

# Fish Faunal Biodiversity in Mahananda River of Malda District, West Bengal, India

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**Abstract:-** This paper is dealing with fish biodiversity in Mahananda River in Malda District of West Bengal. The *latitude* range of Malda District is 24°40'20" N to 25°32'08" N, and the *longitude* range is 87°45'50" E to 88°28'10" E. Only one river is mentioned here named the Mahananda River. The study area was Alal, Gobindopur, Harirampur, Khanpur, Madhaihat side, Hossainpur side and Telaigachai side, Goal Para, Chandra Para, Kanaipur, Jadupur, Balarampur, Najarpur, Taktuli and Mukhdhampur. Nandi and Das worked on fishes previously on Mahananda River. The present work will serve as a documentation of Fish faunal biodiversity in Mahananda River of Malda district. Total catchment area is 22 kilometres, most of which is covered by arable land. Thirty two species of fishes belonging to 27 genera, 7 order and 13 families were identified from the collection of Mahananda River at Malda. Out of the 32 species 6 species *Mystus bleekari* (F.Day, 1877), *Puntius conchoni* (Hamilton, 1822), *Nemaacheilus corica* (Hamilton, 1822), *Lepidocephalichthys thermalis* (Hamilton, 1822), *Anguilla bengalensis bengalensis* (Gray, 1831) and *Monopterusuchia* (Hamilton, 1822) are newly recorded by the authors. Fish biodiversity of Mahananda River represents the fish faunal diversity at Malda also. Sampling was conducting in between August 2016 to December 2016. Fish diversity depends upon many physical parameters of aquatic environment. It is offered to demonstrate a rich blending of applied and fundamental ecology, achieved by the intersections among fishery science, ichthyology, and ecology. It is surrounded by Bangladesh and South Dinajpur district in the east, Santal Parganas of Jharkand state in the west, North Dinajpur district in the north and Murshidabad in the south. The district consists of two subdivisions, Sadar and Chanchal. English bazaar is the headquarters station of the district as well as the Sadar subdivision. The district consists mainly of low-lying plains, sloping towards the south with undulating areas on the northeast. The Mahananda River divides Malda district into two regions. Pisciculture has been undertaken under various projects according to modern scientific methods.

**Index Terms:-** Fish faunal, biodiversity, taxonomic studies, documentation, conservation, functional diversity, abundance, Mahananda River, Malda, West Bengal.

## I. INTRODUCTION

The present study, therefore is aimed at to update the ichthyofaunal diversity in the rivers of the Malda district to get a database on the distribution of fish species. Biodiversity is essential for stabilization of ecosystem, safety of overall environmental quality for understanding intrinsic value of all species on the Earth. The critical ecological conditions have made it important to examine the status of Malda fish on the basis of their relative abundance and specific diversity. After determining their ecological status following IUCN (1994), priorities can be established for Fish conservation and management. The concept of priority requirement for conservation and management on the basis of ecological status of species was first voiced during the world conservation strategy launched in 1980. Nandi (2013) worked on the cheque list of fishes at Malda District. Das et al (2014) worked on 20 species from Malda. Authors have been found 32 species from Mahananda River at Malda. Out of 32 species 6 species are new recorded from the region. However, no serious efforts have been made previously to determine the ecological status of Malda fish in order to establish conservation priorities.

## II. MATERIALS AND METHODS

Fish samples were collected from the river and other valuable information were collected from the local fishermen and resident adjacent to the selected side of the river Mahananda by Md. Nurul Hasan. Fishing was carried out with the help of local fishermen using gill net, cast net, drug net, scoop net, including hooks and lines (Bose at.al. 2013). The importance of this site lies with the connectance between the rivers and provides a corridor for fishes over a large area. The samples were photographed, immediately prior to preservation as formalon (8%) decolorizes the fish colour on long preservation (Bagra, 2010). The samples were identified based on keys of fishes of the Indian subcontinent (Day, 1996; Talwar and Jhingran, 1991). Classifications were carried out on lines of Jayaram (1999).

