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Present status of the ichthyofaunal diversity of Mailata-Diplinga Beel of Darrang District, Assam, India

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Abstract

Darrang district is located at 26°9'N 91°45'E to 26°45' N 92°22' E covering geographical area of 1585 sq.km (Approximately) having population 9, 28, 500 (As per 2011 census). The present investigation was carried out in the Mailata-Diplinga beel during the 2021-22 to document the ichthyo-faunal diversity and conservation status of the fishes. The study reveals the presence of 36 species belonging to 28 genera, 7 orders and 17 families. Among these, 6 species were nearly threatened (NT), 1 species vulnerable (VU), 28 species were least concern (LC) and 1 data deficient (DD). The predominant orders of fishes in the Mailata-Diplinga Beel are Cypriniformes, Perciformes and Siluriformes.

Keywords: Darrang, ichthyo-faunal diversity, cypriniformes, perciformes, siluriformes

1. Introduction

The North-Eastern region of India lies between 22°00'N and 29°05' N and 88°00' E and is considered as one of the hotspots of freshwater fish biodiversity in the world. This rich diversity of the region could be assigned to certain reasons, notably, the geo-morphology and the tectonics of this zone. The region is dominated by two drainage systems namely the Brahmaputra in the north and the Barak in the south with numerous tributaries.

NE region, in general, and Assam, in particular, is blessed with a number of lentic systems, locally called Beel, Haor, Anua, Hola, Doloni, Jalah, etc., which alone constitute around 81% of the total lentic area (0.12 x 106 ha) in Assam (Kar, 2019) [2]. Further, in Assam, there are around 1, 392 wetlands having a total of around 22, 896 fisheries of different categories, out of which, the number of registered wetlands is only 394 (30.38%) covering an area of around 70, 000 ha. Of them, around 19, 000 ha are considered in good condition, around 15, 000 ha are in semi-derelict condition, and around 35, 000 ha are in derelict condition (Government of Assam, 2006) (Kar, 2019) [2].

Following the pioneering work of Day (1967), various authors reported ichthyofaunal diversity in Indian water bodies (Jhingran *et al.* 1991) [23]. These reports highlight the faunal diversity of the aquatic ecosystems and reveal the variations in the distribution of the ichthyofauna and other fauna found in the aquatic ecosystem. These reports also highlight the potential fish species found in Indian waters, their growth potential, aquaculture importance, and their capture fishery dynamics. A proper understanding of the fish fauna, their seasonal abundance, and habitat is of great importance in effective utilization of this resource (Johnson *et al.* 2012) [13]. According to IUCN (1970), wetlands are areas of marsh, fen, etc., temporary or permanent; natural or artificial mass of water, the depth of which generally does not exceed 6 m. Wetlands are areas which contain substantial amount of standing water and little flow (Kar, 2014) [9]. Wetlands occur throughout the world in all climatic zones and are estimated to cover 0.6 % of the earth's surface (Kar, 2019) [2]. The aim of the study is to document the ichthyofaunal diversity of the Mailata-Diplinga with its feeding habitat, economic importance and conservation status.

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2. Materials and methodology

2.1. Study area

Darrang district of Assam is located at 26°9'N 91°45'E to 26°45' N 92°22' E and its southern side is endowed with many Beels, ponds, low lying swamp and small tributaries. Mailata-Dipinga, a beel of northern part of river Brahmaputra is situated towards south direction at about 38 kms from district

headquarter Mangaldoi and 8-9 km away from Dumunichowki town. The length of the beel is 5 kms and breadth at centre is 120 m but breadth near confluence is 63 m. Total water spread area of Mailata-Dipinga is around 3.5 kms. The depth of the beel is 4-5 feet which changes during the pre-monsoon and post-monsoon period.

