Families and 92 genera.	-A total of 317 specimens belong to 180 species have been collected and identified from target sampling sites and habits - GenBank Accession numbers/ BIN (barcodeIndex Number) are assigned to individual species and have open public access
To develop a standardized reference library as Bangladesh Barcode of Life' Data base system	-Domain purchase, hosting, web design and data uploaded	-Bangladesh Barcode of Life Data base web site exist and has open public access	-Web site has public access -Gene seq can retrieve from the data base
To know the conservation and management status of freshwater fishes of Bangladesh	-Conservation status of individual species assigned as IUCN guideline	-Conservation status recorded -Publications and reports	Some species need immediate status revision for proper management

E. Materials Development/Publication made under the Sub-project:

Publication	Number of publications		Remarks (e.g. paper title, name of journal, conference name, etc.)
	Under preparation	Completed and published	
Technology bulletin/ booklet/leaflet/flyer etc. Journal publication	1		Title not yet settled.
Information development			
Other publications, if any			

F. Technology/Knowledge generation/Policy Support (as applied):

i. Generation of technology (Commodity & Non-commodity)

Extraction of genomic DNA and amplification of COI gene from freshwater fishes of Bangladesh

ii. Generation of new knowledge that help in developing more technology in future

Generated barcodes (260) for 164 species belong to 14 Orders 27 Families and 92 genera and archived in NCBI GenBank

iii. Technology transferred that help increased agricultural productivity and farmers' income

Genetic diversity of freshwater fishes of Bangladesh is documented for authentic identification of freshwater fishes

iv. Policy Support

A standardized reference library as 'Bangladesh Barcode of Life' (www.bdbol.net) Data base system has been developed for the use of researchers, students and policy makers.

G. Information regarding Desk and Field Monitoring

i) Desk Monitoring [description & output of consultation meeting, monitoring workshops/seminars etc.):

Presenting the research findings and progress at the annual review workshop in presence of Technical committee members. All the expert members highly praised the outcome of the project.

ii) Field Monitoring (time& No. of visit, Team visit and output): Not applicable.

H. Lesson Learned: N/A.

I. Challenges (if any)

i) It was challenging to establish the protocol for DNA extraction and PCR amplification

Signature of the Principal Investigator Date	Counter signature of the Head of the organization/authorized representative Date
Seal	Seal

J. Rerences

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K. ANNEXES

Annex I: Sampling and data collection.



Questionnaire Survey on Freshwater fish Biodiversity

নাম: মহিলা/পুরুষ

বয়স:

পেশা:

জেলা:

উপজেলা:

