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A preliminary study on ichthyofaunal resource of Motapung-Maguri Beel of Tinsukia district of Assam, India

Pollobi Kalita, Sewali Pathak and Parag Deka

Abstract
The study relates to the ichthyofaunal resource of Motapung Maguri Beel (wetland) of Tinsukia District, Assam, India. A total of 48 number of fish species including 5 exotic fish species belonging to 35 genera under 18 families from 7 orders is recorded from the present study. Among the recorded fish species no species is recorded as vulnerable, 1 species is endangered, 1 species is data deficient, 2 species are lower risk-near threatened, 39 species are lower risk-least concern and other 5 species are not evaluated. The different families recorded are Belonidae, Clupeidae, Cyprinidae, Cobitidae, Ambassidae, Anabantidae, Channidae, Gobiidae, Osphronemidae, Bagridae, Clariidae, Heteropneustidae, Schilbeidae, Siluridae, Sisoridae, Synbranchidae, Mastacembelidae and Notopteridae. The taxonomic study shows that Cyprinidae is the most dominant family with 19 numbers of species contributing about 40% of the 18 recorded family from the present study followed by Channidae (10%) and bagridae (8%). The study also reveals that the Motapung-Maguri Beel is high in fish diversity. However, the laying of a particular stretch of crude oil pipeline by Oil India Limited beneath the Motapung-Maguri Beel from Bebejia to Baghjan intersecting the beel is a matter of great concern regarding environmental safety. Any leakage or spillage in the pipelines under the beel may have far reaching impacts on this beel.

Keywords: Motapung-Maguri Beel, Ichthyofaunal resource, Tinsukia District

1. Introduction
The N.E. region of India has unique topographical conditions. The region is blessed with enormous and diverse water resources in the form of rivers (19,150 Km); reservoirs (23,792 ha); beels, lakes and swamps (143,740 ha); ponds and mini barrage (40,808 ha) and low laying paddy cum fish culture systems (2,780 ha) (Mahanta *et al.,* 2003) [8]. This region of the country is very rich in fish diversity. So far 267 fresh water fish species belonging to 114 genera under 38 families and 10 orders have been reported from the region (Mahanta *et al.,* 2003) [8], which is approximately 33.13% of the total Indian freshwater fishes (Sen, 2000) [10].
In Assam, fish is an integral part of food and there are lots of flood-plain wetlands exhibiting high diversity of fish fauna supported by the subtropical climate, favourable ecological and geographical condition and auto stocking capacity. There are about 3.9 lakh hector of water area in the state with rich aquatic biodiversity with the largest number of fish species (217), followed by Arunachal Pradesh (167), Meghalaya (165), Tripura (134), Manipur (121), Nagaland (68), Sikkim (52) and Mizoram (48) (Mahanta *et al.,* 2003) [8]. In Assam capture fishery is endowed with many flood plain wetlands from two major river systems namely the Brahmaputra and the Barak river system which provide rich diversity of fish species. The wetlands and lakes are important fisheries resources of Assam which not only fulfil the state's domestic demand for fish but also provide cheap human nutrition and generate the state economy as well. The present study is therefore, an attempt with an aim to investigate the ichthyofaunal diversity of Motapung-Maguri Beel (wetland) situated at Tinsukia District of Assam, India.

2. Materials and Method
2.1. Study area: The present work was based on the studies carried out for a period of 5 months, commencing from January, 2015 to May, 2015 in a wetland named Motapung-Maguri Beel (wetland) situated at 11 km away from Tinsukia District Headquarter and at the south-east side of the Dibru-Saikhowa National Park.

2.2. Survey of landing sites: Four major fish landing sites in the beel area were surveyed during the study period and the species caught by the fisherman using different nets and gears were recorded. The names of major fish landing sites were- Lolit ghat, Mokonala, Subol and Mihibo. Fishes caught for personal consumption were also recorded from local fisherman.

2.3. Data collected from local fisherman: Data regarding occurrence of the different species were collected from local fisher by interviewing them with the help of questionnaires. As the study period was confined only for five months, data regarding occurrence of any other fish species other than the recorded ones were collected.

2.4. Collection, photography and identification of fish: Fishes were collected in live condition and photographs were taken by digital camera placing them in a clean paper and keeping a scale along its length. Some collected fishes were preserved in 10% formaldehyde solution for identification. The specimens were identified as per Talwar and Jhingran (1991) [11]; Jayaram (1999) [5]; Vishwanath (2002) [12].