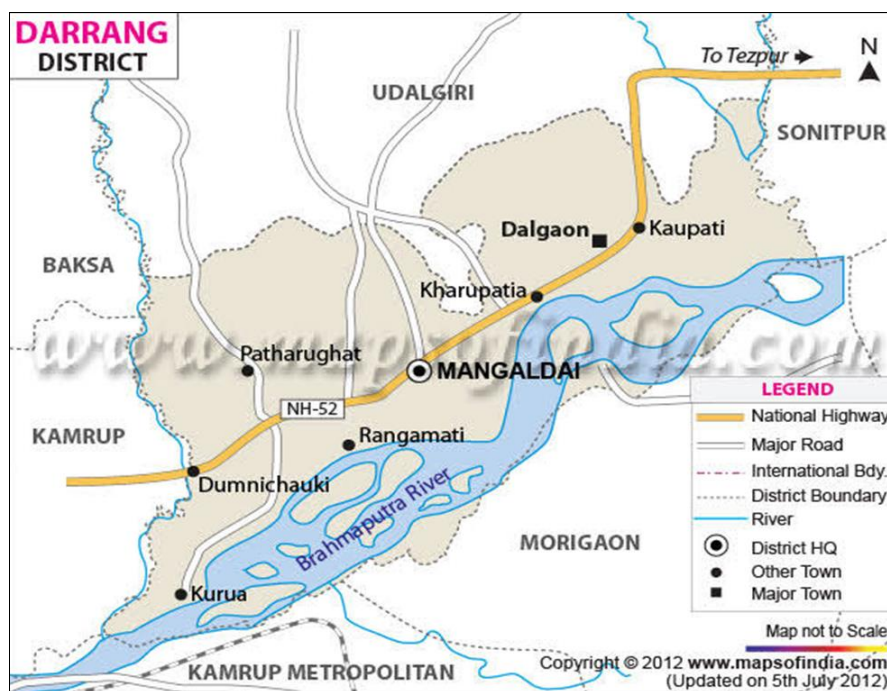


Fig 1: Locational map of study area (Source: Google map).

2.2. Data collection, identification and preservation

The present work was carried out during 2021-2022. Mailata-Diplinga beel (wetland) situated at 9 km away from Dumunichowki Bazar. The data and information are collected in both primary as well as secondary sources. The primary data are collected from survey of the aqua bodies of the study area and various data and information were collected by physical verification and secondary data through interview with the local fishermen of the study area. Fish samples were collected with the help of local skilled fishermen through experimental fishing using a variety of nets and traps. Fishes caught alive or in fresh condition and have been preserved at first in concentrated formaldehyde in the field itself and then in 4% formalin. Photographs were taken on the spots. The fish Specimen were identified following the literature of Talwar and Jhingran (1991) [24] and Jayaram (2010) [14].

3. Result and Discussion

A total of 36 species belonging to 28 genera, 7 orders and 17 families have been recorded from Mailata-Diplinga beel. The species recorded during this survey is listed in Table 1. Out of 7 recorded orders, Perciformes contributed 7 families, followed by Siluriformes 4, Cypriniformes with 2. Osteoglossiformes, Clupeiformes, Beloniformes, and Synbranchiformes each with 1 family respectively. Among families Cyprinidae is highly dominant representing 14 individual fish species, followed by Channidae 3. Conservation status is evaluated based on IUCN data (2017) [3]. Out of 36 species, 6 species were nearly threatened (NT), 1 species vulnerable (VU), 28 species were least concern (LC) and 1 species data deficient (DD).

The feeding habit of the identified fishes were categories as larvivorous (LV), carnivorous fish (CF), herbivorous fish (HF), omnivorous fish (OF), predatory fish (PD), plankton feeder (PF) fish. Out of 36 species recorded from the Mailata-Diplinga beel, omnivorous species has been found to be maximum [14] followed by carnivorous [12], predatory and herbivorous fishes having seven in each, larvivorous and plankton feeder fishes having five numbers in each.

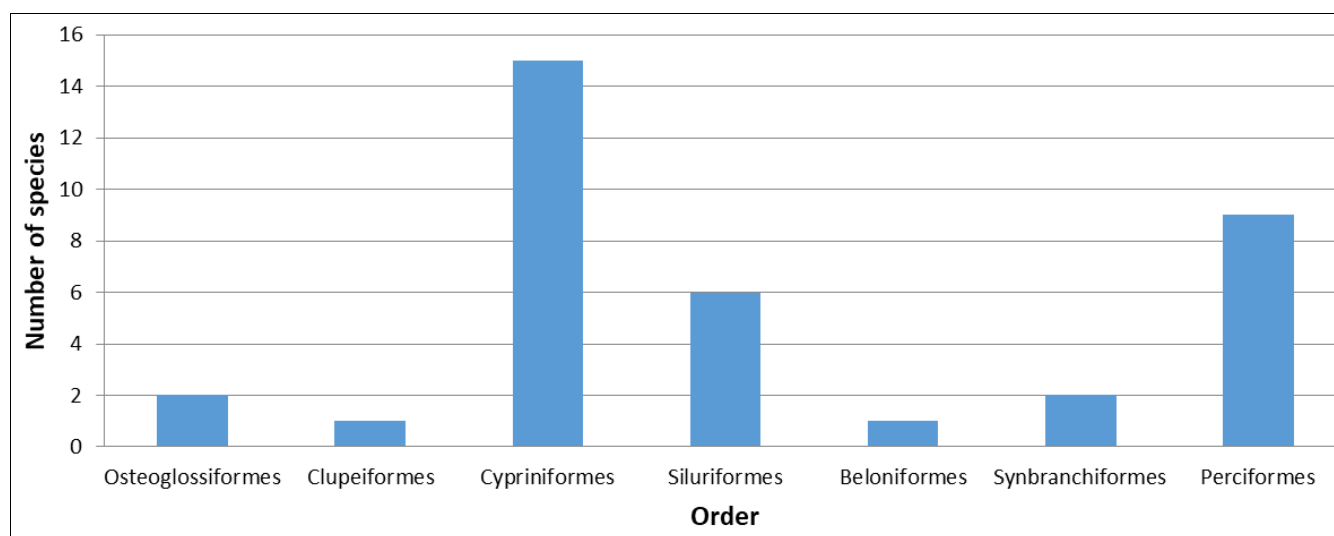
In the present study, out of the 36 species recorded, 21 species were found to be of commercial importance, 29 species have food value and 7 species are classified as coarse food fishes. 4 species are suitable for aquarium, while 7 species have importance in public health as they are larvivorous, and some others are of medicinal use and some are useful as bait. Similar types of results were also reported by Rao *et al.* (1998) [19], Sakhare (2001) [18], Kadam and Gayakwad (2006) [17] in Mehadrigedda, Jawalgaon and Masooli reservoir respectively.