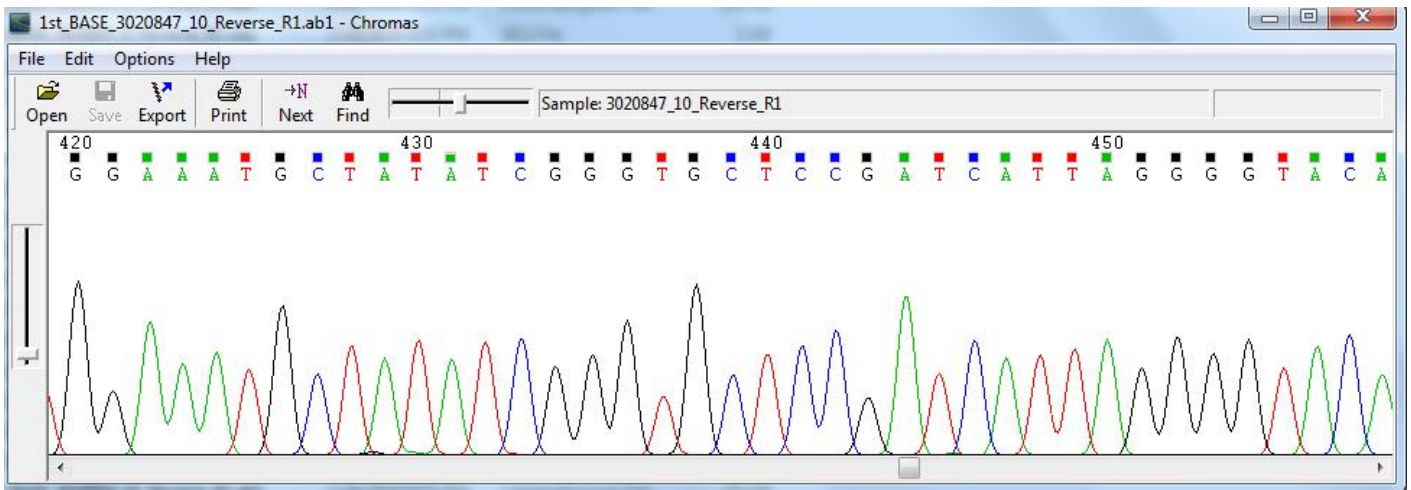
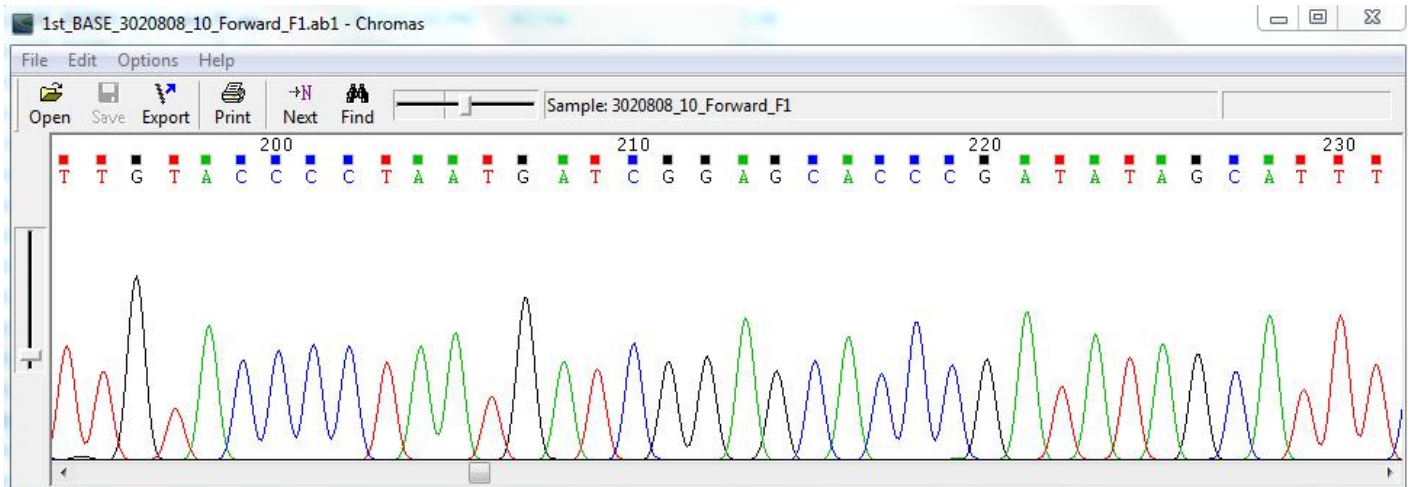
গ্রাম:

নদী:

- ১। কত বছর এই পেশার সাথে জড়িত ?
- ২। এই এলাকায় সবচেয়ে বেশি পাওয়া যায় কোন মাছ গুলো ?
- ৩। কোন মাছ গুলো এখন একেবারে দেখা যায় না ?
- ৪। কোন মাছ গুলো সংখ্যায় একদম কমে গেছে ?
- ৫। মাছ কমে যাওয়ার কারণ গুলো কি মনে করেন ?
- ৬। এমন কি কি মাছ ছিল যা অনেক বছর আগে দেখেছেন, এখন আর পাওয়া যায় না ?
- ৭। কত আগে ?
- ৮। কোন মাছগুলো ধরা পড়ে, তবে বিক্রয় মূল্য না থাকায় আপনারা ফেলে দিচ্ছেন ?
- ৯। মাছ ধরতে সময় কেমন লাগছে ? আগের থেকে কত সময় বেশী লাগছে ?
- ১০। নদীর কোন অংশগুলোতে মাছ বেশী পাওয়া যায় ?
- ১১। নদীর কোন অংশগুলোতে এখন আর মাছ পাওয়া যায় না ?
- ১২। এই নদীগুলোতে কি ধরণের জাল ব্যবহার করা হয় ?
- ১৩। বিভিন্ন মাছের জন্য কি বিভিন্ন ধরণের জাল ব্যবহার করছেন ?