3 Results: A total of 48 species of fishes have been recorded from the study site belonging to 35 genera, 18 families and 7 orders (Table-1) with IUCN status.

Table 1: Fish fauna of Motapung-Maguri Beel with their IUCN status

Sl. No.	Order	Family	Species	Local Name	Iucn Status
1	Beloniformes	Belonidae	*Xenentodon cancila* (Ham.-Buch.)	*Kokila*	LRlc
2	Clupeiformes	Clupeidae	*Gudusia chapra* (Ham.-Buch.)	*Koroti*	LRlc
3	Cypriniformes	Cyprinidae	*Gibelion catla* (Ham.-Buch.)	*Bhokua*	LRlc
4			*Chagunius chagunio* (Ham.-Buch.)	*Keintah puthi*	LRlc
5			*Cirrhinus reba* (Ham.-Buch.)	*Lachim*	LRlc
6			*Labeo bata* (Ham.-Buch.)	*Bhangone*	LRlc
7			*Labeo rohita* (Ham.-Buch.)	*Rou*	LRlc
8			*Labeo gonius* (Ham.-Buch.)	*Kuri*	LRlc
9			*Osteobrama cotio* (Ham.-Buch.)	*Hato*	LRlc
10			*Puntius sophore* (Ham.-Buch.)	*Puthi*	LRlc
11			*Puntius javanicus* (Bleeker)	*Java puthi*	NE
12			*Rasbora daniconius* (Ham.-Buch.)	*Darikona*	LRlc
13			*Danio devario (Ham- Buch)*	*Darikona*	LRlc
14			*Davario assamensis* (Barman)		LRlc
15			*Amblypharyngodon mola (Ham-Buch)*	*Moa*	LRlc
16			*Systomus sarana* (Ham.-Buch.)	*Puthi*	LRlc
17			*Cirrhinus mrigala* (Ham.-Buch.)	*Mirika*	LRlc
18			*Ctenopharyngodon idella* (Valenciennes)	*Grass Carp*	NE
19			*Hypopthalmichthys molitrix* (Valenciennes)	*Silver carp*	NE
20			*Cyprinus carpio* (Linnaeus)	*Common carp*	NE
21			*Hypopthalmichthys nobilis*	*Big head carp*	NE
22		Cobitidae	*Lepidocephalichthys guntea (Ham- Buch)*	*Batia*	LRlc
23			*Canthophyrs gongota* (Hamilton)	*Kukur batia*	LRlc
24	Perciformes	Ambassidae	*Chanda nama* (Ham.-Buch.)	*Chanda*	LRlc
25		Anabantidae	*Anabas testudineus* (Bloch)	*Kawoi*	DD
26		Channidae	*Channa orientalis* (Bloch & Schneider)	*Chengeli*	LRlc
27			*Channa punctata* (Bloch)	*Goroi*	LRlc
28			*Channa gachua* (Ham.-Buch.)	*Cheng*	LRlc
29			*Channa striata* (Bloch)	*Sol*	LRlc
30			*Channa marulius* (Hamilton)	*Sal*	LRlc
31		Gobiidae	*Glossogobius giuris* (Ham.-Buch.)	*Patimutura*	LRnt
32		Osphronemidae	*Trichogaster fasciata* (Schneider)	*Kholihona*	LRlc
33			*Trichogaster lalius* (Ham.-Buch.)	*Kholihona*	LRlc
34	Siluriformes	Bagridae	*Mystus cavasius* (Ham.-Buch.)	*Singora*	LRlc
35			*Mystus tengara* (Ham.-Buch.)	*Singora*	LRlc
36			*Mystus carcio* (Hamilton)	*Singora*	LRlc
37			*Sperata seenghala* (Sykes)	*Ari*	LRlc
38		Clariidae	*Clarias magur* (Linnaeus)	*Magur*	EN
39		Heteropneustidae	*Heteropneustes fossilis* (Bloch)	*Singhi*	LRlc
40		Schilbeidae	*Pachypterus atherinoides* (Bloch)	*Bordowa*	LRlc
41		Siluridae	*Wallago attu* (Schneider)	*Barali*	LRlc
42		Sisoridae	*Hara hara* (Hamilton)	*Hatihoka*	LRlc
43	Synbranchiformes	Synbranchidae	*Monopterus cuchia* (Ham.-Buch.)	*Kuchia*	LRlc
44		Mastacembelidae	*Mastacembelus armatus* (Lacepede)	*Bami/Gosi*	LRlc
45			*Macrognathus aral* (Bloch & Schneider)	*Turi*	LRlc
46			*Macrognathus pancalus* (Ham.-Buch.)	*Turi*	LRlc
47	Osteoglossiformes	Notopteridae	*Notopterus notopterus* (Ham.-Buch.)	*Kandhuli*	LRlc
48			*Chitala chitala* (Pallas)	*Chital*	LRnt