## III. SAMPLING STATIONS

The study area were Alal, Gobindopur, Harirampur, Khanpur, Madhaihat side, Hossainpur side and Telaigachai side, Goal Para, Chandra Para, Kanaipur, Jadupur, Balarampur Najarpur, Taktuli and Mukhdhampur. Fishes were collected from the Mahananda River in Malda district of West Bengal in between July 2016 to December 2016. The specimen study was confined in Malda districts. The specimens were retrieved from the net, identified morphologically to lowest taxonomic level following Shaw and Shebbeare, 1937; Day, 1958 and Talwar and Jhingran, 1991 and then released in the wild after preserving representative specimens in 8% formaldehyde.

## IV. RESULTS AND DISCUSSION

Thirty two fish species belonging 13 families were collected and identified from river Mahananda in Malda district revealed Analysis showed 20 species commonly found in all the location of Malda district. Fish diversity plays an important role in the socio-economic development of the country; as it is a valuable resource of livelihood for a huge section of economically backward population. It also generates gainful employment alternate income stimulates growth of new subsidiary industries (Goswamial et. al.2012). Fish diversity and its abundance is being eroded everyday mainly because of indedinganthopogenic pressure. Habit loss and environmental degraduated has seriously affected the fish fauna (Saha and Patra, 2013). The fundamental idea behind the study of biodiversity pattern is the presumed connection between the shape of species as endangers and the functional was in while they are organized , As competition or members of a wels of interaction and to how species all facing similar environmental constructants. Taxonomic and ecological composition and complementary and as useful in conservations contract. (Angermeier and Winston, 1998; king et al 2009).

TABLE I: COLLECTION SPOTS AND FISH FAUNAL BIODIVERSITY OF MAHANANDA RIVER, AT MALDA DISTRICT, WEST BENGAL

Sl. No.	Collections spots	Name of the fishes	Name of the River
1.	Alal	<i>Glossogobius giuris</i> , <i>Chanda nama</i> , <i>Chanda ranga</i> , <i>Mystus cavasius</i>	Mahananda
2.	Gobindopur	<i>Mystus cavasius</i> , <i>Mystus vittatus</i> , <i>Mystus bleekari</i> , <i>Sperata seeghala</i> , <i>Rita rita</i> , <i>Rita gogra</i>	Mahananda
3.	Harirampur	<i>Puntius conchoniis</i> , <i>Puntius ticto</i> , <i>Cirrhinus reba</i> , <i>Labeo kalbasu</i> , <i>Amblypharyngodon mola</i> , <i>Esomus danrica</i>	Mahananda
4.	Khanpur	<i>Ailia coila</i> , <i>Schilbeidae garua</i> , <i>Eutropiichthys vacha</i>	Mahananda
5.	Madhaihat	<i>Botia Dario</i> , <i>Canthophrys gongota</i> , <i>Lepidocephalichthyes theramlis</i>	Mahananda
6.	Hossainpur	<i>Ompok pabda</i> , <i>Wallago attu</i> , <i>Cirrhinus reba</i> , <i>Labeo kalbasu</i>	Mahananda
7.	Telaigachai	<i>Monopterus cuchia</i> , <i>Eutropiichthys vacha</i>	Mahananda
8.	Goal Para	<i>Anguilla bengalensis bengalensis</i> , <i>Amphipnous cuchia</i>	Mahananda

Sl. No.	Collections spots	Name of the fishes	Name of the River
9.	Chandra Para	<i>Xenentodon cancila</i> , <i>Botia dario</i> , <i>Canthophrys gongota</i> , <i>Lepidocephalichthys theramlis</i>	Mahananda
10.	Kanaipur	<i>Ompok pabda</i> , <i>Wallago attu</i> , <i>Amphipnous cuchia</i>	Mahananda
11.	Jadupur	<i>Gudusia chapra</i> , <i>Ailia coila</i> , <i>Schilbeidae garua</i> , <i>Eutropiichthys vacha</i>	Mahananda
12.	Balarampur	<i>Nemaacheius corica</i> , <i>Cirrhinus reba</i> , <i>Labeo kalbasu</i> , <i>Amblypharyngodon mola</i> , <i>Esomus danrica</i>	Mahananda
13.	Najarpur	<i>Ailia coila</i> , <i>Schilbeidae garua</i> , <i>Eutropiichthys vacha</i>	Mahananda
14.	Taktuli	<i>Botia dario</i> , <i>Canthophrys gongota</i> <i>Lepidocephalichthys theramlis</i> , <i>Ailia coila</i> ,	Mahananda
15.	Mukhdhampur	<i>Glossogobius giuris</i> , <i>Chanda nama</i> , <i>Chanda ranga</i> , <i>Mystus cavasius</i>	Mahananda