- ১৪। কি মাছের জন্য কি ধরনের জাল ব্যবহৃত হচ্ছে ?
- ১৫। কি কি নৌকা ব্যবহার করেন? কোনো বিশেষ ধরনের নৌকা ব্যবহার করেন কি ?
- ১৬। এই এলাকায় জেলের সংখ্যা কত হতে পারে ?
- ১৭। মাছ কমে যাওয়ার কারণে কি তাদের অন্য কোনো পেশার সাথে জড়িত হতে হয়েছে ?
- ১৮। পেশা পরিবর্তন করেছে এমন কতজন হবে আপনাদের জেলেপন্নীতে ?
- ১৯। নতুন করে কি কেউ এই পেশায় আসতে ইচ্ছা পোষণ করে ?
- ২০। আপনাদের খেলে-মেঝেরা এই পেশায় আসতে ইচ্ছুক কি ?
- ২১। আগের মত মাছ পেতে চাইলে কি মনে করেন, কি করা উচিত ?
- ২২। আপনারা নিজেরা কি করতে পারেন বলে মনে করেন ?
- ২৩। সরকার বা অন্যান্য সংস্থা কি করতে পারে বলে মনে করেন ?
- ২৪। NGO গুলো কোল ধরনের সাহায্য করছে কি?
- ২৫। সরকার থেকে কি কি ধরনের সাহায্য পাচ্ছেন আপনারা ?

Annex III: Partial chromatograms of the forward and reverse strands of a specimen.



Chitala chitala voucher ZMUD:001 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

GenBank: MF140393.1

[FASTA Graphics](#)

[Go to:](#)

LOCUS MF140393 689 bp DNA linear VRT 17-JUL-2017

DEFINITION Chitala chitala voucher ZMUD:001 cytochrome oxidase subunit I (COI)
gene, partial cds; mitochondrial.

ACCESSION MF140393

VERSION MF140393.1

KEYWORDS .

SOURCE mitochondrion Chitala chitala (clown knifefish)

ORGANISM [Chitala chitala](#)

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Actinopterygii; Neopterygii; Teleostei; Osteoglossocephala;
Osteoglossomorpha; Osteoglossiformes; Notopteridae; Chitala.

REFERENCE 1 (bases 1 to 689)

AUTHORS Ahmed,M.S., Islam,N.N., Sanzida,N.J., Ayesha,J.B.M.A. and
Nahar,L.

TITLE DNA Barcoding of Freshwater Fishes of Bangladesh

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 689)

AUTHORS Ahmed,M.S., Islam,N.N., Sanzida,N.J., Ayesha,J.B.M.A. and
Nahar,L.

TITLE Direct Submission

JOURNAL Submitted (20-MAY-2017) Department of Genetic Engineering and
Biotechnology, University of Dhaka, Curzon Hall, Dhaka 1000,
Bangladesh

FEATURES

source

Location/Qualifiers

1..689

/organism="Chitala chitala"

/organelle="mitochondrion"

/mol_type="genomic DNA"

/specimen_voucher="ZMUD:001"

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/lat_lon="24.0590 N 90.6738 E"

/collection_date="27-Oct-2016"

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/identified_by="M. S. Ahmed"

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/protein_id="ASK79901.1"

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ASSGVEAGAGTGWTVYPPLAGNLAHAGASVDLTIFSLHLAGVSSILGAINFITTVFNM

KPPAVSQYQTPFIWAVMITAVLLLLSLPVLAAAGITMLLDRNLNTFFDPA

GGDPI LYQHLFWFFGH"

[gene](#)

[CDS](#)

ORIGIN

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1 ccacaaagac attggcacc tatacctgt attggggcc tgagcaggta tagtaggcac
61 agccctaagc ctgctaacc gagcagaatt gagccaacc ggctcactac ttggcgacga
121 ccaaactat aatgttatcg ttacagcaca cgcattcgta ataattctct tcatggtaat
181 gcctattata attggaggct ttggaaactg attaatcca ttaataattg gggccccaga
241 tatagcattc ccccgaaata acaacataag cttttgactc ctgccccat cattcttact
301 actcctagcc tcttcaggag tagaagccgg tgccggaact ggatgaacag tatacccgcc

361 tttagcagga aacctagcgc atgcagggtc ctctgtagac cttacaattt tttactaca
421 tcttgccggt gtttcatcaa ttctaggggc cattaacttt attacaacag tatttaatat
481 aaaacctct gccgtctcac aatatcaaac accactgttc atctgagctg ttataattac
541 tgagcttcta cttttactat cacttcagtt tctagctgcc ggtattacaa tactacttac
601 agaccgcaac ctaacacaa cattcttga cccggcagcg ggaggagatc caattcttta

