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A study on the fish diversity of Dhir Beel of Dhubri District of Assam, India

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Abstract

The present study deals with the fish diversity of Dhir Beel of Dhubri District, Assam, India where 72 number of fish species including 4 exotic fish species belonging to 53 genera under 25 families from 8 orders is recorded during the investigation period. Among the recorded fish species 2 species is recorded as vulnerable, another 2 species is data deficient, 7 species is near threatened, 58 species are least concern, 1 species is endangered and other 2 species are not evaluated. The different families recorded are Notopteridae, Clupeidae, Nemacheilidae, Cobitidae, Belonidae, Cyprinidae, Badidae, Ambassidae, Anabantidae, Channidae, Gobiidae, Sisoridae, Amblycipitidae, Pangasidae, Osphronemidae, Nandidae, Bagridae, Clariidae, Chacidae, Heteropneustidae, Schilbeidae, Siluridae, Synbranchidae, Mastacembelidae and Tetraodontidae. The present study shows that Cyprinidae is the most dominant family with 26 number of species contributing about 37% of the 25 recorded family followed by Bagridae (11%). The present study provides an idea about the richness of fish fauna in Dhir beel.

Keywords: Fish diversity, Dhir Beel, Dhubri District

1. Introduction

The Northeast India is blessed with a wide range of physiography and ecoclimatic conditions with varied type of 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)^[15]. Therefore, this region is glorified with excessive and varied type of fish species with 267 fresh water fish species belonging to 114 genera under 38 families and 10 orders (Mahanta *et al.* 2003^[15]), which is 33.13 % (approximately) of the total freshwater fishes of India (Sen, 2000^[19]). The North East region of the country shares its fish fauna predominantly with the Indo- Gangetic fauna and to a small extent with the Burmese and South China fish fauna (Yadav and Chandra 1994^[22]). In Assam, however, Brahmaputra and Barak are the two prime drainage system with lots of flood-plain wetlands exhibiting huge number of diversity of fish fauna supported by the subtropical climatic condition, favourable geographical and ecological condition with rich aquatic biodiversity having 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)^[15].

The fishes provide nutrition, generate economy and livelihood for the poor people. The wetlands and lakes are major fishery resources of Assam contributing about 25% of the fish production (Chakravarty *et al.*, 2012)^[4]. The present study is therefore, an attempt to investigate the fish diversity of Dhir beels located at Dhubri District of Assam, India.

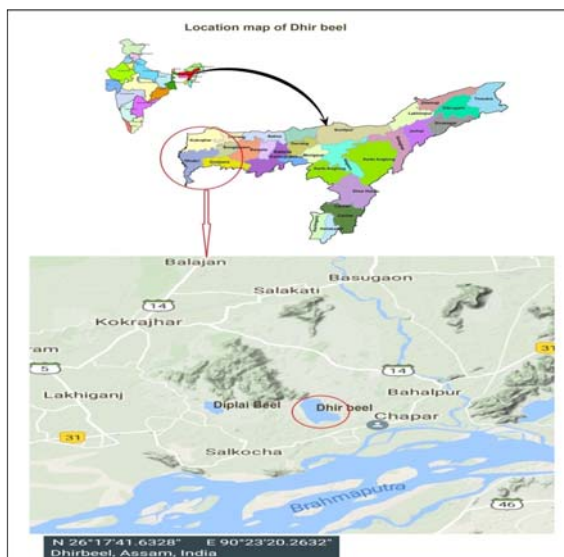
2. Materials and Method:

2.1. Study area: The Dhir Beel is located near Chapar in Dhubri district of Assam which is rich in Piscean fauna. The Beel is situated at latitude 26⁰17'41'' North and longitude 90⁰23'20'' East and covers an area of about 689 ha of land. On its north western side is Chakrashila Wildlife Sanctuary. It is connected with the river Brahmaputra by an 11km long channel called 'Dhir Dhara'. The Beel is under capture fishery and the leasee captures upto 6 quintals of fishes per day during peak season. The Beel is surrounded by village such as Pokhipara, Dhirghat, Alurbhui, Tintila, Chagalkhuti etc.

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Majority of fisher populations of the adjoining area are partially dependant on the beel although the beel is registered and leased by AFDC (Assam Fisheries Development Corporation).