The rich fish diversity of the beels of lower Assam has also been reported from Chandubi having 73 species (Pathak and Goswami, 2021) [1], Tamranga beel having 63 species (Agarwala, 1996) [21], Urpod beel having 60 species (Saud *et al.*, 2012) [12], Charan beel having 64 species (Rahman *et al.*, 2016) [14], Manaha beel having 53 species (Rahman *et al.*, 2016) [14]. Rich fish diversity in the beels of Barak valley, Assam has also been reported from Sone beel with 70 species (Kar and Dey, 1993) [22]. Acharjee (1997) [10] has also reported 56 species in three beels of Kamrup district and Sarma *et al.* (2012) [11] reported 77 species recorded from Goronga Beel of Morigaon district of Assam.

Table 1: Fish fauna, feeding habits, economic importance and conservation status of fish species of Mailata-Diplinga beel.

Sl. No	Order	Family	Scientific name	Feeding habit	Economic importance	Conservation status: IUCN
1	Osteoglossiformes	Notopteridae	<i>Chitala chitala</i> (Hamilton, 1822)	CF, PD	CO, CF, MV, LV	NT
2			<i>Notopterus notopterus</i> (Pallas, 1769)	LV	CO, CF, MV, LV	LC
3	Clupeiformes	Clupeidae	<i>Tenuialosa ilisha</i> (Hamilton, 1822)	PF	FF, CO	LC
4	Cypriniformes	Cyprinidae	<i>Amblypharyngodon mola</i> (Hamilton, 1822)	HF, PF	FF, CO	LC
5			<i>Cirrhinus mrigala</i> (Hamilton, 1822)	OF	FF, CO	LC
6			<i>Cirrhinus reba</i> (Hamilton, 1822)	OF, PF	FF, CF	LC
7			<i>Esomus danricus</i> (Hamilton, 1822)	CF, OF	FF, BT	LC
8			<i>Gibelion catla</i> (Hamilton, 1822)	OF	FF	LC
9			<i>Labeo bata</i> (Hamilton, 1822)	HF	FF	LC
10			<i>Labeo calbasu</i> (Hamilton, 1822)	HF	CO, FF	LC
11			<i>Labeo gonius</i> (Hamilton, 1822)	HF	CF	LC
12			<i>Labeo rohita</i> (Hamilton, 1822)	HF	CO, FF	LC
13			<i>Puntius sophore</i> (Hamilton, 1822)	LV, OF	CF, AF, BT, MV, LV	LC
14			<i>Puntius javanicus</i> (Bleeker, 1855)	OF, LV	FF, LV	LC
15			<i>Cyprinus carpio</i> (Linnaeus, 1758)	OF	FF, CO	VU
16			<i>Hypophthalmichthys molitrix</i> (Cuvier and Valenciennes, 1844)	HF	FF, CO	NT
17			<i>Hypophthalmichthys nobilis</i> (J. Richardson, 1845)	HF	FF, CO	NT
18	Cobitidae	<i>Lepidocephalichthys guntea</i> (Hamilton, 1822)	PD	FF, CO, AF	LC	
19	Siluriformes	Bagridae	<i>Mystus vittatus</i> (Bloch, 1794)	OF, PF	FF, CO	LC
20			<i>Sperata seenghala</i> (Sykes, 1839)	CF, PF	FF, CO	LC
21		Siluridae	<i>Wallago attu</i> (Bloch and Schneider, 1801)	CF, PD	CO, LV	NT
22			<i>Ompok pabo</i> (Hamilton, 1822)	CF, PD	FF	NT
23			Heteropneustidae	<i>Heteropneustes fossilis</i> (Bloch, 1794)	CF	FF, MV
24	Clariidae	<i>Clarias magur</i> (Linnaeus, 1758)	OF	CO, FF, CF	LC	
25	Beloniformes	Belonidae	<i>Xenentodon cancila</i> (Hamilton, 1822)	CF	MV	LC
26	Synbranchiformes	Mastacembelidae	<i>Macragnathus aral</i> (Bloch & Schneider, 1801)	OF	FF, LV	LC
27			<i>Mastacembalus armatus</i> (Lacepede, 1800)	PD	CO, LV	LC
28	Perciformes	Ambassidae	<i>Parambassis ranga</i> (Hamilton, 1822)	OF	FF	LC
29		Nandidae	<i>Nandus nandus</i> (Hamilton, 1822)	CF, PD	FF, AF	LC
30		Gobiidae	<i>Glossogobius giuris</i> (Hamilton, 1822)	CF	FF, CO	LC
31		Anabantidae	<i>Anabas testudineus</i> (Bloch, 1793)	OF, CF	FF, CO	DD
32		Osphronemidae	<i>Trichogaster fasciata</i> (Bloch and Schneider, 1801)	LV, OF	FF, BT	LC
33		Channidae	<i>Channa gachua</i> (Hamilton, 1822)	CF	FF	LC
34			<i>Channa punctatus</i> (Bloch, 1793)	LV	FF, CO	LC
35			<i>Channa striatus</i> (Bloch, 1793)	CF, PD	CO, FF	LC
36			Cichlidae	<i>Oreochromis mossambica</i> (W.K.H. Peters, 1852)	OF	CO, CF, FF, AF