TABLE II: TAXONOMIC POSITION OF FISH SPECIES IN MAHANANDA RIVER OF MALDA DISTRICT, WEST BENGAL, INDIA.

Order	Families	Name of species	Local Name
Perciformes	1 Gobidae 2 Ambassidae	<i>Glossogobius giuris</i> <i>Chanda nama</i> <i>Chanda ranga</i>	Bele Chanda Lal chanda
Siluriformes	1. Siluridae 2. Chilbeidae 3. Bagridae 4. Sisoridae	<i>Ompok pabda</i> <i>Wallago attu</i> <i>Aila coila</i> <i>Schilbeidae garua</i> <i>Eutropiichthys vacha</i> <i>Mystus cavasius</i> <i>Mystus vittatus</i> <i>Mystus bleekari</i> <i>Sperata seghala</i> <i>Rita rita</i> <i>Rita gogra</i> <i>Bagarius bagarius</i> <i>Gagata gagata</i>	Pabda Boal Basot Ghera Bacha Ram Tangra Pati Tangra Guchi Tangra Guji Itha Gagor Baghar Kuckri

Order	Families	Name of species	Local Name
Cypriniformes	1 Cyprinidae	<i>Puntius conchoni</i> <i>Puntius ticto</i> <i>Cirrhinus reba</i> <i>Labeo kalbasu</i> <i>Amblypharyngodon mola</i> <i>Esomus danrica</i> <i>Chela atpar</i>	Boropunti Tit punti Rewa Kalbabush Moya Dairka Cheli
	2 Nemancheildae	<i>Nemaacheius corica</i>	Kuchedharia
	3 Cobitidae	<i>Botia Dario</i> <i>Canthophrysgongota</i> <i>Lepidocephalichthyes theramlis</i>	Dhaira Lachati Pui
Atheriniformes	1 Belonidae	<i>Xenentodon cancila</i>	Kankila
Anguilliformes	1 Anguillidae	<i>Anguilla bengalensis</i> <i>bengalensis</i>	Bam
Clupeiformes	1 Clupeidae	<i>Gudusia chapra</i>	Khori
Synbranchiformes	1 Synbranchidae	<i>Monopterus cuchia</i> <i>Amphipnous cuchia</i>	Bamuch Kunche