LRnt= Lower risk near threatened; LRlc=Lower risk least concern, VU= Vulnerable; DD=Data deficient; NE= Not Evaluated; EN-Endangered

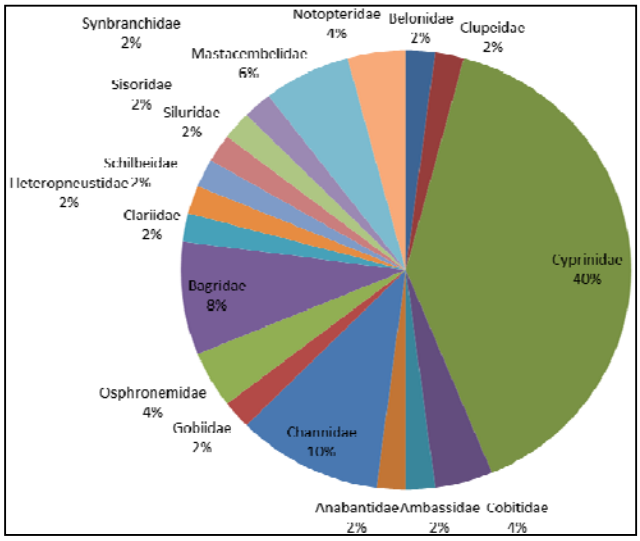


Fig 1: Family wise distribution of fish species.

Among the 48 fish species recorded from different landing sites of Motapung-Maguri Beel belonging to 35 genera and 18 families, it has been observed that Cyprinidae family was the most dominant, which includes 19 species, accounting a percentage of 40%. Next followed by Channidae family with 5 species holding 10% share which is followed by Bagridae comprising 8% and Mastacembellidae comprising 6.25% whereas families Osphronemidae, Cobitidae and Bagridae comprising each with 4%. And the rest of the families (Table-1) were observed to be the least dominating with 2 % each.

Of the recorded fish species, some were most abundant, some were abundant and some were least abundantly found. It was observed that the species like *Puntius sophore, Mystus tengara, Chanda nama* were most abundantly found and species like *Labeo gonius, Osteobrama cotio, Glossogobius giuris, Trichogaster fasciata*, *Xenentodon cancila, Macrognathus aral, Macrognathus pancalus, Mastacembelus armatus, Channa spp.* were abundant. On the other hand, the species such as *Wallago attu, Heteropneustes fossilis, Trichogaster lalius, Clarias magur etc.* were recorded as least abundant. Further, the local fishermen revealed that the occurrence of *Nandus nandus* and *Rasbora elanga* has been gradually declining and is near to the zero because of some unknown reasons. The conservation status of the recorded fishes have been classified into five category viz., LRnt= Lower risk near threatened; LRlc=Lower risk least concern, VU= Vulnerable; DD=Data deficient; NE= Not Evaluated; EN-Endangered of which no species is recorded as vulnerable, 1 species is endangered, 1 species is data deficient, 2 species are lower risk-near threatened, 39 species are lower risk-least concern and other 5 species are not evaluated.