661 ccaacaccta ttctgattct ttggccacc
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//

Notopterus notopterus voucher DUZM002 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial

GenBank: KT346361.1

[FASTA Graphics](#)

[Go to:](#)

LOCUS KT346361 648 bp DNA linear VRT 16-SEP-2015

DEFINITION *Notopterus notopterus* voucher DUZM002 cytochrome oxidase subunit 1 (COI) gene, partial cds; mitochondrial.

ACCESSION KT346361

VERSION KT346361.1

KEYWORDS .

SOURCE mitochondrion *Notopterus notopterus* (bronze featherback)

ORGANISM [Notopterus notopterus](#)

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Actinopterygii; Neopterygii; Teleostei; Osteoglossocephala; Osteoglossomorpha; Osteoglossiformes; Notopteridae; *Notopterus*.

REFERENCE 1 (bases 1 to 648)

AUTHORS Ahmed,M.S., Chowdhury,M.M., Rahman,M. and Nahar,L.

TITLE DNA barcoding of small indigenous fishes (SIS) of Bangladesh

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 648)

AUTHORS Ahmed,M.S., Chowdhury,M.M., Rahman,M. and Nahar,L.

TITLE Direct Submission

JOURNAL Submitted (26-JUL-2015) Zoology, University of Dhaka, Karzon Hall,

Dhaka, Dhaka 1000, Bangladesh

COMMENT ##Assembly-Data-START##

Sequencing Technology :: Sanger dideoxy sequencing

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..648

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/organelle="mitochondrion"
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/db_xref="taxon:103479"

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/country="Bangladesh"
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/note="collected from Tanguar Haor"

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/gene="COI"

CDS

<1..>648

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/transl_table=2

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TVYPPLAGNLAHAGASVDLTIFSLHLAGVSSILGAINFITTFVNMKPPVVSQYQTPLF
IWAVMITAVLLLLSLP VLAAGITMLLTDRNLNTFFDPAGGGDPILYQH LFWFFGT"

ORIGIN

1 ctgagcaggc atagtaggta cagccctaag cctgctaac cgagcagaat taagccaacc
61 tggctcacta ctggcgacg accagattta taatgttatc gtaacagcac acgccttcgt
121 aataatttc tttatggtaa tgcctattat gattggaggt tttgaaatt gattaatccc
181 actaataatt ggagcccctg atagcatt cccccgaata aataacataa gcttctgact
241 cctaccccca tcgtcctac tactcctagc ctctcagga gtagaggccg gtgccggaac
301 aggatgaacc gtatatccgc ctctagcagg aaacctagca catgcaggcg cctccgttga
361 tctcacaatt tttcacttc acctagctgg tgtctcatca attctaggag ccattaattt
421 tattacaaca gtatttaata taaaccgcc cgtagtgtca caatatcaaa caccactgtt
481 tatctgagca gtaataatta ctgcagtttt acttcttta tccctccag tcttagccgc
541 cggcattaca atgcttcta cagaccgcaa ccttaacaca acatttttcg acccggcagg
601 aggggggat ccaatcctt atcagcactt attctgattc ttggcac

Corica soborna voucher ZMUD:012 cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

GenBank: KX455892.1

[FASTA](#) [Graphics](#) [PopSet](#)

Go to:

LOCUS KX455892 696 bp DNA linear VRT 25-JUL-2016

DEFINITION Corica soborna voucher ZMUD:012 cytochrome oxidase subunit I (COI)

gene, partial cds; mitochondrial.

ACCESSION KX455892

VERSION KX455892.1

KEYWORDS BARCODE.

SOURCE mitochondrion Corica soborna

ORGANISM [Corica soborna](#)

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Actinopterygii; Neopterygii; Teleostei; Clupei; Clupeiformes; Clupeoidei; Clupeidae; Corica.

REFERENCE 1 (bases 1 to 696)

AUTHORS Ahmed,M.S., Chowdhury,M.M., Rahman,M. and Nahar,L.

TITLE DNA barcoding of small indigenous species (SIS) of Bangladesh

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 696)

AUTHORS Ahmed,M.S., Chowdhury,M.M., Rahman,M. and Nahar,L.