2.2. Survey sites: During the study, major fish landing site Dhir Ghat of the beel was surveyed and different fish species were collected from the local fisher. Fishes caught for personal consumption were also recorded. Nearby fish markets are also investigated in order to collect information about the fishes of Dhir Beel.

2.3. Data collected from local fisherman: Occurrence of the fish species other than data collected directly from the Dhir ghat were recorded from local fisher by interviewing them with the help of prepared questionnaires.

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 with a scale along the length of the specimen. The collected fishes were preserved in 10% formaldehyde solution for identification and further study. The specimens were identified following Talwar and Jhingran (1991)^[20]; Jayaram (1999)^[11]; Vishwanath (2002)^[21].

3 Results: The present study envisages a total of 72 species of fishes from the present study belonging to 53 genera, 25 families and 8 orders (Table-1).

Table 1: Fish fauna of Dhir Beel with their IUCN status

Sl. No.	Order	Family	Species	Local name	Iucn status
1	Osteoglossiformes	Notopteridae	<i>Notopterus notopterus</i> (Pallas, 1769)	Kanduli	LRlc
2			<i>Chitala chitala</i> (Hamilton, 1822)	Chital	LRnt
3	Clupeiformes	Clupeidae	<i>Gudusia chapra</i> (Hamilton, 1822)	Karati	LRlc
4			<i>Tenualosa ilisha</i> (Hamilton, 1822)	Ilish	LRlc
5	Cypriniformes	Cyprinidae	<i>Hypophthalmichthys molitrix</i> (Valenciennes, 1844)	Silver carp	LRnt
6			<i>Hypophthalmichthys nobilis</i> (Richardson, 1845)	Bighead	DD
7			<i>Cabdio morar</i> (Hamilton, 1822)	Boriola	LRlc
8			<i>Salmostoma bacaila</i> (Hamilton)	Selkona	LRlc
9			<i>Barilius barila</i> (Hamilton, 1822)	korang	LRlc
10			<i>Laubuca laubuca</i> (Hamilton, 1822)	Lau puthi	LRlc
11			<i>Devario devario</i> (McClelland, 1839)	Lauputhi	LRlc
12			<i>Esomus danrica</i> (Hamilton, 1822)	Dorikona	LRlc
13			<i>Amblypharyngodon mola</i> (Hamilton, 1822)	Moa	LRlc
14			<i>Ctenopharyngodon idella</i> (Valenciennes, 1844)	Grass Carp	NE
15			<i>Cyprinus carpio</i> Linnaeus, 1758	Common carp	VU
16			<i>Chela cachius</i> (Hamilton, 1822)	Chela	LRlc
17			<i>Bangana ariza</i> (Hamilton, 1807)	-----	LRlc
18			<i>Puntius chola</i> (Hamilton, 1822)	Puthi	LRlc
19			<i>Pethia ticto</i> (Hamilton, 1822)	Puthi	LRlc
20			<i>Puntius sophore</i> (Hamilton, 1822)	Puthi	LRlc
21			<i>Puntius terio</i> (Hamilton, 1822)	Puthi	LRlc
22			<i>Pethia conchoni</i> (Hamilton, 1822)	Puthi	LRlc
23			<i>Systemus sarana</i> (Hamilton, 1822)	Puthi	LRlc
24			<i>Cirrhinus mrigala</i> (Hamilton, 1822)	Mirika	LRlc
25			<i>Cirrhinus reba</i> (Hamilton, 1822)	Lachim	LRlc
26			<i>Gibelion catla</i> (Hamilton, 1822)	Bhokua	LRlc
27			<i>Labeo gonius</i> (Hamilton, 1822)	Kurhi	LRlc
28			<i>Labeo calbasu</i> (Hamilton, 1822)	Bahu	LRlc
29			<i>Labeo rohita</i> (Hamilton, 1822)	Rou	LRlc
30			<i>Labeo bata</i> (Hamilton, 1822)	Bhangone	LRlc
31		Nemacheilidae	<i>Acanthocobitis botia</i> (Hamilton, 1822)	Gethu	LRlc
32		Cobitidae	<i>Botia dario</i> (Hamilton, 1822)	Bagh mach	LRlc
33			<i>Botia rostrata</i> (Gunther, 1868)	Battia	VU
34			<i>Lepidocephalichthys guntea</i> (Hamilton, 1822)	Battia	LRlc
35	Siluriformes	Bagridae	<i>Rita rita</i> (Hamilton, 1822)	Ritha	LRlc
36			<i>Sperata aor</i> (Hamilton, 1822)	Ari	LRlc
37			<i>Sperata seenghala</i> (Sykes, 1839)	Ari	LRlc
38			<i>Mystus vittatus</i> (Bloch, 1794)	Singora	LRlc