N.B: HF - Herbivorous fish, OF - Omnivorous fish, CF - Carnivorous fish, PD -Predatory fish, PF -Plankton feeder, CF - Coarse food, FF- Food fish, CO - Commercial food, LV- Larvivorous, MV-Medicinal value, AF -Aquarium fish, BT- Bait fish. LC: Least Concern, DD: Data Deficiency, NT: Near Threatened, VU: vulnerable.

**Fig 2:** Number of species of Mailata-Diplinga beel on the basis of order.

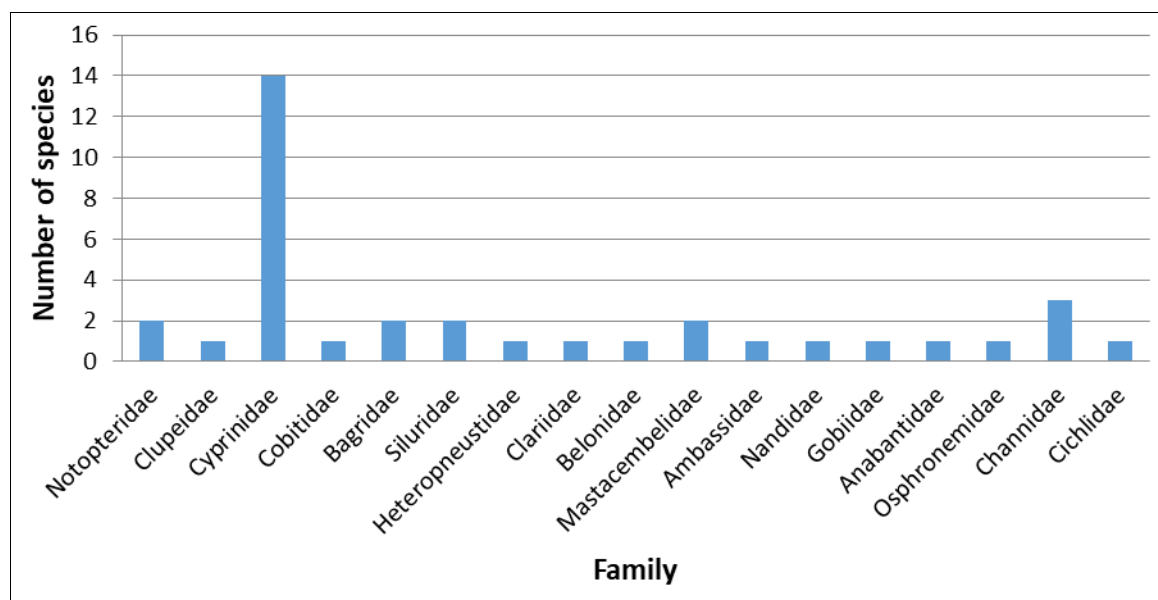


Fig 3: Number of species of Mailata-Diplinga beel on the basis of family.

4. Conclusion

The Beel represents rich ichthyofaunal diversity in Mailata-Diplinga Beel of Darrang district. The fishes around the globe are declining day by day due to anthropogenic and natural pressure. So the identified fish species of Mailata-Diplinga beel should be protected, conserved from the threat factors and Govt, fishery department, NGO should adopted measures for sustainable development of the ecosystem.

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