TITLE Direct Submission

JOURNAL Submitted (29-JUN-2016) Department of Genetic Engineering and Biotechnology, University of Dhaka, Karzon Hall, Dhaka 1000, Bangladesh

FEATURES Location/Qualifiers

source

1..696

/organism="Corica soborna"

/organelle="mitochondrion"

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/isolate="44"

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/country="Bangladesh: Tanguar Haor, Sunamganj"

/lat_lon="25.07 N 91.32 E"

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[gene](#)

CDS

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/protein_id="ANU06308.1"
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LASSGVESGAGTGWTVYPPLAGNLAHAGASVDLTIFSLHLAGISSILGAINFITTIIN  
MKPPAISQYQTPLFVWAVLVTAVLLLLSLPVLAAGITMLLTDRNLNTTFFDPAGGGDP  
ILYQHLFWFFGHQE"
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ORIGIN

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121 gaccaatct ataacgtcat cgttaccgct catgccttg tgataatttt cttcatagta  
181 atgccaatct taattggcgg ctttgtaac tgacttgtgc ctttgataat cggagcccct  
241 gacatagcat tccccgaat aaataacatg agctttggac tccttcccc atctttcctt  
301 cttcttttag cctcttcagg agtagaatcg ggggcaggaa cagggtgaac tgtatacccc  
361 cctctcgctg gtaattggc tcacgctgga gcttcagtag atttaactat tttctctt  
421 cacctggcag gaatttcatc catcctagga gccattaact ttatcacaac aatcattaat  
481 ataaaacccc ctgcatctc gcagtatcaa actcctctat tcgtgtgagc tgtacttgtt  
541 acagctgttc ttttactact ttccttcca gttttagcag ctggcattac aatgcttctt  
601 actgaccgaa atcttaacac aacattttc gaccggcag ggggaggaga cccaattcta  
661 tatcaacact tattctgatt ctttggccac caggaa
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Bagarius bagarius voucher ZMUD:141B cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial

GenBank: KX455910.1

[FASTA](#) [Graphics](#) [PopSet](#)

Go to:

LOCUS KX455910 696 bp DNA linear VRT 25-JUL-2016

DEFINITION Bagarius bagarius voucher ZMUD:141B cytochrome oxidase subunit I (COI) gene, partial cds; mitochondrial.

ACCESSION KX455910

VERSION KX455910.1

KEYWORDS BARCODE.

SOURCE mitochondrion Bagarius bagarius (dwarf goonch)

ORGANISM [Bagarius bagarius](#)
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Actinopterygii; Neopterygii; Teleostei; Ostariophysi;

Siluriformes;
Sisoridae; Sisorinae; Bagarius.

REFERENCE 1 (bases 1 to 696)

AUTHORS Ahmed,M.S., Chowdhury,M.M., Rahman,M. and Nahar,L.

TITLE DNA barcoding of small indigenous species (SIS) of Bangladesh

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 696)

AUTHORS Ahmed,M.S., Chowdhury,M.M., Rahman,M. and Nahar,L.

TITLE Direct Submission

JOURNAL Submitted (29-JUN-2016) Department of Genetic Engineering and Biotechnology, University of Dhaka, Karzon Hall, Dhaka 1000, Bangladesh

FEATURES Location/Qualifiers

source 1..696

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/organelle="mitochondrion"

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/isolate="68"

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/country="Bangladesh: Tanguar Haor, Sunamganj"

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gene

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CDS

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MKPPAISQYQTPLFVWAVLITAVLLLLSLPVLAAGITMLLDRNLNTFFDPAGGGDP
ILYQHFLWFFGHQK"

ORIGIN

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121 gaccaaattt ataattgcat tgttactgct cacgcctttg ttataatttt ctttatagta
181 ataccaatca tgattggtgg gttcggcaac tgactagtgc cactaatgat tggagctccc
241 gacatggcat tcctcgaat aaataacata agcttctgac tactgcccc atccttcta
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361 ccacttgacg gaaacctcgc acatgcagga gcttcctgg atttaactat ttttctctg
421 catcttgacg gaatttcac aattctagga gccatcaact ttatcacaac tatcattaat
481 ataaaacctc cagcgatctc ccagtaccaa acaccattat tctgtggggc cgtcctcatc
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661 tatcaacatc tttctgatt cttggccac caaaaa