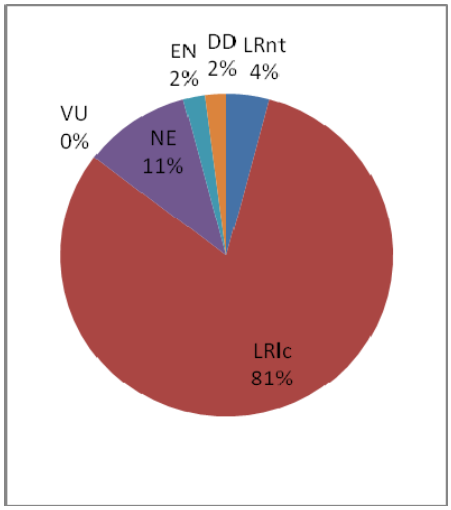


Fig 2: Percentage distribution of conservation status of recorded fish species

Labeo gonius

Chagunius chagunio

Puntius javanicus

Puntius sophore

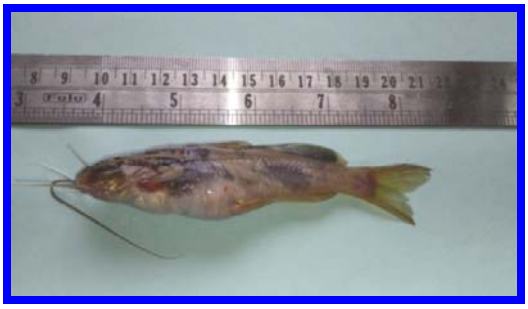
Gudusia chapra

Cirrhinus reba

Trichogaster fasciata

Trichogaster lalius

Mystus cavasius



Mystus tengara

Hara hara

Heteropneustes fossilis

Channa punctata

Pachypterus atherinoides

Mastacembelus armatus

Macrognathus pancalus

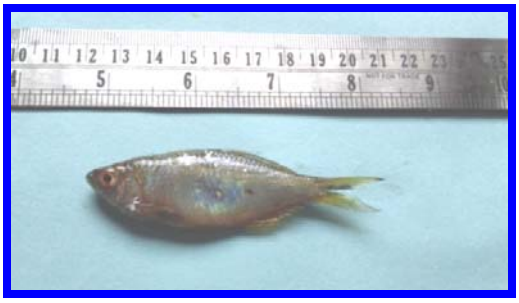
Rasbora daniconius

Glossogobius giuris

Xenentodon cancila

Chanda nama

Osteobrama cotio



Davario assamensis

Notopterus notopterus

Aspidoparia morar

Mystus carcio

Macrognathus aral

Some of the fishes were found in the studied beel but were not recorded by photograph during the study period. The information about their occurrence was found from the local fishermen and by the socio-economic survey done among the people of the adjoining area to the Beel. The fishes includes *Chitala chitala, Danio devario, Amblypharyngodon mola, Puntius sarana, Cirrhinus mrigala, Cyprinus carpio, Ctenopharyngodon idella, Hypophthalmichthys molitrix, Lepidocephalichthys guntea.* The ecosystem of Motapung-Maguri beel supports the habitat of varieties species of fishes with ornamental ones. This wetland produces more than 200 metric tons of fishes in a year and hereby it is playing an important role for the livelihood to the local people.

The laying of a particular stretch of crude oil pipeline by Oil India Limited beneath the Motapung-Maguri Beel from Bebejia to Baghjan intersecting the beel is a matter of great concern regarding environmental safety. Any leakage or spillage in the pipelines under the beel may have far reaching impacts on this beel.

4. Discussion: Beels are highly productive natural ecosystem which can convert the solar energy into organic matter in presence of rich nutrients available from natural sources. Historically, there have been three leading groups of people involved in organized fishing in the beels: 1.Those who catch fish for their own daily consumption. 2. Those who belonging to the fisher community and depend in fishing for their livelihood. 3. Rural Entrepreneurs (Leaseholders).

The fish diversity of the beels of lower Assam like Chanddubi (57 species), Dora (62), Deepor (41) and Tamranga beel (63) was reported by previous workers (Dey, 1981; Lahon, 1983; Goswami,1985; Agarwala, 1996) [3, 7, 4, 2] which more or less corroborate with the findings of the present study. Rich ichthyofaunal diversity in the beels of Assam has been reported by Kar and Dey (1993) [6] from Sone beel (70 species), Acharjee (1997) [1] in three beels of Kamrup district (56 species) and Sarma *et al.*, 2012 in Goronga Beel of Morigaon district (77 species).

Three exotic carps viz. *Cyprinus carpio, Ctenopharyngodon idella and Hypophthalmichthys molitrix* have been recorded in the study area by the information gathered from the local fishermen as it was not caught during the study period and these three exotic carps have been listed by Sen (2000) [10] in different parts of the state.

One more important species (*Labeo nandina*) though reported earlier from a wetland of Assam (Goswami, 1985) [4] is not found in the present study, and this may be due to the fact that the species is slowly disappearing from the wetland.

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