39			<i>Mystus cavasius</i> (Hamilton, 1822)	<i>Bor Singora</i>	LRlc
40			<i>Mystus tengara</i> (Ham.-Buch.)	<i>Singora</i>	LRlc
41			<i>Mystus bleekeri</i> (Day, 1877)	<i>Singora</i>	LRlc
42			<i>Batasio batasio</i> (Hamilton, 1822)	<i>Batashi Mas</i>	LRlc
43		Siluridae	<i>Ompok pabo</i> (Hamilton, 1822)	<i>Pavo</i>	LRnt
44			<i>Wallago attu</i> (Bloch and Schneider, 1801)	<i>Barali</i>	LRnt
45		Schilbidae	<i>Ailia coila</i> (Hamilton, 1822)	<i>Kajoli</i>	LRnt
46			<i>Clupisoma garua</i> (Hamilton, 1822)	<i>Neria</i>	LRlc
47			<i>Eutropiichthys vacha</i> (Hamilton, 1822)	<i>Bacha</i>	LRlc
48			<i>Eutropiichthys murius</i> (Hamilton, 1822)	<i>Bacha</i>	LRlc
49		Pangasidae	<i>Pangasius pangasius</i> (Hamilton, 1822)	<i>Kach</i>	LRlc
50		Amblycipitidae	<i>Amblyceps mangois</i> (Hamilton, 1822)	-----	LRlc
51		Sisoridae	<i>Bagarius bagarius</i> (Hamilton, 1822)	<i>Bagari</i>	LRnt
52		Claridae	<i>Clarias batrachus</i> (Linnaeus, 1758)	<i>Magur</i>	EN
53		Heteropneustidae	<i>Heteropneustes fossilis</i> (Bloch, 1794)	<i>Singhi</i>	LRlc
54		Chacidae	<i>Chaca chaca</i> (Hamilton, 1822)	<i>Kurkuri</i>	LRlc
55	Beloniformes	Belonidae	<i>Xenentodon cancila</i> (Hamilton, 1822)	<i>Kokila</i>	LRlc
56	Synbranchiformes	Synbranchidae	<i>Monopterusuchia</i> (Hamilton, 1822)	<i>Kuchia</i>	LRlc
57		Mastacembelidae	<i>Macrognathus aral</i> (Bloch and Schneider, 1801)	<i>Turi</i>	LRlc
58			<i>Macrognathus pancalus</i> Hamilton, 1822	<i>Turi</i>	LRlc
59			<i>Mastacembelus armatus</i> (Lacepede, 1800)	<i>Bami/gosi</i>	LRlc
60	Perchiformes	Ambassidae	<i>Chanda nama</i> (Hamilton, 1822)	<i>Chanda</i>	LRlc
61			<i>Parabassiss lala</i> (Hamilton, 1822)	<i>Chanda</i>	LRnt
62			<i>Parabassiss ranga</i> (Hamilton, 1822)	<i>Chanda</i>	LRlc
63		Nandidae	<i>Nandus nandus</i> (Hamilton, 1822)	<i>Gadgadi</i>	LRlc
64		Badidae	<i>Badis badis</i> (Hamilton, 1822)	<i>Dun vessel</i>	LRlc
65		Gobiidae	<i>Glossogobius giuris</i> (Hamilton, 1822)	<i>Patimutura</i>	LRlc
66		Anabantidae	<i>Anabas testudineus</i> (Bloch, 1792)	<i>Kawoi</i>	DD
67		Osphronemidae	<i>Trichogaster fasciata</i> (Bloch and Schneider, 1801)	<i>Kholihona</i>	LRlc
68			<i>Trichogaster lalius</i> (Hamilton, 1822)	<i>Kholihona</i>	LRlc
69		Channidae	<i>Channa gachua</i> (Hamilton 1822)	<i>Cheng</i>	LRlc
70			<i>Channa punctatus</i> (Bloch, 1793)	<i>Goroi</i>	LRlc
71			<i>Channa striatus</i> (Bloch, 1793)	<i>Sol</i>	LRlc
72	Tetraodontiformes	Tetraodontidae	<i>Leiodon cutcutia</i> (Hamilton, 1822)	<i>Gangatope</i>	NE