TABLE III: FISH FAUNAL BIODIVERSITY IN MAHANANDA RIVER OF MALDA DISTRICT, WEST BENGAL

S. No.	Scientific name	Family	Conservation status	Relative abundance	Food habit	Economic importance
1	<i>Glossogobius giuris</i> (Hamilton, 1822)	Gobiidae	LRNT	+	C	Fd/Or
2	<i>Ompok pabda</i> (Hamilton, 1822)	Bagridae	VU	+	C	Fd/Or
3	<i>Wallago attu</i> (Bloch and Schneider, 1801)	Bagridae	VU	+	C	Fd
4	<i>Mystus cavasius</i> (Hamilton, 1822)	Bagridae	LRIC	+	O	Fd/Or
5	<i>Mystus vittatus</i> (Bloch, 1794)	Bagridae	VU	+++	C	Fd/Or
6	<i>Mystus bleekari</i> (F.Day, 1877)	Bagridae	VU	+	C	Fd/Or
7	<i>Sperata seeghala</i> (Sykes, 1839)	Bagridae	VU	+	C	Fd
8	<i>Rita rita</i> (Hamilton & Buchanan, 1822)	Bagridae	VU	+	C	Fd/Or
9	<i>Rita gogra</i> (Sykes, 1839)	Bagridae	VU	+	C	Fd/Or
10	<i>Gagata gagata</i> (Hamilton, 1822)	Sisoridae	VU	+	C	Fd/Or
11	<i>Bagarius bagarius</i> (Hamilton, 1822)	Sisoridae	VU	+	C	Fd
12	<i>Eutropichthys vacha</i> (Hamilton & Buchanan, 1822)	Schilbeidae	LRIC	+	C	Fd
13	<i>Puntius conchonius</i> (Hamilton, 1822)	Cyprinidae	LRIC	+++	C	Fd/Or
14	<i>Puntius amphibious</i> (Hamilton, 1822)	Cyprinidae	LRIC	+++	C	Fd
15	<i>Cirrhinus reba</i> (Hamilton & Buchanan, 1822)	Cyprinidae	VU	+	O	Fd
16	<i>Xenentodon cancila</i> (Hamilton & Buchanan, 1822)	Belonidae	LRlc	+	C	Or
17	<i>Anguilla bengalensis bengalensis</i> (Gray, 1831)	Anguillidae	EN	+	O	Fd
18	<i>Amphipnous cuchia</i> (Hamilton, 1822)	Synbranchidae	VU	+	O	Or
19	<i>Amblypharyngodon mola</i> (Hamilton & Buchanan, 1822)	Cyprinidae	LC	+	O	Fd
20	<i>Aila coila</i> (Hamilton, 1822)	Chilbeidae	EN	+	O	Fd
21	<i>Gudusia chapra</i> (Hamilton, 1822)	Clupeidae	EN	+	O	Fd

S. No.	Scientific name	Family	Conservation status	Relative abundance	Food habit	Economic importance
22	<i>Lepidocephalichthyes thermalis</i> (Hamilton, 1822)	Cobotidae	EN	+	O	Fd
23	<i>Canthophrys gongota</i> (Hamilton, 1822)	Cobotidae	EN	+	O	Fd
24	<i>Botia dario</i> (Hamilton, 1822)	Cobotidae	EN	+	O	Fd
25	<i>Esomus danrica</i> (Hamilton, 1822)	Cyprinidae	LC	++	O	Fd
26	<i>Labeo kalbasu</i> (Hamilton, 1822)	Cyprinidae	LC	++	O	Fd
27	<i>Schilbeidae garua</i> (Bleeker, 1858)	Schilbeidae	EN	+	O	Fd
28	<i>Chela atpar</i> (Hamilton, 1822)	Cyprinidae	EN	+	O	Fd
29	<i>Nemaacheius corica</i> (Hamilton, 1822)	Nemacheilidae	EN	+	O	Fd
30	<i>Chanda ranga</i> (Hamilton, 1822)	Ambassidae	LC	++	O	Fd
31	<i>Chanda nama</i> (Hamilton, 1822)	Ambassidae	LC	++	O	Fd
32	<i>Monopterusuchia</i> (Ham.. 1822)	Synbranchidae	EN	+	O	Fd

Note:-

Feeding Habit:

O= Omnivorous  
C= Carnivorous  
H= Herbivorous.

Economic Importance:

FD= Food fish  
Or = Ornamental fish.

According to IUCN (2010) and CAMP (1998):

DD= Data deficient  
NE= Not evaluated  
VU= vulnerable  
EN= Endangered  
CNE= critically endangered  
LRnt= Lower risk near threatened  
LRlc= lower risk least concern

Abundance Category:

+++ = abundant species  
++ = Less abundant  
+ = Rare species.

PLATE-1



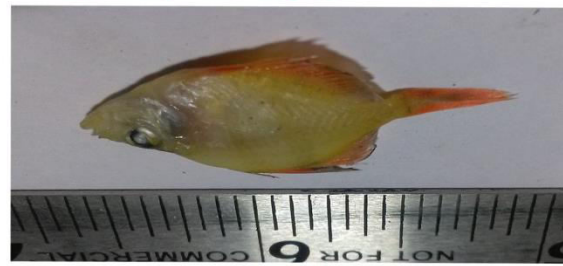
*Puntius amphibius*



*Lepidocephalichthysguntea guntea*



*Chela atpar*



*Chanda ranga*



*Acanthocobitis mooreh*



*Ailia coila*



*Chanda nama*



*Cirrhinus reba*



*Puntius conchoniuss*



*Monopterus cuchia*



## V. CONCLUSION

The highest fish bio-diversity of the Malda district region is therefore represented fish about 32 fish species. Species specific programme and broad area in-situ conservation programmes will enable us to anthropogenic stresses. Some endangered species are present in these areas like *Ompok pabda*, *Eutropiichthys vacha*, *Nemaacheilus corica*, *Monopterus cuchia* and *Anguilla bengalensis*. These fish species have also high market value.