LRnt=Near Threatened ; LRlc= least concern, VU= Vulnerable; DD=Data deficient; NE= Not Evaluated; EN=Endangered

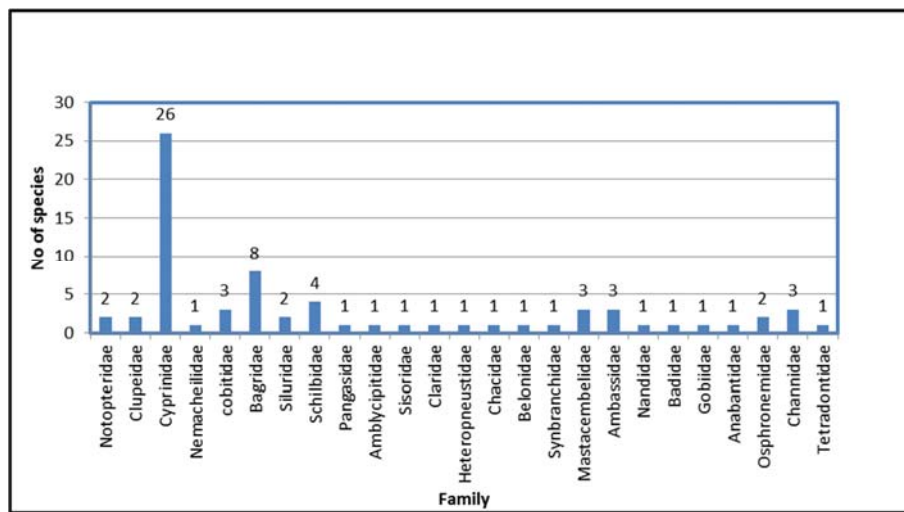


Fig 1: Family wise distribution of fish species

Among the 72 fish species recorded from Dhir Beel belongs to 53 genera under 25 families. it has also been observed that Cyprinidae family was the most dominant (37%), which includes 26 species followed by Bagridae with 8 species holding 11% share. The third highest dominance is shared by Ambassidae, Mastacembelidae, Cobitidae and Channidae comprising 4% each. The next dominance is shown by Clupeidae, Siluridae, Schilbeidae, Osphronemidae and Notopteridae which comprise about 3% each and the rest of

the families (Table-1) is observed to be the least dominating with 1 % each. The conservation status of the recorded fishes have been classified into five categories viz., LRnt= near threatened; LRlc= least concern, VU= Vulnerable; DD=Data deficient; NE= Not Evaluated; EN=Endangered of which 2 species is recorded as Vulnerable, 2 species is Data Deficient, 7 species is Near Threatened, 58 species are Least Concern, 2 species are Not Evaluated and 1 species is Endangered which is *Clarius magur*.

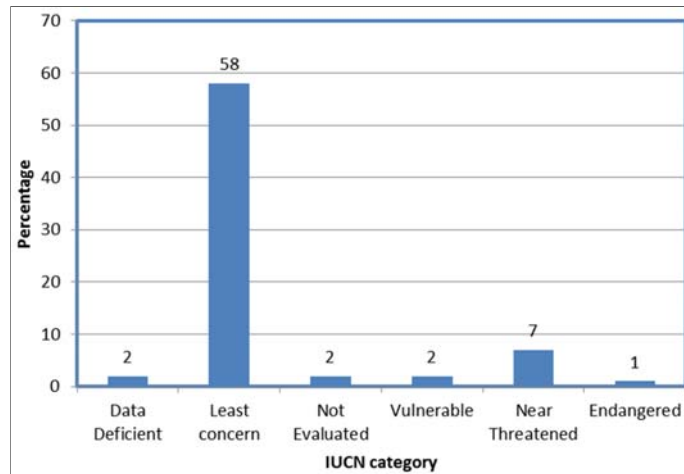


Fig 2: Percentage distribution of conservation status of recorded fish species



Labeo gonius



Labeo bata



Tetraodon cutcutia



Xenentodon cancila



Wallago attu



Puntius sophore



Channa punctatus



Chaca chaca



Badis badis



Lepidocephalichthys guntea



Clarius magur



Cirrhinus mrigala



Labeo gonius



Cabdio morar



Esomus danricus



Mystus vitatus



Amblypharyngodon mola



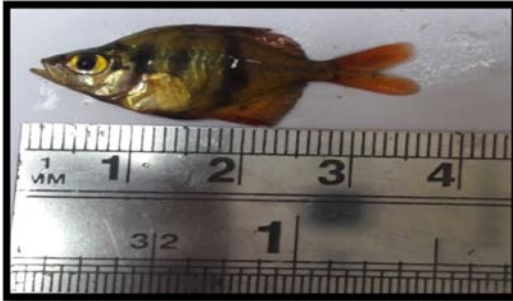
Channa gachua



Mystus tengra



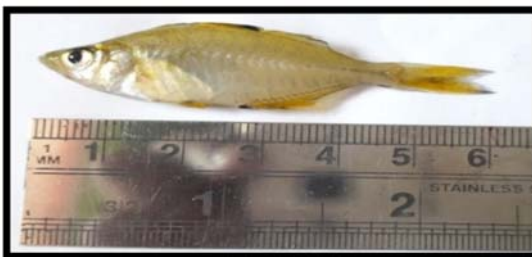
Labeo calbasu



Parambassis lala



Parambassis ranga



Chanda nama



Devario devario



Gudusia chapra



Heteropneustes fossilis



Trichogaster lalius



Trichogaster fasciata



Nandus nandus



Glossogobius giuris



Mastacembelus armatus



Macrognathus aral



Macrognathus pancalus



Notopterus notopterus



Chitala chitala



Anabas testudineus

During the study period some of the fishes are not recorded by photograph but is found in the studied beel. The information about their occurrence is collected from the local fishermen of the Beel.

4. Discussion: Beels are one of the main fishery resources in Assam which are highly productive in presence of rich nutrients available from natural sources. In Assam, there are three primary groups of people involved in fishing in the beels. These are 1. Those that catches fish for their own daily consumption. 2. Those that belonging to the fisher community and fishing is their livelihood and 3. Rural Entrepreneurs (Leaseholders).

However, the present study reveals rich fish diversity with 72 numbers of fish species with some ornamental species. The rich fish diversity of the beels of lower and middle Assam has also been recorded from Chanddubi (57 species) (Goswami, 1985) [8], Dora (62 species) (Lahon, 1983) [14], Deepor (41 species) (Dey, 1981) [7], Tamranga beel (63 species) (Agarwala, 1996) [2], Urpod (60 species) (Saud *et al.*, 2012) [18], Charan Beel (64 species) (Rahman *et al.*, 2012) [16], Manaha Beel (53 species) (Rahman *et al.*, 2012) [16] and Era Kopili Beel (47 species) (Chhetry and Deka, 2016) [5]. However, recent study done by Goswami and Kalita, 2012 [8] on Deepor beel reveals that the number of fish species increase to 54. Rich fish diversity in the beels of Barak valley, Assam has also been reported by Kar and Dey

(1993)^[13] from Sone beel (70 species). Acharjee (1997)^[11] has also reported 56 species in three beels of Kamrup district and Sarma *et al.*, 2012^[17] reported 77 species from Goronga Beel of Morigaon district of Assam.

The exotic fish species reported from the present study are *Cyprinus carpio*, *Ctenopharyngodon idella*, *Hypophthalmichthys molitrix* and *Hypophthalmichthys nobilis* which are the common in most of the wetlands (beels) of Assam. The commercially important fish species found in the wetland are *Labeo rohita*, *Labeo gonius*, *Gibelion catla*, *Cirrhinus mrigala*, *Notopterus notopterus*, *Chitala chitala*, *Wallago attu*, *Channa striatus*, *Cirrhinus reba*, *Heteropneustes fossilis*, *Clarias magur*, *Ompok pavo*, *Anabas testudineus*, *Mystus tengra* etc

Cyprinidae is the most dominant family recorded from the present study is also reported from earlier workers from Assam (Chakravarty *et al.*, 2012^[4]; Deka and Dutta, 2013^[6]; Bordoloi and Hazarika, 2015^[3]; Kalita and Deka, 2015^[12]; Rahman *et al.*, 2016)^[16].

The aquatic habitat of Dhir Beel supports a variety of fish species with ornamental species. This beel is playing an important role for the livelihood by producing animal protein for the local people of the adjoining area.

Two important fish species *Devario devario* and *Mystus tengra* is reported in the present study which has not been reported by Hussain *et al.*, 2015^[10].

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