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## REFERENCES

- [1] Barman, R. P. (2007). A review of the fresh water fish fauna of West Bengal, India with suggestions for conservation of the threatened and endemic species, Records of the Zoological Survey of India, Ocassional paper 263: 1-48.
- [2] Das, J. et al 2015. Status of predatory Ichthyofauna Diversity of Malda and Murshidabad District of West Bengal: An approach towards Biodiversity Management. ArticleNo. 3. 1-8.
- [3] Hamilton B. An account of the fishes from the river Ganges and its branches (Edinburgh), 1822.
- [4] Hora, S.L. and Gupta, J. C. 1940. On a collection of fish from Kalimpong, Duars and silliguriTerai, North Bengal. Journal Royal Asiatic Society of Bengal (Science). VI: 77-83.
- [5] IUCN. Red list of Threatened Species, 2010.
- [6] Jayaram, K. C and Singh, K.P 1977, 1999. On the collection of fish from North Bengal. Records of Zoological Survey of India. 72 (1-4): 243-275, the Freshwater Fishes of the Indian Region. Delhi.
- [7] Jayaram, K. C. 1981. Methods of preservation of fishes. In: Director, ZSI (Ed), the freshwater fishes of India, Pakistan, Bangladesh, Burma and Srilanka-A Handbook. Calcutta Laser Graphics Pvt Ltd., Calcutta, p5.
- [8] K. C Jayaram .The freshwater Fishes of India: A handbook. Zoological surbey of India , Calcutta 475 p,(1981)
- [9] Mondal, D.K. and Kaviraj, A. 2009. Distribution of fish assemblages in two floodplain lakes of North 24 pgs in west Bengal, India. J. Fish. Aquatic Sc. 4(1): 12-21.
- [10] Nandi, B. 2013. Checklist of ichyofauna of Mahananda River at Malda District of West Bengal, India. NBU J. Anim. Sc. 7: 25-30.
- [11] P. K .Talwar and A. G. Jhingran. Inland fishes of India and Adjacent countries (vol 1 & 2). Oxford and IBH Publishing Co. Pvt. Ltd, Calcutta. 1158, (1991)
- [12] Patra, A.K. and Datta, T. 2010. Diversity of Cypriniformes fish fauna in Kerala River, a tributary of Teesta River at Jalpaiguri district of West Bengal, India. Res. J. Biol. Sc. 5(1): 106-110.
- [13] R. P. Barman , Records of the Zoological Survey of India, Ocassional paper 263, 1, (2007)
- [14] Shaw, G. E and Shebbare, E. O. 193. The fishes of Northern Bengal. J.assisant .soc.Beng, 3(1).
- [15] Shaw, G.E. & E.O. Shebbeare (1937): The fisheries of north Bengal. Journal of the Royal Asiatic Society of Bengal (science) 3(1): 1-137.
- [16] Sinha M, Mukherjee MK, Mitra PM, Bagchi MM, karmakarHc. Impact of Farakka barrage on the hydrology fisheries of Hoogly Estuary. Estuaries 1996; 19(3): 710-722.
- [17] Talwar, P.K. and Jhingran, A.G. 1991. Inland Fishes of India and adjacent countries, vol. 1 &2. Oxford & IBH publishing co. pvt. Ltd. New Delhi.

- [18] Tamang, L, S. Chaudary & D. Choudary (2007): Ichthyofaunal contribution to the state and comparison of habitat contiguity on taxonomic diversity in senkhi stream. Arunachal Pradesh, India. Journal of the Bombay Natural History Society 104(2): 170-177.